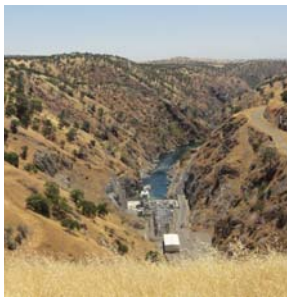
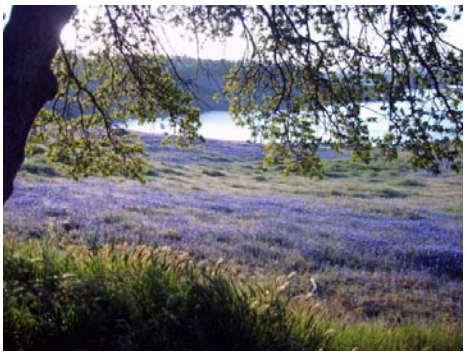
VISUAL QUALITY
STUDY REPORT
DON PEDRO PROJECT
FERC NO. 2299

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MID
Modesto Irrigation District

Prepared for:
Turlock Irrigation District – Turlock, California
Modesto Irrigation District – Modesto, California

Prepared by:
HDR Engineering, Inc.

January 2013

Visual Quality
Study Report

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List of Acronyms

ac .....acres

ACEC .....Area of Critical Environmental Concern

AF .....acre-feet

ACOE.....U.S. Army Corps of Engineers

ADA .....Americans with Disabilities Act

ALJ.....Administrative Law Judge

APE .....Area of Potential Effect

ARMR.....Archaeological Resource Management Report

AW .....American Whitewater

BA .....Biological Assessment

BDCP .....Bay-Delta Conservation Plan

BLM .....U.S. Department of the Interior, Bureau of Land Management

BLM-S .....Bureau of Land Management – Sensitive Species

BMI .....Benthic macroinvertebrates

BMP .....Best Management Practices

BO .....Biological Opinion

CalEPPC .....California Exotic Pest Plant Council

CalSPA.....California Sports Fisherman Association

CAS.....California Academy of Sciences

CCC.....Criterion Continuous Concentrations

CCIC .....Central California Information Center

CCSF.....City and County of San Francisco

CCVHJV .....California Central Valley Habitat Joint Venture

CD .....Compact Disc

CDBW.....California Department of Boating and Waterways

CDEC .....California Data Exchange Center

CDFA .....California Department of Food and Agriculture

CDFG .....California Department of Fish and Game (as of January 2013, Department of Fish and Wildlife)

CDMG.....California Division of Mines and Geology

CDOF .....California Department of Finance

CDPH.....California Department of Public Health
CDPR.....California Department of Parks and Recreation
CDSOD.....California Division of Safety of Dams
CDWR.....California Department of Water Resources
CE.....California Endangered Species
CEII.....Critical Energy Infrastructure Information
CEQA.....California Environmental Quality Act
CESA.....California Endangered Species Act
CFR.....Code of Federal Regulations
cfs.....cubic feet per second
CGS.....California Geological Survey
CMAP.....California Monitoring and Assessment Program
CMC.....Criterion Maximum Concentrations
CNDDB.....California Natural Diversity Database
CNPS.....California Native Plant Society
CORP.....California Outdoor Recreation Plan
CPUE.....Catch Per Unit Effort
CRAM.....California Rapid Assessment Method
CRLF.....California Red-Legged Frog
CRRF.....California Rivers Restoration Fund
CSAS.....Central Sierra Audubon Society
CSBP.....California Stream Bioassessment Procedure
CT.....California Threatened Species
CTR.....California Toxics Rule
CTS.....California Tiger Salamander
CVRWQCB.....Central Valley Regional Water Quality Control Board
CWA.....Clean Water Act
CWHR.....California Wildlife Habitat Relationship
Districts.....Turlock Irrigation District and Modesto Irrigation District
DLA.....Draft License Application
DPRA.....Don Pedro Recreation Agency
DPS.....Distinct Population Segment
EA.....Environmental Assessment

EC .....Electrical Conductivity
EFH.....Essential Fish Habitat
EIR .....Environmental Impact Report
EIS.....Environmental Impact Statement
EPA.....U.S. Environmental Protection Agency
ESA.....Federal Endangered Species Act
ESRCD.....East Stanislaus Resource Conservation District
ESU.....Evolutionary Significant Unit
EVC.....Existing Visual Condition Assessment
EWUA.....Effective Weighted Useable Area
FERC.....Federal Energy Regulatory Commission
FFS.....Foothills Fault System
FL.....Fork length
FMU.....Fire Management Unit
FOT.....Friends of the Tuolumne
FPC .....Federal Power Commission
ft/mi.....feet per mile
FWCA.....Fish and Wildlife Coordination Act
FYLF.....Foothill Yellow-Legged Frog
g.....grams
GIS .....Geographic Information System
GLO .....General Land Office
GPS .....Global Positioning System
HCP.....Habitat Conservation Plan
HHWP.....Hetch Hetchy Water and Power
HORB .....Head of Old River Barrier
HPMP.....Historic Properties Management Plan
ILP.....Integrated Licensing Process
ISR .....Initial Study Report
ITA.....Indian Trust Assets
KOP.....Key Observation Point
kV.....kilovolt
m .....meters

M&I.....Municipal and Industrial
MCL.....Maximum Contaminant Level
mg/kg .....milligrams/kilogram
mg/L.....milligrams per liter
mgd .....million gallons per day
mi .....miles
mi^2 .....square miles
MID.....Modesto Irrigation District
MOU .....Memorandum of Understanding
MSCS.....Multi-Species Conservation Strategy
msl.....mean sea level
MVA .....Megavolt Ampere
MW .....megawatt
MWh .....megawatt hour
mya.....million years ago
NAE .....National Academy of Engineering
NAHC .....Native American Heritage Commission
NAS.....National Academy of Sciences
NAVD 88 .....North American Vertical Datum of 1988
NAWQA .....National Water Quality Assessment
NCCP .....Natural Community Conservation Plan
NEPA .....National Environmental Policy Act
ng/g .....nanograms per gram
NGOs .....Non-Governmental Organizations
NHI .....Natural Heritage Institute
NHPA.....National Historic Preservation Act
NISC .....National Invasive Species Council
NMFS.....National Marine Fisheries Service
NOAA.....National Oceanic and Atmospheric Administration
NOI .....Notice of Intent
NPS .....U.S. Department of the Interior, National Park Service
NRCS .....National Resource Conservation Service
NRHP.....National Register of Historic Places

NRI.....Nationwide Rivers Inventory
NTU .....Nephelometric Turbidity Unit
NWI.....National Wetland Inventory
NWIS .....National Water Information System
NWR .....National Wildlife Refuge
NGVD 29.....National Geodetic Vertical Datum of 1929
O&M.....operation and maintenance
OEHHA.....Office of Environmental Health Hazard Assessment
ORV .....Outstanding Remarkable Value
PAD.....Pre-Application Document
PDO.....Pacific Decadal Oscillation
PEIR.....Program Environmental Impact Report
PGA.....Peak Ground Acceleration
PHG.....Public Health Goal
PM&E .....Protection, Mitigation and Enhancement
PMF.....Probable Maximum Flood
POAOR.....Public Opinions and Attitudes in Outdoor Recreation
PP .....Photo Point
ppb.....parts per billion
ppm .....parts per million
PSP.....Proposed Study Plan
QA.....Quality Assurance
QC.....Quality Control
RA.....Recreation Area
RBP.....Rapid Bioassessment Protocol
Reclamation .....U.S. Department of the Interior, Bureau of Reclamation
RM .....River Mile
RMP .....Resource Management Plan
RP.....Relicensing Participant
RSP .....Revised Study Plan
RST .....Rotary Screw Trap
RWF.....Resource-Specific Work Groups
RWG .....Resource Work Group

RWQCB.....Regional Water Quality Control Board
SC.....State candidate for listing under CESA
SCD.....State candidate for delisting under CESA
SCE.....State candidate for listing as endangered under CESA
SCT.....State candidate for listing as threatened under CESA
SD1.....Scoping Document 1
SD2.....Scoping Document 2
SE.....State Endangered Species under the CESA
SFP.....State Fully Protected Species under CESA
SFPUC.....San Francisco Public Utilities Commission
SHPO.....State Historic Preservation Office
SJRA.....San Joaquin River Agreement
SJRGA.....San Joaquin River Group Authority
SJTA.....San Joaquin River Tributaries Authority
SPD.....Study Plan Determination
SPP.....Supplemental Photo Point
SR.....California Rare Species
SRA.....State Recreation Area
SRMA.....Special Recreation Management Area or Sierra Resource Management Area (as per use)
SRMP.....Sierra Resource Management Plan
SRP.....Special Run Pools
SSC.....State species of special concern
ST.....California Threatened Species under the CESA
STORET.....Storage and Retrieval
SWAMP.....Surface Water Ambient Monitoring Program
SWE.....Snow-Water Equivalent
SWRCB.....State Water Resources Control Board
TAC.....Technical Advisory Committee
TAF.....thousand acre-feet
TCP.....Traditional Cultural Properties
TDS.....Total Dissolved Solids
Turlock SRA.....Turlock Lake State Recreation Area

TID .....Turlock Irrigation District
TMDL .....Total Maximum Daily Load
TOC.....Total Organic Carbon
TRT .....Tuolumne River Trust
TRTAC .....Tuolumne River Technical Advisory Committee
UC .....University of California
USDA.....U.S. Department of Agriculture
USDOC .....U.S. Department of Commerce
USDOI .....U.S. Department of the Interior
USFS .....U.S. Department of Agriculture, Forest Service
USFWS .....U.S. Department of the Interior, Fish and Wildlife Service
USGS .....U.S. Department of the Interior, Geological Survey
USR.....Updated Study Report
UTM.....Universal Transverse Mercator
VAMP .....Vernalis Adaptive Management Plan
VELB .....Valley Elderberry Longhorn Beetle
VQO .....Visual Quality Objective
VR .....Visual Resource
VRM .....Visual Resource Management
VRO .....Visual Resource Objective
WPT .....Western Pond Turtle
WSA.....Wilderness Study Area
WSIP .....Water System Improvement Program
WWTP .....Wastewater Treatment Plant
WY .....water year
µS/cm .....microSeimens per centimeter

1.0 INTRODUCTION

1.1 General Description of the Don Pedro Project

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) are the co-licensees of the 168-megawatt (MW) Don Pedro Project (Project) located on the Tuolumne River in western Tuolumne County in the Central Valley region of California. The Don Pedro Dam is located at river mile (RM) 54.8 and the Don Pedro Reservoir formed by the dam extends 24-miles upstream at the normal maximum water surface elevation of 830 ft above mean sea level (msl; NGVD 29). At elevation 830 ft, the reservoir stores over 2,000,000 acre-feet (AF) of water and has a surface area slightly less than 13,000 acres (ac). The watershed above Don Pedro Dam is approximately 1,533 square miles (mi^2).

Both TID and MID are local public agencies authorized under the laws of the State of California to provide water supply for irrigation and municipal and industrial (M&I) uses and to provide retail electric service. The Project serves many purposes including providing water storage for the beneficial use of irrigation of over 200,000 ac of prime Central Valley farmland and for the use of M&I customers in the City of Modesto (population 210,000). Consistent with the requirements of the Raker Act passed by Congress in 1913 and agreements between the Districts and City and County of San Francisco (CCSF), the Project reservoir also includes a "water bank" of up to 570,000 AF of storage. CCSF may use the water bank to more efficiently manage the water supply from its Hetch Hetchy water system while meeting the senior water rights of the Districts. CCSF's "water bank" within Don Pedro Reservoir provides significant benefits for its 2.6 million customers in the San Francisco Bay Area.

The Project also provides storage for flood management purposes in the Tuolumne and San Joaquin rivers in coordination with the U.S. Army Corps of Engineers (ACOE). Other important uses supported by the Project are recreation, protection of the anadromous fisheries in the lower Tuolumne River, and hydropower generation.

The Project Boundary extends from approximately one mile downstream of the dam to approximately RM 79 upstream of the dam. Upstream of the dam, the Project Boundary runs generally along the 855 ft contour interval which corresponds to the top of the Don Pedro Dam. The Project Boundary encompasses approximately 18,370 ac with 78 percent of the lands owned jointly by the Districts and the remaining 22 percent (approximately 4,000 ac) is owned by the United States and managed as a part of the U.S. Bureau of Land Management (BLM) Sierra Resource Management Area.

The primary Project facilities include the 580-foot-high Don Pedro Dam and Reservoir completed in 1971; a four-unit powerhouse situated at the base of the dam; related facilities including the Project spillway, outlet works, and switchyard; four dikes (Gasburg Creek Dike and Dikes A, B, and C); and three developed recreational facilities (Fleming Meadows, Blue Oaks, and Moccasin Point Recreation Areas). The location of the Project and its primary facilities is shown in Figure 1.1-1.

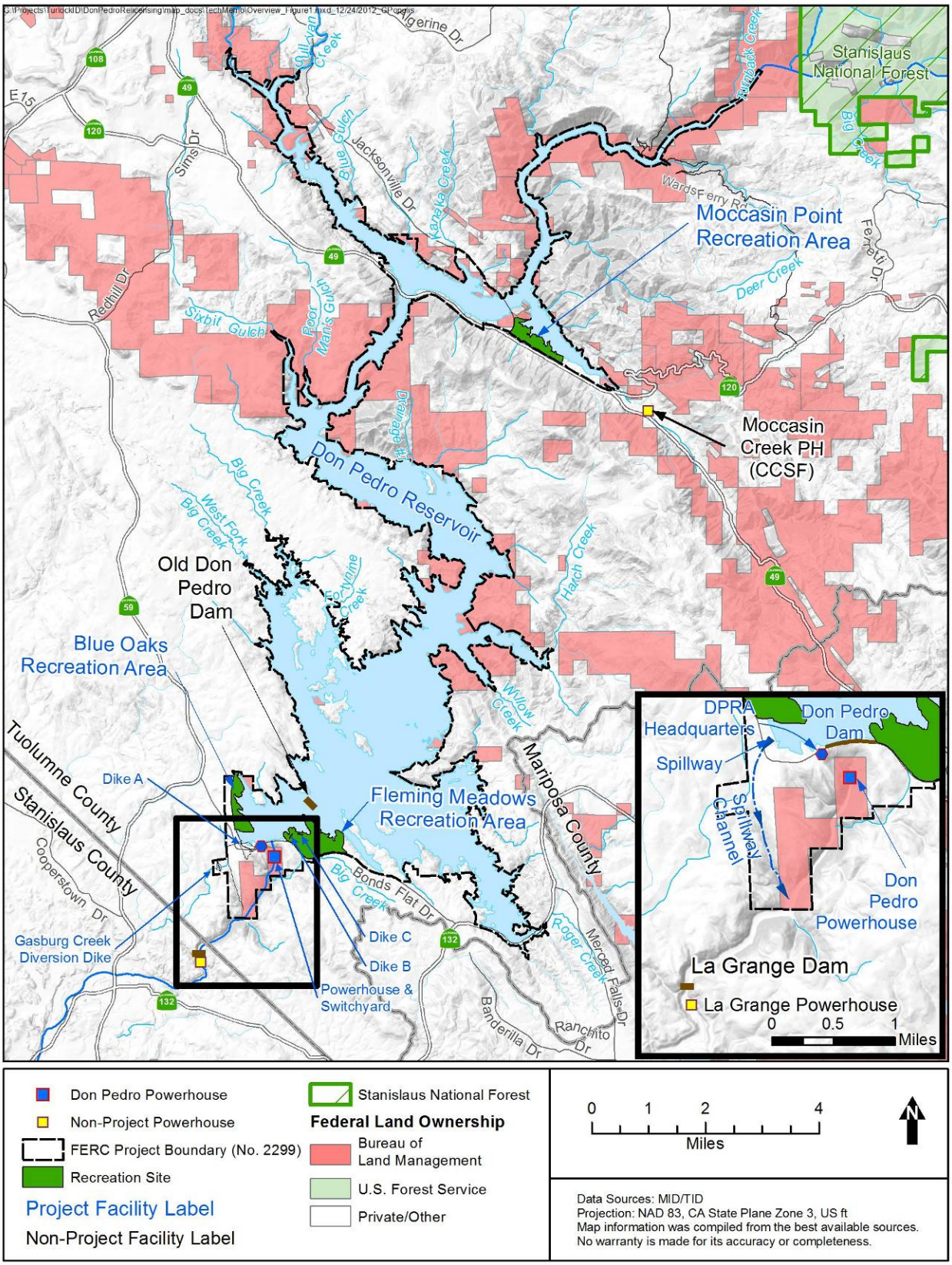

Figure 1.1-1. Don Pedro Project location.

1.2 Relicensing Process

The current FERC license for the Project expires on April 30, 2016, and the Districts will apply for a new license no later than April 30, 2014. The Districts began the relicensing process by filing a Notice of Intent and Pre-Application Document (PAD) with FERC on February 10, 2011, following the regulations governing the Integrated Licensing Process (ILP). The Districts' PAD included descriptions of the Project facilities, operations, license requirements, and Project lands as well as a summary of the extensive existing information available on Project area resources. The PAD also included ten draft study plans describing a subset of the Districts' proposed relicensing studies. The Districts then convened a series of Resource Work Group meetings, engaging agencies and other relicensing participants in a collaborative study plan development process culminating in the Districts' Proposed Study Plan (PSP) and Revised Study Plan (RSP) filings to FERC on July 25, 2011 and November 22, 2011, respectively.

On December 22, 2011, FERC issued its Study Plan Determination (SPD) for the Project, approving, or approving with modifications, 34 studies proposed in the RSP that addressed Cultural and Historical Resources, Recreational Resources, Terrestrial Resources, and Water and Aquatic Resources. In addition, as required by the SPD, the Districts filed three new study plans (W&AR-18, W&AR-19, and W&AR-20) on February 28, 2012 and one modified study plan (W&AR-12) on April 6, 2012. Prior to filing these plans with FERC, the Districts consulted with relicensing participants on drafts of the plans. FERC approved or approved with modifications these four studies on July 25, 2012.

Following the SPD, a total of seven studies (and associated study elements) that were either not adopted in the SPD, or were adopted with modifications, formed the basis of Study Dispute proceedings. In accordance with the ILP, FERC convened a Dispute Resolution Panel on April 17, 2012 and the Panel issued its findings on May 4, 2012. On May 24, 2012, the Director of FERC issued his Formal Study Dispute Determination, with additional clarifications related to the Formal Study Dispute Determination issued on August 17, 2012.

This study report describes the objectives, methods, and results of the Visual Quality Study (RR-04) as implemented by the Districts in accordance with FERC's SPD and subsequent study modifications and clarifications. Documents relating to the Project relicensing are publicly available on the Districts' relicensing website at www.donpedro-relicensing.com.

1.3 Study Plan

Turlock Irrigation District and Modesto Irrigation District's continued Operation and Maintenance (O&M) of the Don Pedro Reservoir Project potential to affect visual quality was identified in the Visual Quality Study Plan (Study RR-04).

The study area includes all Project facilities and features visible from public land administered by BLM and their associated viewsheds. The viewsheds include travel routes, recreation areas, and water bodies from which the Project facilities and features on and near BLM-administered public land are visible to the public. These facilities are listed in Section 3.0 as part of the

Existing Visual Condition (EVC) Assessment. And the viewsheds associated with these facilities are listed in Section 4.1.

Land ownership in this study area is complex. BLM lands include large continuous blocks of land and small, isolated parcels. The Districts' lands are mostly continuous within, or adjacent to, the FERC Project Boundary around Don Pedro Reservoir. Private lands are located outside the FERC Project Boundary and are mixed in or around District lands and lands administered by the BLM. In general, private lands predominate along the western side of the Project and transition to BLM lands, predominating on the east side of the Project. The Districts' lands are generally near the reservoir.

2.0 STUDY GOALS AND OBJECTIVES

The goal of this study is to document current visual conditions of the Project as viewed from BLM lands during various times of the year and identify any adverse visual resource effects due to continued O&M of the Project. The objectives of the study are to identify, map, and describe BLM inventories associated with Project facilities and features on public land administered by BLM; and document the Existing Visual Condition (EVC) of all Project facilities and features from associated viewsheds on public land administered by BLM.

3.0 STUDY AREA

The study area includes Don Pedro Reservoir and Tuolumne River up to Ward's Ferry Bridge (Figure 3.0-1, detailed figures in Attachment A). The following features and facilities are found within the Study Area and were assessed for visual quality. The listed viewsheds are public travel routes and recreation areas from which the public can view Project facilities and features, as well as the surrounding landscape which is often beyond the Project Boundary. These viewsheds have been identified by the BLM through formal planning processes (BLM 1984). Similar techniques have been used to identify viewsheds in the lower part of the Project on Districts-owned and private lands not administered by the BLM.

- Ward's Ferry Bridge
- State Highway 49/120 Vista Point
- Moccasin Point Recreation Area
- State Highway 132
- BLM dispersed use areas
- Don Pedro Reservoir and Tuolumne River
- Fleming Meadows Recreation Area
- Don Pedro Dam and Powerhouse
- Don Pedro Recreation Agency Headquarters and Visitors Center
- Don Pedro Spillway
- Blue Oaks Recreation Area

Additionally, there is a large road network linking the study area and some smaller roads within this network were reviewed and appear in Table 5.1-1.

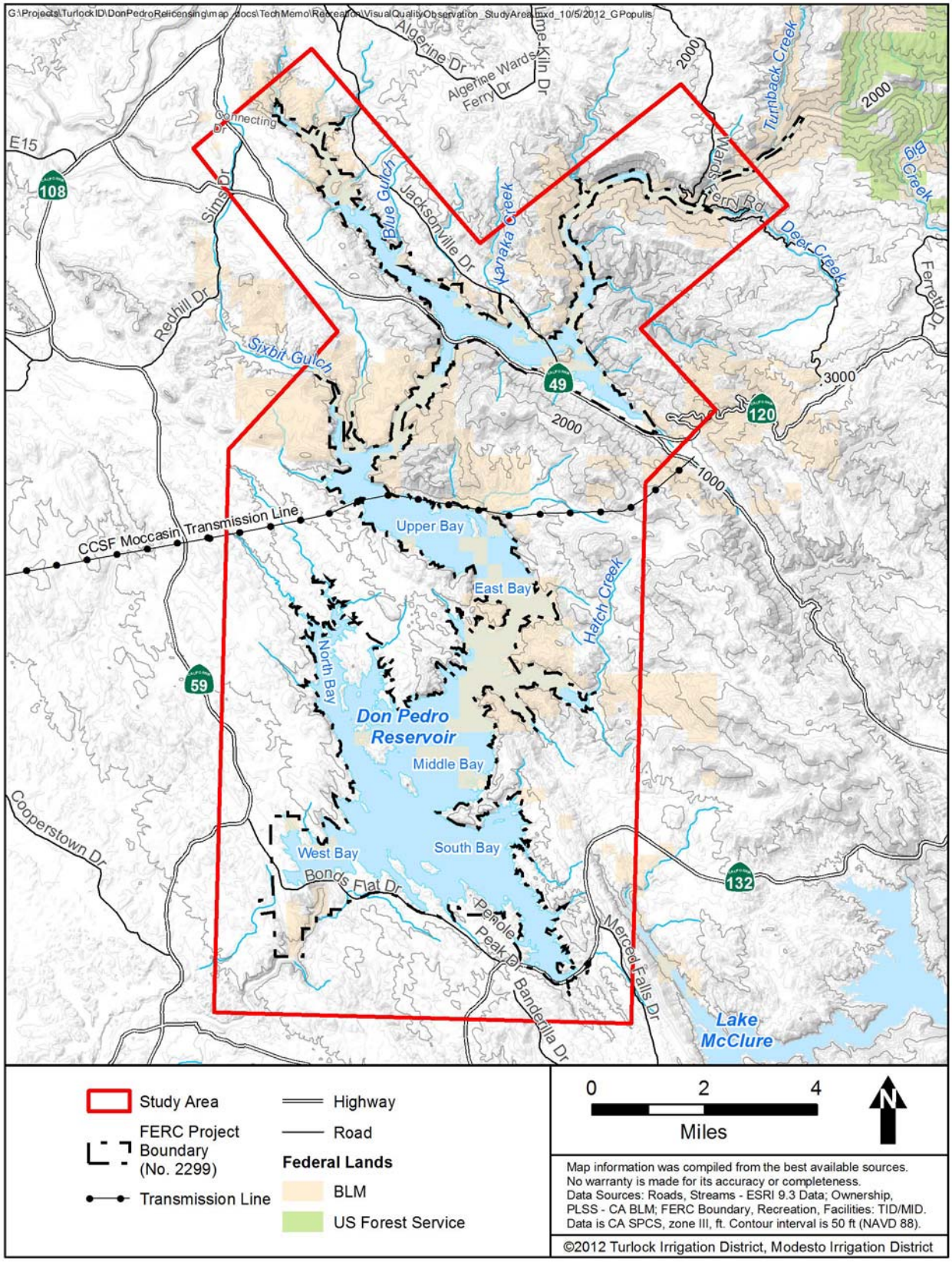

Figure 3.0-1. Don Pedro Study Area Map.

4.0 METHODOLOGY

This study represents the only visual assessment of Project facilities to date. When BLM developed inventoried Visual Quality Objective (VQO) classes in the 1980s, the Project reservoir was recognized as contributing to a variety of class A ratings. The dam, powerhouse, transmission lines, and other facilities were omitted and did not factor into developing inventoried Visual Resource Management (VRM) classes.

Focus was placed on BLM land management activities during development of the Sierra Resource Management Plan (SRMP) VQOs. All Project facilities pre-date the BLM SRMP (BLM 2008). Under this approach, facility compliance with VQOs was not addressed during the SRMP planning process.

The study followed methods outlined in BLM's Visual Resource Management System, which are described below (BLM 1986*a*, 1986*b*). See Attachment C for an overview of the system used in the study.

The following methods were employed to complete this study:

- Project facilities were located on a Geographical Information System (GIS) map;
- The Sensitivity Level 1 and 2 routes and use areas were identified;
- The visual contrast for all Project facilities was determined;
- Key Observation Points (KOPs) were selected in consultation with BLM;
- Photographs were taken from each KOP, and an additional Photo Point or "PP" (similar to a KOP, but lacks GPS coordinates) for a superior (i.e., from a higher elevation) view of Don Pedro Reservoir; and
- Photographs from past years when the reservoir reached extremely low and extremely high elevations were collected and analyzed.

4.1 Mapping Project Facilities

The study area included all Project facilities and features on public land or adjacent to public land administered by BLM and their associated viewsheds, which were often beyond the FERC Project Boundary. The viewsheds were identified by BLM through formal planning processes that systematically inventoried all roads, trails, and use areas, assigned sensitivity levels, and mapped visible areas by distance zones. See Section 4.2 for a description of sensitivity levels. A summary of BLM's VRM system is available in Attachment C.

Based on consultation with the BLM Folsom Office regarding availability of BLM visual inventory mapping related to other visual resource assessments in the region (J. Eicher, pers. comm., 2012*a*), it was identified that inventory information was not available and that the VRM Class I thru III objectives applied to lands included in this study based on the SRMP direction. The study author met with Jim Eicher on March 14, 2012 to discuss this inventory approach.

Due to the scattered and interspersed nature of lands administered by BLM, almost all BLM viewsheds visible from public roads, trails, and use areas included the Districts' land as well (Table 4.1-1).

Table 4.1-1. Viewsheds associated with facilities of the Don Pedro Project on or near BLM-administered lands.

Viewshed Type	BLM and District-Managed Viewsheds	Sensitivity Level (Level of Importance)
State Highways, County Roads, and Local Roads with public access.	State Highway 49	Level 1
	State Highway 120	Level 1
	State Highway 132	Level 1
	Access road/interior roads within Blue Oaks Recreation Area.	Level 1
	Access road/interior roads within Fleming Meadows Recreation Area.	Level 1
	Local road, Bonds Flat Road	Level 1
	Local road, Ward's Ferry Road	Level 1
	Local road, Jacksonville Road	Level 1
	Local residential roads, Arbolada Drive	Not Applicable
	Local road, Grizzly Road	Level 1
Waterbodies with boating	Don Pedro Reservoir	Level 1
	Tuolumne River	Level 1
Developed Recreation Sites	Blue Oak Recreation Area	Level 1
	Fleming Meadows Recreation Area	Level 1
	Don Pedro Recreation Agency Headquarters & Visitor Center	Level 1
	Moccasin Point Recreation Area	Level 1
	BLM dispersed camping areas	Level 1
	Ward's Ferry Bridge with Whitewater Boating Take-out	Level 1
	State Highway 49/120 Vista Point	Level 1

4.2 Sensitivity Levels

The fieldwork involved driving all accessible roads (i.e., not gated and locked, and suitable for 2-wheel drive vehicle) and going to use areas to determine from where the public could view Project facilities. BLM criteria were then applied to determine sensitivity levels.

BLM uses "sensitivity levels" as a measure of people's concern for the scenic quality of public lands. The levels are defined as follows:

- Level 1 – highest sensitivity
- Level 2 – average sensitivity
- Level 3 – lowest sensitivity

Sensitivity levels are one of the components used to develop inventoried Visual Resource Classes for BLM. BLM did not have Sensitivity Level 1 and 2 inventory maps available, so routes and use areas were identified in the field, and, displayed on maps, and listed in

Table 4.1-1. Sensitivity levels were not assigned where it was ultimately determined that BLM-managed viewsheds were not present.

4.3 BLM Visual Resource Management System

The BLM Visual Resource Management System combines the sensitivity levels and distance zones (foreground/middle ground, background, or seldom seen, as defined in BLM 1986*a*) with the scenic quality evaluations to set inventoried Visual Resource Classes. The Visual Resource Classes define allowed levels of change to the characteristic landscape. The Visual Resource Classes are considered and weighed during the Resource Management Planning process and result in Visual Resource Objectives set by the Resource Management Plan (RMP). A detailed explanation of this process is described in Attachment C.

4.4 BLM Land and Resource Management Plan Direction

The Districts collected BLM's land management direction for VRM from BLM's SRMP and Record of Decision (ROD) (BLM 2008). The VRM direction is to manage the Tuolumne Wild and Scenic River Corridor as Class I (preserve existing character), manage the Red Hills ACEC as Class II (retain existing character), manage the seen area (viewshed) from State Highway 49 in association with Don Pedro Reservoir as Class III and all remaining BLM lands as Class III (partially retain existing character).

4.5 Mapping BLM Visual Resource Management Objectives

The Districts collected BLM VRM objective information from the SRMP. This information was transferred to display maps (Attachment A). Private lands and Districts lands did not have VRM objectives and therefore are not classified on the maps.

4.6 Key Observation Points

Identifying KOPs was the first step in assessing the EVC of facilities and features. The approach was to identify the most critical viewpoints of Project facilities and features. In many cases, where there was more than one road, trail, or use area, this meant establishing multiple KOPs. In other field situations, there were roads where many KOPs could be established. In these situations, the most critical views (e.g., the view with the closest distance or apparently greatest contrast) were chosen to represent the multiple views. Once a KOP was identified, the Districts took a photograph and GPS coordinates. In some cases, one KOP would provide critical views in more than one direction. In these cases, the multiple views and photographs are indicated in the EVC table by the letters A, B, C, etc.

Initial consultation with the BLM Folsom Office regarding KOPs involved meeting with the BLM Associate Field Manager, Jim Eicher on March 14, 2012 and discussing possible KOPs over a set of maps, considering possible routes and use areas on BLM land, and discussing the approach to photographs and GPS points. In addition to the formal KOPs established, a photo point was identified for a superior point view of a large area of the reservoir.

It is notable that due to water year conditions, reservoir elevations did not reach very high or very low levels in 2012. Photographs portraying the range of visual conditions of the Don Pedro Reservoir were provided by the Don Pedro Recreation Agency (DPRA) from past years when the reservoir reached extremely low and extremely high levels and were analyzed by the Districts (see Attachment B). GPS points were not available for these photographs, so the locations on the map for these photos are best estimates and are indicated by the letters "SPP" or Supplemental Photo Point. This is an additional effort to the study plan as approved and provides analysis of a range of Project operating conditions based on available information.

4.7 Existing Visual Condition (EVC)

The BLM visual contrast rating system was used in the EVC assessments. The visual contrast rating system is based on comparing line, form, color, and texture elements of the landscape to the visual contrast with the built environment. Below is a general description of how the EVC assessment was conducted in the field for all land ownership situations.

4.7.1 General Approach

The first step in the EVC assessment was to determine whether Project facilities or features could be seen from key roads, trails, or recreation use areas associated with BLM-administered lands. This was accomplished by traveling to all key roads, trails, overlooks, and recreation areas. If a Project facility could be seen, the assessment described the degree of visual contrast created by Project facilities or features, when seen from a road or use area in terms of form, line, color, and texture, and duration and aspect of viewing. This assessment resulted in an EVC rating for each Project facility by KOP.

EVC ratings were developed for each KOP. BLM staff agreed that for this study it would not be necessary to calculate an overall rating or average rating based on several KOPs. This allows for more accurate ratings and an opportunity to better understand what resource management measures may be effective or desired. For some facilities, multiple opportunities for KOPs existed from the same road and, in some cases, from multiple recreation use areas. To arrive at a manageable and understandable number of KOPs, EVC ratings, and photographs, the most critical observer points were identified as KOPs and used for EVC analysis.

Before conducting EVC field visits, field maps and BLM VRM direction from the SRMP were reviewed to identify key routes and use areas to visit and set up KOPs. The field visits were conducted on March 23 & 24, 2012 and July 6, 2012. Office analysis consisted of reviewing atlas maps, BLM maps and direction, USGS 7.5-minute quad maps, photographs, and field notes.

In addition to observing Project facilities and features from key routes and recreation use areas, each Project facility, except the Powerhouse, was visited to understand the specific components and configuration of the facility, as well as to verify the facilities seen from KOPs. During these visits, facility features and surrounding visual conditions were recorded and photo-documented. For Ward's Ferry Bridge, this included recognizing that people drive and walk across the bridge.

EVC ratings were also developed based on photographs from past years depicting extremely low and extremely high reservoir levels.

4.7.2 Existing Visual Condition on Public Land Administered by BLM

The BLM EVC system uses degree of visual contrast to rate existing facilities and changes to the landscape. The categories and definitions are as follows:

- None. The element contrast is not visible or perceived.
- Weak. The element contrast can be seen but does not attract attention.
- Moderate. The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- Strong. The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

In determining the degree of contrast, the *BLM Manual 8400: Visual Resources Management* (BLM 1984) lists the following factors to consider: distance, angle of observation, length of time viewed, relative size or scale, seasons of use, light conditions, recovery time, spatial relationships, atmospheric conditions, motion, and the basic elements of form, line, color, and texture.

BLM degree of contrast and BLM VRM Classes do not correlate directly but, in general, correspond as follows:

Table 4.7-1 Degree of contrast correlation to VRM Classes.

Degree of Contrast	VRM Classes	
None	I	Preserve existing character
Weak	II	Retain existing character
Moderate	III	Partially retain existing character
Strong	IV	Provide for management activities which require major modification of existing character

Based on the above correlation, for example, it can be assumed that if the degree of contrast rating is "weak," then the facility can meet a Class II objective. See BLM's Handbook 8431-1: Visual Resource Contrast Rating, for more detailed information (BLM 1986*a*).

Any Project facilities on, partially on, or near lands administered by BLM were evaluated from KOPs using the BLM system. These KOPs are listed in Table 5.1-1. For the KOPs where ultimately no BLM influence was identified, the same EVC system was used but there was no documentation of Visual Resource Objectives (VRO) and no determination that a VRO was met because they do not exist on District land or private land.

This analysis determined whether the potential visual impacts from the Project, if any, met the management objectives established for BLM-administered public land. A visual contrast rating process was used for this analysis which involved comparing the Project features with the major

features in the existing landscape using the basic design elements of form, line, color, and texture.

5.0 RESULTS

A general summary of the Project reservoir and associated facilities, including powerhouse, spillway, recreation areas, and maintenance buildings is provided below. The summary includes a description of public access, opportunities for views, EVC ratings, and land ownership. The order of facilities and areas is upstream to downstream, from Ward's Ferry Bridge to the Don Pedro Dam. Table 5.1-1 lists the KOP, PP, or SPP, VRM class, EVC rating, consistency with SRMP visual direction, and land ownership, followed by a section for discussion/explanation. The discussion/explanation gives detailed information about distance zone, viewer position, view duration, and landscape factors that led to the EVC rating. Photographs of the facilities taken from KOPs, PP and SPPs are available in Attachment B. At least one and sometimes more than one photograph from each KOP are provided to present all the facilities and typical shorelines. The location of the KOPs, PP, and SPPs are displayed on the maps in Attachment A, and described in the discussion/explanation column in Table 5.1-1.

5.1 Visual Assessment Summary of Facilities and Features.

The main access routes to Don Pedro Reservoir are from State Highways 49, 120, and 108 on the north side of the reservoir, La Grange Road from the west side, State Highway 132 from the east and south sides and Bonds Flat Road on the south side of the reservoir. Ward's Ferry Road provides access to Ward's Ferry Bridge and the whitewater boating take-out on the Tuolumne River.

Don Pedro Reservoir is seen from all these main access routes with the exception of State Highway 108. The other critical viewing points of Don Pedro Reservoir are Blue Oaks Recreation Area, Fleming Meadows Recreation Area, DPRA Headquarters and Visitors Center, State Highway 49/120 Vista Point, and recreational boats on the water. Don Pedro Dam, the spillway, and DPRA Headquarters are viewed from the Don Pedro Reservoir side by boaters and campground users. There also are several views of Don Pedro Reservoir from dispersed recreation sites on BLM land in the eastern side of the reservoir near Moccasin Point Recreation Area as well as views from Moccasin Point Recreation Area.

The many viewing opportunities include foreground, middle ground, and background and typically, the closer foreground views are the most critical. See Table 5.1-1 for detailed information for each facility as seen from Key Observation Points (KOPs). Location maps are included in Attachment A. Photographs from each KOP are included in Attachment B.

5.1.1 Ward's Ferry Bridge

Ward's Ferry Bridge is located in a steep canyon and is used as a whitewater boating take-out on the Upper Tuolumne River during the whitewater boating season (April – September). The view is from the bridge looking up and down the river. Drawdown is clearly evident on the steep slopes and presents strong visual contrast to the landscape outside the drawdown zone.

5.1.2 Moccasin Point Recreation Area

Moccasin Point Recreation Area is not located on BLM land. It is located just south of the Jacksonville Road Bridge that spans Don Pedro Reservoir's northeast cove. No KOPs were established in the campground because there were limited views of the reservoir and it is not located on BLM land.

There are a few dispersed recreation areas located on BLM land in the vicinity of Moccasin Point Recreation Area. KOPs were selected in four locations.

The first two are on BLM land and accessed from New Priest Grade Road. The first, taken from the intersection of Grizzly Road and New Priest Grade Road, is a superior view of Moccasin Arm of the reservoir. The second is taken at the end of Grizzly Road and has a view of Moccasin Point Recreation Area, as well as a view of houseboats.

The second two are both on BLM land and were taken from small roads accessed off Jackson Road a short distance past Moccasin Point Recreation Area. One is found off of Kanaka Road and has views across the reservoir and up the Woods Creek Arm. The other is found off of Harney Road and has a view directly across the Woods Creek Arm of the State Highway 49/120 and Vista Point.

5.1.3 Highway 49/120 and Vista Point

State Highways 49 and 120 are combined along the same route which traverses the Project in the north. Views from Highway 49/120 are of Don Pedro Reservoir, and BLM, District, and private lands in foreground, middle ground, and background. The foreground is that of the reservoir, the middle ground is of the lands across the water and the background is of steep slopes of the foothills. The view most often seen from this viewshed is from the SR 49/120 Vista Point approximately 100 feet (ft) above the water. Hetch Hetchy pipeline can be seen running down the slope to the east. This view of the reservoir is the one most often seen by people, typically those passing through the area on their way to Yosemite National Park.

A few residences in long range view can be seen tucked into the landscape when looking across the reservoir; the color and the geometric shapes present weak visual contrast to the green chamise (*Adenostoma fasiculatum*) dominated foothills interspersed with blue oak (*Quercus douglassii)* and gray pine (*Pinus sabiniana*).

During high water there is little to no visual contrast with the exception of the Jacksonville Road Bridge seen to the south which is moderate to strong depending on lighting. As the water level decreases, the visual contrast increases and was considered moderate in both March and July as seen from the Vista Point. This is due to the drawdown zone being adjacent to vegetation which includes trees of a different texture and color.

5.1.4 State Highway 132

State Highway 132 runs east and west along the southern portion of the Project. It runs immediately adjacent to the Rogers Creek Arm of Don Pedro Reservoir and views of the reservoir can been seen for a few hundred feet. Typical speeds are 40-50 miles per hour. There are no views of facilities or recreation areas from State Route 132.

5.1.5 Fleming Meadows Recreation Area

Fleming Meadows Recreation Area is developed on a peninsula; therefore, views of the Reservoir are provided in three directions. Several campground loops provided many different views of Don Pedro Reservoir, including views of the dam, the spillway, a marina, and two houseboat mooring areas in foreground, and another mooring area in the middle ground.

In the foreground is a houseboat mooring area with an associated marina which presents strong visual contrast, due to the bright white colors of the houseboats. From another vantage point within the campground is a second houseboat group which also is a strong visual contrast. This contrast is expected with houseboats and is part of the normal visual condition of recreation management on the reservoir.

In the middle ground from some locations in the campground are views to the dam and the spillway. The long range views encompass the foothills and are weak visual contrast.

When the reservoir is below full pool elevation, the drawdown zone can be seen here and it was found to be moderate visual contrast during the study. Lower water levels will result in a stronger visual contrast.

5.1.6 Don Pedro Dam

There are several views of the dam and these are reflected in KOPs 9, 10, and 14. The DPRA Headquarters and Visitors Center has the strongest views of the dam with it being directly in the foreground. The dam is also viewed from the Blue Oaks Recreation Area. From the reservoir side, the dam presents strong visual contrast due to the color difference of the rock, the texture of the rock and also the straight geometric shape of the dam which distinguishes it from the surrounding natural landscape. From the DPRA Headquarters and Visitor's Center viewing platform, the dam presents strong visual contrast due to shape and texture, but is weak visual contrast in regards to color.

5.1.7 Don Pedro Powerhouse

The view of the powerhouse is limited to a short glimpse traveling east along Bonds Flat Road as motorists travel around 40 mph. The Project powerhouse is located at the bottom of a steep, tall dam and the view angle from the car makes it difficult to see. Technically it presents a strong visual contrast against the surrounding landscape but that is only possible if the passenger in a vehicle purposely sits high to see the powerhouse. The view is for only for a few seconds.

The powerhouse cannot be viewed from the DPRA Headquarters and Visitor's Center because of the cut of the slope and vegetation. Therefore it has no visual contrast at this KOP.

5.1.8 Don Pedro Recreation Agency Headquarters and Visitors Center

DPRA Headquarters and Visitors Center is located adjacent to the dam, and includes a viewing platform designed and constructed to offer views of the Project's facilities. The view of the dam is typical for foreground views. The dam's visual contrast is strong, due to the geometry of the dam compared to the natural shapes of the rolling landscape. A communications tower and water storage tank, and DPRA maintenance building and yard are also visible from the viewing platform, and present strong contrast to the surrounding grassland and scattered oak trees due to shape and color. The Blue Oaks Recreation Area is also visible from the viewing platform and presents moderate contrasts to due to color, especially when recreation use is heavy.

5.1.9 Don Pedro Spillway

There are views of the Don Pedro Spillway from KOPs 11 and 12. It has a strong visual contrast due to its color, texture, and geometry. The view from Bonds Flat road is below the spillway and is viewed for a few seconds. The other view is from the Blue Oaks Recreation Area group picnic site. The viewing time from the picnic site is longer but less of the spillway structure is seen.

5.1.10 Blue Oaks Recreation Area

Blue Oaks Recreation Area is located partially on BLM land. Views out are primarily of the dam and the reservoir surrounded by lands administered by BLM, Districts' land, and some private land. People at Blue Oaks Recreation Area see the reservoir and the campground in the foreground. The dam, a houseboat mooring area, undeveloped landscape, and rolling hills are found in the middle ground, and the foothills are in the background.

Foreground views of recreation facilities show weak visual contrast with the surrounding vegetation when not occupied by recreation users. When recreation sites are occupied, the visual contrast is strong due to the many different colors, shapes, and sizes of tents, trailers, RVs, and camping equipment. This is recognized as typical and is part of the normal management of recreation facilities.

In the middle ground, the dam's visual contrast is strong, due to the gray color and the rough and uniform texture of the rocks that do not match the oak woodlands and grasslands in the surrounding landscape. The visual contrast of houseboats is strong, due to color and shape. The visual contrast of the DPRA Headquarters and Visitors Center is moderate due to color and shape.

Views from the water surface are similar to the views from land. Views back towards the recreation facilities are of weak contrast except when occupied by light and bright vehicles and tents.

The recreation facilities do not present strong visual contrast with the exception of boats moored at the marina and vehicles, including RVs, located in parking areas and campsites.

5.1.11 Reservoir Level

Don Pedro Reservoir is operated between elevations 690 ft. msl and 830 ft., depending on hydrologic, precipitation, and water management factors. Reservoir water elevations during the study were 785 ft. msl (March 23 and 24, 2012) and 789 ft. (July 6, 2012). To visually represent the high and low levels that Don Pedro Reservoir experiences, photographs from previous years are included as Supplemental Photo Points (SPP) in Attachment B.

A band or zone of exposed soil with sparse and/or low growing vegetation is evident in the drawdown zone. Where the slopes are steeper, sandy brown soils are exposed; and where slopes are gentler, more grasses and low vegetation tend to become established. In some locations the drawdown exposes large rocky areas which tend to match rocky areas above the high water mark and present little visual contrast. As the reservoir elevation gets lower and the drawdown zone expands, the visual effect tends to emphasize the lack of vegetation and result in a strong visual contrast at times.

Table 5.1-1. Existing visual condition assessment of Don Pedro Project facilities and features on or seen from BLM or the Districts land

Project Facilities	KOP[1]	SRMP VRO[2]	EVC Rating[3]	Consistent with SRMP	Land Ownership	Discussion/Explanation
Ward's Ferry Bridge	KOP 1 fig. 1 - 4	III	Moderate contrast	Yes	Public Bridge Adjacent to BLM	The view from the Ward's Ferry Bridge is a superior view of the Tuolumne River reach and can be seen from either car or foot. There are foreground views of the bridge itself and the vault toilet building, both heavily covered in graffiti. The middle ground views are of the river and there the drawdown zone on the canyon walls results in moderate contrast.
Grizzly Road & New Priest Grade Road Intersection	KOP 2 fig. 5-6	III	Weak contrast	Yes	BLM	Located at the lower tip of the Moccasin Arm is a superior view of the reservoir. The view is made up of middle ground and background views and has weak visual contrast. It is primarily viewed for seconds by passengers in passing cars but there is a small area where a car could pull off and a person could take in the view for several minutes.
Terminus of Grizzly Road	KOP 3 fig. 7-8	III	Strong & weak contrast	No for houseboats. Yes for campground	Districts' land adjacent to BLM land	Located just outside the locked gate at the terminus of Grizzly Road. A group of houseboats are moored and present strong visual contrast. Moccasin Point Recreation Area campground has weak visual contrast because the campground and the supporting facilities are largely hidden by vegetation from this view. The drawdown zone is weak visual contrast.
Kanaka Road	KOP 4 fig. 9-10	III	Moderate & weak contrast	Yes	BLM	Located just off of Jacksonville Road. There are foreground views of the reservoir, middle ground views of surrounding hills, and background views of the rising foothills. The entire view is weak visual contrast except the moderate visual contrast of the drawdown zone.
Harney Road	KOP 5 fig. 11-12	III	Moderate & weak Contrast	Yes	BLM	This view is from the end of a short unimproved road off Jacksonville Road. The view is superior and naturally orients the viewer to the State Highway 49 Bridge which is in the middle ground and presents weak visual contrast. The entire view is weak visual contrast except the moderate visual contrast of the drawdown zone.
Hwy 49/120 Vista Point	KOP 6 fig. 13-14	III	Strong, moderate & weak Contrast	Yes	Districts' land adjacent to BLM land	This view gets high public use. Many visitors to Yosemite National Park stop at this Vista Point and spend a few minutes here. The parking lot of the Vista Point is strong visual contrast to the surrounding area while the rest of the views from this KOP are weak visual contrast. The visual contrast of the drawdown zone is moderate. In the long range background the viewer can see the Jacksonville Bridge and the Hetch Hetchy pipeline. Both are weak visual contrast because of the distance.

Project Facilities	KOP[1]	SRMP VRO[2]	EVC Rating[3]	Consistent with SRMP	Land Ownership	Discussion/Explanation
Fleming Meadows Recreation Area – campsite A19	KOP 7 fig. 15-16	NA[4]	Strong & moderate Contrast	NA	Districts	The view from Campsite A19 is a superior view and has unlimited view time from a standing position. In the foreground are houseboats and a marina, both are strong visual contrast with the natural surroundings. The drawdown zone is evident from this view and is moderate visual contrast. The background views are of the foothills to the east.
Fleming Meadows Recreation Area – campsite A-47D	KOP 8 fig. 17-18	NA	Strong & moderate Contrast	NA	Districts	The view is a panoramic, superior view and can be viewed by standing or sitting. Houseboats are in the foreground and found to be strong contrast. The middle ground view includes the dam and the spillway structure. These both moderately contrast with the surrounding area.
Don Pedro Dam & Powerhouse	KOP 9 fig. 19-20	III	Strong Contrast	No	BLM	The view is a glimpse of the Don Pedro Powerhouse, but only from the passenger side of a moving car traveling east across the dam. It is a superior view and the powerhouse is strong visual contrast but it is generally hidden from view for most people. The dam itself presents strong visual contrast in immediate foreground due to color and texture.
Don Pedro Recreation Agency Headquarters and Visitors Center, & Don Pedro Dam	KOP 10 fig. 21-24	III	Strong & weak Contrast	No	Districts' land adjacent to BLM land	The viewshed from the viewing platform is a superior view. The dam is in the foreground and is strong contrast due to its geometric shape. Also in the foreground are power lines ascending from the powerhouse; these are weak visual contrast. There are cuts in the hillside next to the dam which were used as roads during construction. There are houseboats in the middle ground, as well as a communications tower, water storage tank, picnic pavilion, and boat launch. All are strong visual contrast to the surrounding landscape, especially the light and mostly white colors of the vehicles, houseboats, and other boats when they are present in large numbers. The background views are of the surrounding landscape of oak woodlands with grasslands.
Don Pedro Spillway	KOP 11 fig. 25-26	NA	Strong Contrast	NA	Districts	The spillway is viewed in the foreground from an inferior viewing position (i.e., from a lower elevation). View duration is short as views are from cars traveling at 40 mph. The spillway structure is strong contrast due to shape and line.

Project Facilities	KOP[1]	SRMP VRO[2]	EVC Rating[3]	Consistent with SRMP	Land Ownership	Discussion/Explanation
Group Picnic in Blue Oaks Recreation Area	KOP 12 fig. 27-28	NA	Weak & Moderate Contrast	NA	Districts	This superior view of the reservoir is located at the Group Picnic Pavilion in Blue Oaks Recreation Area. From this location all the views are in the foreground and one can see houseboats, the spillway, a portion of the boat launch, the dam, the DPRA Headquarters and Visitors Center, the campground and houseboat storage area. All these elements are moderate contrast except the DPRA Headquarters and Visitors Center and the campground which are weak contrast.
Blue Oaks Recreation Area – campsite B-40	KOP13 fig. 29-30	NA	Strong Contrast	NA	Districts	The view from Blue Oaks Recreation Area Campsite B-40 is a superior view. The view is primarily of a houseboat group near an island in the middle ground. The houseboats are strong contrast to the color and texture of the surrounding landscape.
Blue Oaks Recreation Area – campsite D-19	KOP 14 fig. 31-32	III	Weak & Strong Contrast	No	BLM	The view from Blue Oaks Recreation Area Campsite D-19 is a superior view. This view is dominated by the reservoir in the foreground and the dam in the middle ground. The dam is strong contrast due to the straight geometry and color of the rock and concrete that does not blend with the natural landscape. Additionally the Visitors Center, the Group Picnic Pavilion and campsites can all be seen from this location. They are weak contrast due to distance and color blending with the natural surroundings.
Residential Area	PP 1 fig. 33-34	NA	NA	NA	Private	This Photo Point is on Arbolado Drive on the east side of the Reservoir. It is a wide spanning superior view taking in much of the reservoir including the character of the landscape and topography, and is included to provide that perspective.
Highway 49/120 Vista Point, high water	SPP 1 fig. 35	III	Weak to no contrast	Yes	Districts' land adjacent to BLM land	This Supplemental Photo Point provides a superior view at the Highway 49/120 Vista Point at a time of high reservoir elevation (date unknown) looking east to the Jacksonville Road Bridge. The drawdown zone is weak to no contrast.
Shoreline just west of dam, high water	SPP 2 fig. 36	III	Weak contrast	Yes	Districts	This Supplemental Photo Point is located at a cove along the Don Pedro Reservoir shoreline, west of the dam at a time of high reservoir elevation from a superior view (date unknown). The drawdown zone is weak contrast.
Shoreline just west of dam, low water	SPP 3 fig 37	III	Moderate contrast	Yes	Districts	This Supplemental Photo Point is located at a cove along the Don Pedro Reservoir shoreline, west of the dam at a time of low reservoir elevation from a superior view (date unknown). The drawdown zone is moderate contrast.

Project Facilities	KOP[1]	SRMP VRO[2]	EVC Rating[3]	Consistent with SRMP	Land Ownership	Discussion/Explanation
Blue Oaks Group Area, low water	SPP 4 fig. 38	NA	Moderate contrast	NA	Districts	This Supplemental Photo Point is looking east with a superior view of Blue Oaks Recreation Area Group Picnic Area at a time of low reservoir elevation (date unknown). The drawdown zone is moderate contrast.

[1] Key Observation Point. (KOP) Photo Point (PP) Supplemental Photo Point (SPP), Referenced figures 1-38 are in Attachment B.
[2] Sierra Resource Management Plan (SRMP) Visual Resource Objectives (VRO).
[3] BLM visual contrast rating system, Existing Visual Condition (EVC).
[4] Not Applicable (NA).

6.0 DISCUSSION AND FINDINGS

This study documented current visual conditions of the Project during various times of the year as viewed from BLM lands or where Project facilities and features (including the reservoir) are located on BLM lands to identify any adverse visual resource effects due to continued operations and maintenance (O&M) of the Project. This section presents a discussion of those Project facilities and features located on BLM lands that were found to exhibit a strong contrast. The discussion includes consideration of the pertinent Visual Resource Objectives (VROs).

Don Pedro Dam is located on Districts' land and the powerhouse is located on BLM land (Attachment A, Figure 2). Due to height (580 ft), size and material, the Don Pedro Dam presents strong visual contrast from two views. From the reservoir side, the dam presents strong visual contrast due to the color difference of the rock, the texture of the rock, and also the straight geometric shape of the dam which distinguishes it from the surrounding natural landscape. From the DPRA Headquarters and Visitors Center view decking platform, the dam presents strong visual contrast due to shape and texture, but is weak visual contrast in regard to color. The powerhouse is visible from vehicles passing on Bonds Flat Road and presents a strong visual contrast when glimpsed from passing vehicles. There are no stationary vistas of the powerhouse. Because BLM lands at the powerhouse are classified VRO Class III and the corollary BLM objective is to partially retain existing character, these strong visual contrast ratings of the powerhouse and dam are not consistent with the SRMP. Nonetheless, because the VRO maps were developed with the Don Pedro Dam and Powerhouse present, their continued presence does retain existing character.

Blue Oaks Recreation Area is located on Districts' and BLM land. Vehicles, houseboats, other boats, tents, and canopies when present create a strong visual contrast. Because BLM lands at Blue Oaks Recreation Area are classified VRO Class III and the corollary BLM objective is to partially retain existing character, these strong visual contrast ratings of the recreation uses are not consistent with the SRMP. Nonetheless, it is notable that the VRO maps were developed with the Blue Oaks Recreation Area present. Additionally, visitors to the Blue Oaks Recreation Area expect to see other recreationists and recreation-related vehicles and equipment, and the presence of such in the view is expected.

The Don Pedro Reservoir is a major visual asset to the landscape, as evidenced by development of residential view property in the vicinity, and the presence and popularity of the Highway 49/120 Vista Point. Don Pedro Reservoir, with its complex and long shoreline with many bays and arms looks like a natural lake when the reservoir is full. A different shoreline is evident when the reservoir is drawn down and the band of exposed soil and limited vegetation is visible. As the reservoir elevation gets lower and the drawdown zone expands, the visual effect tends to emphasize the lack of vegetation. The drawdown zone is a strong visual element in the landscape but public attitudes are not necessarily negative. Particularly during low water years and drought, recreationists know that reservoirs will be down and understand why there is a band of exposed soil and rock around the Don Pedro Reservoir. This conclusion is supported by the preliminary results of the Don Pedro relicensing recreation use assessment where over 70 percent of respondents reported that reservoir water levels were not a problem regarding scenic quality of the shoreline as reported in section 2.2.1.5 of the Initial Study Report. (TID/MID 2011)

7.0 STUDY VARIANCES AND MODIFICATIONS

This Visual Quality Study was conducted following the methods in Study Plan RR-04 included in the District's Revised Study Plan filed with FERC on November 22, 2011, and approved by FERC in its Study Plan Determination dated December 22, 2011. Two variances occurred during the study. Based on consultation with BLM (Eicher 2012*b*), the number of field visits was reduced from three to two because the visual difference throughout late spring, summer, and fall around Don Pedro Reservoir is minimal. As conducted, the late winter/early spring season with more green in the landscape was recorded on the March 23 & 24 visit and the summer/fall season with a drier, browner landscape was recorded on the July 6, 2012 visit. Secondly, photographs from past years when the reservoir reached extremely low and extremely high levels were collected and analyzed to more fully assess the potential for effects of Project operation on visual resources.

8.0 REFERENCES

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STUDY REPORT RR-04
VISUAL QUALITY

ATTACHMENT A

VISUAL QUALITY MAP WITH KEY OBSERVATION POINT (KOP), PHOTO POINT (PP), AND SUPPLEMENTAL PHOTO POINT (SPP) LOCATIONS AND BLM VISUAL RESOURCE OBJECTIVES

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List of Figures

1.0 GUIDE TO READING MAPS

The overview map, Figure 1, shows the overall location of the Project reservoir and the general location of Key Observation Points (KOPs).

Figures 2 through 11 show KOP, PP, and SPP Locations and display the BLM Visual Resource Objectives: Class I (shown as Class 1 on the legend) is green and allows no change in visual character. It is the Tuolumne Wild and Scenic River corridor. Class II (Class 2 on the legend) is red and allows only slight change to visual character. This is an Area of Critical Environmental Concern (ACEC). Class III (Class 3 on the legend) is yellow and allows partial change to visual character. BLM has assigned Class III to most of the BLM land in the study area.

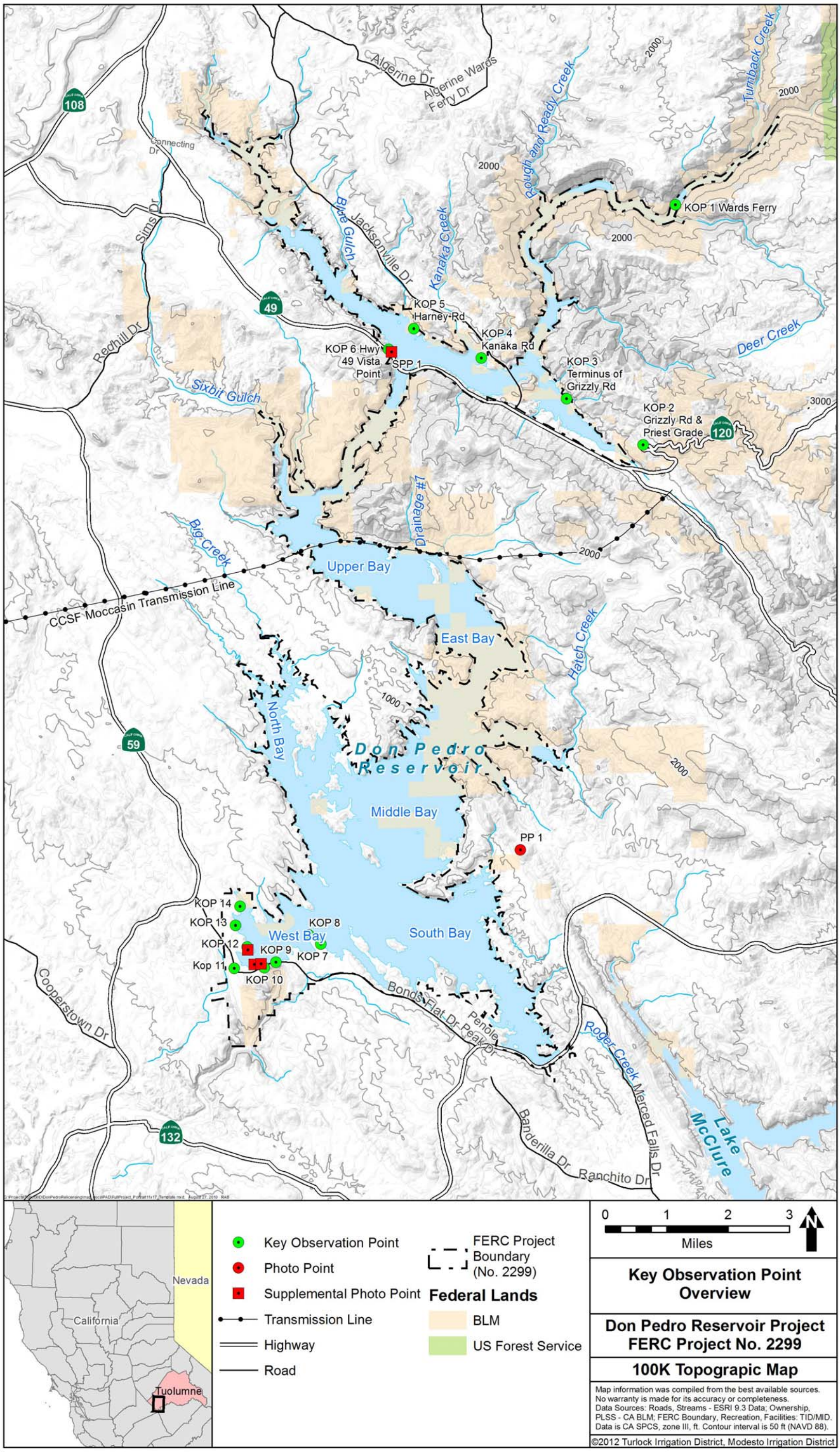


Figure 1. Overview Map.

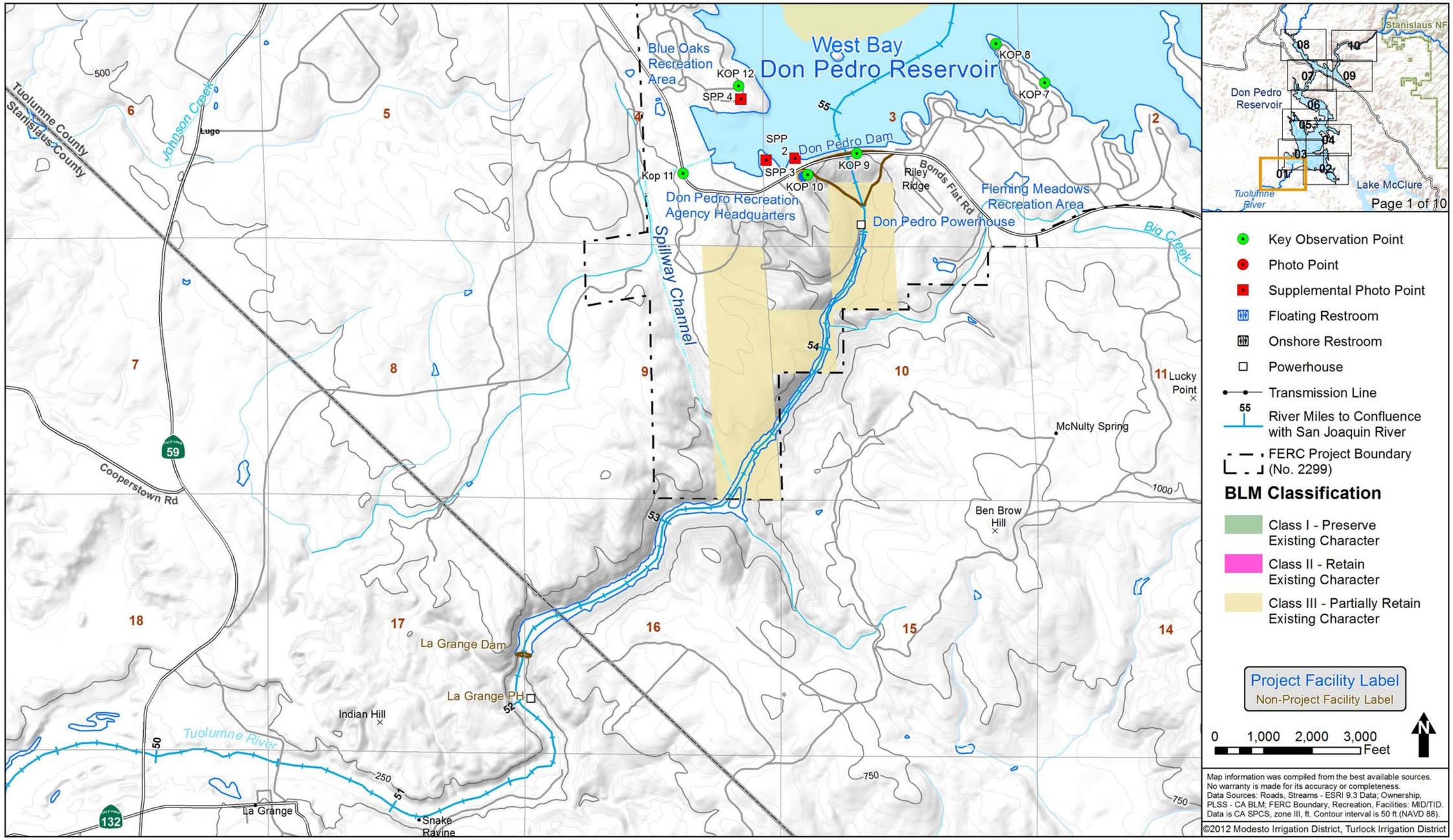


Figure 2. Pedro Dam and Spillway, Blue Oaks and Fleming Meadows Recreation Areas.

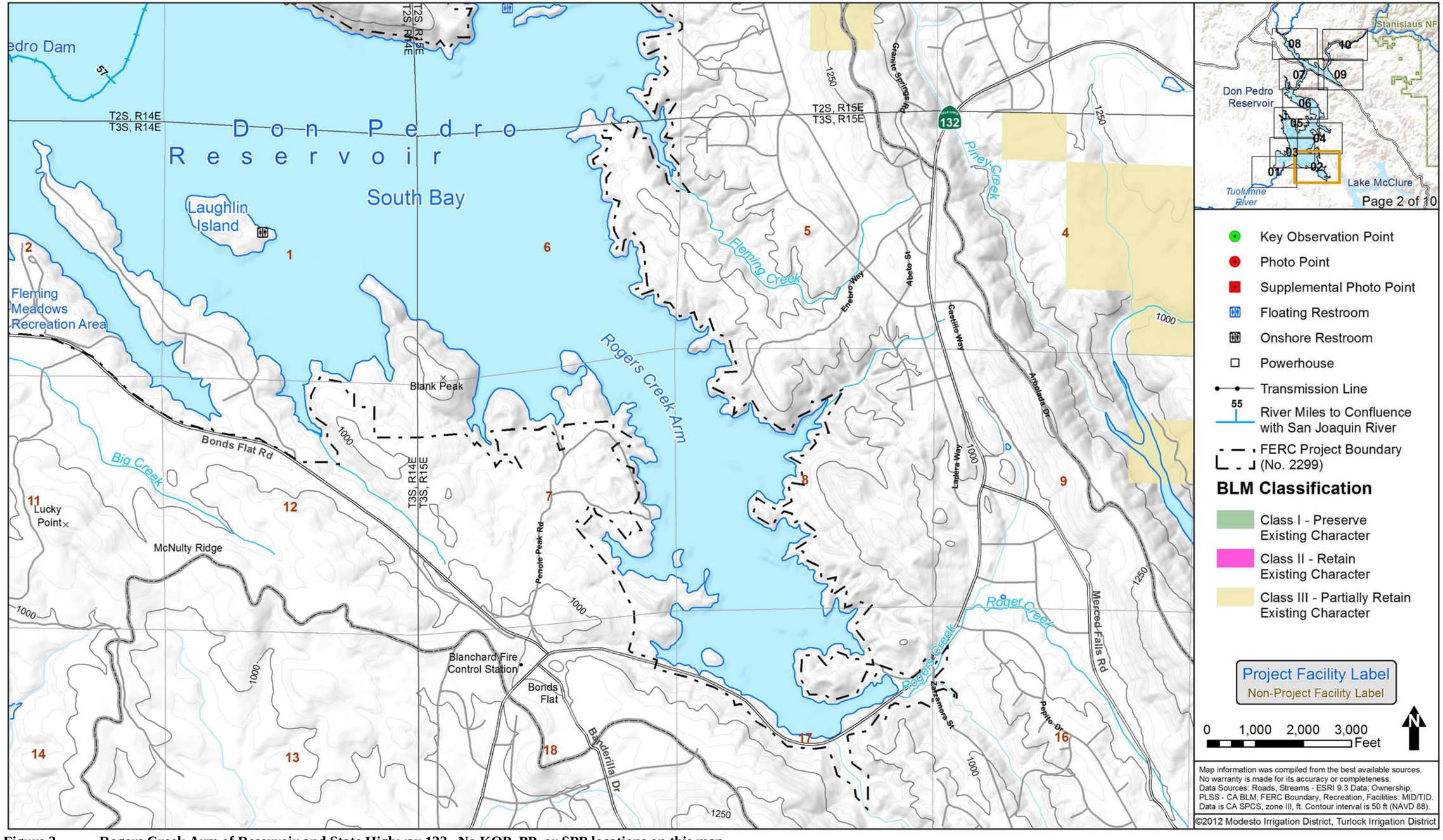


Figure 3. Rogers Creek Arm of Reservoir and State Highway 132. No KOP, PP, or SPP locations on this map

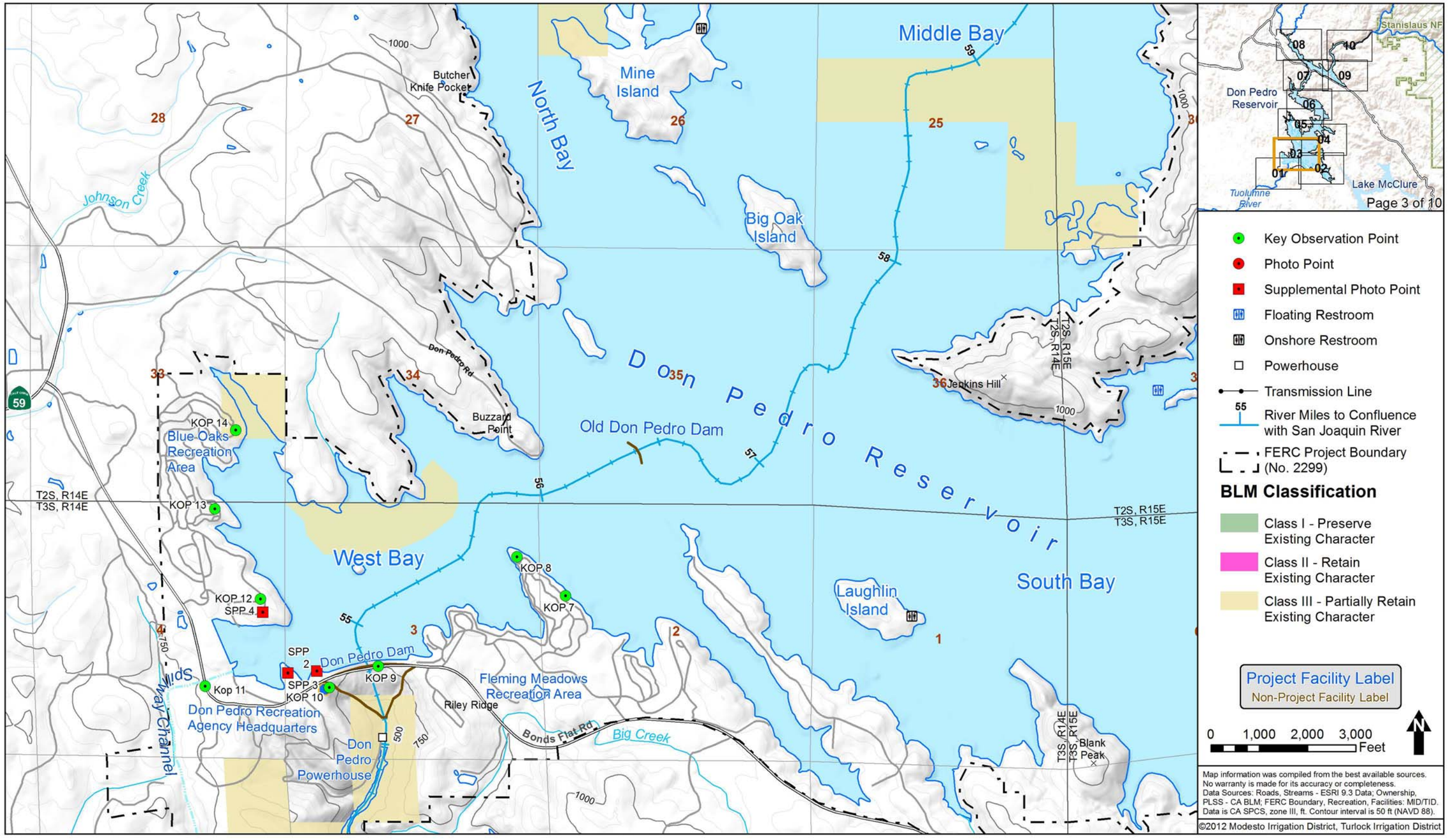


Figure 4. Don Pedro Dam and Spillway, Blue Oaks and Fleming Meadows Recreation Areas, and North Bay.

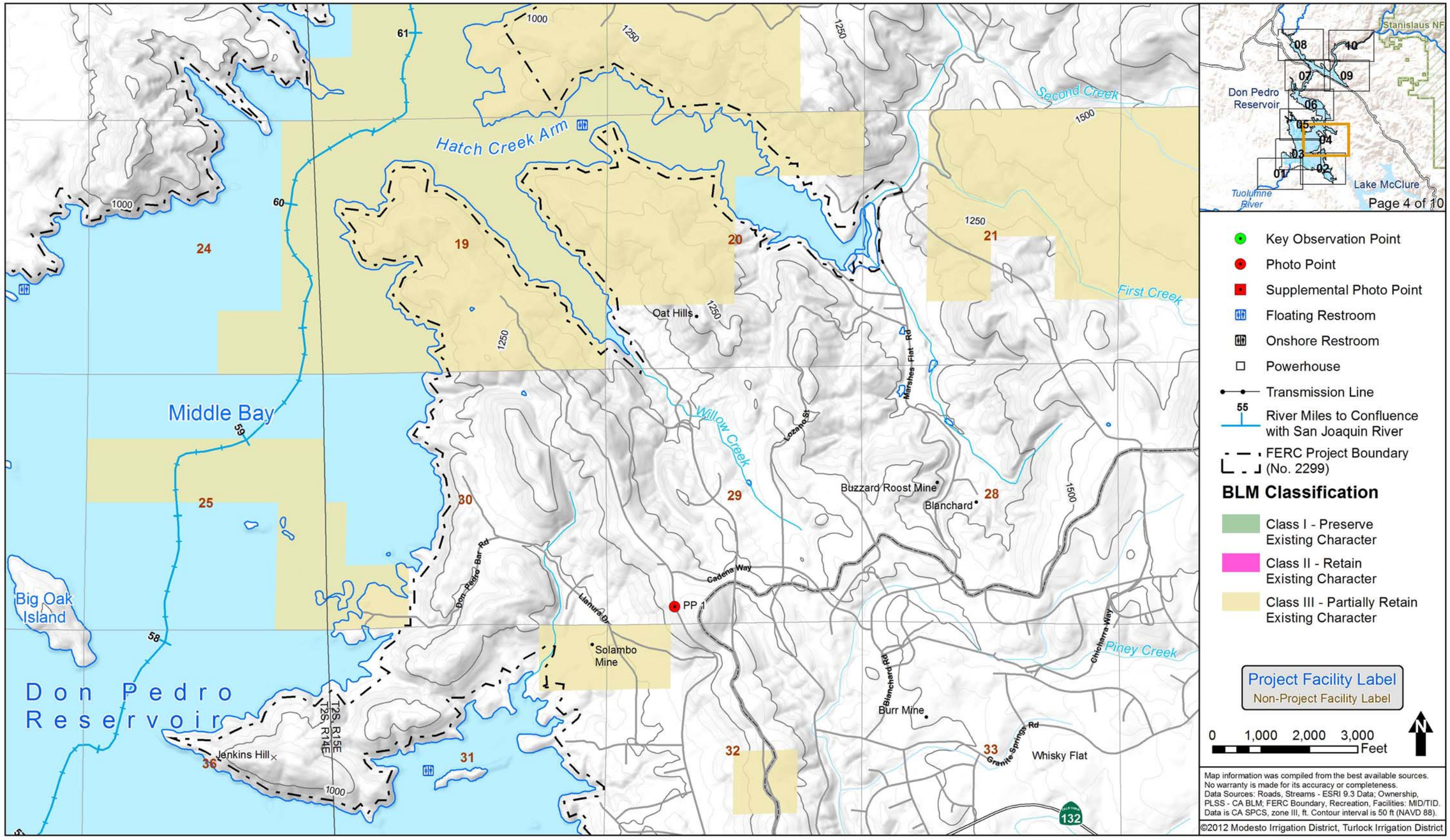


Figure 5. Middle Bay view from private residence area.

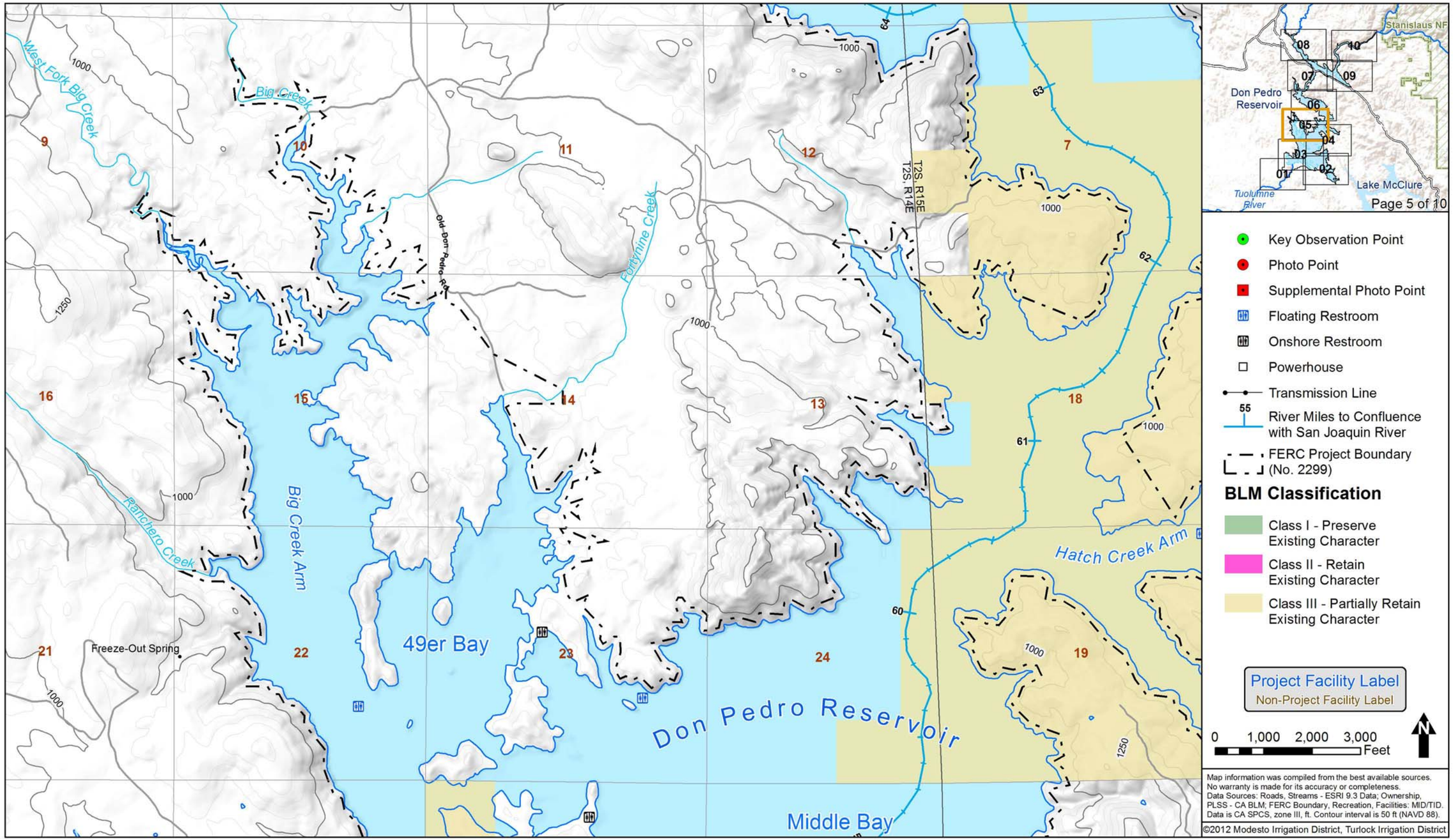


Figure 6. 49er Bay. No KOP, PP, or SPP locations on this map.

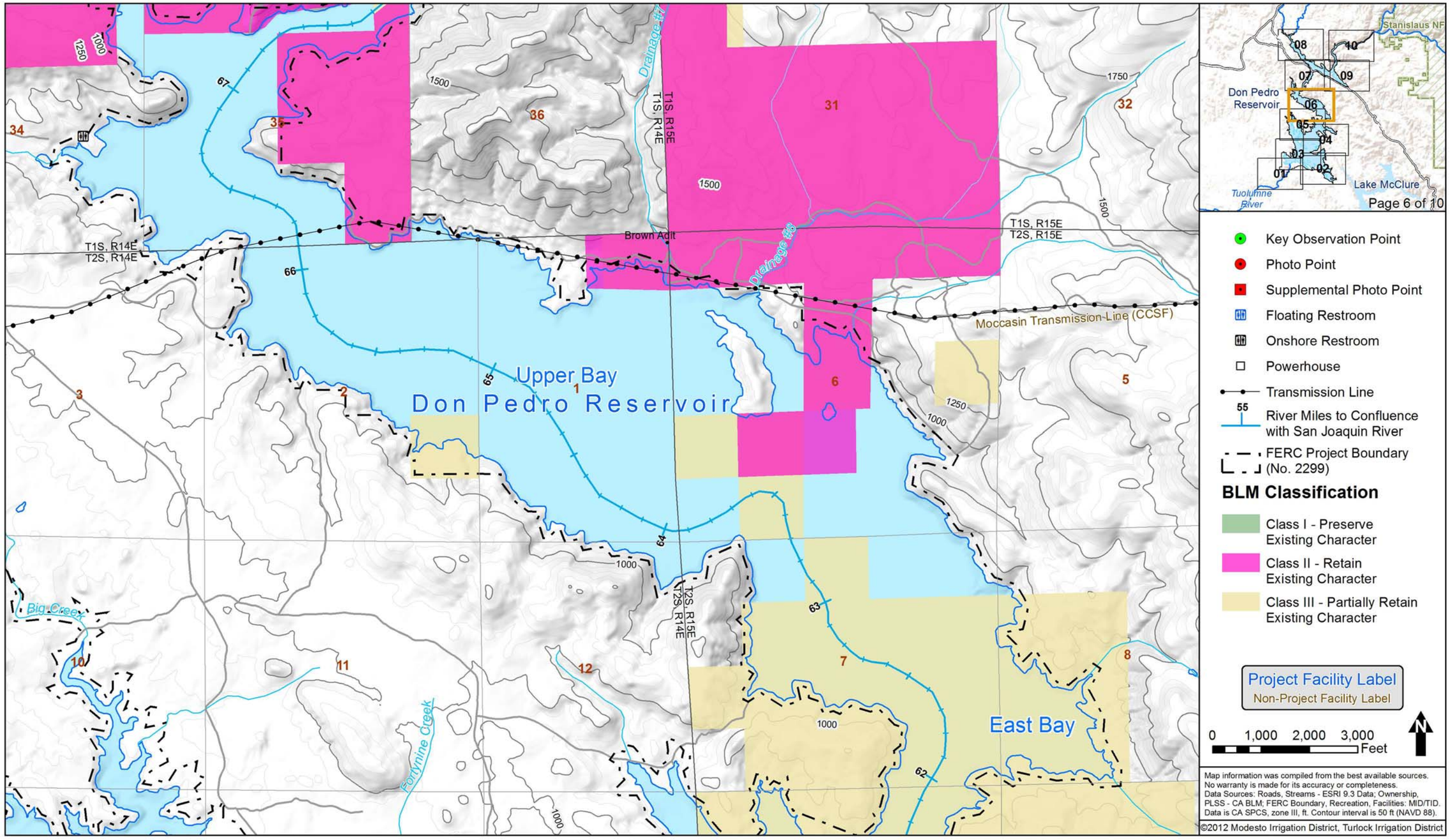


Figure 7. Upper Bay Area. No KOP, PP, or SPP locations on this map.

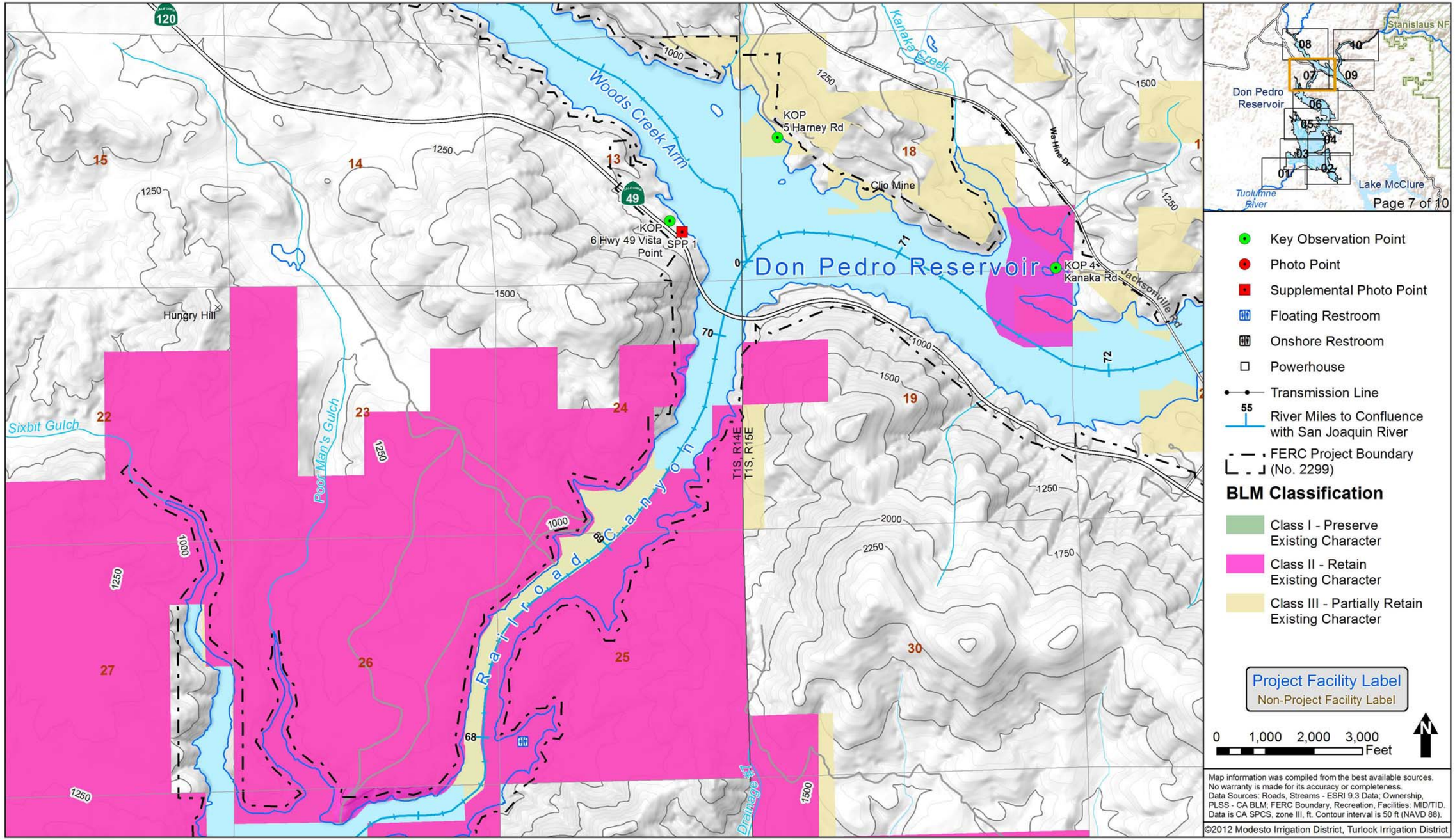


Figure 8. Woods Creek Arm.

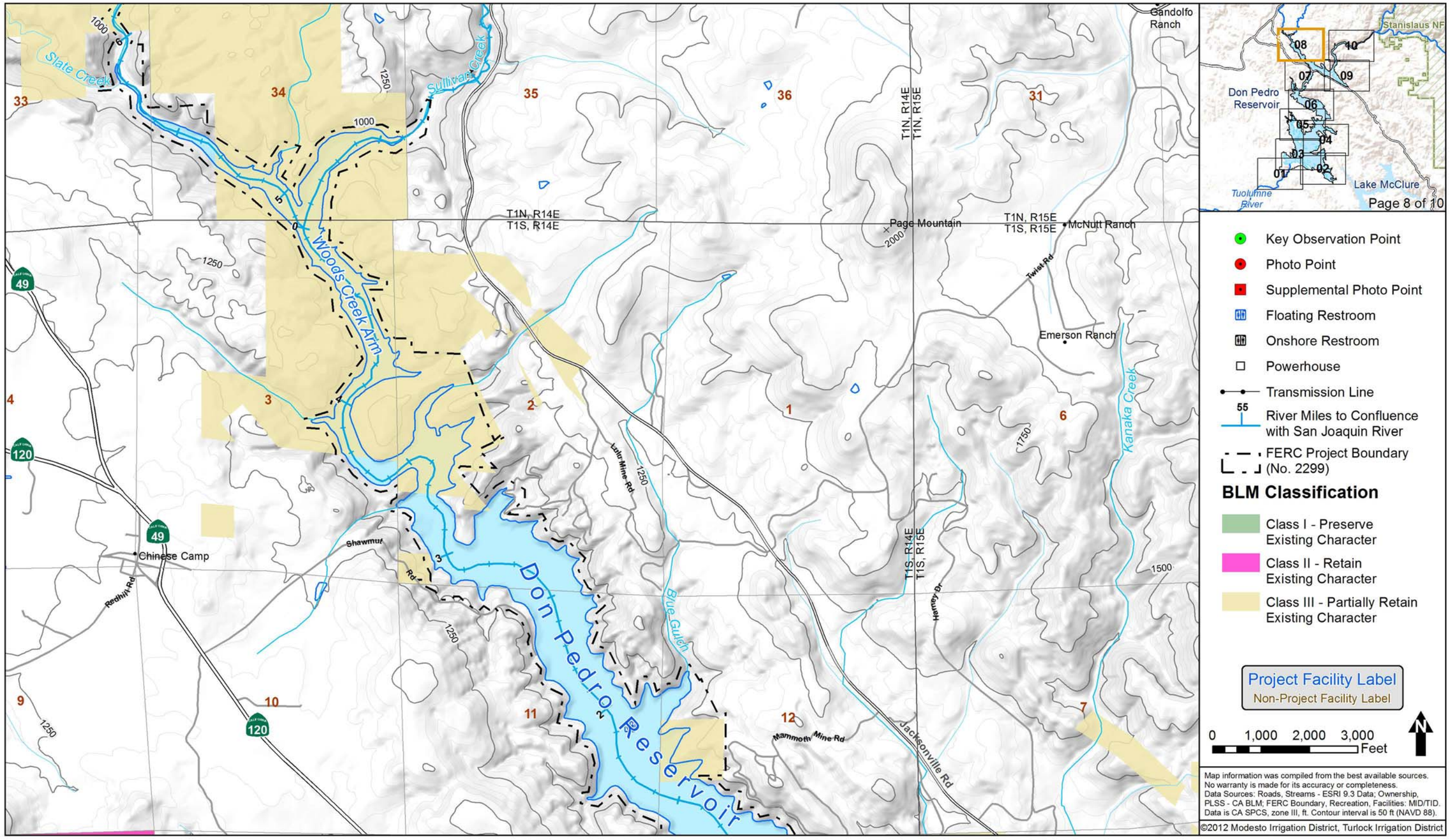


Figure 9. Northern portion of Woods Creek Arm.

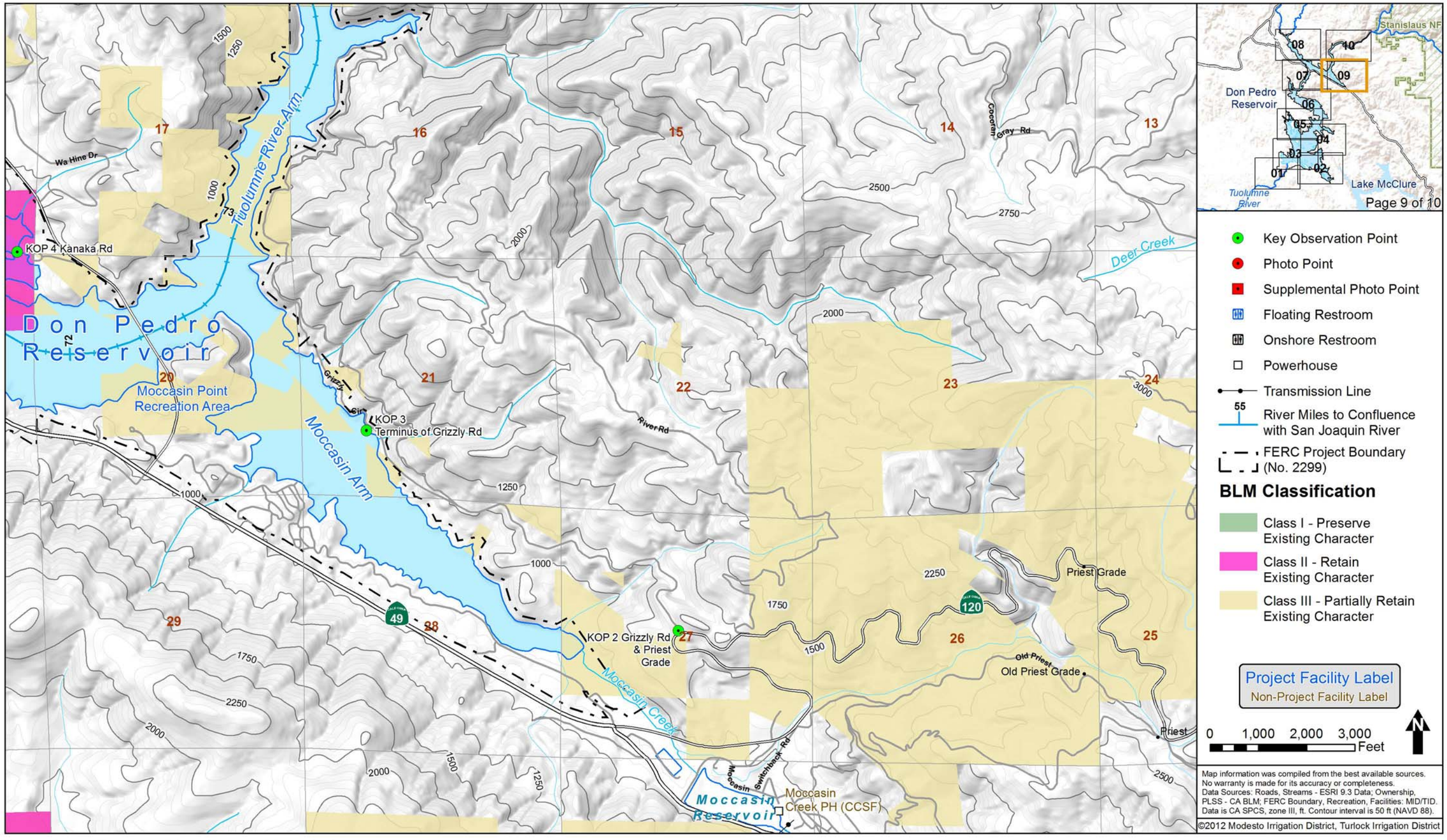
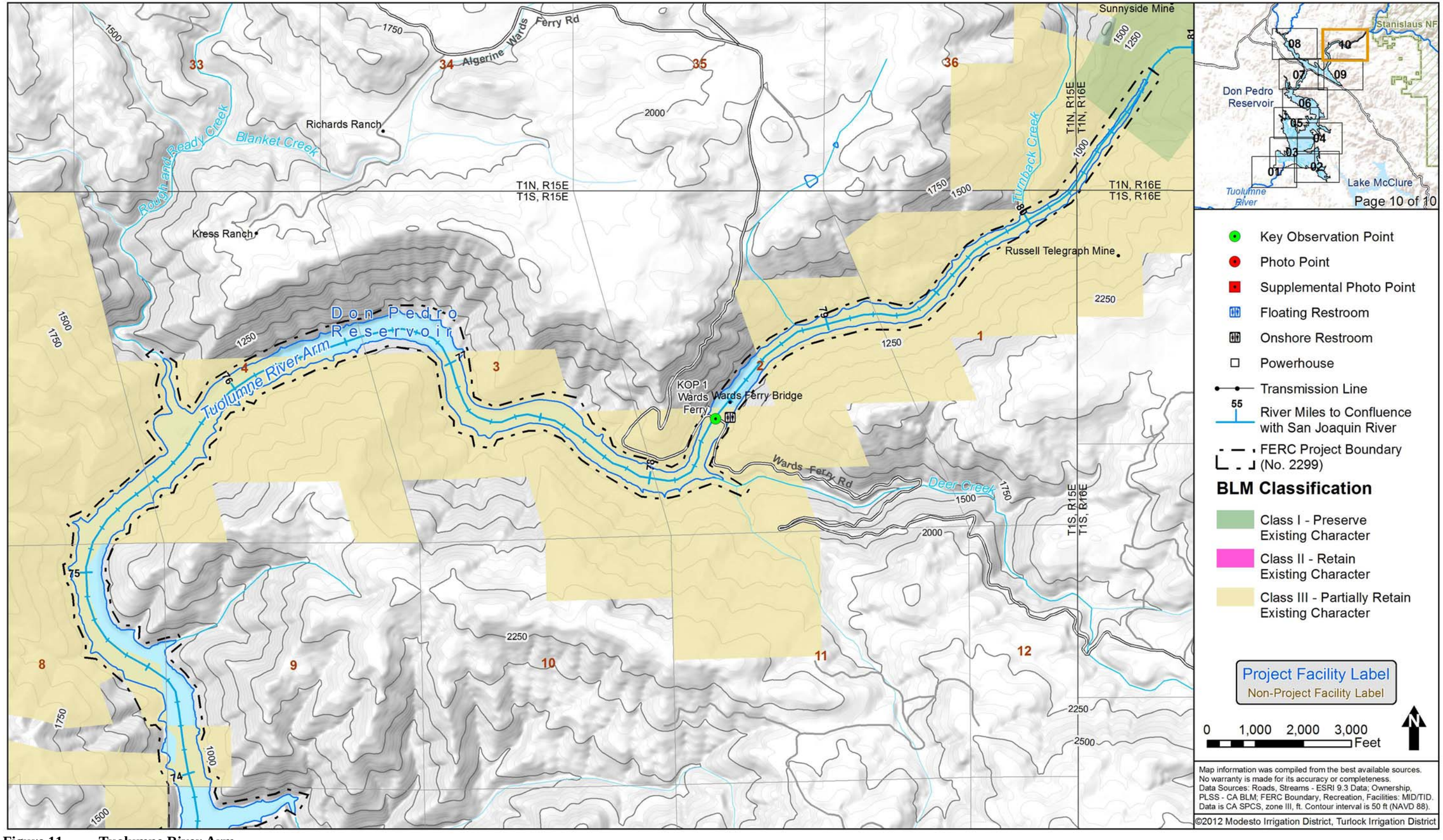


Figure 10. Tuolumne River Arm and Moccasin Arm.



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SUMMARY OF BLM VISUAL RESOURCE MANAGEMENT SYSTEM

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1.0 BLM VISUAL RESOURCE MANAGEMENT SYSTEM SUMMARY

The United States Department of Interior, Bureau of Land Management (BLM) homepage for Visual Resources Management overview states that there are two stages to the Visual Resource Management System, Inventory and Analysis. Its summary description provides a clear overview, as follows:

Inventory: The inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using BLM's visual resource inventory process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. The process is described in detail in *BLM Handbook H 8410-1, Visual Resources Inventory*. The results of the visual resource inventory become an important component of BLM's Resource Management Plan (RMP) for the area. The RMP establishes how the public lands will be used and allocated for different purposes; it is developed through public participation and collaboration. Visual values are considered throughout the RMP process, and the area's visual resources are then assigned to management classes with established objectives.

Analysis: The analysis stage involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments will meet the management objectives established for the area, or whether design adjustments will be required. A visual contrast rating process is used for this analysis that involves comparing the project features with the major features in the existing landscape using the basic design elements of form, line, color, and texture. This process is described in *BLM Handbook H-8431-1, Visual Resource Contrast Rating*. The analysis can then be used as a guide for lessening visual impacts. Once every attempt is made to reduce visual impacts, BLM managers can decide whether to accept or deny proposals, or attach additional mitigation stipulations to bring the proposal into compliance.

A more detailed discussion is provided below.

1.1 Inventory System

The Inventory System has three main components:

- Scenic quality evaluation
- Sensitivity level analysis
- Delineation of distance zones

1.2 Scenic Quality Evaluation

Scenic quality evaluation is set up with an A, B, or C rating (A being high scenic quality, B being typical or average scenery, and C being lower scenic quality). When rating landscapes for scenic quality, seven key factors are considered: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. These factors listed above are ranked on a

comparative basis with similar features within the physiographic provinces. As noted in the BLM Handbook, "An important premise of the evaluation is that all public lands have scenic value, but areas with the most variety and most harmonious compositions have the greatest scenic value." The evaluation is done in relationship to the natural landscape. The Scenic Quality Rating Units are delineated on maps by considering similar physiographic characteristics. Scores will reflect overall impression of the area, including knowledge of the views from the ground. Human development on the ground should not reduce the scores from this evaluation process.

1.3 Sensitivity Level Analysis

Sensitivity Level Analysis is set up with public lands being assigned high, medium, or low sensitivity levels by analyzing the various indicators of public concern.

Factors to consider are:

- Types of users
- Amount of use
- Public interest
- Adjacent land uses
- Special areas (natural areas or wilderness)
- Other factors (research or special studies that may indicate public interest or concern)

An interdisciplinary team should be used, if possible, to delineate Sensitivity Level Rating Units on a map. Distance zones can be used as a factor to drive the shape of a unit.

1.4 Distance Zones

Distance zones are categorized as foreground, middle ground, background, or seldom seen. They are mapped from observation on the ground, as follows:

- **Foreground/middle ground zone**: Map areas less than 3-5 mi away that are seen from roads and use areas.
- **Background zone**: Map areas beyond the 3- to 5-mile zone up to 15 mi away.
- **Seldom seen zone**: Map areas hidden from view and rarely visited.

1.5 Combine Maps

The three maps (Scenic Quality Rating Units, Sensitivity Level Rating Units, and distance zones) are then combined by creating overlays for the sensitivity level map and distance zone map and transferring the information on to the scenic quality map. Combinations of scenic quality, sensitivity levels, and distance zones will result in inventoried Visual Resource Classes. For

example, a scenic quality rating of A and sensitivity level of high combined with a foreground middle ground zone results in a Class II. All the possible combinations, plus the consideration for previous land use designations, such as wilderness(special areas), are displayed below in the matrix (Table 1.5-1) with all the resulting classes.

Basis for Determining Visual Resource Inventory Classes

- **Class I**. Class I is assigned to all special areas where the current management situations require maintaining a natural environment essentially unaltered by man.
- **Classes II, III, and IV**. These classes are assigned based on combinations of scenic quality, sensitivity levels, and distance zones as shown in Table 1.5-1.

Table 1.5-1. Visual Resource Class Matrix.

		High Sensitivity			Medium Sensitivity			Low Sensitivity
Special Areas		I	I	I	I	I	I	I
Scenic Quality	**A**	II	II	II	II	II	II	II
	B	II	III	III*	III	IV	IV	IV
				IV*				
	C	III	IV	IV	IV	IV	IV	IV
		f/m	**b**	**s/s**	**f/m**	**b**	**s/s**	**s/s**
		DISTANCE ZONES						

* If adjacent areas are Class III or lower, assign Class III, if higher assign Class IV.
Distance zone key: f/m=foreground/middle ground. b=background. s/s=seldom seen.

1.6 Visual Resource Classes and Objectives

Visual Resource Classes are used early in the BLM planning process as an inventory tool to portray the relative value of visual resources and describe different levels of visual management emphasis. Classes become Visual Resource Objectives during resource management planning as land use decisions are made for a range of resources on various land management areas. Once land use and visual management decisions are made, Visual Resource Classes become management objectives. The definition of these objectives are:

- **Class I Objective:** The objective of this class is to preserve the existing landscape character. The level of change to the characteristic landscape should be very low and must not attract attention. This is typically assigned to wilderness areas.
- **Class II Objective:** The objective of this class is to retain the existing character of the landscape. Management activities may be seen but should not attract the attention of a casual observer. Any changes must repeat the basic elements of form, line, color, or texture found in the predominant natural features of the characteristic landscape. The level of change to the characteristic landscape should be low.
- **Class III Objective:** The objective of this class is to partially retain the existing character of the landscape. Management activities may attract attention but should not dominate the view of the casual observer. Any changes should repeat the basic elements found in the

predominant natural features of the characteristic landscape. The level of change to the characteristic landscape can be moderate.

- **Class IV Objective:** The objective of this class is to provide for management activities that require major modifications to the existing character of the landscape. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of basic elements. The level of change to the characteristic landscape can be high.

1.7 Visual Contrast Rating System

1.7.1 Basic Philosophy

The basic philosophy of the visual contrast rating system is that the degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features in the existing landscape. The basic design elements of form, line, color, and texture can be used to make the comparison and to describe the visual contrast created by the project. This assessment process provides a means for determining visual impacts and for identifying measures to mitigate these impacts. The key steps are:

(1) Write a Project description
(2) Identify VRM objectives
(3) Select Key Observation Points (KOPs)
(4) Develop visual simulations for proposed projects
(5) Complete the contrast rating

1.7.2 Degree of Contrast Definitions

The visual contrast rating is completed by determining the degree of contrast in terms of strong, moderate, weak, or none, which are defined below.

- **None:** The element contrast is not visible or perceived.
- **Weak:** The element contrast can be seen but does not attract attention.
- **Moderate:** The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong:** The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

1.7.3 Factors to Consider

In determining the degree of contrast for the visual contrast rating process, the BLM handbook lists the following factors to consider:

- Distance
- Angle of observation
- Length of time viewed
- Relative size or scale
- Seasons of use
- Light conditions
- Recovery time
- Spatial relationships
- Atmospheric conditions
- Motion
- Basic elements of form, line, color, and texture.

1.7.4 Comparison of Degree of Contrast and Visual Resource Management Classes

Although degree of contrast and VRM Classes are not directly correlated, they can be generally lined up as follows:

Degree of Contrast	**VRM Class**
None	I: Preserve existing character
Weak	II: Retain existing character
Moderate	III: Partially retain existing character
Strong	IV: The level of change to the characteristic landscape can be high

Where BLM Visual Resource Management Class Objectives do not match up with the appropriate degree of contrast rating, mitigation could be considered.

2.0 CHARACTERISTIC LANDSCAPE FOR THE PROJECT AREA

For the BLM visual system, in order to rate the visual quality of landscapes, a framework is needed to compare similar landscapes by regions. BLM uses the term "characteristic landscape." The characteristic landscape descriptions were initially used by BLM landscape architects to develop criteria for rating variety class. When rating existing visual condition for project facilities, it is helpful to be aware of the local characteristic landscape. As the characteristic landscape changes, colors, shapes, lines, or textures of facilities that may create visual contrast in one setting may blend well in another setting. For example, what may be considered a strong visual contrast in a natural forest setting may be visually acceptable in a rolling foothill setting. The characteristic landscape for the Project Area described below is part of the information considered when making the existing visual condition ratings that are found in Section 5.1 of this study report.

2.1 Sierra Foothills

The characteristic landscape for the Sierra foothills within the Project Area ranges from dramatic rugged hills to low rolling hills. The rugged hills are accented with steep and deep canyon walls of major rivers such as the Tuolumne. The larger rugged hills found in the eastern part of the Project Area are covered with a patchwork of oak woodlands (blue oak and live oak) with some gray pine, chaparral, and grasslands. These vegetative patterns occur due to a combination of soil types, slope orientation to the sun, and fire history. The oak woodlands vary in density from full canopy forest to clumps of oaks and in other areas scattered individual trees. In the eastern part of the project understory is a mix of chaparral and grasslands. Further to the west the understory is primarily grasslands. The oak woodlands have a dark green color with a hint of gray/blue. The gray pine, as the name implies, has a gray/green color. The grasslands have a yellow/brown or tan color from summer through fall and are light green with a yellowish tint in the winter and spring. The chaparral tends toward dark greens similar to the oak woodlands. The low rolling hills in the western part of the Project are covered primarily with grasslands and scattered blue oaks. This area is characterized by oak woodlands, grasslands, and occasional chaparral covering flat to rolling hills, occasionally accented by a steep canyon wall. In this area, native and wild vegetation quickly transitions to non-native plants and trees in a few isolated residential areas and more extensive ranch lands.