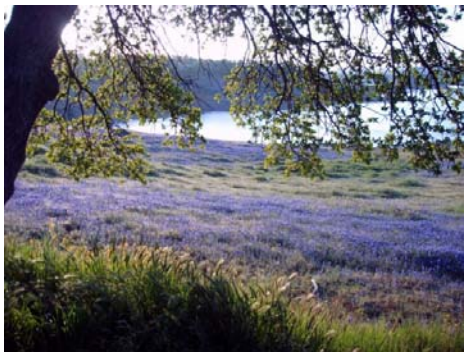
ENDANGERED SPECIES ACT-LISTED AMPHIBIANS - CALIFORNIA TIGER SALAMANDER
STUDY REPORT
DON PEDRO PROJECT
FERC NO. 2299





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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

Endangered Species Act-Listed Amphibians
California Tiger Salamander
Study Report

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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

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
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
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
MVZ.....Museum of Vertebrate Zoology
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
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

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

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
VRM.....Visual Resource Management
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.

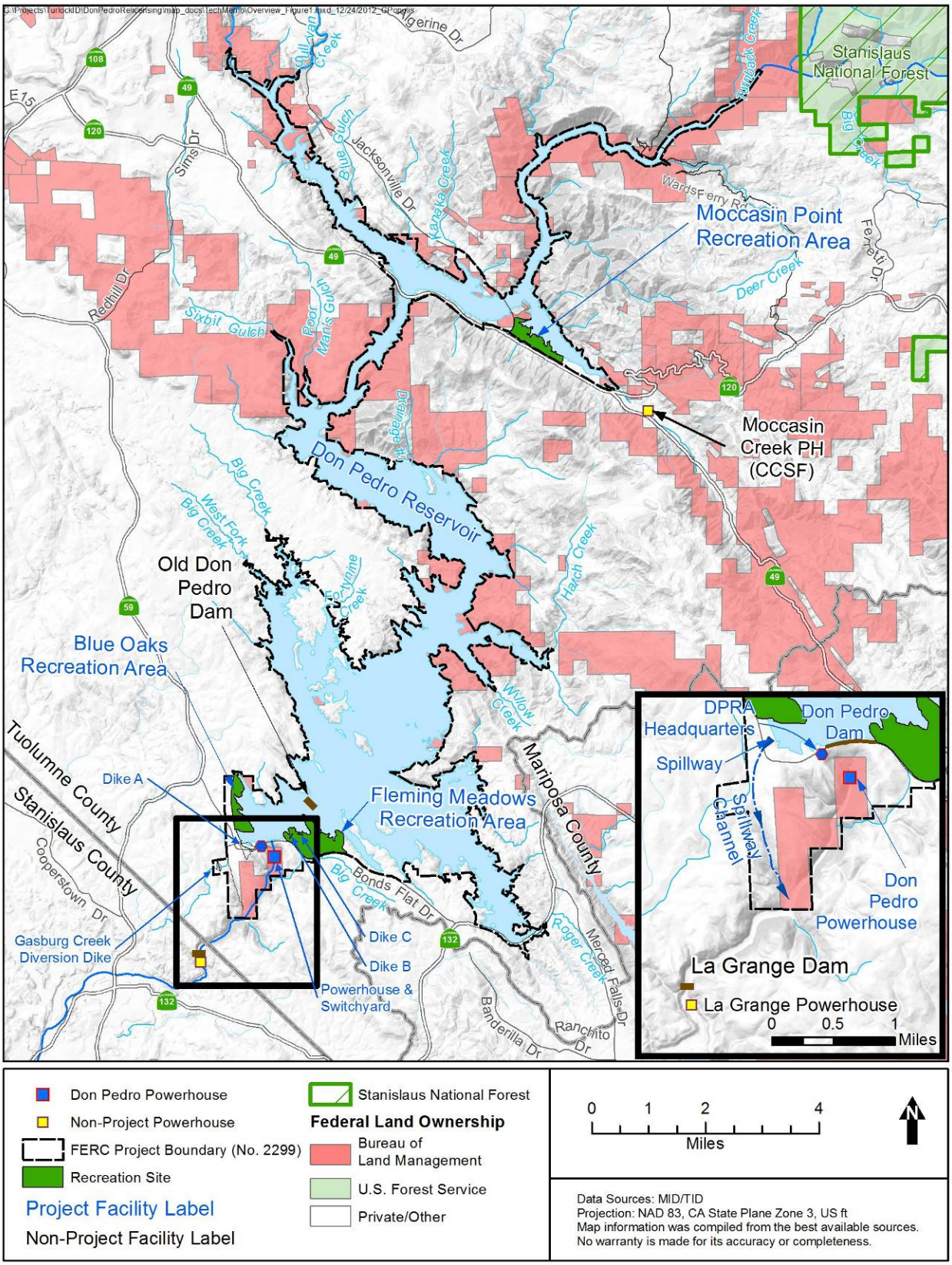

Figure 1.1-1. Don Pedro Project location.

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 ESA-Listed Amphibians - California Tiger Salamander Study (TR-08) 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

The Districts' continued operation and maintenance (O&M) of the Don Pedro Project has the potential to affect the terrestrial and aquatic habitat of the California tiger salamander (CTS; *Ambystoma californiense*). Don Pedro Project O&M includes normal operations within the currently licensed elevation range (up to 830 feet), as well as operation of three formal recreation areas (Moccasin Point, Blue Oaks, and Fleming Meadows), vegetation management within these recreation areas and Project facilities, and ongoing reservoir debris removal and disposal. The Central Valley CTS population is listed as threatened under the federal Endangered Species Act (ESA) and as threatened under the California Endangered Species Act (CESA). These effects

could involve activities related to Project O&M or to Project-related recreation activities that impact CTS suitable habitat.

FERC's SPD approved the Districts' California Tiger Salamander Study Plan as provided in the RSP filing. The study was completed consistent with the study plan.

2.0 STUDY GOALS AND OBJECTIVES

The goal of this study is to provide FERC with information supporting consultation with the US Fish and Wildlife Service (USFWS) regarding the effects of Project licensing on CTS. The objectives of this study are to:

- Identify and map known occurrences of CTS and determine, if appropriate, the closest known breeding locality;
- Evaluate the likelihood that CTS currently exist in the study area using habitat assessments and historical records;
- Compile incidental observations of CTS from other relicensing studies; and
- Provide information to FERC that can be used to develop a Biological Assessment regarding the effects of Project licensing on CTS.

3.0 STUDY AREA

The study area for this effort consisted of suitable aquatic habitats within the Project Boundary and lands within 1.24 miles (2 kilometers) of the Project Boundary. Consistent with USFWS guidelines (USFWS, 2003a) for defining a "project action area," the study area includes all lands potentially affected by Project O&M.

Land ownership within the 1.24-mile study area is principally MID, TID, and BLM, with some private and other land. Existing land uses include ranching, limited residential development and recreation. Uplands in the study area consist of blue and live oak woodland, oak-foothill pine, scrub-shrub chaparral, and annual grassland. Much of the terrain is rugged and was inaccessible for field assessments due to private property restrictions, steep slopes, and lack of roads. Potential barriers to CTS dispersal include steep terrain, highways, including State Route (SR) 120, SR 59, SR 139, and SR 49, and Don Pedro Reservoir.

4.0 METHODOLOGY

The study plan approved by FERC in their December 22, 2011 Study Plan Determination outlined five steps for performing the CTS study. Those steps were as follows:

(1) Site Assessment.
(2) Prepare, Format, and Quality Assurance/Quality Control Data.
(3) Consult with the Districts' Project O&M Staff.
(4) Prepare Report.
(5) Consult with USFWS.

The following methods described for site assessment and habitat characterization were conducted in compliance with Steps 1 - 3 of the FERC-approved ESA-listed Amphibian California Tiger Salamander Study (TR-08). This document was created to comply with Step 4 and will be submitted to USFWS in compliance with Step 5.

4.1 Site Assessment and Habitat Characterization

According to the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003a), the criteria for CTS breeding habitat include the presence of standing water for a period sufficient for larvae to achieve metamorphosis. Breeding generally occurs between December and February. Larvae may metamorphose in as little as 10-12 weeks, although typically not until May to July (Laabs et al. 2001). Natural vernal pools, stock ponds, drainage ditches, and pools in low gradient streams are potential habitat. Permanent ponds may be suitable, but not if predatory fish are established. The presence of American bullfrog (*Lithobates* [*Rana*] *catesbeianus*), introduced crayfish, and predacious insects may also decrease site suitability. Suitable upland habitats, which are described in Section 5.1, are equally important to the occurrence of CTS.

Potential study sites within the Project Boundary and within 1.24 miles of the Project Boundary were identified, characterized, and mapped based on review of existing aerial photography, NWI maps, and other pertinent resource agency GIS layers as available. Using available information, these aquatic habitat sites were characterized by habitat type (e.g., natural seasonal pond, stock pond, or creek), surface area, depth, seasonality, topography, and types of associated aquatic or emergent vegetation. Lands adjacent to the aquatic habitats were described by plant community, burrow presence, current land use, and an assessment of potential barriers to CTS movement. Following habitat mapping, the district selected potentially suitable aquatic habitats for field visits and additional characterization.

4.1.1 Review of Historical Data

Known CTS records in the study area were compiled from a review of the following sources:

- California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) (CDFG 2012);

- University of California Berkeley's Museum of Vertebrate Zoology (MVZ) Data Access (MVZ 2012);
- California Academy of Sciences (CAS) online records (CAS 2012); and
- Peggy Cranston from the Mother Lode Field Office of the BLM on 3/18/2012 (Cranston 2012).

4.1.2 Habitat Characterization Methods

Field reconnaissance of a representative set of aquatic habitat features was performed under the provisions of ESA-Listed Amphibians – California Red-Legged Frog Study (TID/MID, 2013) at sites within 1 mi around the Project Boundary. Additional field reconnaissance within the FERC Project Boundary was conducted for Special-Status Amphibians and Aquatic Reptiles Study (TID/MID 2013). In addition, 55 sites within 1.24 miles of the project boundary, which were outside of the other studies' assessment areas, were examined to supplement other sources of information. Under each methodology, sites were photographed depicting aquatic and upland habitat and other notable findings. Locations on private property were typically assessed from the adjacent road, aided by binoculars. Field visits to verify habitat characterizations and collect additional information were performed at sites selected as follows:

- All potential breeding locations within the Project Boundary.
- Representative potential breeding locations on publicly accessible lands (and private lands for which access permission could be obtained) within 1.24 miles outside of the Project Boundary.

All habitat and site assessment data required by the Interim Guidance (USFWS 2003a) were collected at each site where reconnaissance level examination was performed, along with photographs depicting habitat and other notable findings. These data are included in Attachment A. Information collected during field visits included topography; soil type; plant communities; water body presence, location, types, and size; fossorial mammals detected; current land use, and a description of adjacent lands, including uplands. A summary of the data collected is provided in the site assessments for CTS, California Red-Legged Frog, and Special Status Amphibians, which are attached to each of the appropriate study reports. Each site was photographed to depict habitat and other notable findings. The presence of fish, American bullfrogs (*Lithobates catesbeianus*), and other incidental observations of amphibians was also noted. Upland habitats were characterized based on description of upland vegetation communities, land uses, and any potential barriers to CTS movement. Sites were evaluated to determine if water was present for at least 10 weeks during the CTS breeding season and suitable upland habitat, including underground refugia, the key components of CTS breeding habitat according to the USFWS (2003a).

For aquatic habitat sites not depicted on existing NWI maps, biologists evaluated seasonality from water depth, feature size, and the presence of water and associated emergent and aquatic vegetation. Bankfull features and pool dimensions were visually estimated on the ground or measured from aerial photographs. Observations of incidental amphibian and potential predator presence, including fish, American bullfrog, and introduced crayfish (not identified to species)

were collected during site visits for CTS and the Districts' other relicensing studies. Substrate was described when viewed on-site. Aquatic habitats were then mapped, differentiating locations where potential CTS breeding habitat might occur or were believed to be present based on the information described above. Areas that did not appear to represent suitable habitat, or that weren't accessible or viewable from a distance, were not field examined, but instead were characterized from aerial imagery, existing ground photographs, and other existing descriptive information.

Characterization of upland habitats drew upon data from CalVeg data (USFS 2009 adjacent to the feature. CalVeg is a two-level hierarchical classification system of actual vegetation designed to assess broad scale resources throughout California. Upland habitats were further characterized based on adjacent land uses and any potential barriers to CTS movement.

4.2 Data Management and Consultation with Districts' Staff

Standard data QA/QC procedures were performed, including, but not limited to: daily QA/QC of field data sheets, spot-checks of transcription during data compilation, and comparison of Geographic Information System (GIS) maps with field notes and field maps to verify locations. Data were entered into a database and crosschecked by a second scientist to ensure data were properly recorded. GIS maps, depicting the CTS occurrences, and Project facilities and features, were generated to display field collected GPS information and used as a second method to verify that all special-status plant occurrence locations matched the information on the data sheets.

After all potentially suitable CTS breeding habitat and historical occurrences were verified and mapped, Project operations staff was consulted to identify Project O&M, recreation and other Project-related activities that typically occur in the area of the CTS occurrences that have a potential to adversely affect the occurrences.

5.0 RESULTS

5.1 CTS Life History Information

CTS live in vacant or mammal-occupied burrows (e.g., California ground squirrel, *Otospermophilus beecheyi,* and valley pocket gopher, *Thomomys bottae*) (Trenham 2001), or occasionally other underground retreats, throughout most of the year; in grassland, savannah, or open woodland habitats. Populations in Sonoma County, California, are closely associated with the presence of pocket gopher burrows (USFWS 2003b). CTS breeding habitat is generally associated with shallow, seasonal (i.e., continuously flooded for a minimum of 10-12 consecutive weeks) or semi-permanent pools and ponds that fill during heavy winter rains, or in permanent ponds (Alvarez 2004a). Adults spend little time in breeding sites before returning to upland habitats. CTS populations generally do not persist where fish, American bullfrogs, or predacious insects are well established. Breeding occurs mainly from December through February after rains fill pools and ponds. Eggs are laid singly or in small clusters, often attached to submerged stems and leaves, and hatch in 2 to 4 weeks. Larvae transform in about 4 months (Behler and King 1979) as water recedes in late spring or summer, but larvae may overwinter in permanent ponds (Alvarez 2004b). CTS may not breed at all in drought years when ponds fail to fill. The number of larvae that successfully metamorphose at a given site tends to be "boom or bust" (Loredo and Van Vuren 1996).

5.2 Historical and Current Occurrence of CTS in the Project Vicinity

Known historical and current CTS occurrences near the Project are summarized in Table 5.2-1 and depicted on Figure 5.4-1. There are five known historical CTS occurrences within five miles of the Don Pedro Project. The most recent occurrence was observed in 2007, approximately 0.4 miles from Don Pedro Reservoir.

There is one known historical CTS occurrence within one mile of the Don Pedro Reservoir study area, in Tuolumne County, near Big Creek south of Don Pedro Reservoir.

Table 5.2-1. Recorded occurrences of CTS within 5 miles of the Project

Occurrence	Distance from the Project and Status of the Occurrence
Tuolumne Co. (3 larvae, 2007)	0.37 mi S of Don Pedro Reservoir. Presumed extant.
About 0.5 mi E of La Grange, Stanislaus Co. (unknown number and lifestage, 1973)	3.13 mi SW of Don Pedro Reservoir. Presumed extant.
Cardoza Lake, E side of Highway J-59, about 1.25 mi S of La Grange, Stanislaus Co. (1 adult, 1986)	3.98 mi SW Don Pedro Reservoir. Presumed extant.
About 2 mi S of La Grange, Stanislaus Co. (unknown number and lifestage, 1973)	5.00 mi SW of Don Pedro Reservoir. Presumed extant.
La Grange Regional Park, near Basso Bridge on the Tuolumne River, Stanislaus Co. (unknown number and lifestage, 1973)	5.06 mi SW of Don Pedro Reservoir. Presumed extant.

Source: CDFG 2012

5.3 Site Assessment and Habitat Characterization

A total of 392 sites were assessed in the Don Pedro Reservoir study area, including 73 sites within the FERC Project Boundary. Of the sites within the FERC Project Boundary, 20 sites are proximate to project facilities or Don Pedro Reservoir and are therefore considered potentially affected by Project O&M. Of the 392 sites, 88 were assessed in the field, including 66 that occur within the FERC Project Boundary. One site was assessed from a distance due to safety concerns. The remaining 304 sites were not accessible for on-site assessment or were not within the FERC Project Boundary, and were therefore assessed from aerial imagery.

Sites within the study area consisted of 125 sections of streams or pools in streams; 166 natural ponds; 20 stock, irrigation, and detention ponds; 73 other wetlands; and eight uplands or constructed areas. A total of 88 stream sites, 134 ponds, 16 stock/irrigation/detention ponds, six emergent wetlands, a constructed public swimming pool, a constructed swimming lagoon, and a constructed reservoir appear to meet the minimum criterion of 10 weeks of standing or slow-moving water. It was unknown if two seasonal streams and one manually filled stock pond met the 10-week criterion. Many of the field assessed sites meeting the 10-week criterion were perennial streams with too high of a gradient or lacked upland habitat suitable for dispersal.

Based on these factors, 37 of the 88 field-assessed sites appear to represent suitable breeding habitat for CTS, including 22 within the FERC Project Boundary. Of the 37 suitable sites, 14 had either American bullfrog or fish present, predators which can diminish the overall habitat suitability for CTS. Six sites located within the FERC Project Boundary, perennial pools within the spillway channel that are connected via a seasonal stream during high flow conditions, were not field accessible due to unsafe conditions and were evaluated from an aerial photograph. As such, the sites were assumed to be suitable, although the presence of suitable upland habitat and aquatic predators is unknown. Table 5.3-1 summarizes the conditions encountered at the 38 sites determined to be potentially suitable habitat for CTS.

Table 5.3-1. Summary of field assessed sites potentially suitable for CTS habitat.

Site[1]	Habitat Feature/Seasonality/Location	Burrows Observed	Emergent Vegetation Present	Overhanging Vegetation Present	Bullfrog Present	Fish Present
F3	Stream, perennial (unnamed), near Marshes Flat Road	x	x	--	x	--
F13	Stream, perennial (unnamed), 49er Bay	x	x	--	x	x
F15	Stream, perennial (Big Creek), near Old Don Pedro Road	x	x	--	x	--
F17	Stream, perennial, Poor Man's Gulch	x	x	x	--	--
F22	Stream, perennial and associated pond, Big Creek Arm	x	x	--	x	x
F24	Stream, ephemeral, Upper Bay	--	x	--	--	--
F25	Stream, perennial, Wreck Bay	x	x	--	x	x
F30	Stream, perennial, Kanaka Creek, near Jacksonville Road	x	x	x	--	--
F35	Stream, perennial, Woods	x	x	x	x	--

Site[1]	Habitat Feature/Seasonality/Location	Burrows Observed	Emergent Vegetation Present	Overhanging Vegetation Present	Bullfrog Present	Fish Present
	Creek					
F36	Stream, seasonal (unnamed) , near Molina Street	--	x	--	--	--
F39	Stream, seasonal (unnamed), 49er Bay	x	x	--	--	--
F40	Pond, seasonal (unnamed), near SR 132	x	x	--	--	--
F41	Pond, perennial, near SR 132	x	x	--	x	--
F43	Pond, perennial, impoundment in West Fork Big Creek	--	x	x	--	--
F53	Stream, seasonal (unnamed), near Hoyito Circle	x	x	x	--	--
F60	Pond, seasonal, near Jacksonville Road	--	x	x	x	--
F68	Stream, seasonal	x	x	x	--	--
F75	Stream, seasonal		x		x	--
F77	Series of ponds, perennial, near Bonds Flat Road	x	x	--	x	--
F78	Pond, perennial, near Bonds Flat Road	x	x	--	--	--
F80	Pond, perennial, near Bonds Flat Road	x	x	x	--	--
F81	Stock pond, near Bonds Flat Road	x	x	x	--	--
F84	Stream, perennial (Big Creek), crosses La Grange Road	x	x	x	--	--
N52	Pond, perennial, near Marshes Flat Road and Hatch Creek Road	x	x	x	x	--
N60	Pond, perennial, near Marshes Flat Road	x	x	x	--	--
N75	Stream, perennial	x	x	x	--	--
N82	Pond, perennial, near Shawmut Road	x	x	--	--	--
N133	Pond, perennial, near El Encanto and SR 59 behind gravel parking area	--	x	x	--	--
N141	Pond, perennial, near La Grange Road	x	x	--	--	--
N143	Pond, perennial, near Paseo Seven Legends	x	x	x	--	--
N148	Pond, perennial, near La Grange Road	x	x	x	x	--
N158	Pond, perennial, near Paseo Seven Legends	x	x	--	x	--
N161	Pond, perennial	x	x	x	x	
N164	Pond, seasonal, near Paseo Seven Legends	x	--	--	--	--
N172	Pond, perennial, near La Grange Road	x	x	--	--	--
N179	Pond, seasonal, near Paseo	x	--	x	--	--

Site[1]	Habitat Feature/Seasonality/Location	Burrows Observed	Emergent Vegetation Present	Overhanging Vegetation Present	Bullfrog Present	Fish Present
	Seven Legends					
N222	Pond, perennial, by Egan Road	x	x	x	x	--
N305	Pond, seasonal, by La Grange Road	x	x	--	--	--

1. Sites within the FERC Boundary are denoted by the letter "F" and sites outside of the FERC Boundary are denoted by the letter "N."

Descriptions of upland and aquatic habitats within the FERC Project Boundary surrounding Don Pedro Reservoir, including detailed descriptions of all aquatic habitats potentially suitable for CTS breeding habitat, total acreages, elevation range, general topography, vegetation communities, land use, and other aspects are presented in Attachment A. Summary information concerning all other aquatic habitats that met minimal criteria for CTS breeding habitat is presented in Attachment A, in Table 1.2-1 for sites in the study area. Attachment B presents maps showing locations of all aquatic habitats within the study.

BLM (2009, 1980) reports that fish known to occur in the Project area include the green sunfish, largemouth bass, Sacramento sucker, and the mosquito fish, roach, Sacramento pikeminnow, rainbow trout, largemouth bass, and blue gill. The presence of predatory fish can severely limit the survival of CTS in otherwise suitable breeding habitat (Jennings and Hayes, 1994), and was considered an important factor in characterizing field assessed habitat.

Based on a review of aerial videography, stream habitat mapping photographs, and results of habitat assessments performed as part of this and other studies, stream reaches potentially affected by the project generally lack the essential components of CTS breeding habitat.

5.3.1 Sites Potentially Affected by Project O&M

Based on their proximity to project facilities or Don Pedro Reservoir, 20 sites were considered potentially affected by Project O&M, of these 20 sites, the essential components of CTS breeding habitat were identified at 18 locations. Lack of emergent or overhanging vegetation or the presence of aquatic predators diminishes the potential suitability of most of the sites (Table 5.3-2). Sites F31 and F73, streams in the Moccasin Point Recreation Area, do not meet the 10-week criterion.

Table 5.3-2. Summary of sites potentially affected by Project O&M assessed for CTS habitat.

Site Number	Habitat Description	Area (acres)	Ownership	Meets 10-Week Criterion	Fish Known to Occur at Project Site
F31	Stream in Moccasin Point Recreation Area	0.39	MID/TID	N	None
F45	Sewage Treatment Pond near Fleming Meadows Recreation Area	1.51	MID/TID	Y	None
F46	Sewage Treatment Pond near Blue Oaks Recreation Area	1.53	MID/TID	Y	None
F47	Swimming lagoon at Fleming Meadows Recreation Area	2.16	MID/TID	Y	None

Site Number	Habitat Description	Area (acres)	Ownership	Meets 10-Week Criterion	Fish Known to Occur at Project Site
F49	Sewage Treatment Pond near Fleming Meadows Recreation Area	0.12	MID/TID	Y	None
F50	Sewage Treatment Pond near Blue Oaks Recreation Area	0.71	MID/TID	Y	None
F51	Sewage Treatment Pond near Moccasin Point Recreation Area	0.68	BLM	Y	None
F52	Sewage Treatment Pond near Moccasin Point Recreation Area	0.02	BLM	Y	None
F73	Stream in Moccasin Point Recreation Area	0.22	MID/TID	N	None
F77	Pool in spillway channel	0.14	MID/TID	Y	Not likely
F78	Pool in spillway channel	0.06	MID/TID	Y	Not likely
F80	Pool in spillway channel	1.61	MID/TID	Y	Not likely
F81	Pond at base of Gasburg Creek Dike, adjacent spillway channel.	0.88	MID/TID	Y	None
F82	Pool in spillway channel	0.33	MID/TID	Y	Not likely
F83	Pool in spillway channel	0.45	MID/TID	Y	Not likely
F85	Pool in spillway channel	0.33	MID/TID	Y	Not likely
F86	Pool in spillway channel	0.80	MID/TID	Y	Not likely
F87	Pool in spillway channel	0.32	MID/TID	Y	Not likely
F88	Pool in spillway channel	0.33	MID/TID	Unknown	Not likely
F89	Pool in spillway channel	0.06	BLM	Y	Not likely

Most of the sites potentially affected by Project O&M with the essential components of CTS breeding habitat were relatively small water bodies (i.e., 0.06 – 2.17 acres), that were either man-made sewage treatment ponds or pools in the spillway channel. Sewage treatment ponds had minimal or no emergent and overhanging vegetation, where pools in the spillway channel had emergent vegetation and overhanging oaks or willows present but limited upland dispersal habitat. American bullfrogs, which also likely diminish CTS suitability, were observed at three pools in the spillway (F77, F78, and F80).

Three of the Project sites are situated on public land administered by the BLM. These sites include two sewage treatment ponds near Moccasin Point Recreation Area, Sites F51 and F52, and a pool in the spillway channel near the Tuolumne River, Site F89.

Don Pedro Reservoir itself does not possess the essential components of CTS breeding habitat because of the absence of suitable vegetation. This reservoir is also stocked with a variety of introduced, predatory fish, which diminish suitability for CTS.

5.3.2 Sites Not Affected by Project O&M

Aquatic habitats within the 1.24-mile radius study area surrounding the Project but not proximate to and therefore not affected by Project O&M included streams (ephemeral, seasonal, and perennial), pools in streams, natural ponds, and stock ponds. Some of the areas identified for assessment based on NWI maps were determined to be uplands. Other locations lacking the essential components of CTS breeding habitat were intermittent streams unlikely to provide standing water for a sufficient period. Seventy-four of the 372 sites not affected by the Project

were assessed in the field, while the remaining sites were assessed aerially, with the presence of essential CTS breeding habitat determined based on available information. Most field assessed sites met the 10-week criterion for CTS breeding habitat, but lacked suitable upland habitat, underground refugia, or some combination of both. Many of the sites assessed aerially were assumed to meet the 10-week criterion, but were lacking some component of suitable vegetation (either emergent or overhanging).

Within the Project Boundary, 23 of the 53 sites assessed held water for at least 10 weeks during the CTS breeding season, and it was unknown if 2 sites met the 10-week criterion. The majority of sites meeting the 10-week criterion were perennial streams, many of which contained fish and/or American bullfrogs. Table 5.3-3 summarizes the assessment results at sites located within the Project Boundary, excluding those potentially affected by Project O&M.

Table 5.3-3. Summary of other (non-Project affected) sites assessed for CTS habitat within the Project Boundary.

Aquatic Habitat Type	Number of Aquatic Habitat Locations	Number of Locations that Meet 10-Week Criterion[1]	Land Ownership[3]		
			MID/TID	BLM	Private/ Other
Streams and Pools in Streams	41	18 (*2*)	34[2]	9[2]	8[2]
Natural Ponds	7	4	6[2]	4	2[2]
Stock/Irrigation/ Detention Pond	1	1	0	1	0
Upland/Developed	4	0	3	1	0
Total	**53**	**23 (*2*)**	**43**	**15**	**10**

[1] Italic numbers in parenthesis are those sites for which 10-week criterion status is unknown.
[2] Includes locations with multiple ownerships.
[3] Some sites have multiple ownerships; therefore, ownership total exceeds the number of assessed locations.

Outside of the Project Boundary, 207 of the 319 sites assessed held water for at least 10 weeks during the CTS breeding season. The majority of the sites assessed were natural ponds or other wetlands located on private land. Most of these ponds met the 10-week criterion, but were lacking either emergent or overhanging vegetation. Predators were present at many of the field assessed sites but could not be determined for sites assessed aerially. Table 5.3-4 summarizes the assessment results at sites located within one mile outside of the Project Boundary.

Table 5.3-4. Summary of results at other (non-Project affected) aquatic habitat locations within 1.24 mile of Project sites assessed for CTS habitat (excluding sites within Project Boundary).

Aquatic Habitat Type	Number of Aquatic Habitat Locations[1]	Number of Locations that Meet 10-Week Criterion	Land Ownership[2]		
			TID/ MID	BLM	Private/Other
Streams and Pools in Streams	72	61	2[2]	3	68[2]
Natural Ponds	158	129	4[2]	2	154[2]
Stock/ Irrigation/ Detention Pond	13	9	0	1[2]	13[2]
Other Wetlands	73	6	1[2]	1[2]	73[2]

Aquatic Habitat Type	Number of Aquatic Habitat Locations[1]	Number of Locations that Meet 10-Week Criterion	Land Ownership[2]		
			TID/ MID	BLM	Private/Other
Upland[1]/ Developed	1	0	0	0	1
Other	2	2	0	0	2
Total	**319**	**207**	**7**	**7**	**311**

[1] Includes locations with multiple ownerships.
[2] Some sites have multiple ownerships; therefore, ownership total exceeds the number of assessed locations.

5.3.3 Potential Sites on BLM Administered Public Land

The study areas encompassed aquatic habitats located on public land administered by BLM at 25 locations. Table 5.3-5 summarizes the sites located at least partially on BLM land.

Table 5.3-5. Summary of aquatic habitat locations on BLM administered land.

Site Number[1]	Habitat Description	Area[1] (m^2)	Additional Ownership	Meets 10-Week Criterion	Fish Known to Occur at Project Site
F17	Poor Man's Gulch	60	N/A	Y	Likely
F24	Unnamed ephemeral tributary to Upper Bay	10	N/A	Y	Likely
F27	Deer Creek	5	N/A	Y	None
F30	Kanaka Creek	15	MID/TID	Y	Likely
F32	Perennial stream near Jacksonville Road	2.25	N/A	Y	Likely
F33	Stream, seasonal (unnamed), near Grizzly Road	3	MID/TID	N	None
F34	Stream, seasonal (unnamed), near Moccasin Creek D Road	4.5	MID/TID	N	None
F35	Woods Creek	200	N/A	Y	Yes
F38	Stream, ephemeral, Upper Bay	Unknown	N/A	N	None
F51	Perennial pond near Jacksonville Road	2,760	N/A	Y	None
F52	Perennial pond near Jacksonville Road	95	N/A	Y	None
F54	Sixbit Gulch	6	N/A	Y	Yes
F60	Seasonal pond near Jacksonville Road	650	N/A	Y	None
F70	No aquatic feature present	N/A	N/A	N	None
F88	Pool in perennial stream near Bonds Flat Road	1,350	MID/TID	N	None
F89	Perennial pond near La Grange Impoundment	235	N/A	Y	None
F90	Stock pond near La Grange Impoundment	570	N/A	Y	None
N61	Perennial pond near Arbolada Drive	90	N/A	Y	None
N78	Sixbit Gulch	Unknown	Private	Y	Yes
N215	Stream impoundment, perennial	18	N/A	Y	None
N217	Emergent wetland	155	Private	N	None

Site Number[1]	Habitat Description	Area[1] (m^2)	Additional Ownership	Meets 10-Week Criterion	Fish Known to Occur at Project Site
N218	Pool in stream, near Old Priest Grade	Unknown	N/A	N	None
N252	Stock pond	140	N/A	Y	None
N224	Perennial Stream Impoundment	120	N/A	Y	None
N271	Pond, seasonal, near New Priest Grade Road	50	N/A	N	None

[1] Total surface area (m^2) of aquatic habitat; for streams, dimensions are maximums of pool habitats.

5.4 Incidental Observations and Recorded Occurrences

No CTS were observed during the site assessments performed as part of this study, nor were there any incidental sightings of CTS during performance of the other relicensing studies during 2012.

Other incidental observations that may be pertinent to the potential occurrence of CTS in the study area include the presence of predatory fish particularly bass, sunfish, and mosquitofish; American bullfrog, and introduced crayfish. Observations of these species at CTS assessment sites are presented in Attachment A. Other pertinent incidental observations of these predatory species occurring during relicensing studies in 2012 are summarized in the Special-Status Amphibians and Reptiles Study (TID/MID 2013) and the ESA Listed Amphibians – California Red Legged Frog Study (TID/MID 2013).

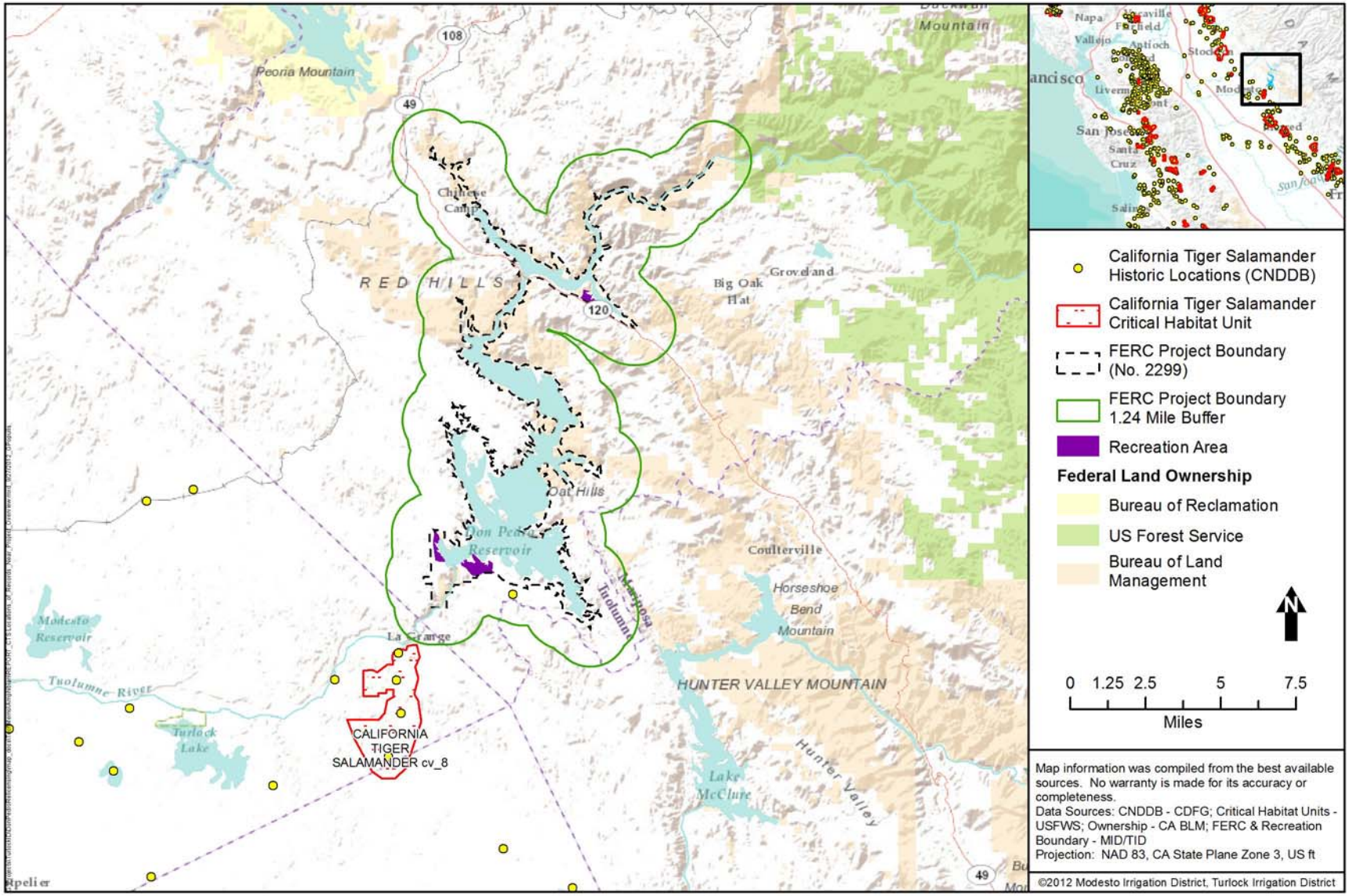

Figure 5.4-1. Locations of current and historical California tiger salamander occurrences and Critical Habitat Units.

6.0 DISCUSSION AND FINDINGS

6.1 Summary

No occurrences of CTS have been recorded within the Project Boundary. Field assessments documented the minimum components of CTS breeding habitat were documented at 38 sites within the study area. A total of sixteen sites within the study area both met the minimum criteria for CTS breeding habitat and are potentially affected by Project O&M, based on their proximity to Project facilities. Nine of these sites are in or adjacent to the spillway channel; these met the minimum criteria for CTS breeding habitat based on field or aerial assessments, but each was considered marginal CTS habitat due to limited upland dispersal habitat. Additionally, seven sites located at Project recreation facilities (sewage treatment ponds and a swimming lagoon) met some components of breeding habitat (each held water for at least 10 weeks during the CTS breeding season), but did not provide suitable upland dispersal habitat. Because Project-affected lands in the study area represent generally poor habitat for CTS, the study concludes that Project O&M, including normal operations within the currently licensed elevation range, operation of the three recreation areas, vegetation management within these recreation areas and Project facilities, ongoing reservoir debris removal and permitted grazing, are not likely to affect CTS or its habitat.

6.2 Project Effects

FERC's Scoping Document 2 identified the following issues potentially affecting species listed under the ESA:

- Effects of project operation, including water level fluctuations, ground-disturbing activities, and maintenance on plants and wildlife species listed as threatened or endangered under the ESA.
- Effects of maintenance and use of project recreation facilities by recreationists on species listed as threatened or endangered under the ESA.
- Effects of project operation and maintenance on designated critical habitat under the ESA.
- Effects of vegetation clearing for project maintenance on species listed as threatened or endangered under the ESA.

Don Pedro Project O&M includes normal operations within the currently licensed elevation range (up to 830 feet), as well as operation of three formal recreation areas (Moccasin Point, Blue Oaks, and Fleming Meadows), vegetation management within these recreation areas and Project facilities, and ongoing reservoir debris removal and disposal. Recreation activities occur along portions of the shoreline and include dispersed camping, fishing and hiking. Additionally, the Districts have granted four grazing permits on a limited area within the Project Boundary, on a total of 559 acres.

There is one known occurrence of CTS in the vicinity of Don Pedro Reservoir, approximately 0.4 miles south of Don Pedro Reservoir near Big Creek. However, Don Pedro Reservoir itself is characterized by deep, still or slowly moving water with steep banks in most areas and limited

vegetation below the high-water mark; it does not constitute aquatic breeding habitat for CTS (USFWS 2003a). Because CTS does not occur at Don Pedro Reservoir, Project reservoir operations are not likely to affect the species or its habitat.

CTS site assessments documented a total of sixteen sites within the study area that met the minimum criteria for CTS breeding habitat and are potentially affected by Project O&M, based on their proximity to Project facilities. Nine of these sites are located in or adjacent to the spillway channel (F77, F78, F80, F81, F82, F83, F85, F86, F87, F88). These nine sites are considered marginal habitat due to limited adjacent upland dispersal habitat, and are not likely to support CTS. As a result, Project O&M at these locations is not likely to affect CTS or its potential habitat. Additionally, potential habitats in the spillway channel are not subject to any Project activities under normal O&M procedures; the spillway has released water only once since Project construction, in 1997. The spillway channel is included in lands permitted for grazing by the Districts, but access to the area is limited by steep slopes; no cattle were observed during field work.

Seven of the nine assessment sites located at Project recreational facilities met the 10-week criterion; one constructed swimming lagoon (F47) and 6 sewage treatment ponds (F45, F46, F49, F50, F51, and F52). Each of these sites is lined with either concrete or gravel and has none or minimal surrounding upland vegetation. While these sites all hold water for at least 10 weeks during the CTS breeding season, they are considered marginal habitat due to their lack of suitable adjacent upland habitat and are not likely to support CTS.

Ground squirrel control occurs annually at Project recreation facilities, which could limit the ground squirrel burrows available for CTS use, but CTS occurrence at the sites near these control efforts is not anticipated due to the lack of suitable adjacent upland habitat. Additionally, despite ground squirrel control, burrows were observed at six of the seven sites located at Project recreational facilities. Project O&M at recreational facilities is not likely to affect CTS or its habitat.

The Project is not located within USFWS designated critical habitat for CTS. The closest designated critical habitat is located approximately one mile southwest of the FERC Project Boundary in Stanislaus County. Therefore, Project O&M will have no impact on CTS critical habitat.

Project-related vegetation clearing and management is limited to roads, the three Project recreation areas, and Project facilities. As described above, available CTS habitat in the three Project recreation areas and facilities is considered marginal and are not likely to support CTS, and vegetation clearing and management is not likely to affect CTS or its habitat.

7.0 STUDY VARIANCES AND MODIFICATIONS

The study was conducted consistent with the FERC-approved ESA-listed Amphibians - California Tiger Salamander Study Plan (TR-08). No variances occurred.

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CALIFORNIA TIGER SALAMANDER

ATTACHMENT A

CTS SITE ASSESSMENT

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1.0 DON PEDRO RESERVOIR STUDY AREA

Potential study sites within the Project Boundary and within 1.24 miles of the Project Boundary were identified, characterized, and mapped based on review of existing aerial photography, NWI maps, and other pertinent resource agency GIS layers as available. Using available information, these aquatic habitat sites were characterized by habitat type (e.g., natural seasonal pond, stock pond, or creek), surface area, depth, seasonality, topography, and types of associated aquatic or emergent vegetation. Lands adjacent to the aquatic habitats were described by plant community, burrow presence, current land use, and an assessment of potential barriers to CTS movement. Following habitat mapping, the district selected potentially suitable aquatic habitats for field visits and additional characterization. Data were collected at each site sufficient to complete a site assessment as defined in the Interim Guidance (USFWS 2003) at each site where reconnaissance level examination was performed, along with photographs depicting habitat and other notable findings.

A total of 392 sites were assessed in the study area, including 73 sites within the Don Pedro Hydroelectric Project Boundary (Table 1.0-1). The Don Pedro Reservoir has a normal maximum water surface elevation of 830 ft, and has a capacity of 2,030,000 acre-feet of water. A study area extending 2.0 km (1.24 mile) from the FERC Project Boundary of Don Pedro Reservoir was evaluated for appropriate California tiger salamander (*Ambystoma californiense*) (CTS).

Sites were evaluated to determine if they met the criteria for suitable CTS breeding habitat, as outlined by the USFWS Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (2003). Those criteria are as follows:

- Standing bodies of fresh water (including natural and manmade (e.g., stock)) ponds, vernal pools, and other ephemeral or permanent water bodies which typically support inundation during winter rains and hold water for a minimum of 10 weeks in a year of average rainfall;
- Upland habitats adjacent and accessible to and from breeding ponds that contain small mammal burrows or other underground habitat that CTS depend upon for food, shelter, and protection form the elements and predation; and
- Accessible upland dispersal between occupied locations allow for movement between such sites.

Twenty nine sites representing potentially suitable California tiger salamander (CTS) breeding habitat were identified within the Project Boundary (Table 1.0-1). Six of these sites are pools within the spillway channel; these were not safely accessible and were evaluated from aerial photographs. Details of the site assessments are presented in Section 1.1. The site locations in Section 1.1 describe the closest horizontal distance landward of the normal maximum water surface elevation (NMWSE) of Don Pedro Reservoir.

Don Pedro Reservoir is likely a substantial barrier to CTS movement in the project area, especially at those sites located directly adjacent to the reservoir. Highways in the project vicinity, including State Route (SR) 49, 59, 120, and 132, could affect CTS movement, but are

not considered substantial barriers due to relatively low traffic volumes. The roads in the study area are generally small and may not be heavily traveled at night, when adult CTS migrate to and from breeding sites, and young-of-the-year disperse after metamorphosis.

Table 1.0-1. Aquatic habitat locations within the Project Boundary potentially suitable for CTS breeding habitat.

Site #	Habitat Feature	Land Ownership	Accessible for Field Assessment	Area / Depth[1]	Comments
F3	Stream, perennial (unnamed), near Marshes Flat Road	TID/MID	Yes	7.5 / 0.1	Includes stream and in-stream pool
F13	Stream, perennial (unnamed), 49er Bay	TID/MID	Yes	60 / 0.5	American bullfrog present Sierran treefrog present Fish present
F15	Stream, perennial (Big Creek), near Old Don Pedro Road	TID/MID	Yes	3 / 1.5	American bullfrog present Western toad present
F17	Stream, perennial, Poor Man's Gulch	BLM	Yes	60 / 0.8	
F22	Stream, perennial and associated pond, Big Creek Arm	TID/MID	Yes	10 / 0.1	American bullfrog present Fish present
F24	Stream, ephemeral, Upper Bay	BLM	Yes	10 / 1.25	
F25	Stream, perennial, Wreck Bay	TID/MID	Yes	3 / 0.2	American bullfrog present
F30	Stream, perennial, Kanaka Creek, near Jacksonville Road	BLM/ TID/MID	Yes	15 / 0.5	
F35	Stream, perennial, Woods Creek	BLM	Yes	200 / 0.75	American bullfrog present Fish present
F36	Stream, seasonal (unnamed) , near Molina Street	TID/MID	Yes	8 / 0.75	
F39	Stream, seasonal (unnamed), 49er Bay	Private/Other	Yes	0.25 bank full / 0.1	
F40	Pond, seasonal (unnamed), near SR 132	TID/MID	Yes	14,300 / >2	Sierran treefrog present
F41	Pond, perennial, near SR 132	TID/MID	Yes	7.5 / 0.1	Sierran treefrog adults present
F43	Pond, perennial, near Fleming Meadow Recreation Area	TID/MID	Yes	9,900 / >2	
F53	Stream, seasonal (unnamed), near Hoyito Circle	TID/MID	Yes	24 / 2	
F60	Pond, seasonal, near Jacksonville Road	BLM	Yes	650 / >1	American bullfrog present
F68	Stream, seasonal (unnamed)	TID/MID	Yes	5 bank full / >2	
F75	Stream, seasonal (unnamed)	TID/MID	Yes	24 / 0.5	American bullfrog present upstream

Site #	Habitat Feature	Land Ownership	Accessible for Field Assessment	Area / Depth[1]	Comments
F77	Pool in spillway channel	TID/MID	Yes	547 / >2	
F78	Pool in spillway channel	TID/MID	Yes	250 / >2	Unidentified frog species present
F80	Pool in spillway channel	TID/MID	Yes	6,500 / >2	
F81	Stock pond, near Bonds Flat Road	TID/MID	Yes	3,565 / 2	
F82	Pool in spillway channel	TID/MID	No	1,325 / unknown	
F83	Pool in spillway channel	TID/MID	No	1,800 / unknown	
F84	Stream, perennial (Big Creek), crosses La Grange Road	TID/MID	Yes	16 / 0.75	
F85	Pool in spillway channel	TID/MID	No	1,345 / unknown	
F86	Pool in spillway channel	TID/MID	No	3,250 / unknown	
F87	Pool in spillway channel	TID/MID	No	1,300 / unknown	
F88	Pool in spillway channel	TID/MID	No	1,350 / unknown	

[1] Total surface area (m^2) and depth (cm) of aquatic habitat; for streams, dimensions are maximums of pool habitats.

Other aquatic habitats within the Project Boundary that do not represent potential habitat for CTS include the reservoir itself, moderate to high gradient perennial and seasonal streams, and seasonal wetlands that are too small and/or hold water for an insufficient period. Details regarding these unsuitable sites are presented in the Study Report for ESA-Listed Amphibians – California Red-Legged Frog (TID/MID 2013). Photographs illustrating the types of aquatic habitats in the Project Boundary and the surrounding 1.24 mile (mi) area are presented in Section 1.2.

Land ownership within the 1.24-mile study area is principally MID, TID, and BLM, with some private and other land. Existing land uses include ranching, limited residential development and recreation. Uplands in the study area consist of blue and live oak woodland, oak-foothill pine, scrub-shrub chaparral, and annual grassland. Much of the terrain is rugged and was inaccessible for field assessments due to private property restrictions, steep slopes, and lack of roads. Potential barriers to CTS dispersal include steep terrain, highways, including State Route (SR) 120, SR 59, SR 139, and SR 49, and Don Pedro Reservoir. Five historic CTS locations occur within the vicinity of the project. All occurrences are assumed to be extant.

Outside of the Project Boundary, 15 of the 21 field assessed aquatic habitats were identified as potentially suitable for CTS breeding habitat within the 1.24 mi radius Don Pedro Reservoir study area. The remaining 297 sites were assessed from a combination of aerial photographs and NWI maps. Of the aerially assessed sites, 191 were determined to hold water for at least 10 weeks during the CTS breeding seasons, but the presence of suitable upland habitat could not be

determined. Characteristics of site outside of the Project Boundary, as determined from aerial photographs, NWI maps, and field assessments, are summarized in Section 1.2.

1.1 Sites Potentially Suitable for CTS within Project Boundary

Site F3

F3

F3 is a freshwater pond formed at the confluence of three perennial tributaries to Don Pedro Reservoir, located east of SR 182, 65 m east of Don Pedro Reservoir, and within the FERC Project Boundary. NWI data for the area depict a palustrine, unconsolidated bottom, permanently flooded, diked/impounded (PUBHh) wetland feature in the area of the site. SSURGO data classify soils in this location as Rock outcrop-Henneke-Delpiedra.

The site was assessed on February 8, 2012. The bank full width was estimated at 1.5 m with a maximum depth of 0.5 m. The stream gradient was approximately 3 percent. Pools measuring up to 5 m x 1.5 m and 0.1 m deep were present at the site. Non-pool habitat was made up of riffles. Substrate consisted of silt. Banks were gently sloping with an incised vegetated channel. The dominant emergent and margin vegetation was grass with no overhanging vegetation present. Surrounding upland habitat consisted of blue oak pastureland. A juvenile American bullfrog was observed during the survey. Numerous burrows measuring approximately 2 inches in diameter were present in the upland area.

The nearest known CTS occurrence is located 2.9 miles west. F3 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F13

F13

F13 is a 736-m-long section of an unnamed perennial tributary to 49er Bay, located 15 m south of Old Don Pedro Road, partially below the high water line of Don Pedro Reservoir and within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, seasonally flooded (R4SBC) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 19, 2012. F13 is a series of pools within a stream and is not located near any other sites. The pools and stream were fed by two smaller streams, one perennial and one seasonal. The bank full width was 8 m with a depth of 1 m. The stream gradient was 2 - 4 percent. Pools measuring up to 20 m x 3 m and 0.5 m deep were present in the stream. Non-pool

habitat consisted of low gradient run and riffle. The substrate was made up of organic matter, soil, and some subangular cobbles. Stream banks were mainly low gradient vegetated soil, and those around non-pool habitat were undercut by the stream. Emergent vegetation was made up of rushes, grasses, forbs, and submerged pondweed with no vegetation overhanging the site. Upland habitat was made up of oak savannah with 60 percent canopy cover. Larval western toads (*Anaxyrus boreas*), adult and juvenile American bullfrogs, larval sierran treefrog, and fish were all observed during the site visit. A small dirt road crossed the stream within the site. A cluster of burrows 4 - 5 inches in diameter were observed in the steep sections of the bank.

The nearest known CTS occurrence is located 5.1 miles south. F13 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F15

F15

F15 is a 1,218-m-long section of Big Creek and associated tributaries, located partially below the high water line of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, seasonally flooded (R4SBC) wetland feature from the mouth at the reservoir upstream. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 17, 2012. Big Creek is a large perennial tributary to Don Pedro Reservoir in a landscape characterized by bedrock outcroppings. The bank full width of the stream was observed to be 7 - 8 m with a depth of 0.5 m. The stream gradient was 2 - 4 percent. Pools measuring up to 1 m x 3 m and 1.5 m deep were present in the stream. Non-pool habitat consisted of riffle, run, and cascade. The substrate was made up of bedrock, gravel, cobble, and boulder. Stream banks were low gradient near the stream, turning to steeper rolling hills. Emergent and margin vegetation were a combination of grasses and forbs with no vegetation overhanging the site. Upland habitat was a mixed oak and foothill pine savannah with approximately 45 percent canopy cover. Juvenile and larval American bullfrogs were present throughout the site, and 3 western toads were observed in amplexus during the survey. A bald eagle was observed feeding on a bass near the stream with a juvenile or subadult nearby. Horses were observed grazing near the stream. Two burrows were present in the hillside near the stream, measuring between 1.5 and 2 inches in diameter.

The nearest known CTS occurrence is located 6.3 miles south. F15 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F17

F17

F17 is a 187-m-long section of Poor Man's Gulch, below the high water line of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, seasonally flooded (R4SBC) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 9, 2012. F17 is a section of a perennial stream north of F65. The bank full width was 6 m with a depth of 1.5 - 2 m. The stream gradient was 2 - 4 percent. Pools measuring up to 10 m x 6 m and 0.8 m deep were present in the stream. Non-pool habitat was a combination of cascade, step-pool, run, and low gradient riffle. The substrate was made up of bedrock, boulder, and subangular cobble. Stream banks were a mix of confined, steep rocky soil and low gradient vegetated soil. Emergent vegetation consisted of grasses with foothill pine overhanging. Upland habitat was made up of foothill pine woodland and toyon (*Heteromeles arbutifolia*). No fish or amphibians were observed; however, fish are known to be present in Don Pedro Reservoir. Burrows measuring 2.5 inches in diameter were sparse but present in clusters.

The nearest known CTS occurrence is located 9.3 miles south. F17 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F22

F22

F22 is a 145-m-long section of an unnamed perennial tributary to the Big Creek arm of Don Pedro Reservoir, located 10 m north of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, seasonally flooded (R4SBC) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 19, 2012. F22 is a perennial stream with an associated seasonal pond that is not located near any other sites. The bank full width of the stream was 0.1 m with a depth of 1 m. The stream gradient was 2 - 4 percent. Pools measuring up to 2 m x 5 m and less than 0.1 m deep were present in the stream. Non-pool habitat consisted of step pool, cascade pool, and low riffle. The substrate was made up of organic matter and soil with bedrock outcroppings. Stream banks varied from low gradient to steeper areas of vegetated soil with some bedrock outcroppings. The seasonal pool covered an area of 20 m^2 and had a maximum depth of 0.3 m. The banks of the pond were steeply sloped gravel and bedrock with some low gradient areas that may connect to other ponds that were dry at the time of the

survey. Emergent vegetation at both the stream and the pond was a mix of grasses and forbs, with no overhanging vegetation. Vegetation in the margin was mostly grasses. Upland habitat was made up of a gently sloping meadow with oak above the high water line of the reservoir. American bullfrogs and small fish were observed at the site during the survey. Multiple burrows measuring 2 inches in diameter were present along the bank and three additional 5 - 7 inches in diameter burrows were associated with a tree trunk.

The nearest known CTS occurrence is located 6.2 miles south. F22 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F24

F24

F24 is a 77-m-long section of an ephemeral tributary to the upper bay of Don Pedro Reservoir, below the high water line of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, seasonally flooded (R4SBC) wetland feature in the area of the site. SSURGO data classify soils in this location as Rock outcrop-Henneke-Delpiedra.

The site was assessed on June 19, 2012. F24 is in east of the group of seven other ephemeral tributaries to the upper bay of Don Pedro Reservoir. The site is adjacent to a large constructed gravel slope and beneath power lines. The bank full width was 3 m with a depth of 1.25 m. The stream gradient was 6 percent. The stream was dry at the time of survey, but it was assumed that pools up to 5m x 2m would be present during flow conditions. Non-pool habitat was assumed to be a mix of cascade and riffle. The substrate was made up of soil and gravel with bedrock in the upstream portion. Stream banks were steeply incised and made up of a combination of soil and gravel with bedrock upstream. Emergent and margin vegetation consisted of desiccated grasses and forbs, with no overhanging vegetation. Upland habitat was a mix of pine and oak with 60 percent canopy cover. No fish or amphibians were observed; however, fish are known to be present in Don Pedro Reservoir. No evidence of burrowing mammals was present.

The nearest known CTS occurrence is located 7.6 miles south. F24 holds water for at least 10 weeks during the CTS breeding season. The site is situated in suitable upland habitat, but no underground retreats were observed during the survey.

Site F25

F25

F25 is a 54-m-long section of an unnamed perennial tributary to Don Pedro Reservoir, located below the high water line of Don Pedro Reservoir and within the FERC Project Boundary in Wreck Bay. NWI data for the area depict a riverine, intermittent, streambed, temporarily flooded (R4SBA) wetland feature in the area. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on June 19, 2012. The bank full width was estimated at 1.5 m. The stream depth at the bank full width was determined to be 0.75 m. The stream gradient was 2 percent. Pools measuring up to 1 m x 3 m and 0.2 m deep were present in the stream. Non-pool habitat was a mix of riffle and run. The substrate consisted of soil, bedrock, gravel, and cobbles. The banks of the channel were made up of moderately sloping bedrock. Emergent and margin vegetation consisted of desiccated grasses and forbs with no overhanging vegetation. Submerged algae was abundant in the stream. Larval American bullfrogs and small fish were present. Surrounding upland habitat included mixed oak and pine woodland with 60 percent canopy cover. A cluster of 1 inch diameter burrows was observed on the south bank of the stream, near the reservoir

The nearest known CTS occurrence is located 8.2 miles south. F25 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F30

F30

F30 is a 321-m-long section of a perennial tributary to Don Pedro Reservoir, Kanaka Creek, located south of Jacksonville Road, partially below the high water line of Don Pedro Reservoir, and within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, seasonally flooded (R4SBC) wetland feature from the mouth at the reservoir upstream including Site F30. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 9, 2012. F30 is located northwest of Site F32. The bank full width was estimated at 2 m with a maximum depth of 0.6 m. The stream gradient was 4 percent. Pools with a maximum size of 5 m x 3 m and 0.5 m deep were present in the stream. Non-pool habitat was a mix of cascade, step pool, and riffle. The substrate consisted of boulders, bedrock, cobble, and gravel. The banks of the channel were steep, rocky, and confined above the high water line. Below the high water line the banks were made up of channelized vegetated soil with a moderate slope. Dehisced forbs were the dominant vegetation and were overhanging the stream

in combination with buckthorn and willow. Emergent vegetation was made up of water purslane (*Ludwigia* sp.), beggar-tick (*Bidens* sp.), and algae. Margin vegetation consisted of annual and perennial grasses and asters (*Asteracea*) and vetch (*Vicia* sp). Surrounding upland habitat included foothill pine and interior live oak. No fish or amphibians were observed; however, fish are known to be present in Don Pedro Reservoir. Burrows measuring 1 - 3 inches were densely concentrated in the hillsides surrounding the site.

The nearest known CTS occurrence is located 11.3 miles south. F30 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F35

F35

F35 is a 173-m-long section of Woods Creek, located below the high water line of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a lacustrine, littoral, unconsolidated shore, seasonally flooded, diked/impounded (L2USCh) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 18, 2012. F35 is a perennial tributary to Don Pedro Reservoir with areas of large ponding that is not located near any other sites. The bank full width of the stream was 20 m with a depth of greater than 2 m. The stream gradient was 0 - 2 percent. Pools measuring up to 20 m x 10 m and less than 0.75 m deep were present in the stream. Non-pool habitat consisted of run and riffle. The substrate was made up of bedrock, round and subangular cobbles, and large gravel. The stream bank was low gradient soil sloping to a steeper hillside. Emergent vegetation was dominated by grasses, but also included sedges and cattail (*Typha* sp.), with dispersed willow overhanging the stream and grasses and rushes in the margin. Submerged vegetation included pondweed and algae. Upland habitat was a mix of pine and oak scrub-shrub with chamise (*Adenostoma fasciculatum*). American bullfrogs and small fish were observed at the site during the survey. Shade and overhead cover of the stream were extremely limited. An adult American bullfrog was observed near the ponded section of Woods Creek during the survey. Clusters of burrows measuring 2 - 3 inches in diameter were present on the bank of the stream, and had been recently inundated by high flows.

The nearest known CTS occurrence is located 13.7 miles southwest. F35 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F36

F36

F36 is a 78-m-long section of a seasonal unnamed tributary to Don Pedro Reservoir, located below the high water line of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a lacustrine, limnetic, unconsolidated bottom, permanently flooded, diked/impounded (L1UBHh) wetland feature in the area of the site. SSURGO data classify soils in this location as Rock outcrop-Henneke-Delpiedra.

The site was assessed on April 19, 2012. F36 is a small seasonal stream with areas of rock and debris jam creating cascades and pools. The bank full width of the stream was 2 m with a depth of 0.25 m. The stream gradient was 2 - 4 percent. Pools measuring up to 2 m x 4 m and less than 0.75 m deep were present in the stream. Non-pool habitat consisted of run, riffle, and cascade. The substrate was made up of bedrock, boulder, gravel, and sand. The stream bank varied from moderately sloped vegetated soil with some areas undercut by the stream to steep bedrock outcroppings. Emergent and margin vegetation was dominated by forbs, but also included grasses and monkey flower (*Mimulus* sp.). No vegetation was overhanging the stream. Upland habitat was dominated by chamise (90 percent canopy cover) with some scattered oak and clusters of foothill pine (20 percent canopy cover). No fish or amphibians were observed; however, fish are known to be present in Don Pedro Reservoir. No evidence of burrowing mammals was present.

The nearest known CTS occurrence is located 2.7 miles southwest. F35 holds water for at least 10 weeks during the CTS breeding season. The site is situated in suitable upland habitat, but no underground retreats were observed during the survey.

Site F39

F39

F39 is a 24-m-long section of a seasonal unnamed tributary to Don Pedro Reservoir's 49er Bay, 185 m northwest of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a riverine, intermittent, streambed, temporarily flooded (R4SBA) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 19, 2012. F39 is a seasonal stream in a depression located within a hilly landscape. Although the stream was mostly dry at the time of the survey, the bank full width was estimated to be 0.25 m with a depth of 0.1 m. The stream gradient was 1 percent. No pools were present in the stream, and habitat consisted of low-gradient run. The substrate was made up of soil and organic matter. Stream banks were low

gradient, vegetated soil. Emergent vegetation was a mix of forbs and grasses with no overhanging vegetation. Upland habitat was oak savannah with approximately 40 percent canopy cover. Residential homes and associated structures were located nearby the site. No amphibians or fish were observed during the survey. Three or four burrows, measuring 5 - 6 inches in diameter, were present near the stream and the adjacent stream.

The nearest known CTS occurrence is located 4.5 miles south. F39 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F40

F40

F40 is a palustrine freshwater pond, located south of US Hwy 132, below the high water line of Don Pedro Reservoir and within the FERC Project Boundary. NWI data for the area depict a palustrine, unconsolidated shore, seasonally flooded, diked/impounded (PUSCh) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 8, 2012. F40 is a pond located above a culvert within a gently sloping drainage. The site covers approximately 14,300 m^2; the maximum observed water depth was greater than 2 m; the bank full depth was greater than 2 m. The pond was dry at the time of assessment. Substrate consisted of soil, silt, bedrock, and boulders. Emergent vegetation consisted of sparse grass and forbs, the dominant vegetation in the area. No vegetation was overhanging the pond. Sierran treefrog was heard calling but was not observed. Upland habitat was made up of blue oak pastureland. Burrows measure 2 - 4 inches in diameter were abundant in clusters along the banks and upslope.

The nearest known CTS occurrence is located 2.6 miles west. Hydrological conditions at F40 vary greatly from year to year depending on reservoir operations. In most years F40 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F41

F41

F41 is a freshwater pond formed at the confluence of three perennial tributaries to Don Pedro Reservoir, located east of SR 182, 65 m east of Don Pedro Reservoir, and within the FERC Project Boundary. NWI data for the area depict a palustrine, unconsolidated bottom, permanently flooded, diked/impounded (PUBHh) wetland feature in the area of the site. SSURGO data classify soils in this location as Rock outcrop-Henneke-Delpiedra.

The site was assessed on February 8, 2012. The bank full width was estimated at 1.5 m with a maximum depth of 0.5 m. The stream gradient was approximately 3 percent. Pools measuring up to 5 m x 1.5 m and 0.1 m deep were present at the site. Non-pool habitat was made up of riffles. Substrate consisted of silt. Banks were gently sloping with an incised vegetated channel. The dominant emergent and margin vegetation was grass with no overhanging vegetation present. Surrounding upland habitat consisted of blue oak pastureland. A juvenile American bullfrog was observed during the survey. Numerous burrows measuring approximately 2 inches in diameter were present in the upland

The nearest known CTS occurrence is located 2.8 miles west. F41 holds water for at least 10 weeks during the CTS breeding season. The site is situated in suitable upland habitat with underground retreats present.

Site F43

F43

F43 is a palustrine, freshwater pond created by a natural impoundment within West Big Fork Creek, located below the high water line of Don Pedro Reservoir and within the FERC Project Boundary. NWI data for the area depict a palustrine, unconsolidated bottom, permanently flooded, diked/impounded (PUBHh) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 17, 2012. F43 is adjacent to site F21. The site covers approximately 9,900 m^2; the maximum observed water depth was greater than 2 m; the bank full depth was greater than 2 m. Substrate consisted mostly of organic matter and silt with some small gravel. The banks of the pond were mostly vegetated and varied from low grade to somewhat steep with angular bedrock outcroppings. Emergent vegetation was dominated by grasses, but included a mix of grasses and forbs with willows overhanging. The margins were vegetated with grasses and forbs. An abundance of large woody debris was present at the time of survey. Upland habitat consisted of rolling hills dominated by oak with a few large willows near the pond. An unidentified frog species jumped into the pond while vocalizing and a western pond turtle was seen basking on the opposite side of the pond. No evidence of burrowing mammals was present.

The nearest known CTS occurrence is located 6.0 miles south. F43 holds water for at least 10 weeks during the CTS breeding season. The site is situated in suitable upland, but no underground retreats were observed during the survey.

Site F53

F53

F53 is a 62-m-long section of a seasonal unnamed tributary to Don Pedro Reservoir, 8 m northwest of Don Pedro Reservoir and within the FERC Project Boundary. NWI data for the area depict a palustrine, scrub-shrub temporarily flooded (PSSA) wetland feature in the area of the site SSURGO data classify soils in this location as Rock outcrop-Henneke-Delpiedra.

The site was assessed on April 19, 2012. F53 is a seasonal stream surrounded by steep bedrock cliffs with vegetated slopes. The bank full width of the stream was 4 m with a depth of 0.25 m. The stream gradient was 10 percent. Pools, measuring up to 4 m x 6 m and 2 m deep were present in the stream. Non-pool habitat consisted of riffle, run, and cascade. The substrate was made up of gravel, subangular cobble, organic matter, and bedrock. Stream banks were mostly steep bedrock with some lower gradient areas of vegetated soil. Emergent vegetation was dominated by forbs, but also contained some grasses. Overhanging vegetation consisted of oak, beggar-tick, and foothill pine that were growing on the steep slopes above the stream. Upland habitat was mixed oak and foothill pine with approximately 30 percent canopy cover and some tickbush shrub with approximately 10 percent canopy cover. One burrow measuring 3 inches in diameter was observed at the site.

The nearest known CTS occurrence is located 2.4 miles southwest. It is unknown if F53 holds water for at least 20 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F60

F60

F60 is a seasonal, freshwater pond, located below the high water line of Don Pedro Reservoir, within the FERC Project Boundary. NWI data for the area depict a palustrine, emergent, temporarily flooded, diked/impounded (PEMAh) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 18, 2012. F60 is a pond fed by a seasonal branch of a creek. The site covers approximately 650 m^2; the maximum observed water depth was greater than 1 m; the bank full depth was greater than 2 m. Substrate consisted of soil, organic matter, and subangular cobble. The banks of the pond were flat but adjacent to a steep hillside. Emergent vegetation was made up of grasses, with cocklebur, grasses and forbs in the margin around the entire pond. Cockleburs were the dominant vegetation in the area and two smaller willows were overhanging the site.

Submerged vegetation consisting of duckweed and algae was present in the upstream end of the pool. Upland habitat was a mix of Manzanita and chamise with some oak and foothill pine with approximately 20 percent canopy cover. Adult, juvenile, and many larval American bullfrog were observed during the survey. No evidence of burrowing mammals was present.

The nearest known CTS occurrence is located 14.0 miles southwest. F60 holds water for at least 10 weeks during the CTS breeding season. The site is situated in suitable upland, but no underground retreats were observed during the survey.

Site F68

F68

F68 is a 34-m-long section of a seasonal unnamed tributary to Don Pedro Reservoir, located partially below the high water line of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area depict a palustrine, emergent, saturated (PEMB) wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 19, 2012. F68 flows over a valley created by bedrock outcropping within a vegetated hillside. The bank full width of the stream was observed to be 5 m with a depth of 1 - 3 m. The stream gradient was 5 - 12 percent. Pools measuring up to 1 m x 3 m and 0.25 m deep were present in the stream. Non-pool habitat consisted of high gradient riffle. The substrate was made up of bedrock with some soil and gravel. Stream banks were moderately sloping with vegetated soil lining the bedrock. Emergent vegetation was a mix of sparse grass and forbs with thick willows in the stream and overhanging the site. Upland habitat was made up of oak savannah with 30 - 60 percent canopy cover. A large metal pipe was observed in the stream channel. Clusters of burrows measuring 2 - 3 inches in diameter were present on the bank, but had been inundated by high flows.

The nearest known CTS occurrence is located 3.5 miles southeast. F68 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F75

F75

F75 is a 49-m-long section of a seasonal unnamed tributary to Don Pedro Reservoir, located 110 m northeast of Don Pedro Reservoir within the FERC Project Boundary. NWI data for the area do not show a wetland feature at the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on April 19, 2012. F75 flows in a depression through a hilly, vegetated area. The bank full width of the stream was observed to be 4 m with a depth of 0.25 m. The stream gradient was 0 -1 percent. Pools measuring up to 4 m x 6 m and 0.5 m deep were present in the stream. Non-pool habitat consisted of run and low gradient riffle. The substrate was made up of soil and organic matter with a few subangular cobbles. Stream banks varied from low to higher gradient, somewhat incised, and vegetated throughout the stream channel. Emergent vegetation was a mix of grasses, rushes, and forbs with no vegetation overhanging the site. Upland habitat was made up of oak savannah with 60 percent canopy cover. A juvenile American bullfrog was observed in a pool upstream of the site. Fences were present at the site, but grazing was still occurring along the stream. No evidence of burrowing mammals was present.

The nearest known CTS occurrence is located 4.8 miles south. F75 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. No underground retreats were observed during the survey, but suitable upland habitat may be present.

Site F77

F77

F77 is a series of perennial, freshwater ponds, located east of Bonds Flat Road, 110 m west of Don Pedro Reservoir, within the FERC Project Boundary. NWI data for the area do not show a wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 8, 2012. F77 is located east of site F78, within the spillway channel. The site covers 547 m^2 with ponds ranging from small (1 m x 0.5 m) to very large (30 m x 15 m) within the scoured bedrock channel. Observed water depth ranged from 0.1 m at small ponds to greater than 2 m at large ponds; the bank full depth was estimated to be greater than 3 m. The substrate was made up of bedrock and boulders. Emergent vegetation consisted of cattail, monkeyflower, bulrush, and primrose (*Ludwigia* sp.) with no vegetation overhanging the site or in the margin. Upland habitat was made up of angular cobble with no canopy over the site. An unidentified frog, red-wing blackbirds (*Agelaius phoeniceus*), and waterfowl were observed at the site.

American bullfrogs have been observed at the site in the past. Burrows measuring 2 inches in diameter were sparsely distributed near the pond and more densely distributed along the gravel road.

The nearest known CTS occurrence is located 2.7 miles east. F77 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F78

F78

F78 is a perennial, freshwater pond, located west of Bonds Flat Road, 200 m west of Don Pedro Reservoir, within the FERC Project Boundary. NWI data for the area do not show a wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 8, 2012. F77 is located east of site F78, within the spillway channel. The site covers approximately 250 m^2; the maximum observed water depth was greater than 2 m; the bank full depth was estimated to be 4 m. Emergent vegetation consisted of cattail, bulrush, primrose, and fern (*Azolla* sp.) with no vegetation overhanging the site. Some deciduous trees were present in the margin. Upland habitat was made up of oak pastureland and the nearby highway. Small frogs, likely American bullfrogs, were present at the site along with various waterfowl. Some burrows measuring approximately 3 inches in diameter were observed upslope of the site, along the road.

The nearest known CTS occurrence is located 2.8 miles southeast. F78 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F80

F80

F80 is a perennial, freshwater pond, located southwest of Bonds Flat Road, 480 m southwest of Don Pedro Reservoir, within the FERC Project Boundary. NWI data for the area do not show a wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 8, 2012. F80 is located south of site F79, connected to the Tuolumne River. The site covers approximately 6,500 m^2; the maximum observed water depth was greater than 2 m; the bank full depth was greater than 4 m. Banks of the pond were vegetated and varied from steep to sloping. The substrate consisted entirely of bedrock. Emergent vegetation was made up of cattail and some sedges with sparse buckeye overhanging the site. Upland grasses and vetch

were present in the margin. Dominant species at the site were cattail and upland grasses. Upland habitat was blue oak rangeland with no canopy cover at the site. Fish presence is highly likely in the pond due to the connection with the Tuolumne River, although no fish were observed at the time of the survey. Waterfowl and red wing blackbirds were observed during the survey. Burrows measuring 2 - 3 inches in diameter were sparsely distributed in the upland area.

The nearest known CTS occurrence is located 2.8 miles east. F80 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

Site F81

F81

F81 is a man-made, freshwater stock pond above a small dam, located southwest of Bonds Flat Road, 800 m southwest of Don Pedro Reservoir, within the FERC Project Boundary. NWI data for the area do not show a wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 8, 2012. F81 is located southwest of site F80, and is generally manually filled by the Tuolumne Irrigation District each year at the request of a local cattle rancher. The site covers approximately 3,565 m^2; the maximum observed water depth was 2 m; the bank full depth was greater than 4 m. The substrate consisted of soil with a limited amount of bedrock. Emergent vegetation consisted of primrose and bulrush with sparse blue oak overhanging the site. Grasses were the dominant vegetation at the site. Upland habitat was blue oak pastureland with approximately 20 percent canopy cover on the northeast side of the site and may represent potentially suitable CTS breeding habitat. Clusters of burrows measuring 3 - 6 inches in diameter were observed in the bank upslope of the pond.

The nearest known CTS occurrence is located 2.6 miles south. It is unknown if F81 holds water for at least 10 weeks during the CTS breeding season. The site is situated in suitable upland habitat with underground retreats present.

Sites F82, F83, F85, F86, F87, and F88

F82, F83, F85, F86, F87, and F88 are all pools within the spillway channel that are connected via a seasonal stream during high flow conditions. All of the sites were determined to be inaccessible for assessment due to unsafe conditions. The sites are located in a bedrock lined canyon, south of Bonds Flat Road, within the FERC Boundary. NWI data for the area do not show a wetland feature in the area of the sites.

F82 covers approximately 1,325 m^2, is 2.6 miles southwest of the nearest known CTS occurrence. Emergent vegetation was present and willows were overhanging. Upland habitat was oak pastureland above a steep ravine and rock cliffs. F82 holds water for at least 10 weeks during the CTS breeding season and therefore represents potential CTS breeding habitat.

F83 covers approximately 1,800 m^2, is 2.5 miles southwest of the nearest known CTS occurrence. Emergent vegetation was present and willows were overhanging. Upland habitat was oak pastureland above a steep ravine and rock cliffs. F83 holds water for at least 10 weeks during the CTS breeding season and therefore represents potential CTS breeding habitat.

F85 covers approximately 1,345 m^2, is 2.5 miles southwest of the nearest known CTS occurrence. Emergent and aquatic vegetation was present and willows and shrubs were overhanging. Upland habitat was oak pastureland above a steep ravine and rock cliffs. F85 holds water for at least 10 weeks during the CTS breeding season and therefore represents potential CTS breeding habitat.

F86 covers approximately 3,250 m^2, is 2.4 miles southwest of the nearest known CTS occurrence. Emergent vegetation was present and willows were overhanging. Upland habitat was oak pastureland above a steep ravine and rock cliffs. F86 holds water for at least 10 weeks during the CTS breeding season and therefore represents potential CTS breeding habitat.

F87 covers approximately 1,300 m^2, is 2.3 miles southwest of the nearest known CTS occurrence. Emergent vegetation was present with oaks and willows overhanging. Upland habitat was oak pastureland above a steep ravine and rock cliffs. F86 holds water for at least 10 weeks during the CTS breeding season and therefore represents potential CTS breeding habitat.

F88 covers approximately1,350 m^2, is 2.2 miles southwest of the nearest known CTS occurrence. Emergent and aquatic vegetation were present with shrubs overhanging. Upland habitat was oak pastureland above a steep ravine and rock cliffs. F88 holds water for at least 10 weeks during the CTS breeding season and therefore represents potential CTS breeding habitat.

Site F84

F84

F84 is a 357-m-long section of a Big Creek, a perennial tributary to Don Pedro Reservoir that crosses and is adjacent to La Grange Road, within the FERC Project Boundary. NWI data for the area do not show a wetland feature in the area of the site. SSURGO data classify soils in this location as Whiterock-Rock outcrop-Auburn.

The site was assessed on February 8, 2012. F84 is made up of a pool within a stream running under La Grange Road through a culvert. The maximum observed water depth was0.75 m; the bank full width was 3 m with a depth of 2 m; the stream gradient was 0.5 percent. One large pool was present, measuring 8 m x 2 m and approximately 0.75 m deep. No non-pool habitat was present. The substrate consisted of cobbles, boulders, and a culvert. The banks were steep, eroded, and vegetated with grasses. Emergent vegetation included cattail, willow, and primrose with willow overhanging the site. Willow and grasses were present in the margin. The dominant vegetation at the site was willow. Upland habitat was blue oak pastureland with approximately 80 percent canopy cover from willow in water. Burrows measuring approximately 4 inches in diameter were present at the site.

The nearest known CTS occurrence is located 1.5 miles east. F84 holds water for at least 10 weeks during the CTS breeding season and may represent potentially suitable CTS breeding habitat. The site is situated in suitable upland habitat with underground retreats present.

1.2 Other Potentially Suitable Aquatic Habitats within Study Area

Table 1.2-1. Summary of sites (aquatic habitat locations) assessed for potential California tiger salamander breeding habitat within the Don Pedro Project study area (excluding sites within Project Boundary). (357 sites)

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N1	Pond, emergent	Yes	Emergent, aquatic, and margin vegetation present Oak and shrub overhanging	N/A
N2	Wetland, depression	No	No emergent vegetation present Oak and shrub overhanging Depression caused by road No standing water present	N/A
N3	Pond, forested shrub wetland	No	Emergent and aquatic vegetation present Shrub and some oak overhanging Large woody debris present	N/A
N4	Stream in emergent wetland, near SR 49	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N5	Pond, perennial, near SR 49	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N6	Pond, perennial, near Twist Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N7	Stream in emergent wetland, near Sims Road	No	Emergent vegetation present Willow overhanging	N/A
N8	Pond, perennial, near Perri Con Road	Yes	Emergent and aquatic vegetation present Shrub overhanging Pond surrounded by plastic fence	N/A
N9	Pond, perennial, in forested/shrub wetland	Yes	Emergent and margin vegetation present Pine and oak overhanging	N/A
N10	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N11	Pond, perennial	Yes	Emergent and margin vegetation present Shrub overhanging	N/A
N12	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N13	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N14	Wetland, forested/shrub	No	No emergent vegetation present Oak and shrub overhanging No standing water	N/A
N16	Pond, perennial	Yes	Emergent vegetation present Oak and pine overhanging	N/A
N18	Pond, seasonal, near Juniper Mine Road	No	Emergent vegetation present Oak overhanging No standing water in July	N/A
N19	Pond, perennial,	Yes	Emergent and aquatic vegetation present Oak and shrub overhanging	N/A
N20	Pond, perennial	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N21	Pond, perennial, near Stamp Mill Loop Road E	Yes	Emergent, aquatic and margin vegetation present	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
			Oak and shrub overhanging Large vegetated island takes up most of pond	
N22	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N23	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N24	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N25	Wetland, emergent	No	Emergent vegetation present Shrub overhanging	N/A
N27	Wetland, emergent	Yes	Emergent vegetation present No tree cover or overhanging vegetation Small pond present through year round	N/A
N29	Pond, perennial	Yes	Emergent vegetation present Some oak overhanging Bordered by dirt road on all sides	N/A
N32	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N33	Pond, perennial	Yes	Emergent, aquatic and margin vegetation present Oak and shrub overhanging	N/A
N34	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Densely vegetated throughout	N/A
N35	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N36	Wetland, emergent, near Hidalgo Street and Banderilla Drive	No	Emergent vegetation present No tree cover or overhanging vegetation Passes through a school that is mostly impervious surface	N/A
N37	Wetland, emergent with pond, near Castillo Way	Yes	Emergent vegetation present Oak and shrub overhanging Perennial pond present near El Prado Road Wetland follows small stream that parallels Castillo Way	N/A
N39	Wetland, emergent	No	Emergent vegetation present Oak and shrub overhanging	N/A
N40	Pond, perennial, near Marshes Flat Road	Yes	Emergent vegetation present Oak and shrub overhanging Connected to N41 and reservoir by small stream	N/A
N41	Pond, perennial, near Marshes Flat Road	Yes	Emergent and aquatic vegetation present Oak and shrub overhanging Connected to N40/N53 and reservoir by small stream	N/A
N42	Wetland, emergent, near Merced Falls Road	No	Emergent vegetation present Oak overhanging	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N43	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation Residential driveway	N/A
N44	Wetland, emergent, near SR 132 and Las Palmas Way	Yes	Emergent and margin vegetation present Oak and shrub overhanging Wetland created between two branches of seasonal stream channel	N/A
N47	Wetland, emergent, near El Prado Road	No	Emergent and margin vegetation present Oak and shrub overhanging on east side Wetland in seasonal stream channel Crosses Merced Falls Road	N/A
N48	Wetland, forested/shrub, near Marshes Flat Road	No	Emergent vegetation present Oak and shrub overhanging Directly connected to N41/N49	N/A
N49	Wetland, forested/shrub, near Marshes Flat Road	Yes	Emergent and margin vegetation present Oak, pine, and shrub overhanging Directly connected to N41 (pond)	N/A
N50	Pond, perennial, near Alamo Road	Yes	Emergent and margin vegetation present Oak and rushes overhanging	N/A
N51	Freshwater emergent wetland, near Merced Falls Road	No	Emergent vegetation present Oak overhanging No standing water	N/A
N52	**Pond, perennial, near Marshes Flat Road and Hatch Creek Road**	**Yes**	**Size: 40m x 53m** **Emergent vegetation: grass, forbs, duckweed** **Overhanging: blackberry, toyon, mountain mahogany, tree of heaven** **Substrate: soil and organic matter** **Cluster of 7 – 10 burrows about 1.5 inch in diameter present** **Field assessed on 4/17/12** **Sierra treefrog present** **American bullfrog present**	**0793 - 0812**
N54	Pond, seasonal, near Azucena Court	No	Emergent vegetation present Oak and shrub overhanging	N/A
N55	Pond, seasonal , near Penole Peak Road	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N56	Pond, perennial	Yes	Emergent vegetation present Oak and pine overhanging	N/A
N57	Stream, perennial with emergent wetland, near El Cerrito Way	Yes	Emergent vegetation present Oak and shrub overhanging	N/A
N60	**Pond, perennial, near Marshes Flat Road**	**Yes**	**Size: 33m x 26m** **Emergent and margin vegetation: forbs and grasses** **Overhanging: redbud** **Substrate: soil and organic matter** **Cluster of 2 or 3 burrows 1-2 inches in diameter present** **Field assessed on 4/17/12** **Sierra treefrog present**	**0777 - 0782**
N61	Pond, perennial, near	Yes	No emergent vegetation	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
	Arbolada Drive		Oak and pine overhanging	
N62	Pond, perennial, near Hoyito Circle	Yes	Emergent and margin vegetation present Oak and shrub overhanging Directly connected to F53	N/A
N63	Pond, perennial, near Las Palmas Way	Yes	Emergent vegetation present No tree cover or overhanging vegetation Pond near school	N/A
N67	Pond, perennial, near Buena Vista Court	Yes	Emergent and margin vegetation present Oak and, pine, and shrub overhanging Adjacent to N68/N72 (pond)	N/A
N69	Pond, perennial, near Penole Peak Road	Yes	Emergent and margin vegetation present Oak overhanging	N/A
N71	Stream, perennial, adjacent to SR 132	Yes	Emergent vegetation present Oak overhanging Vegetated throughout stream channel	N/A
N73	Wetland, emergent, around ephemeral stream channel stream channel, near Madreselva Street	No	Emergent vegetation present Oak and shrub overhanging No standing water present	N/A
N74	Wetland, emergent, near Merced Falls Road	No	No emergent vegetation present No tree cover or overhanging vegetation Field adjacent to baseball diamond near school	N/A
N75	**Stream, perennial**	**Yes**	**Bankfull width: 2 – 3 m; gradient: 2 – 4 percent** **Pool size: 1m x 10m** **Non-pool habitat: run, riffle, step-pool, cascade** **Emergent Vegetation: forbs and grasses** **Overhanging: oak** **Substrate: soil, organic matter, boulders, cobbles, gravel** **Banks are steep and deeply incised with vegetation** **Scattered burrows 1 – 2 inches in diameter present** **Field assessed on 4/17/12** **Sierra treefrog present** **Within 1 mile of historic California red legged frog location**	**0783 - 0790**
N76	Stock pond, perennial	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N77	Pond, perennial, near Old Don Pedro Road	Yes	Emergent vegetation present Oak overhanging	N/A
N78	**Stream, perennial, Sixbit Gulch**	**Yes**	**Bank full width: 3m** **Depth at bank full: 0.5m** **Size of pools: 2m x 4m** **Maximum depth of pool: 0.5m** **Emergent vegetation: sedges, grasses, forbs** **Overhanging: willow and Western**	**1681 - 1688**

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
			spicebush **Substrate: bedrock and cobbles** **No burrows present** **Field assessed on 6/21/12** **Fish present**	
N79	Stream, seasonal, near Red Hills Road	Yes	Emergent and margin vegetation present Some oak overhanging Wetland follows stream channel	N/A
N81	Wetland, emergent, near SR 49	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N82	**Pond, perennial, near Shawmut Road**	**Yes**	**Size: 480m x 20m** **Emergent vegetation: rushes, plantego, grass** **No overhanging vegetation** **Substrate: soil and organic matter** **Abundant burrows with diameter 1.5 – 3 inches in diameter scattered throughout the field adjacent to wetland** **Field assessed on 4/18/12**	**0987 – 0992**
N83	Wetland, forested/shrub	No	No emergent vegetation present Oak and shrub overhanging No standing water	N/A
N84	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N85	Stream, perennial with emergent wetland, near Old Don Pedro Road	Yes	Emergent and margin vegetation present Oak overhanging	N/A
N87	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak and shrub overhanging Connected to Don Pedro Reservoir by small stream	N/A
N89	Pond, perennial	Yes	Emergent vegetation present Some oak overhanging	N/A
N90	Wetland, emergent	No	Emergent vegetation present No tree cover or overhanging vegetation Connected to Big Creek by intermittent stream channel	N/A
N91	Pond, perennial, near Old Don Pedro Road	Yes	Emergent and aquatic vegetation present Oak overhanging	N/A
N92	Wetland, emergent	No	No emergent vegetation overhanging No tree cover or overhanging vegetation	N/A
N93	Wetland, emergent in ephemeral streambed	No	Emergent vegetation present Sparse oak and shrub overhanging	N/A
N94	Stream, seasonal, near SR 49	Yes	Ephemeral vegetation present Oak and shrub overhanging	N/A
N97	Pond, perennial, near Menke Hess Road	Yes	Ephemeral and margin vegetation present Oak, pine, and shrub overhanging	N/A
N98	Stream, seasonal	Yes	Ephemeral vegetation present Oak overhanging	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N99	Pond, perennial, near Jacksonville Road	Yes	Emergent and margin vegetation No tree cover or overhanging vegetation	N/A
N100	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Large woody debris present	N/A
N101	Stream, seasonal	Yes	Emergent and margin vegetation present Some oak and shrub overhanging	N/A
N103	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N106	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N107	Stream, perennial (Sixbit Gulch), with forested/shrub wetland	Yes	Emergent vegetation present Pine and shrub overhanging	N/A
N108	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation Crosses SR 49 Wetland in ephemeral stream channel	N/A
N109	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N110	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water Vegetation community is red colored in July	N/A
N112	Wetland, emergent, near Old Don Pedro Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N113	Wetland, emergent, near Old Don Pedro Road	No	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N115	Stream, perennial, near SR 49 and Menke Hess Road	Yes	Emergent vegetation present Oak, pine, and shrub overhanging	N/A
N116	Wetland, emergent	Yes	Emergent vegetation present Oak overhanging Formed in streambed that has been cutoff from N125 (pond) by berm	N/A
N117	Stream, perennial with emergent wetland, near Old Don Pedro Road	Yes	Emergent and margin vegetation present Oak overhanging	N/A
N118	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water Beneath power lines	N/A
N120	Wetland emergent, near Old Don Pedro Road	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water Formed in ephemeral stream channel	N/A
N121	Pond, perennial, near Old Don Pedro Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N122	Wetland, emergent, near SR 49	No	No emergent vegetation present Some oak overhanging	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N123	Pond, perennial, near SR 49	Yes	Emergent and margin vegetation present Rushes overhanging	N/A
N124	Pond, perennial, near Shawmut Road	Yes	Emergent vegetation present Oak and shrub overhanging Berm separates site from N82/N95/N96	N/A
N125	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N128	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N131	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N132	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Separated from N332/N333 by berm	N/A
N133	**Pond, perennial, near El Encanto and SR 59 behind gravel parking area**	**Yes**	**Size: 50m x 26m** **Emergent vegetation: scirpus, grasses, forbs, duckweed** **Overhanging: oak** **Substrate: soil and organic matter** **No evidence of burrows present** **Field assessed on 4/19/12** **Great egret present**	**1142 – 1145**
N134	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak overhanging Beneath powerlines	N/A
N135	Pond, seasonal, near Pased Seven Legends	No	No emergent vegetation No tree cover or overhanging vegetation Dry most of the year	N/A
N136	Pond, seasonal	No	No emergent vegetation No tree cover or overhanging vegetation	N/A
N137	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water Concrete trough structure present	N/A
N138	Stream pool, seasonal	No	No emergent vegetation No tree cover or overhanging vegetation	N/A
N139	Pond, perennial, near Los Nogales Road	Yes	Emergent and margin vegetation present Oak, shrub, and rushed overhanging Impoundment caused by road	N/A
N140	Pond, seasonal	No	No emergent vegetation present Oak overhanging Dry by June	N/A
N141	**Pond, perennial, near La Grange Road**	**Yes**	**Size: 10m x 20m** **Emergent vegetation: grasses and forbs** **No overhanging vegetation** **Substrate: soil and organic matter** **Clusters of 4 inch burrows present on east side of pond** **Field assessed on 4/19/12**	**1152 – 1157**
N142	Pond, seasonal	No	No emergent vegetation present	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
			Oak overhanging Dry by June Adjacent to dirt road	
N143	**Pond, perennial, near Paseo Seven Legends**	**Yes**	**Size: 40m x 20m** **Emergent vegetation: rushes** **Aquatic: algae** **Oak overhanging** **Substrate: soil** **Many scattered 1 inch diameter burrows present** **Field assessed on 6/20/12** **Berm separating pond from ditch or stream** **Juvenile western toad present**	**1592 – 1609**
N144	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N145	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N146	Pond, seasonal	Yes	No emergent vegetation No tree cover or overhanging vegetation	N/A
N147	Pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N148	**Pond, perennial, near La Grange Road**	**Yes**	**Size: 78m x 15m** **Emergent vegetation: Typha. Duckweed** **Margin vegetation: rushes, grass, forbs** **Overhanging vegetation: plantago, oak** **Substrate: soil, organic matter** **Burrows were likely but could not be detected in thick vegetation** **Field assessed on 4/19/12** **American bullfrog present**	**1169 – 1172**
N149	Pond, perennial, near Bonds Flat Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N150	Pond, seasonal, near Don Pedro Road	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N151	Pond, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation Depression in roadway No standing water	N/A
N152	Pond, perennial	Yes	Emergent vegetation present Shrub overhanging	N/A
N153	Wetland, forested/shrub	No	No emergent vegetation present Oak overhanging No standing water	N/A
N154	Pond, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation Densely vegetated throughout	N/A
N155	Wetland, emergent	No	Emergent vegetation present No tree cover or overhanging vegetation	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N156	Pond, perennial	Yes	Emergent vegetation present Oak and shrub overhanging	N/A
N157	Pond, seasonal	Yes	No emergent vegetation present Oak overhanging	N/A
N158	**Pond, perennial, near Paseo Seven Legends**	**Yes**	**Size: 10m x 20m** **Emergent vegetation: grasses and rushes** **Aquatic vegetation: algae** **No overhanging** **Substrate: soil and cobbles** **One cluster of 4 – 5 1 inch diameter burrows present on berm** **Field assessed on 6/20/12** **Separated from N165 by berm** **American bullfrog present**	**1631 – 1632, 1634, 1636 – 1641**
N159	Stream pool, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N160	Pond, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N161	**Pond, perennial**	**Yes**	**Size: 45m x 20m** **Emergent vegetation: rushes** **Aquatic vegetation: algae** **Oak overhanging** **Substrate: soil and cobbles** **Approximately 15 1 – 4 inch burrows present around pond** **Field assessed on 6/20/12** **American bullfrog present**	**1611 – 1622**
N162	Pond, seasonal	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N163	Wetland, emergent, near Don Pedro Road	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N164	**Pond, seasonal, near Paseo Seven Legends**	**Yes**	**Size: 15m x 15m** **No emergent vegetation** **Margin vegetation : desiccated grasses** **No overhanging** **Substrate: soil** **Scattered burrows ranging from 1 – 4 inches in diameter were present in the berm on the west side of the pond** **Field assessed on 6/21/12**	**1689 – 1696**
N165	**Pond, seasonal, near Paseo Seven Legends**	**No**	**Size: 10m x 15m** **No emergent vegetation** **Forbs present throughout** **No overhanging** **Substrate: soil and cobbles** **One cluster of 4 – 5 1 inch diameter burrows present on berm** **Separated from N158 by berm** **Field assessed on 6/20/12**	**1633, 1635, 1636 – 1641**

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N166	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N167	Stream pool, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N168	Stream pool, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N169	Pond, seasonal	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N170	Pond, seasonal	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N171	Pond, seasonal, near Pased Seven Legends	No	No emergent vegetation No tree cover or overhanging vegetation Pond created by culvert in ephemeral stream channel	N/A
N172	**Pond, perennial, near La Grange Road**	**Yes**	**Size: 97m x 27m** **Emergent and margin vegetation: grasses and forbs** **No overhanging vegetation** **Substrate: soil, organic matter, subangular cobble** **Abundant 2 – 4 inch diameter burrows present** **Field assessed on 4/19/12**	**1158 – 1168**
N173	Pond, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation	N/A
N174	Wetland, emergent	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N175	Stream pool, seasonal	No	No emergent vegetation present Oak overhanging	N/A
N176	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N177	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak overhanging	N/A
N178	Pond, perennial, near Las Armomitas	Yes	Emergent and margin vegetation present Shrub overhanging	N/A
N179	**Pond, seasonal, near Paseo Seven Legends**	**Yes**	**Size: 30m x 10m** **No emergent vegetation present, grasses and forbs throughout** **Oak overhanging** **Substrate: soil, grasses, cobbles** **Two 4 inch diameter burrows present on west side of pond** **Field assessed on 6/20/12** **Fed by 1m wide ditch** **Dry in June 2012**	**1586 – 1590**
N180	Wetland, forested/shrub	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N181	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak overhanging	N/A
N182	Pond, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N184	Pond, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N185	Pond, perennial, near Avenida Lugo Road	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation	N/A
N186	Pond, seasonal	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N187	Pond, perennial, near County Road J59	Yes	Emergent vegetation present No tree cover or overhanging vegetation Used by cows	N/A
N188	Pond, perennial, near Don Pedro Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N189	Pond, seasonal, near Pased Seven Legends	Yes	Emergent vegetation present Oak overhanging	N/A
N190	Pond, perennial, near Ward's Ferry Road	Yes	Emergent, aquatic, and margin vegetation present Oak and rushes overhanging Pond vegetated throughout	N/A
N191	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak and shrub overhanging	N/A
N192	Pond, perennial, near Apple Colony Road	Yes	Emergent vegetation present Oak and shrub overhanging Located in landscaped residential area	N/A
N193	Pond, seasonal, near Apple Colony Road	No	Emergent vegetation present Oak overhanging	N/A
N195	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N196	Pond, perennial	Yes	Emergent and aquatic vegetation No tree cover or overhanging vegetation	N/A
N197	Pond, perennial, near Ward's Ferry Road	Yes	Emergent vegetation present Oak and shrub overhanging	N/A
N198	Pond, perennial, near Major Way	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N199	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak overhanging	N/A
N200	Pond, perennial	Yes	Emergent vegetation present Oak and pine overhanging	N/A
N201	Pond, perennial	Yes	Emergent and aquatic vegetation present Willow overhanging	N/A
N202	Stream, perennial (Deer Creek) with forested/shrub wetland, near Ward's Ferry Road	Yes	No emergent vegetation present Oak, pine, and shrub overhanging Stream in bedrock channel	N/A
N203	Pond, perennial, near Jacksonville Road	Yes	Emergent and aquatic vegetation present Oak overhanging	N/A
N205	Wetland, emergent	No	No emergent vegetation present Some oak overhanging	N/A
N207	Wetland, emergent	No	No emergent vegetation Shrub and pine overhanging Overlaps maintained dirt area around treatment pond (N208)	N/A
N208	Treatment pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N210	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N211	Wetland, emergent, near SR 49 and New Priest Grade Road	No	No emergent vegetation present Shrub overhanging	N/A
N212	Pond perennial, near Moccasin Reservoir spillway	Yes	Emergent vegetation present Oak overhanging Connected to Moccasin Reservoir by spillway under Moccasin Switchback Road	N/A
N213	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N214	Pond, perennial, near Moccasin Reservoir spillway	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N215	**Pool in stream**	**No**	**Size: 3m x 6m** **Bank full depth: 1m** **No emergent vegetation present** **Willow overhanging and in the margin** **Desiccated forbs along margins** **Depression between two hills** **Many 2 inch diameter burrows present next to road** **Upstream of culvert, dry at survey** **Field assessed on 6/18/12**	**1462 – 1467**
N216	Wetland, forested/shrub	No	No emergent vegetation present Pine and shrub overhanging Depression between two hills No standing water	N/A
N217	Wetland, emergent	No	No emergent vegetation present Oak, pine, and shrub overhanging No standing water	N/A
N218	**Pool in stream, near Old Priest Grade**	**No**	**Bank full depth: 1.25m** **No emergent vegetation present** **Forbs in bottom of streambed** **Manzanita, toyon, and caenothus overhanging** **No evidence of burrows present** **Dry at time of survey** **Field assessed on 6/18/12**	**1468 – 1474**
N219	Pond, seasonal	No	Emergent vegetation present Oaks and shrub overhanging	N/A
N220	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N221	Stock pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N222	**Pond, perennial, by Egan Road**	**Yes**	**Size: 100m x 75m** **Emergent vegetation: typha/scirpus, grasses, forbs, planago, algae** **Oak overhanging on north side** **Substrate: soil and organic matter**	**0994 – 1004**

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
			Two 3 inch diameter burrows present Field assessed on 4/18/12 American bullfrog present Waterfowl present	
N223	Stream impoundment, seasonal	No	Stream channel appears intermittent	N/A
N224	Stream impoundment, perennial	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N225	Stream impoundment, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation In agricultural field	N/A
N226	Stream impoundment, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation In agricultural field	N/A
N227	Stream impoundment, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation In agricultural field	N/A
N228	Stream impoundment, seasonal	Yes	Emergent vegetation present No tree cover or overhanging vegetation In agricultural field	N/A
N229	Pond, seasonal	No	No emergent vegetation present Shrub overhanging In agricultural field	N/A
N230	Reservoir, constructed	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N231	Stream impoundment	Yes	Emergent , aquatic, and margin vegetation present Some oak overhanging on northeast side	N/A
N232	Stock pond, constructed	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N233	Pond, perennial	Yes	Emergent , aquatic, and margin vegetation present Shrub overhanging on north side	N/A
N234	Pond, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation In agricultural field	N/A
N235	Pond, perennial	Yes	Some emergent vegetation present No tree cover or overhanging vegetation	N/A
N236	Pond , perennial	Yes	Emergent vegetation present Oak overhanging on south and west sides	N/A
N237	Pond, perennial	Yes	Emergent and margin vegetation present Oak overhanging on south side	N/A
N238	Pond, perennial	Yes	Emergent, aquatic, and margin vegetation present Oak overhanging on north side	N/A
N239	Pond, emergent depression	Yes	Emergent, aquatic, and margin vegetation present Shrub overhanging along west side	N/A
N240	Pond, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation Concrete trough structure present	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
			No standing water evident	
N241	Pond, emergent depression	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N242	Stream impoundment, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation	N/A
N243	Pond, perennial	Yes	Aquatic vegetation present No tree cover or overhanging vegetation	N/A
N244	Pond,	Yes	Emergent vegetation present Oak overhanging on south side	N/A
N245	Pond, emergent depression, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation Adjacent to cleared equipment parking area	N/A
N246	Pond, emergent depression, seasonal	No	Emergent and margin vegetation present No tree cover or overhanging vegetation Small seasonal pond in northern part of site, but otherwise no standing water	N/A
N247	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N248	Stream impoundment, seasonal	No	No emergent vegetation Oak overhanging southeast side Pond is dry by June	N/A
N249	Pond, perennial	Yes	Emergent and margin vegetation present Oak and pine overhanging	N/A
N250	Pond, perennial	Yes	No emergent vegetation Oak overhanging	N/A
N251	Stock pond, seasonal	No	No emergent vegetation Oak overhanging northeast side	N/A
N252	Stock pond, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N253	Wetland, emergent depression	No	No emergent vegetation present Oak overhanging No standing water	N/A
N254	Stock pond, seasonal	No	No emergent vegetation present Oak overhanging	N/A
N255	Stream impoundment	Yes	Emergent and aquatic vegetation present Oak and shrub overhanging	N/A
N256	Wetland, emergent depression	No	No emergent vegetation present Oak overhanging No standing water	N/A
N257	Stock pond, Seasonal	No	No emergent vegetation Oak overhanging	N/A
N258	Wetland, emergent depression	No	No emergent vegetation present Oak overhanging No standing water	N/A
N259	Stock pond, seasonal	No	Emergent vegetation present Oak overhanging	N/A
N260	Stream impoundment, perennial	Yes	Emergent and margin vegetation present Shrub overhanging	N/A
N261	Pond, perennial, near	Yes	Emergent and margin vegetation present	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
	Powell Ranch Road		Oaks and shrub overhanging	
N262	Pond, emergent depression, seasonal, near Powell Ranch Road	Yes	No emergent vegetation present No tree cover or overhanging vegetation Dries by mid – late July	N/A
N263	Stream impoundment, perennial	Yes	Emergent and margin vegetation present Oaks and shrub overhanging Separated from stream by road or berm	N/A
N264	Pond, perennial	Yes	Emergent and aquatic vegetation present Oak overhanging In depression between hillside and road	N/A
N265	Pond, perennial	Yes	Emergent and margin vegetation present Oak and shrub overhanging In depression between hillside and road	N/A
N266	Road, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation Depression in dirt road No standing water	N/A
N267	Wetland, emergent depression, near Jacksonville Road	No	No emergent vegetation present Oak overhanging on south side Adjacent to road and parking area	N/A
N268	Stream pool	Yes	Emergent vegetation present Oak, pine, and shrub overhanging	N/A
N269	Pond, emergent depression	Yes	Emergent and margin vegetation present Oak overhanging	N/A
N270	Emergent marsh	No	Emergent and margin vegetation present No tree cover or overhanging vegetation	N/A
N271	**Pond, seasonal, near New Priest Grade Road**	**No**	**Size: 10m x 5m** **Emergent vegetation: forbs, dock** **Margin vegetation: forbs** **No overhanging** **Substrate: soil and organic matter** **One 3-inch burrow 500 feet from pond** **Field assessed on 6/18/12** **Dry in June 2012**	**1453 – 1460**
N272	Stream impoundment, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation Impoundment cause by dirt road	N/A
N273	Pond, perennial	Yes	Emergent and aquatic vegetation present Shrub and oak overhanging	N/A
N274	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N275	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N276	Stock pond, perennial	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N277	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N278	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N279	Pond, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation Dry by June	N/A
N280	Wetland , emergent	No	No emergent vegetation present Oak and shrub overhanging	N/A
N281	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N282	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N283	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N284	Stream impoundment, perennial	Yes	Emergent, aquatic, and margin vegetation present Oak and shrub overhanging	N/A
N285	Stream impoundment	Yes	No emergent vegetation Some oak overhanging	N/A
N286	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water	N/A
N287	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N288	Wetland, emergent depression	No	No emergent vegetation present Oak overhanging	N/A
N289	Wetland, emergent depression	No	No emergent vegetation present Oak overhanging	N/A
N290	Wetland, emergent depression	No	No emergent vegetation present Oak overhanging No standing water	N/A
N291	Stream impoundment, perennial	Yes	Emergent and aquatic vegetation present Oak overhanging	N/A
N292	Stream impoundment, seasonal	Yes	No emergent vegetation present No tree cover or overhanging vegetation Dry by July in low flow years	N/A
N293	Stream impoundment, perennial	Yes	Emergent vegetation present Oak overhanging in during higher flow	N/A
N294	Stream impoundment, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N295	Stream pool, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation Pool created by bedrock outcropping	N/A
N296	Wetland, emergent depression, near Brunette Road	No	No emergent vegetation present No tree cover or overhanging vegetation In field adjacent to residence	N/A
N297	Stream pool, seasonal	No	No emergent vegetation present Oak overhanging Dry by June	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N298	Emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation No standing water No vegetation present during growing season	N/A
N299	Stock pond, perennial	Yes	Margin vegetation present No tree cover or overhanging vegetation	N/A
N300	Stock pond, perennial, near Pased Seven Legends Road	Yes	Emergent vegetation present Oak overhanging	N/A
N301	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N302	Pond, perennial	Yes	No emergent vegetation present Oak overhanging	N/A
N303	Pond, perennial	Yes	Emergent and margin vegetation present Oak overhanging on south side	N/A
N304	**Pond, seasonal, near La Grange Road**	**No**	**Size: 2m x 4m** **Emergent vegetation: grasses, forbs** **Margin vegetation: grass, forbs** **Overhanging vegetation: oak on south side** **Substrate: soil, organic matter** **No evidence of burrows present** **Field assessed on 4/19/12** **Redtail hawk nest on nearby powerline**	**1173 – 1178**
N305	**Pond, seasonal, by La Grange Road**	**Yes**	**Size: 10m x 20m** **Emergent vegetation: grasses, rushes, forbs** **No overhanging vegetation** **Substrate: soil and organic matter** **Many 1.5 – 3 inch diameter burrows present throughout field/pasture** **Field assessed on 4/18/12**	**1005 – 1011**
N306	Pond, emergent depression	No	Emergent vegetation present Oak overhanging east side	N/A
N307	Pond, perennial, near Pased Seven Legends Road	Yes	Emergent vegetation present Oak overhanging west side	N/A
N308	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N309	Stream impoundment	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N310	Emergent depression, near Las Cruces	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N311	Stream impoundment, perennial, near El Encino Drive	Yes	Emergent and aquatic vegetation present Oak and shrub overhanging	N/A
N312	Stream impoundment, seasonal, near El Encino Drive	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N313	Stream pool, perennial, near County Road J59 and Bonds Flat Road	Yes	Emergent vegetation present Oak overhanging	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N314	Stream pool, perennial, near County Road J59 and Bonds Flat Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation Stream enters culvert at Bonds Flat Road	N/A
N315	Pond, emergent depression	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N316	**Pond, perennial, near El Encanto and SR 59 behind gravel parking area**	**Yes**	**2 excavated ponds, separated by earthen berm** **Pond 1 Size: 46m x 13m** **Pond 2 Size: 55m x 12m** **Emergent vegetation: rushes, grasses, forbs, dock** **Overhanging: oak** **Substrate: soil , organic matter, gravel** **No evidence of burrows present** **Field assessed on 4/19/12** **American bullfrog present**	**1146 – 1151**
N317	Pool, constructed	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N318	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N319	Stock pond, constructed	Yes	No emergent vegetation present No tree cover or overhanging vegetation Rectangular concrete structure constructed in depression	N/A
N320	Wetland, emergent depression	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N321	Stream pool, perennial, near County Road J59	Yes	Emergent vegetation present No tree cover or overhanging vegetation Adjacent to driveway	N/A
N322	Stream pool, perennial	Yes	Emergent vegetation present Oak and shrub overhanging Stream flows through bedrock outcropping	N/A
N323	Stream pool, perennial, near Bonds Flat Road	Yes	No emergent vegetation present Oak overhanging	N/A
N324	Stream pool, near Bonds Flat Road	Yes	Emergent vegetation present No tree cover or overhanging vegetation Impoundment created by raised road grade	N/A
N325	Wetland, emergent depression	No	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N326	Stream pool, perennial, near Los Nogales Road	Yes	Emergent and margin vegetation present Shrub, willow and oak overhanging Pool between two road crossings	N/A
N327	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A
N328	Pond, seasonal	No	No emergent vegetation present Oak overhanging No standing water	N/A
N329	Stream impoundment, perrenial	Yes	Emergent and margin vegetation present Oak and shrub overhanging	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N330	Stream pool, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N331	Stream pool, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Connects to N332 via culvert	N/A
N332	Stream pool, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Connects to N331 via culvert	N/A
N333	Stream pool, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N334	Stream pool, Big Creek, perennial	Yes	Emergent and margin vegetation present Oak overhanging	N/A
N335	Stream pool, Big Creek, perennial	Yes	Emergent vegetation present Oak and shrub overhanging Pool in bedrock outcropping	N/A
N336	Stream pool, Big Creek, perennial	Yes	Emergent vegetation present Oak and shrub overhanging Pool in bedrock outcropping	N/A
N337	Stream pool, Big Creek, perennial	Yes	Emergent vegetation present Oak and shrub overhanging Pool in bedrock outcropping	N/A
N338	Stream pool, Big Creek, perennial	Yes	Emergent vegetation present Oak and shrub overhanging Pool in bedrock outcropping	N/A
N339	Pond, perennial	Yes	Emergent vegetation present Oak overhanging	N/A
N340	Pond, perennial, near Bonds Flat Road	Yes	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N341	Pond, seasonal	Yes	Emergent vegetation present No tree cover or overhanging vegetation Mostly dry by end of July	N/A
N342	Pond, seasonal	No	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N343	Pond, seasonal	No	No emergent vegetation present No tree cover or overhanging vegetation	N/A
N344	Stream impoundment, perennial	Yes	Emergent, aquatic, and margin vegetation present Oak and shrub overhanging	N/A
N345	Stream pool, perennial	Yes	No emergent vegetation present Oak and shrub overhanging	N/A
N346	Stream pool, perennial	Yes	Emergent vegetation present Oak and shrub overhanging	N/A
N347	Pond, perennial	Yes	Emergent vegetation present Oak and shrub overhanging	N/A
N348	Pond, perennial	Yes	Emergent vegetation and algae present No tree cover or overhanging vegetation	N/A
N349	Stream pool, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Pool in bedrock outcropping	N/A
N350	Stream pool, perennial	Yes	Emergent vegetation present No tree cover or overhanging vegetation Pool in bedrock outcropping	N/A

Site Number[1,2,3]	Habitat Feature/Seasonality/ Location	Meets 10-Week Criterion	Notes	Photo Number
N351	Stream pool, perennial, near Jalapa Way	Yes	Emergent vegetation present No tree cover or overhanging vegetation Stream flows behind residences	N/A
N352	Stream pool, perennial, near Jalapa Way	Yes	Emergent vegetation present No tree cover or overhanging vegetation Stream flows around a residence	N/A
N353	Pond, seasonal	No	Emergent vegetation present No tree cover or overhanging vegetation	N/A
N354	Pond, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation Adjacent to dirt road	N/A
N355	Pond, perennial	Yes	Emergent and margin vegetation present No tree cover or overhanging vegetation	N/A
N356	Stream pool, perennial	Yes	Emergent vegetation present Oaks and shrub overhanging Behind residence	N/A
N357	Pond, perennial	Yes	Emergent and aquatic vegetation present No tree cover or overhanging vegetation	N/A

[1] All sites in table are within the current or historic range of the CTS.
[2] Sites field-assessed in bold.
[3] Some aspects of the site assessment are not discernible from aerial imagery (e.g. depth, substrate, etc.).

1.2.1 Photos of Sites (Aquatic Habitat Locations) Field Assessed for Potential California Tiger Salamander Breeding Habitat within the Don Pedro Study Area (Excluding Sites within the Project Boundary)

Figure 2.0-1. N52

Figure 2.0-2. N60

Figure 2.0-3. N75

Figure 2.0-4. N78

Figure 2.0-5. N82

Figure 2.0-6. N133

Figure 2.0-7. N141

Figure 2.0-8. N143

Figure 2.0-9. N148

Figure 2.0-10. N158

Figure 2.0-11. N161

Figure 2.0-12. N164

Figure 2.0-13. N165

Figure 2.0-14. N172

Figure 2.0-15. N179

Figure 2.0-16. N215

Figure 2.0-17. N218

Figure 2.0-18. N222

Figure 2.0-19. N271

Figure 2.0-20. N304

Figure 2.0-21. N316

2.0 REFERENCES

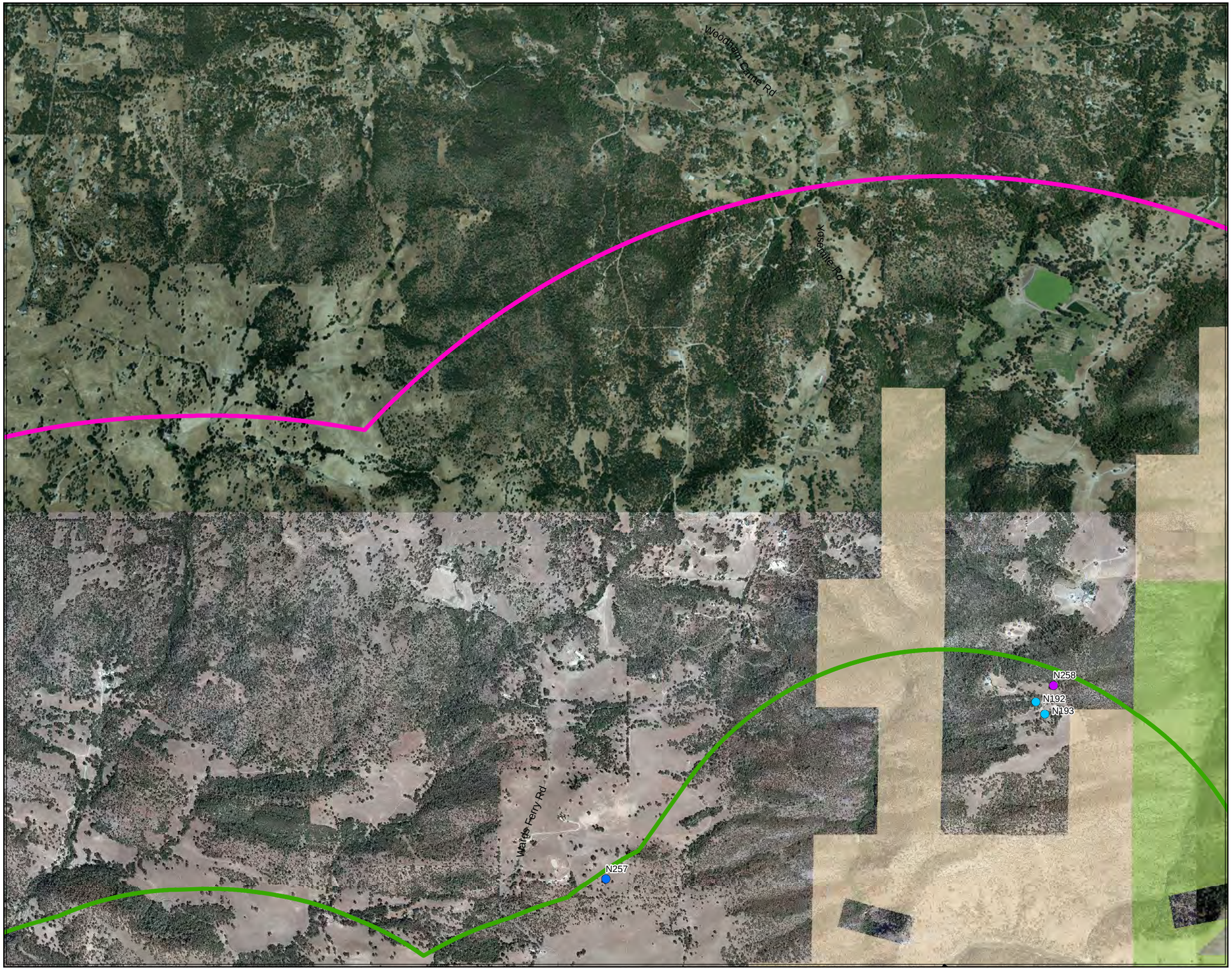
Turlock Irrigation District and Modesto Irrigation District (TID/MID). 2013. ESA-Listed Amphibians – California Red-Legged Frog Study Report (TR-07). Attachment to Don Pedro Hydroelectric Project Initial Study Report. January 2013.

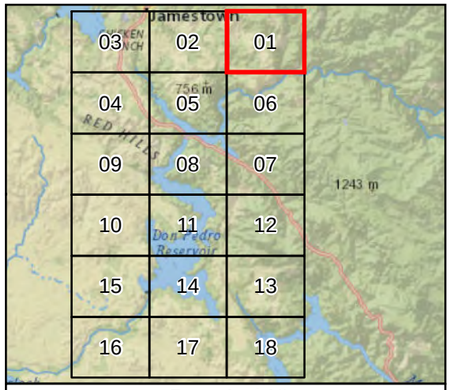
U.S. Fish and Wildlife Service (USFWS). 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. October 2003. USFWS, Sacramento Fish and Wildlife Office, Region 8. 8 pp. Available online: www.fws.gov/sacramento/es/documents/cts_survey_protocol.pdf.

STUDY REPORT TR-08
CALIFORNIA TIGER SALAMANDER

ATTACHMENT B

CTS STUDY SITE LOCATIONS BY HABITAT TYPE





Study Sites*
Habitat Type

- Constructed Pond
- Natural Pond
- Stream/Pool in Stream
- Upland/Developed
- Wetland

* **Study Sites Within FERC Boundary**
Potentially Suitable Aquatic Habitat
+YES+
--NO--

- CTS Historic Location (CNDDB)
- FERC Project Boundary (No. 2299)
- 1.24 Mile Buffer from FERC Boundary
- 3.1 Mile Buffer from FERC Boundary
- Recreation Area
- County Boundary
- Normal Maximum Water Surface

Federal Land Ownership[1]

- Bureau of Land Management
- Bureau of Reclamation
- US Forest Service

(1) Land ownership data was clipped to only show portions within the 3.1 mile buffer of the FERC project area.

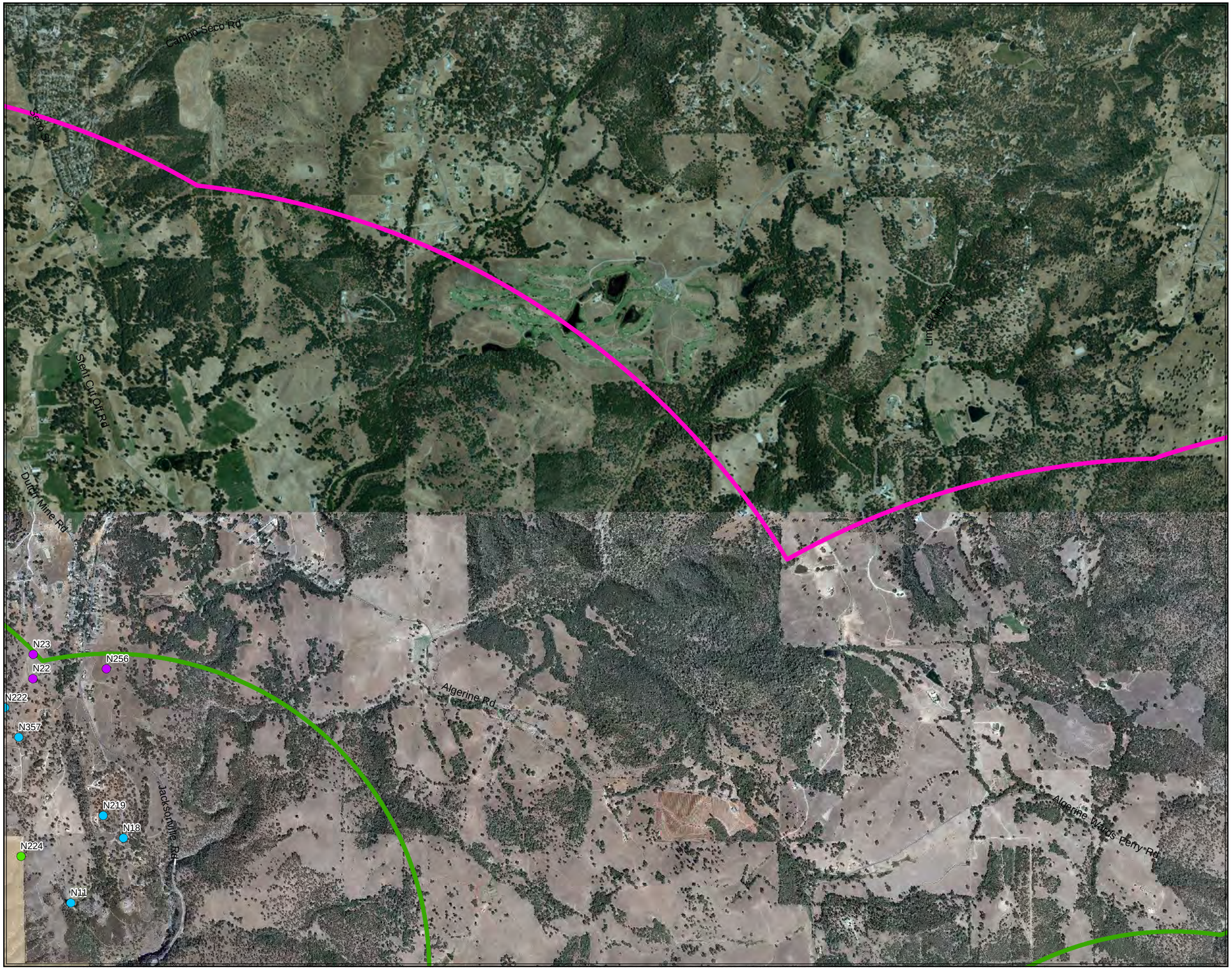
N

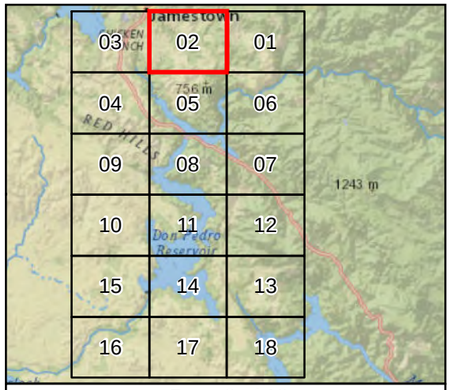
0 0.25 0.5 1
Miles

CTS Study Site Location by Habitat Type

Don Pedro Project (FERC No.2299)

Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness. Data Sources: Ownership - CA BLM; Water Surface, FERC Boundary, Recreation & Project Facilities - MID/TID; Roads - Esri. Data is NAD 83, CA State Plane, Zone III, U.S. Feet.





Study Sites*

Habitat Type

- Constructed Pond
- Natural Pond
- Stream/Pool in Stream
- Upland/Developed
- Wetland

* **Study Sites Within FERC Boundary**

Potentially Suitable Aquatic Habitat

+YES+

--NO--

- CTS Historic Location (CNDDB)
- FERC Project Boundary (No. 2299)
- 1.24 Mile Buffer from FERC Boundary
- 3.1 Mile Buffer from FERC Boundary
- Recreation Area
- County Boundary
- Normal Maximum Water Surface

Federal Land Ownership[1]

- Bureau of Land Management
- Bureau of Reclamation
- US Forest Service

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N

0 0.25 0.5 1

Miles

CTS Study Site Location by Habitat Type

Don Pedro Project (FERC No.2299)

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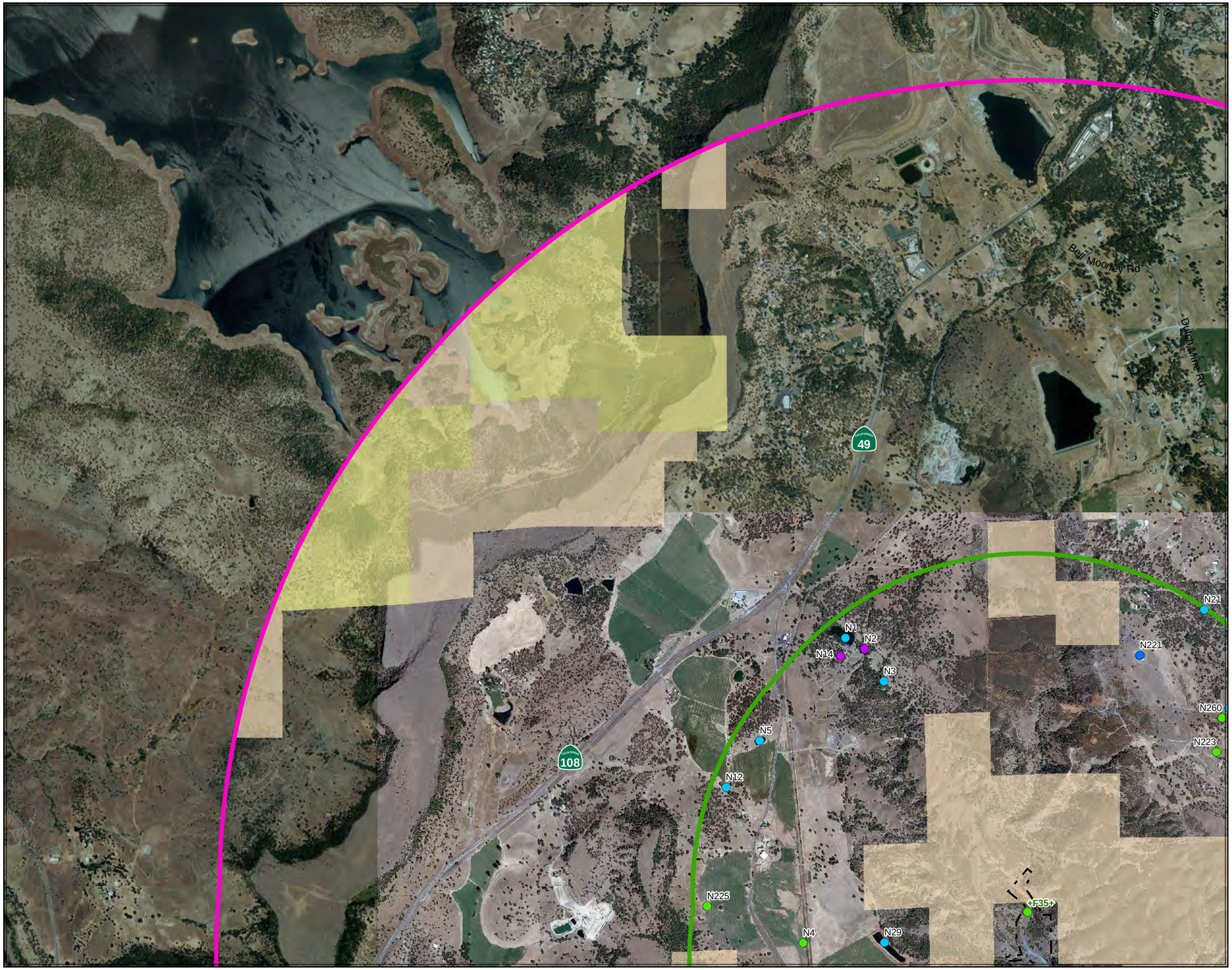

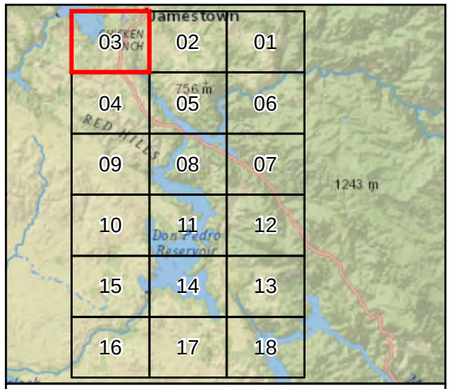

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Habitat Type

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- Wetland

* **Study Sites Within FERC Boundary**

Potentially Suitable Aquatic Habitat

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--NO--

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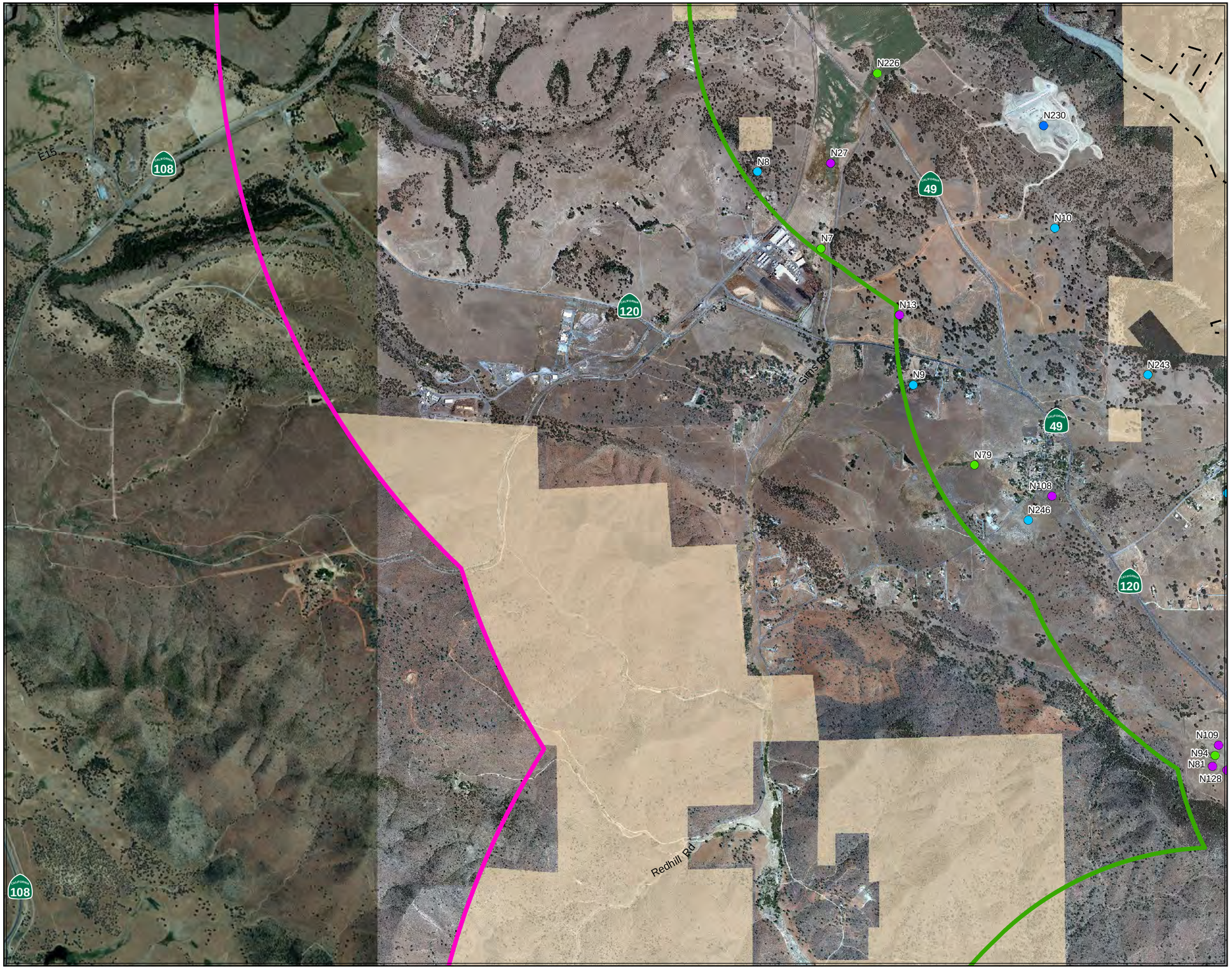

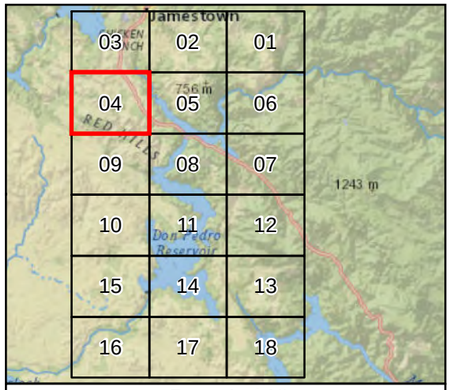

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Habitat Type

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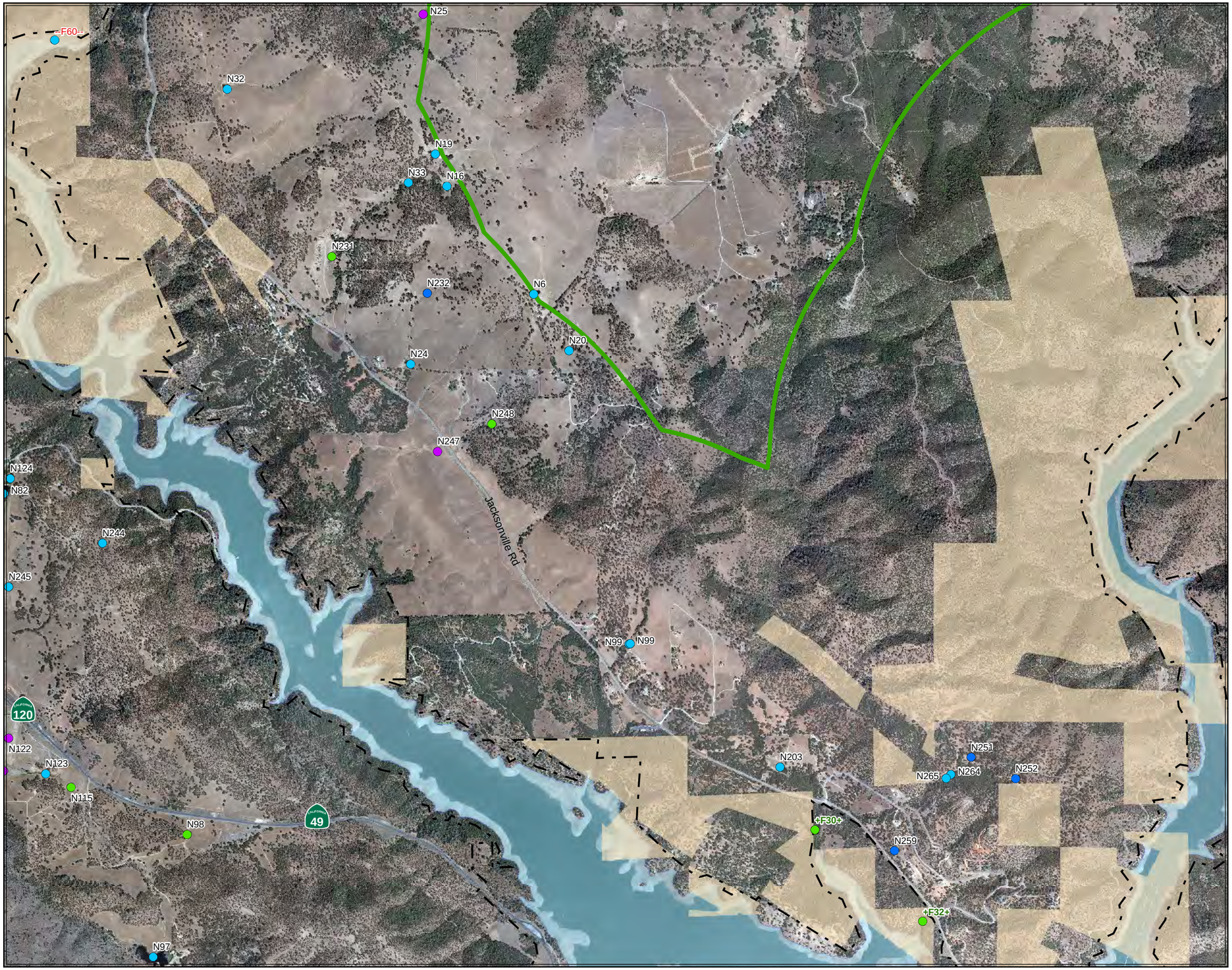

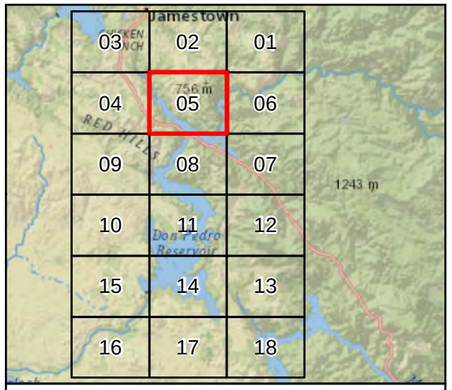

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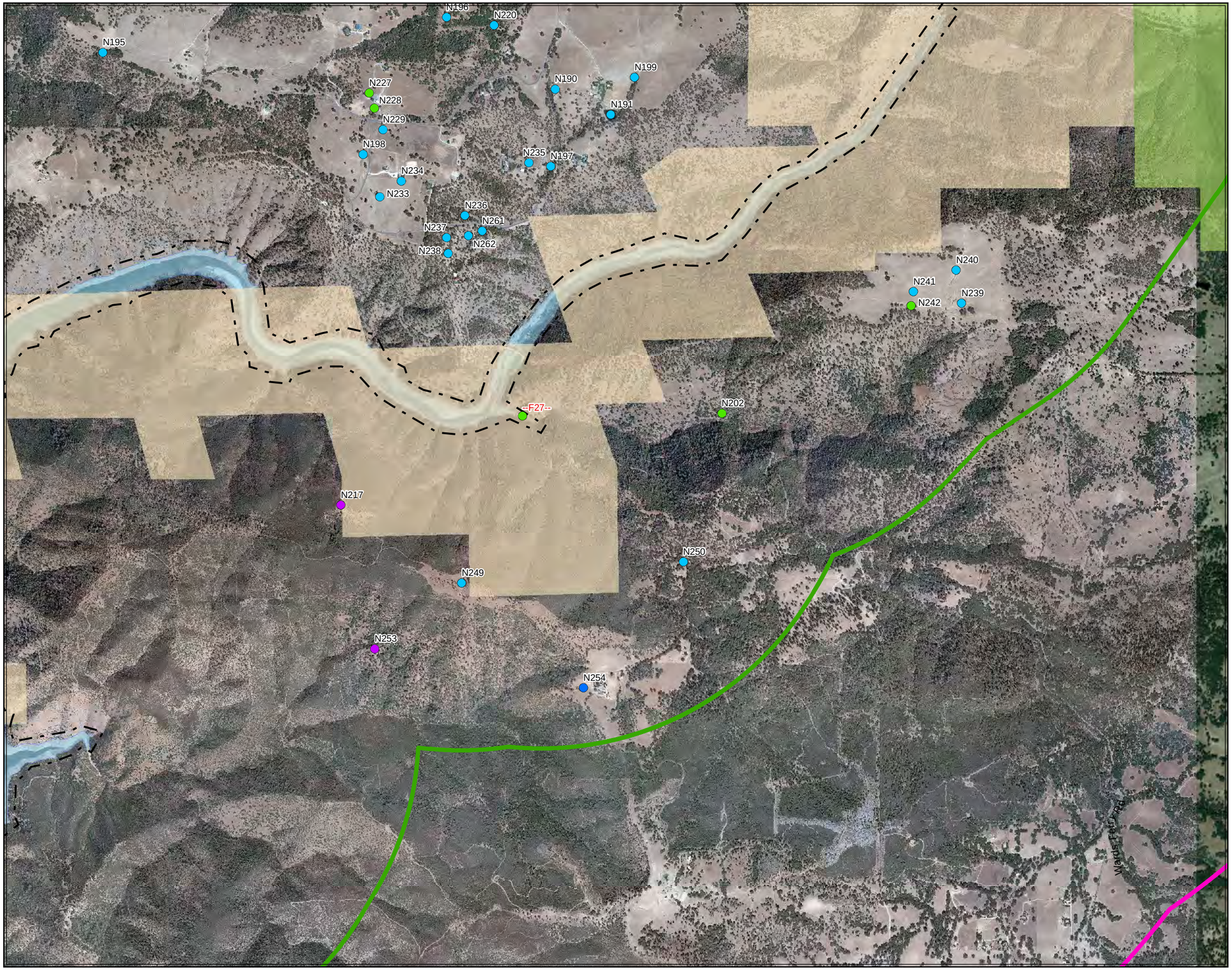

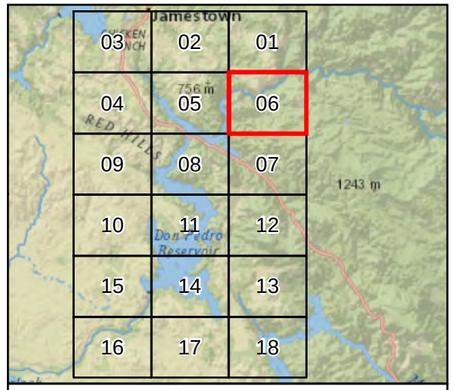

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CTS Study Site Location by Habitat Type

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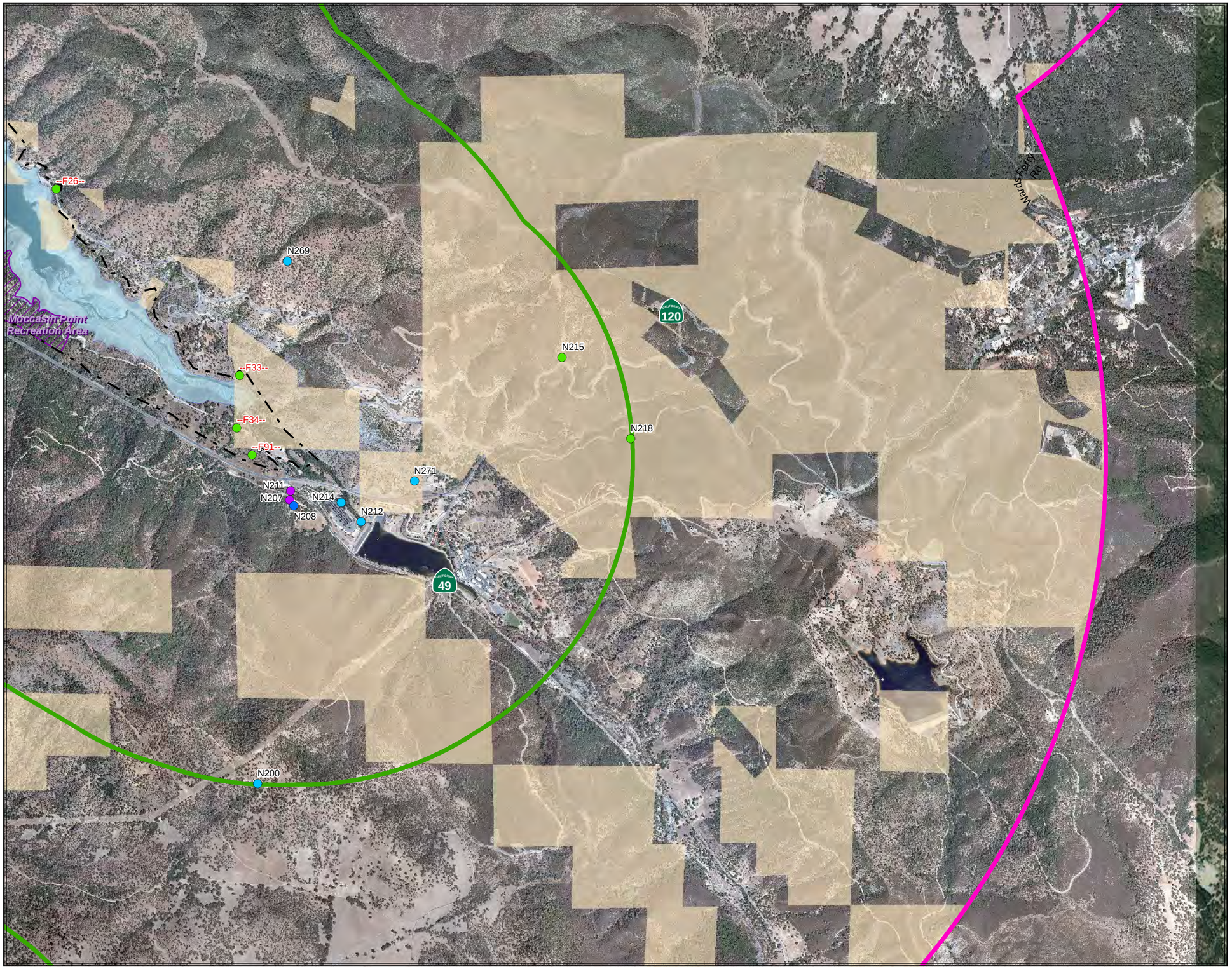

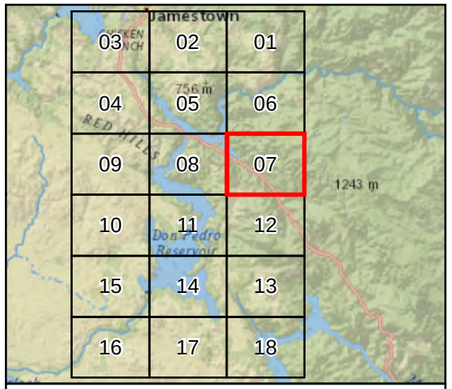

Study Sites*

Habitat Type

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* **Study Sites Within FERC Boundary**

Potentially Suitable Aquatic Habitat

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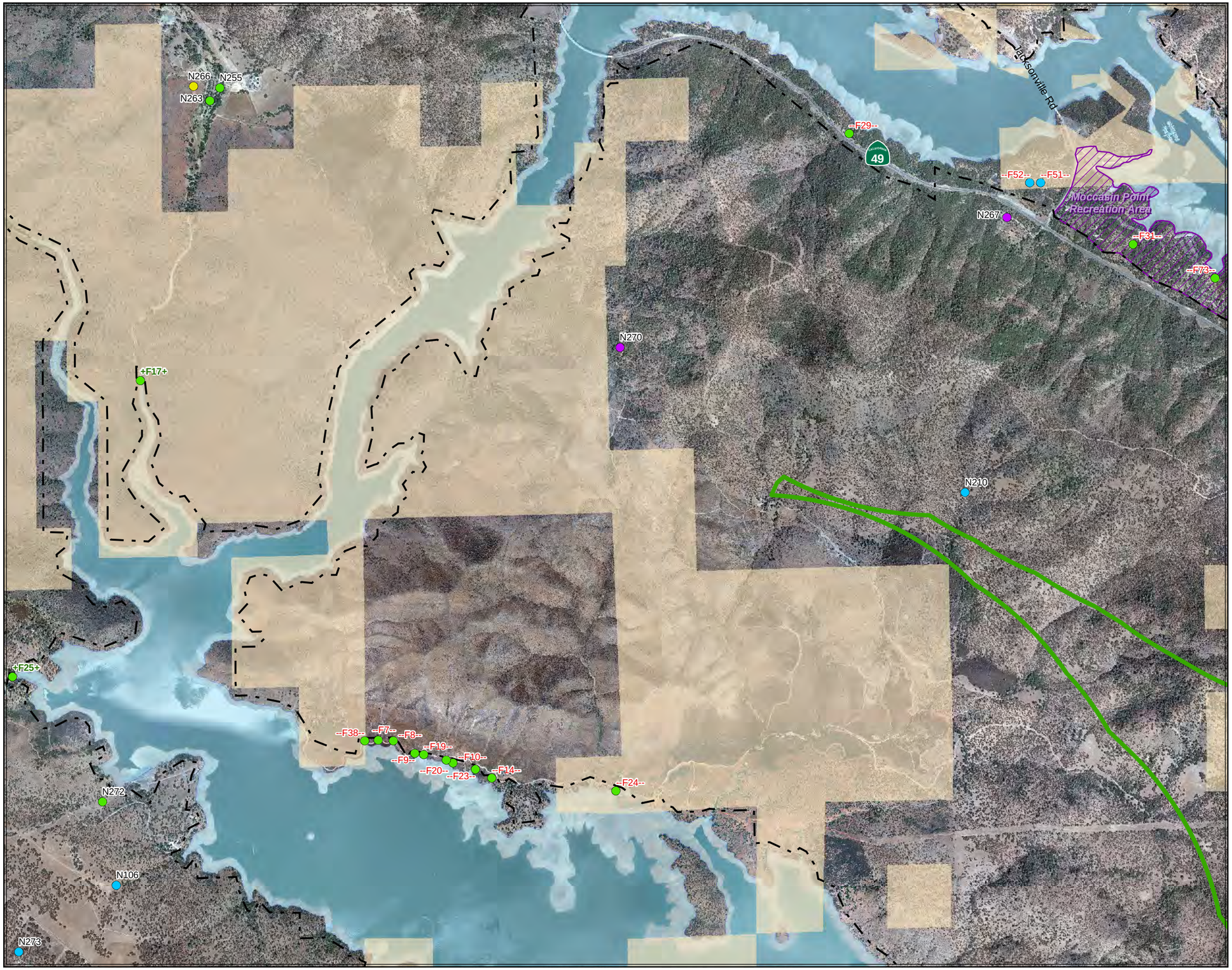

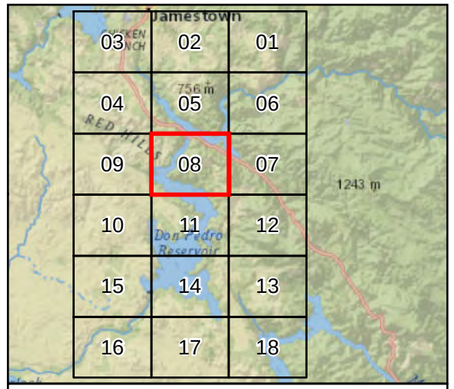

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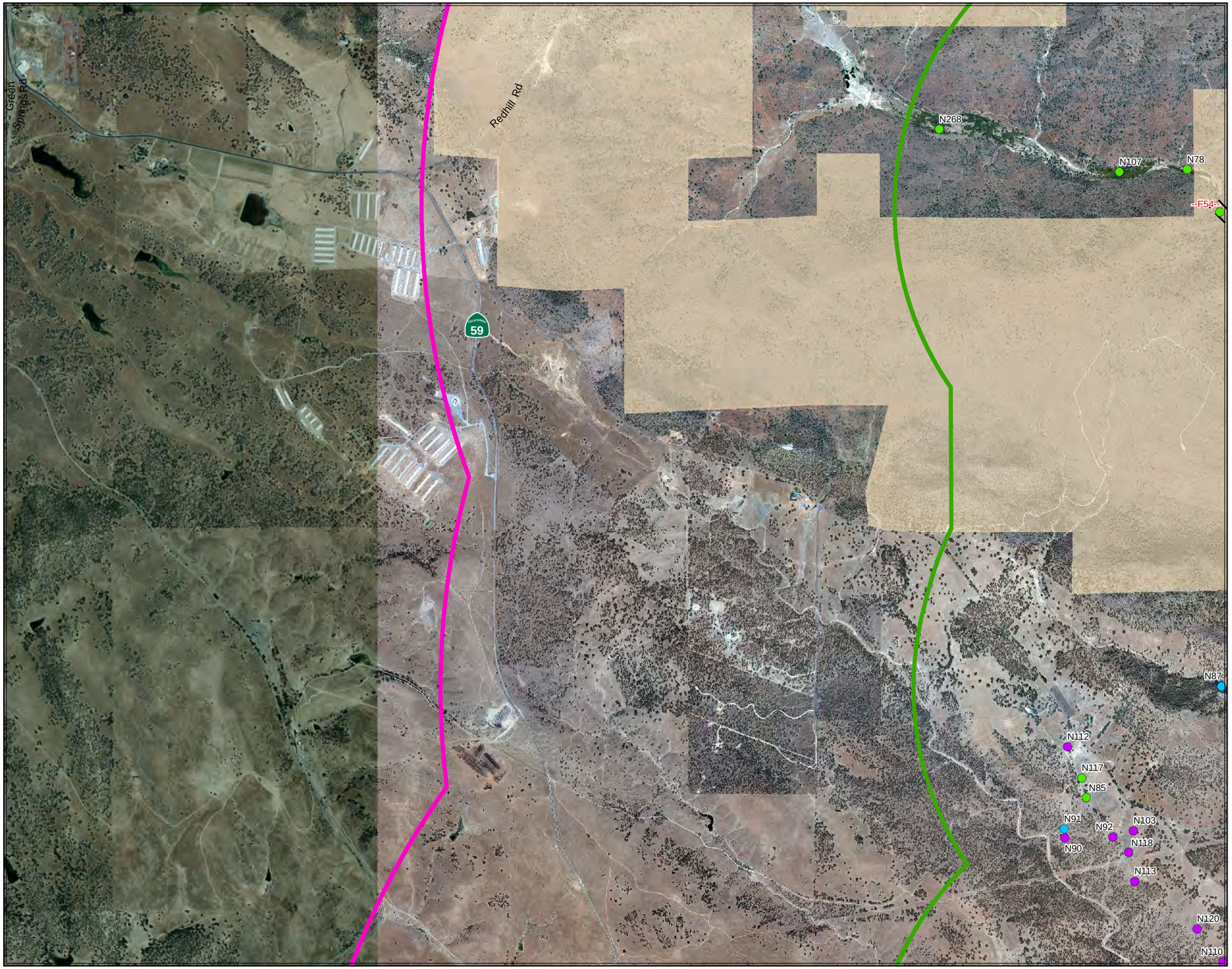

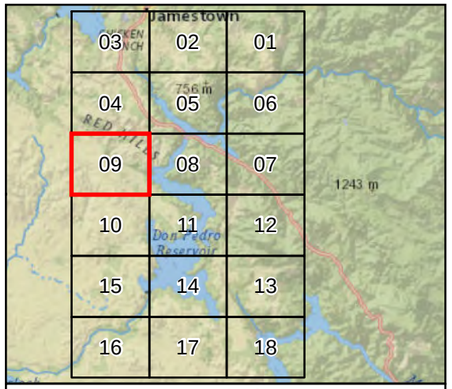

Study Sites*

Habitat Type

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Potentially Suitable Aquatic Habitat

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CTS Study Site Location by Habitat Type

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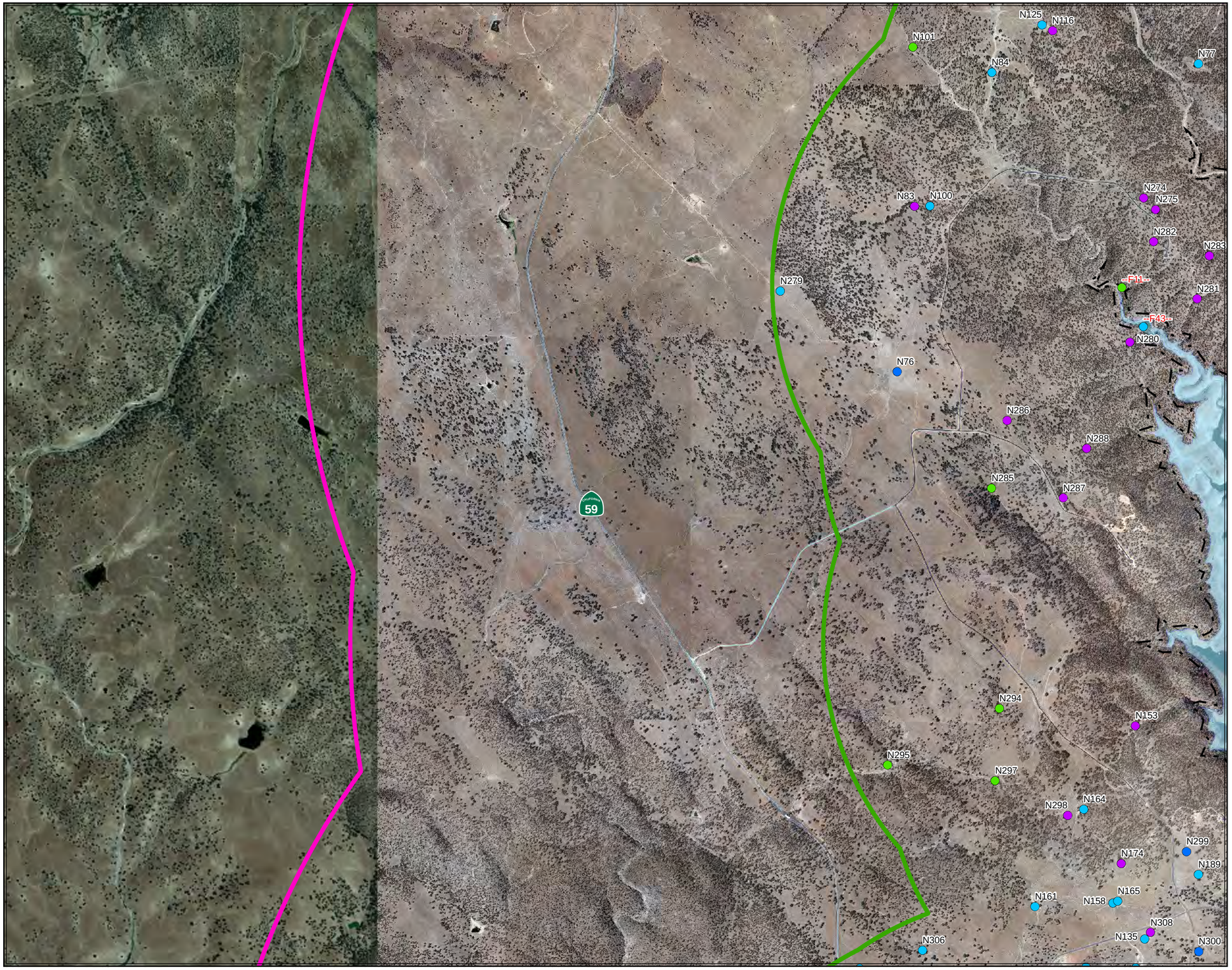

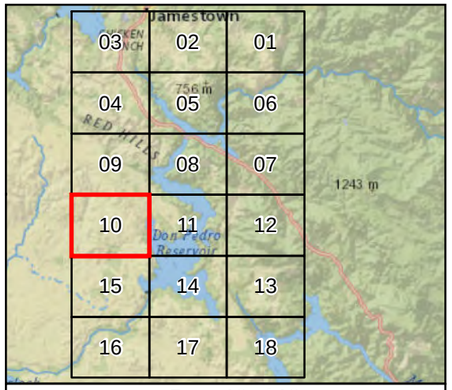

Study Sites*

Habitat Type

- Constructed Pond
- Natural Pond
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Potentially Suitable Aquatic Habitat
+YES+
--NO--

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0 0.25 0.5 1
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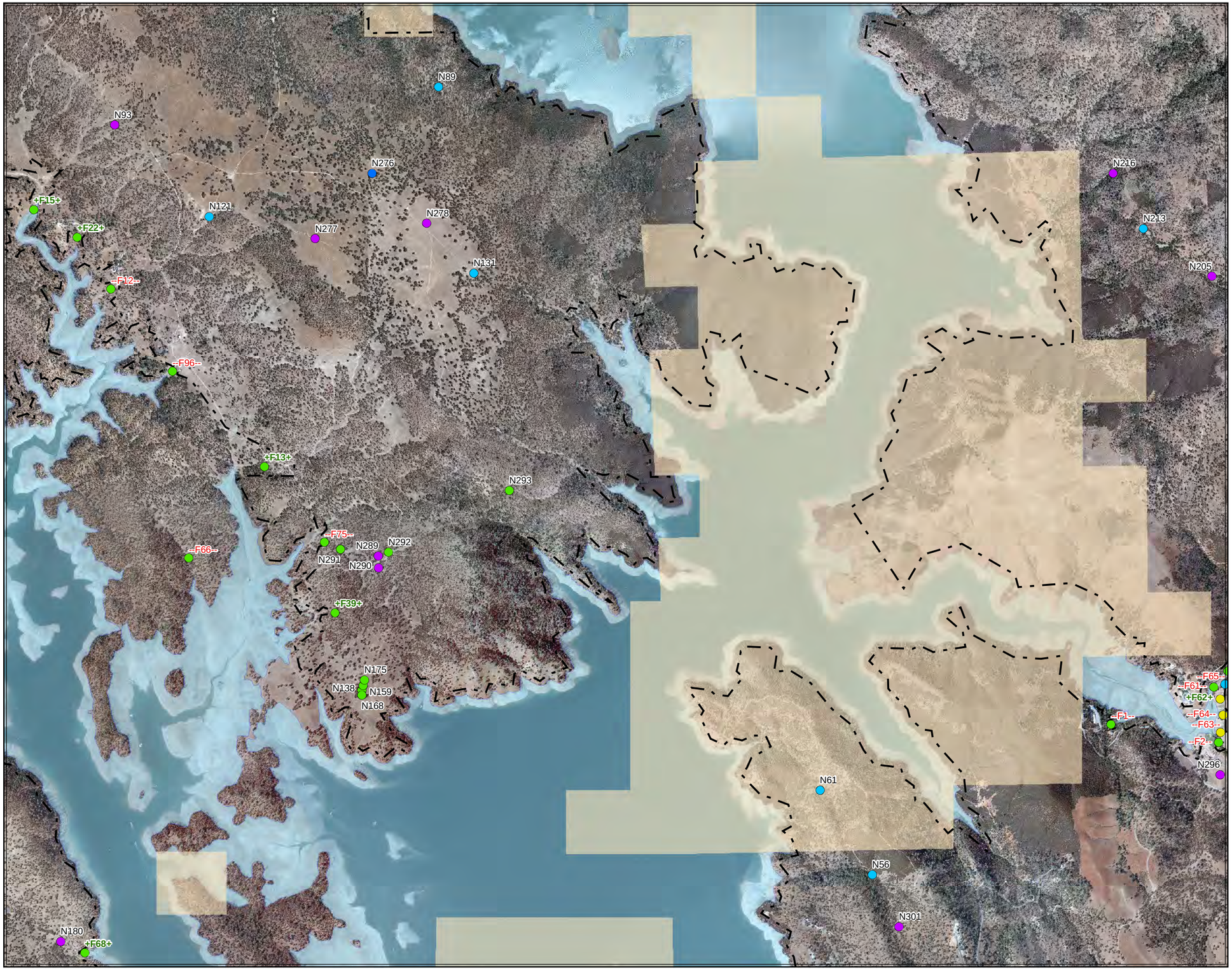

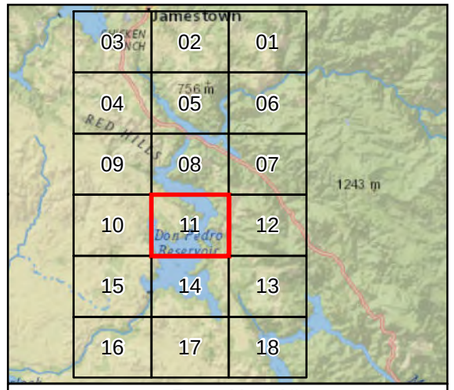

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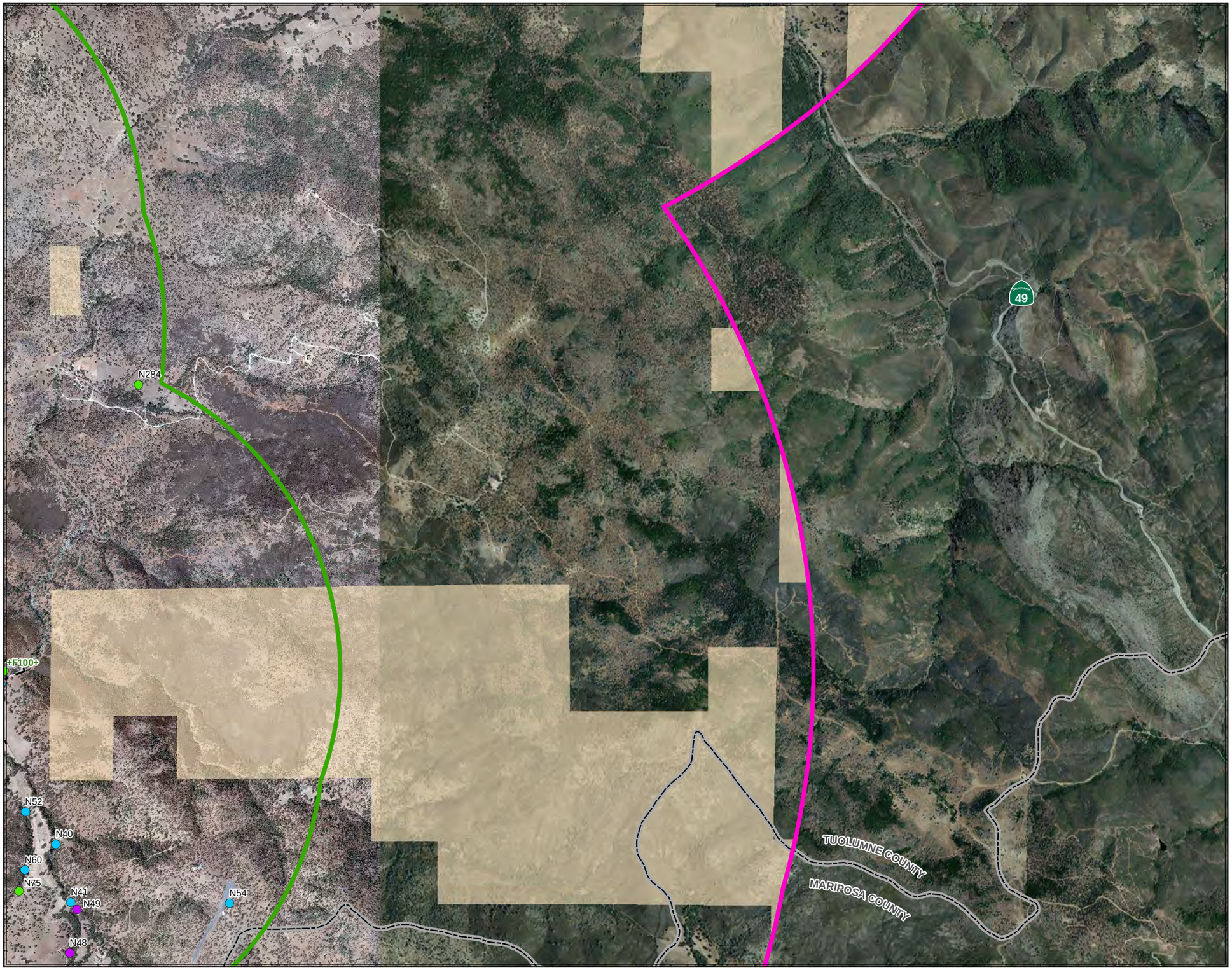

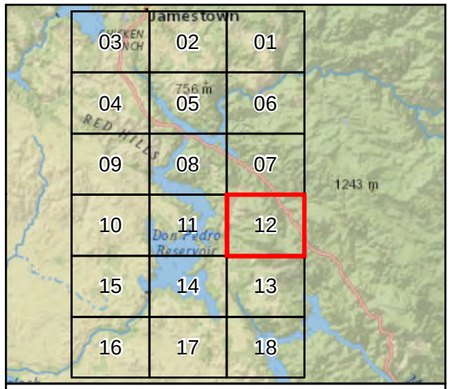

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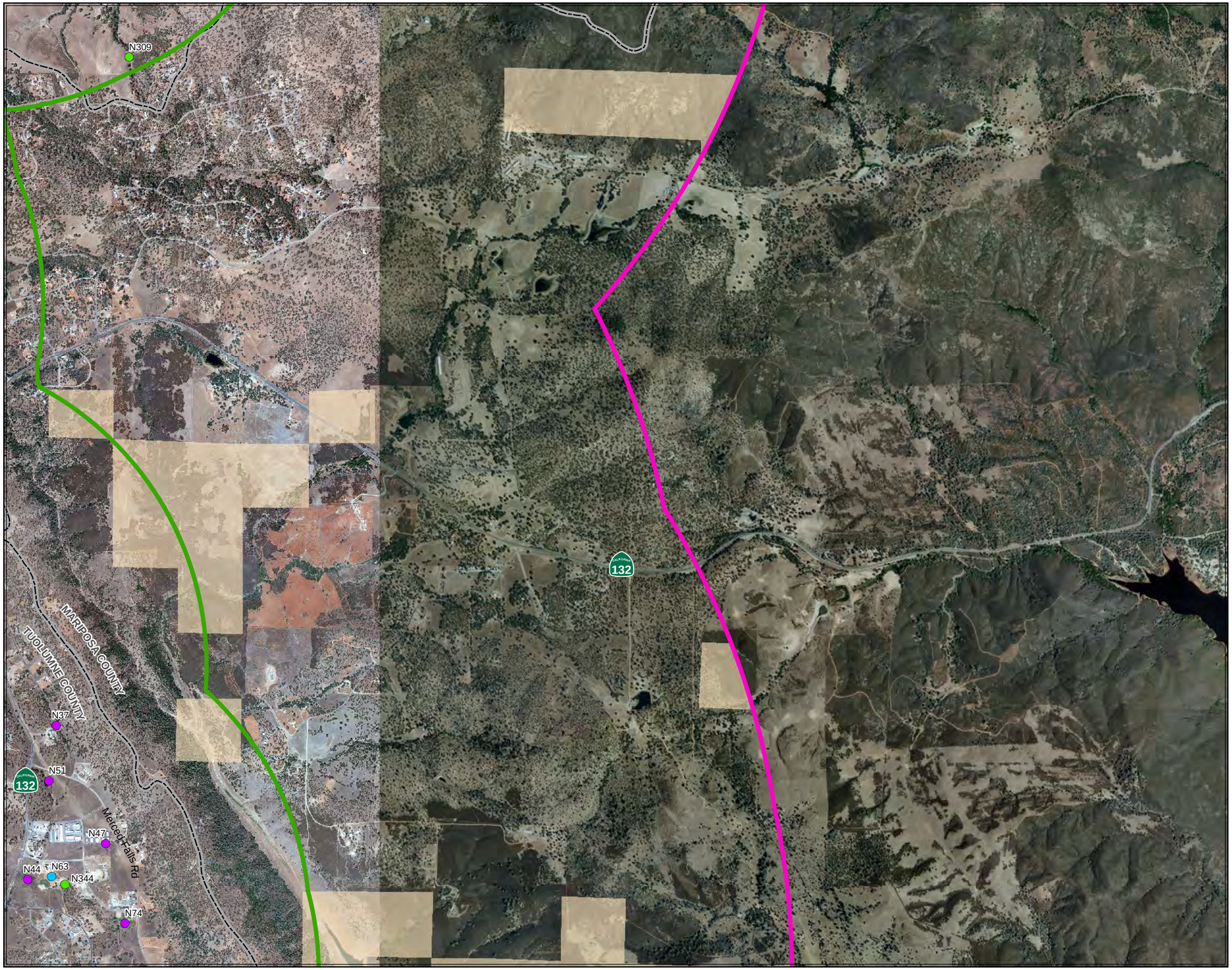

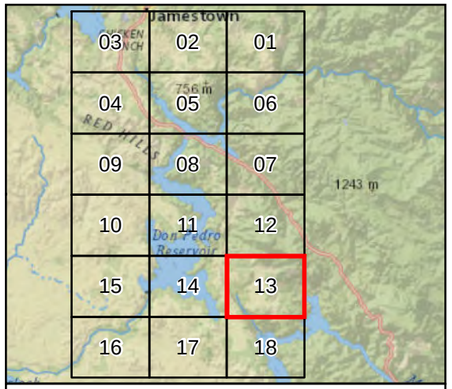

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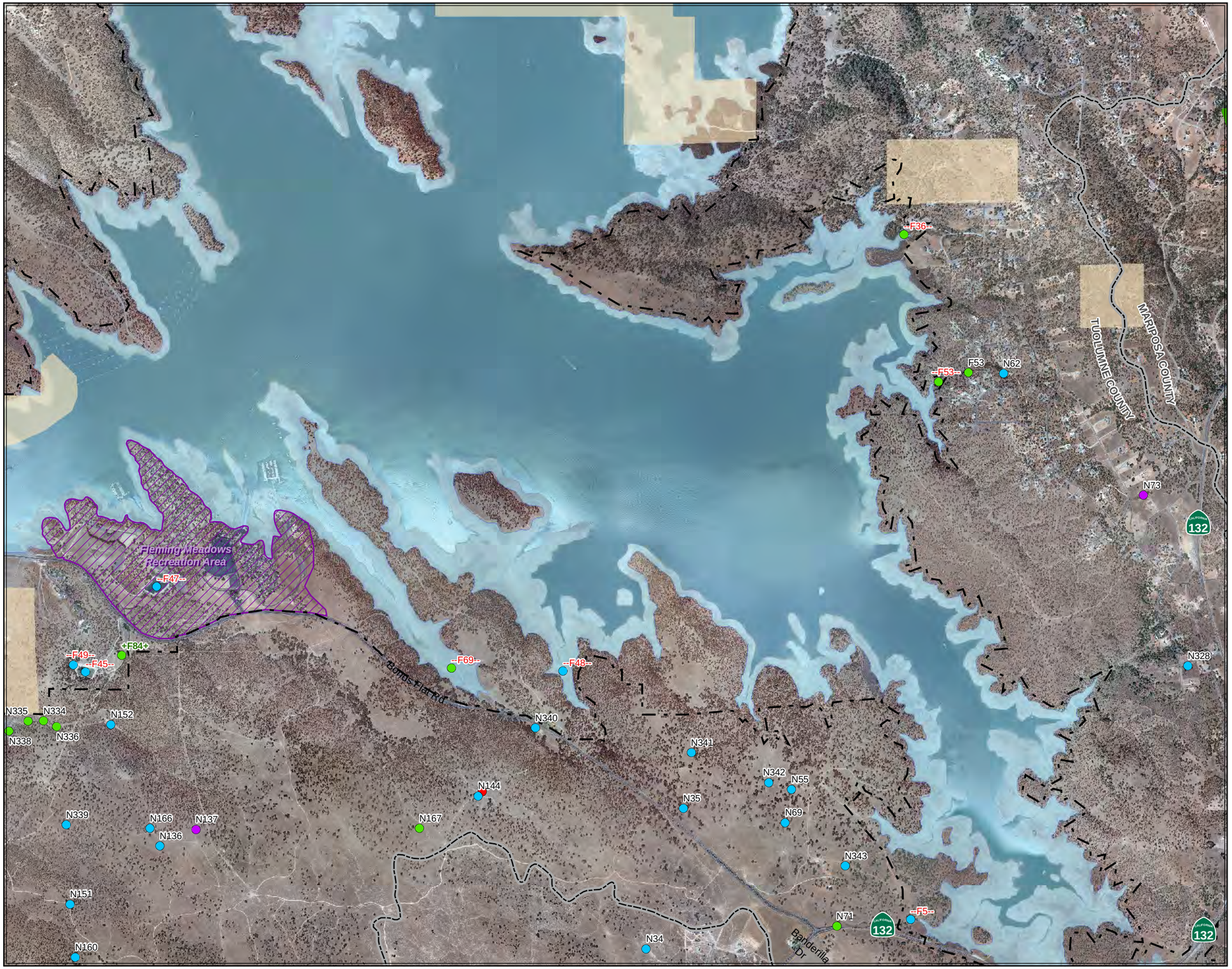

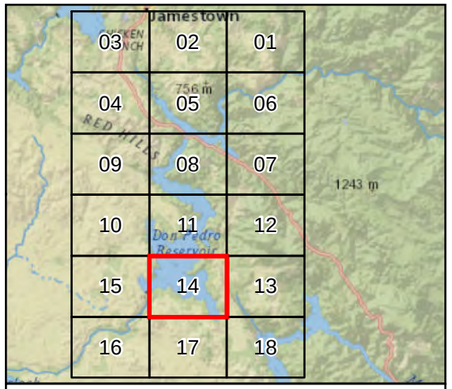

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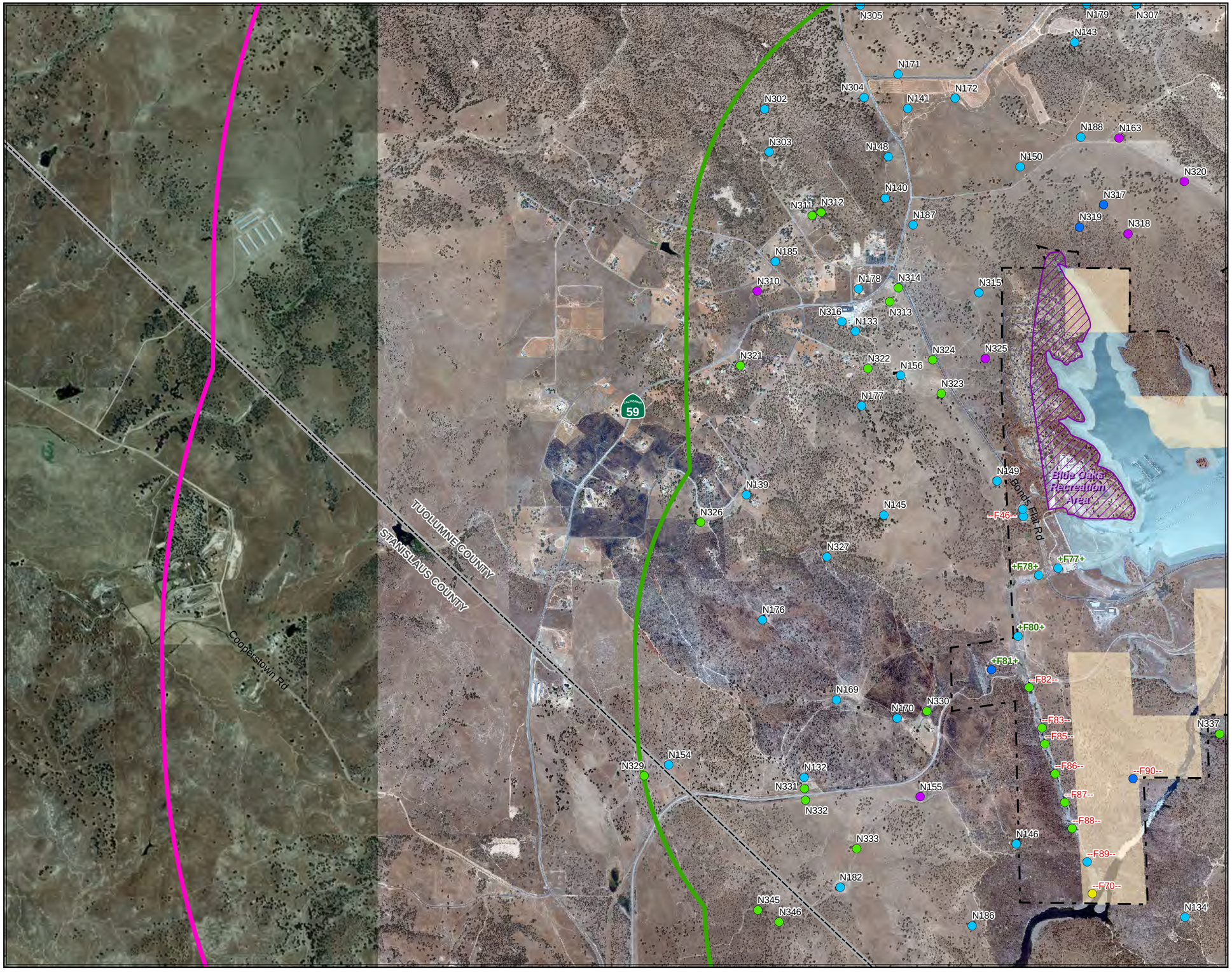

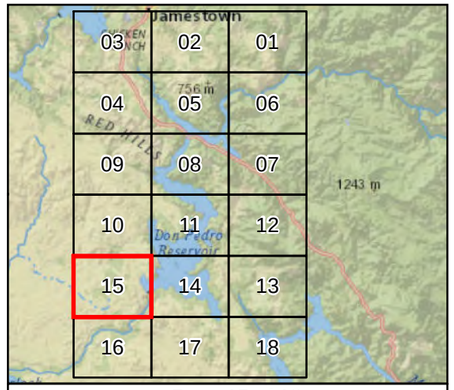

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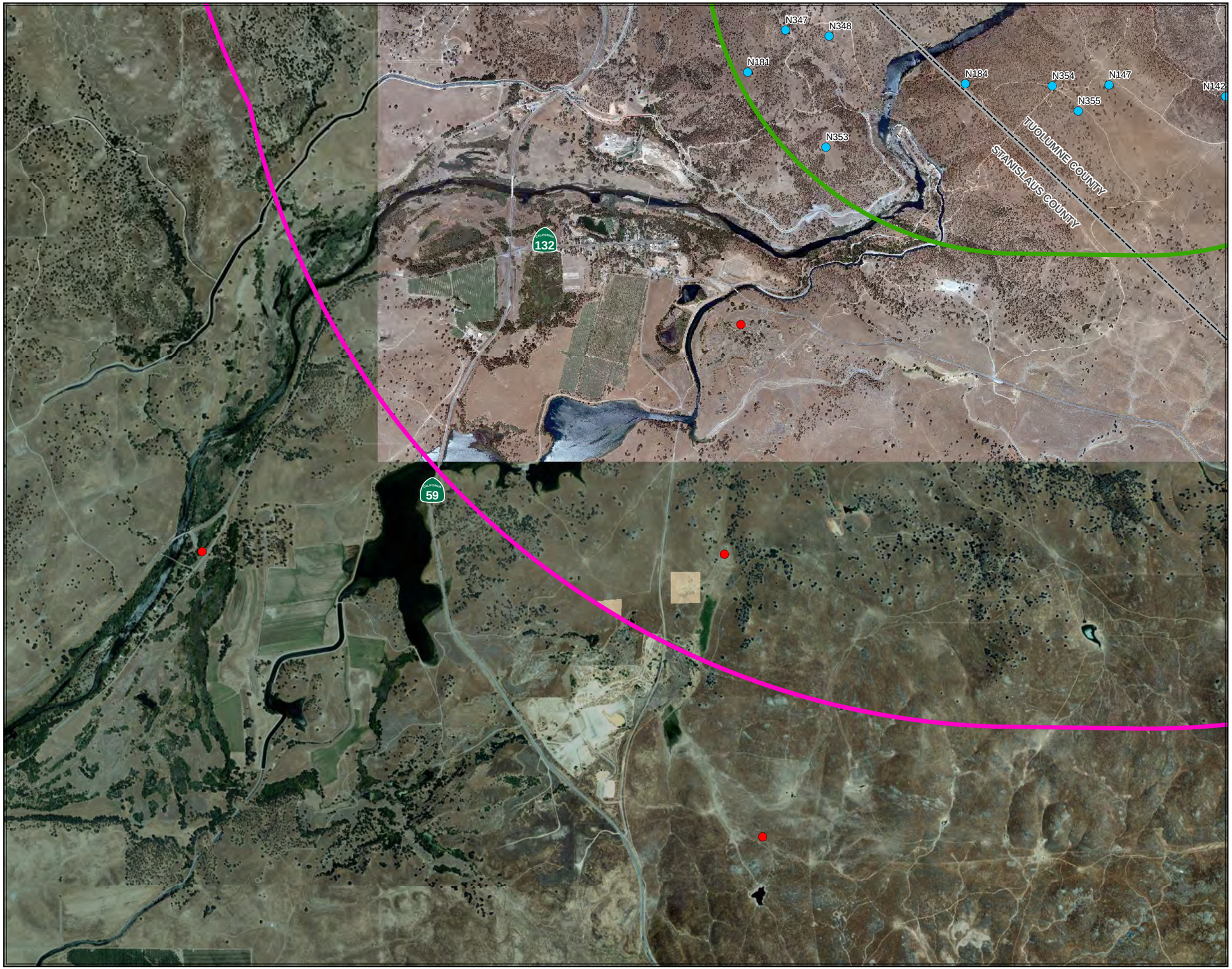
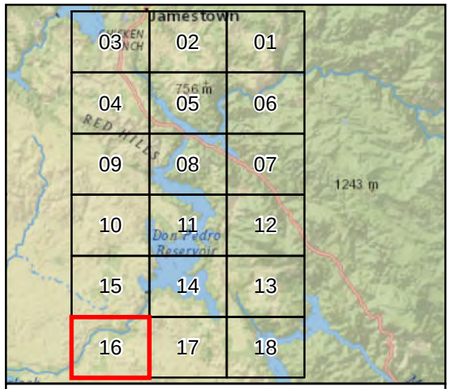
Miles

CTS Study Site Location by Habitat Type

Don Pedro Project (FERC No.2299)

Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness. Data Sources: Ownership - CA BLM; Water Surface, FERC Boundary, Recreation & Project Facilities - MID/TID; Roads - Esri. Data is NAD 83, CA State Plane, Zone III, U.S. Feet.





Study Sites*

Habitat Type

- Constructed Pond
- Natural Pond
- Stream/Pool in Stream
- Upland/Developed
- Wetland

* **Study Sites Within FERC Boundary**

Potentially Suitable Aquatic Habitat

+YES+

--NO--

- CTS Historic Location (CNDDB)
- FERC Project Boundary (No. 2299)
- 1.24 Mile Buffer from FERC Boundary
- 3.1 Mile Buffer from FERC Boundary
- Recreation Area
- County Boundary
- Normal Maximum Water Surface

Federal Land Ownership[1]

- Bureau of Land Management
- Bureau of Reclamation
- US Forest Service

(1) Land ownership data was clipped to only show portions within the 3.1 mile buffer of the FERC project area.

N

0 0.25 0.5 1

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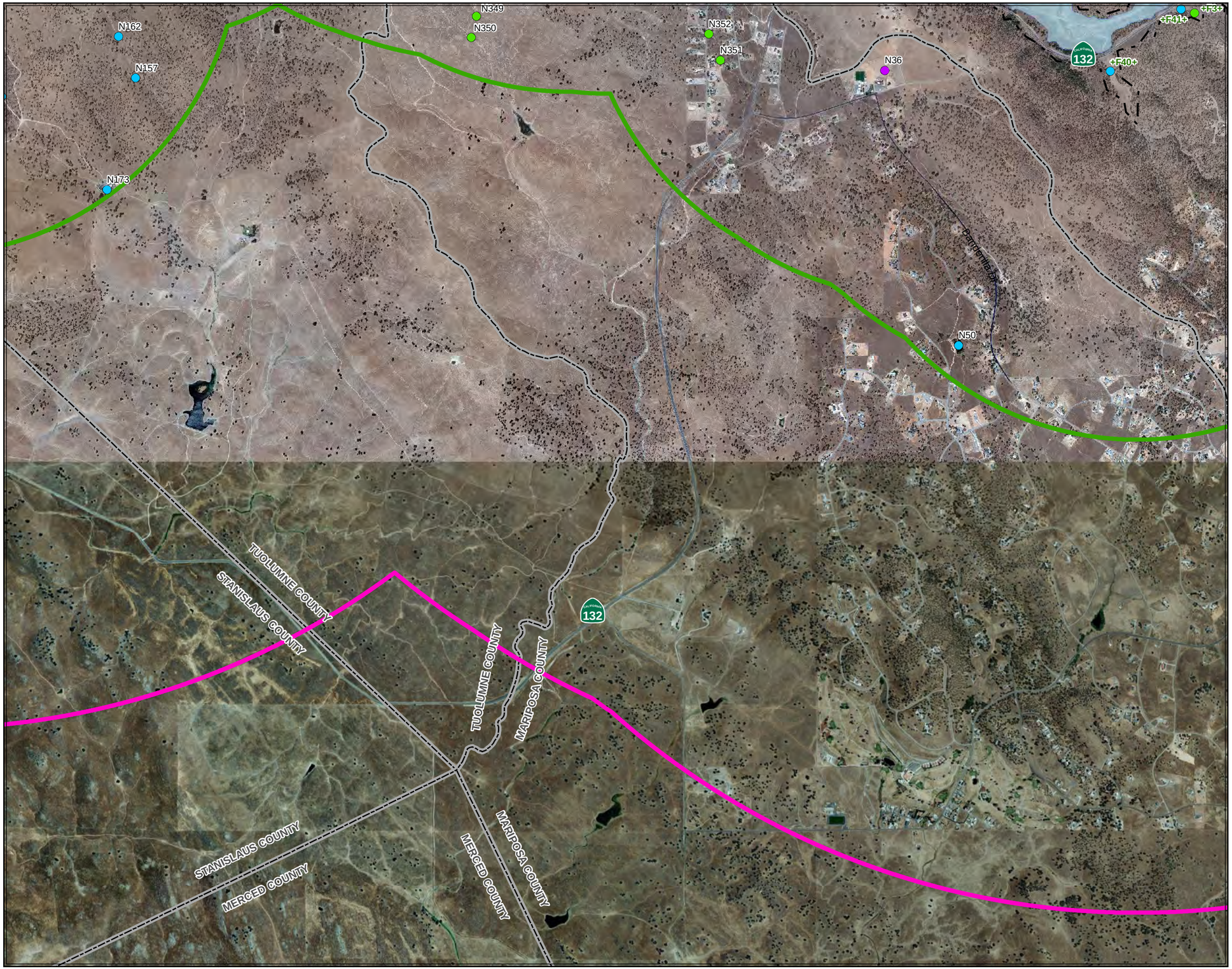

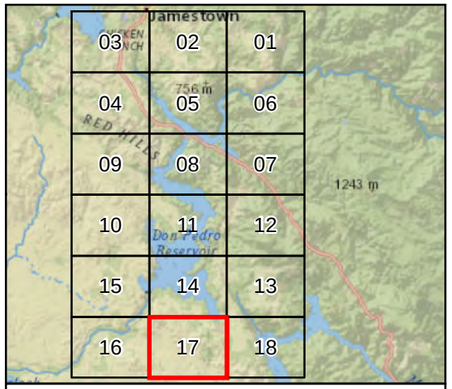

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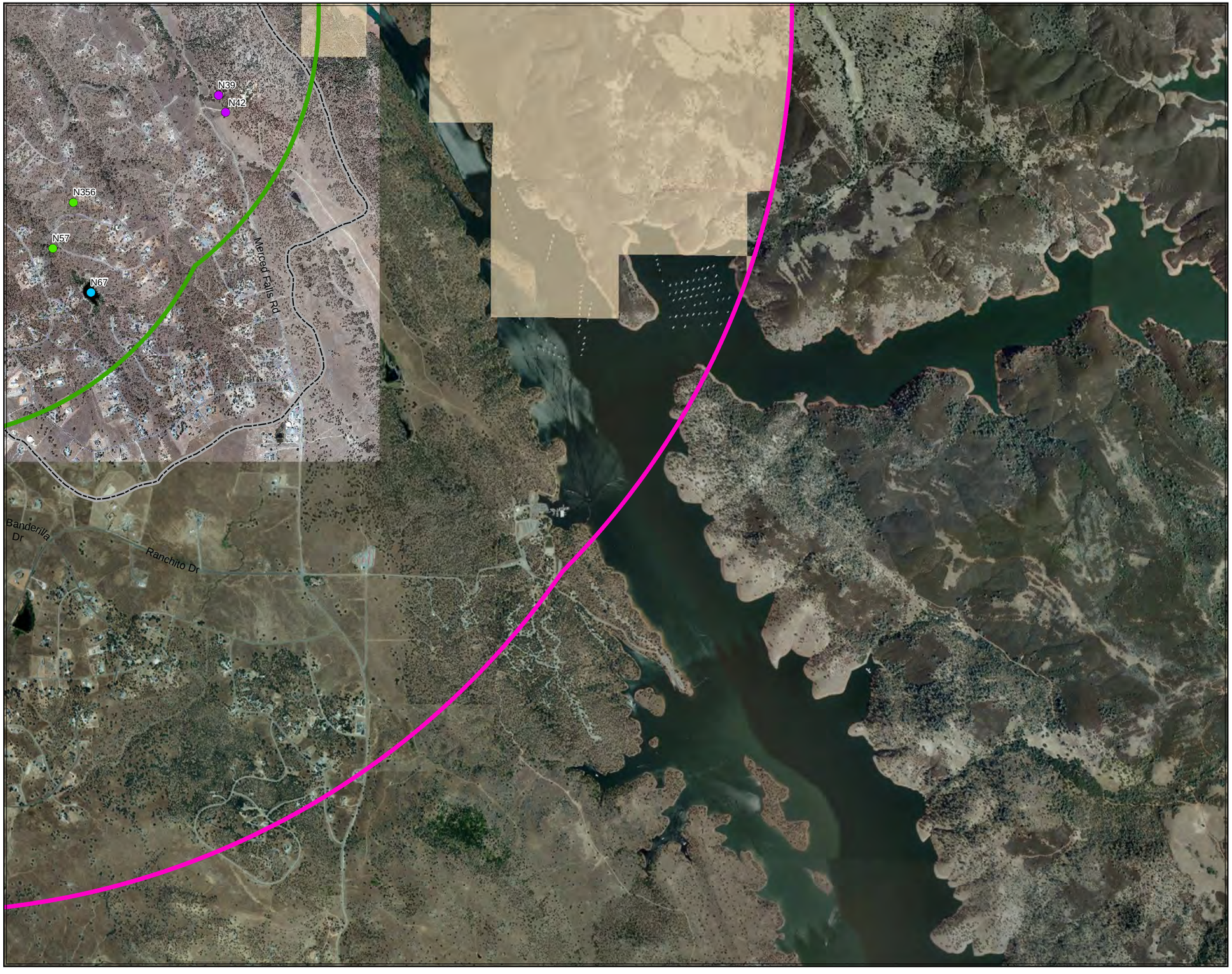

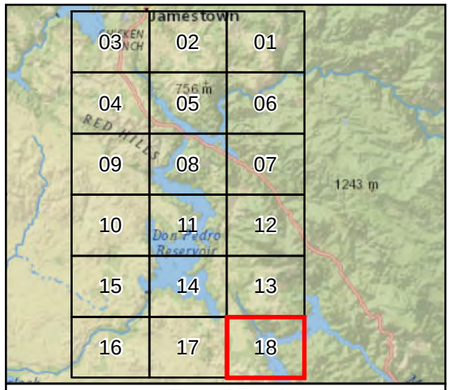

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