SOUTHERN CALIFORNIA EDISON®
Energy for What's Ahead℠

Wayne P. Allen
Principal Manager
Regulatory Support Services

Filed Electronically

March 31, 2023

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
825 First Street, N.E.
Washington, D.C. 20426

Subject: Lee Vining Creek Hydroelectric Project, FERC Project No. 1388
2022 Progress Report Technical Memos

Dear Secretary Bose:

Southern California Edison Company (SCE) hereby files with the Federal Energy Regulatory Commission (FERC) its 2022 Progress Report and Technical Memos for the Lee Vining Creek Project (FERC No. 1388).

The Progress Report include Technical Memos that summarize the preliminary data collected during the 2022 study year. The Progress Report and Technical Memos were sent to Stakeholders for a 30-day review period on January 23, 2023. A virtual Technical Working Group (TWG) meeting was held on February 1, 2023, to discuss the Technical Memos and SCE's plans for 2023 studies. Following the meeting, comments on the Technical Memos were received from the U.S. Forest Service (USFS) and California Department of Fish and Wildlife (CDFW) on February 21 and February 23, 2023, respectively.

The Progress Report, Technical Memos, meeting materials, agency comments, and SCE's response to those comments are attached to this letter.

The Lee Vining Project is following the Traditional Licensing Process, SCE has conducted the activities mentioned above and is filing these documents to keep stakeholders informed and continue collaboration. Following the acceptance of this filing, SCE will forward the "Acceptance for Filing" e-mail generated by FERC's e-filing service to all contacts on the distribution list via e-mail. This filing will also be placed on SCE's Lee Vining Creek Relicensing Website (https://www.sce.com/leevining), where it will be available for download.

SCE looks forward to continuing to work with FERC and other interested parties on the Lee Vining Creek relicensing. Should there be any questions or concerns regarding this filing, please contact Matthew Woodhall, Senior Regulatory Advisor, by phone at (626) 302-9596 or via e-mail at matthew.woodhall@sce.com.

Sincerely,

DocuSigned by:
Wayne Allen
106CF18A73D445F...
Wayne P. Allen
Principal Manager

1515 Walnut Grove Avenue
Rosemead, CA 91770
626.302.9741
wayne.allen@sce.com

Attachments:

- 2022 Progress Report and Technical Memos
- February 1, 2023, Stakeholder Meeting Materials
    - Meeting Agenda
    - PowerPoint Presentation
    - Meeting Summary
- USFS and CDFW Comment Letters
- SCE Responses to Comments

1515 Walnut Grove Avenue
Rosemead, CA 91770
626.302.9741
wayne.allen@sce.com

2022 PROGRESS REPORT AND TECHNICAL MEMOS

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SOUTHERN CALIFORNIA EDISON
Lee Vining Hydroelectric Project
(FERC Project No. 1388)

2022 PROGRESS REPORT

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead®

January 2023

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SOUTHERN CALIFORNIA EDISON

Lee Vining Hydroelectric Project
(FERC Project No. 1388)

2022 PROGRESS REPORT

Southern California Edison
1515 Walnut Grove Ave
Rosemead, CA 91770

January 2023

Support from:

Kleinschmidt

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
amsl	above mean sea level
APE	Area of Potential Effects
BE	built environment
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CHSC	California Health and Safety Code
CL	Confidence Limit
CNDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
DLA	Draft License Application
DO	dissolved oxygen
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
ft^2	square feet
FVE	Focused Visual Encounter
FW	Far Western Anthropological Research Group, Inc.
GIS	geographic information system
GPS	global positioning system
HRA	Historical Research Associates, Inc.
JAM	Joint Agency Meeting
LADWP	Los Angeles Department of Water and Power
N/A	data not available
NDVI	Normalized Difference Vegetation Index
NHPA	National Historic Preservation Act
NIR	near-infrared
NNIP	non-native invasive plant
NOI	Notice of Intent
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit

O&M	operations and maintenance
OHP	California Office of Historic Preservation
PAD	Pre-Application Document
Project	Lee Vining Hydroelectric Project (FERC Project No. 1388)
s.u.	standard unit
SCE	Southern California Edison
TAA	Terrestrial Assessment Area
TBD	to be determined
TDS	total dissolved solids
TLP	Traditional Licensing Process
TSS	total suspended solids
TWG	Technical Working Group
U.S.	United States
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

1.0 INTRODUCTION AND BACKGROUND

1.1. INTRODUCTION

Southern California Edison (SCE) is the licensee, owner, and operator of the Lee Vining Hydroelectric Project (Project), licensed under the Federal Energy Regulatory Commission (FERC) Project Number 1388. The Project is an existing hydroelectric generating facility located on Lee Vining Creek near the town of Lee Vining and in Mono County. The Project has an installed capacity of 11.25 megawatts. SCE is developing the application to relicense the Project. This *2022 Progress Report* is intended to provide stakeholders a summary of progress to date and data collected from the studies initiated in 2022. The 2022 Progress Report meeting (February 1, 2023, at 9:00 a.m. via Microsoft Teams) will provide an opportunity for Stakeholders to comment on the 2022 study program. Please note that a 2022 Progress Report and meeting is not a FERC requirement for relicensing using the Traditional Licensing Process (TLP), but SCE is providing them to facilitate collaboration and communication.

1.2. STUDY PLAN IMPLEMENTATION

SCE held 21 stakeholder meetings from October 2020 to March 2022 (see Section 1.3, Consultation to Date). SCE filed the Pre-Application Document (PAD) and Draft Study Plans on August 12, 2021. The comment period ended on January 15, 2022, with comments received from California Department of Fish and Wildlife, U.S. Forest Service, Mono Lake Committee, and the State Water Resources Control Board. Study Plans were modified based on feedback received from Stakeholders; Revised Study Plans were filed with FERC on February 18, 2022. The Final Study Plans were filed with FERC on April 25, 2022. Where appropriate, each study plan included a table identifying study elements discussed during PAD development and not adopted. The Lee Vining Study Program includes 15 study plans, as listed in Table 1.2-1. Several of these studies commenced in the summer of 2022. Table 1.2-1 indicates which studies occurred in 2022 and which will continue or begin in 2023.

The studies that occurred in 2022 form the basis for this *2022 Progress Report*.

Table 1.2-1. Study Plans and Implementation Year(s)

Study Plan Title	Year(s) of Implementation
Stream and Reservoir Water Quality (WQ-1)	2022*
Reservoir Fish Population (AQ-1)	2022
Stream Fish Population (AQ-2)	2022
Aquatic Habitat Mapping and Sediment Characterization (AQ-3)	2023
Aquatic Invasive Plants (AQ-4)	2023
Operations Model (AQ-5)	2022–2023
Lower Lee Vining Creek Channel Morphology (AQ-6)	2022–2023
General Botanical Resources Survey (TERR-1)	2022–2023
General Wildlife Resources Survey (TERR-2)	2022–2023
Recreation Use Assessment (REC-1)	2022–2023
Existing Recreation Facilities Condition Assessment (REC-2)	2022–2023
Project Lands and Roads (LAND-1)	2023
Visual Resource Assessment (LAND-2)	2023
Cultural Resource (CUL-1)	2022–2023
Tribal Resources (TRI-1)	2023

Note: Grey rows indicate studies that have not yet commenced. These are briefly identified in Table 2-1 but are not discussed further in this *2022 Progress Report*.

* Depending on the 2023 Water Year Type, WQ-1 may be implemented in 2023.

1.3. Consultation to Date

Below is a list of meetings conducted in support of the relicensing effort.

- October 6, 2020—Public Kickoff Meeting (morning and evening presentations)
- November 17, 2020—Initial Technical Working Group (TWG) Meeting
- Aquatics and Hydrology TWG Meetings:
  - January 25, 2021
  - February 22, 2021
  - March 29, 2021
  - May 24, 2021
- Terrestrial and Botanical TWG Meetings:
  - January 27, 2021
  - February 24, 2021
  - April 7, 2021
  - May 26, 2021
- Cultural and Tribal TWG Meetings:
  - January 27, 2021
  - February 24, 2021
  - March 31, 2021
  - May 26, 2021
- Recreation and Land Use TWG Meetings:
  - January 28, 2021
  - February 24, 2021
  - April 1, 2021
  - May 27, 2021
- September 28, 2021—Site Visit
- November 16, 2021—Joint Agency and Public Meeting
- March 28, 2022—Study Plan Meeting

1.4. Process Plan and Schedule

The Project follows the TLP schedule as outlined by FERC guidance (18 CFR § 16.8). Table 1.2-2 identifies the major milestones completed and those upcoming for the Project, as filed with FERC in the August 2021 PAD.

Table 1.2-2. Project Relicensing Schedule

Regulation	Activity	Responsible Party	Activity Timeframe	Dates [a]
Stage 1				
18 CFR § 5.3, 16.8	File NOI and PAD	SCE	At least 5 years but no more than 5.5 years prior to license expiration	8/12/2021
18 CFR § 5.3	Publish Notice in Newspaper of NOI/PAD Filing, TLP Request, and Site Visit	SCE	Concurrent with NOI	8/12/2021
18 CFR § 5.7	Meeting Between FERC Staff and Native American Tribes	FERC/Stakeholders	Within 30 days of NOI	9/13/2021
18 CFR § 5.3	Comments on Use of TLP	FERC/ Stakeholders	Within 30 days of NOI	9/13/2021
18 CFR § 5.8	FERC Notice of Site Visit	FERC	Approximately 30 days before site visit	8/27/2021
18 CFR § 16.8	Conduct Site Visit	SCE	30 to 60 days after FERC Notice of Commencement and TLP Approval	9/28/2021
18 CFR § 5.8	FERC Notice of NOI/PAD Filing, Commencement of Proceeding, and Decision on TLP Request	FERC	Within 60 days of NOI	10/8/2021
18 CFR § 16.8	JAM Notification and Agenda to FERC and Stakeholders	SCE	At least 15 days prior to the JAM	10/31/2021
18 CFR § 16.8	Publish Public Notice of JAM in Newspaper	SCE	At least 14 days prior to the JAM	11/1/2021
18 CFR § 16.8	Conduct JAM	SCE	30 to 60 days after FERC Notice of Commencement and TLP Approval	11/16/2021
18 CFR § 16.8	File Comments on PAD and Study Requests	Stakeholders	Within 60 days of JAM	1/15/2022
Not Required	Provide Study Plans TWG Review	SCE	Within 30 days of Receipt of Study Requests	2/18/2022
Not Required	Comments on Study Plans	Stakeholders	Within 30 days of Receipt of Study Plans	3/20/2022
Not Required	Study Plan Meetings	SCE/Stakeholders	If needed, within 15 days of receipt of comments on Study Plans	3/28/2022

Regulation	Activity	Responsible Party	Activity Timeframe	Dates [a]
	Final Study Plans	SCE	Within 30 Days of Receipt of Study Plan Comments	4/25/2022
Stage 2				
18 CFR § 16.8	Conduct First Season of Studies	SCE		2022
Not Required	2022 Progress Report Meeting	SCE/Stakeholders	Following first year of study implementation	1/31/2023
18 CFR § 16.8	Conduct Second Season of Studies (if necessary)	SCE		2023
18 CFR § 16.8	File DLA with Stakeholders and FERC	SCE	No later than 150 days prior to deadline for filing FLA	9/3/2024
18 CFR § 16.8	File Comments on Applicant's DLA	Stakeholders	Within 90 days of filing DLA	12/2/2024
Stage 3				
18 CFR § 5.17	File FLA	SCE	No later than 24 months before existing license expires	1/31/2025

CFR = Code of Federal Regulations; DLA = Draft License Application; FERC = Federal Energy Regulatory Commission; FLA = Final License Application; JAM = Joint Agency Meeting; NOI = Notice of Intent; PAD = Pre-Application Document; SCE = Southern California Edison; TLP = Traditional Licensing Process; TWG = Technical Working Group

Notes:

[a] If the due date falls on a weekend or holiday, the deadline has been adjusted to show the preceding business day.

2.0 SUMMARY OF STUDIES

SCE initiated several resource studies in 2022 as outlined in the Revised Technical Study Plan. A high-level summary of the 2022 field studies is included in Table 2-1.

This *2022 Progress Report* includes technical memos for studies that were implemented in 2022. The goal of this progress report and accompanying technical memos is to provide Stakeholders with a summary update on the Lee Vining Study Program and provide a look ahead for the 2023 field season. This report is a snapshot of the status of each study with as much data as possible provided to help guide discussions. Data is still being analyzed for several studies that were still collecting data into fall 2022. Where available and appropriate, preliminary results will be discussed during the February 2023 progress meeting. For those preliminary results and all studies, final results and discussion will be included in Technical Reports as the studies conclude.

Final Technical Reports will be distributed prior to inclusion in the Draft License Application (DLA) in 2024.

Table 2-1. Project Relicensing 2022 Field Study Summary

Study Name	Study Status	Modification to Methodology	Next Steps / Schedule
WQ-1 Stream and Reservoir Water Quality	1-year study, pending water quality results; went as planned in 2022	• Due to freezing waters in Saddlebag Lake, depth profiles were collected at the deepest location free of ice cover rather than maximum depth. • Supply chain issues led to turbidity logger installation in early summer rather than in spring. • At some sites, fewer than nine edible-sized individuals of a given species were caught, processed, and sent to analytical laboratory for mercury tissue analysis.	• See the WQ-1 Technical Memo (Appendix A) • Second field season 2023 pending water year type
AQ-1 Reservoir Fish Population	1-year study; went as planned in 2022	• Reduced gill netting set times at some locations from approximately 8 hours to approximately 4 hours to reduce potential for fish mortality.	• See the AQ-1 Technical Memo (Appendix B)
AQ-2 Stream Fish Population	1-year study; went as planned in 2022	• No changes or modifications to methods	• See the AQ-2 Technical Memo (Appendix C)
AQ-3 Aquatic Habitat Mapping and Sediment Characterization	Study will occur in 2023	Not Applicable	• No work conducted in 2022 • Field surveys in 2023
AQ-4 Aquatic Invasive Plants Survey	Study will occur in 2023	Not Applicable	• No work conducted in 2022 • Field surveys in 2023
AQ-5 Operations Model	2-year study; went as planned in 2022	• No changes or modifications to methods	• See the AQ-5 Technical Memo (Appendix D) • Continued data collection and model calibration in 2023
AQ-6 Lower Lee Vining Creek Channel Morphology	2-year study; went as planned in 2022	• No changes or modifications to methods	• See the AQ-6 Technical Memo (Appendix E) • Field surveys in 2023
TERR-1 General Botanical Resources Survey	2-year study; went as planned in 2022	• Conducted two rounds of surveys in place of reference population checks for Special Status Plants • Scale of vegetation mapping is significantly finer than the U.S. Forest Service's scale	• See the TERR-1 Technical Memo (Appendix F) • Field surveys in 2023

Study Name	Study Status	Modification to Methodology	Next Steps / Schedule
TERR-2 General Wildlife Resources Survey	2-year study; went as planned in 2022	• Expanded Yosemite toad study area and survey days • Trail cameras were deployed during snow-free seasons	• See the TERR-2 Technical Memo (Appendix G) • Develop 2023 Scope and make Study Plan updates • Coordinate 2023 camera locations with REC team • Field surveys in 2023
REC-1 Recreation Use Assessment	2-year study; went as planned in 2022	• Shifted survey dates later in the season because of campground/road opening dates; shifted survey dates due to personnel injury; added dates in September to account for missed day(s) • Survey circuits took longer than anticipated • Nexus survey was on tablet only in English, not on paper and bilingual as originally proposed; however, no language barriers were encountered	• See the REC-1 Technical Memo (Appendix H) • Develop plan for winter 2023 field portion of study • Field surveys in 2023
REC-2 Existing Recreation Facilities Condition Assessment	2-year study; went as planned in 2022	• No changes or modifications to methods	• See the REC-2 Technical Memo (Appendix I) • Field surveys in 2023
LAND-1 Project Lands and Roads Assessment	Study will occur in 2023	• The historic FERC Project Boundary warrants modifications due to shifting creek channel and modern mapping standards	• No work conducted in 2022 • Desktop analysis in 2023
LAND-2 Aesthetics Resource Assessment	Study will occur in 2023	Not Applicable	• No work conducted in 2022 • Field surveys in 2023
CUL-1 Cultural Resource	2-year study; went as planned in 2022	• No changes or modifications to methods	• See the CUL-1 Technical Memo (Appendix J) • Field surveys in 2023
TRI-1 Tribal Resources	Study will occur in 2023	Not Applicable	• Desktop reviews conducted in 2022 • Field surveys in 2023

FERC = Federal Energy Regulatory Commission

Note: Grey rows indicate studies that have not yet commenced.

APPENDIX A
STREAM AND RESERVOIR WATER QUALITY (WQ-1) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Stream and Reservoir Water Quality (WQ-1) Technical Memo

1.0 INTRODUCTION

This memo presents a data summary of the Study WQ-1 conducted in 2022 within the Lee Vining Hydroelectric Project (Project). The *WQ-1 Stream and Reservoir Water Quality Technical Study Plan* details Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

In 2022, all components of Study WQ-1 were implemented, including reservoir profiles, reservoir and stream water quality sampling, bacterial sampling, fish tissue sampling, and turbidity monitoring. A data summary from the 2022 spring (May–June) reservoir and stream water quality sampling effort are included in this memo.

2.0 STUDY OBJECTIVES

The goal of this study is to assess consistency of Project reservoirs and Project-affected stream reaches with water quality objectives in the Lahontan Region Water Quality Control Board Basin Plan (Basin Plan) (LRWQCB, 2019).

2.1. STUDY AREA

The study area included Project reservoirs and selected sites within Project-affected stream reaches. Exact locations of the monitoring stations were determined in the field based on sampling suitability (i.e., well-mixed and deep enough for representative sampling) and accessibility. Site selection for fish tissue sampling occurred as part of Study AQ-1 (SCE, 2022). Site coordinates of sampling sites were documented with a hand-held Global Positioning System (GPS) unit, where possible. Established station locations were re-occupied during subsequent water quality monitoring efforts. Specifically excluded from the study area are areas where access is unsafe (very steep terrain or high streamflow). Water quality, bacterial, turbidity, and fish tissue sampling locations are shown on Figure 2.1-1 and listed in Table 2.1-1.

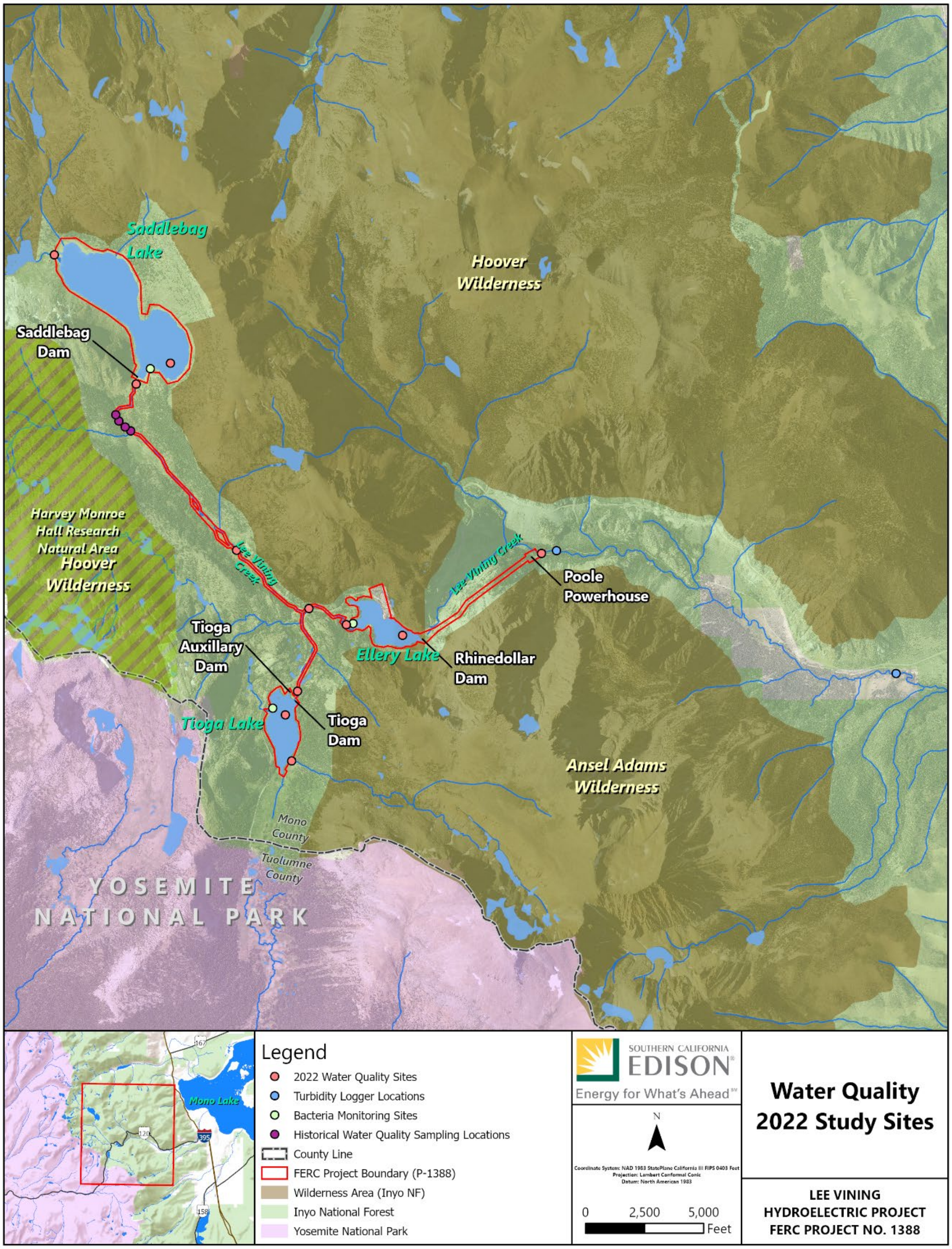

Figure 2.1-1. Overview of Water Quality 2022 Study Sites

Table 2.1-1. 2022 Water Quality General Sampling Locations and Study Components

General Site Description	Study Component			
	Reservoir and Stream Water Quality Sampling	Bacterial Sampling	Fish Tissue Mercury Sampling	Hydro-Resource Optimization Event Turbidity Monitoring
Lee Vining Creek Watershed				
Lee Vining Creek inflow to Saddlebag Lake	X			
Saddlebag Lake	X	X	X	
Lee Vining Creek between Saddlebag Dam and its confluence with Slate Creek	X			
Lee Vining Creek between its confluence with Slate Creek and Glacier Creek	X			
Lee Vining Creek between its confluence with Glacier Creek and Ellery Lake	X			
Lee Vining Creek inflow to Ellery Lake	X			
Ellery Lake	X	X		
Lee Vining Creek immediately downstream of Poole Powerhouse	X			X
Lee Vining Creek upstream of the LADWP Diversion	X			
Glacier Creek Watershed				
Glacier Creek inflow to Tioga Lake	X			
Tioga Lake	X	X	X	
Glacier Creek downstream of Tioga Dam	X			

LADWP = Los Angeles Department of Water and Power

3.0 METHODS

Study implementation generally followed the methods described in the WQ-1 Final Technical Study Plan (SCE, 2022), with the exceptions described in below.

3.1. MODIFICATIONS TO METHODS

Three modifications to the methods outlined in the WQ-1 Final Technical Study Plan were made in 2022:

1. During spring sampling (June 1, 2022), extensive ice cover on Saddlebag Lake prevented collection of depth profiles at the location of maximum depth. Profiles were instead collected at the deepest location free of ice cover. *In situ* turbidity was not measured during depth profile collection in summer 2022.

2. During summer sampling, analytical samples were not collected at depth from Saddlebag Lake and Tioga Lake when the reservoirs were stratified.

3. Continuous turbidity data loggers were not available for purchase (due to supply chain issues) until late June 2022. As a result, turbidity loggers were installed in early summer 2022 rather than in spring. Turbidity loggers were redeployed after downloading data in October 2022 to characterize turbidity in Lee Vining Creek downstream of Poole Powerhouse through spring 2023. Both logger installations were moved slightly during redeployment to better withstand elevated spring flows.

4. All edible-sized[1] brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss*) caught during reservoir fish sampling were processed and sent to the analytical laboratory for mercury tissue analysis. However, fewer than nine edible-sized individuals of a given species were caught at some sites.

3.2. ANALYSIS

Data reduction, tabulation, quality assurance / quality control, analysis, and summary are underway. Water quality data collected during this study will also be used by related aquatic studies.

4.0 DATA SUMMARY

4.1. RESERVOIR WATER QUALITY SAMPLING

Vertical profiles of *in situ* water temperature, dissolved oxygen (DO), pH, specific conductivity, and turbidity were collected at or near the location of maximum depth in Saddlebag Lake, Tioga Lake, and Ellery Lake in spring, summer, and fall 2022 (Table 4.1-1). Seasonal sampling schedule and depths are listed in Table 4.1-1. Water quality sonde used to collect depth profiles were calibrated daily before and after sampling. A

[1] greater than 200 millimeters total length

multi-parameter water quality sonde (YSI Incorporated, Yellow Springs, OH [YSI]) was used to measure profiles at 1-meter intervals.

Table 4.1-1. 2022 Reservoir Water Quality Sampling Sites and Schedule

Site ID Code	Site Description	Location[a] (decimal degrees)		Water Quality Sampling Dates (2022)		
		Latitude (North)	Longitude (East)	Spring	Summer	Fall
LV-2	Saddlebag Lake[b]	37.968235°	-119.269312°	June 1	August 18	October 4
LV-7	Ellery Lake	37.935294°	37.935294°	June 1	August 17	October 5
LV-11	Tioga Lake	-37.926389	-119.252667°	May 31	August 17	October 5

[a] Datum: World Geodetic System (WGS) 84
[b] Frozen conditions on Saddlebag Lake during spring sampling made the maximum depth inaccessible. Samples collected at 37.9701326 N, -119.2730728 E

Water quality grab samples were collected at Project reservoirs during profile collection. Surface samples were collected at all reservoirs during all sampling events at a depth of 0.5 meter. Based on possible thermal stratification in October 2022, grab samples were additionally collected using a Van Dorn sampler at a depth of 20 meters in Saddlebag Lake and 18 meters in Tioga Lake.

All water quality grab samples were placed in a laboratory-supplied container, labeled, preserved, immediately placed on ice, packaged, and transported to California Laboratory Services (Rancho Cordova, California) via overnight shipping on the same day they were collected. Samples were analyzed in the laboratory for basic water chemistry and nutrients according to the methods listed in Table 6-1 of the WQ-1 Final Technical Study Plan (SCE, 2022).

4.2. Stream Water Quality Sampling

In situ water quality sampling for DO, pH, specific conductivity, and turbidity was conducted in spring, summer, and fall at the nine stream water quality sampling sites according to the schedule described in Table 4.2-1. Water quality meters used to collect *in situ* measurements were calibrated daily before and after sampling. Surface water grab samples were simultaneously collected from a well-mixed area of the stream at each sampling site.

All surface water grab samples were placed in a laboratory-supplied container, labeled, preserved, immediately placed on ice, packaged, and transported to California Laboratory Services (Rancho Cordova, California) via overnight shipping on the same day they were collected. Samples were analyzed in the laboratory for basic water chemistry and nutrients according to the methods listed in Table 6-1 of the WQ-1 Final Technical Study Plan (SCE, 2022).

Table 4.2-1. 2022 Stream Water Quality Sampling Sites Schedule

Site ID Code	Site Description	Location[a] (decimal degrees)		Water Quality Sampling Dates (2022)		
		Latitude (North)	Longitude (East)	Spring	Summer	Fall
Lee Vining Creek						
LV-1	Lee Vining Creek inflow to Saddlebag Lake	37.979087°	-119.284321°	June 1	August 18	October 4
LV-3	Lee Vining Creek between Saddlebag Dam and its confluence with Slate Creek	37.964904°	-119.273738°	May 31	August 18	October 4
LV-4	Lee Vining Creek between its confluence with Slate Creek and Glacier Creek	37.944963°	-119.258639°	May 31	August 18	October 4
LV-5	Lee Vining Creek between its confluence with Glacier Creek and Ellery Lake	37.938058°	-119.249256°	May 31	August 17	October 4
LV-6	Lee Vining Creek inflow to Ellery Lake	37.936590°	-119.243355°	May 31	August 17	October 5
LV-8	Lee Vining Creek immediately downstream of Poole Powerhouse	37.944568°	-119.214543°	May 31	August 17	October 5
LV-9	Lee Vining Creek upstream of the LADWP Diversion	37.935977°	-119.137268°	May 31	August 17	October 5
Glacier Creek						
LV-10	Glacier Creek inflow to Tioga Lake	37.920886°	-119.251772°	June 1	August 17	October 5
LV-12	Glacier Creek downstream of Tioga Dam	37.928959°	-119.250728°	May 31	August 17	October 5

[a] Datum: World Geodetic System (WGS) 84

4.3. Bacterial Sampling

Five fecal coliform samples were collected within a 30-day period near campgrounds at each of the three Project reservoirs: Saddlebag Lake Campground, Ellery Lake Campground, and Tioga Lake Campground. In 2022, sampling occurred on September 15, 19, and 20; and October 4 and 5. Samples were collected in sterilized bottles supplied by Silver State Laboratory (Reno, Nevada). Samples were immediately stored on ice and transported to the analytical laboratory on the same day they were collected. All analytical data have been received and are currently undergoing review.

4.4. Turbidity Monitoring

Two continuous turbidity data loggers (RBRsolo Tu, RBR, Ottawa, Canada) were installed in Lee Vining Creek downstream of Poole Powerhouse on July 14, 2022. The loggers were installed in the stream channel at a location representative of the entire channel, and the installation location was recorded using a GPS unit. The loggers recorded turbidity at 30-minute intervals. The loggers were checked monthly to confirm they remain submerged and in good condition. Loggers were retrieved and downloaded on October 6, 2022, and redeployed on October 7, 2022, in locations more likely to withstand elevated spring flows. *In situ* calibration measurements of turbidity were collected for quality control purposes prior to logger retrieval using a YSI EXO2 multiparameter water quality sonde. Turbidity data are currently undergoing quality assurance / quality control and review and will be compared before, during, and after hydro-resource optimization events that occurred during the deployment period.

4.5. Fish Tissue Sampling

In August 2022, fish were collected at Saddlebag, Tioga, and Ellery lakes during Study AQ-1 fieldwork (Table 4.5-1). Physical characteristics were recorded for each individual fish: weight, total length, fork length, and presence of any physical abnormalities. Each fish was individually tagged, wrapped in aluminum foil, placed in a labeled zipper-closure bag, and stored on dry ice at -20 degrees Celsius (°C) until transmittal to the Marine Pollution Studies Lab at Moss Landing Marine Laboratories (Moss Landing, California). Fish tissue mercury data will be tabulated by reservoir and compared to consumption screening values established by the California Office of Environmental Health Hazard Assessment.

Table 4.5-1. Fish Collected for Analysis of Mercury in Tissue during 2022

Sample Date	Species	Number of Fish	Size Range (fork length [millimeters])
Ellery Lake			
8/2/2022	Brook trout	5	244–310
	Brown trout	9	195–285
	Rainbow trout	2	225–287
Tioga Lake			
8/3/2022	Brook trout	9	208–262
	Rainbow trout	8	220–425
Saddlebag Lake			
8/4/2022	Brook trout	9	255–324

5.0 SPRING DATA SUMMARY

In situ and analytical water quality parameters were collected at Project reservoirs and stream sites during May 31 and June 1, 2022. Quality control review and analysis of the summer and fall 2022 data are ongoing and will be developed and presented in a comprehensive Technical Report.

5.1. RESERVOIR WATER QUALITY

During the spring survey at all Project reservoir sites, DO, water temperature, pH, specific conductance, and turbidity exhibited little variation throughout the water columns; and total dissolved solids (TDS), total suspended solids (TSS), and nutrient concentrations were low. *In situ* water temperature, DO, pH, and specific conductance, and turbidity vertical profiles are presented in Figures 5.1-1 to 5.1-3. Basic chemistry and nutrient analytical data for reservoirs are presented in Table 5.1-1.

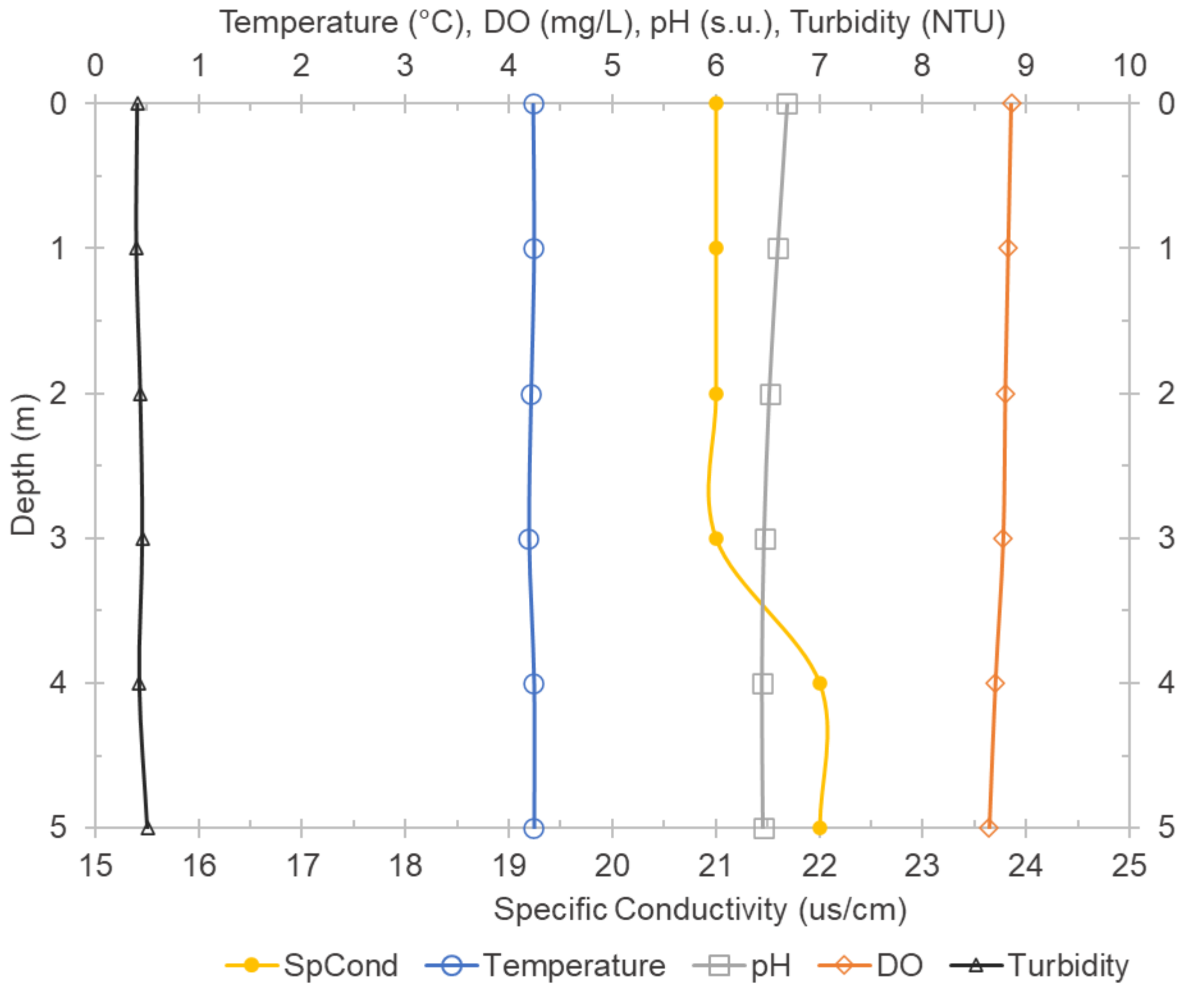

Figure 5.1-1. Saddlebag Lake Water Temperature, Dissolved Oxygen (DO), pH, Specific Conductance (SpCond) Vertical Profiles Measured in Spring 2022.

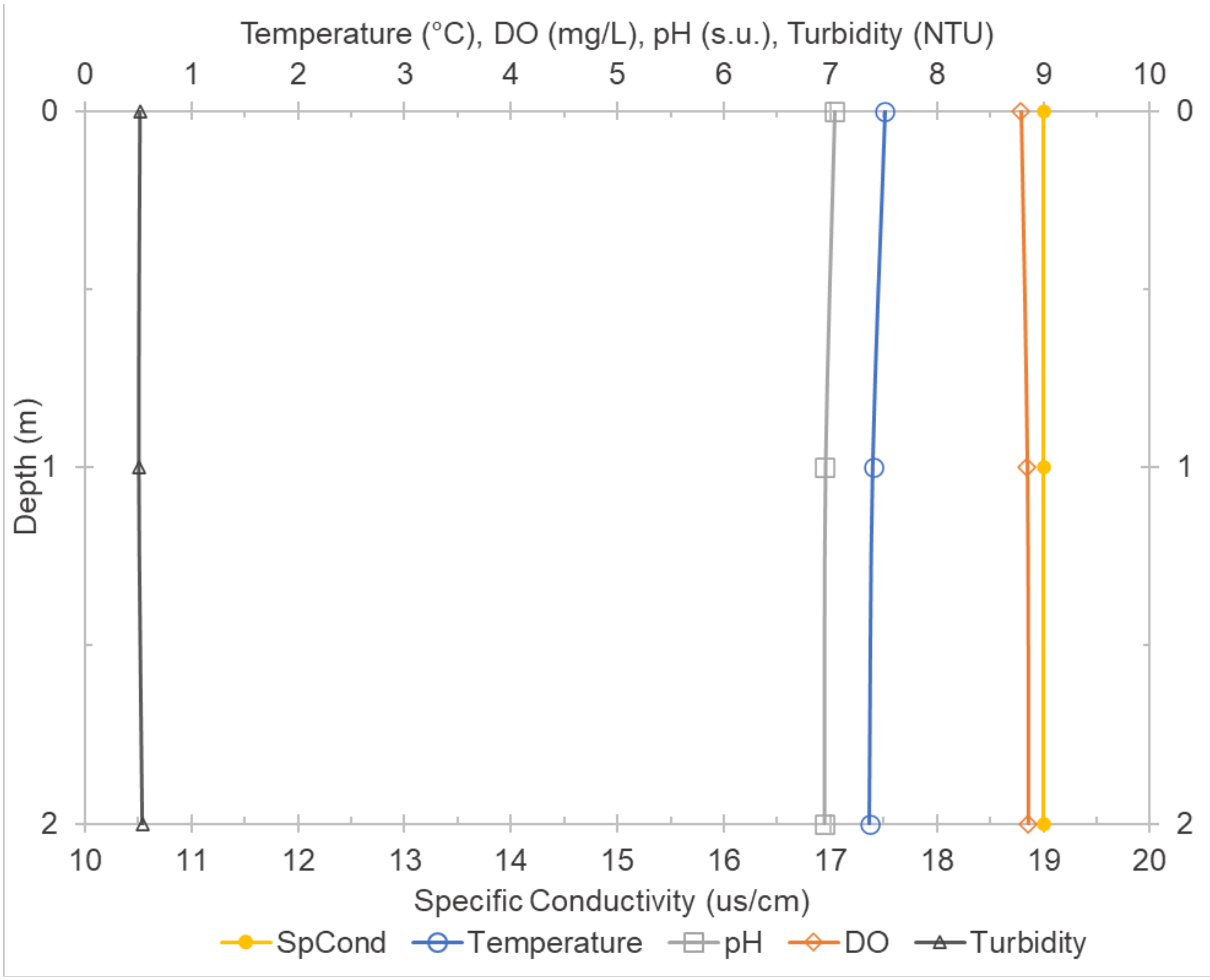

Figure 5.1-2. Ellery Lake Water Temperature, Dissolved Oxygen (DO), pH, and Specific Conductance (SpCond), and Turbidity Vertical Profiles Measured in Spring 2022.

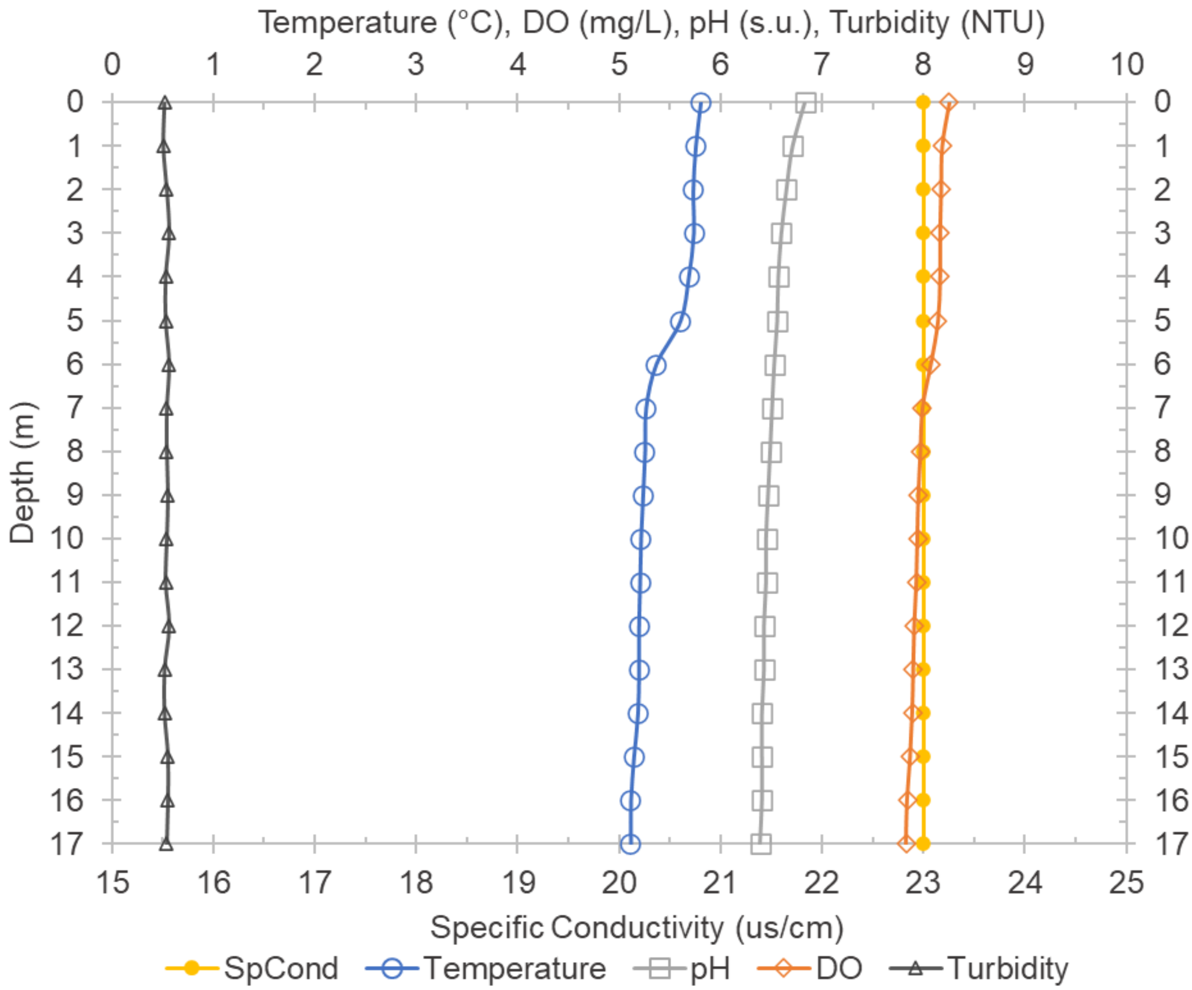

Figure 5.1-3. Tioga Lake Water Temperature, Dissolved Oxygen (DO), pH, and Specific Conductance (SpCond), and Turbidity Vertical Profiles Measured in Spring 2022.

Table 5.1-1. Analytical Laboratory Data for Surface Water Samples Collected at Reservoir and Stream Sites in Spring 2022

Site ID	Description	Basic Water Quality		Nutrients				
		TDS (mg/L)	TSS (mg/L)	NO_3-NO_2 as N (mg/L)	NH_4 as N (mg/L)	TKN (mg/L)	TP (mg/L)	PO_4 (mg/L)
Lee Vining Creek Watershed								
LV-1	Lee Vining Creek inflow to Saddlebag Lake	9 J	<2	0.120 J	<0.025	0.065 J	<0.023	<0.0051 HT-1
LV-2	Saddlebag Lake	21	<2	0.063 J	<0.025	0.048 J	<0.023	<0.0051 HT-1
LV-3	Lee Vining Creek between Saddlebag Dam and its confluence with Slate Creek	15	<2	0.075 J	0.036 J	0.057 J	<0.023	0.026 A-COM, J
LV-4	Lee Vining Creek between its confluence with Slate Creek and Glacier Creek	12	<2	0.077 J	0.038 J	0.084 J	<0.023	0.043 A-COM, J
LV-5	Lee Vining Creek between its confluence with Glacier Creek and Ellery Lake	10	<2	0.076 J	<0.025	0.081 J	<0.023	0.039 A-COM, J
LV-6	Lee Vining Creek inflow to Ellery Lake	15	<2	0.074 J	0.026 J	0.077 J	<0.023	0.006 A-COM, J
LV-7	Ellery Lake	12	<2	0.062 J	<0.025	0.072 J	<0.023	<0.0051
LV-8	Lee Vining Creek immediately downstream of Poole Powerhouse	21	<2	0.065 J	<0.025	0.060 J	<0.023	0.018 A-COM, J
LV-9	Lee Vining Creek upstream of the LADWP Diversion	23	<2	0.079 J	<0.025	0.100 J	<0.023	<0.0051 A-COM
Glacier Creek Watershed								
LV-10	Glacier Creek inflow to Tioga Lake	23	<2.0	0.110 J	0.031 J	0.110 J	<0.023	0.014 J
LV-11	Tioga Lake	17	<2.0	0.087 J	0.066 J	0.150 J	<0.023	0.026 J
LV-12	Glacier Creek downstream of Tioga Dam	22	<2.0	0.082 J	0.054 J	0.170 J	<0.023	0.018 J
DL		*5*	*2*	*0.055*	*0.025*	*0.04*	*0.023*	*0.0051*
RL		*10*	*5*	*0.4*	*0.1*	*0.2*	*0.05*	*0.15*

DL=laboratory detection limit; mg/L=milligrams per liter; NH_4=Ammonia; NO_3=nitrate; NO_2=nitrite; PO_4 = Orthophosphate; RL=laboratory reporting limit; TDS = total dissolved solids; TSS = total suspended solids; N = nitrogen; TKN = Total Kjeldahl Nitrogen; TP = Total Phosphorous

J Detected but below the reporting limit
HT-1 Sample received by the analytical laboratory outside of the EPA recommended holding time
A-COM Samples run slightly out of EPA recommended holding time

5.1.1. Saddlebag Lake

Saddlebag Lake had extensive ice cover during the spring sampling rendering the deepest area of the lake inaccessible. *In situ* vertical profiles were collected at a location that was 5 meters deep (Figure 5.1-1). A thermocline was not defined, and water temperatures were cold (4.2 °C). DO concentrations (8.6 to 8.8 milligrams per liter [mg/L]) in Saddlebag Lake were above the 8.0 mg/L minimum threshold (for single-day measurements) described in the Basin Plan for waterbodies designated as cold freshwater habitat (COLD). Measured pH (6.5 to 6.6 standard units [s.u.]) were slightly acidic. Specific conductance (21 to 22 microsiemens per centimeter [uS/cm]) and turbidity (0.4 to 0.5 nephelometric turbidity units [NTU]) were low throughout the water column. In surface water grab samples, TDS were detected at low concentrations and TSS was below the laboratory detection limit (Table 5.1-1). Nitrate-nitrite and Total Kjeldahl Nitrogen were detected at low concentrations. Ammonia, total phosphorus, and orthophosphate were below the laboratory detection limits.

5.1.2. Ellery Lake

Ellery Lake was approximately 2 meters deep during the spring survey (Figure 5.1-2). A thermocline was not defined, and water temperatures were cold (7.4 to 7.5 °C). DO concentrations (8.8 to 8.9 mg/L) in Ellery Lake were above the 8.0 mg/L Basin Plan minimum threshold (for single-day measurements). Measured pH were 6.9 to 7.0 s.u. Specific conductance (6.9 to 7.0 uS/cm) and turbidity (0.3 to 0.4 NTU) were low throughout the water column. In surface water grab samples, TDS were detected at low concentrations and TSS was below the laboratory detection limit (Table 5.1-1). Nitrate-nitrite and Total Kjeldahl Nitrogen were detected at low concentrations. Ammonia, total phosphorus, and orthophosphate were below the laboratory detection limits.

5.1.3. Tioga Lake

Tioga Lake was approximately 17 meters deep during the spring survey (Figure 5.1-3). A thermocline was not defined, and water temperatures were cold (5.1 to 5.8 °C). DO (7.8 to 8.3 mg/L) gradually decreased with reservoir depth and were slightly less than the 8.0 mg/L Basin Plan minimum threshold (for single-day measurements) in the mid- to bottom-waters (10 to 17 meters). Measured pH (6.4 to 6.8 s.u.) were slightly acidic. Specific conductance (23 uS/cm) and turbidity (0.5 to 0.6 NTU) were low throughout the water column. In surface water grab samples, TDS were detected at low concentrations and TSS was below the laboratory detection limit (Table 5.1-1). Nitrate-nitrite and Total Kjeldahl Nitrogen were detected at low concentrations. Ammonia, total phosphorus, and orthophosphate were below the laboratory detection limits.

5.2. Stream Water Quality

In situ and analytical water quality parameters were collected at seven sites in Lee Vining Creek and two sites in Glacier Creek during May 31 and June 1 of 2022. During the spring survey, DO, water temperature, pH, specific conductance, and turbidity exhibited little variation between sites within each of the creeks, Lee Vining Creek and Glacier Creek. TDS, TSS, and nutrient concentrations were low at all Project stream sites. *In situ* water temperature, DO, pH, and specific conductance, and turbidity profiles are presented in Table 5.1-1. Basic chemistry and nutrient analytical data for stream sites are presented in Table 5.2-1.

Table 5.2-1. *In Situ* Water Quality Parameters Measured at Stream Sites (Spring 2022)

Site ID	Description	Water Temperature (ºC)	DO (mg/L)	Specific Conductance (µS/cm)	pH (s.u.)	Turbidity (NTU)
Lee Vining Creek						
LV-1	Lee Vining Creek inflow to Saddlebag Lake	5.9	9.0	9	6.9	0.8
LV-3	Lee Vining Creek between Saddlebag Dam and its confluence with Slate Creek	4.1	9.0	23	6.8	0.7
LV-4	Lee Vining Creek between its confluence with Slate Creek and Glacier Creek	2.5	9.8	18	6.7	0.4
LV-5	Lee Vining Creek between its confluence with Glacier Creek and Ellery Lake	1.9	10.0	20	6.8	0.4
LV-6	Lee Vining Creek inflow to Ellery Lake	2.1	9.9	21	7.0	0.3
LV-8	Lee Vining Creek immediately downstream of Poole Powerhouse	5.5	9.0	29	7.0	0.3
LV-9	Lee Vining Creek upstream of the LADWP Diversion	4.8	9.9	35	7.3	0.7
Glacier Creek						
LV-10	Glacier Creek inflow to Tioga Lake	7.6	8.7	29	7.2	0.2
LV-12	Glacier Creek downstream of Tioga Dam	6.0	8.4	23	6.8	0.5

°C = degrees Celsius; DO = dissolved oxygen; NTU = nephelometric turbidity units; s.u. = standard unit

5.2.1. Lee Vining Creek

In situ water quality was generally similar across stream sampling sites (Table 5.2-1). Water temperatures in Lee Vining Creek were cold and varied between a low of 1.9°C just downstream of the confluence with Glacier Creek to a high of 5.9°C at the inlet to Saddlebag Lake. DO was above the 8.0 mg/L single-day measurement minimum threshold at all sites, ranging between 9 to 10 mg/L. pH ranged from 6. to 7.3 s.u. and were generally lower at sites upstream of Ellery Lake compared to downstream sites. Specific conductance ranged between 19 to 35 uS/cm, except for the Lee Vining Creek inlet to Saddlebag Lake, where it was considerably lower at 9 uS/cm. Turbidity was low throughout Lee Vining Creek. In stream water grab samples, TDS were detected at low concentrations at all stream sites. Generally, TDS concentrations were lower at sites upstream of Saddlebag Lake and Ellery Lake compared to sites downstream of Ellery Lake. TSS were below the laboratory detection limit at all sites. Nitrate-nitrite and Total Kjeldahl Nitrogen were detected at low concentrations at all sites; ammonia, and orthophosphate were detected at multiple sites. Total phosphorus was below the laboratory detection limits at all sites.

5.2.2. Glacier Creek

Water temperature, DO, and specific conductance concentrations were slightly higher at the site in Glacier Creek upstream of Tioga Lake compared to the site downstream (Table 5.2-1). DO was above the 8.0 mg/L single-day measurement minimum threshold at both sites. pH ranged from 6.8 to 7.2 s.u. Specific conductivity and turbidity were low. In stream water grab samples, TDS were detected at low concentrations at both stream sites and TSS were below the laboratory detection limit. Nitrate-nitrite, Total Kjeldahl Nitrogen, ammonia, and orthophosphate were detected at low concentrations and total phosphorus was below the laboratory detection limits.

6.0 NEXT STEPS

Laboratory analytical data have been received and are undergoing review and compilation. Analysis of data is ongoing and includes summary of reservoir profiles, *in situ*, and water quality data; analysis of turbidity downstream of Poole Powerhouse; and summary of fish tissue mercury. All water quality parameters measured will be compared to Basin Plan water quality objectives, and any exceedances were enumerated and evaluated in terms of any relationship to Project operations. Study results will be summarized in a Technical Report in spring of 2023. Continuous turbidity loggers installed in Lee Vining Creek downstream of Poole Powerhouse will remain in place through spring 2023 to characterize potential effects of Project-related streamflow variation on downstream turbidity. As described in the WQ-1 Final Technical Study Plan (SCE, 2022), if the 2023 water year type differs from 2022, SCE will repeat water quality study components described in the study plan.

The anticipated next steps for Study WQ-1 are identified in Table 6-1 below.

Table 6-1. Schedule

Date	Activity
2022/2023–Winter	Analyze data
2023–January	Progress Report and Meeting
2023–Spring	Distribute draft report to Stakeholders [a]
2023–Spring/Fall	Conduct field surveys, if 2023 water year type differs from 2022
2024–March	Revise report to include 2023 results if conducted; distribute revised report to Stakeholders
2023–Fall	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

[a] If 2023 is a different water year type than 2022 and additional field surveys are needed, the draft report will be held until the second field season has been completed and all data analyzed.

7.0 REFERENCES

LRWQCB (Lahontan Region Water Quality Control Board). 2019. *Water Quality Control Plan for the Lahontan Region*. Plan effective March 31, 1995, including amendments effective through September 22, 2021. State of California Regional Water Quality Control Board, Lahontan Region. Accessed: November 2022. Available online: https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.html.

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

APPENDIX B
RESERVOIR FISH POPULATION (AQ-1) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Reservoir Fish Population (AQ-1) Technical Memo

1.0 INTRODUCTION

This memo presents a data summary of the fish species composition and distribution surveys conducted in 2022 within the Lee Vining Hydroelectric Project (Project) reservoirs. The *AQ-1 Reservoir Fish Population Technical Study Plan* details Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

Surveys occurred August 2 through August 4, 2022. Adult and juvenile gill nets were deployed, and boat electrofishing was conducted in all Project reservoirs. Sampling under Study AQ-1 is complete.

2.0 STUDY OBJECTIVES

Study goals and objectives were determined during the February 22, 2021, and March 29, 2021, Aquatic Resources Technical Working Group (TWG) Meetings. Stakeholders stated that there is no current information regarding the distribution of fish species in the Project Area. The goal of this study is to assess fish populations within Project reservoirs. The objective of this study is to obtain information on reservoir fish populations where background data are lacking. Additionally, fish captured during this study will inform mercury bioaccumulation analyses under Study WQ-1.

2.1. STUDY AREA

Fish population sampling was conducted at three Project reservoirs: Saddlebag Lake, Ellery Lake, Tioga Lake.

Within each Project reservoir, sample sites were established to include a representative subset of available habitats. Boat electrofishing was restricted to nearshore (i.e., shallow) areas and generally included one location near a major reservoir tributary (Figures 2.1-1, 2.1-2, and 2.1-3). Adult and juvenile gill nets were generally paired and distributed in the reservoir to sample near a major reservoir tributary, a deepwater location, and a location near the dam.

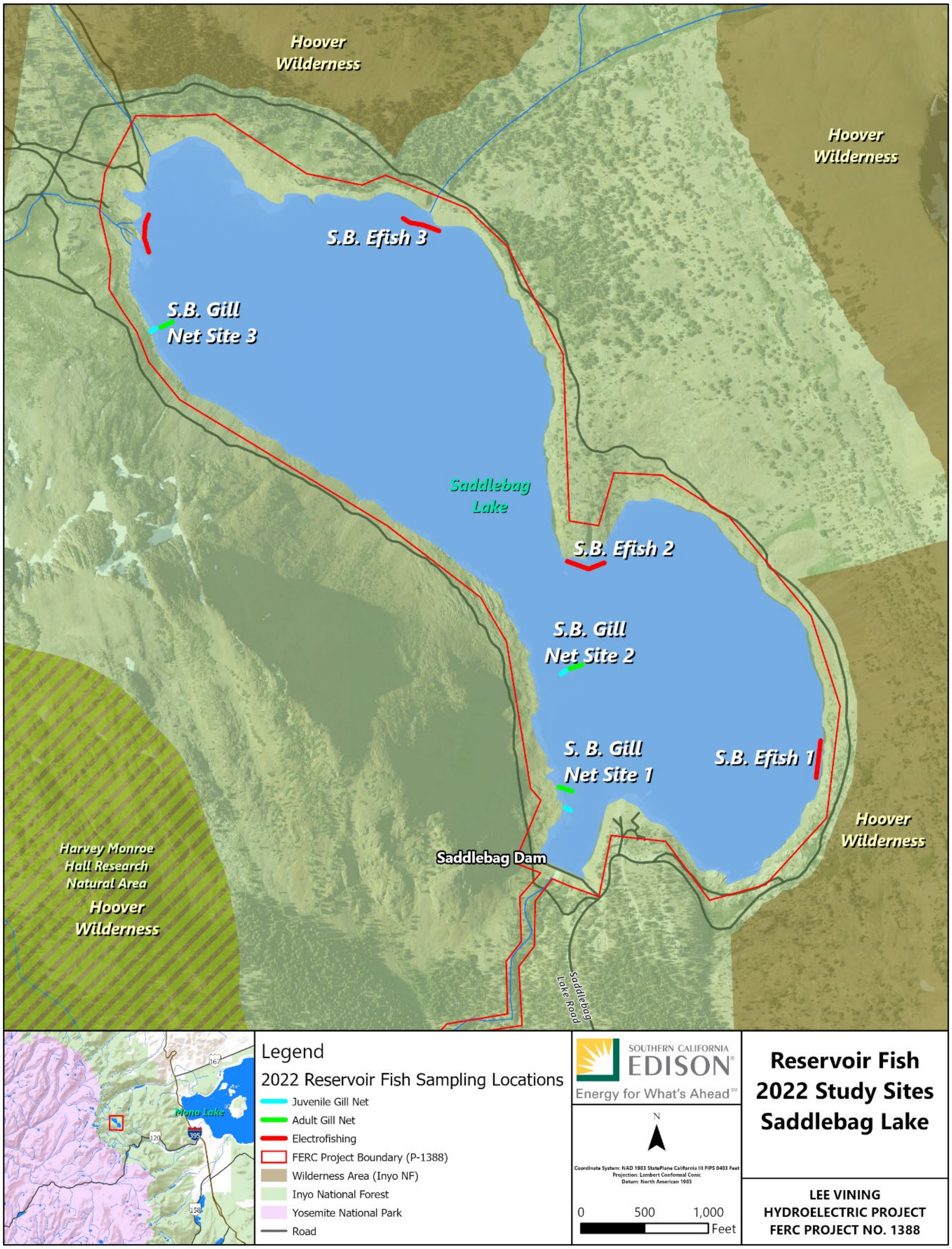

Figure 2.1-1. Reservoir Fish 2022 Study Sites—Saddlebag Lake.

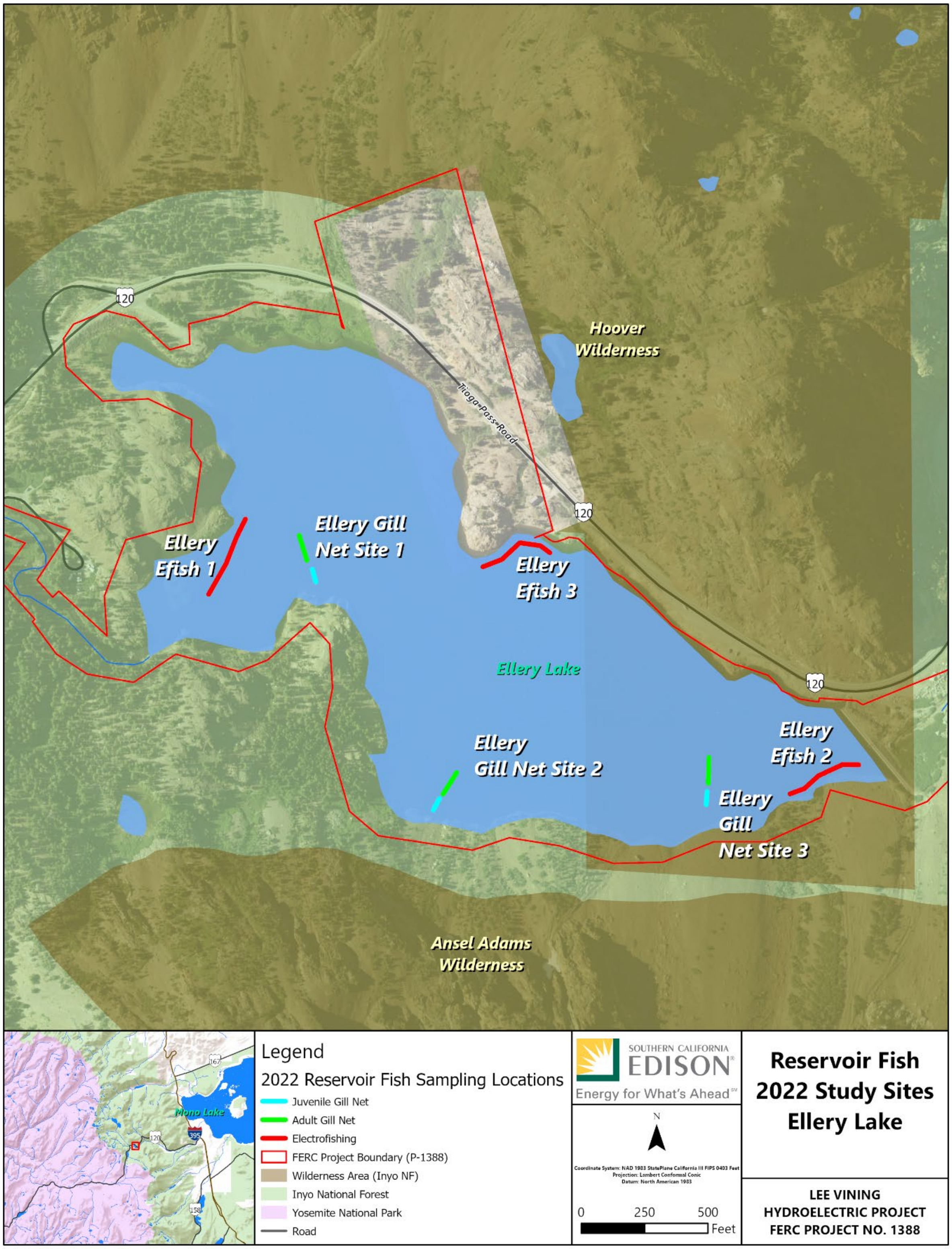

Figure 2.1-2. Reservoir Fish 2022 Study Sites—Ellery Lake.

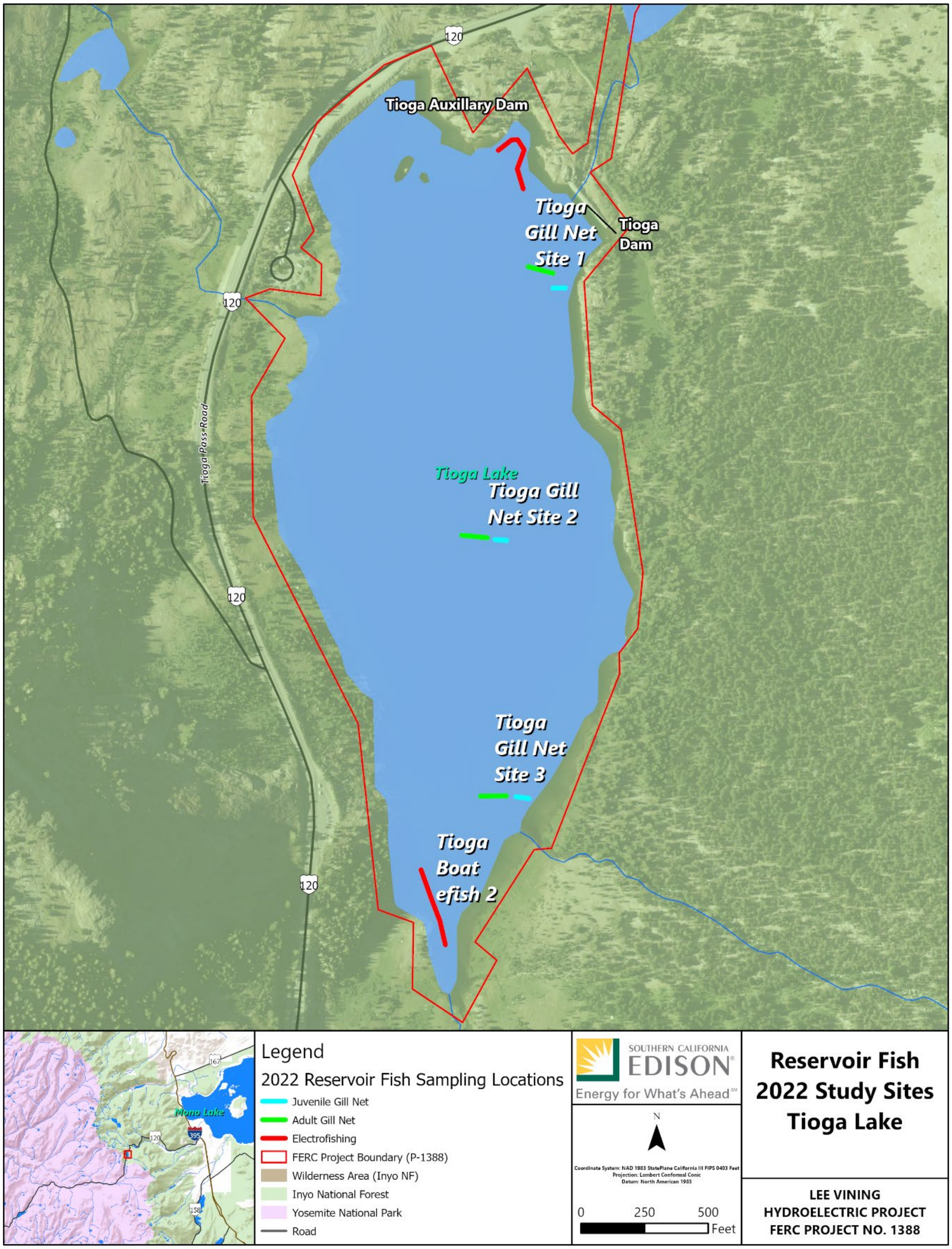

Figure 2.1-3. Reservoir Fish 2022 Study Sites—Tioga Lake.

3.0 METHODS

Study implementation generally followed the methods described in the AQ-1 Final Technical Study Plan (SCE, 2022), with the exception described below.

3.1. MODIFICATIONS TO METHODS

One modification to study methods was made during sampling to reduce the potential for fish mortally during gill netting efforts. After fish mortalities were observed on the first night at Ellery Lake, gill net soak times during the night sampling period were decreased from approximately 8 hours to approximately 4 hours for all gill net locations at Tioga Lake and at two gill net locations at Saddlebag Lake. Gill net soak times during the day remained at approximately 8 hours for all locations sampled. No other modifications occurred during study implementation.

3.2. ANALYSIS

Data analysis is underway. Data has been entered into an Excel spreadsheet for reduction, tabulation, quality assurance / quality control, and summary. Capture data was summarized by species composition for the whole lake and all gear types, as well as by gear type and site. Length-frequency histograms are being developed for each trout species observed or captured and used to estimate size and age-class distribution. Breaks and modalities within the histograms will be evaluated and compared to the subsample of aged scales collected at each study site and relevant literature on trout growth to estimate the age-class distribution of each species. Relative abundance will be determined by calculating catch-per-unit-effort (fish per hour) by gear type and site.

4.0 DATA SUMMARY

Based on the individuals captured, the fishery appears to be composed of brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss*) in Ellery Lake; brook trout and rainbow trout in Tioga Lake; and brook trout and Lahontan redside (*Richardsonius egregious*) in Saddlebag Lake (Figure 4-1).

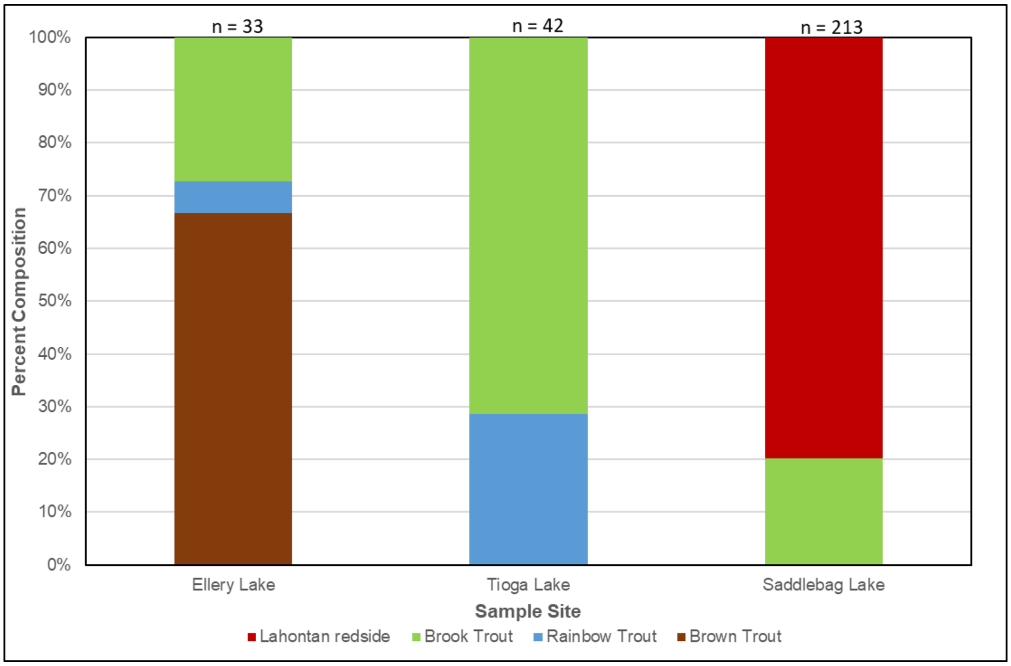

Figure 4-1. Fish Species Composition Observed in Project Reservoirs during August 2022.

5.0 NEXT STEPS

Analysis of sampling data is ongoing and includes age-class evaluations from scale samples and catch-per-unit-effort analyses. Study results will be summarized in a Technical Report in spring of 2023.

The anticipated next steps for the reservoir fish population study are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2022/2023–Winter	Compile study data and conduct analyses
2023–January	Progress Report and Meeting
2023–Spring	Distribute draft report to Stakeholders
2023–Fall	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

6.0 REFERENCES

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

APPENDIX C
STREAM FISH POPULATION (AQ-2) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Stream Fish Populations (AQ-2) Technical Memo

1.0 INTRODUCTION

This memo presents a data summary for Study AQ-2 conducted in 2022 for the Lee Vining Hydroelectric Project (Project). The *AQ-2 Stream Fish Population Technical Study Plan* details the Southern California Edison (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

Stream fish sampling efforts were implemented during September 16 through 22, 2022. Backpack electrofishing was conducted at seven sample sites. No additional sampling is planned under Study AQ-2.

2.0 STUDY OBJECTIVES

Study goals and objectives were determined during the February 22, 2021, and March 29, 2021, Aquatic Resources Technical Working Group (TWG) Meetings. The goal of this study is to supplement the existing available information to assess fish populations in Project-affected stream reaches. The objective of this study is to obtain information on existing fish populations downstream of Project reservoirs.

2.1. STUDY AREA

The study area includes the Project-affected stream reaches of Lee Vining Creek and Glacier Creek. Three sites between Saddlebag Dam and Slate Creek were previously established and sampled in 1999 to 2001, 2006, 2011, 2016, and 2021 (Salamunovich, 2021). These sites were re-sampled for comparison to historical data, and four additional survey sites were selected during a pre-survey reconnaissance visit (Table 2.1-1). Study site locations are depicted in Figure 2.1-1.

Table 2.1-1. 2022 Lee Vining Stream Fish Sampling Locations

Reach Description	2022 Site Code	Historical Site Code
Lee Vining Creek between Poole Powerhouse and the pool upstream of the Los Angeles Department of Water and Power Diversion Dam	LLVC-F1	--
Lee Vining Creek between Glacier Creek and Ellery Lake	ULVC-F1	--
Lee Vining Creek between Slate Creek and Glacier Creek	ULVC-F2	--
Lee Vining Creek upstream of Slate Creek	ULVC-F3	Reach 1
	ULVC-F4	Reach 2
	ULVC-F5	Reach 3
Glacier Creek downstream of Tioga Dam	GC-F1	--

Figure 2.1-1. Stream Fish 2022 Study Sites.

3.0 METHODS

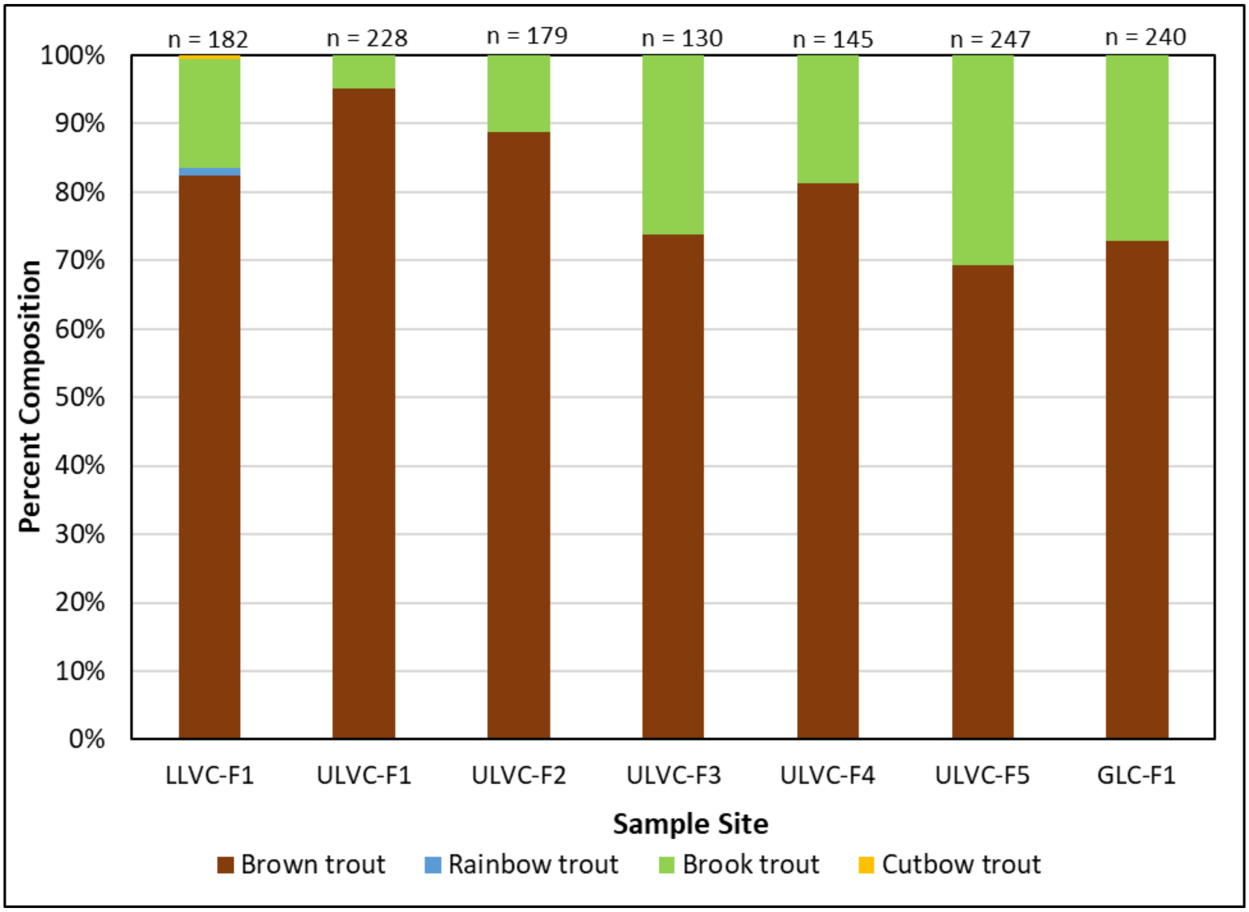
No modifications to the methods as outlined in the AQ-2 Final Technical Study Plan (SCE, 2022) occurred during study implementation.

3.1. ANALYSIS

Data analysis is underway. Data collected during the stream fish population study has been entered into an Excel database for data reduction, tabulation, and summary. Data will be compared with data collected during previously conducted studies, where possible. Size distribution will be evaluated at all survey sites. Length-frequency histograms are being developed for each trout species observed or captured and used to estimate size and age-class distribution. Breaks and modalities within the histograms will be evaluated and compared to the subsample of aged scales collected at each study site and relevant literature on trout growth to estimate the age-class distribution of each species. Trout densities (number per acre), biomass (pounds per acre), and 95 percent confidence intervals will be computed for each electrofished site. Trout condition will be assessed using weight-to-length relationships of individual fish, and Fulton's condition factor will be calculated for each fish. Mean fish condition will be calculated from individual condition values for each species.

4.0 DATA SUMMARY

Four species of fish were observed during the stream fish sampling efforts including brown trout (*Salmo trutta*), brook trout *(Salvelinus fontinalis),* rainbow trout (*Oncorhynchus mykiss),* and cutbow trout (*Oncorhynchus clarkii* × *mykiss*) (Figure 4-1). Brown trout were the most abundant species throughout all sites followed by brook trout (Figure 4-1). Only two rainbow trout and one hybrid cutbow trout were captured during sampling; all were captured within the study site on Lee Vining Creek downstream of Poole Powerhouse (LLVC-F1) (Figure 4-1). Scale samples were collected from multiple size-classes of each species from each study site for use in fish age-class analysis.



GC = Glacier Creek; LLVC = Lower Lee Vining Creek; ULVC = Upper Lee Vining Creek

Figure 4-1. Fish Species Composition Observed during 2022 Stream Surveys.

Spawning brown and brook trout were incidentally observed during September 2022 stream fish sampling. Male fish with milt were documented in Lee Vining Creek downstream of Saddlebag Lake and in Glacier Creek downstream of Tioga; none were observed in Lower Lee Vining Creek downstream of Poole Powerhouse (Table 4-1). Redds were also observed in Lee Vining Creek downstream of Saddlebag Lake and downstream of Poole Powerhouse (Table 4-2).

Table 4-1. Incidental Spawning Observations during 2022 Stream Surveys.

Reach Description	Study Site	Sample Date	Number of Milting Fish	Species
Lee Vining Creek downstream of Poole Powerhouse	LLVC-F1	9/19/2022	none	--
Lee Vining Creek downstream of Saddlebag Lake	ULVC-F1	9/20/2022	1	brown trout
	ULVC-F2	9/22/2022	2	brown trout
	ULVC-F3	9/16/2022	none	--
	ULVC-F4	9/17/2022	none	--
	ULVC-F5	9/18/2022	2	brown trout
	ULVC-F5	9/18/2022	1	brook trout
Glacier Creek downstream of Tioga	GLC-F1	9/21/2022	1	brown trout
	GLC-F1	9/21/2022	4	brook trout

Table 4-2. Incidental Redd Observations during 2022 Stream Surveys.

Reach Description	Sample Date	Survey Distance (miles)	Number of Redds
Lee Vining Creek downstream of Saddlebag Lake	9/17/2022	0.43	0
	9/21/2022	0.40	0
	9/22/2022	0.34	1
Lee Vining Creek downstream of Poole Powerhouse	9/21/2022	0.72	0

5.0 NEXT STEPS

Analysis of sampling data is ongoing. Completed results will be summarized in a Technical Report in spring of 2023.

The anticipated next steps for Study AQ-2 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2022/2023–Winter	Compile initial study data
2023–January	Progress Report and Meeting
2023–Spring	Distribute draft report to Stakeholders
2023–Fall	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

6.0 REFERENCES

Salamunovich, T. 2021. Fall 2021 Fish Population Survey, Upper Lee Vining Creek, Mono County, California. 3 December 2021 draft report prepared by TRPA Fish Biologists for Psomas, Santa Ana, California.

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

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APPENDIX D
OPERATIONS MODEL (AQ-5) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Operations Model (AQ-5) Technical Memo

1.0 INTRODUCTION

This memo presents the status of Study AQ-5 conducted in 2022 within the Lee Vining Hydroelectric Project (Project) reservoirs. The *AQ-5 Operations Model Technical Study Plan* details the Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

During the Technical Working Group meetings held January 25, February 22, March 29, and May 24, 2021, SCE and Stakeholders identified an interest in quantifying resource optimization operations at Poole Powerhouse before and after 2015.[1] Particularly, Stakeholders are interested in the seasonality, magnitude, and frequency of peaking operations at Poole Powerhouse and the effects of these operations on downstream recreational sites.

2.0 STUDY OBJECTIVES

- Develop a robust Operations Model (Model) to assist SCE and Stakeholders in understanding how Project operations interact with Lee Vining hydrology. This model would be used to make informed decisions regarding the implementation of and results from other relicensing studies. To meet this goal, this Study Plan has the following objectives:
  - Accurately model the systems inflows, outflows, and operational constraints.
  - Align the model with needs of other relicensing studies and information needs.
  - Develop procedures to configure the model for alternative operational scenarios and document results.
- Determine effective operating limits of the Poole Powerhouse to accurately represent installed and dependable capacity for licensing documents.

[1] Since 2016, current operations have optimized generation during periods of high demand or in response to grid-related events. Stakeholders have been seeking information on how frequently these events lead to increased flows below the Project and whether there are resource impacts from these releases.

- Determine the frequency, magnitude, duration, and seasonality of intraday releases from the Poole Powerhouse in response to resource optimization needs.
- Describe the stage/discharge relationship at discreet locations between the Poole Powerhouse and the Los Angeles Department of Water and Power (LADWP) diversion.

2.1. STUDY AREA

The study includes all Project-influenced waters including diverted reaches, bypass reaches, and reservoirs beginning in the Project Area and continuing downstream to the LADWP Diversion Dam (Figure 2.1-1).

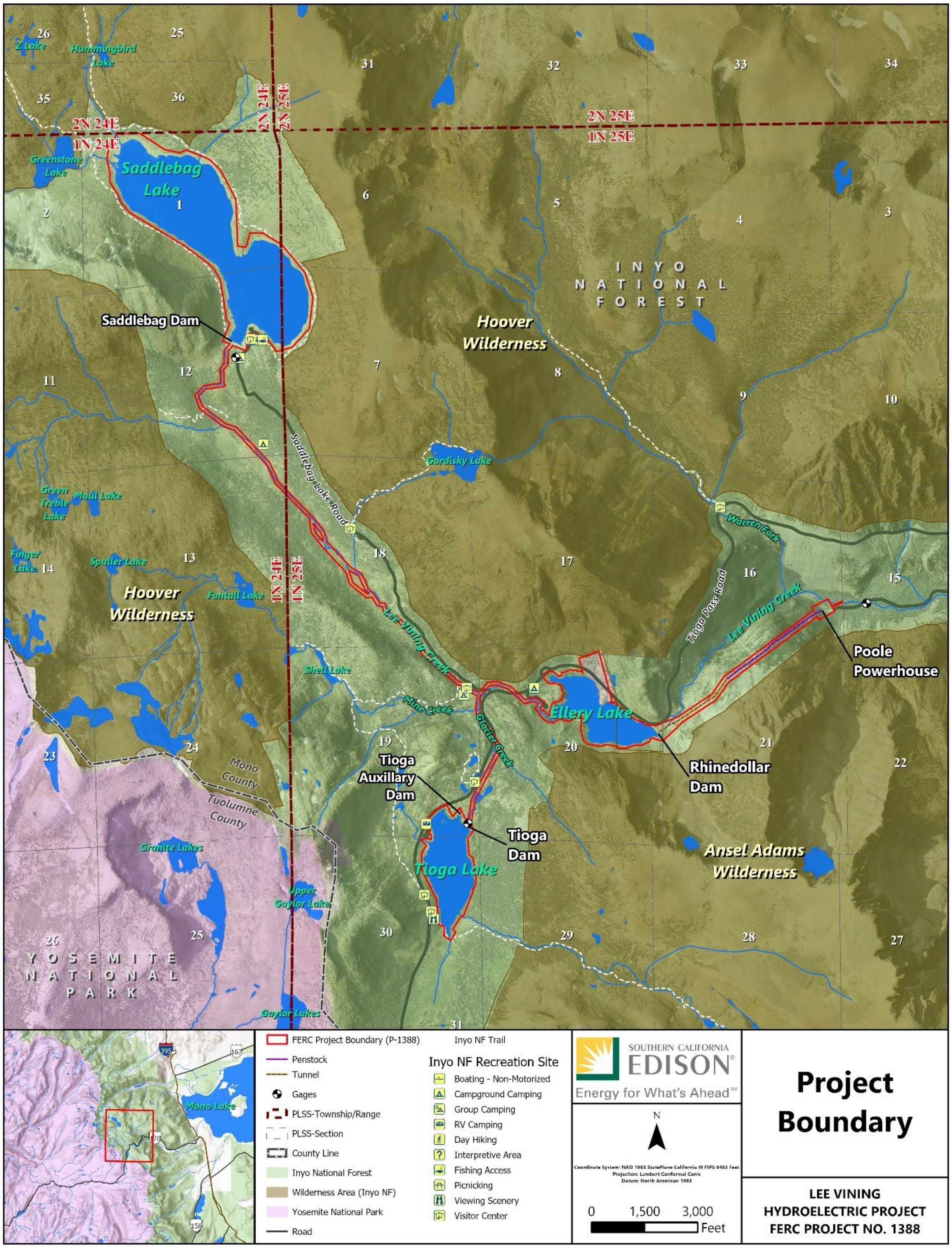

Figure 2.1-1. Project Boundary.

The study area incorporates the approximately[2] 35 square-mile contributing drainage area above the Poole Powerhouse and specific locations of interest along streams influenced by Project operational releases below the powerhouse.

3.0 METHODS

Study implementation generally followed the methods described in the AQ-5 Final Technical Study Plan (SCE, 2022); no modifications occurred during study implementation.

This study will develop two models that describe Project Operations. The first is an excel-based model of daily operations that uses a mass-balance (Operations Model) approach to model daily inflows through the Project reaches and terminating in the discharge from the powerhouse and any bypassed reaches. The second model is a more granular (sub-hourly) evaluation of discharge from the Poole Powerhouse in response to resource optimization events (Resource Optimization Model), in which pricing is evaluated as the independent variable to validate the range of flow-fluctuations that can result from this mode of operation.

3.1. DATA SOURCES

3.1.1. OPERATIONS MODEL

Data representing physical characteristics of project features were provided from SCE. Such features include reservoir stage-storage relationships and spillway elevations for Saddlebag Lake, Tioga Lake, and Rhinedollar Dam, and physical hydraulic capacities of the single project turbine and penstock. Data sources within and around the project boundary were collected, which represent portions of the project hydrology. These include eight U.S. Geological Survey (USGS) gages for daily average flows and contributing drainage area, and four snow course datasets. The existing operation of the project is modeled using data from the current project license, including minimum flow targets and reservoir operating limitations, and dates of these targets where seasonally variable.

3.1.2. RESOURCE OPTIMIZATION MODEL

Several data sources were used in the resource optimization analysis. Gage discharge data from the Poole Powerhouse (provided by SCE), the LADWP gage on Lee Vining Creek, and the Los Angeles aqueduct were used to determine flow patterns in the period of interest. Additionally, pricing data from SCE was used to validate resource optimization events. These datasets are summarized in Table 3.1-1 below.

[2] USGS Gage No. 10287900, Lee Vining Creek near Lee Vining, CA has a published drainage area of 34.9 sq. mi.

Table 3.1-1. Data Sources Used in Study AQ-5

	Type	Dates	Source	Interval
Poole Powerhouse	Flow	October 2009–July 2021	SCE	15-minute
LADWP Gage	Flow	May 2013–April 2021	LADWP	15-minute
Generation	Price	January 2015–December 2021	SCE	1-hour

LADWP = Los Angeles Department of Water and Power; SCE = Southern California Edison

Numerous USGS gage records within the system are being reviewed for potential value in calculating the operations model hydrologic input. These records include streamflow and storage datasets. Snow course datasets in the Project Area have also been collected. Intraday flow estimates have been requested in locations downstream of the Poole Powerhouse, and recent 15-minute flow datasets at the Poole Powerhouse are being combined with Rhinedollar Dam releases to provide this information. Additional considerations of Warren Fork contributions are being made.

3.2. ANALYSIS

3.2.1. OPERATIONS MODEL

Data analysis is underway. To adequately characterize the existing operations, a daily operations model is being developed using an Excel platform. Relevant hydrologic records are being examined to determine a means for calculating the daily inflow. Some inflows may be synthesized using the datasets where direct historic measurements were not performed. Subdrainage areas are being checked for accuracy with a geographic information system (GIS) as part of this effort.

Hydraulic constraints and regulatory requirements constitute the basis of the model's logic structure. Reservoir storage curves, spillway elevations, and penstock and turbine hydraulic capacities are physical limitations that form the prioritized logic in daily model calculations. Categorization of wet, normal, and dry year types; minimum flow requirements; and reservoir limits are examples of regulatory logic that could be altered as part of the optimization process. Historic operational practices are also examined as part of potential dispatch logic.

3.2.2. RESOURCE OPTIMIZATION MODEL

Data analysis is underway.

Using python code, an algorithm was developed to programmatically identify flow patterns that may be in response to pricing surges in the time series data. A moving average algorithm was selected as it correctly identified sub-daily peak releases for the historical data. The algorithm was calibrated by adjusting the threshold for changes in peak flow as a function of moving average and multiples of the moving standard deviation for each timestep.

The same algorithm with modified calibration parameters was used for the pricing data. It was determined that 79 percent of the identified flow peaks fell within a pricing peak, which validated the peaking calibration. Using results from the calibrated algorithm, the peaking information was used to form an understanding of the properties of resource optimization operations in Lee Vining Creek.

4.0 RESULTS

Results of calibration efforts are pending completion of GIS efforts and operations model logic. Completion of other studies is necessary for determining results of operational resource optimization.

5.0 NEXT STEPS

Consistent with Study AQ-5 (SCE, 2022), the Relicensing Team will continue to construct the model and review the data. Upon completion and calibration, the model will be distributed to interested Stakeholders for review and comment.

The anticipated next steps for Study AQ-5 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2022/2023–Winter	Initial Model
2023–January	Progress Report and Meeting
2023-September	Final Model to Stakeholders
2023–Fall	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

6.0 REFERENCES

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

APPENDIX E
LOWER LEE VINING CREEK CHANNEL MORPHOLOGY (AQ-6) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Lower Lee Vining Creek Channel Morphology (AQ-6) Technical Memo

1.0 INTRODUCTION

This memo presents a summary of study progress for Study AQ-6 conducted in 2022 for the Lee Vining Hydroelectric Project (Project).

In June 2022, a reconnaissance field visit was conducted to help select three responsive study sites. During the reconnaissance visit, a coarse longitudinal profile survey of Lee Vining Creek was measured from Poole Powerhouse to the Los Angeles Department of Water and Power (LADWP) Diversion (lower Lee Vining Creek). Sediment facies mapping, bulk sediment sampling, pebble counts, cross section and detailed longitudinal profile surveys, and tracer rock deployment was conducted at three study sites between October 3 and 7, 2022.

The *AQ-6 Lower Lee Vining Creek Channel Morphology Technical Study Plan* details Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

2.0 STUDY OBJECTIVES

This study has three primary goals: (1) assess the potential geomorphic effects of reducing sediment supply (e.g., coarse and fine) to, and altering sediment transport in lower Lee Vining Creek, (2) provide information required to assess potential ecological effects of any geomorphic changes in lower Lee Vining Creek resulting from Project operation, and (3) provide information for developing Protection, Mitigation, and Enhancement measures aimed at mitigating any identified sediment imbalance.

The specific objectives of the study are to:

- Classify transport and response reaches in lower Lee Vining Creek using existing geographic information system (GIS) data, maps, and other remote sensing imagery; and

- Characterize channel morphology, fluvial processes, and coarse sediment (greater than 2 millimeters) transport rates at three responsive study sites from Poole Powerhouse to the most downstream responsive study site located upstream of the pool above the LADWP Diversion.

2.1. STUDY AREA

The study area includes Lee Vining Creek from the Poole Powerhouse outlet to the pool upstream of LADWP Diversion Dam. Specifically excluded from field study were areas where access was unsafe (very steep terrain or high streamflow). Figure 2.1-1 depicts the study sites. Sites were selected based on the potential responsiveness of the channel to geomorphic change.

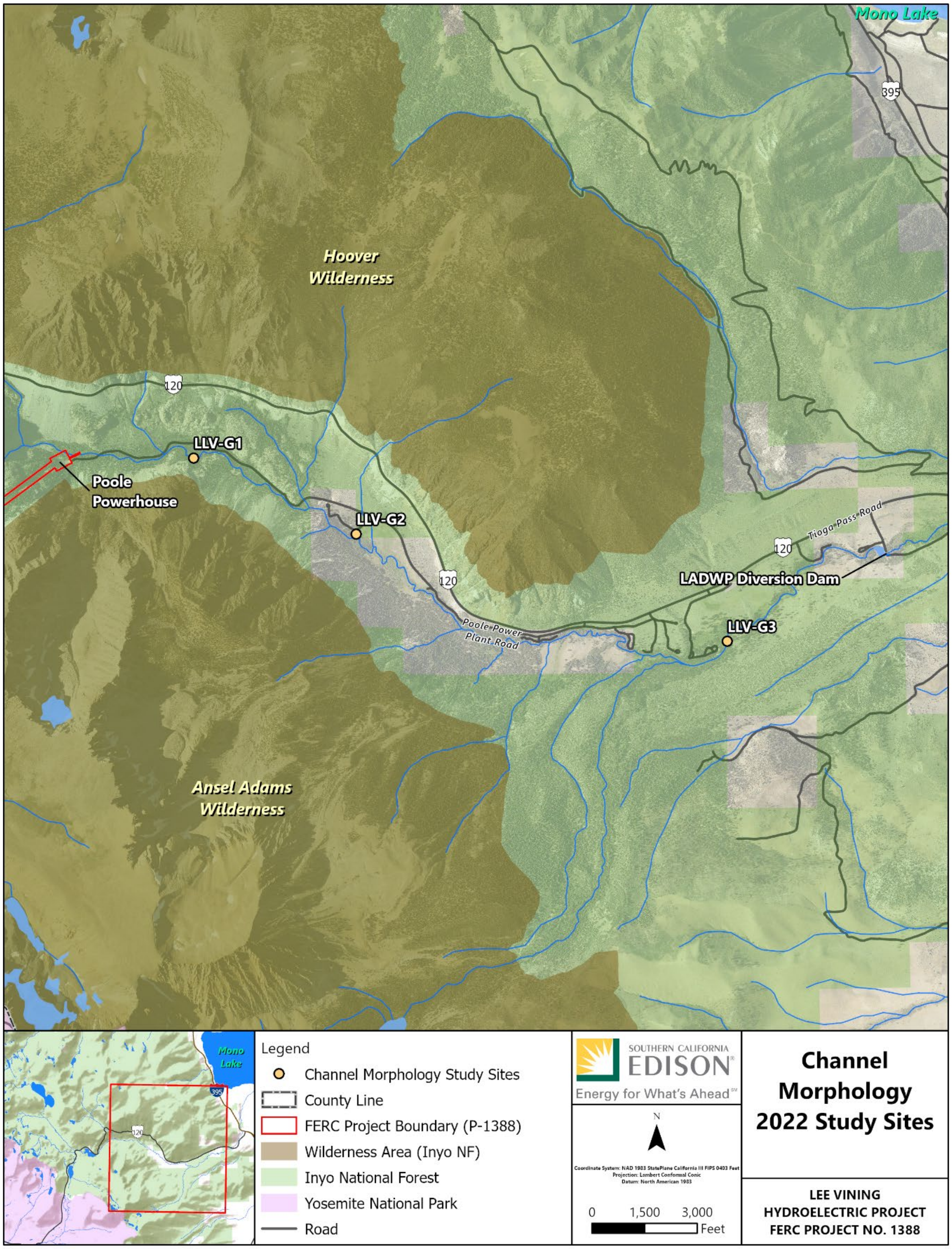

Figure 2.1-1. Channel Morphology 2022 Study Sites.

3.0 METHODS

Study implementation followed the methods described in the AQ-6 Final Technical Study Plan (SCE, 2022); no modifications occurred during study implementation.

3.1. ANALYSIS

A reference conditions conceptual model is being developed for channel and sediment dynamics prior to dam construction, with emphasis on characteristics most likely to be affected by ongoing Project operations. Results from *AQ-5 Operations Model* will provide information on unimpaired hydrology in lower Lee Vining Creek. Results of this study will provide information on sediment supply and transport at responsive study sites and major tributary confluences in lower Lee Vining Creek under reference conditions.

Current channel and sediment dynamics will be compared with those hypothesized under the reference model to assess potential ongoing Project effects of the Project and other land uses.

4.0 DATA SUMMARY

In June 2022, lower Lee Vining Creek was classified into functionally similar reaches (i.e., reaches with similar sediment transport and storage processes, and that dictate responsiveness to changes in flow and sediment supply) based on the longitudinal profile and field observations of channel gradient, relative confinement, morphology, alluvial sediment storage, and bed surface texture. Five distinct reaches were identified:

1. Reach 1 from Poole Powerhouse to the downstream end of Big Bend Campground. Reach 1 has a channel gradient of approximately 2.1 percent and is predominately plane bed and pool-riffle sequences interspersed with step pool and bedrock channel types, small floodplain development with moderate channel confinement between steep valley walls mantled with large rockfall and debris flow deposits, and frequent large and complex large woody debris jams.

2. Reach 2 from Big Bend Campground to upstream end of large meadow complex near Aspen Campground. Reach 2 has a channel gradient of approximately 4 percent and is predominately cascade and step pool morphology, channel highly confined with little floodplain development and connectivity.

3. Reach 3 from Aspen Campground to downstream extent of large meadow complex. Reach 3 has a channel gradient of approximately 0.2 percent and is predominately pool-riffle channel type, unconfined and well connected to floodplain.

4. Reach 4 from meadow complex to Lower Lee Vining Creek Campground. Reach 2 has a channel gradient approximately 2 percent and is predominately plane bed, moderately confined with little floodplain connectivity.

5. Reach 5 from Lower Lee Vining Creek Campground to LADWP Diversion. Reach 5 has a channel gradient of approximately 1.3 percent and is predominately plane bed

and pool-riffle channel types with frequent large and complex large woody debris jams and increased floodplain connectivity as compared to Reach 4.

Three intensive study sites (i.e., LLV-G1, LLV-G2, and LLV-G3) were identified in Reaches 1, 3, and 5, respectively, based on the potential responsiveness of the channel to geomorphic change (Figure 2.1-1).

5.0 NEXT STEPS

Data review, analysis, and synthesis is ongoing. Tracer rocks will be recovered from lower Lee Vining Creek after peak flows occur in 2023. Study results will be summarized in a Technical Report in 2024.

The anticipated next steps for Study AQ-6 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2022/2023–Winter	Compile initial study data
2023–January	Progress Report and Meeting
2023–Summer/Fall	Continue analysis and collect tracer rocks
2023/2024–Winter	Distribute draft report to Stakeholders
2024–Spring	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

6.0 REFERENCES

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

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APPENDIX F
GENERAL BOTANICAL RESOURCES SURVEY (TERR-1) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	General Botanical Resources Survey (TERR-1) Technical Memo

1.0 INTRODUCTION

This memo presents the preliminary data of Study TERR-1 conducted in 2022 within the Lee Vining Hydroelectric Project (Project). The *TERR-1 General Botanical Resources Survey Technical Study Plan* details Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

Information on vegetation communities and plant species, including riparian conditions monitored as part of the current license, is provided by the previously conducted field surveys and license-required monitoring studies (Psomas, 2006, 2010, 2013; Read, 2004, 2012, 2017, 2022) and the Project Environmental Assessment (FERC, 1992). Since those studies were undertaken, new species have been added to the federal and state endangered species lists, and others have been deemed sensitive by various government agencies.

As outlined in the *TERR-1 General Botanical Resources Survey Technical Study Plan*, the studies began in 2022 and will continue into 2023.

2.0 STUDY OBJECTIVES

The goal of this study is to obtain the additional information to supplement the existing information regarding sensitive botanical resources in the study area by:

- Ground-truthing the existing USFS vegetation map (USFS, 2019), including identification of any sensitive natural communities;
- Documenting the presence of species listed by the federal and/or state Endangered Species Acts or proposed for listing, e.g., whitebark pine (*Pinus albicaulis*);
- Documenting the presence of other special-status plants including species with a California Rare Plant Rank (CRPR) of 1 or 2 and USFS Species of Conservation Concern;
- Documenting non-native, invasive plants identified in the Inyo National Forest Invasive Plant Inventory Database (NRM – TESP/IS, 2018) and on the California Invasive Plant Council Inventory (Cal-IPC, 2020);

- Incorporating results of the riparian monitoring study undertaken as part of the existing license (see Read, 2004, 2012, 2017, 2022); and
- Performing a focused study of selected riparian habitat areas using Normalized Difference Vegetation Index (NDVI) to (1) compare ”test” reaches and “control” reaches and (2) to assess whether or not there have been changes resulting from hydro-resource optimization.

2.1. STUDY AREAS

Two study areas were used as part of the botanical resources survey. This includes a Botanical Resources Study Area and an NDVI Study Area.

2.1.1. BOTANICAL RESOURCES STUDY AREA

The Botanical Resources Study Area was used to document the presence of special-status plant species and the presence of invasive plant species. The Botanical Resources Study Area is shown on Figure 2.1-1 (and the associated mapbook in Attachment 1) and includes all aboveground Project facilities and USFS recreation areas, including an approximate 100-foot buffer around these areas:

- Saddlebag Dam and Campgrounds (SD): Saddlebag Dam, spillway, and valve house; Saddlebag Day Use Picnic/Fishing Site; Saddlebag Lake Campground; Saddlebag Lake Group Campground; and Saddlebag Lake Loop trailhead
- Rhinedollar Dam and Penstock Trail (RD): Rhinedollar Dam, tunnel intake, spillway, and valve house and Penstock Trail
- Tioga Dam (TD): Tioga Dam, Tioga Auxiliary Dam, and access road
- Poole Powerhouse (PP)
- Sawmill Campground (SM): Sawmill Walk-in Campground including parking area
- Junction Campground (JC)
- Ellery Lake Campground (EC)
- Ellery Lake Overlook (EO)
- Tioga Lake Campground (TC)

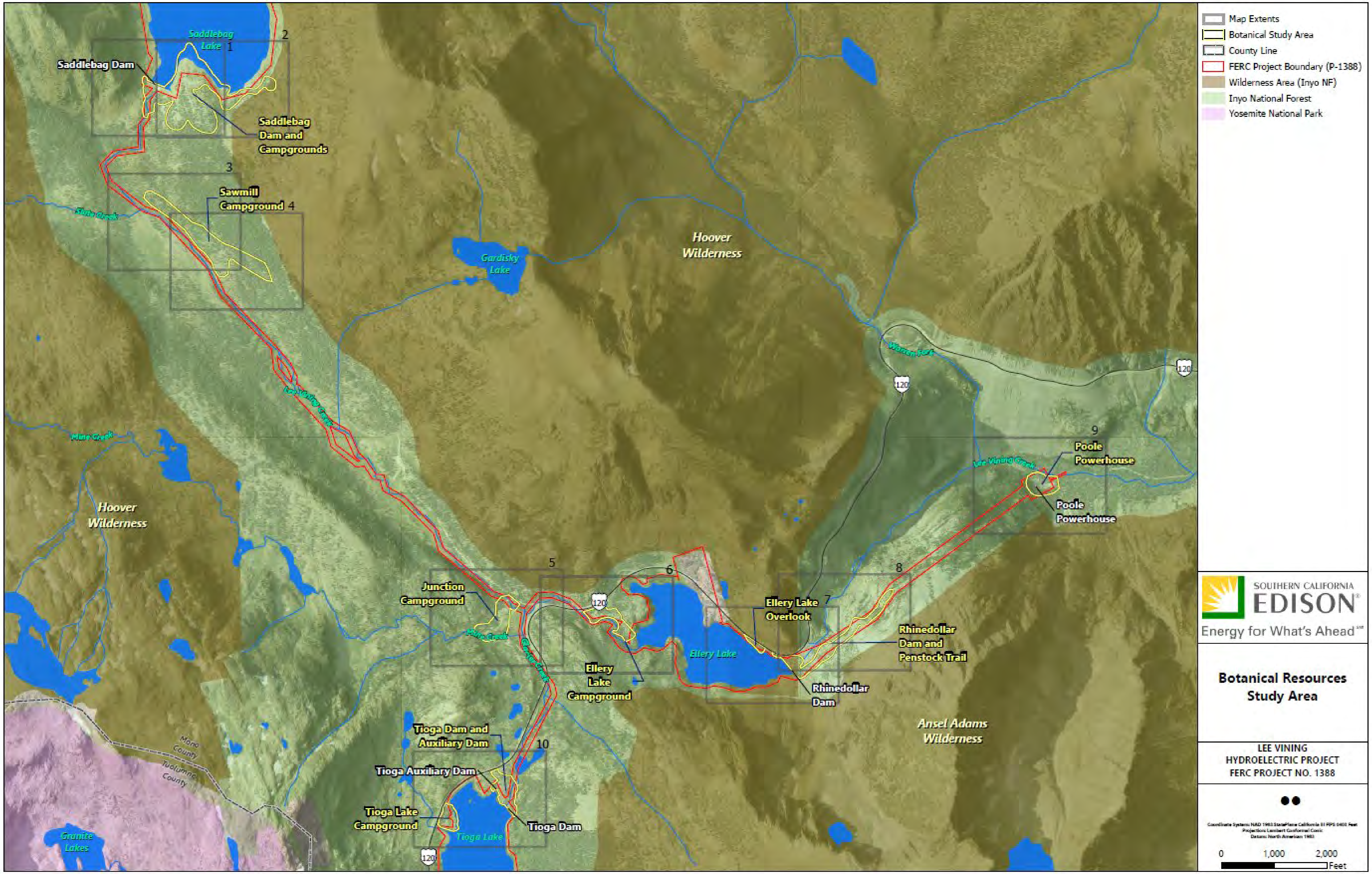

Figure 2.1-1. Botanical Resources Study Area

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2.1.2. NDVI Study Area

The NDVI Study Area was used (1) to compare test reaches and control reaches and (2) to assess the potential effects of hydro-optimization on riparian resources. The NDVI Study Area extends from above Saddlebag Lake to below Aspen Campground (Table 2.1-1; Figure 2.1-2; and the associated mapbook in Attachment 1). Test reaches were located along Lee Vining Creek, within or adjacent to the FERC Project Boundary, that are downstream of Project water releases, including minimum instream flows and hydro-optimization. Control areas include a reach along Lee Vining Creek that is upstream of any Project facility (i.e., upstream of Saddlebag Lake) and tributaries to Lee Vining Creek (i.e., Mine Creek and Slate Creek).

Table 2.1-1. NDVI Study Sites and Source for Delimiting Sampling Plots

Study Site	Control/Test	Affected by Hydro-Resource Optimization	Willow Riparian Scrub Vegetation Determination	Wet Meadow Vegetation Determination
Above Saddlebag (AS)	Control	No	Based on Google Earth aerial imagery	Based on Google Earth aerial imagery
Upper Slate Creek (USC)	Control	No	Based on Google Earth aerial imagery	Based on Google Earth aerial imagery
Mine Creek (MC)	Control	No	Based on Google Earth aerial imagery	Based on Google Earth aerial imagery
Below Saddlebag (BS)	Test	No	Based on field survey; dominated by gray-leafed Sierra willow (*Salix orestera*)	Community not present
Upper Lee Vining (ULV)	Test	No	Based on field survey; mix of Sierra willow (*Salix eastwoodiae*), tea-leafed willow (*Salix planifolia*), Jepson's willow (*Salix jepsonii*), and gray-leafed Sierra willow	Based on field survey; dominated by a mix of grasses and forbs, including Pacific onion (*Allium validum*), alpine ragwort (*Packera pauciflora*), sedges (*Carex* spp.), and rushes (*Juncus* spp.)
Middle Lee Vining (MLV)	Test	No	Based on Google Earth aerial imagery	Based on Google Earth aerial imagery
Below Ellery (BE)	Test	No	Based on field survey; dominated by gray-leafed Sierra willow	Community not present
Lower Lee Vining (LLV)	Test	Yes	Based on field survey; dominated by narrow-leaved willow (*Salix exigua*)	Based on field survey; dominated by sedges (*Carex* spp.) and rushes (*Juncus* spp.)

Source: Google Earth, various dates

NDVI = Normalized Difference Vegetation Index

Figure 2.1-2. NDVI Study Area

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3.0 METHODS

Study implementation generally followed the methods described in the *TERR-1 General Botanical Resources Survey Technical Study Plan*, with the exceptions described below.

3.1. MODIFICATIONS TO METHODS

Study *TERR-1* originally proposed two study sites to determine whether changes were detected in riparian “health” as a result of hydro-resource optimization, as measured by NDVI. The current study expanded the analysis to eight study sites: five test reaches of Lee Vining Creek downstream of Project facilities and three outside the Project to act as controls. These additional study sites allow for an increase in sampling replicates and a more robust analysis.

Select portions of the Botanical Resources Study Area were extended beyond 100 feet at the request of the USFS (i.e., the portion of Lee Vining Creek below Saddlebag Dam and the lakeshore around the Saddlebag Day Use Picnic/Fishing Site) for the purpose of gathering more extensive data along the creek.

In some locations, the Botanical Resources Study Area buffer was decreased within 100 feet due to limitations of accessibility and topography.

In place of reference population checks, two rounds of surveys were performed in 2022 to ensure coverage of the blooming periods for all species.

3.2. SPECIAL-STATUS PLANT SPECIES SURVEY

3.2.1. LITERATURE REVIEW

A literature review was conducted to identify special-status plant species reported to occur (or that historically occurred) in the vicinity of the Botanical Resources Study Area. This literature review also verified the protective status of any of the previously identified special-status plants and reviewed any new literature on the ecology and life history of these resources. The literature review was used to define potentially suitable habitat for special-status plant species and make a determination on which species have potential to occur in the Botanical Resources Study Area based on the presence of suitable habitat.

A list of special–status plant species was compiled from several sources by searching the following U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles: Tioga Pass, Mount Dana, Lee Vining, Falls Ridge, Lundy, Dunderberg Peak, Vogelsang Peak, Koip Peak, Matterhorn Peak, and Tenaya Lake. The sources queried included:

- California Natural Diversity Database (CNDDB; CDFW, 2020)
- California Native Plant Society’s Inventory of Rare and Endangered Plants (CNPS, 2020)

- Persistence Analysis for Species of Conservation Concern Inyo National Forest (INF, 2019) (species known to be present in the Mono Ranger District are included)
- USFS records of botany at risk species (NRM – TESP/IS, 2018)
- Whitebark pine range geospatial data (USFS, 2020)

The literature review yielded a total of 135 special-status plant species reported from the vicinity of the Botanical Resources Study Area as shown in Table 1 of Attachment 2, Literature Review Results, to this memo. Species listed in the table are categorized as known to occur, may occur, or unlikely to occur. The table also summarizes pertinent information for each species, including listing status, blooming period, and preferred habitat, with information on the location of occurrences recorded within the Botanical Resources Study Area.

3.2.2. Field Survey

Special-status plant surveys were floristic in nature and consistent with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018). Surveys were performed at appropriate times of year to maximize the probability of detecting special-status plant species, as determined by the literature review and in consultation with the relevant Stakeholders. Two rounds of surveys were conducted to encompass the blooming/fruiting period for multiple special-status plant species.

Surveys were conducted on July 18, 19, 20, 21, and 22 and August 15, 16, 17, 18, and 19, 2022. A systematic, pedestrian survey was conducted throughout the Botanical Resources Study Area in all areas of suitable plant habitat. Inaccessible areas were viewed via binoculars. A field map with the Botanical Resources Study Area overlaid on aerial imagery (source USGS, 2020) was prepared at a scale of 1 inch equals 150 feet (1″=150′).

Plant species were identified in the field or collected for future identification. Voucher specimens will be deposited in an approved herbarium that is a member of the Consortium of California Herbaria (i.e., at the University of California, Riverside, and the California Botanic Garden). Individuals were collected under the conditions of California Department of Fish and Wildlife (CDFW) and USFS permits.

Plants were identified to the taxonomic level necessary to determine whether they were a special-status species.

The location of any special-status plant species population observed in the Botanical Resources Study Area was recorded with either a handheld Garmin Global Positioning System (GPS) unit or on an iPad loaded with Avenza Maps software displaying the field map. The number of individuals was collected for non-clonal species (estimated for large populations) and the area and percent cover was mapped for clonal species. Data were collected on the phenology of individuals and microsite characteristics (e.g., slope, aspect, soil texture, surrounding habitat, and associated species). At the request of the resource agencies, locations of black cottonwood (*Populus trichocarpa*) were also recorded. CNDDB Field Survey Forms will be submitted to the CDFW for listed species or species with a CRPR of 1 or 2.

3.3. Invasive Plant Species Survey

3.3.1. Literature Review

The list of invasive plant species with potential to occur in the Botanical Resources Study Area was developed from a query of the Cal-IPC (Cal-IPC, 2020) and a list provided by the USFS of non-native invasive plants (NNIPs) currently known in the Inyo National Forest (NRM – TESP/IS, 2018).

Cal-IPC was queried to obtain a list of invasive plants based on two parameters:

- Jepson region: The inventory uses geographic floristic provinces and subdivisions within California as described by the Jepson Flora Project (2022); Sierra Nevada East was used.
- Habitat types: Five vegetation communities were known to be in or near the Botanical Resources Study Area and were selected: scrub and chaparral, grasslands, riparian, woodland, and forest.

Cal-IPC defines NNIPs as plants that (1) are not native to, yet can spread into, wildland ecosystems, and that also (2) displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes (Cal-IPC, 2020).

Cal-IPC categorizes plants as High, Moderate, or Limited, according to the degree of ecological impact in California (Cal-IPC, 2020).

The USFS has categorized NNIPs into various treatment strategies (1) eradicate, (2) control, (3) contain, and (4) limited or no treatment.

The Cal-IPC query combined with the list of NNIPs known to occur in the Inyo National Forest yielded a total of 84 invasive plant species that have the potential to occur in the Botanical Resources Study Area as shown in Table 2 of Attachment 2, Literature Review Results, to this memo.

3.3.2. Field Survey

Invasive plant species surveys were performed concurrently with and followed the methods for special-status plant surveys, as described above.

The USFS identified select invasive species of concern to be mapped within the Botanical Resources Study Area (see Table 3 in Attachment 2, Literature Review Results, of this memo). Discrete individuals/populations were mapped as a point or polygon. Widely distributed species dispersed throughout a study site were documented as present/absent in individual study sites. The number of individuals of each invasive species was estimated. Other non-native plant species observed were documented as present but not mapped.

3.4. NDVI Analysis

An NDVI analysis was performed for willow riparian scrub and wet meadow communities on select study sites of the riparian corridor. Study sites were selected visually based on the presence of a relatively uniform riparian plant community (i.e., willow riparian scrub with or without a wet meadow) that was not obscured by a conifer canopy, as identified by Google Earth aerial imagery and field surveys. Sites were selected that had a willow cover large enough to support 10 replicate sampling plots of 10 square meters each. The number and size of sampling plots per study site was constrained because some study sites had limited willow extent. For each study site, sampling plots were placed within areas of relatively homogeneous willow riparian scrub or wet meadow (where present). Plots were repositioned to minimize the amount of non-vegetative landcover (e.g., rock, trail) or shadow within the plot boundary as shown in the 2016 and 2021 imagery flown as part of the long-term riparian monitoring study.

An NDVI quantifies vegetation by measuring the difference between near-infrared (NIR), which vegetation strongly reflects, and red light (R), which vegetation absorbs. This reports the “greenness” of vegetation, which is used as a proxy for vegetation health (i.e., high NDVI values represent healthier vegetation) (GISGeography, 2022).

$$NDVI = (NIR - R)/(NIR + R)$$

The mean NIR and R values were obtained for each sampling plot using the false color infrared aerial imagery flown as part of the current license requirement for riparian monitoring. Aerial imagery was flown by Keystone Aerial Surveys on August 12, 2016, and August 2, 2021. The flight line extended from just upstream of Saddlebag Lake to the SCE powerhouse in Lee Vining. Pixel resolution of the imagery was approximately 12 centimeters for aerials flown in 2021 and 15 centimeters for aerials flown in 2016.

Values were obtained using the NDVI tool in ArcGIS software. The average and standard deviation of NDVI values were calculated for each of the eight study sites.

4.0 DATA SUMMARY

4.1. Special-Status Plant Species

Two special-status plant species were observed in 2022 in the Botanical Resources Study Area: mountain bent grass (*Agrostis humilis*) and whitebark pine (*Pinus albicaulis*). Figure 4.1-1 (and the associated mapbook in Attachment 1) shows the location of each population of special-status plant species. At the request of the resource agencies, information was also collected on black cottonwood. A complete list of plant species observed is included in Attachment 3, 2022 Plant Compendium.

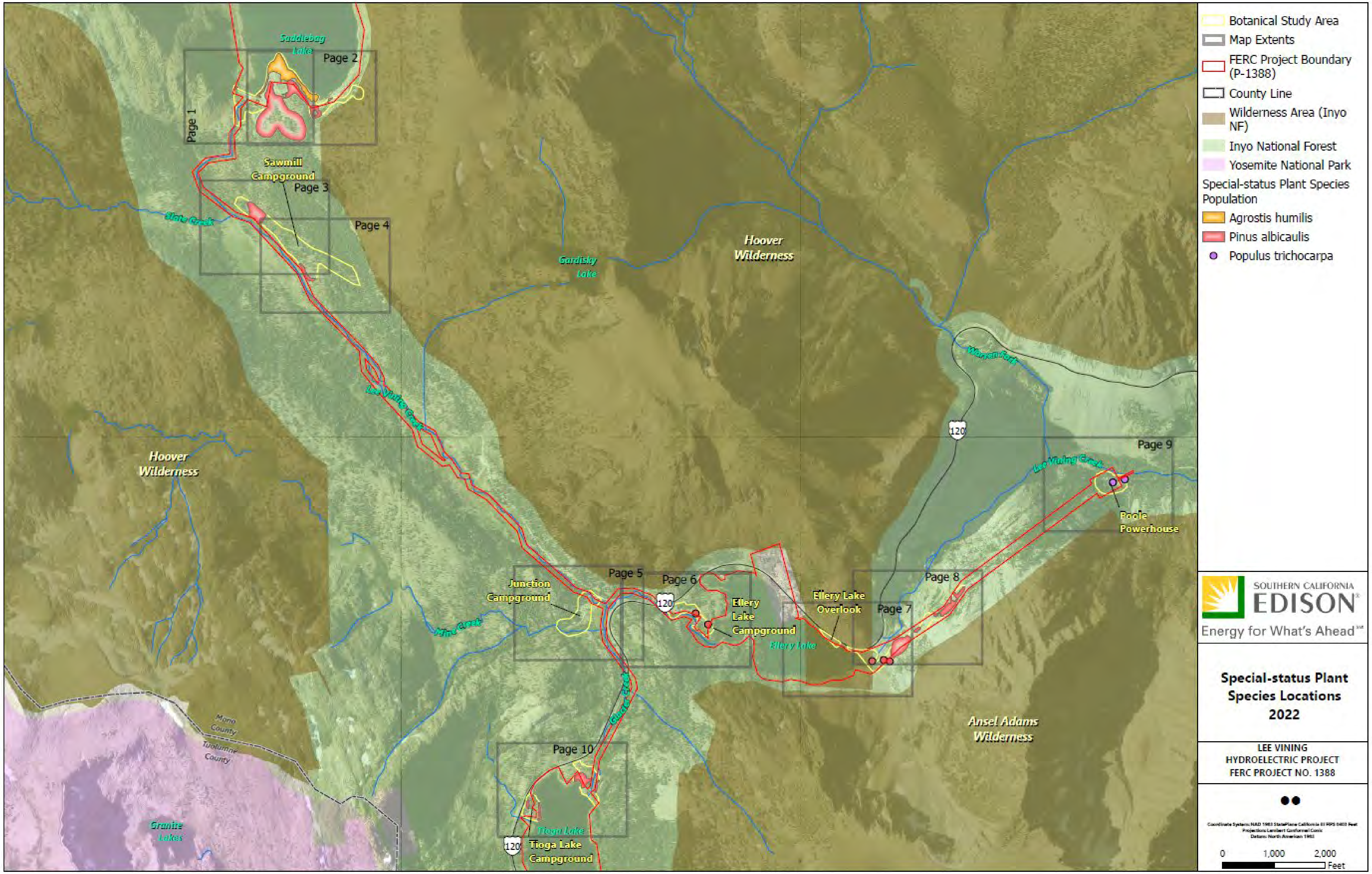

Figure 4.1-1. Special-status Plant Species Locations 2022

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4.1.1. Mountain Bent Grass

Mountain bent grass has a CRPR of 2B.3 and is designated as a Species of Conservation Concern by the Inyo National Forest. Five populations of mountain bent grass totaling approximately 854 individuals were observed in the Botanical Resources Study Area (Figure 4.1-1; Table 4.1-1). The majority of individuals were flowering or fruiting. Populations were observed in the Saddlebag Dam and Campgrounds portion of the study area. The species was growing in relatively barren areas along the lakeshore and below Saddlebag Dam, sometimes among scattered boulders and cobbles. Associated species vary by population and include rough bent grass (*Agrostis scabra*), abrupt-beaked sedge (*Carex abrupta*), umbel-bearing pussypaws (*Calyptridium umbellatum*), Newberry's beardtongue (*Penstemon newberryi*), northern goldenrod (*Solidago multiradiata*), and Anderson's alpine aster (*Oreostemma alpigenum* var. *andersonii*).

Table 4.1-1. Population Counts and Phenology of Mountain Bent Grass

Botanical Study Area	Population	Number of Individuals	Percent Vegetative	Percent Flowering/Fruiting
Saddlebag Dam and Campgrounds	1	106	10	90
Saddlebag Dam and Campgrounds	2	500	10	90
Saddlebag Dam and Campgrounds	3	48	10	90
Saddlebag Dam and Campgrounds	4	100	10	90
Saddlebag Dam and Campgrounds	5	100	10	90

4.1.2. Whitebark Pine

Whitebark pine is listed as Threatened under the federal Endangered Species Act and is designated as a Species of Conservation Concern by the Inyo National Forest. Federal listing was finalized on December 15, 2022, and the rule is effective January 17, 2023 (USFWS 2022).

Seventeen populations of whitebark pine totaling approximately 1,004 individuals were observed in the Botanical Resources Study Area (Figure 4.1-1; Table 4.1-2). The species was growing in a mix of vegetation types including whitebark pine forest, whitebark pine—alpine, willow scrub, and wet meadow. Associated species vary by site and include lodgepole pine, gray-leafed Sierra willow, Brewer's mountain heather (*Phyllodoce breweri*), western Labrador tea (*Rhododendron columbianum*), whitestem goldenbush (*Ericameria discoidea*), dwarf bilberry, fireweed (*Chamerion angustifolium* ssp. *circumvagum*), compact spear phacelia (*Phacelia hastata* var. *compacta*), Newberry's beardtongue, squirreltail (*Elymus elymoides*), and sedge (*Carex* spp.).

Table 4.1-2. Population Counts and Phenology of Whitebark Pine

Botanical Study Area	Population	Number of Individuals	Percent Vegetative	Percent Flowering/Fruiting
Rhinedollar Dam and Penstock Trail	1	2	50	50
Rhinedollar Dam and Penstock Trail	2	1	100	—
Rhinedollar Dam and Penstock Trail	3	2	100	—
Rhinedollar Dam and Penstock Trail	4	300	75	25
Rhinedollar Dam and Penstock Trail	5	12	33	67
Rhinedollar Dam and Penstock Trail	6	300	75	25
Saddlebag Dam and Campgrounds	7	30	85	15
Saddlebag Dam and Campgrounds	8	200	75	25
Ellery Lake Campground	9	2	—	100
Ellery Lake Campground	10	3	33	67
Sawmill Campground	11	17	41	59
Sawmill Campground	12	23	78	22
Tioga Dam and Auxiliary Dam	13	10	60	40
Tioga Dam and Auxiliary Dam	14	74	69	31
Tioga Lake Campground	15	6	17	83
Tioga Lake Campground	16	9	55	45
Tioga Lake Campground	17	13	85	15

4.1.3. Black Cottonwood

Black cottonwood is not considered a special-status plant species; however, as a riparian species, it is of interest to the stakeholders.

Two populations of black cottonwood were observed in the Botanical Resources Study Area (Figure 4.1-1; Table 4.1-3). Population 1 consisted of a single, mature individual. Population 2 consisted of a cluster of eight saplings.

Table 4.1-3. Population Counts and Phenology of Black Cottonwood

Botanical Study Area	Population	Number of Individuals	Percent Vegetative	Percent Flowering	Percent Fruiting
Poole Powerhouse	1	1	100	—	—
Poole Powerhouse	2	8	100	—	—

4.2. Invasive Plant Species

One invasive plant species of concern designated for mapping was observed in 2022 in the Botanical Resources Study Area: cheat grass (*Bromus tectorum*).

Three populations of cheat grass were observed in 2022 in the Botanical Resources Study Area (Figure 4.2-1 and the associated mapbook in Attachment 1). Two populations were documented from Poole Powerhouse (Population 1 has 30 individuals; Population 2 has 60 individuals) and one was documented from Ellery Lake Campground (Population 3 has 40 individuals).

No other invasive plant species of concern were observed in the Botanical Resources Study Area. Other non-native plant species observed are reported in Attachment 3, 2022 Plant Compendium.

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Figure 4.2-1. Invasive Species Locations 2022

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4.3. NDVI ANALYSIS

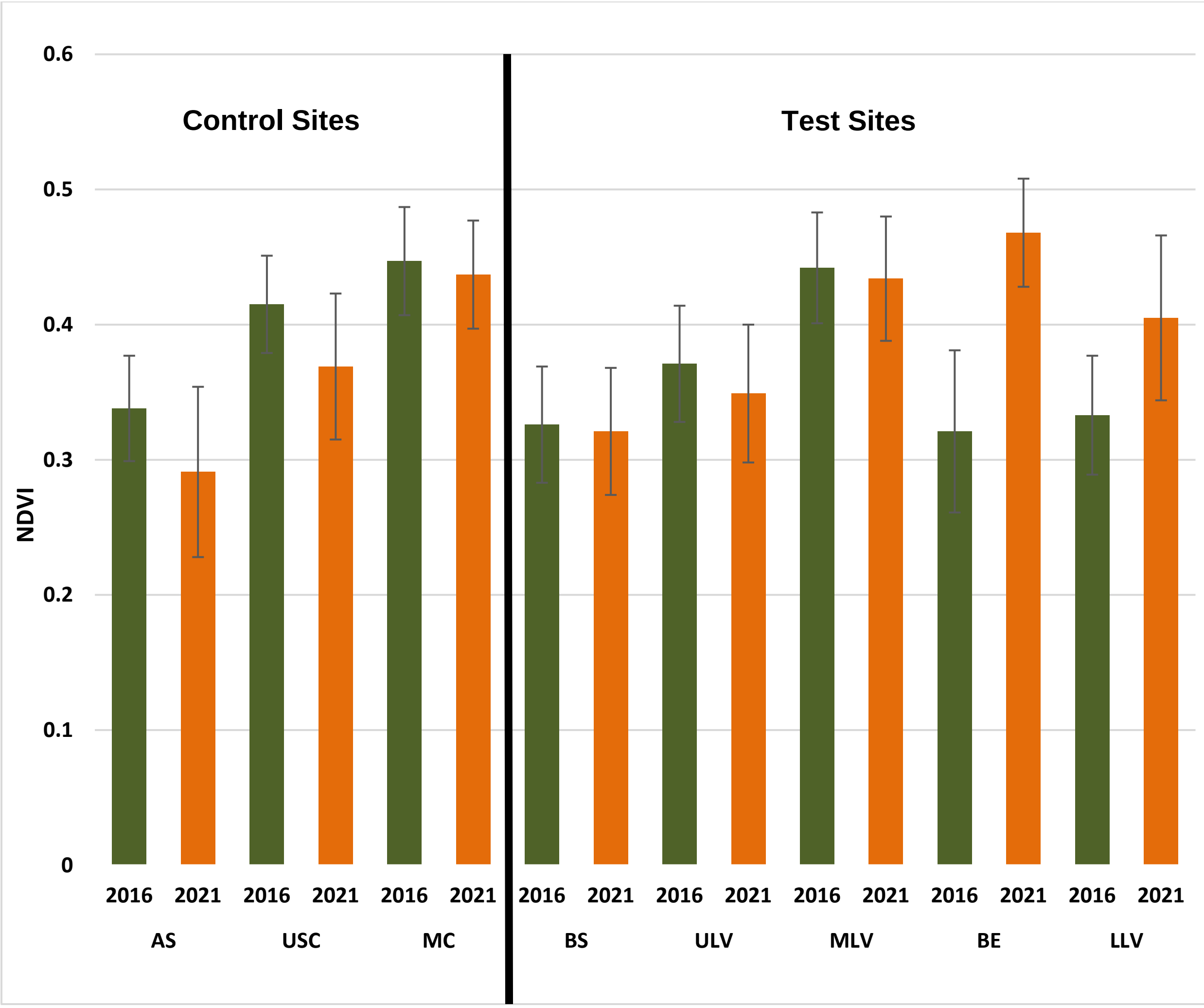
Vegetation indices are used to measure biomass or vegetative vigor using combinations of several spectral values (Campbell and Wynne, 2011). The NDVI is one form of vegetation index that is constrained to vary within limits (i.e., between -1 and +1). A high NDVI value indicates “healthy” vegetation because it reflects more near-infrared and green light compared to other wavelengths and absorbs more red and blue light.

Table 4.3-1 and Figure 4.3-1 summarizes the 2016 and 2021 NDVI data for willow riparian scrub at both control and test sites.

Table 4.3-1. Summary of NDVI Data for Willow Riparian Scrub in 2016 and 2021

Site [a]	Mean (2016)	Mean (2021)	Standard Deviation (2016)	Standard Deviation (2021)	Minimum (2016)	Minimum (2021)	Maximum (2016)	Maximum (2021)
AS	*0.338*	*0.291*	*0.039*	*0.063*	*0.209*	*0.055*	*0.437*	*0.473*
USC	*0.415*	*0.369*	*0.036*	*0.054*	*0.307*	*0.180*	*0.489*	*0.500*
MC	*0.447*	*0.437*	*0.040*	*0.040*	*0.347*	*0.305*	*0.592*	*0.570*
BS	0.326	0.321	0.043	0.047	0.218	0.119	0.438	0.487
ULV	0.371	0.349	0.043	0.051	0.111	0.138	0.488	0.482
MLV	0.442	0.434	0.041	0.046	0.258	0.223	0.519	0.569
BE	0.321	0.468	0.060	0.040	0.102	0.331	0.437	0.582
LLV	0.333	0.405	0.044	0.061	0.198	0.220	0.454	0.590

AS = Above Saddlebag; USC = Upper Slate Creek; MC = Mine Creek; BS = Below Saddlebag; ULV = Upper Lee Vining; MLV = Middle Lee Vining; BE = Below Ellery; LLV = Lower Lee Vining
Notes:
[a] Site names in italics are control sites; site names not in italics are test sites.



AS = Above Saddlebag; USC = Upper Slate Creek; MC = Mine Creek; BS = Below Saddlebag; ULV = Upper Lee Vining; MLV = Middle Lee Vining; BE = Below Ellery; LLV = Lower Lee Vining; NDVI = Normalized Difference Vegetation Index

Figure 4.3-1. Mean NDVI (+/- Standard Deviation) for Control and Test Willow Riparian Scrub

Table 4.3-2 and Figure 4.3-2 summarizes the 2016 and 2021 NDVI data for wet meadow at both control and test sites.

Table 4.3-2. Summary of NDVI Data for Wet Meadow in 2016 and 2021

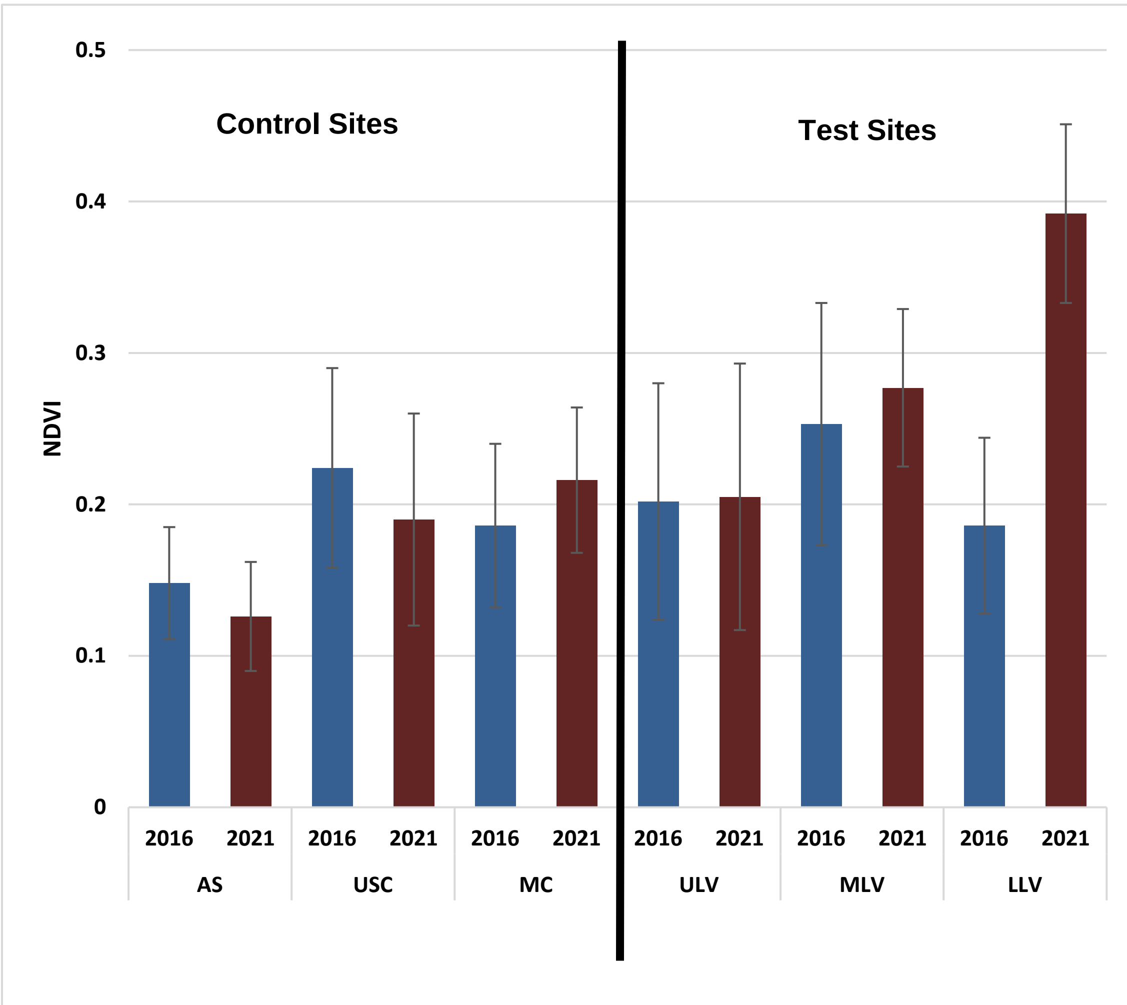
Site [a]	Mean (2016)	Mean (2021)	Standard Deviation (2016)	Standard Deviation (2021)	Minimum (2016)	Minimum (2021)	Maximum (2016)	Maximum (2021)
AS	*0.148*	*0.126*	*0.037*	*0.036*	*0.059*	*0.026*	*0.251*	*0.223*
USC	*0.224*	*0.190*	*0.066*	*0.070*	*0.102*	*0.029*	*0.358*	*0.344*
MC	*0.186*	*0.216*	*0.054*	*0.048*	*0.075*	*0.092*	*0.354*	*0.354*

Site [a]	Mean (2016)	Mean (2021)	Standard Deviation (2016)	Standard Deviation (2021)	Minimum (2016)	Minimum (2021)	Maximum (2016)	Maximum (2021)
ULV	0.202	0.205	0.078	0.088	0.014	-0.029	0.344	0.388
MLV	0.253	0.277	0.080	0.052	0.099	0.145	0.402	0.447
LLV	0.186	0.392	0.058	0.059	0.062	0.191	0.333	0.523

AS = Above Saddlebag; USC = Upper Slate Creek; MC = Mine Creek; ULV = Upper Lee Vining; MLV = Middle Lee Vining; LLV = Lower Lee Vining; NDVI = Normalized Difference Vegetation Index

Notes:

[a] Site names in italics are control sites; site names not in italics are test sites.



AS = Above Saddlebag; USC = Upper Slate Creek; MC = Mine Creek; ULV = Upper Lee Vining; MLV = Middle Lee Vining; LLV = Lower Lee Vining; NDVI = Normalized Difference Vegetation Index

Figure 4.3-2. Mean NDVI (+/- Standard Deviation) for Control and Test Wet Meadow Habitat

5.0 NEXT STEPS

As noted in the methods, plant species were identified in the field or collected for future identification. Over 300 specimens were collected. Identification is still in progress, and the 2022 plant compendium (Attachment 3) represents species identified to date. The compendium will be completed as species identifications are confirmed.

A second year of plant/invasive surveys will be performed in 2023 to document any additional special-status plant and/or invasive species populations and to add new observations to the plant compendium.

The anticipated next steps for Study TERR-1 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2022–Nov/Dec	Compile preliminary data
2023–January	Progress Report and Meeting
2023–Feb/March	Stakeholder review and provide comments on draft report
2023–Summer/Fall	Conduct second season of field surveys
2024–Spring	Distribute draft report to Stakeholders
2024–Summer	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

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ATTACHMENT 1
MAPBOOKS

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Map Extents
Stream Flowline
Botanical Study Area
FERC Project Boundary (P-1388)

Base Imagery: NAIP 2016

SOUTHERN CALIFORNIA EDISON®
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Botanical Resources Study Area

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LEE VINING
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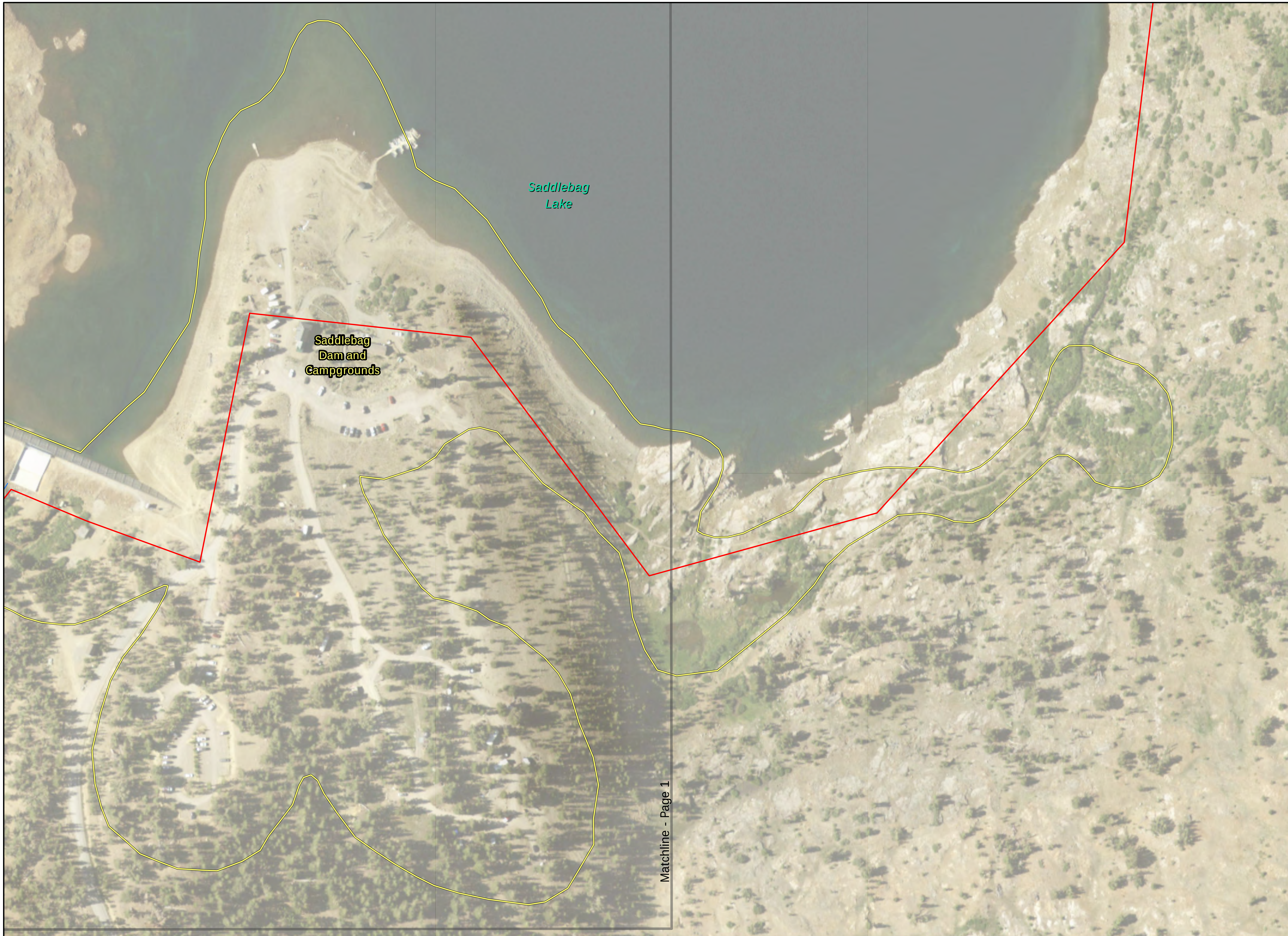

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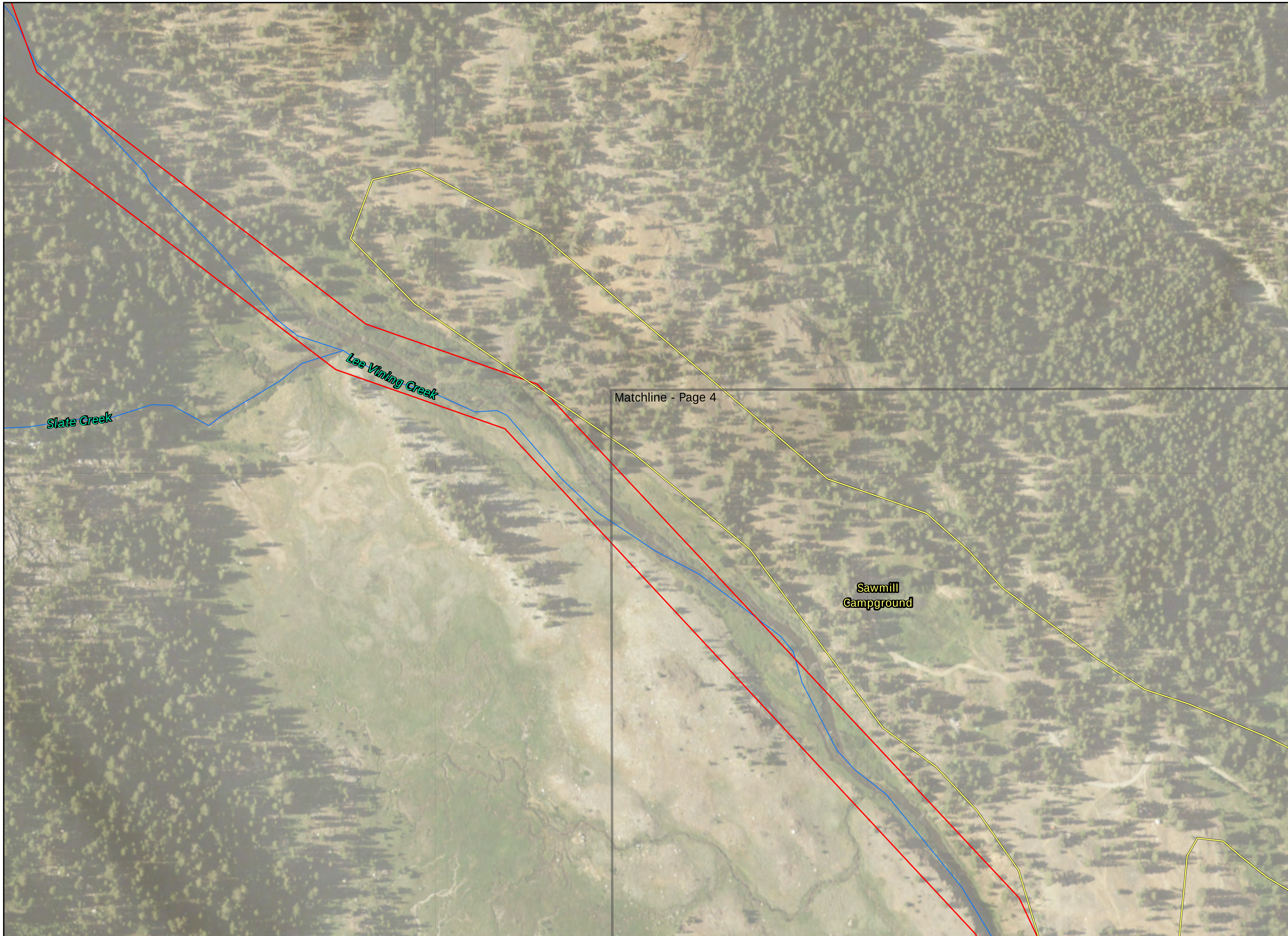

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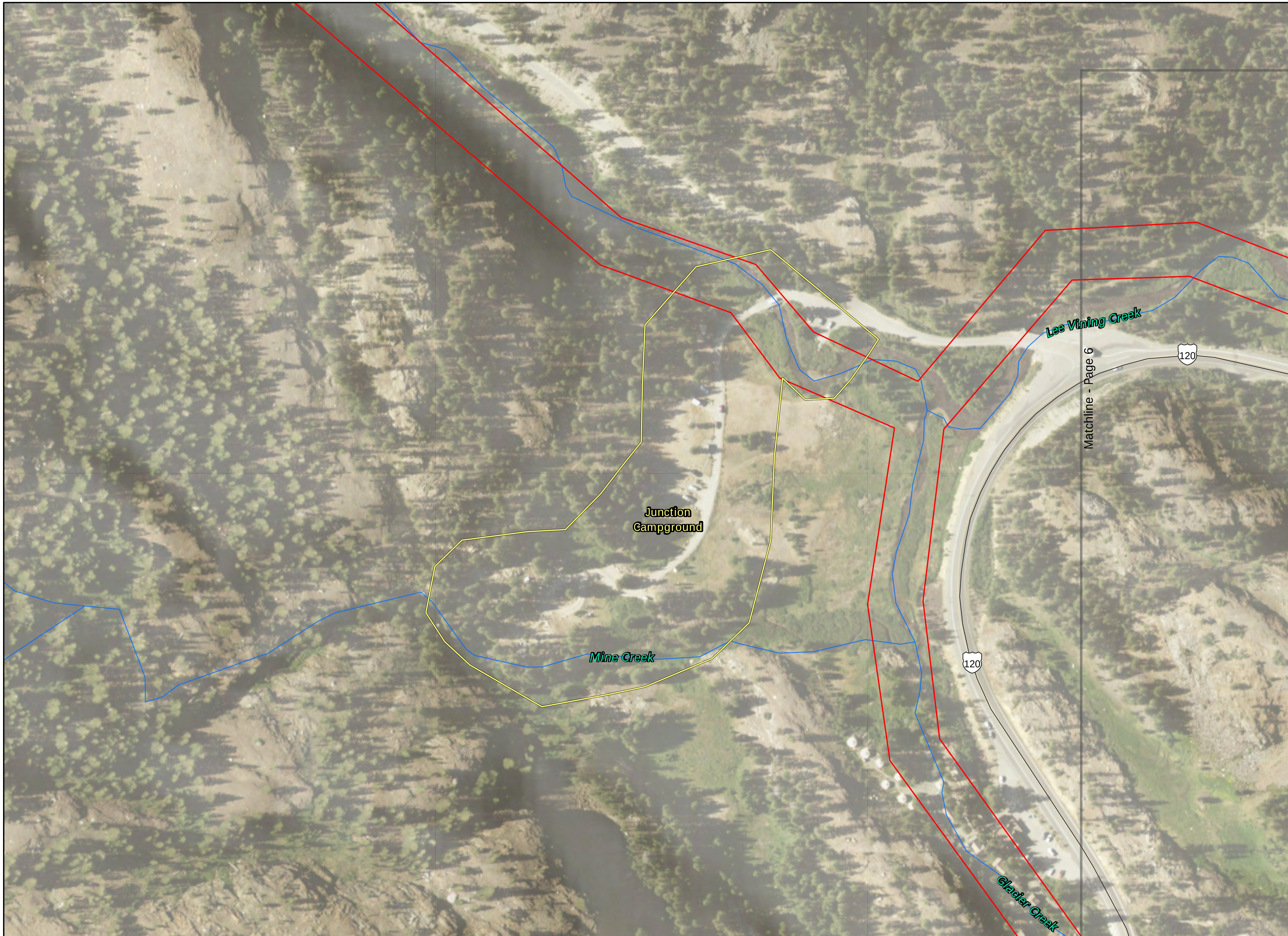

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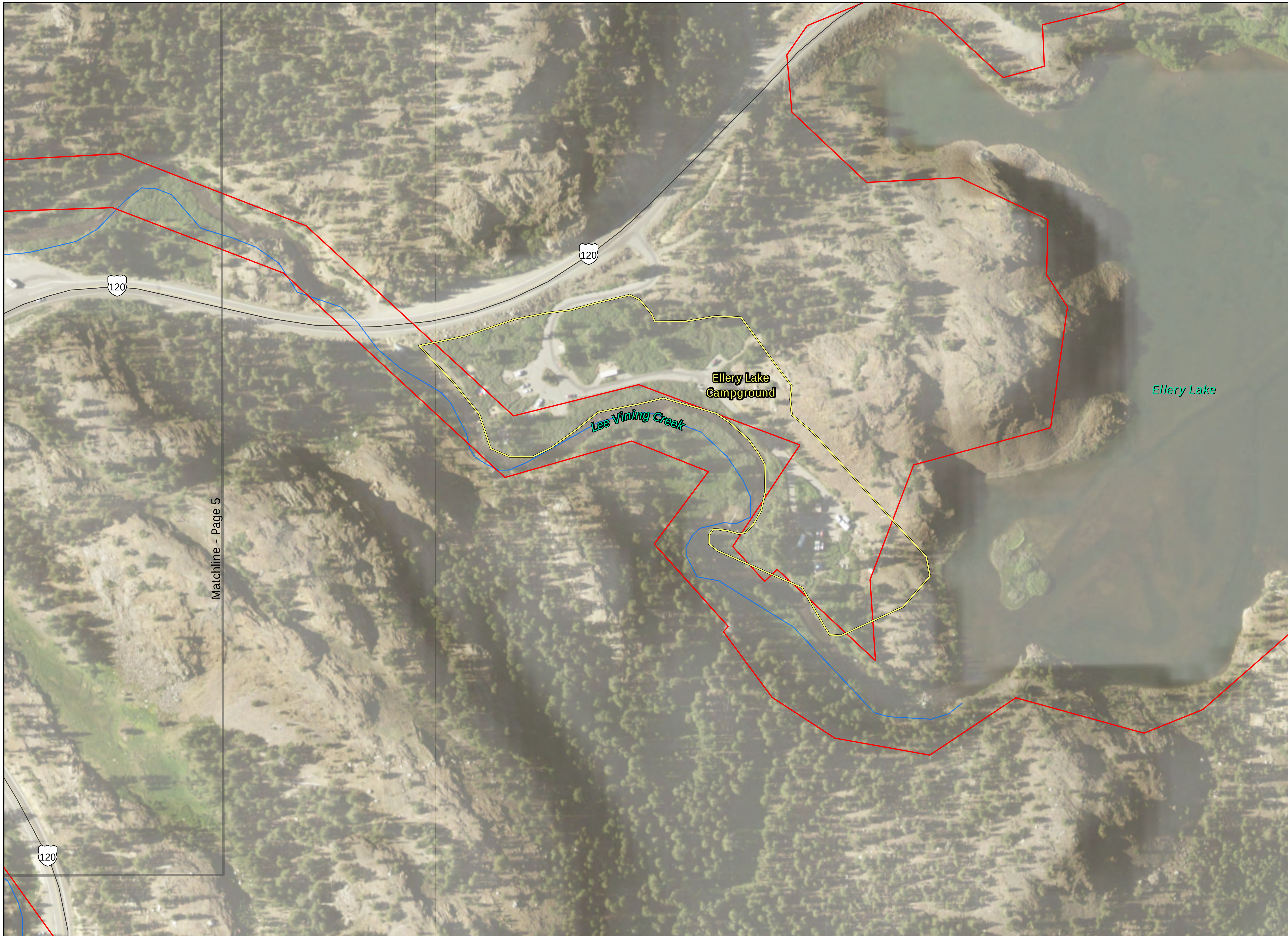

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NDVI Plots
- Sampling Plot - Wet Meadow
- Sampling Plot - Willow Riparian Scrub

NDVI Study Sites
- NDVI Study Site - Test
- NDVI Study Site - Contol
- Stream Flowline
- Road
- FERC Project Boundary (P-1388)

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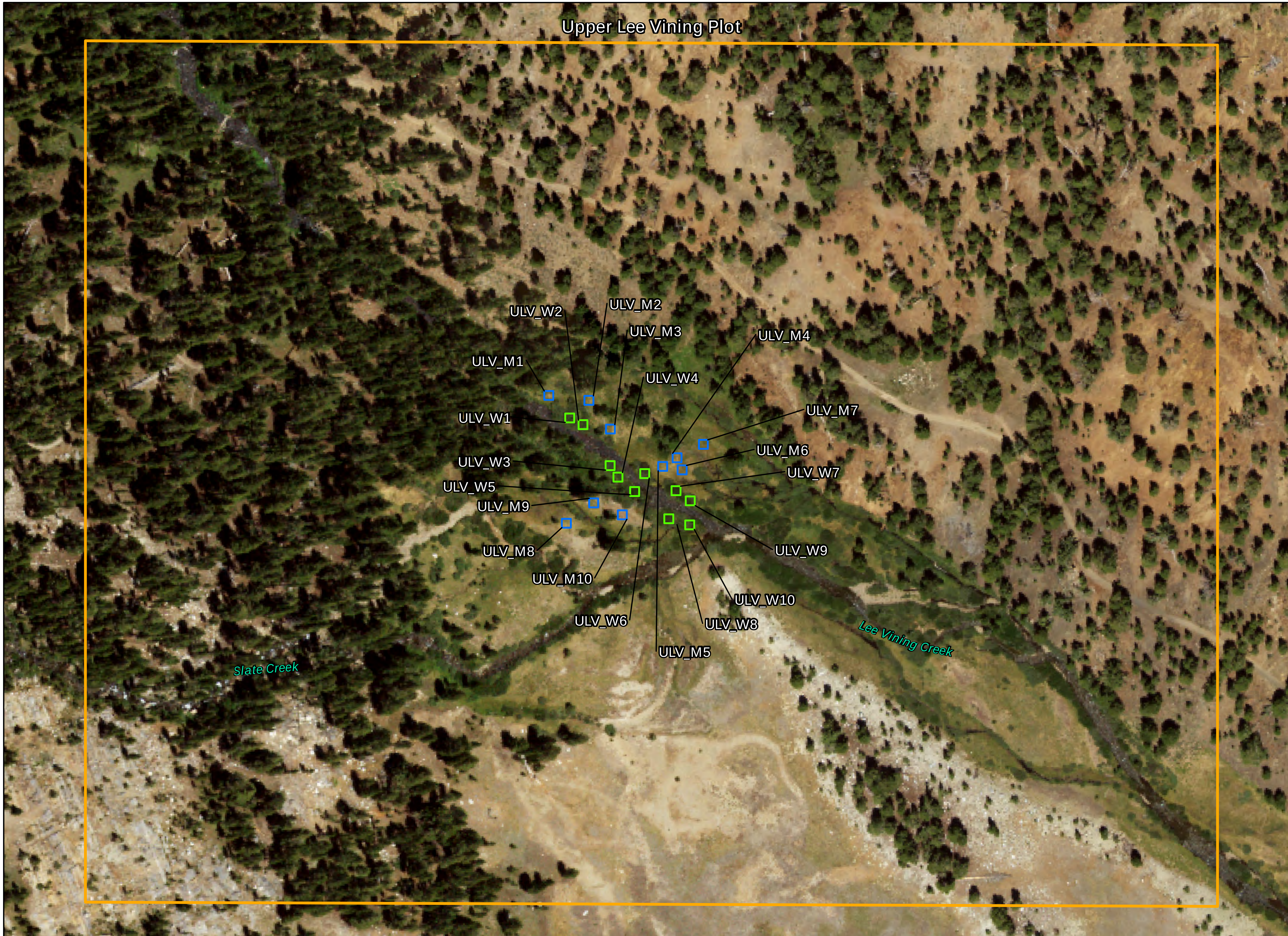

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NDVI Study Area

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NDVI Study Sites

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FERC Project Boundary (P-1388)

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NDVI Study Area

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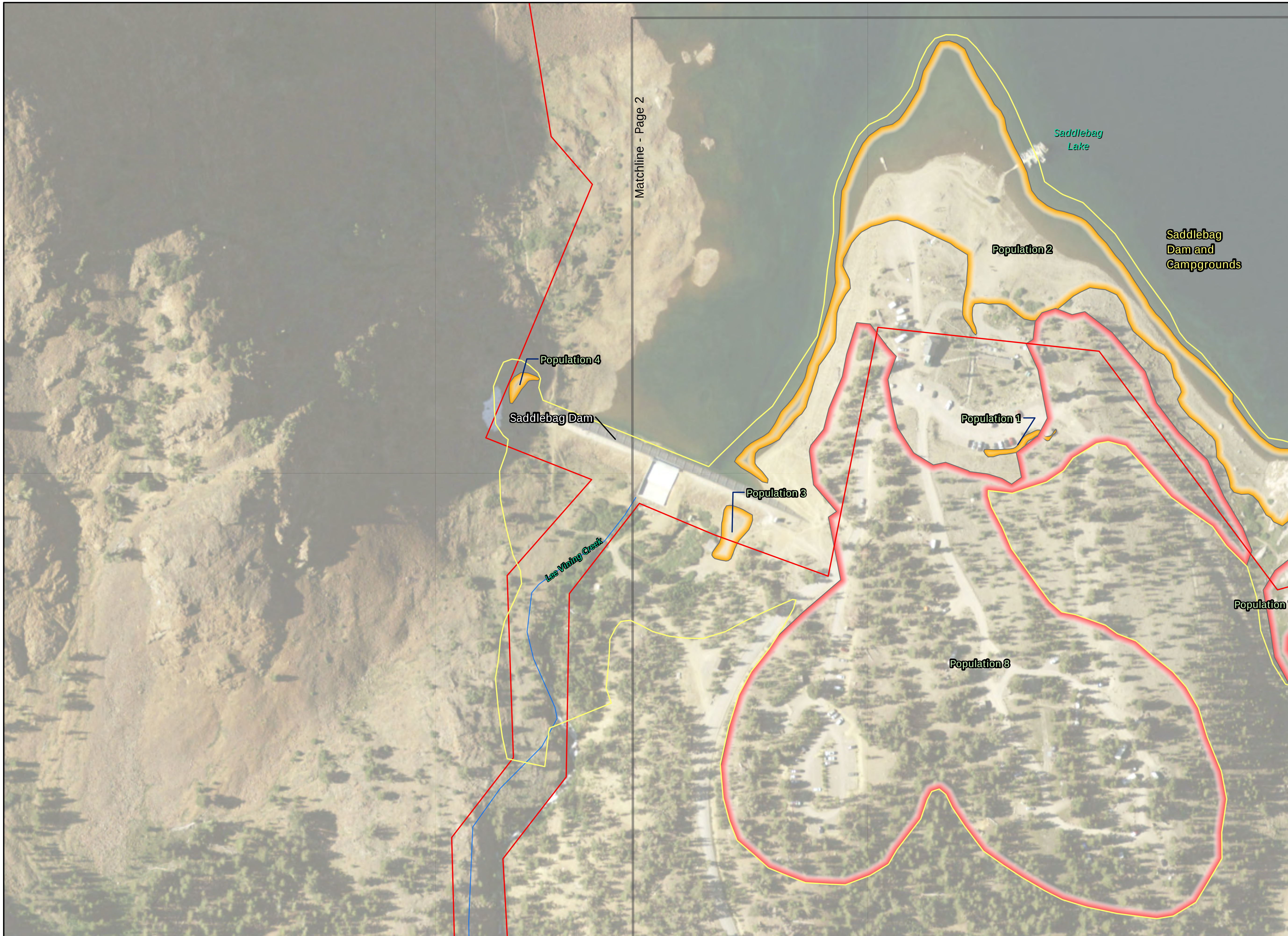

Map Extents
Botanical Study Area
County Line
FERC Project Boundary (P-1388)

Special-status Plant Species Population
Agrostis humilis
Pinus albicaulis
Populus trichocarpa

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead

Special-status Plant Species Location 2022

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LEE VINING HYDROELECTRIC PROJECT
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Map Extents
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Special-status Plant Species Population

Agrostis humilis
Pinus albicaulis
Populus trichocarpa

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead

Special-status Plant Species Location 2022

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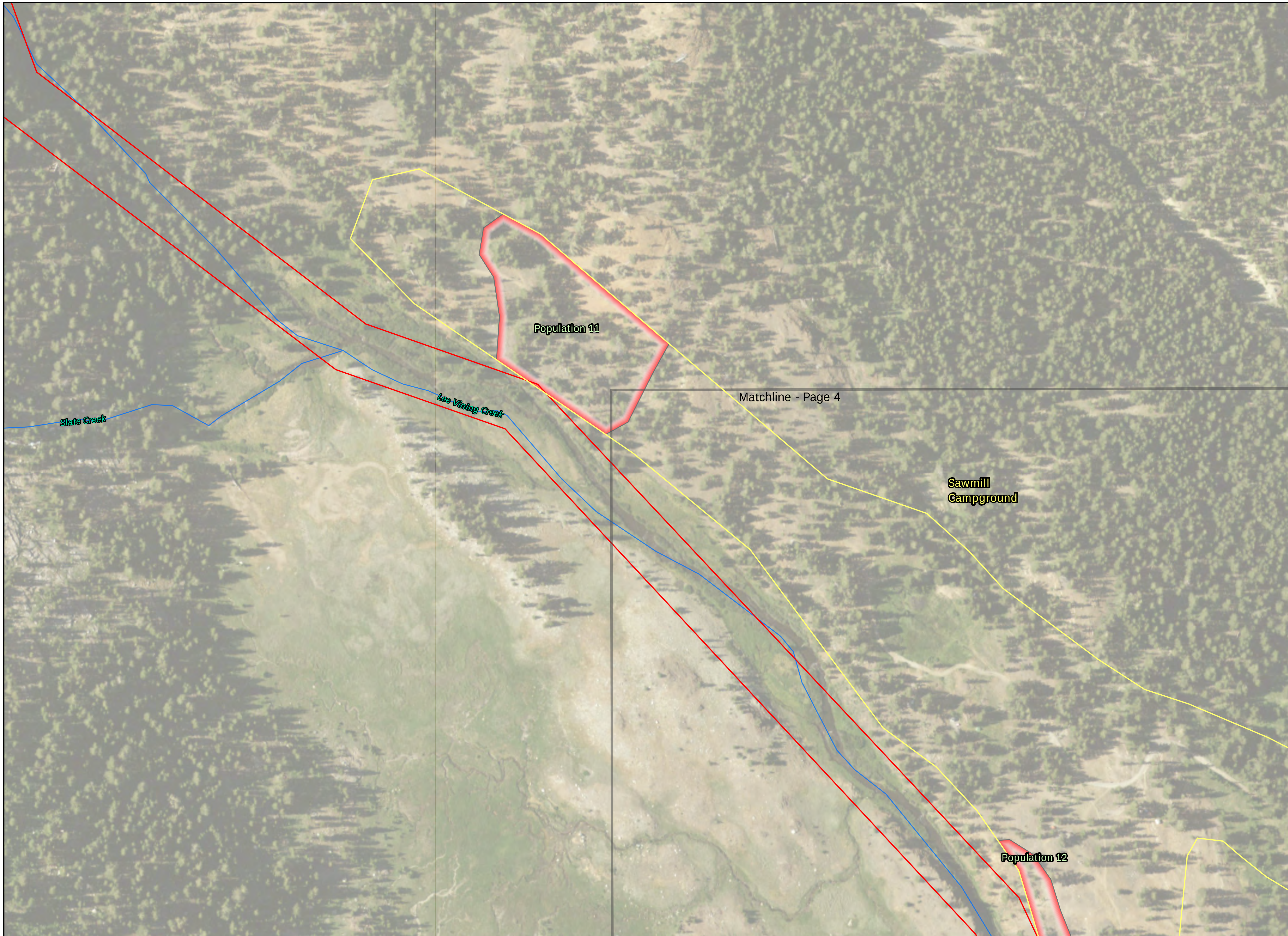

Map Extents
Botanical Study Area
County Line
FERC Project Boundary (P-1388)

Special-status Plant Species Population

Agrostis humilis
Pinus albicaulis
Populus trichocarpa

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead

Special-status Plant Species Location 2022

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LEE VINING HYDROELECTRIC PROJECT
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Special-status Plant Species Population
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Pinus albicaulis
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SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead

Special-status Plant Species Location 2022

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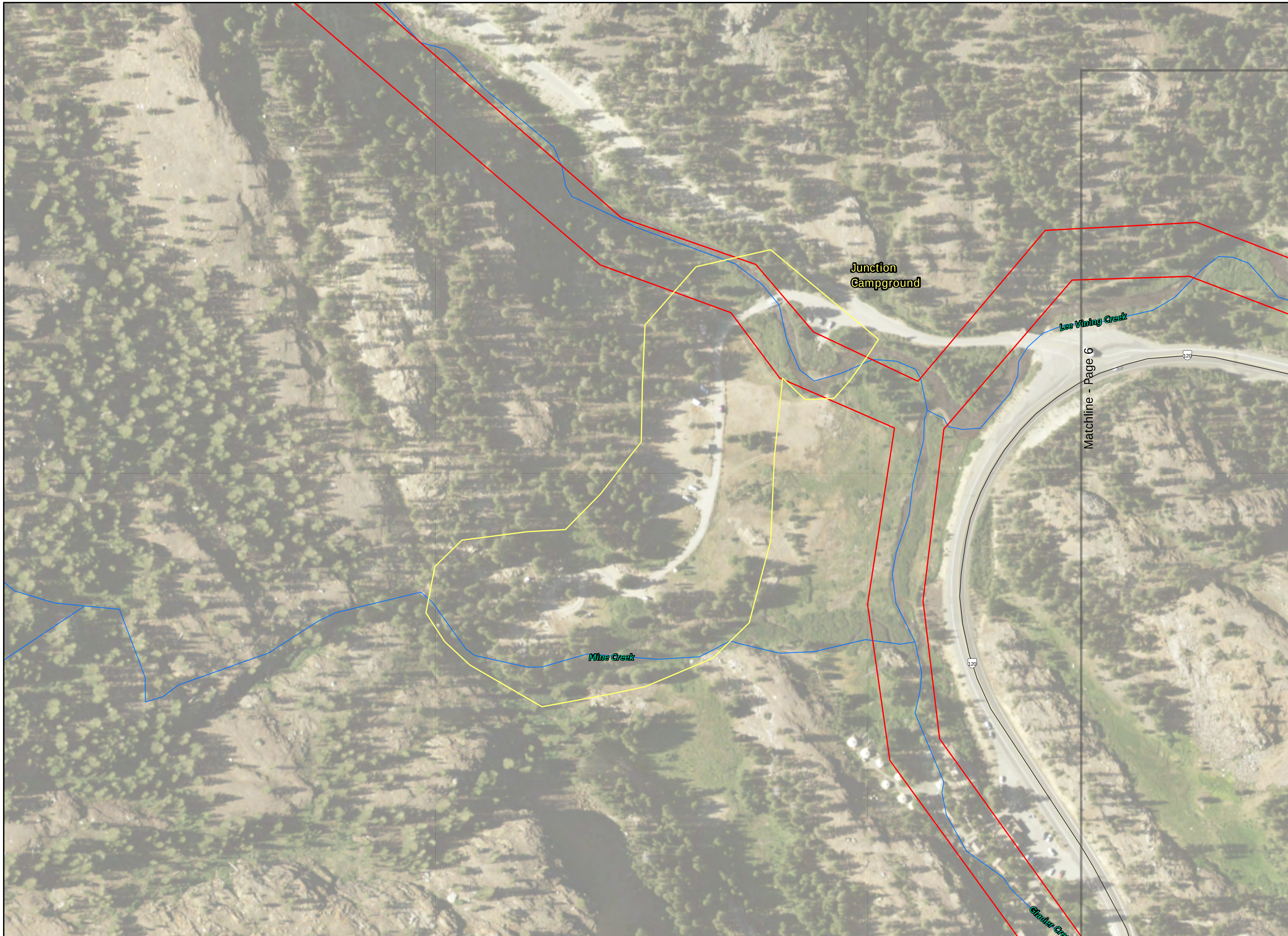

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Special-status Plant Species Population
Agrostis humilis
Pinus albicaulis
Populus trichocarpa

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead℠

Special-status Plant Species Location 2022

LEE VINING HYDROELECTRIC PROJECT
FERC PROJECT NO. 1388

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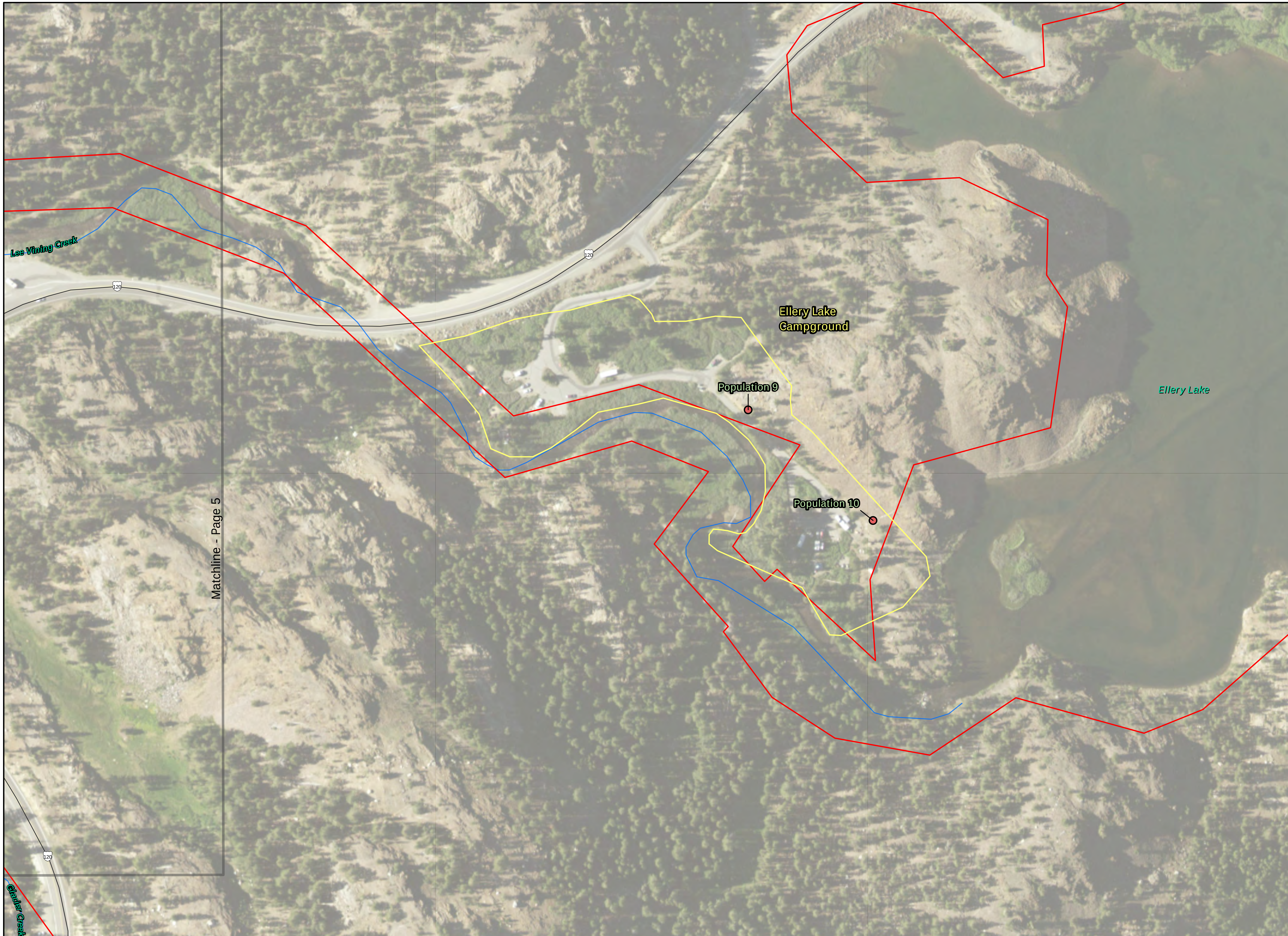

Map Extents
Botanical Study Area
County Line
FERC Project Boundary (P-1388)

Special-status Plant Species Population

Agrostis humilis
Pinus albicaulis
Populus trichocarpa

SOUTHERN CALIFORNIA EDISON
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Special-status Plant Species Location 2022

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LEE VINING HYDROELECTRIC PROJECT
FERC PROJECT NO. 1388

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

0 125 250 Feet

Map Extents
Botanical Study Area
County Line
FERC Project Boundary (P-1388)

Special-status Plant Species Population

Agrostis humilis
Pinus albicaulis
Populus trichocarpa

SOUTHERN CALIFORNIA EDISON®
Energy for What's Ahead℠

Special-status Plant Species Location 2022

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LEE VINING HYDROELECTRIC PROJECT
FERC PROJECT NO. 1388

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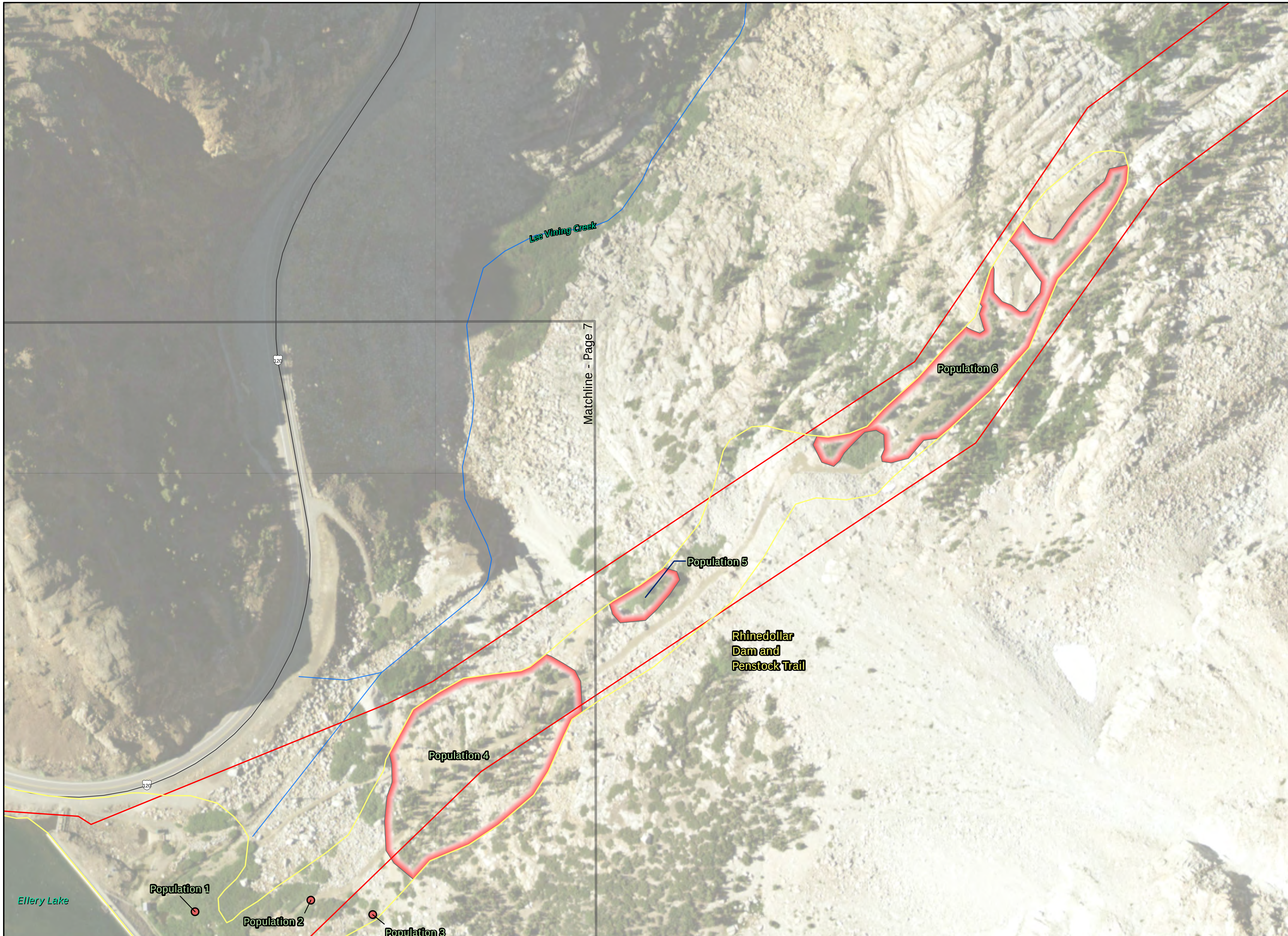
Projection: Lambert Conformal Conic
Datum: North American 1983

0 125 250 Feet



Map Extents
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County Line
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Special-status Plant Species Population
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Map Extents

Botanical Study Area

County Line

FERC Project Boundary (P-1388)

Special-status Plant Species Population

Agrostis humilis

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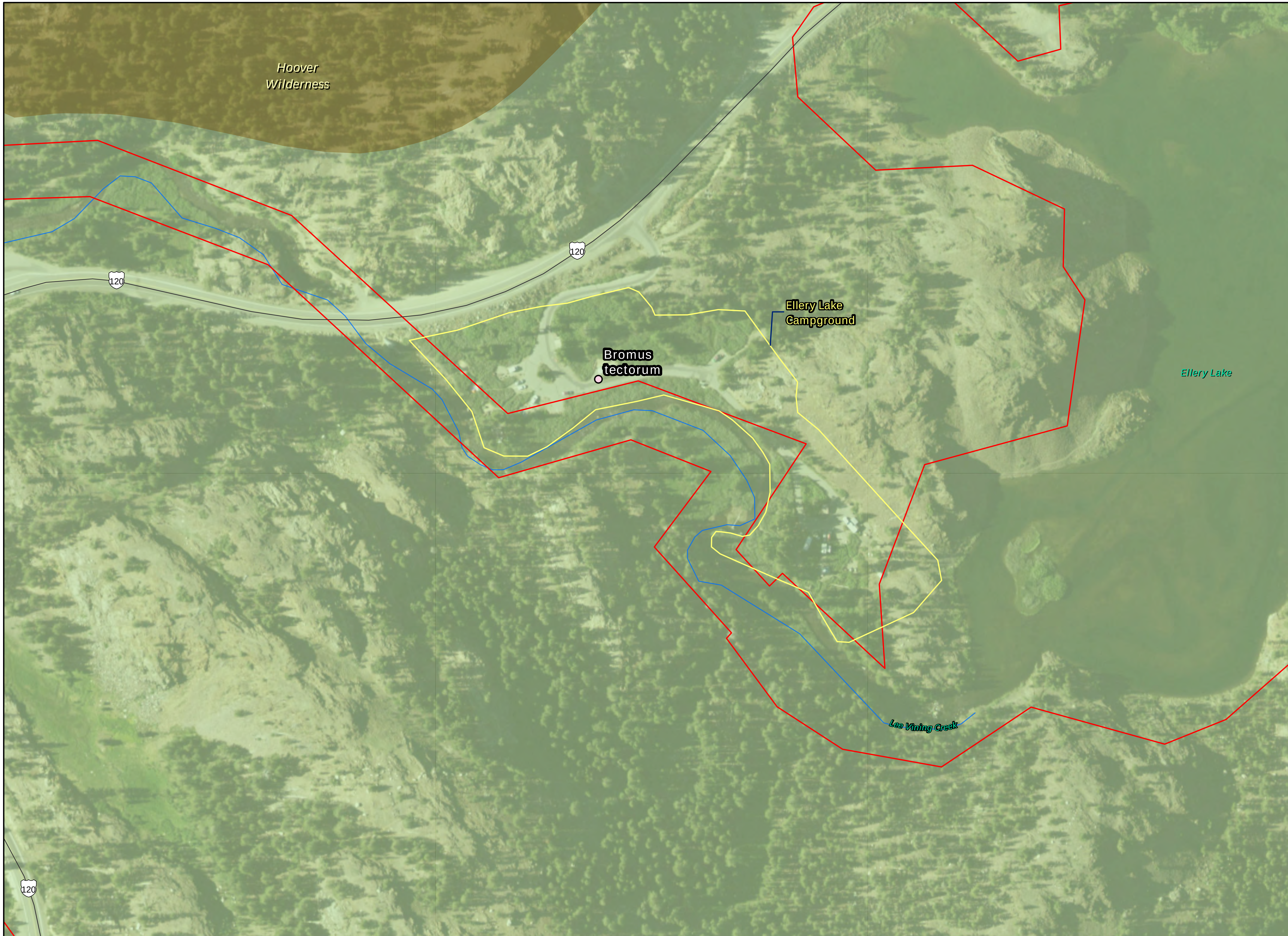

Map Extents
Botanical Study Area
County Line
FERC Project Boundary (P-1388)
Stream Flowline
Wilderness Area (Inyo NF)
Inyo National Forest
Yosemite National Park
Invasive Plant Populations
Bromus tectorum

SOUTHERN CALIFORNIA EDISON
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Invasive Species Locations 2022

LEE VINING HYDROELECTRIC PROJECT
FERC PROJECT NO. 1388

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

0 120 240 Feet

Map Extents
Botanical Study Area
County Line
FERC Project Boundary (P-1388)
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Energy for What's Ahead℠

Invasive Species Locations 2022

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FERC PROJECT NO. 1388

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

0 120 240 Feet

ATTACHMENT 2
LITERATURE REVIEW RESULTS

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Table 1. Potential for Special-status Plant Species to Occur

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Known to Occur					
Agrostis humilis mountain bent grass	SCC	2B.3	Jul–Sep	Perennial herb found in alpine boulder and rock field, meadows and seeps, and subalpine coniferous forest, sometimes in carbonate soil; 3,200–10,500 feet	Known to occur. This species has numerous records in the local watershed and two 1999 records within the TAA: (1) 820 feet southeast from the Saddlebag Lake parking lot (YOSE.99S148) and (2) 1,640 feet up Lee Vining Creek from Gardisky Lake Trailhead, on east side of the creek (YOSE.99S145).
Boechera tiehmii Tiehm's rockcress	SCC	1B.3	Jul–Aug	Perennial herb found in alpine boulder and rock field (granitic); 3,590–11,780 feet	Known to occur. This species has three records since 1990 within the TAA in a cirque at east base of Tioga Peak uphill from State Route 120 between Warren Fork and Ellery Lake (RSA565042).
Botrychium crenulatum scalloped moonwort	SCC	2B.2	Jun–Sep	Perennial rhizomatous herb found in bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps (freshwater), and upper montane coniferous forest; 3,280–10,760 feet	Known to occur. This species has been recorded in the TAA area in 1998 on the Nunatak Trail downstream of Tioga Lake (UCR123116).
Carex vallicola western valley sedge	SCC	2B.3	Jul–Aug	Perennial rhizomatous herb found in mesic soil in Great Basin scrub and meadows and seeps; 2,805–9,205 feet	Known to occur. This species has been recorded in the TAA in 2006 in a meadow across State Route 120 and upstream by 0.1 mile (CHSC99395).
Eriogonum alexanderae Alexander's buckwheat	SCC	1B.1	May–Jul	Perennial herb found in shale or gravelly soil in Great Basin scrub, and pinyon and juniper woodland; 4,265–5,577 feet	Known to occur. This species has been recorded in the TAA in 2002 at the south end of Saddlebag Lake (SEINET 523071).

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Pinus albicaulis whitebark pine	Candidate; SCC		NA	Tree found in subalpine forest; 10,000–12,100 feet	Known to occur. This species has been recorded in the TAA and in the local watershed numerous times in the last 100 years.
May Occur					
Boechera bodiensis Bodie Hills rockcress	SCC	1B.3	Jun–Jul (Aug)	Perennial herb found in alpine boulder and rock field, Great Basin scrub, pinyon and juniper woodland, and subalpine coniferous forest; 3,530–11,580 feet	May occur. This species was recorded in 1999, 3.2 miles from the TAA but outside the local watershed. Suitable habitat is present.
Boechera shockleyi Shockley's rockcress	SCC	2B.2	May-Jun	Perennial herb found in carbonate or quartzite, rocky or gravelly soils in pinyon and juniper woodland; 2,625–6,930 feet	May occur. This species was recorded in 1984 in the local watershed 0.7 mile from the TAA. Suitable habitat is present.
Boechera tularensis Tulare rockcress	SCC	1B.3	(May) Jun–Jul (Aug)	Perennial herb found in rocky slopes, sometimes roadsides, subalpine coniferous forest, and upper montane coniferous forest; 3,350–10,990 feet	May occur. This species was recorded in 1942, 3.6 miles from the TAA but outside the local watershed. Suitable habitat is present.
Botrychium ascendens upswept moonwort	SCC	2B.3	(Jun) Jul–Aug	Perennial rhizomatous herb found in mesic soil in lower montane coniferous forest, and meadows and seeps; 3,045–9,990 feet	May occur. This species was recorded in 2007, 7.3 miles from the TAA but outside the local watershed. Suitable habitat is present.
Botrychium lineare slender moonwort	SCC	1B.1	Unknown	Perennial herb found in meadows and seeps, subalpine coniferous forest, and upper montane coniferous forest (often disturbed areas); 2,600–8,530 feet	May occur. This species was recorded in 2013, 4.6 miles from the TAA but outside the local watershed. Suitable habitat is present.
Botrychium lunaria common moonwort		2B.3	Aug	Perennial rhizomatous herb found in meadows and seeps, subalpine coniferous forest, and upper montane coniferous forest; 3,400–11,155 feet	May occur. This species was recorded in 1981, 5.7 miles from the TAA but outside the local watershed. Suitable habitat is present.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Botrychium minganense Mingan moonwort	SCC	2B.2	Jul–Sep	Perennial rhizomatous herb found in mesic soil in bogs and fens, lower montane coniferous forest, meadows and seeps (edges), and upper montane coniferous forest; 2,180–7,150 feet	May occur. This species was recorded in 1961, 1.0 mile from the TAA but outside the local watershed. Suitable habitat is present.
Botrychium paradoxum paradox moonwort		2B.1	Aug	Perennial rhizomatous herb found in alpine boulder and rock field (limestone and marble), and upper montane coniferous forest (moist); 4,200–13,780 feet	May occur. This species was recorded in 2008, 5.7 miles from the TAA but outside the local watershed. Suitable habitat is present.
Botrychium yaaxudakeit giant moonwort		2B.1	Aug	Perennial rhizomatous herb found in limestone and marble soil in alpine boulder and rock field (meadows); 3,200–10,500 feet	May occur. This species was recorded in 2007, 6.9 miles from the TAA but outside the local watershed. Suitable habitat is present.
Bruchia bolanderi Bolander's bruchia	SCC	4.2	NA	Moss found in damp soil in lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; 2,800–9,185 feet	May occur. This species was recorded in 2000, 4.1 miles from the TAA but outside the local watershed. Suitable habitat is present.
Carex davyi Davy's sedge	SCC	1B.3	May–Aug	Perennial herb found in subalpine coniferous forest and upper montane coniferous forest; 3,200–10,500 feet	May occur. This species was recorded in 1944, 4.8 miles from the TAA but outside the local watershed. Suitable habitat is present.
Carex praticola northern meadow sedge	SCC	2B.2	May–Jul	Perennial herb found in mesic soil in meadows and seeps; 3,200–10,500 feet	May occur. This species was recorded in 2003 in the local watershed 0.3 mile from the TAA. Suitable habitat is present.
Carex scirpoidea ssp. *pseudoscirpoidea* western single-spiked sedge	SCC	2B.2	Jul, Sep	Perennial rhizomatous herb found in mesic, often carbonate soil in alpine boulder and rock field, meadows and seeps, and subalpine coniferous forest (rocky); 3,700–12,140 feet	May occur. This species was recorded in 2009 in the local watershed 1.1 miles from the TAA. Suitable habitat is present.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Carex tiogana Tioga Pass sedge	SCC	1B.3	Jul–Aug	Perennial herb found in meadows and seeps (mesic, lake margins); 3,300–10,825 feet	May occur. This species was recorded in 2010, 1.6 miles from the TAA but outside the local watershed. Suitable habitat is present.
Claytonia megarhiza fell-fields claytonia	SCC	2B.3	Jul–Sep	Perennial herb found in crevices between rocks in alpine boulder and rock field, and subalpine coniferous forest (rocky or gravelly); 3,532–11,590 feet	May occur. This species was recorded in 2007, 7.4 miles from the TAA but outside the local watershed. Suitable habitat is present.
Draba cana canescent draba		2B.3	Jul	Perennial herb found in carbonate soil in alpine boulder and rock field, meadows and seeps, and subalpine coniferous forest; 3,505–11,500 feet	May occur. This species was recorded in 1990 in the local watershed 0.5 mile from the TAA. Suitable habitat is present.
Draba monoensis White Mountains draba	SCC	1B.2	Aug	Perennial herb found in alpine boulder and rock fields and meadows and seeps; 9,000–11,880 feet	May occur. This species was recorded in 1949, 7 miles from the TAA but outside the local watershed. Suitable habitat is present.
Draba praealta tall draba		2B.3	Jul–Aug	Perennial herb found in mesic soil in meadows and seeps; 3,415–11,205 feet	May occur. This species was recorded in 1990 in the local watershed 0.4 mile from the TAA. Suitable habitat is present.
Festuca minutiflora small-flowered fescue		2B.3	Jul	Perennial herb found in alpine boulder and rock field; 4,050–13,285 feet	May occur. This species was recorded in 2009 in the local watershed 2 miles from the TAA. Suitable habitat is present.
Helodium blandowii Blandow's bog moss	SCC	2B.3		Moss found in meadows, seeps, and subalpine coniferous forest on damp soil, especially under willows among leaf litter. 6,109–8,858 feet	May occur. Detailed location information is not available for this species, but it was reported approximately 30 miles from the TAA outside the local watershed. Suitable habitat is present.
Horkelia hispidula White Mountains horkelia	SCC	1B.3	Jun–Aug	Perennial herb found in Great Basin scrub, subalpine coniferous forest, alpine dwarf scrub, and dry flats, mostly in bristlecone forest. 9,843–11,155 feet	May occur. Outside current known geographic range but reported from Saddlebag Lake in 1940. Suitable habitat is present.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Jamesia americana var. *rosea* rosy-petalled cliffbush	SCC	4.3	Jul–Aug	Perennial deciduous shrub found on rocky slopes and cliffs in subalpine and alpine areas; 6,791–12,139 feet	May occur. Outside current known geographic range but reported 8.8 miles from the TAA in 1949. Suitable habitat is present.
Kobresia myosuroides seep kobresia	SCC	2B.2	(Jun) Aug	Perennial rhizomatous herb found in alpine boulder and rock field (mesic), meadows and seeps (carbonate), and subalpine coniferous forest; 3,245–10,645 feet	May occur. This species was recorded in 2010, 1.6 miles from the TAA but outside the local watershed. Suitable habitat is present.
Lupinus gracilentus slender lupine		1B.3	Jul–Aug	Perennial herb found in subalpine coniferous forest; 3,500–11,485 feet	May occur. This species was recorded in 1997, 0.2 mile from the TAA but outside the local watershed. Suitable habitat is present.
Meesia longiseta long seta hump moss		2B.3	NA	Moss found in carbonate, on soil in bogs and fens, meadows and seeps, and upper montane coniferous forest; 5,741–9,900 feet	May occur. This species was recorded in 2000, 4.1 miles from the TAA but outside the local watershed. Suitable habitat is present.
Pohlia tundrae tundra thread moss		2B.3	NA	Moss found in gravelly, damp soil in alpine boulder and rock field; 3,000–9,845 feet	May occur. This species was recorded in 2009, 1.7 miles from the TAA but outside the local watershed. Suitable habitat is present.
Potamogeton epihydrus Nuttall's ribbon-leaved pondweed		2B.2	(Jun) Jul–Sep	Perennial rhizomatous herb found in marshes and swamps (assorted shallow freshwater); 2,172–9,182 feet	May occur. This species was recorded in 2008, 8.1 miles from the TAA but outside the local watershed. Suitable habitat is present.
Potamogeton praelongus white-stemmed pondweed		2B.3	Jul–Aug	Perennial rhizomatous herb (aquatic) found in marshes and swamps (deep water, lakes); 5,905–9,842 feet	May occur. Outside current known geographic range but reported 4.9 miles from the TAA in 1934. Suitable habitat is present.

Scientific/Common Name [a]	**Federal Status** [b]	**State Status and CRPR Rank** [c]	**Blooming Period** [d]	**Habitat**	**Likelihood for Occurrence Within TAA** [e,f] **and Occurrence Notes**
Potamogeton robbinsii Robbins' pondweed		2B.3	Jul–Aug	Perennial rhizomatous herb (aquatic) found in marshes and swamps (deep water, lakes); 3,300–10,825 feet	May occur. This species was recorded in 2008, 5.5 miles from the TAA but outside the local watershed. Suitable habitat is present.
Sabulina stricta bog sandwort		2B.3	Jul–Sep	Perennial herb (aquatic) found in alpine boulder and rock field, alpine dwarf scrub, and meadows and seeps; 3,960–12,990 feet	May occur. This species was recorded in 1990 in the local watershed 0.2 mile from the TAA. Suitable habitat is present.
Salix brachycarpa var. brachycarpa short-fruited willow		2B.3	Jun–Jul	Perennial herb found in carbonate soil in alpine dwarf scrub, meadows and seeps, and subalpine coniferous forest; 3,500–11,485 feet	May occur. This species was recorded in 1993, 0.5 mile from the TAA but outside the local watershed. Suitable habitat is present.
Salix nivalis snow willow		2B.3	Jul–Aug	Perennial deciduous shrub found in alpine dwarf scrub; 3,500–11,485 feet	May occur. This species has been recorded numerous times in the last 90 years on the ridgelines surrounding the TAA. Suitable habitat is present.
Silene oregana Oregon campion		2B.2	Jul–Sep	Perennial deciduous shrub found in Great Basin scrub and subalpine coniferous forest; 2,500–8,200 feet	May occur. This species was recorded in 1995, 1.5 miles from the TAA but outside the local watershed. Suitable habitat is present.
Triglochin palustris marsh arrow-grass		2B.3	Jul–Aug	Perennial rhizomatous herb found in mesic soil in meadows and seeps, marshes and swamps (freshwater), and subalpine coniferous forest; 3,700–12,140 feet	May occur. This species was recorded in 2012, 3.0 miles from the TAA but outside the local watershed. Suitable habitat is present.
Viola purpurea ssp. *aurea* golden violet		2B.2	Apr–Jun	Perennial herb found in sandy soil in Great Basin scrub, and pinyon and juniper woodland; 2,500–8,200 feet	May occur. This species was recorded in 1980, 5.5 miles from the TAA but outside the local watershed. Suitable habitat is present.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Unlikely to Occur					
Abronia alpina Ramshaw Meadows abronia	SCC	1B.1	Jul–Aug	Perennial herb found in granitic, gravelly margins of meadows in gravel and sand with *Hulsea* spp. and *Lupinus* spp.; 7,874–8,858 feet	Unlikely to occur. The TAA lies outside this species’ known geographic range.
Allium atrorubens var. *atrorubens* Great Basin onion	SCC	2B.3	May–Jun	Perennial bulbiferous herb found in rocky or sandy soil in Great Basin scrub and pinyon and juniper woodland; 2,315–7,595 feet	Unlikely to occur. The TAA lies outside this species’ elevation range and known geographic range.
Astragalus cimae var. *sufflatus* inflated Cima milk-vetch	SCC	1B.3	Apr–Jun	Perennial herb found in Great Basin scrub, sagebrush, pinyon and juniper woodland in rocky, limestone sites with carbontate/calcareous substrates; 4,987–6,759 feet	Unlikely to occur. The TAA lies outside this species’ elevation range and known geographic range.
Astragalus inyoensis Inyo milk-vetch	SCC	4.2	May–Jun	Perennial herb found in mostly volcanic, sometimes carbonate soils in Great Basin scrub and pinyon and juniper woodland;4,500–9,150 feet	Unlikely to occur. The TAA lies outside this species’ known geographic range.
Astragalus johannis-howellii Long Valley milk-vetch	SCC	1B.2	(May) Jun–Aug	Perennial herb found in Great Basin scrub (sandy loam); 6,692–8,300 feet	Unlikely to occur. The TAA lies outside this species known geographic range.
Astragalus kentrophyta var. *elatus* spiny-leaved milk-vetch	SCC	2B.2	Jun–Sep	Perennial herb found in subalpine coniferous forest (rocky, sometimes carbonate soil); 9,842–11,450 feet	Unlikely to occur. The TAA lies outside this species’ known geographic range.
Astragalus lemmonii Lemmon's milk-vetch	SCC	1B.2	May–Aug (Sep)	Perennial herb found in Great Basin scrub, meadows and seeps, marshes, and swamps (lake shores); 3,303–7,244 feet	Unlikely to occur. The TAA lies outside this species’ known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Astragalus lentiginosus var. kernensis Kern Plateau milk-vetch	SCC	1B.2	Jun–Jul	Perennial herb found in meadows, seeps, and subalpine coniferous forest in dry, gravelly or sandy slopes or flats, primarily in and around large meadows; 6,791–9,006 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Astragalus monoensis Mono milk-vetch	SCC	1B.2	Jun–Aug	Perennial herb found in pumice, gravelly or sandy soil in Great Basin scrub and upper montane coniferous forest; 3,355–11,005 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Astragalus ravenii Raven's milk-vetch	SCC	1B.3	Jul–Sept	Perennial herb found in alpine boulder and rock fields and upper montane coniferous forests on gravelly flats and slopes of metamorphosed sedimentary and volcanic bedrock, often near large nurse rocks; 10,892–12,106 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Astragalus serenoi var. *shockleyi* Shockley's milk-vetch	SCC	2B.2	May–Jun	Open, dry alkaline gravelly clay, generally in sagebrush or pinyon pine; 3,773–7,546 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Astragalus subvestitus Kern County milk-vetch	SCC	4.3	(May) Jun–Jul	Gravel and sand in sagebrush; 4,921–8,694 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Boechera cobrensis Masonic rockcress		2B.3	Jun–Jul	Perennial herb found in sandy soil in Great Basin scrub, and pinyon and juniper woodland; 3,105–10,185 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Boechera pendulina rabbit-ear rockcress	SCC	2B.3	Jun–Jul	Perennial herb found in sandy, gravelly, or rocky (sometimes carbonate) soil in Great Basin scrub and pinyon and juniper woodland; 9,150–9,600 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Boechera pinzliae Pinzl's rockcress	SCC	1B.3	Jul	Perennial herb found in alpine boulder and rock field, and subalpine coniferous forest (scree or sandy); 9,842–10,990 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Botrychium tunux moosewort		2B.1	Aug–Sep	Perennial rhizomatous herb in calcareous alpine boulder and rock field; 10,000 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Calochortus excavatus Inyo County star-tulip	SCC	1B.1	Apr–Jul	Perennial bulbiferous herb found in alkaline, mesic soil in Chenopod scrub, and meadows and seeps; 3,772–6,561 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Camissonia sierrae ssp. *alticola* Mono Hot Springs evening-primrose		1B.2	May–Aug	Annual herb found in granitic, gravel and sand pans in lower montane coniferous forest and upper montane coniferous forest; 2,410–7,905 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Calyptridium pygmaeum pygmy pussypaws	SCC	1B.2	Jun–Aug	Annual herb found in sandy or gravelly soils in subalpine coniferous forest and upper montane coniferous forest; 5,814–9,330 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Carex duriuscula spikerush sedge	SCC	2B.3	Jul-Aug	Perennial rhizomatous herb found in Great Basin scrub and subalpine coniferous forest; 10,500–12,300 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Carex idahoa Idaho sedge	SCC	2B.3	July	Perennial rhizomatous herb found in meadows and seeps and subalpine coniferous forest; 8,550– 9,600 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Carex petasata Liddon's sedge	SCC	2B.3	May–Jul	Perennial herb found in broadleaf upland forest, lower montane coniferous forest, meadows and seeps, and pinyon and juniper woodland; 1,963–10,892 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Carex stevenii Steven's sedge	SCC	2B.2	Aug	Perennial rhizomatous herb found along creeks, sometimes dry meadows and alpine boulder and rock fields; 8,550–10,155 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Chaetadelpha wheeleri Wheeler's dune-broom	SCC	2B.2	Apr–Sep	Perennial rhizomatous herb found in sandy soil in desert dunes, Great Basin scrub, and Mojavean desert scrub; 2,608–6,234 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Cinna bolanderi Bolander's woodreed		1B.2	Jul–Sep	Perennial herb found in mesic stream sides of meadows, seeps, and upper montane coniferous forests; 5,479–8,005 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Cordylanthus eremicus ssp. kernensis Kern Plateau bird's-beak	SCC	1B.3	(May)Jul–Sep	Annual, hemiparasitic herb found in Great Basin scrub, Joshua tree woodland, pinyon and juniper woodland, and upper montane coniferous forest; 5,025–9,000 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Crepis runcinata ssp. *hallii* Hall's meadow hawksbeard	SCC	2B.2	May–Aug	Perennial herb found in mesic, alkaline soil in Mojavean desert scrub, and pinyon and juniper woodland; 1,591–7,125 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Cuniculotinus gramineus Panamint rock-goldenrod	SCC	2B.3	Jun–Aug	Perennial herb found in carbonate, rocky soils in pinyon and juniper woodland and subalpine coniferous forest; 6,120–8,700 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Cusickiella quadricostata Bodie Hills cusickiella		1B.2	May–Jul	Perennial herb found in clay or rocky soil in Great Basin scrub, and pinyon and juniper woodland; 2,800–9,185 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Cymopterus globosus globose cymopterus	SCC	2B.2	Mar–Jun	Perennial herb found in sandy, open flats in Great Basin scrub; 3,937–7,004 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Dedeckera eurekensis July gold	SCC	SR, 1B.3	May–Aug	Perennial deciduous shrub found in Mojavean desert scrub on carbonate soils; 3,645–6,600 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Draba asterophora var. *asterophora* Tahoe draba		1B.2	Jul–Aug (Sep)	Perennial herb found in alpine boulder and rock field, and subalpine coniferous forest; 3,505–11,500 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Draba californica California draba	SCC	4.2	Jul–Aug	Perennial herb found in alpine boulder and rock field and meadows and seeps; 9,000–12,750 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Draba sharsmithii Mt. Whitney draba	SCC	1B.2	Jul–Aug	Perennial herb found in protected rock crevices of alpine boulder and rock fields and subalpine coniferous forest; 7,382–13,009 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Dryopteris filix-mas male fern	SCC	2B.3	Jul–Sep	Crevices of granitic cliffs; 7,874–10,170 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Eremothera boothii ssp. *boothii* Booth's evening-primrose		2B.3	Apr–Sep	Annual herb found in Joshua tree woodland, and pinyon and juniper woodland; 2,400–7,875 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Eremothera boothii ssp. *intermedia* Booth's hairy evening-primrose		2B.3	(May) Jun	Perennial herb found in Great Basin scrub (sandy), and pinyon and juniper woodland; 2,150–7,055 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.

Scientific/Common Name [a]	**Federal Status** [b]	**State Status and CRPR Rank** [c]	**Blooming Period** [d]	**Habitat**	**Likelihood for Occurrence Within TAA** [e,f] **and Occurrence Notes**
Ericameria gilmanii Gilman's goldenbush	SCC	1B.3	Aug–Sep	Perennial shrub found at the interface of pinyon and juniper woodland and subalpine forests and on rocky (generally limestone but also granite) sites in open coniferous forests; 6,890–11,155 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Erigeron compactus compact daisy	SCC	2B.3	May–Jul	Perennial herb found on rocky slopes in sagebrush, pinyon and juniper woodland, and alkali flats with carbonate soils; 5,906–7,546 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Erigeron uncialis var. *uncialis* limestone daisy	SCC	1B.2	May–Jul	Perennial herb found in crevices of limestone cliffs in Great Basin scrub, subalpine coniferous forest, and pinyon and juniper woodland; 6,234–9,514 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Eriogonum mensicola Pinyon Mesa buckwheat	SCC	1B.3	Jul–Oct	Perennial herb found on rocky slopes in sagebrush and pinyon and juniper woodland; 5,906–8,858 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Eriogonum wrightii var. *olanchense* Olancha Peak buckwheat	SCC	1B.3	Jul–Sep	Perennial herb found on dry, gravelly to rocky places and open areas at the base of bounders in subalpine coniferous forest and alpine boulder and rock fields; 10,696–11,598 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Eriophyllum nubigenum Yosemite woolly sunflower		1B.3	May–Aug	Annual herb found in gravelly and granitic soils of chaparral, lower montane coniferous forest, and upper montane coniferous forest; 5,003–9,022 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Erythranthe utahensis Utah monkeyflower		2B.1	Apr	Perennial rhizomatous herb found in meadows and seeps, pinyon and juniper woodland; 2,000–6,560 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Goodmania luteola golden goodmania	SCC	4.2	Apr–Aug	Annual herb found in alkaline or clay soil in Mojavean desert scrub, meadows and seeps, playas, and valley and foothill grassland; 65–7,217 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Greeneocharis circumscissa var. *rosulata* rosette cushion cryptantha	SCC	1B.2	Jul–Aug	Annual herb found in gravelly (coarse), granitic soil in alpine boulder and rock field and subalpine coniferous forest; 9,678–12,008 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Grusonia pulchella beautiful cholla	SCC	2B.2	May (Jun)	Perennial stem succulent found on the borders of dry lakes and sandy flats; 4,921–5,577 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Hackelia brevicula Poison Canyon stickseed	SCC	3.3	Jul	Perennial herb found on open slopes, dry streambeds, and rocky slopes of open aspen stands and sagebrush and alpine habitats; 8,858–10,335 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Hackelia sharsmithii Sharsmith's stickseed	SCC	2B.3	Jul–Aug	Perennial herb found in crevices in cliffs, talus slopes, and the shade of large boulders; 10,335–12,139 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Hesperidanthus jaegeri Jaeger's hesperidanthus	SCC	1B.2	May–Jul	Perennial herb found in shady, rocky, limestone crevices in Great Basin scrub, pinyon and juniper woodland, and subalpine coniferous forest; 7,005–9,186 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Hulsea brevifolia short-leaved hulsea	SCC	1B.2	May–Aug	Perennial herb in granitic or volcanic, gravelly or sandy soils, in upper and lower montane coniferous forest; 4,921–10,499 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Hulsea vestita ssp. *inyoensis* Inyo hulsea	SCC	2B.2	Apr–Jun	Perennial herb found in rocky soil in Chenopod scrub, Great Basin scrub, and pinyon and juniper woodland; 5,393–9,842 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Ivesia campestris field ivesia	SCC	1B.2	Jul–Sep	Perennial herb found on meadow edges; 7,218–10,171 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Ivesia kingii var. *kingii* alkali ivesia	SCC	2B.2	May–Aug	Perennial herb found in mesic, alkaline, and clay soils in Great Basin scrub, meadows and seeps, and playas; 3,937–6,988 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Ladeania lanceolata lance-leaved scurf-pea	SCC	2B.3	Apr–Aug	Perennial rhizomatous herb found in sandy soil in Great Basin scrub; 4,000–8,200 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Lewisia disepala Yosemite lewisia		1B.2	Mar–Jun	Perennial herb found in granitic or sandy soil in upper and lower montane coniferous forest, pinyon and juniper woodland; 3396–11,483 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Lomatium foeniculaceum ssp. *inyoense* Inyo lomatium	SCC	4.3	Jun–Jul	Perennial herb found on open summits and subalpine scrub; 7,201–10,499 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Lupinus duranii Mono Lake lupine		1B.2	May–Aug	Perennial herb found in volcanic pumice, gravelly soil in Great Basin scrub, subalpine coniferous forest, and upper montane coniferous forest; 3,000–9,845 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Lupinus padre-crowleyi Father Crowley's lupine	SCC	SR, 1B.2	Jul–Aug	Perennial herb found on decomposed granite in Great Basin scrub, riparian scrub, riparian forest, and upper montane coniferous forest scattered on steep avalanche chutes, in sunny sites in drainages, and in valley bottoms; 8,990–10,909 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Mentzelia inyoensis Inyo blazing star	SCC	1B.3	Apr–Oct	Annual herb found in rocky sites, washes, calcareous pumice sand, and clayey hillsides of Great Basin scrub, pinyon and juniper woodland; 3,789–6,496 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Mentzelia torreyi Torrey's blazing star	SCC	2B.2	Jun–Aug	Perennial herb found in sandy or rocky, alkaline, usually volcanic soil in Great Basin scrub, Mojavean desert scrub, and pinyon and juniper woodland; 2,835–9,300 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Monardella beneolens sweet-smelling monardella	SCC	1B.3	Jun–Sep	Perennial rhizomatous herb found in granitic soils of alpine boulder and rock fields, subalpine coniferous forest, upper montane coniferous forest, and open conifer forests; 8,202–11,598 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Oreocarya roosiorum bristlecone cryptantha	SCC	SR, 1B.2	Jun–Jul	Perennial herb found on carbonate substrates (gentle slopes or flats of dolomite or limestone formations) of subalpine coniferous forest (bristlecone pine/limber pine); 9,547–10,597 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Oxytropis deflexa var. *sericea* blue pendant-pod oxytrope	SCC	2B.1	Jun–Aug	Perennial herb found in moist meadows, seeps, and forest openings; 9,186–10,499 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Parnassia parviflora small-flowered grass-of-Parnassus		2B.2	Aug–Sep	Perennial herb found in meadows and seeps; 6,562–9,367 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Penstemon calcareus limestone beardtongue	SCC	1B.3	Apr–May	Perennial herb found on carbonate soil in xeric shrub/blackbrush, limestone crevices, rocky slopes in pinyon and juniper woodland, and Joshua tree scrub; 3,937–5,249 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range and it contains no suitable habitat for this species.
Petrophytum caespitosum ssp. *acuminatum* marble rockmat	SCC	1B.3	Jun–Sep	Perennial evergreen shrub found on rocky sites (limestone cliffs) in lower montane coniferous forest and upper montane coniferous forest; 3,035–7,513 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Phacelia inyoensis Inyo phacelia	SCC	1B.2	Apr–Aug	Annual herb found in meadows and seeps (alkaline); 3,000–10,498 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Phacelia monoensis Mono County phacelia	SCC	1B.1	May–Jul	Annual herb found in clay soil, often on roadsides in Great Basin scrub, and pinyon and juniper woodland; 6,233–9,514 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Phacelia nashiana Charlotte's phacelia	SCC	1B.2	Feb–Jun	Annual herb found on sandy to rocky east-facing slopes, generally in Joshua tree woodland, pinyon and juniper woodland, or xeric shrub/blackbrush; less than 7,874 feet	Unlikely to occur. The TAA lies outside this species' known geographic range and it contains no suitable habitat for this species.
Physaria ludoviciana silver bladderpod	SCC	2B.2	May–Jun	Perennial herb found in Great Basin scrub; 7,053 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Physocarpus alternans Nevada ninebark	SCC	2B.3	Jun–Jul	Perennial deciduous shrub found on limestone outcrops, rocky calcareous canyon walls, and dry rocky pinyon and juniper woodland; 5,905–10,170 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	**Federal Status** [b]	**State Status and CRPR Rank** [c]	**Blooming Period** [d]	**Habitat**	**Likelihood for Occurrence Within TAA** [e,f] **and Occurrence Notes**
Plagiobothrys parishii Parish's popcornflower	SCC	1B.1	Mar–Jun (Nov)	Annual herb found in alkaline, mesic soil in Great Basin scrub and Joshua tree woodland; 2,460–4,593 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Polemonium chartaceum Mason's sky pilot	SCC	1B.3	Jun–Aug	Perennial herb found on gravelly slopes and rocky ledges on granitic or volcanic soils in alpine boulder and rock fields, and subalpine coniferous forest; 10,794–14,009 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Polyctenium williamsiae Williams' combleaf	SCC	1B.2	Mar–Jun	Perennial herb found in saline soils of alkali playas, marshes, swamps, vernal pool edges, lake margins, meadows, swales, mud flats, dry streambeds, and gravel bars of sagebrush scrub and pinyon and juniper woodland; 3,281–8,202 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Populus angustifolia narrow-leaved cottonwood	SCC	2B.2	Mar–Apr	Perennial deciduous tree that occurs on stream sides; 3,937–5,906 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Potentilla morefieldii Morefield's cinquefoil	SCC	1B.3	Jul–Aug	Perennial herb found in limestone soils of alpine boulder and rock fields; 10,712–13,123 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Potentilla pulcherrima beautiful cinquefoil	SCC	2B.2	Jul–Aug	Perennial herb found on dry edges of meadows and streams; 9,843–10,171 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Ranunculus hydrocharoides frog's-bit buttercup	SCC	2B.1	Jun–Aug	Perennial herb (aquatic) found in wet ground, shallow water, creek edges, and lakes; 3,937–9,186 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Sclerocactus polyancistrus Mojave fish-hook cactus	SCC	4.2	Apr–Jun	Perennial stem succulent found in limestone areas, hills and canyons, alluvial slopes of sagebrush, xeric shrub/blackbrush, creosote bush scrub, and Joshua tree woodland; 2,461–6,890 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Solorina spongiosa fringed chocolate chip lichen	SCC	2B.2	NA	Crustose lichen (terricolous) found in moist calcareous habitats, meadows and seeps, and subalpine coniferous forest; approximately 9,500 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Sphaeromeria potentilloides var. *nitrophila* alkali tansy-sage	SCC	2B.2	Jun–Jul	Perennial herb found in usually alkaline soil in meadows and seeps, and playas; 6,889–7,874 feet	Unlikely to occur. The TAA contains no suitable habitat for this species.
Sphenopholis obtusata prairie wedge grass	SCC	2B.2	Apr–Jul	Perennial herb found in mesic soil in cismontane woodland, and meadows and seeps; 984–6,561 feet	Unlikely to occur. The TAA lies outside the species known geographic range and contains no suitable habitat for this species.
Stipa divaricata small-flowered ricegrass	SCC	2B.3	Jun–Sep	Perennial herb found on gravel benches, rocky slopes, and creek banks; 2,625–10,171 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Streptanthus gracilis alpine jewelflower	SCC	1B.3	Jul–Sep	Annual herb found in gravel pockets among granitic outcrops and talus boulders of subalpine coniferous forest and upper montane coniferous forest; 9,186–11,483 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Streptanthus oliganthus Masonic Mountain jewelflower	SCC	1B.2	Jun–Jul	Perennial herb found in volcanic or granitic, rocky soil in pinyon and juniper woodland; 3,050–10,005 feet	Unlikely to occur. The TAA lies outside the species' known geographic range and contains no suitable habitat for this species.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Taraxacum ceratophorum horned dandelion	SCC	2B.1	Jun–Aug	Annual herb found in moist alpine meadows; 9,514–10,171 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Tetradymia tetrameres dune horsebrush	SCC	2B.2	(Jul) Aug	Perennial herb found in sandy soil in Great Basin scrub; 3,937–7,004 feet	Unlikely to occur. The TAA contains no suitable habitat for this species.
Thelypodium integrifolium ssp. *complanatum* foxtail thelypodium	SCC	2B.2	Jun–Oct	Perennial herb found in alkaline or subalkaline, mesic soils in Great Basin scrub, and meadows and seeps; 2,500–8,200 feet	Unlikely to occur. The TAA lies outside the species' known elevation range and it contains no suitable habitat for this species.
Thelypodium milleflorum many-flowered thelypodium	SCC	2B.2	Apr–Jun	Perennial herb found in Chenopod scrub and Great Basin scrub (sandy); 4,002–8,202 feet	Unlikely to occur. The TAA contains no suitable habitat for this species.
Townsendia leptotes slender townsendia	SCC	2B.3	Jun–Jul	Perennial herb found on alpine rocky or sandy slopes; 11,483–12,467 feet	Unlikely to occur. The TAA lies outside this species' elevation range and known geographic range.
Transberingia bursifolia ssp. *virgata* virgate halimolobos	SCC	2B.3	May–Jul	Perennial herb found in meadows, near alpine groves, and in pinyon and juniper woodland; 6,562–12,139 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.
Trichophorum pumilum little bulrush	SCC	2B.2	Aug	Perennial rhizomatous herb found in riverbanks, carbonate soil in bogs and fens, marshes and swamps, and riparian scrub; 9,383–10,662 feet	Unlikely to occur. The TAA contains no suitable habitat for this species.

Scientific/Common Name [a]	Federal Status [b]	State Status and CRPR Rank [c]	Blooming Period [d]	Habitat	Likelihood for Occurrence Within TAA [e,f] and Occurrence Notes
Trifolium dedeckerae Dedecker's clover	SCC	1B.3	May–Jul	Perennial herb found in gravelly canyons and slopes, cracks in granite rock outcrops, and understory of pinyon pines in pinyon and juniper woodland, subalpine coniferous forest, upper montane coniferous forest, and lower montane coniferous forest; 6,890–11,483 feet	Unlikely to occur. The TAA lies outside this species' known geographic range.

CRPR = California Rare Plant Rank; NA = not applicable; TAA = Terrestrial Assessment Area
Notes:
[a] The following USGS 7.5-minute topographic quadrangles were queried for special status plant species: Tioga Pass, Mount Dana, Lee Vining, Falls Ridge, Lundy, Dunderberg Peak, Vogelsang Peak, Koip Peak, Matterhorn Peak, and Tenaya Lake.
[b] The source of the Inyo National Forest status is the *List of Botany At Risk Species* (NRM – TES/IS, 2018).
[c] The source for the State Status and CRPR rank is the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW, 2021).
[d] Parentheses enclose blooming periods that are rare to uncommon.
[e] Occurrence information provided by the Consortium of California Herbaria (CCH, 2021); number in parentheses is the accession number.
[f] The TAA includes the FERC Project Boundary plus a 200-foot buffer extending from the reservoir behind Saddlebag Dam to the Poole Powerhouse tailrace.

Federal Status
Candidate = Candidate for listing
Inyo National Forest
SCC = Species of Conservation Concern
State Status
SR = State Rare
California Rare Plant Rank (CRPR)
1B = Plants Rare, Threatened, or Endangered in California and elsewhere
2B = Plants Rare, Threatened, or Endangered in California but more common elsewhere
3 = Plants for which we need more information–Review List
4 = Plants of limited distribution–A Watch List
CRPR Threat Code Extensions
.1 = Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 = Fairly threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 = Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

Table 2. Invasive Plants Potentially Occurring in the Botanical Resources Study Area

Scientific Name	Common Name	USFS Treatment Strategy	Cal-IPC Rank
Agrostis stolonifera	creeping bent		Limited
Ailanthus altissima	tree of heaven	1: Eradicate	Moderate
Alhagi maurorum	camel thorn		Moderate
Arundo donax	giant reed		High
Asparagus asparagoides	bridal creeper		Moderate
Avena barbata	slender wild oat		Moderate
Avena fatua	wild oat		Moderate
Bassia hyssopifolia	five-hook bassia	3: Contain	Limited
Brassica nigra	black mustard		Moderate
Brassica rapa	field mustard		Limited
Brassica tournefortii	Sahara mustard		High
Bromus diandrus	ripgut grass		Moderate
Bromus hordeaceus	soft chess	4: Limited or None	Limited
Bromus japonicus	Japanese brome	4: Limited or None	Limited
Bromus rubens	red brome	3: Contain	High
Bromus tectorum	cheat grass	3: Contain	High
Centaurea diffusa	diffuse knapweed	1: Eradicate	Moderate
Centaurea melitensis	tocalote		Moderate
Centaurea solstitialis	yellow star-thistle	1: Eradicate	High
Centaurea stoebe ssp. *micranthos*	spotted knapweed	1: Eradicate	High
Chorizpora tenella	crossflower	4: Limited or None	
Cirsium arvense	Canada thistle	1: Eradicate	Moderate
Cirsium vulgare	bull thistle	3: Contain	Moderate
Conium maculatum	poison-hemlock		Moderate
Convolvulus arvensis	bindweed	3: Contain	
Cortaderia selloana	pampas grass		High
Cynodon dactylon	Bermuda grass		Moderate
Dactylis glomerata	orchard grass		Limited
Descurainia sophia	tansy mustard	4: Limited or None	Limited
Dipsacus fullonum	wild teasel	2: Control	Moderate

Scientific Name	**Common Name**	**USFS Treatment Strategy**	**Cal-IPC Rank**
Dipsacus sativus	Fuller's teasel		Moderate
Elaeagnus angustifolia	Russian olive	2: Control	Moderate
Elymus caput-medusae	medusa head		High
Erodium cicutarium	redstem filaree	4: Limited or None	Limited
Fallopia sachalinensis	giant knotweed		Moderate
Festuca arundinacea	tall fescue		Moderate
Festuca myuros	rattail sixweeks grass	4: Limited or None	Moderate
Festuca perennis	rye grass		Moderate
Foeniculum vulgare	fennel		Moderate
Geranium purpureum	little robin		Limited
Grindelia squarrosa var. serrulate	curlycup gumweed	4: Limited or None	
Halogeton glomeratus	saltlover	2: Control	Moderate
Helminthotheca echioides	bristly ox-tongue		Limited
Hirschfeldia incana	short-pod mustard	3: Contain	Moderate
Holcus lanatus	common velvet grass	3: Contain	Moderate
Hordeum marinum	Mediterranean barley	4: Limited or None	Moderate
Hordeum murinum	wall barley		Moderate
Lactuca serriola	prickly lettuce	4: Limited or None	
Lathyrus latifolius	perennial sweet pea		Watch
Lepidium appelianum	white-top	1: Eradicate	Limited
Lepidium chalepense	lens-podded hoary cress	1: Eradicate	Moderate
Lepidium draba	heart-podded hoary cress	1: Eradicate	Moderate
Lepidium latifolium	perennial pepperweed	1: Eradicate	High
Leucanthemum vulgare	ox-eye daisy		Moderate
Linaria dalmatica ssp. *dalmatica*	dalmatian toadflax	1: Eradicate	Moderate
Linaria vulgaris	butter-and-eggs	1: Eradicate	Moderate
Lotus corniculatus	bird's-foot trefoil	3: Contain	
Malva neglecta	common mallow	4: Limited or None	
Marrubium vulgare	horehound	3: Contain	Limited
Melilotus spp.	sweetclover	3: Contain	
Penstemon subglaber	smooth penstemon	3: Contain	
Poa bulbosa	bulbous bluegrass	4: Limited or None	

Scientific Name	Common Name	USFS Treatment Strategy	Cal-IPC Rank
Polygonum aviculare	knotweed	4: Limited or None	
Polygonum aviculare ssp. *depressum*	oval-leaf knotweed	4: Limited or None	
Polypogon monspeliensis	rabbitfoot grass	4: Limited or None	Limited
Ranunculus testiculata	curveseed butterwort	4: Limited or None	
Rhaponticum repens	Russian knapweed	1: Eradicate	Moderate
Robinia pseudoacacia	black locust	3: Contain	Limited
Rubus armeniacus	Himalayan blackberry	2: Control	High
Rumex crispus	curly dock	4: Limited or None	Limited
Salsola tragus	Russian thistle	3: Contain	Limited
Saponaria officinalis	bouncingbet	2: Control	Limited
Schismus arabicus	Arabian schismus	4: Limited or None	Limited
Sisymbrium altissimum	tumble mustard	4: Limited or None	
Sonchus oleraceus	common sow thistle	3: Contain	
Spartium junceum	Spanish broom	1: Eradicate	High
Spergularia rubra	red sand-spurry	4: Limited or None	
Tamarix ramosissima	saltcedar	2: Control	High
Taraxacum officinale	common dandelion	4: Limited or None	
Tragopogon dubius	yellow salsify	4: Limited or None	
Tribulus terrestris	puncturevine	2: Control	Limited
Trifolium repens	white clover	4: Limited or None	
Ulmus pumila	Siberian elm	2: Control	
Verbascum thapsus	woolly mullein	4: Limited or None	Limited

Cal-IPC = California Invasive Plant Council; USFS = U.S. Forest Service

Table 3. Invasive Species of Concern to be Mapped in the Botanical Resources Study Area

Scientific Name	Common Name	USFS Treatment Strategy	Cal-IPC Rank
Ailanthus altissima	tree of heaven	1: Eradicate	Moderate
Bassia hyssopifolia	five-hook bassia	3: Contain	Limited
Bromus rubens	red brome	3: Contain	High
Bromus tectorum	cheat grass	3: Contain	High
Centaurea diffusa	diffuse knapweed	1: Eradicate	Moderate
Centaurea solstitialis	yellow star-thistle	1: Eradicate	High
Centaurea stoebe ssp. *micranthos*	spotted knapweed	1: Eradicate	High
Cirsium arvense	Canada thistle	1: Eradicate	Moderate
Cirsium vulgare	bull thistle	3: Contain	Moderate
Convolvulus arvensis	bindweed	3: Contain	
Dipsacus fullonum	wild teasel	2: Control	Moderate
Elaeagnus angustifolia	Russian olive	2: Control	Moderate
Halogeton glomeratus	saltlover	2: Control	Moderate
Holcus lanatus	common velvet grass	3: Contain	Moderate
Lepidium appelianum	white-top	1: Eradicate	
Lepidium chalepense	lens-podded hoary cress	1: Eradicate	Moderate
Lepidium draba	heart-podded hoary cress	1: Eradicate	Moderate
Lepidium latifolium	perennial pepperweed	1: Eradicate	High
Linaria dalmatica ssp. *dalmatica*	dalmatian toadflax	1: Eradicate	Moderate
Linaria vulgaris	butter-and-eggs	1: Eradicate	Moderate
Rhaponticum repens	Russian knapweed	1: Eradicate	Moderate
Robinia pseudoacacia	black locust	3: Contain	Limited
Rubus armeniacus	Himalayan blackberry	2: Control	High
Salsola tragus	Russian thistle	3: Contain	Limited
Saponaria officinalis	bouncingbet	2: Control	Limited
Spartium junceum	Spanish broom	1: Eradicate	High
Tamarix ramosissima	saltcedar	2: Control	High
Tribulus terrestris	puncturevine	2: Control	Limited
Ulmus pumila	Siberian elm	2: Control	

Cal-IPC = California Invasive Plant Council; USFS = U.S. Forest Service

ATTACHMENT 3
2022 PLANT COMPENDIUM

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Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
PTERIDOPHYTES – FERNS AND FERN ALLIES										
WOODSIACEAE – CLIFF FERN FAMILY										
Cystopteris fragilis	brittle bladderfern	x								
GYMNOSPERMS – CONIFERS										
CUPRESSACEAE – CYPRESS FAMILY										
Juniperus communis	common juniper		x							
Juniperus occidentalis	western juniper			x						
PINACEAE – PINE FAMILY										
Abies conrolor	white fir			x	x					x
Pinus albicaulis	whitebark pine	x	x	x		x		x		x
Pinus contorta ssp. *murrayana*	lodgepole pine	x	x	x		x	x	x		x
Pinus flexilis	limber pine	x	x			x				
Pinus jeffreyi	Jeffrey pine				x					
EUDICOTS – FLOWERING PLANTS										
APIACEAE – CARROT FAMILY										
Angelica capitellata	ranger's buttons	x	x							
Cymopterus terebinthinus	turpentine springparsley	x								
Ligusticum grayi	Gray's licorice-root	x								
Perideridia parishii	Parish's yampah	x				x				
Sphenosciadium capitellatum	swamp white heads			x			x			
APOCYNACEAE – DOGBANE FAMILY										
Apocynum androsaemifolium	bitter dogbane				x					
ASTERACEAE – SUNFLOWER FAMILY										
Achillea millefolium	thousand-leaved yarrow	x				x	x			
Agrostis humilis	mountain bent grass	x								
Agoseris scabra	rough bent grass	x								
Antennaria media	middle pussy-toes		x	x	x	x		x		
Antennaria pulchella	beautiful pussy-toes	x				x				x

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
Antennaria rosea ssp. *rosea*	rosy pussy-toes	x								x
Arnica lanceolata ssp. *prima*	clasping arnica	x								
Arnica mollis	hairy arnica			x						
Artemisia douglasiana	mugwort				x					
Artemisia ludoviciana	silver wormwood				x					
Artemisia tridentata	big sagebrush	x			x	x	x		x	x
Cirsium andersonii	Anderson's thistle					x				
Cirsium scariosum	meadow thistle	x		x		x	x			x
Dieteria canescens	hoary-aster				x					
Ericameria discoidea	western goldenbush		x							
Ericameria nauseosa	rubber rabbitbrush				x			x	x	
Hulsea algida	cold hulsea								x	
Oreostemma alpigenum var. *andersonii*	tundra aster	x		x			x			x
Packera pauciflora	alpine ragwort	x					x			
Packera subnuda var. *subnuda*	cleftleaf ragwort	x								x
Pyrrocoma apargioides	alpine goldenweed	x								
Raillardella argentea	silky raillardella	x		x		x				
Senecio scorzonella	Sierra ragwort					x				
Senecio triangularis	arrowleaf ragwort						x			
Solidago multiradiata	northern goldenrod	x		x	x	x	x			
Stephanomeria virgata ssp. *pleurocarpa*	rib-fruited wand-like stephanomeria				x					
Taraxacum officinale [a]	common dandelion			x		x				
Wyethia mollis	woolly mule's ears					x				

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
BORAGINACEAE – BORAGE FAMILY										
Hackelia micrantha	smallest stickseed					x				
Oreocarya nubigena	Sierra oreocarya		x							
Phacelia hastata var. *compacta*	compact spear phacelia	x	x	x		x		x	x	x
BRASSICACEAE – MUSTARD FAMILY										
Barbarea orthoceras	American yellowrocket		x							
Boechera howellii	Howell's rockcress	x			x					x
Boechera lyallii	Lyall's rockcress	x								
Boechera pauciflora	hairy stem rockcress		x		x					
Boechera platysperma	pioneer rockcress	x								
Boechera retrofracta	relexed rockcress				x				x	
Cardamine breweri	bittercress				x					
Descurainia californica	Sierra tansymustard		x		x					
Erysimum perenne	sanddune wallflower	x		x		x	x	x		
Lepidium virginicum	Virginia peppergrass				x					
Rorippa curvipes	bluntleaf yellow cress	x								
Sisymbrium altissimum [a]	tumble mustard				x					
Streptanthus tortuosus	mountain jewel-flower	x								
Subularia aquatica ssp. *americana*	water awlwort		x							
CAPRIFOLIACEAE – HONEYSUCKLE FAMILY										
Symphoricarpos rotundifolius	roundleaf snowberry			x	x					
CHENOPODIACEAE – GOOSEFOOT FAMILY										
Dysphania ambrosioides	Mexican tea				x					
CORNACEAE – DOGWOOD FAMILY										
Cornus sericea	American dogwood				x					

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
CRASSULACEAE – STONECROP FAMILY										
Rhodiola integrifolia ssp. *integrifolia*	western roseroot		x							
Sedum lanceolatum	spearleaf stonecrop	x				x				
ERICACEAE – HEATH FAMILY										
Cassiope mertensiana	white heather		x							
Kalmia polifolia	swamp laurel	x								
Orthilia secunda	one-sided wintergreen			x						
Phyllodoce breweri	purple mountainheath	x	x	x			x			x
Rhododendron columbianum	Columbia azalea		x							
Vaccinium cespitosum	dwarf bilberry	x		x		x	x			
Vaccinium uliginosum ssp. *occidentale*	western blueberry	x		x						
FABACEAE – LEGUME FAMILY										
Lupinus argenteus	silvery lupine			x	x					
Lupinus lepidus var. *lobbii*	lobb's dwarf lupine	x	x			x				
Trifolium monanthum ssp. *monanthum*	carpet clover		x			x	x			
FAGACEAE – OAK FAMILY										
Chrysoepis sempervirens	bush chinquapin				x					
GROSSULARIACEAE – GOOSEBERRY FAMILY										
Ribes cereum	wax current			x	x					x
Ribes sp.	current	x	x			x	x			
HYPERICACEAE – ST. JOHN'S WORT FAMILY										
Hypericum anagalloides	tinker's penny	x		x			x			x
LAMIACEAE – MINT FAMILY										
Monardella odoratissima ssp. *pallida*	pale fragrant monardella	x	x	x		x			x	x
MONTIACEAE – MINER'S LETTUCE FAMILY										
Calyptridium monospermum	oneseed pussypaws	x				x				

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
Calyptridium umbellatum	umbel-bearing pussypaws	x				x				
ONAGRACEAE – EVENING PRIMROSE FAMILY										
Chamerion angustifolium ssp. *circumvagum*	fireweed		x	x	x	x	x	x		x
Epilobium ciliatum ssp. *glandulosum*	glandular fringed willowherb	x	x	x			x			x
Epilobium hallianum	Hall's willowherb	x				x				
Epilobium obcordatum	inverted heart willowherb	x								
Gayophytum diffusum	spreading groundsmoke	x			x	x		x		
OPHIOGLOSSACEAE – ADDER'S-TONGUE FAMILY										
Botrychium simplex	least moonwort	x								
OROBANCHACEAE – BROOM-RAPE FAMILY										
Castilleja miniata ssp. *miniata*	red paintbrush				x					
Pedicularis groenlandica	elephant's head	x		x						
PARNASSIACEAE – GRASS-OF-PARNASSUS FAMILY										
Parnassia palustris	marsh grass-of-Parnassus	x		x			x			
PHYRMACEAE – LOPSEED FAMILY										
Erythranthe floribunda	many-flowered monkeyflower	x								
Erythranthe guttata	seep monkeyflower	x								
Erythranthe lewisii	Lewis's monkeyflower				x					
Erythranthe primuloides [Mimulus primuloides var. *primuloides]*	primrose monkeyflower	x		x		x	x			x
Erythranthe tilingii	Tiling's monkeyflower		x			x				x
PLANTAGINACEAE – PLANTAIN FAMILY										
Penstemon heterodoxus var. *heterodoxus*	Sierra beardtongue	x		x		x	x	x		x

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
Penstemon newberryi	Newberry's beardtongue	x		x	x	x	x			x
Penstemon rostriflorus	beaked beaerdtongue				x					
Veronica serpyllifolia ssp. *humifusa*	sprawling thyme-leaved speedwell				x					
Veronica wormskjoldii	American alpine speedwell			x						x
POLEMONIACEAE – PHLOX FAMILY										
Linanthus pungens	granite gilia	x							x	
POLYGONACEAE – BUCKWHEAT FAMILY										
Bistorta bistortoides	western bistort	x				x				x
Eriogonum nudum var. *deductum*	reduced buckwheat				x	x			x	x
Eriogonum ovalifolium	cushion wild buckwheat		x	x						
Eriogonum umbellatum	sulphur flower	x			x					
Oxyria digyna	two-pistiled mountain sorrel	x								
Polygonum aviculare	oval leaf knotweed				x					
Polygonum douglasii	Douglas' knotweed					x				
Rumex paucifolius	alpine sheep dock	x								
Rumex salicifolius	willow dock				x					
RANUNCULACEAE – BUTTERCUP FAMILY										
Aquilegia formosa	handsome columbine		x			x	x			
Thalictrum fendleri	Fendler's meadow-rue	x			x	x	x	x		
RHAMNACEAE – BUCKTHORN FAMILY										
Ceanothus cordulatus	mountain whitethorn				x					
ROSACEAE – ROSE FAMILY										
Cercocarpus ledifolius	curl-leaf mountain-mahogany				x					
Dasiphora fruticosa	shrubby cinquefoil	x								

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
Drymocallis lactea var. *lactea*	Sierran woodbeauty	x		x		x	x	x		x
Geum macrophyllum	large leaf avens	x				x	x	x		x
Horkelia fusca	pinewoods horkelia	x		x		x	x			x
Potentilla breweri	Brewer's cinquefoil	x								
Potentilla gracilis	slender cinquefoil		x							
Prunus emarginata	bitter cherry				x					
Purshia tridentata	bitterbrush				x					
Rosa woodsia	Wood's rose				x					
Sibbaldia procumbens	creeping sibbaldia	x	x	x		x		x		x
Spiraea splendens	splendid spiraea	x				x	x			
RUBIACEAE – COFFEE FAMILY										
Kelloggia galioides	galium-like bush penstemon				x					
SAPINDACEAE – SOAPBERRY FAMILY										
Acer glabrum	mountain maple				x					
SALICACEAE – WILLOW FAMILY										
Populus treuloides	quaking aspen				x					
Populus trichocarpa	black cottonwood				x					
Salix eastwoodiae	Sierra willow			x		x				x
Salix exigua	narrow-leaved willow									x
Salix jepsonii	Jepson's willow	x								
Salix orestera	gray-leafed Sierra willow	x	x	x	x	x		x	x	x
SAXIFRAGACEAE – SAXIFRAGE FAMILY										
Heuchera rubescens	pink alumroot				x					
SCROPHULARIACEAE – FIGWORT FAMILY										
Verbascum sp. [a]	mullein				x					
SELLAGINELLACEAE – SPIKE-MOSS FAMILY										
Selaginella sp.	spike-moss	x		x		x	x			

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
VALERIANACEAE – VALERIAN FAMILY										
Valeriana californica	California valerian	x				x				
VIBURNACEAE – MUSKROOT FAMILY										
Sambucus racemosa	red elderberry			x						
VIOLACEAE – VIOLET FAMILY										
Viola sp. [b]	violet			x						
MONOCOTS – GRASSES AND ALLIES										
ALLIACEAE – ONION FAMILY										
Allium validum	Pacific onion	x				x	x	x		x
CYPERACEAE – SEDGE FAMILY										
Carex abrupta	abrupt-beaked sedge					x			x	x
Carex douglasii	Douglas' sedge			x	x					
Carex filifolia var. *erostrata*	sagebrush sedge	x		x		x	x	x		x
Carex lenticularis var. *lipocarpa [kellogii]*	lakeshore sedge				x					
Carex raynoldsii	Raynold's sedge					x				
Carex utriculata	southern beaked sedge							x		
Carex vesicaria	inflated sedge									
IRIDACEAE – IRIS FAMILY										
Iris missouriensis	western blue flag		x			x				
JUNCACEAE – RUSH FAMILY										
Juncus mexicanus	Mexican rush	x	x	x		x	x	x		x
Juncus parryi	Parry's rush	x			x	x				
Juncus xiphioides	iris-leaved rush			x						
Luzula comosa	Pacific woodrush	x								
Luzula orestera	Sierra woodrush	x		x						
Luzula parviflora	small flowered woodrush			x						
LILIACEAE – LILY FAMILY										
Calochortus leichtlinii	smokey mariposa lily	x				x				

Species	Common Name	SD	RD	TD	PP	SM	JC	EC	EO	TC
Fritillaria sp.	fritillary					x				
POACEAE – GRASS FAMILY										
Agrostis humilis	mountain bent grass	x								
Agrostis scabra	rough bent grass	x								
Bromus sitchensis var. *carinatus*	California brome					x	x	x		
Bromus tectorum [a]	cheat grass				x			x		
Calamagrostis canadensis	bluejoint reed grass				x					
Elymus elymoides var. *elymoides*	squirreltail wildrye	x		x	x	x	x	x	x	x
Elymus trachycaulus ssp. *trachycaulus*	slender wildrye		x			x				
Hordeum brachyantherum	meadow barley		x			x				x
Phleum alpinum	alpine timothy	x	x	x		x	x			x
Poa pratensis ssp. *pratensis* [a]	kentucky blue grass		x					x	x	
Poa wheeleri	Wheeler's blue grass				x	x				x
THEMIDACEAE – BRODIAEA FAMILY										
Triteleia montana	mountain triteleia					x				

SD = Saddlebag Dam and Campgrounds; RD = Rhinedollar Dam and Penstock Trail; TD = Tioga Dam; PP = Poole Powerhouse; SM = Sawmill Campground; JC = Junction Campground; EC = Ellery Lake Campground; EO = Ellery Lake Overlook; TC = Tioga Lake Campground; x = species observed

Notes:

[a] Non-native species.

[b] Characteristics present for an identification to species were not present during the survey; however, vegetative characteristics determined that the species was not special status (i.e., golden violet [*Viola purpurea* ssp. *aurea*]).

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APPENDIX G
GENERAL WILDLIFE RESOURCES SURVEY (TERR-2) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	General Wildlife Resources Survey (TERR-2) Technical Memo

1.0 INTRODUCTION

This memo presents the preliminary data of Study TERR-2 conducted in 2022 within the Lee Vining Hydroelectric Project (Project). The *TERR-2 General Wildlife Resources Survey Technical Study Plan* details Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

As outlined in the TERR-2 Final Technical Study Plan (SCE, 2022), the studies began in 2022 and will continue into 2023.

2.0 STUDY OBJECTIVES

The goal of this study is to develop the additional information necessary to supplement the existing information to address the above identified issues. The study objectives are:

- Build a compendium of common, U.S. Forest Service At-Risk Species and Species of Conservation Concern (USFS, 2019), and other special-status wildlife species occurring within the Project areas that may be affected by routine Operation and Maintenance (O&M) activities.

- Identify rare, threatened, and endangered riparian birds in the area during general wildlife surveys.

- Determine persistence of known Yosemite toad (*Anaxyrus canorus*) populations within the Project Area and identify active breeding locations in areas subject to potential affects by the Project's routine O&M.

- Determine interactions between dispersed recreational use and breeding habitat for Yosemite toad.

- Develop sufficient data for informal and formal consultation needs for U.S. Fish and Wildlife Service (USFWS) with respect to the Yosemite toad.

- Assess willow flycatcher (*Empidonax traillii*) nesting habitat downstream of the Project between Poole Powerhouse and the reservoir at the Los Angeles Department of Water and Power (LADWP) Diversion Dam using vegetation classification as the primary tool, to include review of aerial photography and ground-truthing.

2.1. STUDY AREA

The Wildlife study area is shown on Figure 2.1-1. It is comprised of the following SCE O&M areas, including a 200-foot buffer:

- Saddlebag Dam and associated infrastructure
- Tioga Dam and SCE access road to Tioga Dam
- Rhinedollar Dam
- Poole Powerhouse and associated facilities, including garages, storage buildings, and tail race

The initial Yosemite toad study area included Yosemite toad locations known in the Project Area and potentially suitable breeding habitat areas, specifically:

- The wet meadow southeast of Saddlebag Lake
- The California Natural Diversity Database (CNDDB)-identified area at the northwest end of Saddlebag Lake (CDFW, 2022a)
- The inlets at Tioga Lake
- The areas downstream of Tioga Dam along access roads

Additional areas of potentially suitable wet meadow habitat along Lee Vining Creek were also noted for potential study area expansion pending an updated review of aerial imagery. The actual area surveyed for potential Yosemite toad habitat was expanded during the 2022 field season. Figure 2.1-2 shows the area surveyed for potentially suitable habitat, in addition to the pools surveyed in 2022 for presence of Yosemite toad breeding.

The willow flycatcher study area consists of the portion of Lee Vining Creek downstream of Poole Powerhouse to the reservoir at the LADWP Diversion Dam (Figure 2.1-1).

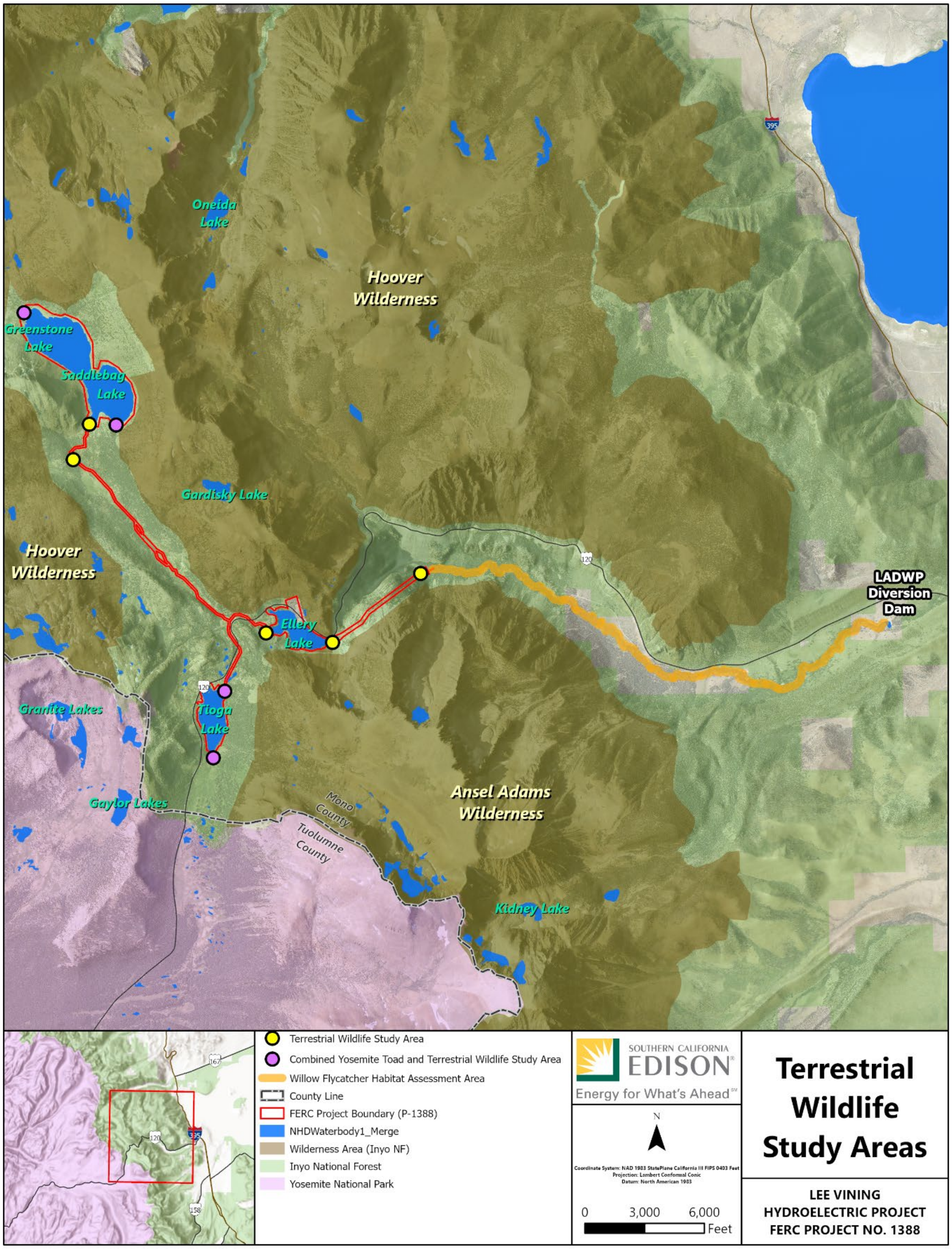

Figure 2.1-1. Terrestrial Wildlife Study Areas.

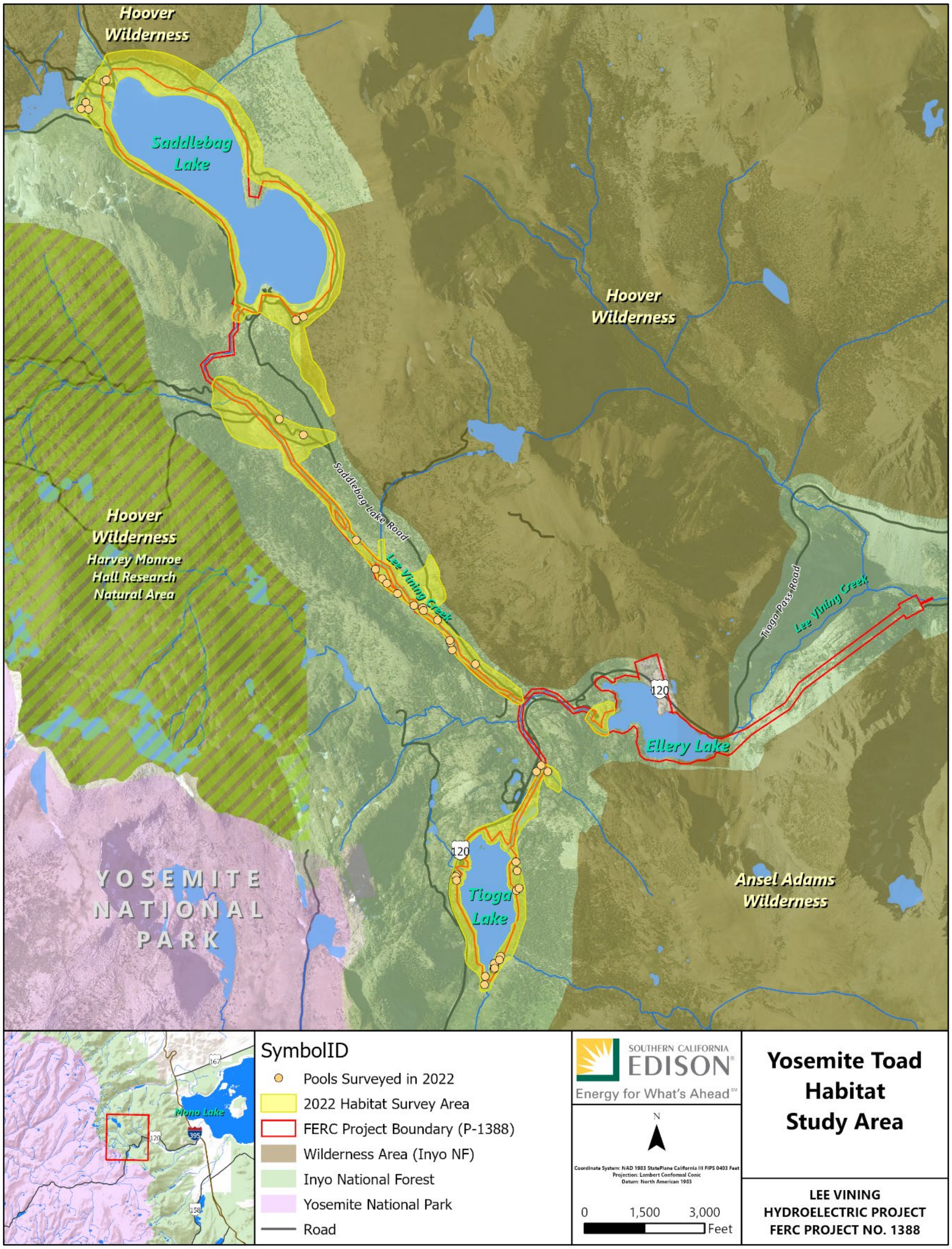

Figure 2.1-2. Yosemite Toad Habitat Study Area.

3.0 METHODS

Study implementation generally followed the methods described in the *TERR-2 General Wildlife Resources Survey Technical Study Plan*, with the exceptions described below.

3.1. MODIFICATIONS TO METHODS

The survey efforts for Yosemite toad and toad habitat were expanded in consultation with the California Department of Fish and Wildlife (CDFW). The 2022 Focused Visual Encounter (FVE) surveys included all the pools showed shown on Figure 2.1-2, which was an expansion from the study area proposed in the TERR-2 Final Technical Study Plan (SCE, 2022). The expanded Yosemite toad study area included the FERC Project Boundary along the majority of Lee Vining Creek between the Project reservoirs. An additional field visit was also added. All the pools shown on Figure 2.1-2 were surveyed five times throughout the 2022 survey season. The TERR-2 Final Technical Study Plan identified up to four visits, but observations during the initial visits warranted an additional visit. Also, as a response to observations made during the initial field visits, the area surveyed for potentially suitable Yosemite toad breeding habitat was expanded beyond the pools shown in Figure 2.1-2. The shaded area in Figure 2.1-2 was surveyed for suitable breeding habitat following the second survey. This expanded study area includes meadows in the upper floodplain of Lee Vining Creek (i.e., at confluences of Slate Creek and other, unnamed creeks) and an additional meadow 1,300 feet south of Saddlebag Lake. This expansion extends well beyond the FERC Project Boundary but was only surveyed after the second round of FVE surveys was complete. Subsequently, portions of this habitat may have supported breeding toads in 2022, but none were observed during the survey and no determinations of presence or absence could be made.

Modifications were also made to the timing and scale of the trail camera deployments. Two locations immediately adjacent to the wildlife study area were chosen; however, deployments were limited to months where the cameras would not be buried in snow. The cameras will be redeployed at new locations in 2023. Trail camera placement locations in 2023 will be coordinated with Study *REC-1 Recreation Use Assessment*.

3.2. GENERAL WILDLIFE SURVEYS

The presence of general wildlife species within the wildlife study area was determined during field visits and upon review of images collected by trail cameras. Biologists conducted field visits on June 1, 2, 15, and 16; July 26 and 27; and August 9, 10, 11, 23, and 24, 2022. Prior to the field visits, a review of previously observed wildlife occurrences and aerial photographs of the study area was conducted to focus survey efforts. The field visits included pedestrian surveys across the wildlife study area. Binoculars were used to directly observe wildlife, and care was taken to not trample sensitive habitat, such as wet meadow areas potentially supporting Yosemite toad subadults and adults. All wildlife species observed directly or indirectly (including observations of species' evidence such as scat, footprints, burrows, inactive nests, eggs strings, etc.) were recorded in field notes.

Two trail cameras were installed in locations most likely to capture resident wildlife species, specifically in natural clearings of naturally vegetated areas with limited recreational activity. The first camera was installed approximately 300 feet east of Tioga Lake at the top of a wet meadow near the northeastern shore. The second trail camera was installed along the western side of the Lee Vining Creek floodplain approximately 8,000 feet downstream of Saddlebag Lake. The cameras were deployed between June 16 and August 24, 2022. Memory card status and battery life was checked and maintained during each field visit.

3.3. Yosemite Toad Surveys

The first year of FVE Surveys for the Yosemite toad were conducted in 2022. Five field visits were made to potential Yosemite toad breeding areas across the study area. SCE coordinated with the CDFW to monitor for the appropriate time to conduct the first field visit based on bi-weekly photographs of the snowpack at Tioga Lake and available vehicle access to the facilities. The first visit was intended to occur when the snow had melted to search for egg masses, tadpoles, and calling adults, which are all signs of breeding. Both entities agreed that the first visit conducted on June 1 and 2 (Visit 1) was appropriate based on the information available at the time. The subsequent four visits occurred on June 15 and 16 (Visit 2); July 26 and 27 (Visit 3); August 9, 10, and 11 (Visit 4); and August 23 and 24 (Visit 5).

All life stages of Yosemite toad were sought during the survey, including eggs, tadpoles, subadults, and adults. Lake shorelines, stream banks, and relevant habitats were visually and aurally scanned for potentially suitable breeding habitat and sign of breeding activities (including egg masses, larval toads, and adult advertisement calls). Potentially suitable habitat was assessed using the primary constituent elements for habitat as defined by the USFWS (USFWS, 2016). Areas matching these criteria were mapped as potentially suitable habitat using Global Positioning System (GPS) antennas connected to tablets with high resolution aerial photographs. All toad breeding locations observed were documented by taking GPS coordinates and photographs of the site and associated habitat, and, where possible, photographs of Yosemite toads at all life stages. Any evidence of significant pedestrian or bicycle traffic observed during the field visits in potential toad breeding habitat was noted.

3.4. Willow Flycatcher Habitat Assessment

The portion of Lee Vining Creek downstream of Poole Powerhouse and upstream of the reservoir at the LADWP Diversion Dam (willow flycatcher study area) was assessed for the presence of potentially suitable nesting habitat for willow flycatcher and relevant subspecies (i.e., Southwestern Willow Flycatcher [*E.t. extimus*]). Aerial photography was first reviewed for potential habitat areas followed by an in-person visual assessment of the potential habitat. Habitat was assessed using habitat parameters described in U.S. Geological Survey Techniques and Methods 2A-10 (Sogge et al., 2010).

4.0 DATA SUMMARY

4.1. General Wildlife

The wildlife observed or otherwise documented during the 2022 surveys are listed in Table 4.1-1.

Table 4.1-1. 2022 Wildlife Compendium

Scientific Name	Common Name	Status [a]	Saddlebag Lake	Tioga Lake	Ellery Lake	Study Area between Reservoirs
AMPHIBIANS						
BUFONIDAE – TRUE TOAD FAMILY						
Anaxyrus canorus	Yosemite toad	FT, SSC	X			
Anaxyrus sp.	unknown toad					X
HYLIDAE – TREEFROG FAMILY						
Pseudacris sierrae	Sierran treefrog		X	X		X
SNAKES						
NATRICIDAE – HARMLESS LIVE-BEARING SNAKE FAMILY						
Thamnophis elegans elegans	mountain gartersnake					X
BIRDS						
ANATIDAE – SWAN, GOOSE, AND DUCK FAMILY						
Anas platyrhynchos	Mallard		X			X
Mergus merganser	Common Merganser		X		X	
TROCHILIDAE – HUMMINGBIRD FAMILY						
Selasphorus calliope	Calliope Hummingbird		X			
SCOLOPACIDAE – SANDPIPER FAMILY						
Actitis macularius	Spotted Sandpiper			X		
PANDIONIDAE – OSPREY FAMILY						
Pandion haliaetus	Osprey			X		
ACCIPITRIDAE – HAWK FAMILY						
Haliaeetus leucocephalus	Bald Eagle	SE, FP	X	X		
Buteo jamaicensis	Red-tailed Hawk					X
Aquila chrysaetos	Golden Eagle	FP	X			
PICIDAE – WOODPECKER FAMILY						
Sphyrapicus thyroideus	Williamson's Sapsucker			X		

Scientific Name	Common Name	Status [a]	Saddlebag Lake	Tioga Lake	Ellery Lake	Study Area between Reservoirs
Picoides arcticus	Black-backed Woodpecker			X		
Colaptes auratus	Northern Flicker		X	X	X	X
FALCONIDAE – FALCON FAMILY						
Falco peregrinus	Peregrine Falcon	FP	X			
TYRANNIDAE – TYRANT FLYCATCHER FAMILY						
Contopus cooperi	Olive-sided Flycatcher	SSC		X		
Empidonax oberholseri	Dusky Flycatcher			X		X
CORVIDAE – JAY AND CROW FAMILY						
Cyanocitta stelleri	Steller's Jay		X	X		X
Nucifraga columbiana	Clark’s Nutcracker		X	X		
Corvus corax	Common Raven		X	X		
PARIDAE – TITMOUSE FAMILY						
Poecile gambeli	Mountain Chickadee		X	X	X	X
SITTIDAE – NUTHATCH FAMILY						
Sitta canadensis	Red-breasted Nuthatch		X	X		
Sitta carolinensis	White-breasted Nuthatch			X		X
CERTHIIDAE – CREEPER FAMILY						
Certhia americana	Brown Creeper		X	X		
TROGLODYTIDAE – WREN FAMILY						
Salpinctes obsoletus	Rock Wren		X			
REGULIDAE – KINGLET FAMILY						
Regulus satrapa	Golden-crowned Kinglet		X	X		
Regulus calendula	Ruby-crowned Kinglet					X
TURDIDAE – THRUSH FAMILY						
Sialia currucoides	Mountain Bluebird			X		X
Catharus guttatus	Hermit Thrush			X		X
Turdus migratorius	American Robin		X	X	X	
FRINGILLIDAE – FINCH FAMILY						
Haemorhous purpureus	Purple Finch		X			
Haemorhous cassinii	Cassin’s Finch		X	X		
Spinus pinus	Pine Siskin			X		X

Scientific Name	Common Name	Status [a]	Saddlebag Lake	Tioga Lake	Ellery Lake	Study Area between Reservoirs
PASSERELLIDAE – NEW WORLD SPARROW FAMILY						
Passerella iliaca	Fox Sparrow					X
Junco hyemalis	Dark-eyed Junco		X	X	X	X
Zonotrichia leucophrys	White-crowned Sparrow		X	X		X
Melospiza melodia	Song Sparrow		X	X	X	X
Melospiza lincolnii	Lincoln's Sparrow					X
Pipilo chlorurus	Green-tailed Towhee		X	X		X
PARULIDAE – WOOD-WARBLER FAMILY						
Geothlypis tolmiei	MacGillivray's Warbler					X
Setophaga coronata	Yellow-rumped Warbler			X	X	X
Cardellina pusilla	Wilson's Warbler					X
MAMMALS						
SCIURIDAE – SQUIRREL FAMILY						
Tamiasciurus douglasii	Douglas' squirrel		X	X		
Marmota flaviventris	yellow-bellied marmot		X	X		
Callospermophilus lateralis	golden-mantled ground squirrel			X	X	
Urocitellus beldingi	Belding’s ground squirrel		X			
Tamias alpinus	alpine chipmunk		X			
Tamias minimus	least chipmunk		X	X	X	X
Thomomys bottae	Botta’s pocket gopher			X		X
OCHOTONIDAE – PIKAS						
Ochotona princeps	American pika		X	X		
LEPORIDAE – HARE AND RABBIT FAMILY						
Lepus americanus tahoensis	snowshoe hare	SSC				X
Lepus townsendii townsendii	white-tailed jackrabbit	SSC				X
FELIDAE – CAT FAMILY						
Puma concolor	mountain lion			X		
CANIDAE – DOG FAMILY						
Canis latrans	coyote		X	X		X
URSIDAE – BEAR FAMILY						
Ursus americanus	black bear		X	X		X

Scientific Name	Common Name	Status [a]	Saddlebag Lake	Tioga Lake	Ellery Lake	Study Area between Reservoirs
CERVIDAE – DEER FAMILY						
Odocoileus hemionus	mule deer		X	X	X	X

Source: CDFW, 2022b

Notes:
[a] Federal (U.S. Fish and Wildlife Service)
FT = Threatened

State (California Department of Fish and Wildlife)
SE = Endangered
FP = Fully Protected
SSC = Species of Special Concern

4.2. Yosemite Toad

All four life stages of Yosemite toad (eggs, tadpoles, subadults, and adults) were observed in the known breeding pond south of Saddlebag Lake during the 2022 survey effort. Despite a greatly expanded Yosemite toad study area, only one other location was observed to show potential presence of Yosemite toad. Tadpoles belonging to the *Anaxyrus* genus were observed in a small pool in the Lee Vining Creek floodplain outside of the FERC Project Boundary and outside of the channel conveying water from any of the Project facilities. Multiple follow-up visits were conducted to determine the species of the tadpoles (such as observation of subadults). However, no tadpoles or other life stages of toad (including subadults) were observed in this area during subsequent visits because the pool containing the tadpoles completely dried prior to the next field visit (which was timed to coincide with the approximate metamorphosizing of the tadpoles). No other observations of any life stage of the *Anaxyrus* genus were made as part of the Project's 2022 Yosemite toad survey effort.

Separately, multiple adults of a known amphibian predator—mountain gartersnake (*Thamnophis elegans elegans*)—were observed foraging in potentially suitable habitat within the Lee Vining Creek floodplain.

Portions of CDFW's 2022 herpetological surveys overlapped with the Project's 2022 Yosemite toad survey effort. The staggered timing of the Project's survey efforts and CDFW's survey efforts (albeit closely staggered) allowed each survey effort to make observations not shared by both parties. Notably, CDFW observed Yosemite toad tadpoles in some pools above the southern margins of Tioga Lake (Psomas, 2022).

4.3. Willow Flycatcher Habitat

The literature search and field survey efforts were completed in 2022. The literature survey results informed the field survey effort and the preliminary data from the field survey are as follows. The literature search results will be presented in the Final Technical Report.

Lee Vining Creek flows east into Mono Lake. Within the willow flycatcher study area, the stream varies from some reaches that are narrow, incised, and fast moving; to reaches of slow-moving waters with small pools; to reaches with broad meadows.

The willow flycatcher study area covered for this habitat assessment consists of the reach of Lee Vining Creek between Poole Powerhouse and the reservoir at the LADWP Diversion Dam, which is approximately 5 miles long. Willow vegetation is generally present along willow flycatcher study area; however, it is only dominant between the Aspen Campground and the Lower Lee Vining Campground a reach of approximately 2 miles. Between the Aspen Campground and the Lower Lee Vining Campground, willow vegetation occurs as a low to mid-range canopy with height range from 6 to 20 feet. The dominant willow species found this reach is narrowleaf willow (*Salix exigua*). Other riparian tree species that occur in the same mid-range vegetative structure include cottonwood (*Populus* sp.) and alder (*Alnus* sp.). A sparse overstory of pine trees including Jeffrey pine (*Pinus jeffreyi*), lodgepole pine (*Pinus contorta*), and singleleaf pinyon (*Pinus monophylla*) are present with a dense understory of various shrub species including Wood's rose (*Rosa woodsii*), currant (*Ribes* sp.), and snowberry (*Symphoricarpos* sp.). In the adjacent meadows and dry washes, Souler's willow (*Salix scouleriana*) is the dominant species. Great Basin mixed scrub and conifer forest borders the riparian vegetation.

West (upstream) of the Aspen Campground and east (downstream) of Lower Lee Vining Creek Campground, the vegetation along Lee Vining Creek is dominated by a dense overstory of upland montane conifer (pine trees) with willow and other riparian trees occurring in the understory with a substantially decreased density.

The closest recorded willow flycatcher nest site (not identified to subspecies) is approximately 4 miles south of the Project in the Pumice Valley of the Mono Basin region (McCreedy, 2007; CDFW, 2022a). Observations of willow flycatcher (not identified to subspecies) occur along Lee Vining Creek in the willow flycatcher study area, but there are no records of nesting (CDFW, 2022a; eBird, 2022).

The reach of Lee Vining Creek between the Aspen Campground and the Lower Lee Vining Campground supports potentially suitable nesting habitat for willow flycatcher. This reach contains perennial aboveground water with a mosaic of open areas (including riparian floodplains, meadows, or dry washes) among extensive stands of shrubby willow thickets over 5 feet tall, greater than 0.5 acre in size, and without substantial canopy cover of pine trees.

The reach of Lee Vining Creek west (upstream) from the Aspen Campgroup has sparse understory vegetation and high canopy cover (over 75 percent cover) from the conifers in the overstory. Although there are willow, cottonwood, and alder trees with a sparse understory of Wood's rose within this reach, the dense overstory canopy of conifer trees makes these portions of Lee Vining Creek not suitable breeding habitat for willow flycatcher.

5.0 NEXT STEPS

Observations from 2023 field surveys will continue to increase the wildlife species compendium and will be incorporated into a Final Technical Report.

Yosemite toad FVE surveys will continue in 2023. Additionally, more detailed mapping of potential breeding habitat will be conducted within the expanded Yosemite toad study area.

The willow flycatcher habitat assessment survey effort is complete, and no additional surveys are anticipated.

The anticipated next steps for Study TERR-2 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2023–January	Progress Report and Meeting
2023–Spring–Fall	Conduct second season of field surveys
2023/2024–Winter	Compile study results and prepare draft report
2024–Spring	Distribute draft report to Stakeholders
2024–Summer	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

6.0 REFERENCES

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USFWS (U.S. Fish and Wildlife Service). 2016. Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for the Sierra Nevada Yellow-Legged Frog, the Northern DPS of the Mountain Yellow-legged Frog, and the Yosemite Toad: Final Rule. *Federal Register,* Vol. 81, No. 166: 59046–59119. August 26.

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APPENDIX H
RECREATION USE ASSESSMENT (REC-1) TECHNICAL MEMO

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MEMORANDUM

To: Lee Vining Stakeholders

From: Southern California Edison Relicensing Team

Date: January 2023

Subject: Recreation Use Assessment (REC-1) Technical Memo

1.0 INTRODUCTION

This memo presents the preliminary data of Study REC-1 conducted in 2022 within the Lee Vining Hydroelectric Project (Project). The *REC-1 Recreation Use Assessment Technical Study Plan* details the Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

This study characterizes existing recreation use and access associated with the Project and aims to assess future recreation needs that may be associated with the Project.

All recreation facilities in the upper Lee Vining Canyon are currently owned and operated by the Inyo National Forest. However, many of these sites are either partially within or directly adjacent to the existing FERC Project Boundary. The initial phase (first study season) of Study REC-1 evaluated which Inyo National Forest recreation facilities or activities have a potential connection to the Project and thus may warrant inclusion in the broader studies proposed in the second study season.

2.0 STUDY OBJECTIVES

The primary objective of Study REC-1 is to determine which Inyo National Forest recreation facilities or activities have a potential connection to the Project and may warrant inclusion in the broader studies proposed in the second study season. Objectives of this study include:

- Characterize existing recreation opportunities and visitation (2022 and 2023 Study Seasons).
- Characterize existing recreation visitor characteristics, needs, and preferences (2022 and 2023 Study Seasons).
- Estimate current recreational fishing effort in Project creeks and reservoirs (2022 and 2023 Study Seasons).
- Estimate future recreational demand and needs, including the need for additional recreation facility and access enhancements or enforcement actions (2022 and 2023 Study Seasons).

- Assess consistency of current recreation opportunities with the Desired Conditions, Goals, Standards, and Guidelines described in the Land Management Plan for the Inyo National Forest (USFS, 2019) (2022 and 2023 Study Seasons).

2.1. Study Area

The recreation use assessment study area included the study sites listed in Table 2.1-1 and shown on Figure 2.1-1. The study areas were broken out into two geographies: Upper Lee Vining Canyon and Lower Lee Vining Canyon.

Table 2.1-1. 2022 Study Sites and Survey Method

Geographic Area	Site ID	Site Name	User Surveys (2022)
Upper Lee Vining Canyon	1	Saddlebag Lake Campground	☑
	2	Saddlebag Lake Day Use Area	☑
	3	Saddlebag Lake Trailhead	☑
	4	Sawmill Walk-In Campground	☑
	5	Carnegie Station Trailhead	☑
	6	Gardisky Lake Trailhead	☑
	7	Junction Campground	☑
	8	Bennettville Trailhead	☑
	9	Tioga Lake Overlook Info Site	☑
	10	Glacier Canyon Trailhead	☑
	11	Nunatak-Tioga Tarns Trailhead	☑
	12	Tioga Lake Campground	☑
	13	Nunatak Nature Trail	☑
	14	Ellery Lake Campground	☑
	15	Warren Fork Trailhead	☑

Geographic Area	Site ID	Site Name	User Surveys (2022)
Lower Lee Vining Canyon	16	Big Bend Campground	☑
	17	Aspen Grove Campground	☑
	18	Boulder Day Use Area	☑
	19	Moraine Campground	☑
	20	Lower Lee Vining Campground	☑

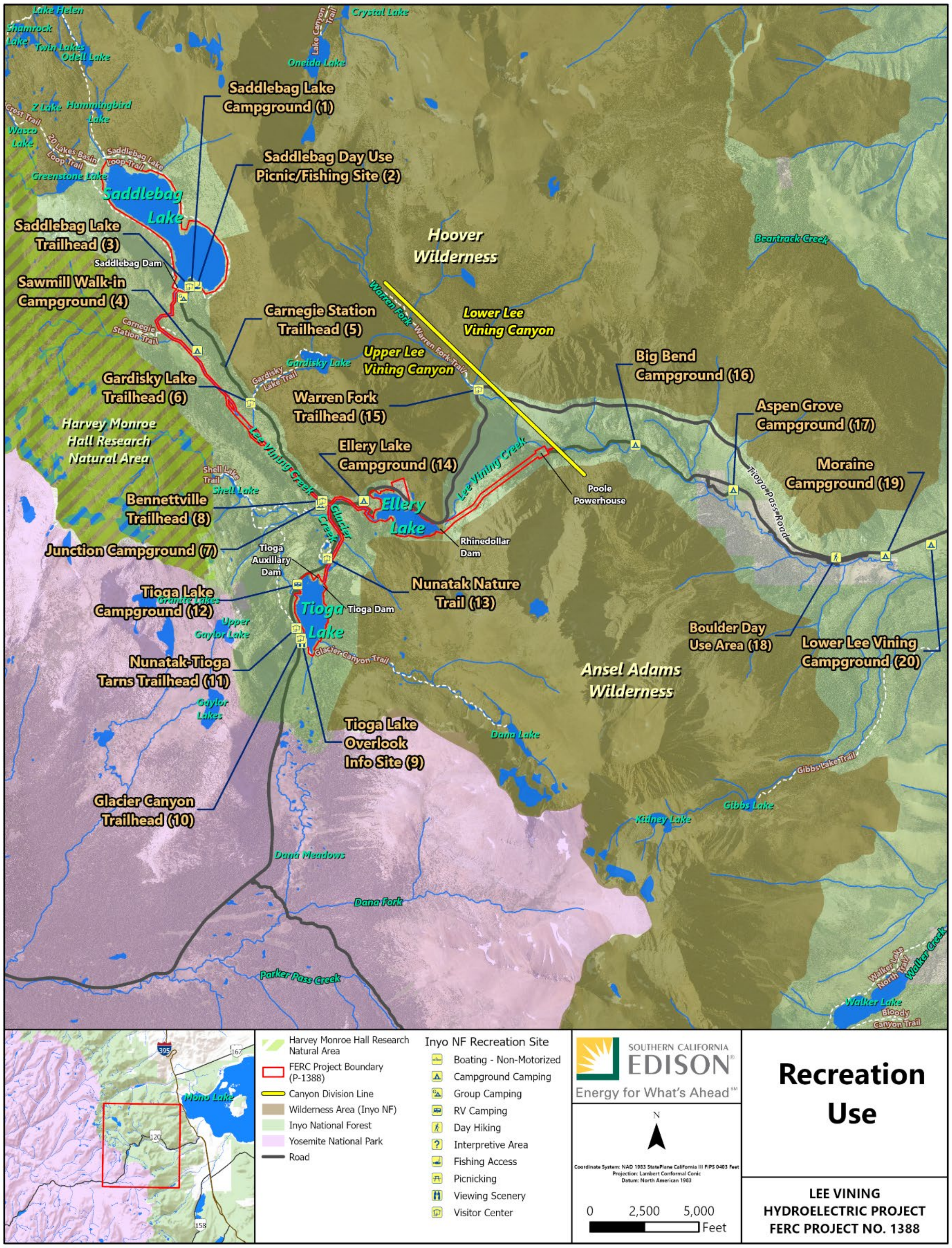


Figure 2.1-1. Recreation Facilities in Project Vicinity.

3.0 METHODS

During the 2022 study season, user surveys were conducted on-site using a survey form at the sites identified in Table 2.1-1 above. These initial surveys were intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project and thus may warrant inclusion in the broader studies proposed in the second study season (2023). SCE worked with the Recreation and Land Use Technical Working Group (TWG) to develop parameters for determining nexus and final survey forms prior to the 2022 field season.

Visitor surveys were conducted 2 days per month (1 weekday and 1 weekend day) from May to September 2022, and 1 day of one holiday weekend for a total of 11 days throughout the study period. For the purposes of this study, the holidays included the 3 days of the holiday weekends Memorial Day: May 28 to 30, 2022; Fourth of July: July 2 to 4, 2022 Labor Day: September 3 to 5, 2022. One visitor survey circuit includes conducting visitor surveys at each of the sites identified in Table 2.1-1. There were three 4-hour shifts: Shift 1 (7 a.m. to 11 a.m.), Shift 2 (11 a.m. to 3 p.m.), and Shift 3 (3 p.m. to 7 p.m.). On each of the 11 days, two visitor survey circuits were completed within a 4-hour shift. SCE anticipated each circuit would take approximately 2 hours. Within each shift, once the first circuit was completed, the second circuit commenced. The visitor surveys were conducted following a bus route method (e.g., Pollack et al., 1994); the shift, the starting recreation site for each circuit, and the direction of travel (i.e., clockwise or counterclockwise) were selected randomly on the days the surveys were conducted.

3.1. MODIFICATIONS TO METHODS

During the 2022 study season, four modifications to the methods were made. (1) Survey dates were shifted due to campground and road opening dates early in the recreation season. (2) An unrelated field staff injury resulted in moving one survey day in July into September. (3) Surveys were conducted only in English rather than English and Spanish as originally proposed. (4) Cattleguard Campground consists of an administrative building and is not open to public use and therefore was not surveyed.

4.0 DATA SUMMARY

Recreation Use Study data are summarized in Table 4-1 and Table 4-2. Data are presented by the number of responses received during the recreation season and then further broken out to show the answer to the main survey question: "What is the primary purpose of your trip to Lee Vining Canyon?" The responses have been broken out by the location where the survey was conducted.

Table 4-1. Survey Responses Received During the 2022 Recreation Season by Site

Location of Survey (Site ID)	Surveys Accepted	Surveys Declined	Total Surveys
Saddlebag Lake Rec Areas (1, 2, 3)	50	9	59
Sawmill Walk-in Campground (4)	20	2	22
Carnegie Station Trailhead (5)	5	1	6
Gardisky Lake Trailhead (6)	8	3	11
Junction Campground, Bennettville Trailhead (7, 8)	42	10	52
Tioga Lake Overlook Info Site, Glacier Canyon Trailhead (9, 10)	31	11	42
Nunatak-Tioga Tarns Trailhead (11)	1	0	1
Tioga Lake Campground (12)	22	9	31
Nunatak Nature Trail (13)	5	1	6
Ellery Lake Campground (14)	19	4	23
Warren Fork Trailhead (15)	1	1	2
Big Bend Campground (16)	27	8	35
Aspen Grove Campground (17)	38	8	46
Boulder Day Use Area (18)	1	0	1
Moraine Campground (19)	24	4	28
Lower Lee Vining Campground (20)	36	11	47
Totals	**330**	**82**	**412**

Table 4-2. Survey Responses to Main Survey Question by Site

Main Survey Question Response	Passing through on my way to Yosemite National Park	Passing through on my way to Eastern Sierras (Mono Lake, June Lake, Mammoth Lakes, Bishop, etc.)	Recreate in the Upper Lee Vining Canyon (Saddlebag Lake, Lee Vining Creek, Tioga Lake, Glacier Creek, Ellery Lake, etc.)	Recreate in the Lower Lee Vining Canyon (Campgrounds and Lee Vining Creek access below Poole Powerhouse)	Other	User Surveys (2023)	Spot Counts (2023)	Counters (2023)
Location of Survey (Site ID) **Upper Lee Vining Canyon**								
Saddlebag Lake Rec Areas (1, 2, 3)	7	3	40	0	0	☑	☑	☑
Sawmill Walk-in Campground (4)	2	0	18	0	0	☑	☑	☑
Carnegie Station Trailhead (5)[a]	0	1	4	0	0	No	No	No
Gardisky Lake Trailhead (6)[a]	1	2	4	0	1 – Locals from Mono fire and forest service hiking Gardisky	No	No	No
Junction Campground, Bennettville Trailhead (7, 8)	7	1	34	0	0	☑	☑	☑
Tioga Lake Overlook Info Site, Glacier Canyon Trailhead (9, 10)	11	11	7	1	1 – Motorcycle ride	☑[b]	☑	No
Nunatak-Tioga Tarns Trailhead (11)[a]	0	0	1	0	0	No	No	No
Tioga Lake Campground (12)	3	1	18	0	0	☑	☑	☑
Nunatak Nature Trail (13)[a]	4	0	1	0	0	No	No	No
Ellery Lake Campground (14)	3	0	16	0	0	☑	☑	☑
Warren Fork Trailhead (15)[a]	0	0	1	0	0	No	No	No
Location of Survey (Site ID) **Lower Lee Vining Canyon**								
Big Bend Campground (16)[a]	0	2	2	22	1 – Going to Bridgeport area	No	No	No
Aspen Grove Campground (17)[a]	4	0	6	28	0	No	No	No
Boulder Day Use Area (18)[a]	0	0	0	1	0	No	No	No
Moraine Campground (19)[a]	3	0	7	14	0	No	No	No
Lower Lee Vining Campground (20)[a]	1	1	8	24	2 – Driving through to Orange County Passing through to Washington	No	No	No
Totals	**46**	**22**	**167**	**90**	**5**			

[a] These sites did not meet the 55 percent potential Project nexus threshold criteria outlined above to be considered for further study.
[b] Data for the Tioga Lake Overlook Site and Glacier Canyon Trailhead did not meet the 55 percent potential Project nexus threshold criteria outlined above; however, SCE committed to moving these sites forward to the 2023 study season in the original study plan.

In addition to the data provided above, SCE ran a statistical analysis on the data to make a proposed determination of sites that may have a potential Project nexus to be moved forward in the 2023 Recreation Use Study. As noted in Table 4-3, the number of visitors encountered at each site during the recreation surveys varied from 1 to 59, with 50 to 100 percent of encountered visitors accepting the survey. The percent of surveyed visitors at each park recreating in Upper Lee Vining Canyon during the survey ranged from zero to 100 percent (Table 4-3). If the survey represents a random sample of site visitors, the precision of these proportion estimates can be estimated as a function of the number of surveys at each site, as displayed in Figure 4-1.

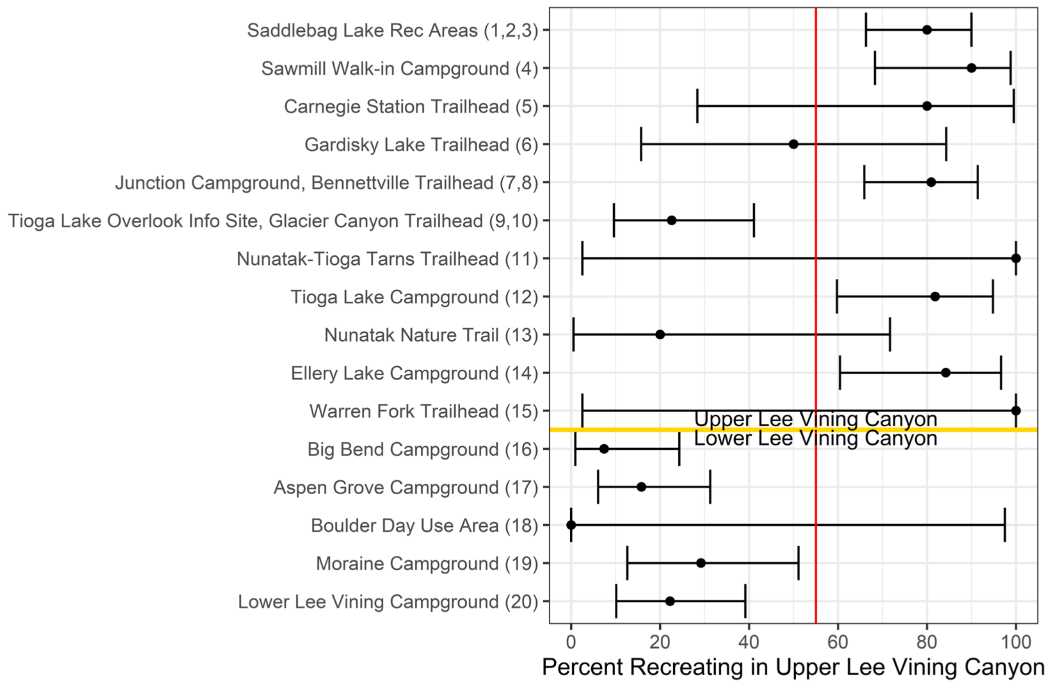
The true proportion of overall site visitors that are using Upper Lee Vining Canyon is unknown, but these 95 percent binomial confidence intervals indicate the range of values that are most likely to include the true proportion based on the sample. There were six recreation sites with highly uncertain results, indicated by confidence intervals wider than 50 percent. These sites had few visitors during the survey period (less than 15), and therefore had fewer survey responses (less than 10), which resulted in this high level of uncertainty. Although some of the estimated proportions for these six sites are greater than 55 percent, these results are not reliable because there were too few surveys conducted. The reason for this uncertainty is that these sites did not receive many visitors during the survey period.

When the results for these less-used sites are excluded, there is a clear division between the remaining recreation sites in which five have more than 55 percent (red vertical line in Figure 4-1) of visitors recreating in Upper Lee Vining Canyon, and five that clearly have less than 55 percent of visitors recreating in Upper Lee Vining Canyon. The five sites with more than 20 visitors encountered and with 95 percent confidence that more than 55 percent of visitors were recreating in Upper Lee Vining Canyon have a higher potential nexus to the Project. These sites are highlighted with bold font in Table 4-3.

Table 4-3. Estimated Percent of Site Visitors Using Recreation Sites

	Number of Visitors Encountered	Number of Surveys Accepted	Number Recreating in Upper Lee Vining Canyon	Percent Recreating in Upper Lee Vining Canyon	Lower 95% CL	Upper 95% CL
Location (Site ID) Upper Lee Vining Canyon						
Saddlebag Lake Rec Areas (1,2,3)	**59**	**50**	**40**	**80%**	**66%**	**90%**
Sawmill Walk-in Campground (4)	**22**	**20**	**18**	**90%**	**68%**	**99%**
Carnegie Station Trailhead (5)	6	5	4	80%	28%	99%
Gardisky Lake Trailhead (6)	11	8	4	50%	16%	84%
Junction Campground Bennettville Trailhead (7, 8)	**52**	**42**	**34**	**81%**	**66%**	**91%**
Tioga Lake Overlook Info Site, Glacier Canyon Trailhead (9, 10)	42	31	7	23%	10%	41%
Nunatak-Tioga Tarns Trailhead (11)	1	1	1	100%	2.5%	100%
Tioga Lake Campground (12)	**31**	**22**	**18**	**82%**	**60%**	**95%**
Nunatak Nature Trail (13)	6	5	1	20%	0.5%	72%
Ellery Lake Campground (14)	**23**	**19**	**16**	**84%**	**60%**	**97%**
Warren Fork Trailhead (15)	2	1	1	100%	2.5%	100%
Location (Site ID) Lower Lee Vining Canyon						
Big Bend Campground (16)	35	27	2	7%	0.9%	24%
Aspen Grove Campground (17)	46	38	6	16%	6.0%	31%
Boulder Day Use Area (18)	1	1	0	0%	0%	98%
Moraine Campground (19)	28	24	7	29%	13%	51%
Lower Lee Vining Campground (20)	47	36	8	22%	10%	39%

CL = Confidence Limit



Note: This figure illustrates the estimated percentage of visitors at each site that are recreating in Upper and Lower Lee Vining Canyon. Error bars have varying widths based on sample size and represent 95 percent confidence intervals on the estimated percentages. The red vertical line is at 55 percent.

Figure 4-1. Estimated Percent of Visitors —Upper and Lower Lee Vining Canyon.

5.0 NEXT STEPS

As proposed, Study REC-1 is a 2-year study. Additional data will be collected in the 2023 survey season in the Upper Lee Vining Canyon area, as discussed in Section 4, Data Summary, and reflected in Table 4-2 above.

SCE will work with the Recreation and Land Use TWG to finalize survey forms prior to the 2023 Recreation User Surveys field season. In addition, SCE will work with the TWG to discuss the 2023 Creel Survey dates. The field schedule and forms will be developed prior to the field season. Study elements to discuss with TWGs include:

- Winter and summer survey locations and schedule;
- 2023 user survey/interview forms;
- Spot count schedule;
- Traffic and trail counter numbers and locations; and
- 2023 Creel survey dates, schedule, and forms.

The anticipated next steps for Study REC-1 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2023–January	2022 Progress Report Meeting
2023–February	Consult with the TWG to finalize surveys and study dates for 2023 field season
2023–Spring/Summer/Winter	Conduct season two studies
2024–Winter/Spring	Compile study results and prepare draft report
2024–Spring	Distribute draft report to TWG
2024–Summer	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

TWG = Technical Working Group

6.0 REFERENCES

Pollack, K.H., C.M. Jones, and T.L. Brown. 1994. "Angler Survey Methods and Their Applications in Fisheries Management." *American Fisheries Society Special Publication 25*. American Fisheries Society, Bethesda, MD.

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APPENDIX I
EXISTING RECREATION FACILITIES CONDITION ASSESSMENT (REC-2) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Existing Recreation Facilities Condition Assessment (REC-2) Technical Memo

1.0 INTRODUCTION

This memo presents the preliminary data of Study REC-2 conducted in 2022 within the Lee Vining Hydroelectric Project (Project). The *REC-2 Existing Recreation Facilities Condition Assessment Technical Study Plan* details the Southern California Edison's (SCE) proposal for study objectives, study area, methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

Study REC-2 evaluates the condition of and public accessibility to existing recreation facilities associated with the Project. Under Title 18 Code of Federal Regulations Section 2.7, licensees whose projects include land and water resources with outdoor recreational potential have a responsibility to develop those resources in accordance with area needs. This includes the provision for adequate public access to such project facilities and waters. Additionally, it takes into consideration the needs of persons with disabilities in the design and construction of such facilities and access.

All recreation facilities in the upper Lee Vining Canyon are currently owned and operated by the Inyo National Forest. However, many of these sites are either partially within or directly adjacent to the existing FERC Project Boundary. The initial phase (first study season) of Study REC-1 evaluated which Inyo National Forest recreation facilities have a potential connection to the Project and thus may warrant inclusion in the broader studies proposed in the second study season of Study REC-2.

2.0 STUDY OBJECTIVES

- Identify existing dispersed or informal use areas, including documentation of existing conditions (2022 Study Season).
- Conduct a facility inventory and condition assessment at existing recreation facilities and associated parking areas, including an evaluation of signage and public safety features (2023 Study Season).
- Assess the carrying capacity and potential need for expansion, or alteration of existing recreation facilities (2023 Study Season).
- Assess the condition and potential for universal accessibility, where feasible (2023 Study Season).

- Assess the consistency of current facilities with the Desired Conditions, Goals, Standards, and Guidelines described in the *Land Management Plan for the Inyo National Forest* (USFS, 2019) (2023 Study Season).

2.1. STUDY AREA

The recreation facilities condition assessment study area includes the sites listed in Table 2.1-1 and shown on Figure 2.1-1 below. Table 2.1-1 denotes which sites have already been agreed upon for season 2 of the Study REC-2 facilities condition assessments in 2023. The remaining sites in Table 2.1-1, listed as to be determined (TBD), will have the data from the 2022 user surveys reviewed and discussed with the Technical Working Group to determine if the sites will be included in season 2 of the Study REC-2 facilities condition assessments in 2023.

Table 2.1-1. Study Sites

Site ID	Site Name	Facilities Condition Assessment (2023)	Dispersed Use Assessment (2022) [a]
1	Saddlebag Lake Campground	☑	☑
2	Saddlebag Lake Day Use Area	☑	☑
3	Saddlebag Lake Trailhead	☑	☑
4	Sawmill Walk-In Campground	TBD [b]	No
5	Carnegie Station Trailhead	TBD [b]	No
6	Gardisky Lake Trailhead	TBD [b]	No
7	Junction Campground	TBD [b]	No
8	Bennettville Trailhead	TBD [b]	No
9	Tioga Lake Overlook Info Site	☑	☑
10	Glacier Canyon Trailhead	☑	☑
11	Nunatak-Tioga Tarns Trailhead	TBD [b]	No
12	Tioga Lake Campground	☑	☑
13	Nunatak Nature Trail	TBD [b]	No
14	Ellery Lake Campground	☑	☑
15	Warren Fork Trailhead	No	No
16	Big Bend Campground	TBD [b]	No
17	Aspen Grove Campground	TBD [b]	No
18	Boulder Day Use Area	TBD [b]	No
19	Moraine Campground	TBD [b]	No
20	Lower Lee Vining Campground	TBD [b]	No
21	Cattleguard Campground	TBD [b]	No

TBD = to be determined

[a] Dispersed use assessments were generally conducted around each of the Project reservoirs (Saddlebag, Ellery, and Tioga). Specific developed Inyo National Forest recreation sites that were included are noted in this table.

[b] To be determined following 2022 user surveys and Technical Working Group consultation.

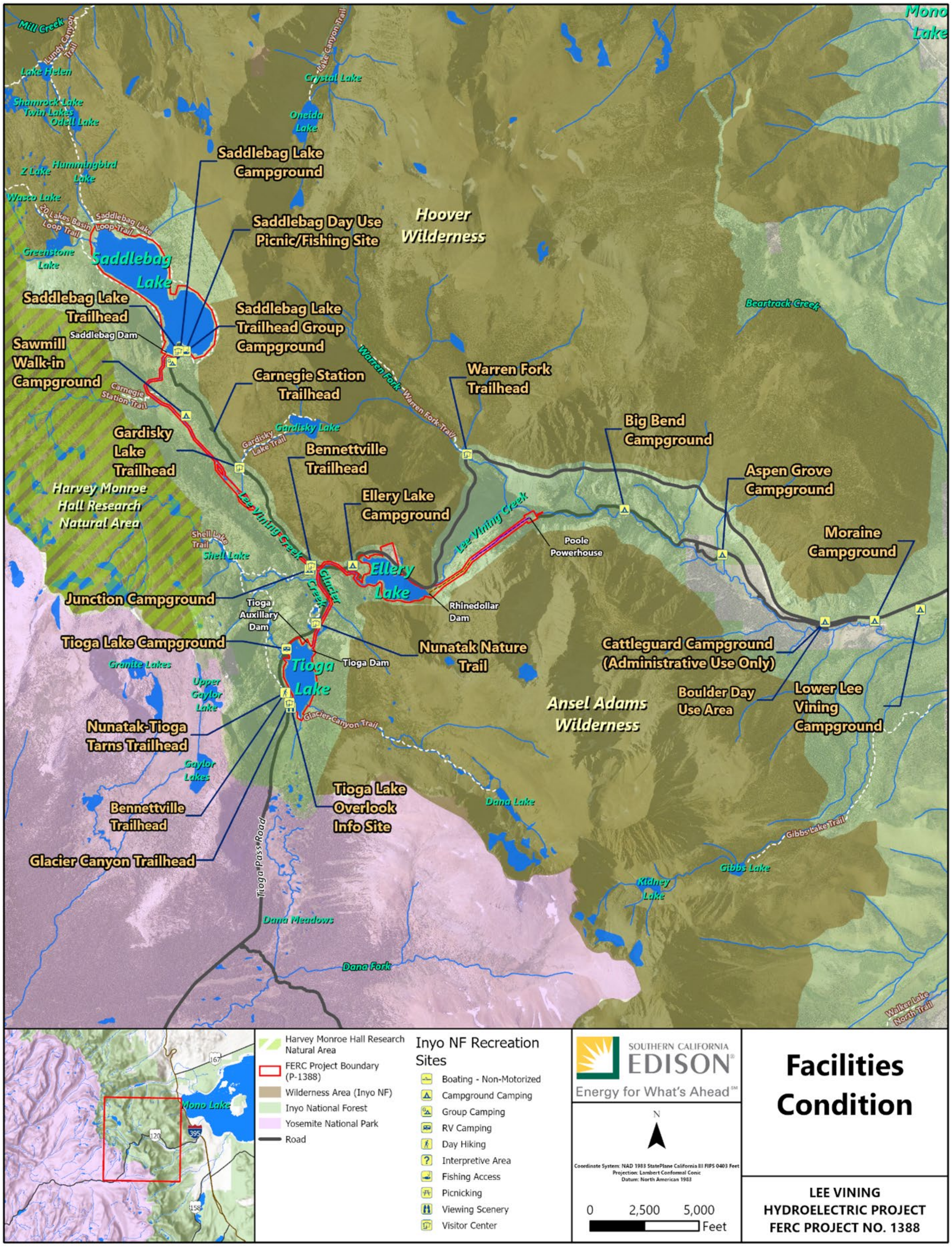

Figure 2.1-1. Facilities Condition.

3.0 METHODS

Study implementation followed the methods described in the REC-2 Final Technical Study Plan (SCE, 2022); no modifications occurred during study implementation.

3.1. ANALYSIS

A dispersed use assessment was conducted within and adjacent to the FERC Project Boundary at each of the Project reservoirs (Saddlebag, Ellery, and Tioga) and the developed sites indicated in Table 2.1-1 above. This study consisted of an initial desktop exercise to scan aerial imagery for evidence of dispersed use or informal access areas such as social trails, brown out areas, or impromptu parking around the perimeter of each study area. These observations were digitized and attributed within a geographic information system (GIS) database and used in the field assessment to ground-truth those potential dispersed uses and to further assess for signs of user-created roads, trails, and/or campsites. Dispersed use was documented with photographs and integrated into a GIS database with relevant attributes (e.g., spatial location, number of fire rings, or length of roads or trails) to facilitate future analysis and ongoing assessment. Additional qualitative information was collected, including potential issues, possible accommodations, or future recreation opportunities at the sites. Findings are being used to inform potential locations for additional user interviews, spot counts, or traffic/trail counters in REC-1 activities to be performed during the subsequent field season.

4.0 DATA SUMMARY

Based on the initial desktop exercise to scan aerial imagery for evidence of dispersed use or informal access areas, a number of social trails and impromptu parking areas around the perimeter of the Project reservoirs (Saddlebag, Ellery, and Tioga) were identified.

Field surveys were conducted to ground-truth the areas identified in the desktop analysis from September 26 through September 28, 2022. In the field, staff were able to confirm 10 of the 11 sites being utilized in a dispersed manner. An additional 13 dispersed use recreation sites were identified (Tables 4-1 and 4-2 respectively).

Table 4-1. Dispersed Use Observations Aerial Imagery Assessment

Site	Boating	Pull Out	Trailhead	Other	Site Total
Ellery	--	4	2	--	6
Saddlebag	1	--	--	1	2
Tioga	1	2	---	--	3
Type Total	**2**	**6**	**2**	**1**	**11**

Table 4-2. Dispersed Use Observation Points, In-field Observation

Site	Boating	Pull Out	Trailhead	Campsite	Fire Pit	Site Total
Ellery		7	2	--	3	12
Saddlebag	1	--	--	--	--	1
Tioga	1	5		2	3	11
Type Total	**2**	**12**	**2**	**2**	**6**	**24**

Social trails digitized from desktop analysis of aerial imagery identified 15,872.9 feet of trails in the Project Area. In-field assessment of the paths yielded a difference of 13,635.5 feet of trail in the Project Area. These trails are summarized in Table 4-3.

Table 4-3. Total Length of Trails (feet)

Site	Aerial Imagery Assessment	In-field Observation
Ellery	6,140.5	8,930.1
Rhinedollar	3,607.1	3,607.1
Saddlebag	4,308.0	7,047.5
Tioga	1,817.3	9,923.6
Grand Total	**15,872.9**	**29,508.3**

A spatial distribution of the preliminary data from the dispersed use study can be found for each Ellery Lake, Saddlebag Lake, and Tioga Lake on Figures 4-1, 4-2, and 4-3 respectively.

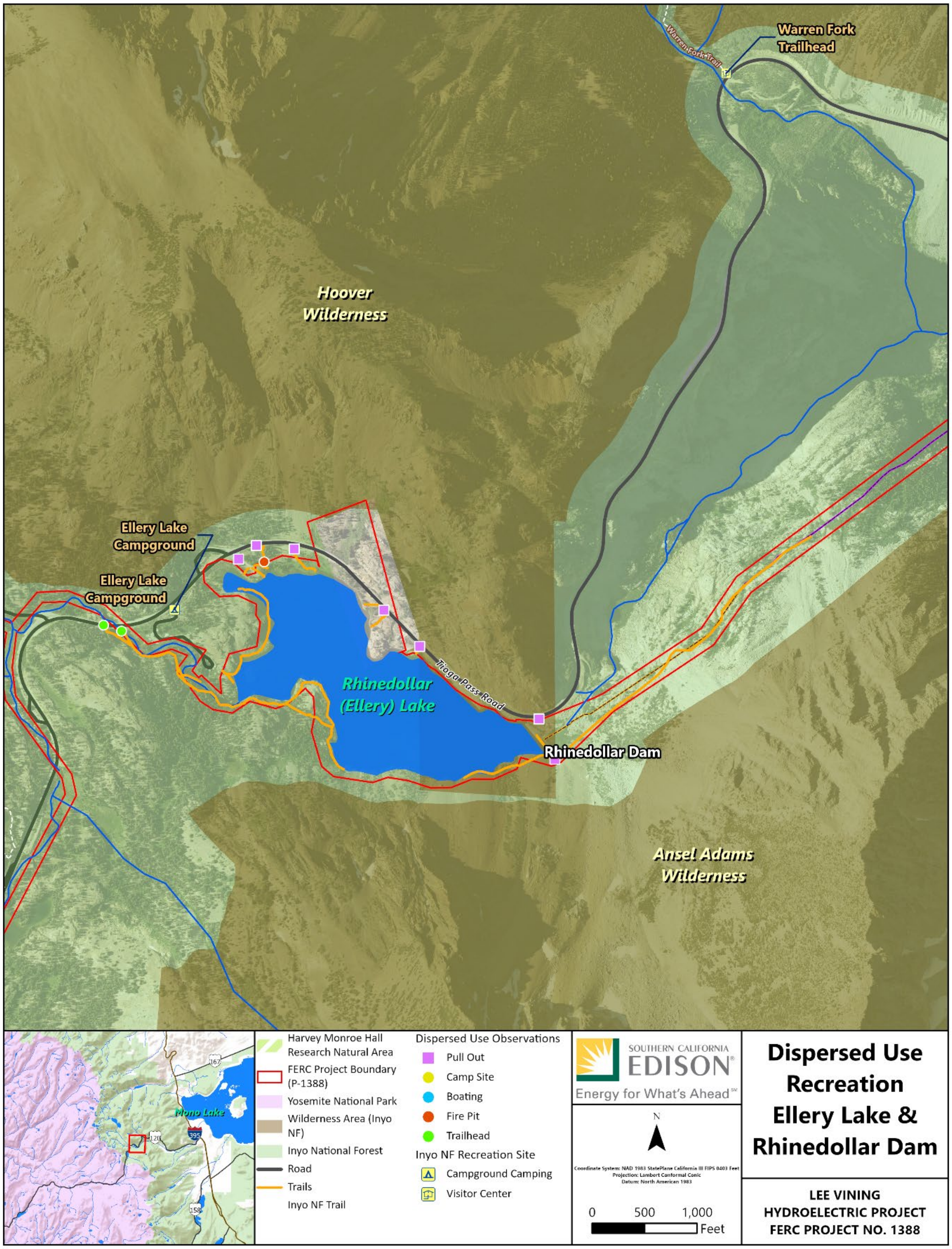

Figure 4-1. Dispersed Use Recreation at Ellery Lake and Rhinedollar Dam.

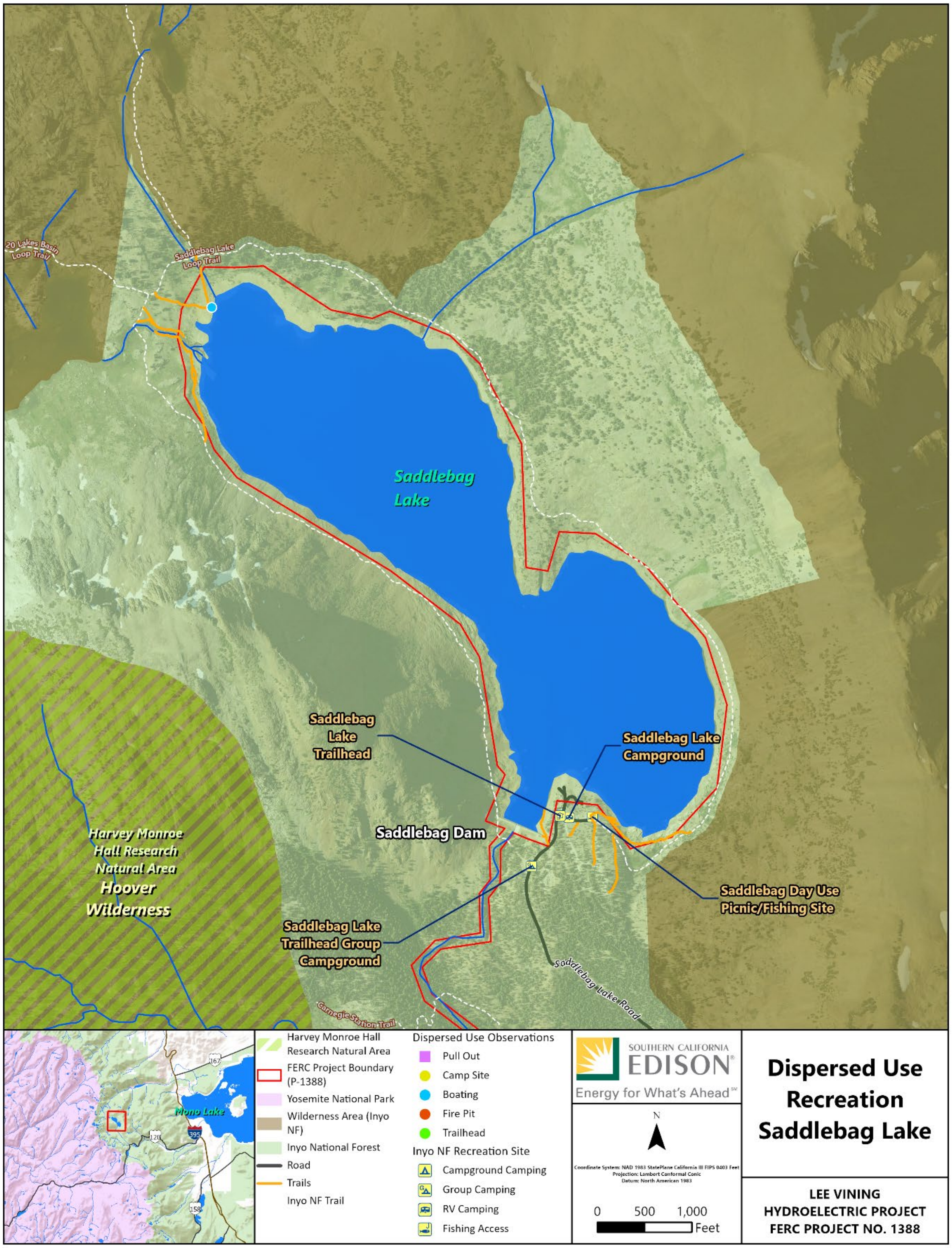

Figure 4-2. Dispersed Use Recreation at Saddlebag Lake.

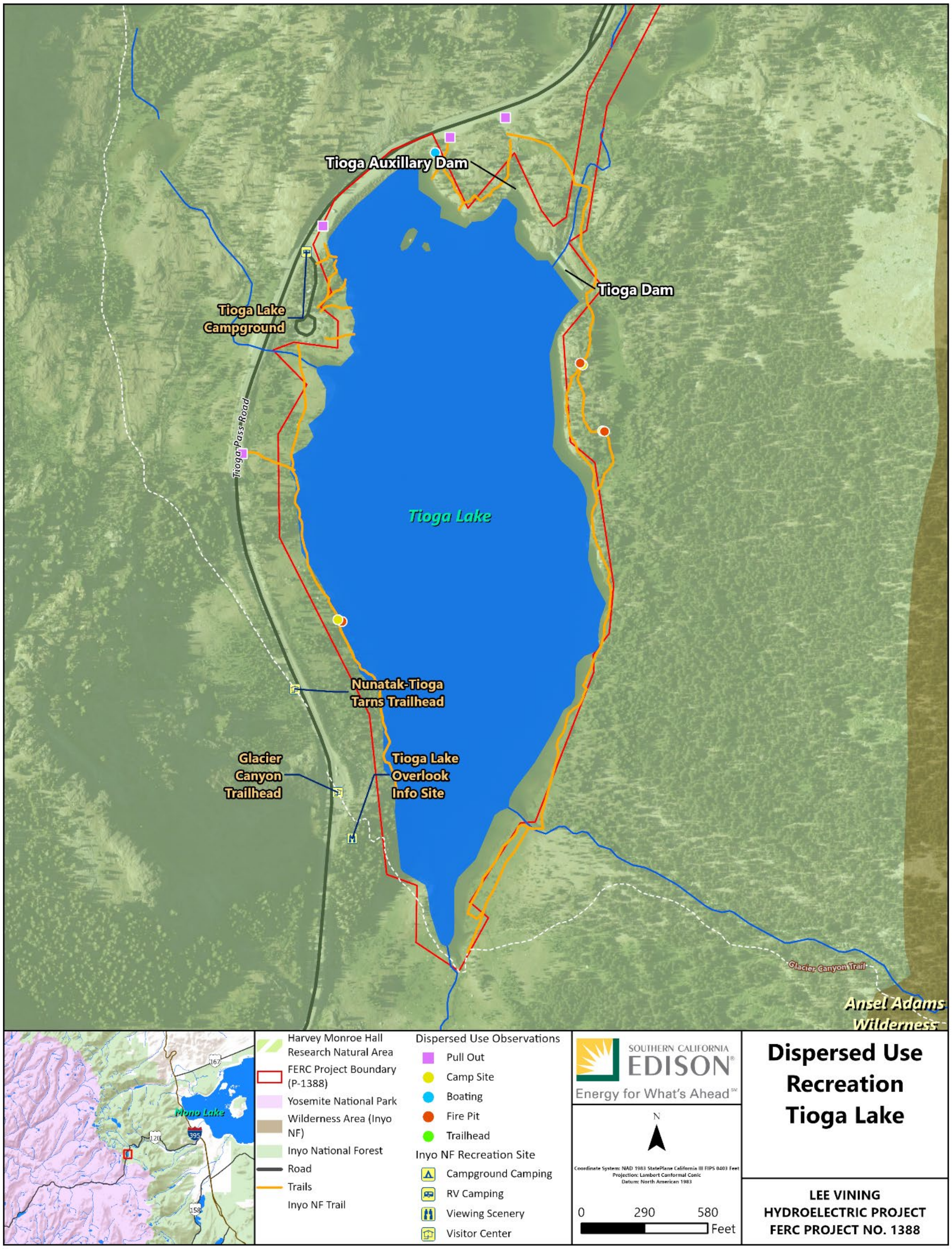

Figure 4-3. Dispersed Use Recreation at Tioga Lake.

5.0 NEXT STEPS

As proposed, the majority of this study's components will be conducted in the 2023 field season.

Findings from the 2022 Dispersed Use effort will be used to inform potential locations for additional user interviews, spot counts, or traffic/trail counters in Study REC-1 activities to be performed during the 2023 field season.

The anticipated next steps for Study REC-2 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2023–January	Progress Report and Meeting
2023–Spring/Summer	Conduct season two studies
2024–Winter/Spring	Compile study results and prepare draft report
2024–Spring	Distribute draft report to TWG
2024–Summer	Resolve comments and prepare final report
2024–September	Distribute final report in Draft License Application

TWG = Technical Working Group

6.0 REFERENCES

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

USFS (U.S. Forest Service). 2019. *Land Management Plan for the Inyo National Forest. Fresno, Inyo, Madera, Mono, and Tulare Counties, California; Esmeralda and Mineral Counties, Nevada*. R5-MB-323a. Pacific Southwest Region. September. Accessed: November 2022. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd664404.pdf.

APPENDIX J
CULTURAL RESOURCE (CUL-1) TECHNICAL MEMO

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MEMORANDUM

To:	Lee Vining Stakeholders
From:	Southern California Edison Relicensing Team
Date:	January 2023
Subject:	Cultural Resource (CUL-1) Technical Memo

1.0 INTRODUCTION

This memo presents the preliminary data of the cultural resources inventory conducted in 2022 within the Lee Vining Hydroelectric Project (Project). The *CUL-1 Cultural Resource Technical Study Plan* details Southern California Edison's (SCE) proposal for study objectives, study area, area of potential effects (APE), methods, and schedule for the effort. The Final Technical Study Plan was filed with the Federal Energy Regulatory Commission (FERC) on April 25, 2022 (SCE, 2022).

The relicensing process is defined as a federal undertaking; therefore, it requires compliance with Section 106 of the National Historic Preservation Act (NHPA). The NHPA requires federal agencies to consider the effects of undertakings on historic properties listed in, or eligible for, the National Register of Historic Places (NRHP).

As part of this process, the Final Technical Study Plan identified the need for a cultural resources inventory of the Project's APE be conducted. The APE comprises all lands within the FERC Project Boundary, including lands managed by Inyo National Forest (INF), in addition to private and county lands (see Figure 2.1-1). Historical Research Associates, Inc. (HRA) and Far Western Anthropological Research Group, Inc. (FW) conducted the cultural resources inventory between July 21 and August 10, 2022. The team conducted the work under Organic Act permit numbers LVD22022 (HRA) and LVD22023 (FW) from Inyo National Forest.

As outlined in the CUL-1 Final Technical Study Plan, the cultural resource studies began in 2022 and will continue into 2023.

2.0 STUDY GOALS AND OBJECTIVES

The cultural resource study goals and objectives include the following:

- Meet FERC compliance requirements in the Code of Federal Regulations, Title 18, Part 5 (18 CFR Part 5) and Section 106 of the NHPA, as amended, by determining if Project-related activities and public access will have an adverse effect on historic properties.

- Identify all archaeological resources, built-environment (BE) resources, and Traditional Cultural Resources[1] within the APE; determine which are historic properties; and develop the Historic Properties Management Plan (HPMP) based on those results.
- Ensure that future Project facilities and operations are consistent with the Desired Conditions described in the *Land Management Plan for the Inyo National Forest* (USFS, 2019) for Social and Economic Sustainability and Multiple Uses.

2.1. Study Area and Area of Potential Effect

The cultural resource studies will focus upon the FERC Project Boundary, the proposed APE, and a larger study area proposed to be a 0.5-mile radius around the proposed APE (Figure 2.1-1).

[1] A TRC is a resource that may not meet the NRHP criteria but has significant value to a Tribal or non-American Indian community or group.

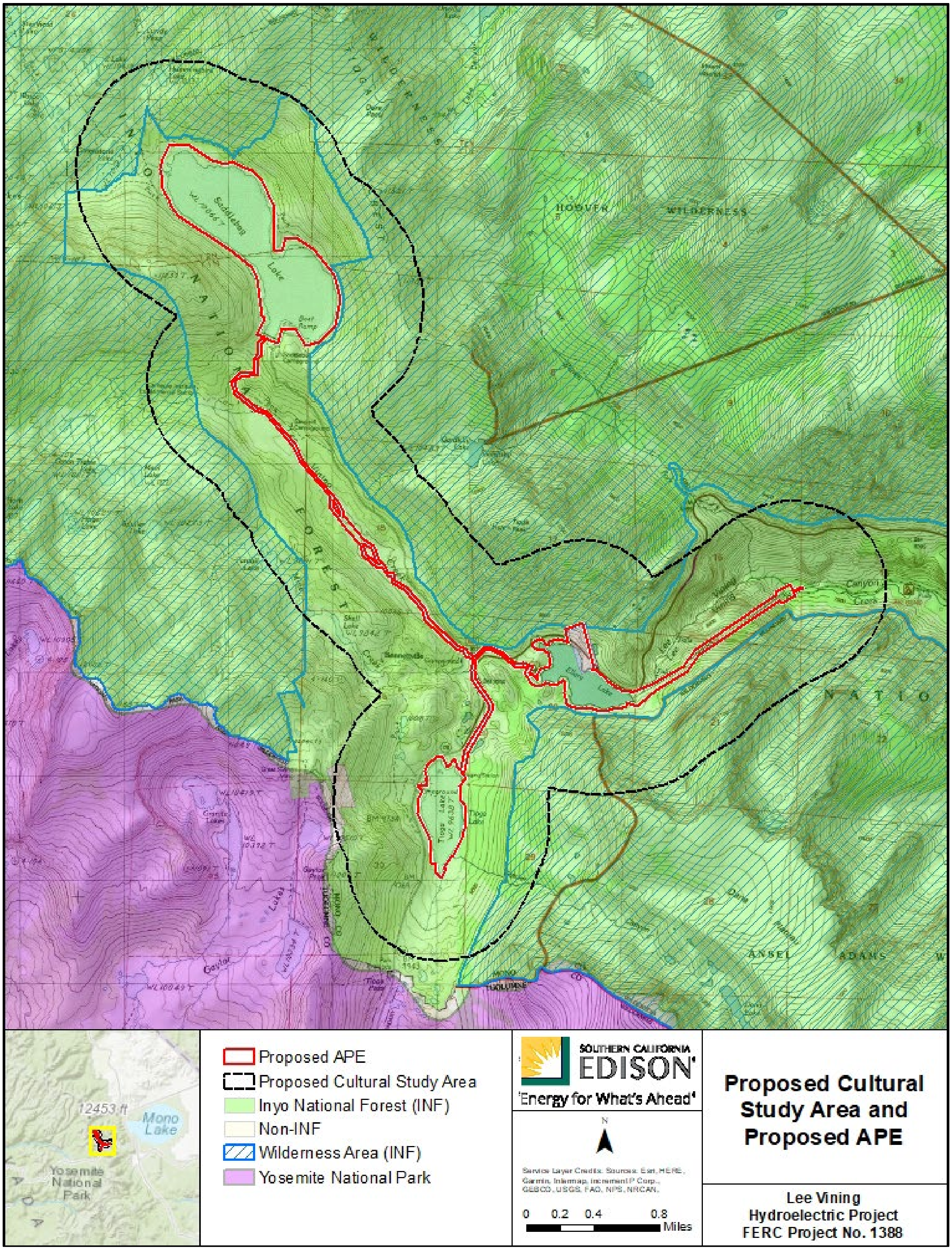

Figure 2.1-1. Proposed APE and Study Area.

3.0 METHODS

The study approach for the cultural resources inventory followed the methods described in the CUL-1 Final Technical Study Plan, with no modifications, and will be followed for the 2023 cultural resource study efforts.

HRA and FW carried out the archaeological and BE surveys following methods described in the Study Plan, under an Organic Act permit issued by the U.S. Forest Service (USFS). Fieldwork took place between July and August 2022.

4.0 DATA SUMMARY

4.1. ARCHAEOLOGICAL INVENTORY AND PRELIMINARY DATA

The total acreage contained within the APE consists of approximately 619 acres. Systematic archaeological survey with 100 percent coverage was conducted on 203 of those acres. The remaining acreage was excluded from the survey due to steep slopes or open water. See Table 4.1-1 and the map book in Attachment A to this memo for a depiction of survey coverage.

Table 4.1-1. Survey Area

Land Manager	**100% Survey**	**No Survey**	**Total**
U.S. Forest Service	188	413	601
Private/Other	15	3	18
Total	**203**	**416**	**619**

In total, 24 cultural resources were revisited or newly identified within the APE (see the Confidential Map Book in Attachment A). Two previously recorded precontact archaeological sites mapped within the APE during the record search were not relocated during the inventory. The crew did identify and record two new precontact sites and one multicomponent site. The crew revisited 5 previously recorded historic-period resources and recorded 16 newly identified historic-period resources. Sites within the APE include precontact lithic scatters and historic-period sites related to the Project, mining, recreation, and transportation in the region.

Table 4.1-2 summarizes the archaeological sites recorded or revisited in 2022. Preliminary recommendations regarding the eligibility of each resource for listing in the NRHP are included in the table. These recommendations are subject to change as additional information is processed and analyzed during the reporting stage of the Project. Fourteen archaeological isolates identified during the inventory are presented in Table 4.1-3 and are depicted in the Confidential Map Book included as Attachment A to this memo. Three are characterized as pre-contact isolates; the other 11 are characterized as historic-period isolates. The pre-contact isolates consist of isolated obsidian flakes or nodules. The historic-period isolates are artifacts related to mining, logging, and recreation. A technical report that complies with Section 106 and FERC regulations is in progress.

Table 4.1-2. Archaeological Sites Located Within the APE

Primary Number	**Trinomial**	**USFS Number**	**Temp Number**	**Site Type**	**Composition of Site**	**NRHP Eligibility Preliminary Recommendation**	**Research Theme**	**Property Owner**
P-26-000016	CA- MNO-16	05045101165	—	Pre-contact	Lithic scatter	N/A (Not Relocated)	—	USFS
P-26-002417	CA- MNO-2417	05045100702	—	Pre-contact	Lithic scatter	Determined Not Eligible 09/22/88 FERC821004D (Not Relocated)	—	USFS
P-26-002437	CA- MNO-2437	05045101163	—	Historic period (also includes BE resources)	Rhinedollar Construction Camp	Determined Not Eligible 02/06/90 FERC821004D	Hydroelectric	SCE and USFS
P-26-003308	—	05045101259	—	Historic period (also includes BE resources)	Tioga Pass Resort	Historic District 07/29/1997, USFS970709A	Recreation	USFS
P-26-006236	—	05045101683	—	Historic period (also includes BE resources)	Rhinedollar 12kV Circuit	Determined Not Eligible 06/06/2011, USFS110413A	Hydroelectric	USFS and SCE
—	—	—	LV-Site-104	Historic period	Debris scatter	Not Eligible	Unknown	USFS
—	—	—	LV-Site-380[a]	Historic period	Tioga Road	Eligible	Transportation	USFS
—	—	—	LV01	Historic period (also includes BE resources)	Poole Powerhouse Complex (archaeological component)	Not Eligible	Hydroelectric	USFS
—	—	—	LV02	Historic period	Tramway and Distribution Line remnants	Not Eligible	Hydroelectric	USFS
—	—	—	LV03[b]	Historic period	Historic-period earthwork and debris scatter	Not Eligible	Hydroelectric	USFS

Primary Number	Trinomial	USFS Number	Temp Number	Site Type	Composition of Site	NRHP Eligibility Preliminary Recommendation	Research Theme	Property Owner
—	—	—	LV04	Historic period	A. O. Biglow rock inscription	Not Eligible	Unknown	USFS
—	—	—	LV05[a]	Historic period	Previous alignments of Tioga Road	Eligible	Transportation	USFS and SCE
—	—	—	LV06	Pre-contact	Lithic scatter	Testing Recommended Prior to Evaluation	—	USFS
—	—	—	LV07	Historic period	Borrow pit at Tioga Dam	Not Eligible	Hydroelectric	USFS
—	—	—	LV09	Pre-contact	Lithic Scatter	Not Eligible	—	USFS
—	—	—	LV10	Historic period (also includes a BE component)	Former Saddlebag Lake Road alignment	Not Eligible	Transportation	USFS
—	—	—	LV11	Historic period	Drilling equipment	Not Eligible	Mining	USFS
—	—	—	LV12	Multicomponent	Waste rock field; milling slick	Not Eligible	Hydroelectric	USFS
—	—	—	LV13	Historic period	Saddlebag Lake Dam construction area	Not Eligible	Hydroelectric	USFS
—	—	—	LV14	Historic period (also includes BE resources)	Wilderness Ranger Station and foundations	Research in progress	Recreation	USFS
—	—	—	LV15	Historic period	Debris scatter	Not Eligible	Recreation	USFS
—	—	—	LV16	Historic period	Debris scatter	Not Eligible	Recreation	USFS

Primary Number	Trinomial	USFS Number	Temp Number	Site Type	Composition of Site	NRHP Eligibility Preliminary Recommendation	Research Theme	Property Owner
—	—	—	LV17	Historic period	Trench mechanically cut from water through bedrock	Not Eligible	Hydroelectric	USFS
—	—	—	LV18	Historic period	Saddlebag Loop Trail (east portion)	Research in progress	Transportation	USFS
—	—	—	LV19	Historic period	Carnegie Station Trail	Research in progress	Transportation	USFS
—	—	—	LV20	Historic period	Bennettville Vis Loop Trail	Research in progress	Recreation	USFS

BE = built environment; N/A = data not available; NRHP = National Register of Historic Places; SCE = Southern California Edison; USFS = U.S. Forest Service

[a] Abandoned segments of Tioga Road were previously recorded under temporary site number LV-Site-380. LV05 includes several additional segments of abandoned roadbed likely associated with historic-period iterations of the road alignment. The modern alignment of Tioga Road (Highway 120) was documented as a BE resource (temporary number HRA-17). These will all likely be incorporated into a single California Department of Parks and Recreation form with BE and archaeological components.

[b] The earthwork that is part of LV03 may be moved to BE, particularly if it is part of the realignment of the Rhinedollar Dam spillway.

Table 4.1-3. Archaeological Isolates

Temporary Number	Isolate Type	Description
ISOLV01	Pre-contact	1 small, raw, obsidian nodule
ISOLV02	Historic period	Lengths of ½-inch-diameter braided cable
ISOLV03	Pre-contact	1 obsidian flake
ISOLV04	Pre-contact	1 obsidian flake
ISOLV05	Historic period	3 strands of barbed wire grown into tree
ISOLV06	Pre-contact	1 handstone
ISOLV07	Historic period	16 fragments of one amber glass bottle with Owens Illinois makers mark dating between 1929 and ca. 1960 (BRG, 2022)
ISOLV08	Historic period	1 wheel hub
ISOLV09	Historic period	1 fragment of green glass 7-Up bottle, 1 segment of 1-inch-diameter pipe
ISOLV10	Historic period	1 Coca-Cola bottle (partial) with Owens Illinois makers mark dating between 1929 and ca. 1960 (BRG, 2022)
ISOLV11	Historic period	1 church key-opened can
ISOLV12	Historic period	1 can fragment with soldered seam
ISOLV13	Historic period	1 church key-opened can
ISOLV14	Historic period	1 solder-seam meat tin; 1 colorless glass panel bottle base with writing

4.2. Built-Environment Inventory and Preliminary Data

Architectural historians conducted field survey of the APE to verify the presence and current condition of previously recorded BE resources and to inventory and evaluate the NRHP eligibility of previously unidentified BE resources. The team started at the Poole Powerhouse Complex and then proceeded to document the resources around each of the dams starting at the highest elevation (Saddlebag Dam) and ending at the lowest (Rhinedollar Dam). In total, 61 BE resources were inventoried during the 2022 fieldwork. Table 4.2-1 summarizes these resources. Preliminary recommendations regarding the eligibility of each resource for listing in the NRHP are included in the table. These recommendations are subject to change as additional information is processed and analyzed during the reporting stage of the Project. See the map in Attachment A for locations of the BE resources and complexes listed in the table. Sketch maps of each complex and their associated resources will be provided in the technical report.

Table 4.2-1. Built-Environment Resources Inventoried for the Project

Primary/USFS Number	Temp Number	Resource Name	Date of Construction / Alteration	Associated Complex or Resource	Preliminary Eligibility Recommendation	Associated with the Project?
—	HRA-19o	Tioga Pass Resort, Propane Tank Storage	Research needed	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19p	Tioga Pass Resort, Bathrooms	Research needed	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19q	Tioga Pass Resort, Cabin 8	1983 (rebuilt the destroyed 1935 cabin); recent alterations	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19r	Tioga Pass Resort, Motel Unit	1920–1925; 1940s; recent alterations	Tioga Pass Resort	Contributing to Tioga Pass Resort [a]	No
—	HRA-19s	Tioga Pass Resort, Well	Research needed	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19t	Tioga Pass Resort, Pump Building	1993; recent alterations	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19u	Tioga Pass Resort, Cabin 9	1983 (rebuilt the destroyed 1935 cabin); recent alterations	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19v	Tioga Pass Resort, Cabin 10	1957–1963; recent alterations	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No
—	HRA-19w	Tioga Pass Resort, Modern foundations for yurts and possibly new cabins	2020s; research needed	Tioga Pass Resort	Noncontributing to Tioga Pass Resort [a]	No

Primary/USFS Number	Temp Number	Resource Name	Date of Construction / Alteration	Associated Complex or Resource	Preliminary Eligibility Recommendation	Associated with the Project?
—	HRA-20	Tioga Dam Complex, includes Dam, Spillway, Instrument Building (?), Gaging Station, Gate House; need to confirm structure names	1928; 1949; 1958–1959 (confirm dates of any recent alterations)	Tioga Dam	Not Eligible	Yes
—	HRA-21	Tioga Auxiliary Dam	1928 (confirm no alterations since 1988)	Tioga Dam	Not Eligible	Yes
—	HRA-22	Saddlebag Dam Complex, includes Firehouse (?), Valve House, Flowline (1950), Instrument building (?), Gaging Station, and archaeological features	1920; 1954 (confirm dates of recent alterations)	Saddlebag Dam	Not Eligible	Yes
USFS. No. 05-04-51-01804	HRA-23	Saddlebag Lake Resort	1947	Saddlebag Lake Resort	Not Eligible	No
—	HRA-24	Lee Vining Substation Powerhouse (Building 0101)	1924; possibly 1950s/1960s (fenestration)	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-25	Warehouse (Building 0105)	1924 (confirm dates of recent alterations)	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-26	Garage (1 car) (Building 0110)	1954 (confirm dates of recent alterations)	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-27	Cottage (Building 0102)	1924 (confirm dates of recent alterations)	Lee Vining Substation Complex	Not Eligible	Yes

Primary/USFS Number	Temp Number	Resource Name	Date of Construction / Alteration	Associated Complex or Resource	Preliminary Eligibility Recommendation	Associated with the Project?
—	HRA-28	Rock Wall System	Likely 1920s	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-29	Historic Bridge	Research needed	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-30	Cottage (Building 0108)	1951 (confirm dates of recent alterations)	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-31	Garage	1951 (confirm dates of recent alterations)	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-32	Lee Vining Substation	1968 (confirm dates of recent alterations)	Lee Vining Substation Complex	Not Eligible	Yes
—	HRA-33	Avalanche Wall	Likely 1920s	Poole Powerhouse	Not Eligible	Yes
—	HRA-34	Wilderness Ranger Cabin [b]	Research needed	Wilderness Ranger Station	Not Eligible?	No
—	HRA-35	Poole Power Plant Road	Likely 1920s	Poole Powerhouse	Not Eligible	Yes
USFS 05-04-53-02829; SCE TLRR Survey No. 9	—	Casa Diablo-Control- Sherwin 115kV Transmission Line [c]	1918	Poole Powerhouse	Not Eligible	Yes

? = reflects uncertainty of ID; BE = built environment; HRA = Historical Research Associates, Inc.; SCE = Southern California Edison; USFS = U.S. Forest Service

[a] Preliminary evaluations based on the 1997 Evaluation of Eligibility for Tioga Pass Resort, which outlined a period of significance of 1915–1940 and described integrity for each of the resources within the district. More research is needed to determine if integrity has diminished due to recent alterations and restoration efforts after major damage from a 2017 avalanche (Cutts, 1997).

[b] This is a BE resource with associated archaeological site(s).

[c] The 2019 surveyors mislabeled Casa Diablo-Control-Sherwin as the Control-Mill Creek in the shapefiles HRA received along with the TLRR report (Urbana, 2019).

5.0 NEXT STEPS

The anticipated next steps for the Study CUL-1 are identified in Table 5-1 below.

Table 5-1. Schedule

Date	Activity
2022/2023–Winter	Compile cultural resource preliminary data and prepare draft reports
2023–January	Progress Report and Meeting
2023–Feb/March	Stakeholder review and provide comments on draft report
2023–April/May	Resolve comments and prepare draft final report
2023–Spring/Fall	Conduct archaeological site evaluations
2023/2024–Winter	Prepare archaeological site evaluation report
2024–Spring	Distribute draft report to Stakeholders
2024–Spring	Stakeholder review and provide comments on draft report
2024–Spring/Summer	Resolve comments and prepare draft final report
2024–Spring/Summer	Prepare draft HPMP
2024	Stakeholder review and provide comments on draft HPMP
2024	Resolve comments and prepare final HPMP
2024–November	Distribute final reports and HPMP in Final License Application

HPMP = Historic Properties Management Plan

6.0 REFERENCES

BRG (Bottle Research Group). 2022. *Manufacturer's Marks and Other Logos on Glass Containers*: O. Electronic document. Accessed: August 18, 2022. Retrieved from: https://sha.org/bottle/pdffiles/OLogoTable.pdf.

Cutts, J.S. 1997. *Tioga Pass Resort Evaluation for National Register Eligibility*. On file, Inyo National Forest.

SCE (Southern California Edison). 2022. *Final Technical Study Plans*. Lee Vining Hydroelectric Project, FERC Project No. 1388. April 25, 2022.

Urbana (Urbana Preservation and Planning, LLC). 2019. *Historical Resource Analysis Report/Historic Property Survey Report: Southern California Edison Company Easter Sierras Transmission System Mono County and Inyo County, California*. Prepared for SCE, Pasadena, California.

USFS (U.S. Forest Service). 2019. *Land Management Plan for the Inyo National Forest. Fresno, Inyo, Madera, Mono and Tulare Counties, California; Esmeralda and Mineral Counties, Nevada*. R5-MB-323a. Pacific Southwest Region. September. Accessed: August 24, 2020. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd664404.pdf.

ATTACHMENT A
PRELIMINARY CULTURAL RESOURCES SURVEY RESULTS MEMO
(CONFIDENTIAL)

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FEBRUARY 1, 2023, STAKEHOLDER MEETING MATERIALS

- Meeting Agenda
- PowerPoint Presentation
- Meeting Summary

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Lee Vining Hydroelectric Project Relicensing

2022 Progress Report Stakeholder Meeting

February 1, 2023, 9:00 a.m. – Noon PDT via Microsoft Teams

Objectives

- Information sharing and high-level review of preliminary data from 2022 studies
- Preview 2023 field season

Duration (minutes)	Agenda Topic/Subtopic	Lead
10	**Welcome and Introductions**	
	- Safety moment - Introductions	Matthew Woodhall
15	**Meeting Objectives and How We Got Here (Traditional Licensing Process)**	
	- Review purpose of this meeting - Review where we are in the relicensing process - Study Implementation Schedule	Shannon Luoma
10	**Cultural and Tribal Studies**	
	- Cultural Resource (CUL-1) - Tribal Resources (TRI-1)	Audry Williams
30	**Fish, Aquatics, and Hydrology Studies**	
	- Stream and Reservoir Water Quality (WQ-1) - Reservoir Fish Population (AQ-1) - Stream Fish Population (AQ-2) - Operations Model (AQ-5) - Lower Lee Vining Creek Channel Morphology (AQ-6)	Heather Neff Ken Jarrett Bret Hoffman Isha Deo Ian Pryor
10	**10-minute break**	
20	**Terrestrial and Botanical Studies**	
	- General Botanical Resources Survey (TERR-1) - General Wildlife Resources Survey (TERR-2)	Allison Rudalevige Steve Norton
20	**Recreation and Land Use Studies**	
	- Recreation Use Assessment (REC-1) - Existing Recreation Facilities Condition Assessment (REC-2)	Angela Whelpley

10	**Schedule and Next Steps**	
	- Relicensing Schedule overview - Other action items	Shannon Luoma
10	**Final Q&A**	
	Adjourn	

Materials Available on Relicensing Website

- Preliminary Application Document, filed August 12, 2021
  - Includes Draft Study Plans
- Final Technical Study Plans, filed April 25, 2022
- Site Visit materials
  - Agenda
  - Project overview maps
  - Site Visit booklet
  - Site Visit photos
- Process Plan and Schedule
- USFWS IPaC Report (April 2020)
- Project Flyover Video
- FERC Environmental Assessment
- Current FERC License (1997)
- Select Orders Amending the 1997 License
- Technical Working Group (TWG) materials
  - Meeting agendas
  - Meeting summaries
  - PowerPoint presentations
  - TWG Charter document
- October 2020 Public Meeting materials
- November 2021 Joint Agency and Public Meeting materials
- March 2022 Study Plan Meeting presentation

SOUTHERN CALIFORNIA EDISON
Energy for What's Ahead℠

Lee Vining Hydroelectric Project

FERC No. 1388

Welcome!

Using the chat, please write your name, organization, and your favorite piece of outdoor gear.

2022 Progress Report Stakeholder Meeting

February 1, 2023

Welcome and Land Acknowledgment

SCE would like to take a moment and recognize that the Lee Vining Project is located on the Mono Lake Kutzadikaa Tribes' traditional lands, which they have stewarded for generations.

Safety Moment

Welcome and Introductions: Lee Vining Relicensing Team

SCE Team

Matthew Woodhall
Project Manager

Martin Ostendorf
Senior Manager

Audry Williams
Cultural Resources Manager

Seth Carr
Operations Manager

Lyle Laven
Production Manager

Consultant Team

Shannon Luoma
Project Manager

Finlay Anderson
Technical Advisor

Kelly Larimer
Project Director

Carissa Shoemaker
TWG Coordinator

Heather Neff
Aquatics Lead

Allison Rudalevige and **Steve Norton**
Terrestrial and Botanical Leads

Lynn Johnson
Tribal Lead

Barb Siskin and **Jay King**
Cultural Leads

Angela Whelpley
Recreation and Land Use Leads

Progress Report Meeting Agenda

- Safety moment
- Welcome and introductions
- Meeting objectives
- How we got here (Traditional Licensing Process)
- Review studies, preliminary data summary, 2023 plans
  - Cultural and Tribal
  - Aquatics
  - Terrestrial
  - Recreation and land use
- Schedule, next steps, action items
- Final questions

Meeting Objectives

- Information sharing and high-level review of preliminary data from 2022 studies
- Preview 2023 field season

Regulatory and Process Look Back

- SCE is utilizing the Traditional Licensing Process (TLP)
  - The Federal Energy Regulatory Commission (FERC) does not engage until end of process
  - Less structured "formal" milestone schedule around studies
- Study Plans were developed in collaboration with Technical Work Group (TWG) members:
  - 12+ TWG meetings January-May 2021
- Preliminary Application Document and Notice of Intent filed August 2021
- Site Visit and Joint Agency Meeting – fall 2021
- Study Plan revisions – February 2022
- Final Study Plans filed April 2022
- Studies began in 2022, continuing into 2023
- Tech Memos distributed January 23, 2023

Study Implementation Schedule

Study Plan Title	Year(s) of Implementation
Cultural Resources (CUL-1)	2022-2023
Tribal Resources (TRI-1)	2023
Stream and Reservoir Water Quality (WQ-1)	2022*
Reservoir Fish Populations (AQ-1)	2022
Stream Fish Populations (AQ-2)	2022
Aquatic Habitat Mapping and Sediment Characterization (AQ-3)	2023
Aquatic Invasive Plants (AQ-4)	2023
Operations Model (AQ-5)	2022-2023
Lower Lee Vining Creek Channel Morphology (AQ-6)	2022-2023
Botanical Resources Survey (TERR-1)	2022-2023
Wildlife Resources Survey (TERR-2)	2022-2023
Recreation Use Assessment (REC-1)	2022-2023
Existing Recreation Facilities Condition Assessment (REC-2)	2022-2023
Project Lands and Roads (LAND-1)	2023
Visual Resource Assessment (LAND-2)	2023

*Study may continue into 2023

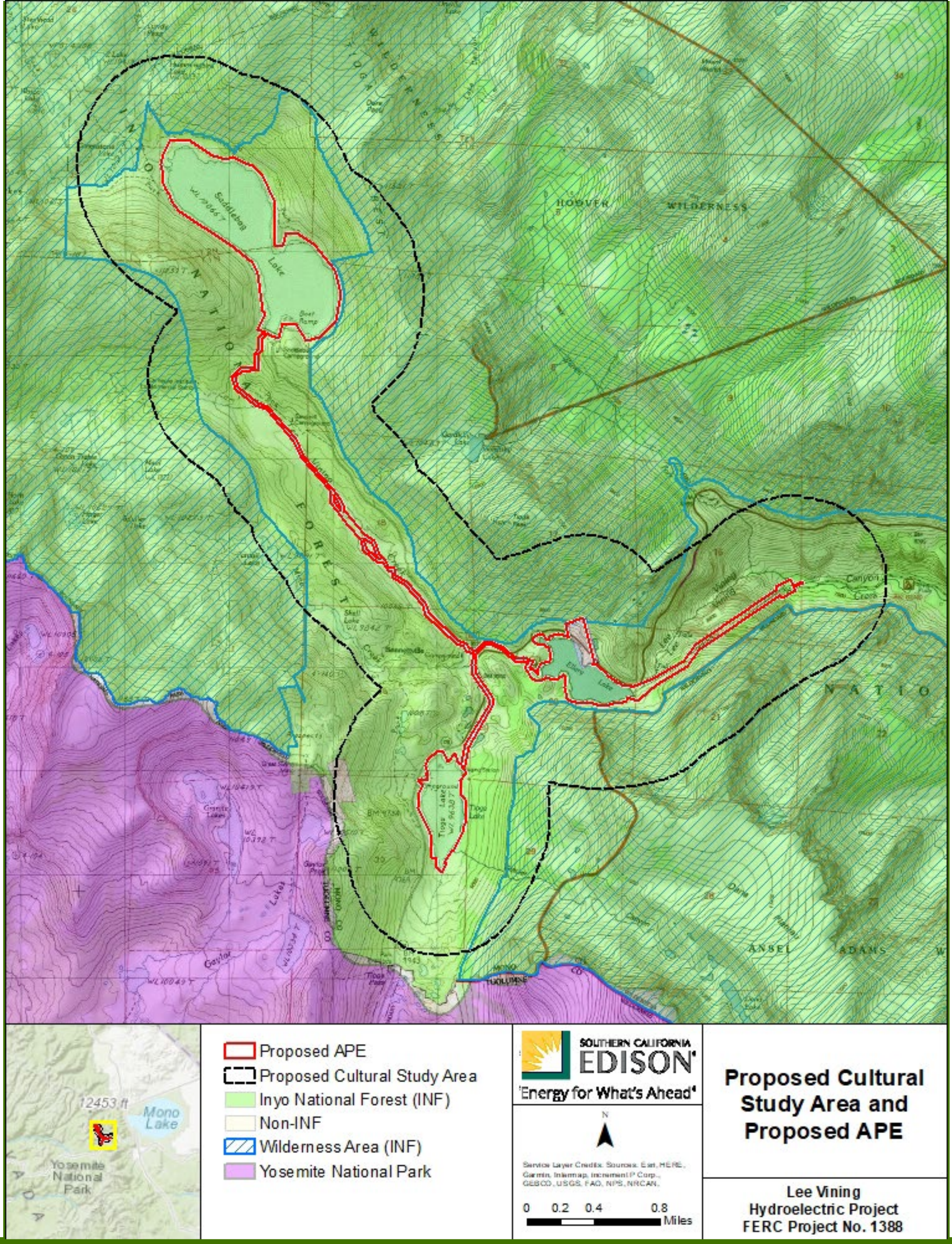
Regulatory and Process Look Ahead

- Comments on tech memos by February 22, 2023
- Focused TWG meetings for select resources prior to 2023 field season as needed
- Draft technical reports for completed studies to be distributed spring 2023 for 60-day review
- 2023 field season
- Draft technical reports for remaining studies to be distributed fall 2023 and spring 2024 for 60-day review
- Draft License Application due to FERC September 2024
  - Will include final technical reports
- Final License Application due to FERC January 2025
- Lee Vining license expires January 2027

2022 (YEAR 1) STUDIES, DATA SUMMARY, & 2023 PLANS

Cultural Resources (CUL-1)

Area of Potential Effects (APE) and Study Area Map



Cultural Resources (CUL-1)

Goals/objectives

- Meet FERC and Section 106 compliance requirements by determining if Project-related activities and public access will have an adverse effect on historic properties
- Identify all archaeological resources, built-environment resources, and Traditional Cultural Resources (TCRs) within the APE; determine which are historic properties; and develop the Historic Properties Management Plan (HPMP) based on those results
- Ensure that future Project facilities and operations are consistent with the desired conditions described in the Land Management Plan for the Inyo National Forest

Cultural Resources (CUL-1)

Preliminary data summary

- Completed background research in summer 2022
- Surveyed APE in July and August 2022
- Submitted draft reports in Q1 2023
- Archaeology: recorded 20 resources (16 new), mostly historic-period, including 6 with built environment elements
- Built Environment: recorded 32 resources, including 13 elements of LVHP; Tioga Pass Resort; Saddlebag Lake Resort; Saddlebag Wilderness Cabin; Tioga Road

Cultural Resources (CUL-1)

Preliminary data summary: National Register of Historic Places (NRHP) Eligibility

- All archaeological resources recommended NRHP ineligible except 3 remaining unevaluated: 2 precontact lithic scatters and a submerged road segment
- All built environment resources recommended NRHP ineligible, including LVHP, except two buildings individually eligible (Poole Powerhouse, Triplex Cottage)
- Evaluation/treatment options to be developed in HPMP

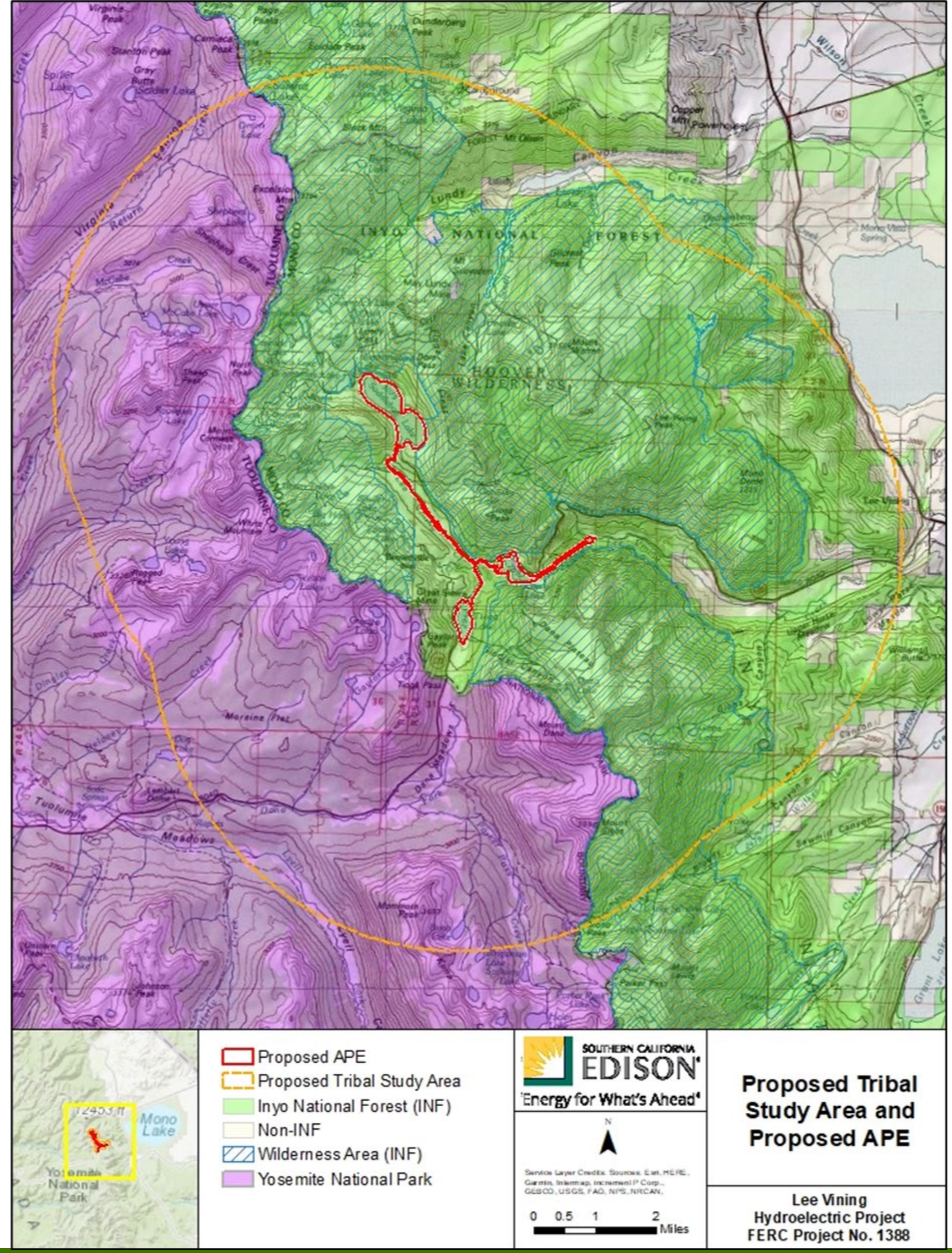
Cultural Resources (CUL-1)

Next steps

Date	Activity
2022/2023–Winter	Compile cultural resource survey data and prepare draft reports
2023–January/February	Progress report and meeting
2023–Spring/Fall	Conduct archaeological site evaluations
2023/2024–Winter	Prepare archaeological site evaluation report
2024–Spring	Distribute draft report to stakeholders for review and comment
2024–Summer	Resolve comments and prepare draft final report
2024–Spring/Summer	Prepare draft HPMP
2024–September	Distribute final reports and HPMP in Draft License Application

Tribal Resources (TRI-1)

APE and Study Area Map



Tribal Resources (TRI-1)

Methods

- Archival research
- Assist other resource specialists
- Meetings with Tribal governments
- Interviews
- Documentation and evaluation
- Reporting and Historic Properties Management Plan

2022 Data Summary

- Background research was conducted in 2022, study will commence in 2023 with interviews

Tribal Resources (TRI-1)

Next steps

Date	Activity
2023–January/February	Progress report and meeting
2023–Summer/Fall	Conduct Tribal site visits; identification and evaluation of Tribal resources
2023/2024–Winter	Prepare draft TRI-1 Study Report
2024–Spring	Distribute draft report to stakeholders for review and comment
2024-Spring	Prepare draft Tribal resource HPMP for review and comment
2024–Summer	Resolve comments and prepare final reports
2024–September	Distribute final reports and HPMP in Draft License Application

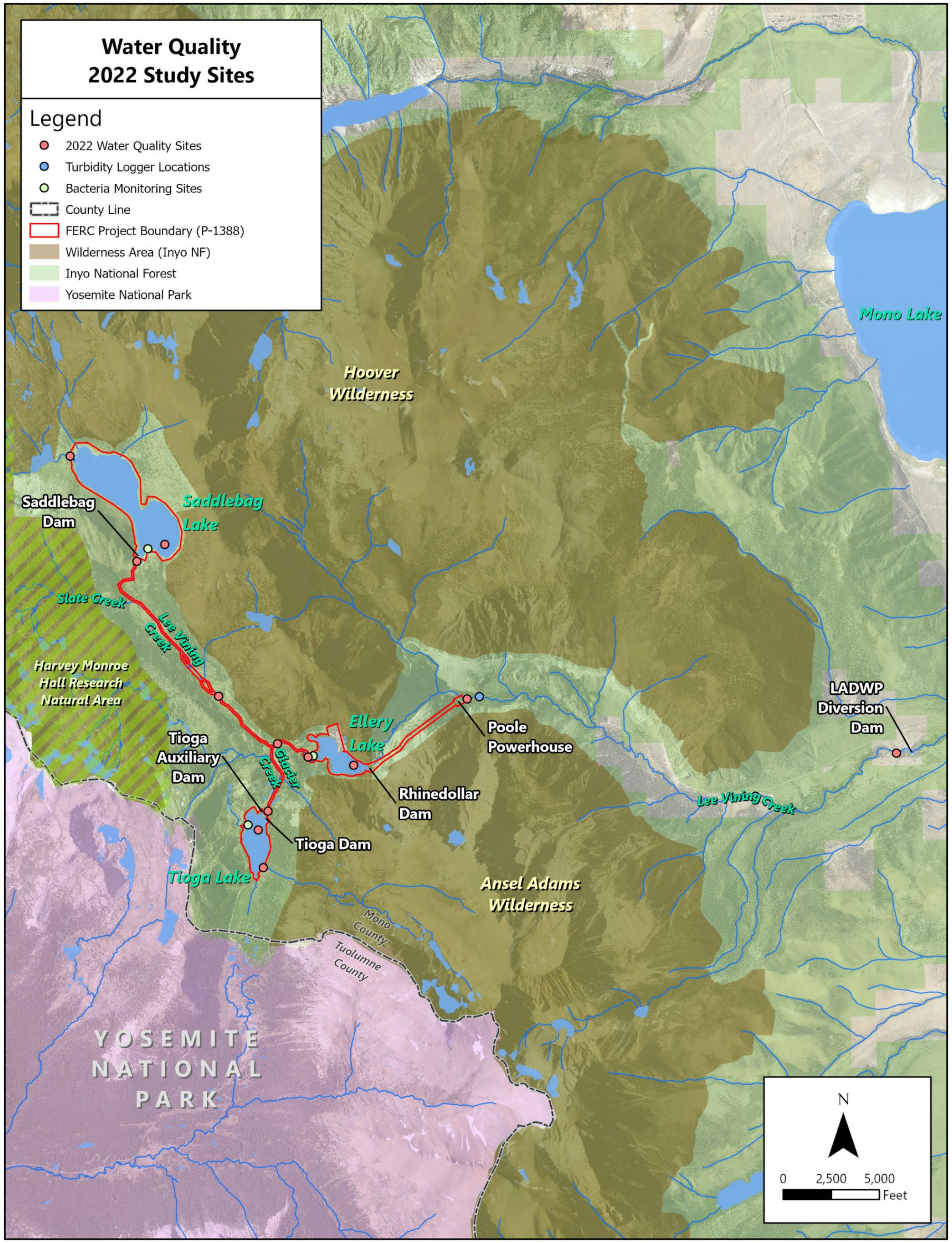
Questions?

Fish, Aquatics, and Hydrology Studies

1. Water Quality Study (WQ-1)
2. Reservoir Fish Populations (AQ-1)
3. Stream Fish Populations (AQ-2)
4. Operations Model (AQ-5)
5. Lower Lee Vining Creek Channel Morphology (AQ-6)

Stream and Reservoir Water Quality (WQ-1)

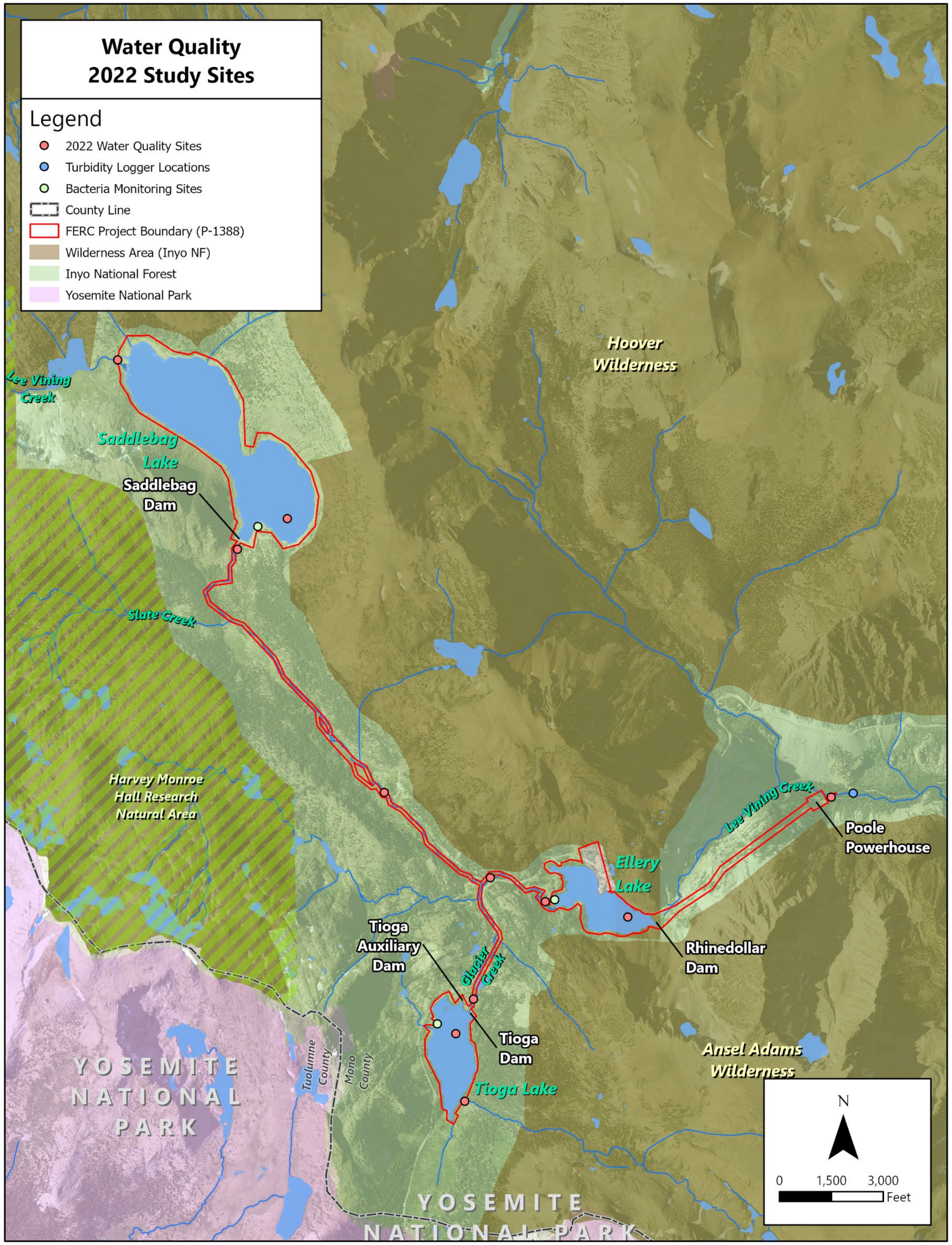
Study Area Map



Stream and Reservoir Water Quality (WQ-1)

Study Sites:

- Saddlebag, Ellery, Tioga lakes (1 WQ site per lake)
- Upper Lee Vining Creek (5 WQ sites)
- Lower Lee Vining Creek (2 WQ sites, 2 turbidity sites)
- Glacier Creek (2 WQ sites)



Stream and Reservoir Water Quality (WQ-1)

Study Goals/Objectives

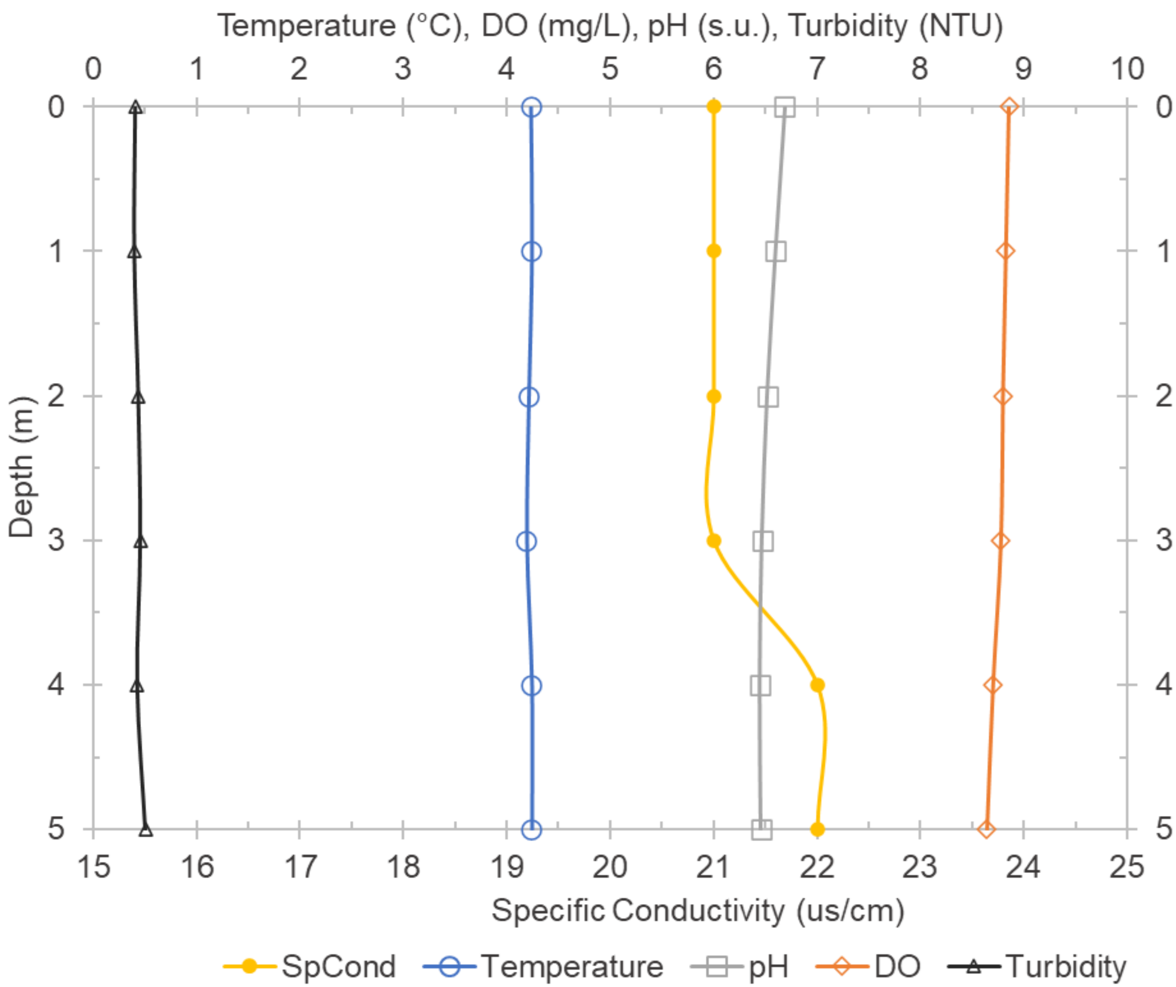
- Assess consistency of Project reservoirs and Project-affected stream reaches with water quality objectives in the Lahontan Region Water Quality Control Board Basin Plan

Modifications to Methods

- Extensive ice cover on Saddlebag Lake prevented collection of depth profiles at maximum depth during spring
- Analytical samples were not collected at depth from Saddlebag Lake and Tioga Lake during summer
- Turbidity logger installation was delayed from spring to summer, loggers were moved to new locations in October 2022
- *In situ* turbidity was not measured during summer (probe malfunction)
- Eight out of nine edible-sized individuals of rainbow trout were caught at Tioga Lake (with nine of nine required brook trout captured)

Stream and Reservoir Water Quality (WQ-1)

Saddlebag Lake – *In Situ* Spring 2022



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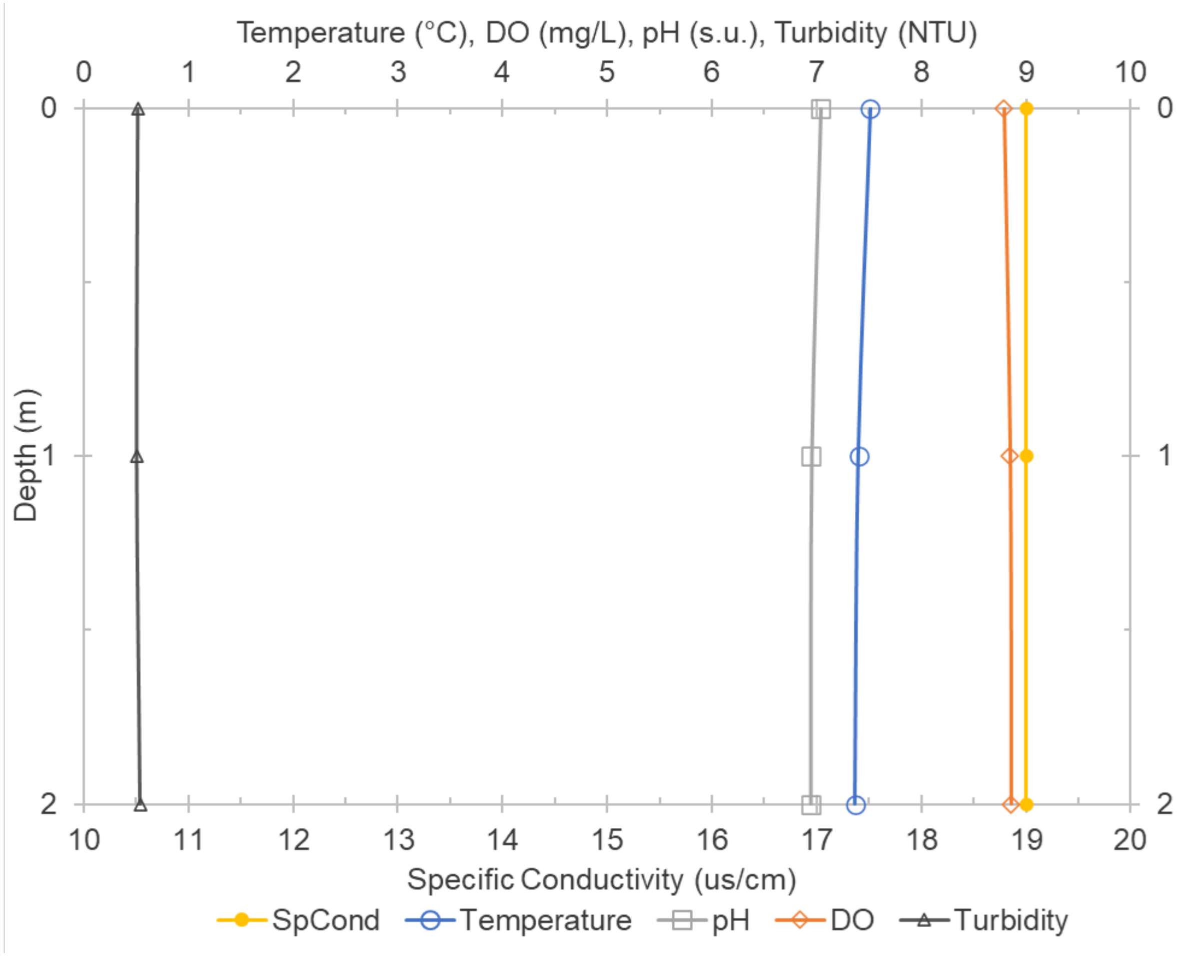
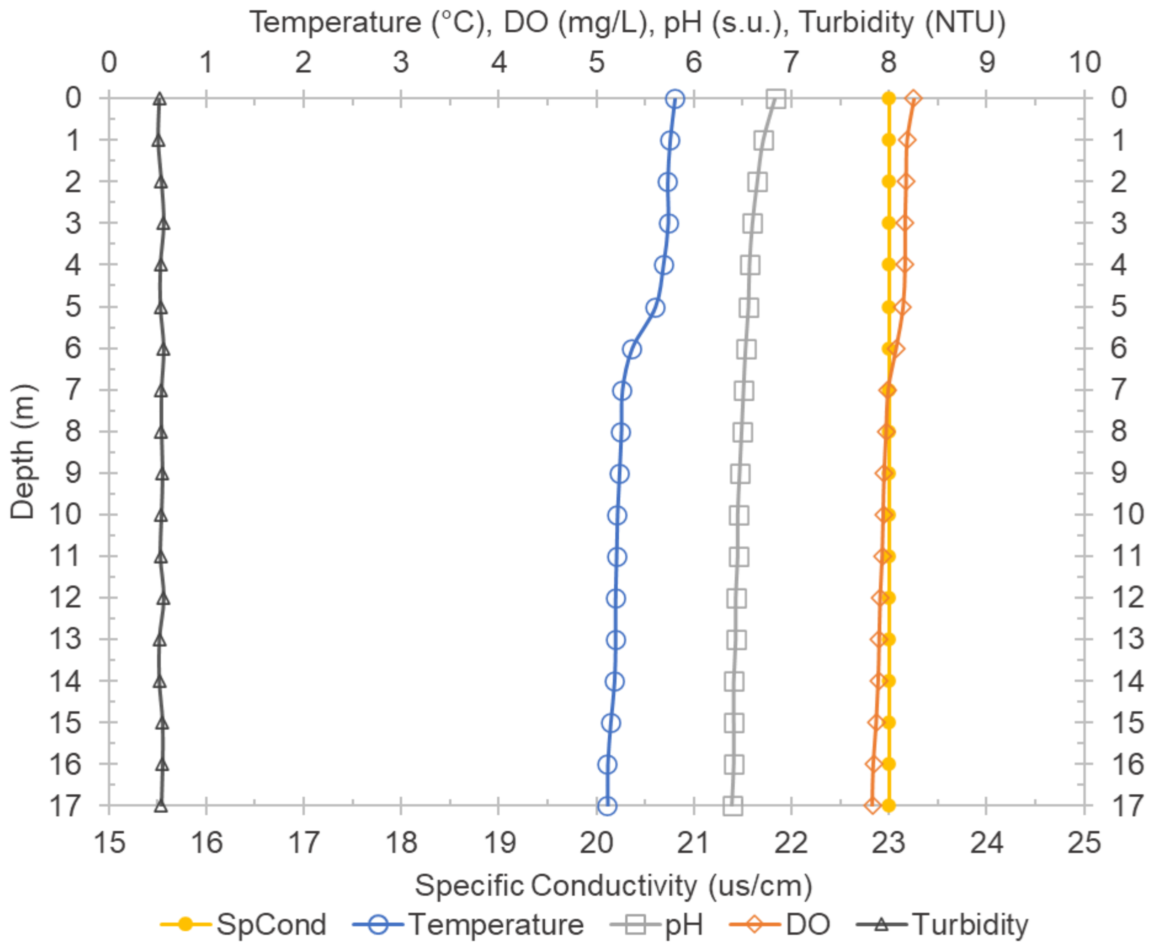
Stream and Reservoir Water Quality (WQ-1)

Ellery Lake – *In Situ* Spring 2022



Stream and Reservoir Water Quality (WQ-1)

Tioga Lake – *In Situ* Spring 2022



Stream and Reservoir Water Quality (WQ-1)

Lee Vining Creek – *In Situ* Spring 2022

Upstream

Downstream

Description	Water Temperature (°C)	DO (mg/L)	Specific Conductance (µS/cm)	pH (s.u.)	Turbidity (NTU)
Lee Vining Creek					
Inflow to Saddlebag Lake	5.9	9.0	9	6.9	0.8
Between Saddlebag Dam and its confluence with Slate Creek	4.1	9.0	23	6.8	0.7
Between its confluence with Slate Creek and Glacier Creek	2.5	9.8	18	6.7	0.4
Between its confluence with Glacier Creek and Ellery Lake	1.9	10.0	20	6.8	0.4
Inflow to Ellery Lake	2.1	9.9	21	7.0	0.3
Immediately downstream of Poole Powerhouse	5.5	9.0	29	7.0	0.3
Upstream of the LADWP Diversion	4.8	9.9	35	7.3	0.7

Stream and Reservoir Water Quality (WQ-1)

Glacier Creek – *In Situ* Spring 2022

Upstream

Downstream

Description	Water Temperature (°C)	DO (mg/L)	Specific Conductance (µS/cm)	pH (s.u.)	Turbidity (NTU)
Glacier Creek					
Inflow to Tioga Lake	7.6	8.7	29	7.2	0.2
Downstream of Tioga Dam	6.0	8.4	23	6.8	0.5

Stream and Reservoir Water Quality (WQ-1)

Lee Vining Creek Watershed– Analytical Spring 2022

Upstream

Downstream

Description	Basic Water Quality		Nutrients				
	TDS (mg/L)	TSS (mg/L)	NO_3-NO_2 as N (mg/L)	NH_4 as N (mg/L)	TKN (mg/L)	TP (mg/L)	PO_4 (mg/L)
Lee Vining Cr. inflow to Saddlebag Lake	9[J]	<2	0.120 [J]	<0.025	0.065 [J]	<0.023	<0.0051 [HT-1]
Saddlebag Lake	21	<2	0.063 [J]	<0.025	0.048 [J]	<0.023	<0.0051 [HT-1]
Lee Vining Cr. between Saddlebag Dam and its confluence with Slate Creek	15	<2	0.075 [J]	0.036 [J]	0.057 [J]	<0.023	0.026 [A-COM, J]
Lee Vining Creek between its confluence with Slate Creek and Glacier Creek	12	<2	0.077 [J]	0.038 [J]	0.084 [J]	<0.023	0.043 [A-COM, J]
Lee Vining Creek between its confluence with Glacier Creek and Ellery Lake	10	<2	0.076 [J]	<0.025	0.081 [J]	<0.023	0.039 [A-COM, J]
Lee Vining Creek inflow to Ellery Lake	15	<2	0.074 [J]	0.026 [J]	0.077 [J]	<0.023	0.006 [A-COM, J]
Ellery Lake	12	<2	0.062 [J]	<0.025	0.072 [J]	<0.023	<0.0051
Lee Vining Creek immediately downstream of Poole Powerhouse	21	<2	0.065 [J]	<0.025	0.060 [J]	<0.023	0.018 [A-COM, J]
Lee Vining Creek upstream of the LADWP Diversion	23	<2	0.079 [J]	<0.025	0.100 [J]	<0.023	<0.0051 [A-COM]
Detection Limit (DL)	5	2	0.055	0.025	0.04	0.023	0.0051
Reporting Limit (RL)	10	5	0.4	0.1	0.2	0.05	0.15

Stream and Reservoir Water Quality (WQ-1)

Glacier Creek Watershed– Analytical Spring 2022

Upstream

Downstream

Description	Basic Water Quality		Nutrients				
	TDS (mg/L)	TSS (mg/L)	NO_3-NO_2 as N (mg/L)	NH_4 as N (mg/L)	TKN (mg/L)	TP (mg/L)	PO_4 (mg/L)
Glacier Creek Watershed							
Glacier Creek inflow to Tioga Lake	23	<2.0	0.110 [J]	0.031 [J]	0.110 [J]	<0.023	0.014 [J]
Tioga Lake	17	<2.0	0.087 [J]	0.066 [J]	0.150 [J]	<0.023	0.026 [J]
Glacier Creek downstream of Tioga Dam	22	<2.0	0.082 [J]	0.054 [J]	0.170 [J]	<0.023	0.018 [J]
Detection Limit (DL)	5	2	0.055	0.025	0.04	0.023	0.0051
Reporting Limit (RL)	10	5	0.4	0.1	0.2	0.05	0.15

Stream and Reservoir Water Quality (WQ-1)

Next Steps

- Data analysis and summary of
  - reservoir and stream *in situ*, basic water chemistry, and nutrient data
  - bacterial data
  - fish tissue mercury analysis
  - turbidity downstream of Poole Powerhouse
  - comparison to Lahontan Region Water Quality Control Board Basin Plan water quality objectives
- 2022 results will be summarized in a Technical Report and provided to stakeholders in spring of 2023

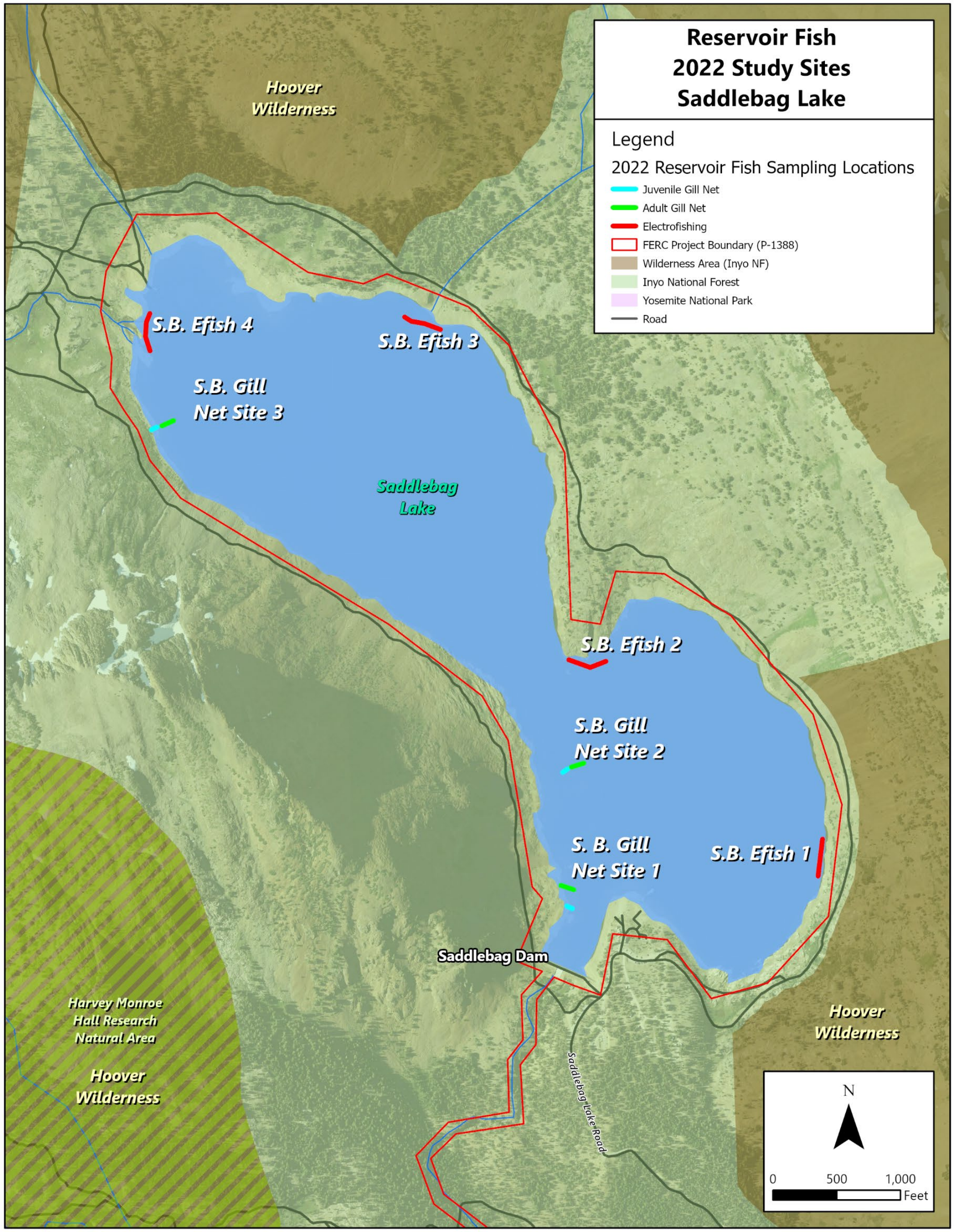
Stream and Reservoir Water Quality (WQ-1)

Study Component	**2022**	**2023**
Stream and reservoir *in situ*, basic water chemistry, and nutrient water quality sampling	✓	Yes
Bacterial sampling	✓	No
Turbidity monitoring downstream of Poole Powerhouse	✓ (summer–winter)	Yes (winter–fall)
Fish tissue mercury sampling	✓	No

Questions?

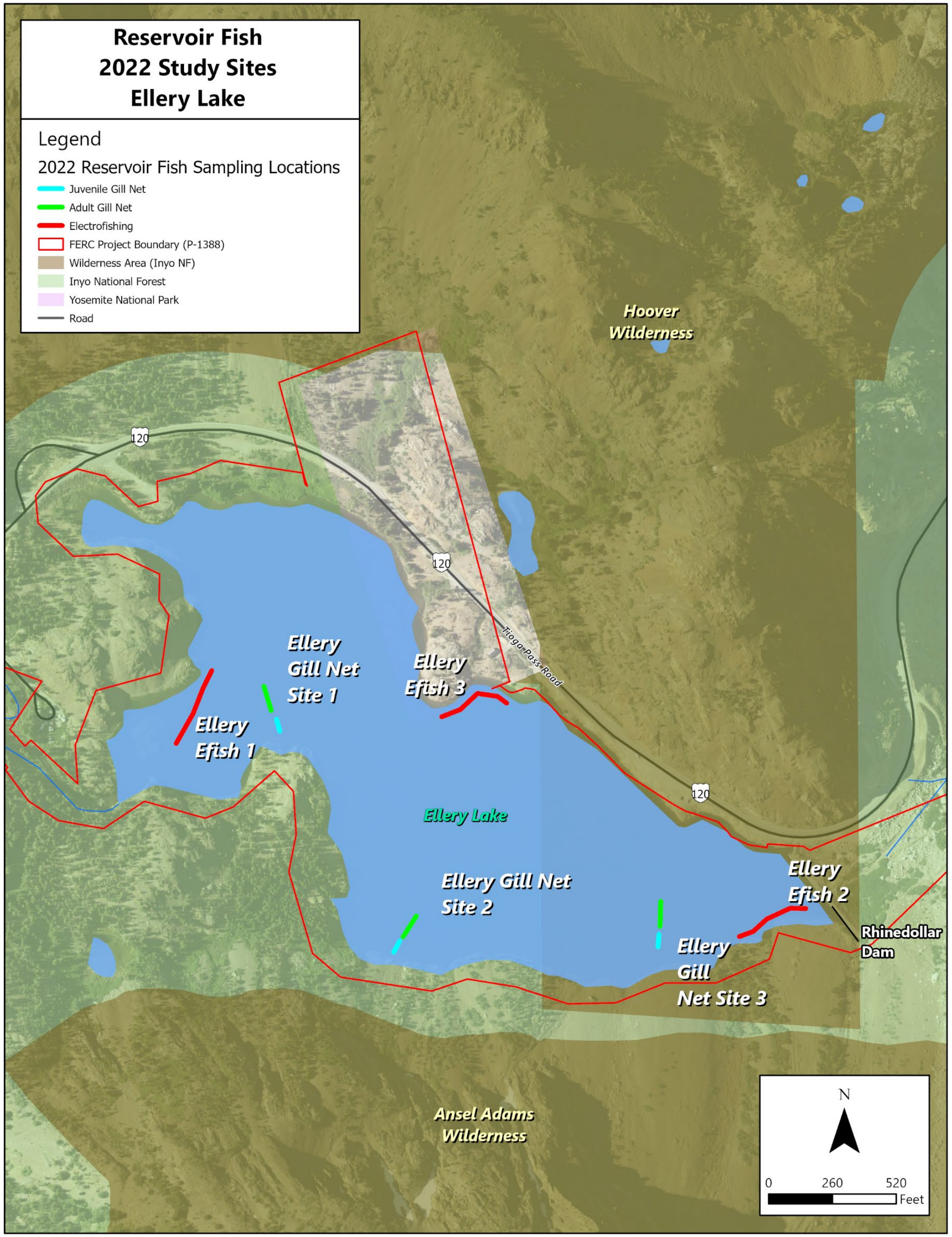
Reservoir Fish Populations (AQ-1)

Reservoir Fish 2022 Study Sites—Saddlebag Lake



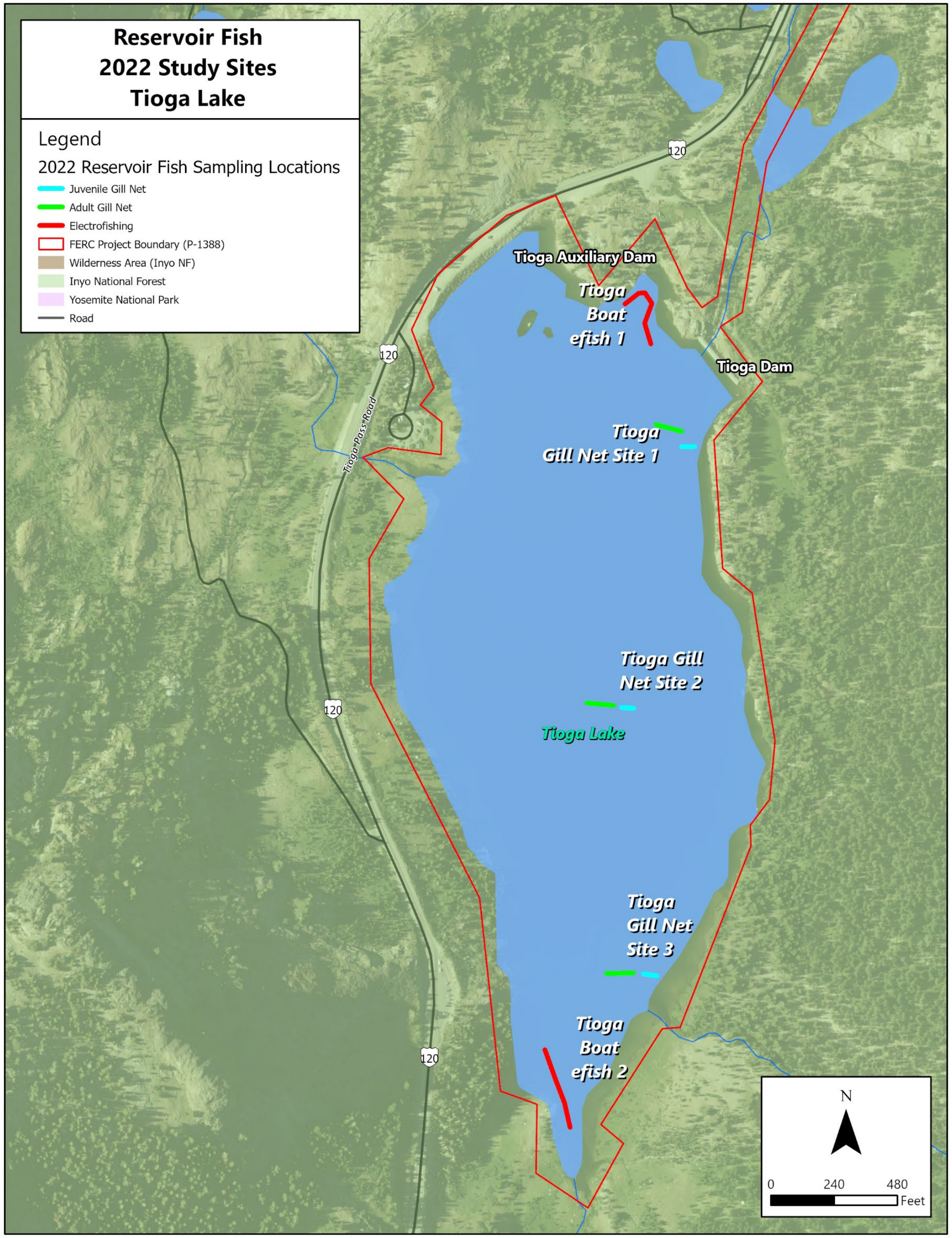
Reservoir Fish Populations (AQ-1)

Reservoir Fish 2022 Study Sites—Ellery Lake



Reservoir Fish Populations (AQ-1)

Reservoir Fish 2022 Study Sites—Tioga Lake



Reservoir Fish Populations (AQ-1)

Study Goals/Objectives

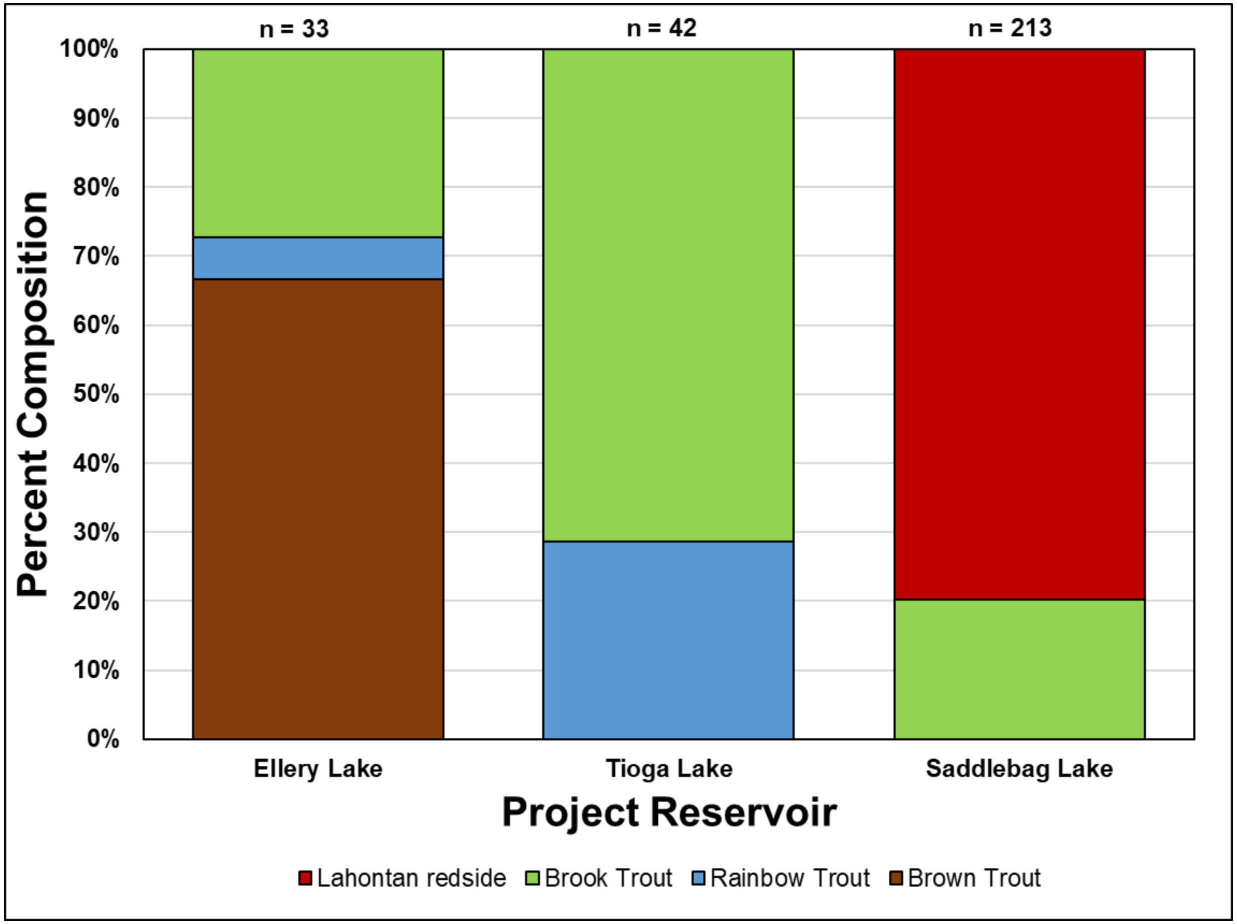
- Assess fish populations within Project reservoirs
- Capture fish for mercury bioaccumulation analyses under Study WQ-1

Modifications to Methods

- Decreased gill net soak times during the night sampling period from approximately 8 hours to approximately 4 hours at Tioga Lake (for all gill net locations) and at Saddlebag Lake (at two gill net locations)

Reservoir Fish Populations (AQ-1)

Preliminary Data Summary – Species Composition



Lahontan redside

Brook trout

Brown trout

Reservoir Fish Populations (AQ-1)

Next Steps

- Surveys were completed in 2022, no additional surveys are planned
- Analysis of sampling data is ongoing and includes age-class evaluations from scale samples and catch-per-unit-effort analyses
- Study results will be summarized in a Technical Report and provided to stakeholders in spring of 2023

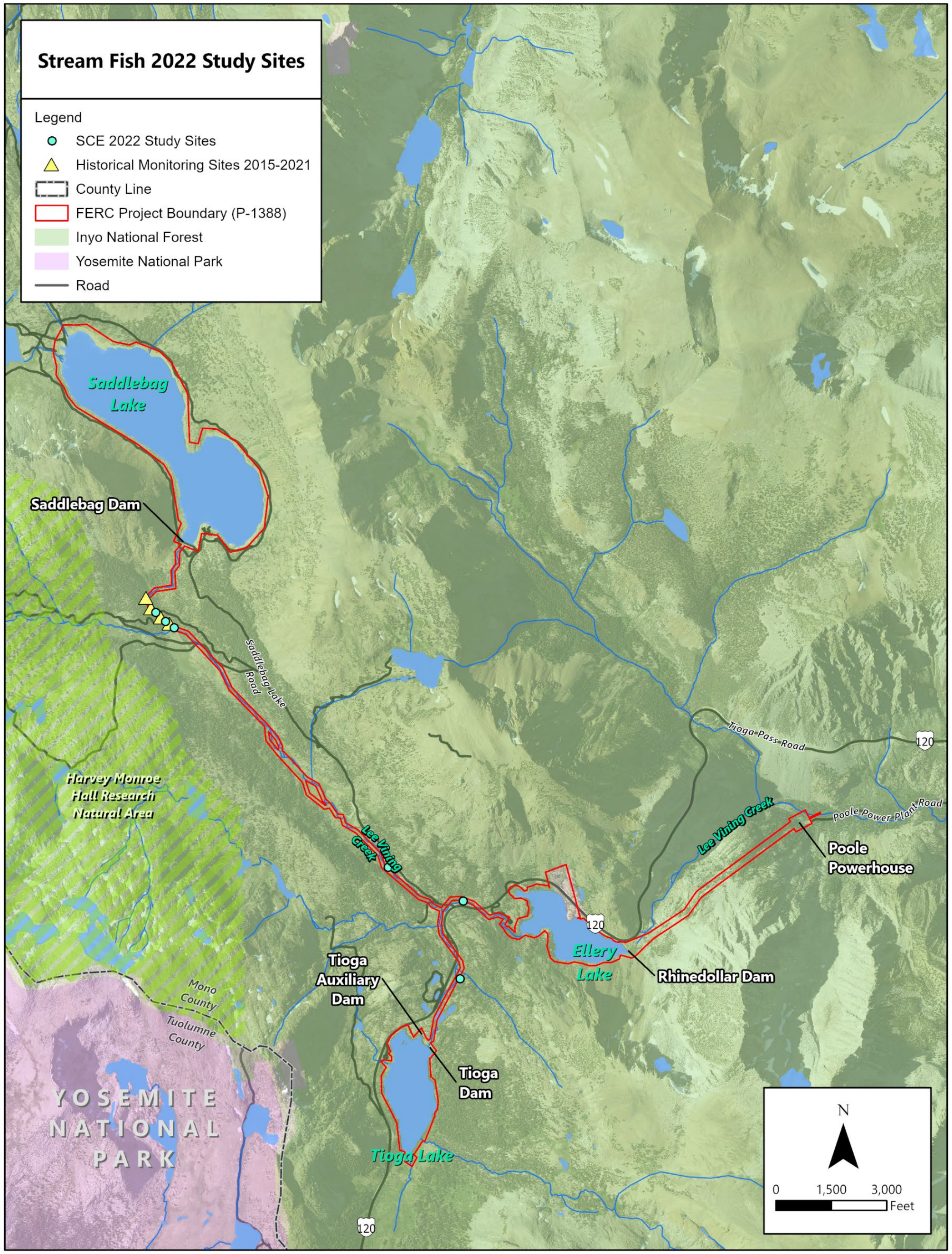
Nighttime Boat Electrofishing at Ellery Lake

Gillnetting at Ellery Lake


Questions?

Stream Fish Populations (AQ-2)

Study Area Map



Stream Fish Populations (AQ-2)

Study Goals/Objectives

- Assess fish populations in Project-affected stream reaches downstream of Project reservoirs

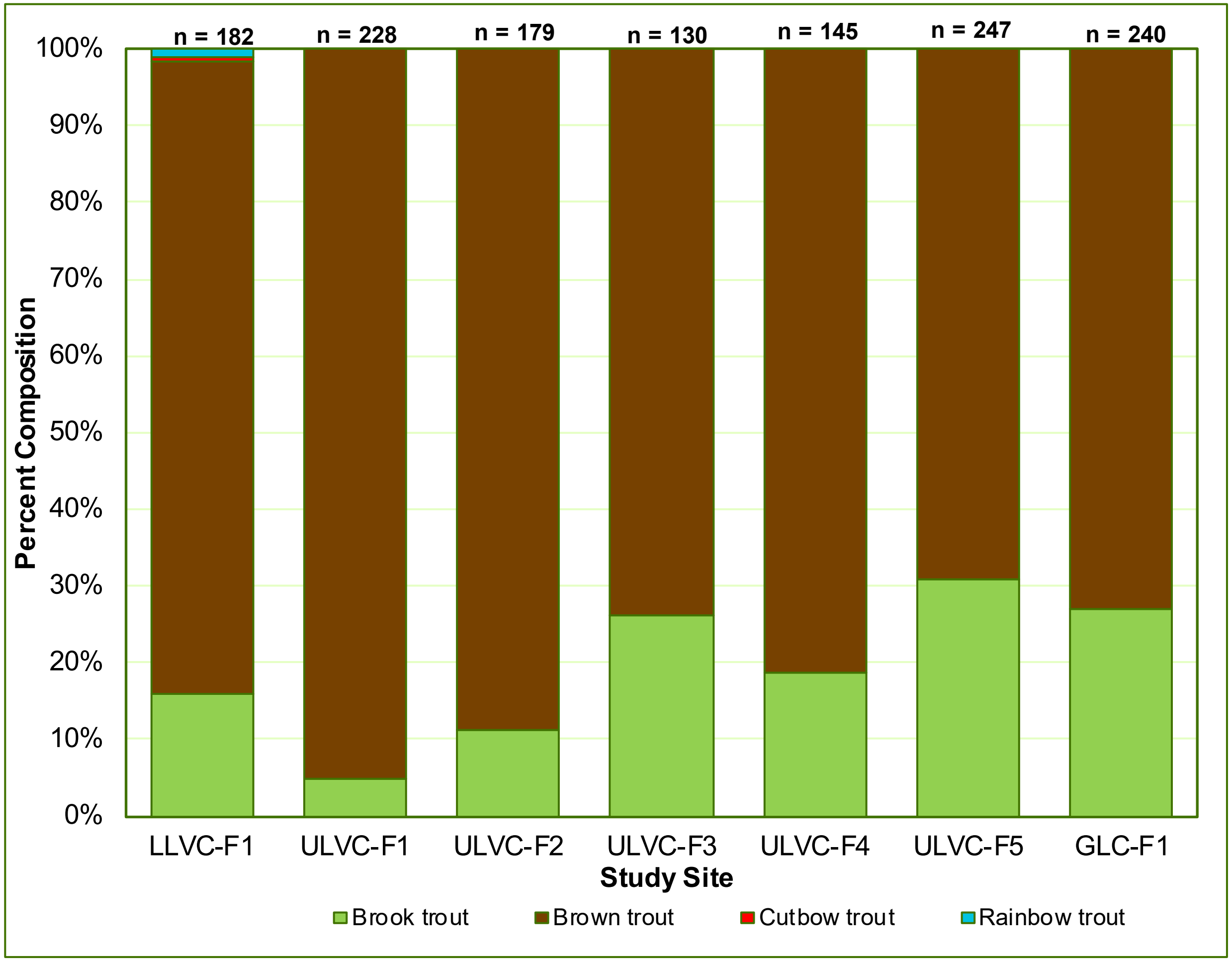
Modifications to Methods

- None

Glacier Creek (Site GLC-F1)

Stream Fish Populations (AQ-2)

Preliminary Data Summary – Species Composition



Brook trout

Brown trout

Rainbow trout

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Stream Fish Populations (AQ-2)

Preliminary Data Summary – Spawning

Reach Description	Study Site	Sample Date	Number of Milting Fish	Species
Lee Vining Creek downstream of Poole Powerhouse	LLVC-F1	9/19/2022	none	--
Lee Vining Creek downstream of Saddlebag Lake	ULVC-F1	9/20/2022	1	brown trout
	ULVC-F2	9/22/2022	2	brown trout
	ULVC-F3	9/16/2022	none	--
	ULVC-F4	9/17/2022	none	--
	ULVC-F5	9/18/2022	2	brown trout
	ULVC-F5	9/18/2022	1	brook trout
Glacier Creek downstream of Tioga Lake	GLC-F1	9/21/2022	1	brown trout
	GLC-F1	9/21/2022	4	brook trout

Stream Fish Populations (AQ-2)

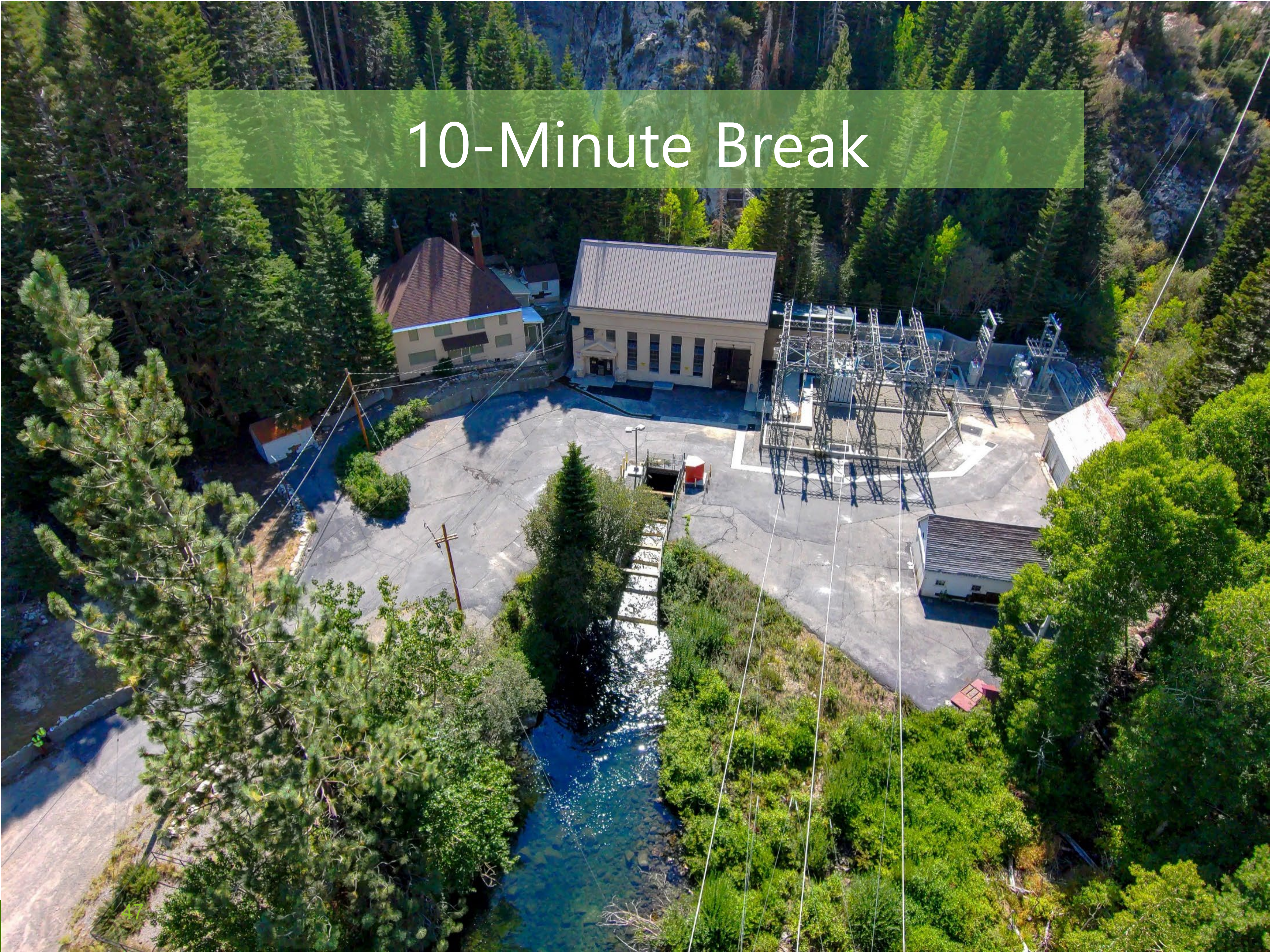
Next Steps

- Surveys were completed in 2022, no additional surveys are planned
- Analysis of sampling data is ongoing
- Completed results will be summarized in a Technical Report and provided to stakeholders in spring of 2023
- Results will be summarized by site for:
  - Density and biomass estimates
  - Fish age class
  - Fish condition
  - Habitat conditions

Lee Vining Creek upstream of Glacier Creek (Site ULVC-F2)

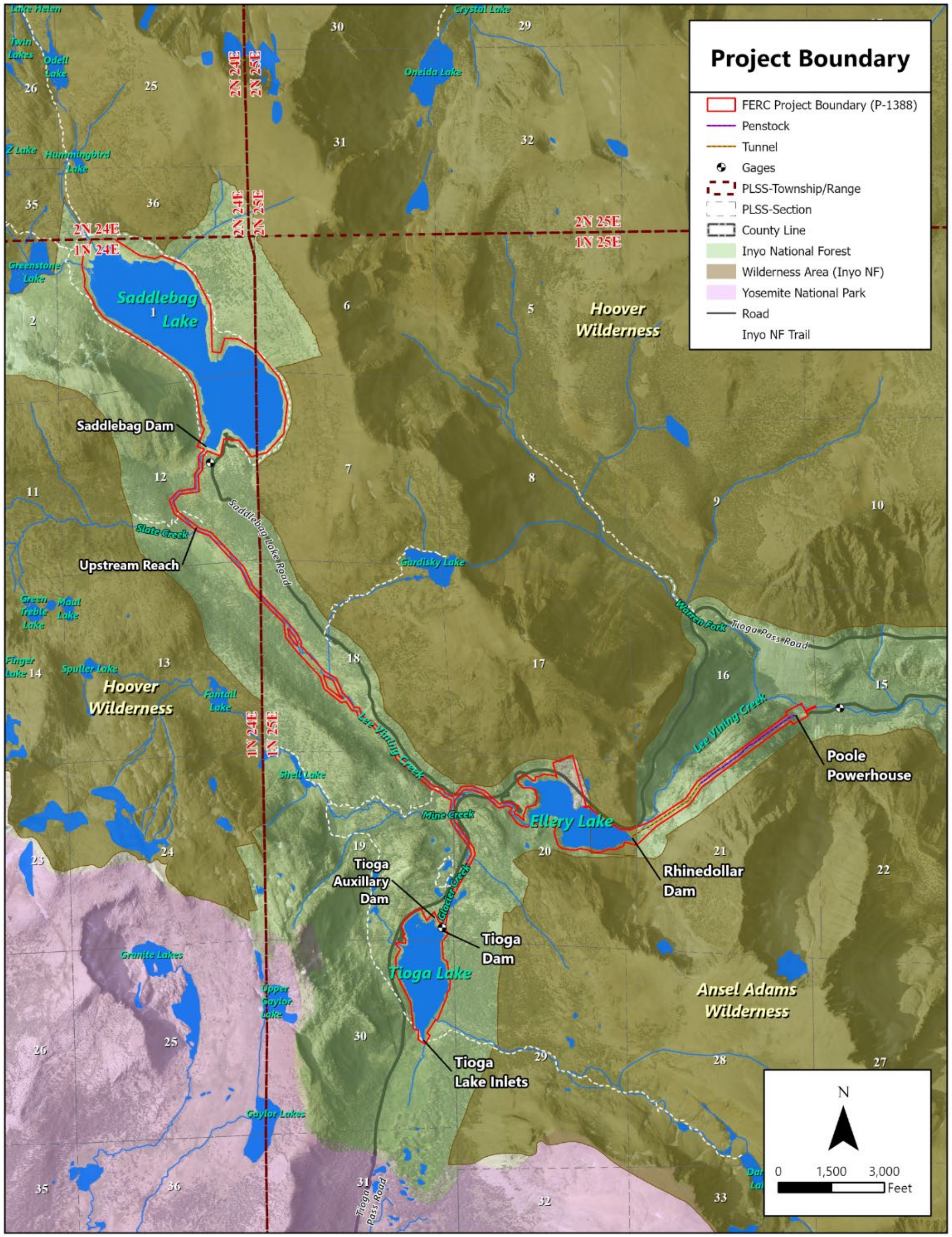
Questions?

10-Minute Break



Operations Model (AQ-5)

Study Area Map



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Operations Model (AQ-5)

Goals/Objectives for Operations Model

- Develop a robust Operations Model (Model) to assist SCE and stakeholders in understanding how Project operations interact with Lee Vining hydrology
- Accurately model the systems inflows, outflows, and operational constraints
- Align model with needs of other relicensing studies and information needs
- Develop procedures to configure model for alternative operational scenarios and document results
- Determine effective operating limits the Poole Powerhouse to accurately represent installed and dependable capacity for licensing documents

Modifications to Methods

- None

Operations Model (AQ-5)

2022 Progress

- Data analysis
  - U.S. Geologic Survey gage records (streamflow, reservoir storage)
  - Snow course
  - 15-minute flow data at Poole Powerhouse
  - Warren Fork flows considered
- Daily operations model
  - Excel platform
  - Daily inflows estimated from hydrologic records
    - Synthesized where necessary
  - Hydraulic constraints: reservoir storage curves, spillway elevations, penstock/turbine capacities
  - Prioritization/allocation:
    - Wet/normal/dry year categorization
    - Minimum flow requirements
    - Reservoir limits/targets

Operations Model (AQ-5)

Goals/Objectives for Resource Optimization Model

- Determine the frequency, magnitude, duration, and seasonality of intraday releases from the Poole Powerhouse in response to resource optimization
- Describe the stage/discharge relationship at discreet locations between the Poole Powerhouse and the Los Angeles Department of Water and Power (LADWP) diversion

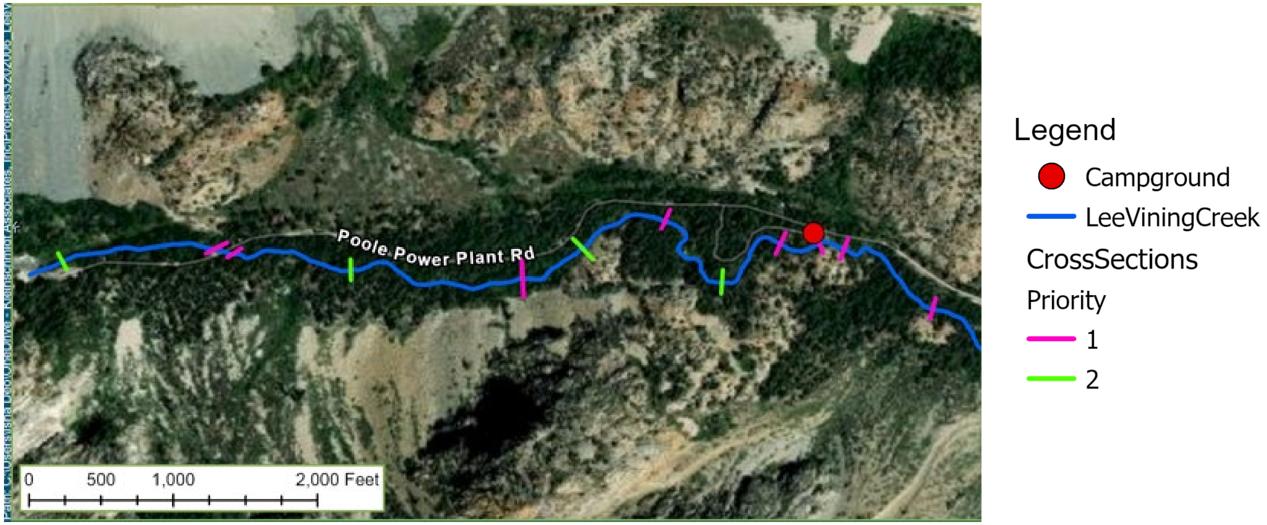
Modifications to Methods

- None

Operations Model (AQ-5)

2022 Progress

- Operations Model Data analysis
  - Flow data from Poole Powerhouse, LADWP gage
  - Generation data from Entergy
- Resource Optimization Model analysis
  - Data sources: intra-day flow and target capacity data
  - Identify flow patterns (flood-related peaks from resource optimization peaks)
- Stage/discharge relationship
  - Data procurement in progress to develop hydraulic model
  - Considering potential effects of operations on downstream areas, including campgrounds



Operations Model (AQ-5)

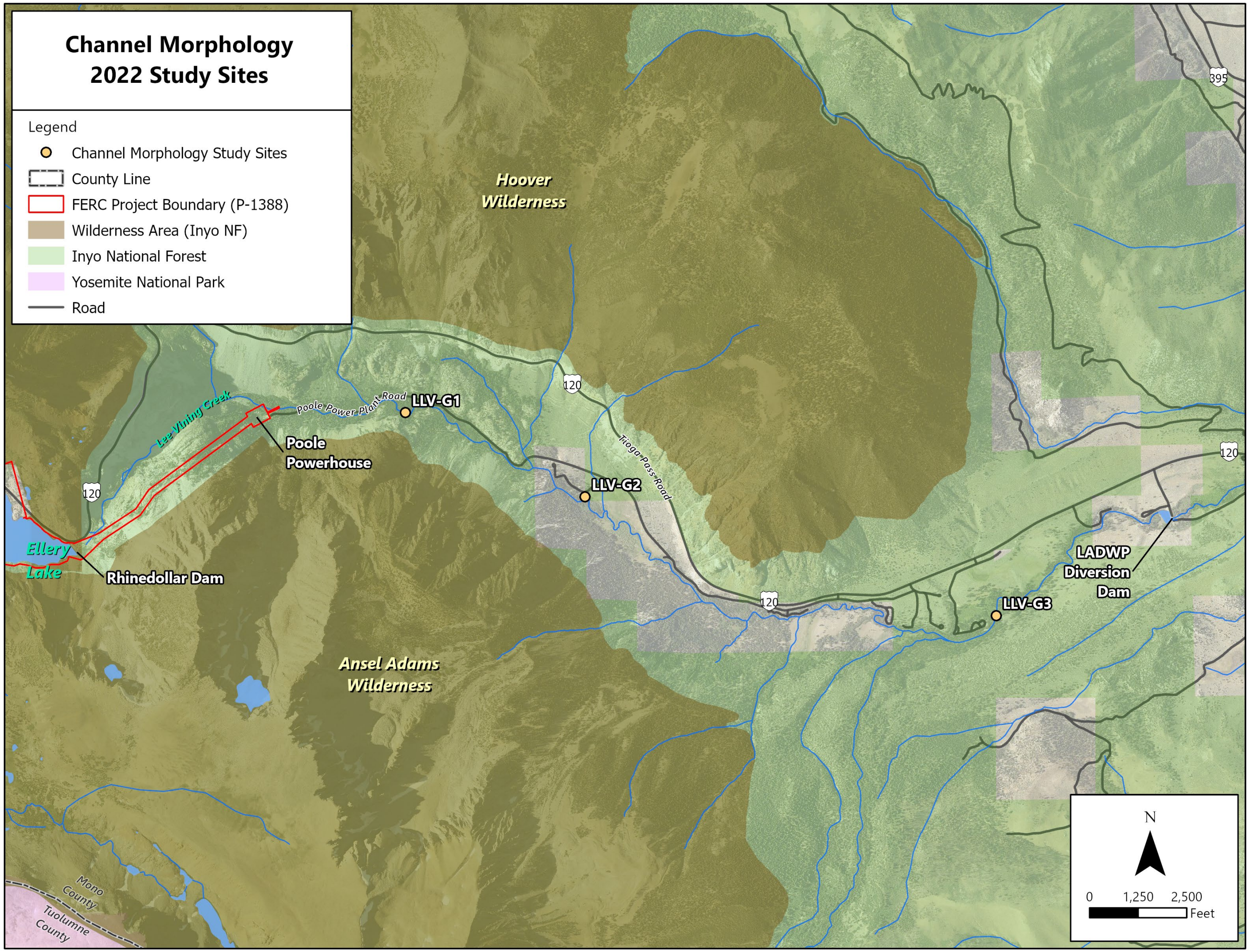
Next Steps

- Construct the model logic and calibrate to hydrologic data records
- Receive quality-controlled data from field surveys
- Determine how model and study data are used to evaluate agency goals (desired outcome)
- Distribute model for review and comment once complete; fall 2023

Questions?

Lower Lee Vining Creek Channel Morphology (AQ-6)

Study Area Map



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Lower Lee Vining Creek Channel Morphology (AQ-6)

Study Goals

- Evaluate impacts of altering sediment supply in Lower Lee Vining Creek
- Support development of Protection, Mitigation, and Enhancement

Specific Objectives

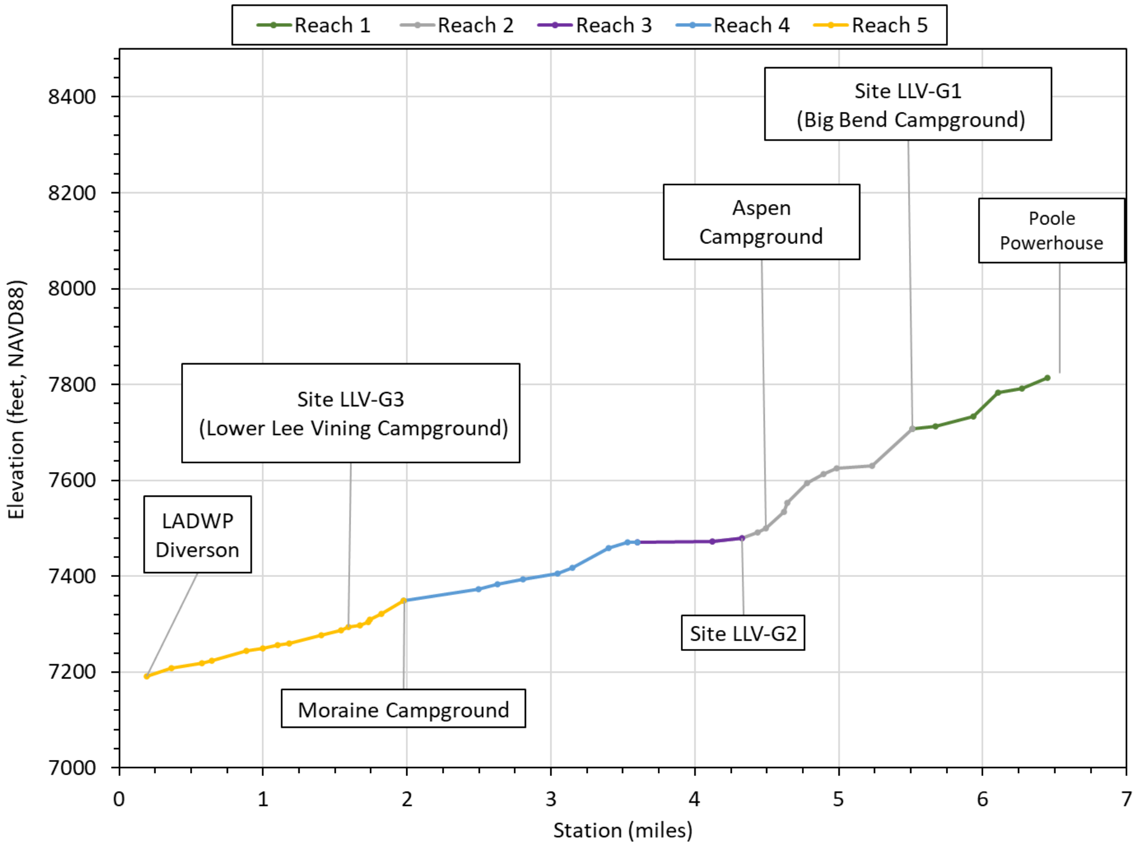
- Classify transport and response reaches
- Characterize channel morphology, fluvial processes, and sediment regime

Modifications to Methods

- None

Lower Lee Vining Creek Channel Morphology (AQ-6)

Preliminary Data Summary



Reach	Length (ft)	Gradient (%)
Reach 1 – Poole Powerhouse to Big Bend Campground	4020	2.1
Reach 2 - Big Bend Campground to Aspen Meadow	6230	3.7
Reach 3 - Aspen Meadow	3840	0.2
Reach 4 – Below Aspen Meadow to LLVCG	8570	1.4
Reach 5 - LLVCG to LADWP	9450	1.7

Lower Lee Vining Creek Channel Morphology (AQ-6)

Preliminary Data Summary – Site LLV-G1

Summary of Data Collected
4 cross sections
3 bulk sediment samples
64 tracer rocks deployed
Longitudinal profile
Sediment facies map

Lower Lee Vining Creek Channel Morphology (AQ-6)

Preliminary Data Summary – Site LLV-G2

Summary of Data Collected
4 cross sections
3 bulk sediment samples
69 tracer rocks deployed
1 pebble count
Longitudinal profile
Sediment facies map

Lower Lee Vining Creek Channel Morphology (AQ-6)

Preliminary Data Summary – Site LLV-G3

Summary of Data Collected
3 cross sections
3 bulk sediment samples
67 tracer rocks deployed
1 pebble count
Longitudinal profile
Sediment facies map

Lower Lee Vining Creek Channel Morphology (AQ-6)

Next Steps

- Data synthesis and analysis (sediment particle size analysis, sediment transport calcs, geomorphic assessment)
- Tracer rocks will be recovered from lower Lee Vining Creek after peak flows occur in 2023
- Study results will be summarized in a Technical Report for stakeholder review in 2024


Questions?

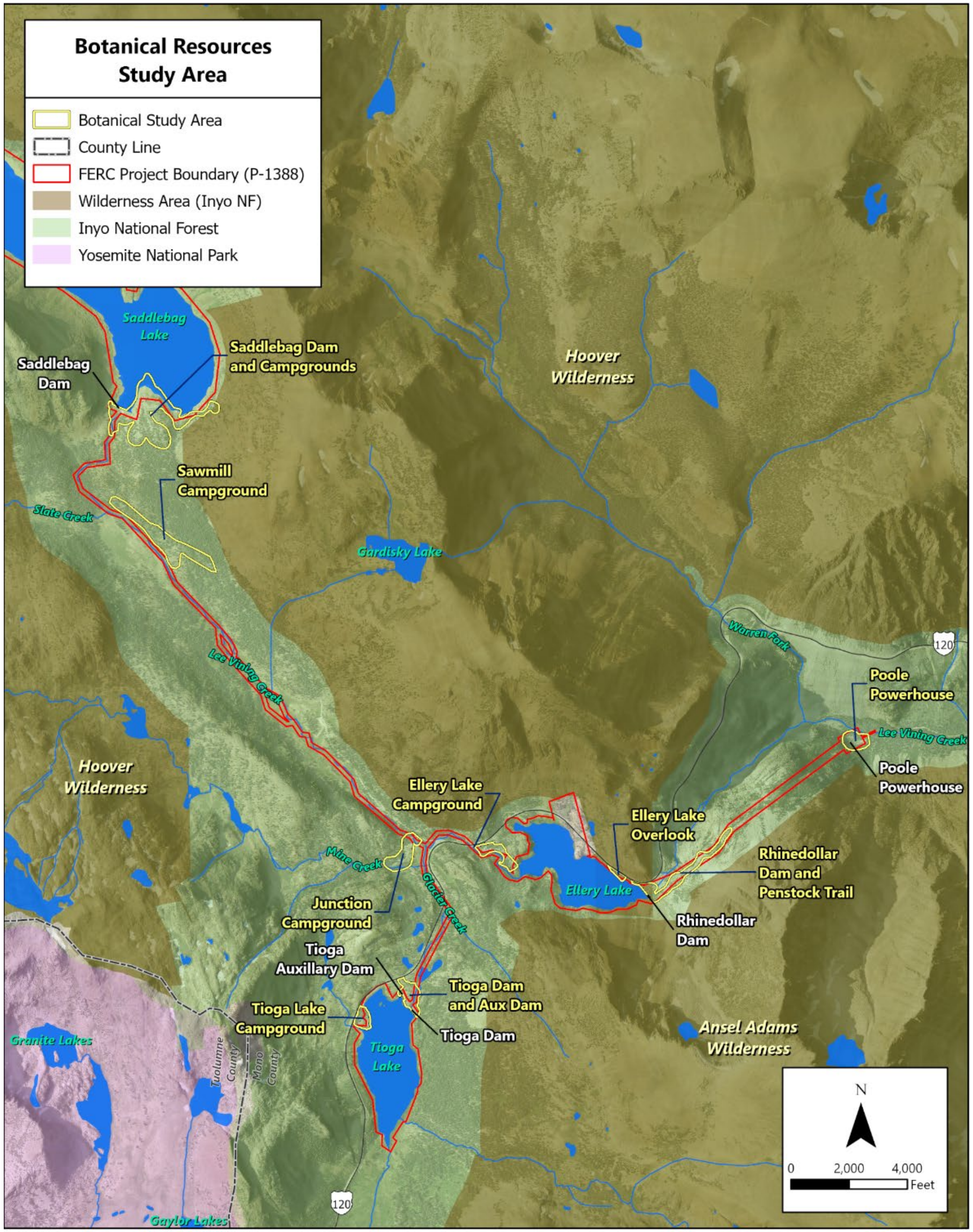
Terrestrial, Botanical, Wetlands, and RTE Species Surveys

1. Botanical Resources (TERR-1)
2. Wildlife Resources (TERR-2)

Botanical Resources (TERR-1)

Study Area Map for

- Special-status Plants
- Invasive Plant Species
- Vegetation Map



Botanical Resources (TERR-1)

Goals/Objectives

- Ground-truth existing U.S. Forest Service vegetation map (USFS 2019), including identification of any sensitive natural communities
- Document the presence of species listed by the federal and/or state Endangered Species Acts or proposed for listing, e.g., whitebark pine (*Pinus albicaulis*)
- Document the presence of other special-status plants
- Document non-native, invasive plants
- Incorporate results of the riparian monitoring study undertaken as part of the existing license
- Perform a focused study of selected riparian habitat areas using NDVI

Botanical Resources (TERR-1)

Modifications to Methods

- Study sites for NDVI analysis were increased from 2 to 8
- Some study areas were extended beyond the 100-foot buffer
- Some study areas were decreased within the 100-foot buffer
- In place of reference population checks, two rounds of surveys were performed in 2022 to ensure coverage of the blooming periods for all species

Botanical Resources (TERR-1)

Preliminary Data

- Federally Listed plant species
  - Whitebark pine
- Special-status plant species
  - Mountain bent grass
  - Black cottonwood
- Invasive plant species
  - Cheat grass
- NDVI analysis

Botanical Resources (TERR-1)

Preliminary Data – Special-status Plant Species

Species	Status	Number of Individuals	Locations Observed
Listed Under Federal Endangered Species Act			
Whitebark Pine	Federally Threatened	1,004	Rhinedollar Dam and Penstock Trail, Saddlebag Dam and Campgrounds, Ellery Lake Campground, Sawmill Campground, Tioga Dam and Auxiliary Dam, and Tioga Lake Campground
Other Special-status Species			
Mountain Bent Grass	CRPR 2B.3	854	Saddlebag Dam and Campgrounds
Black Cottonwood	Local Concern (Agency Request)	9	Poole Powerhouse

Botanical Resources (TERR-1)

Preliminary Data – Invasive Plant Species

Species	Number of Individuals	Locations Observed
Cheat Grass	130	Poole Powerhouse and Ellery Lake Campground

Botanical Resources (TERR-1)

Study Area Map for Normalized Difference Vegetation Index (NDVI) Analysis

Study Sites

- Control
- Test

Botanical Resources (TERR-1)

Example of NDVI Study Site – Lower Lee Vining

Sampling Plots
(10 square meters)

Willow Riparian Scrub

Wet Meadow

Botanical Resources (TERR-1)

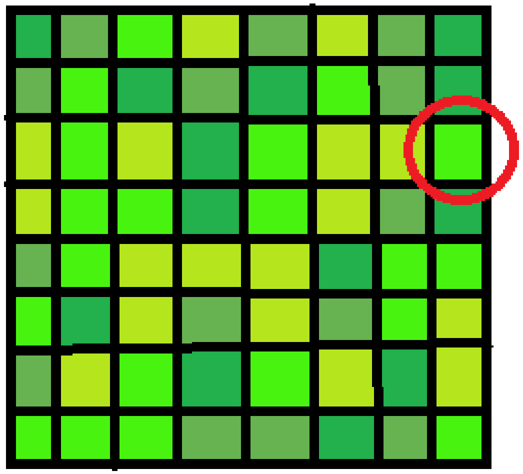
Preliminary Data – NDVI

Normalized Difference Vegetation Index (NDVI)

- Quantifies vegetation by measuring the difference between near-infrared (NIR), which vegetation strongly reflects, and red light (R), which vegetation absorbs
- Provides the "greenness" of vegetation, used as a proxy for vegetation health

$$NDVI = (NIR - R)/(NIR + R)$$

- Each willow riparian scrub or wet meadow study site had 10 sampling plots, each 10 square meters in size
- Used GIS to determine the NDVI value for each pixel within a sampling plot (aerial resolution was 12 cm in 2021 and 15 cm in 2016; e.g., Meadow Site 1 Above Saddlebag had approximately 96,476 pixels)
- Calculated mean NIR and R values for each sampling plot and used that to calculate the mean NDVI value for each sampling plot and study site

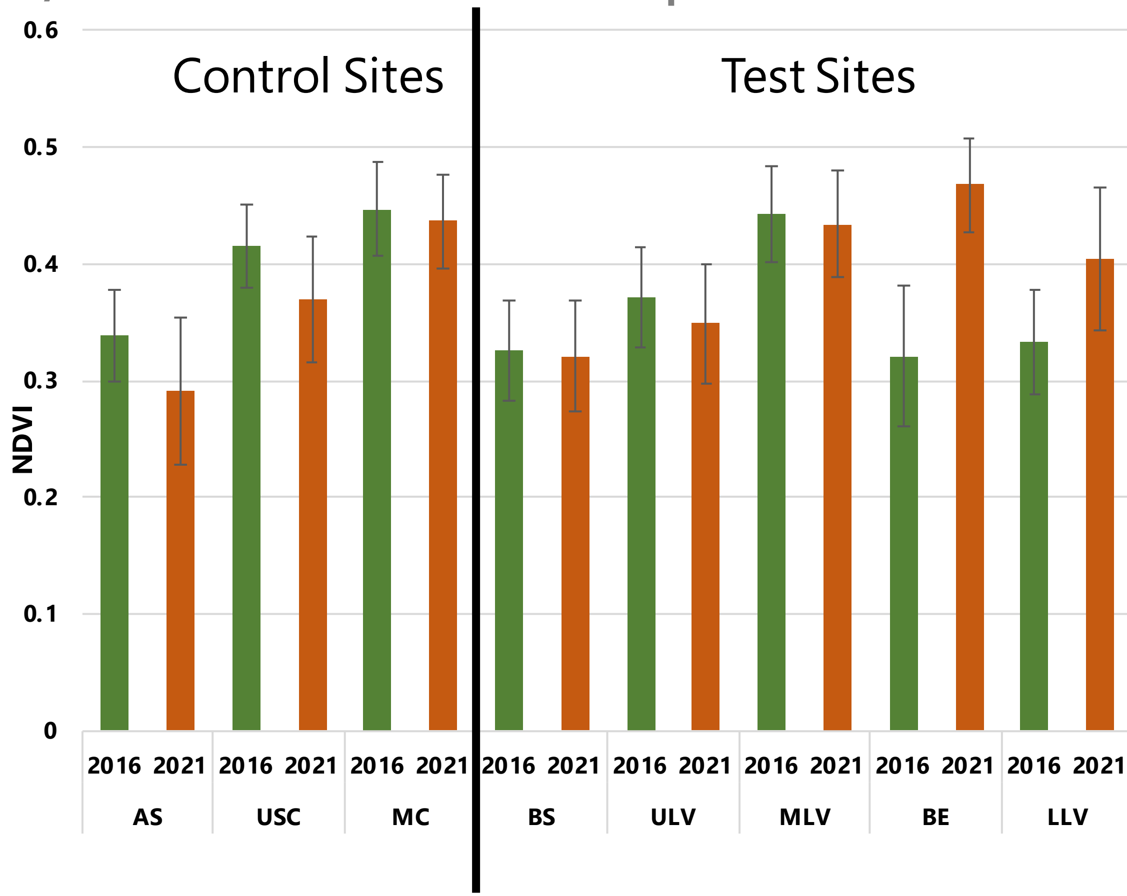


Botanical Resources (TERR-1)

Preliminary Data – NDVI Analysis

Control Sites	AS – Above Saddlebag
	USC – Upper Slate Creek
	MC – Mine Creek
Test Sites	BS – Below Saddlebag
	ULV – Upper Lee Vining
	MLV – Middle Lee Vining
	BE – Below Ellery
	LLV – Lower Lee Vining

Mean NDVI +/- Standard Deviation for Willow Riparian Scrub

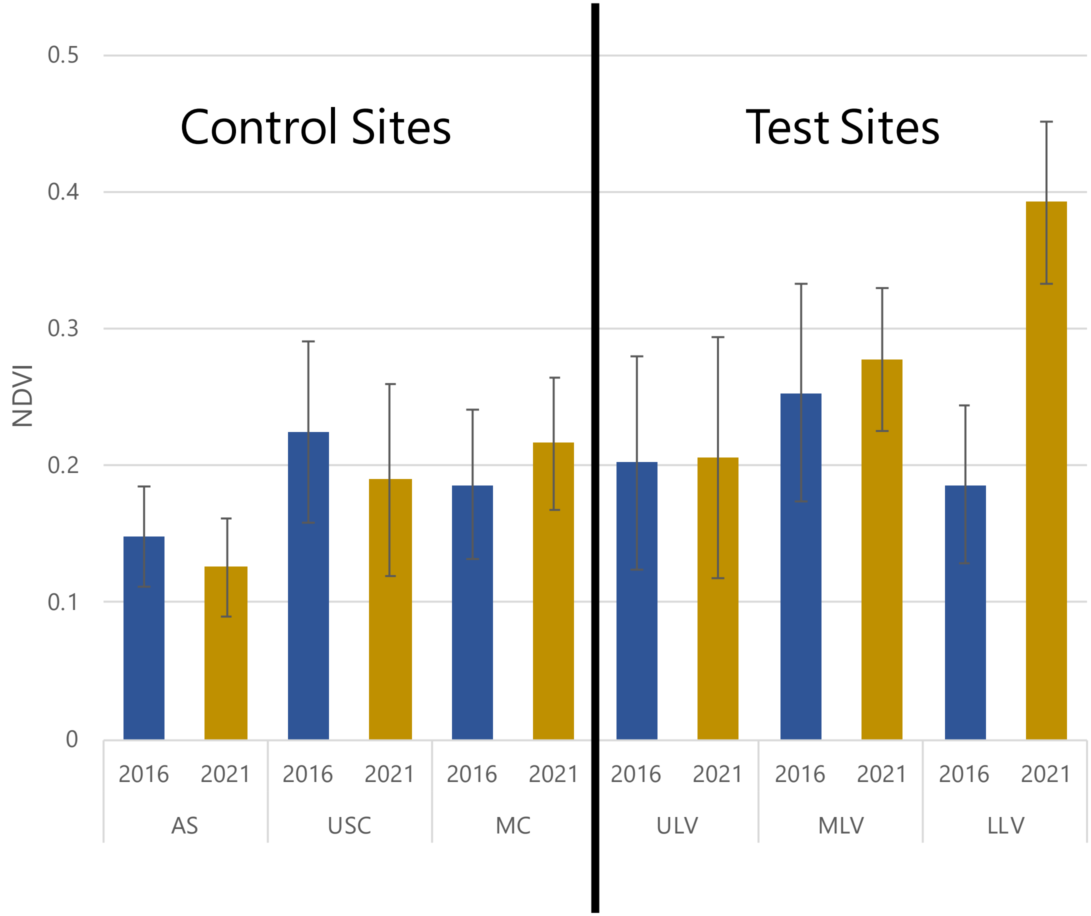


Botanical Resources (TERR-1)

Preliminary Data – NDVI Analysis

Mean NDVI +/- Standard Deviation for Wet Meadow Habitat

Control Sites	AS – Above Saddlebag
	USC – Upper Slate Creek
	MC – Mine Creek
Test Sites	ULV – Upper Lee Vining
	MLV – Middle Lee Vining
	LLV – Lower Lee Vining



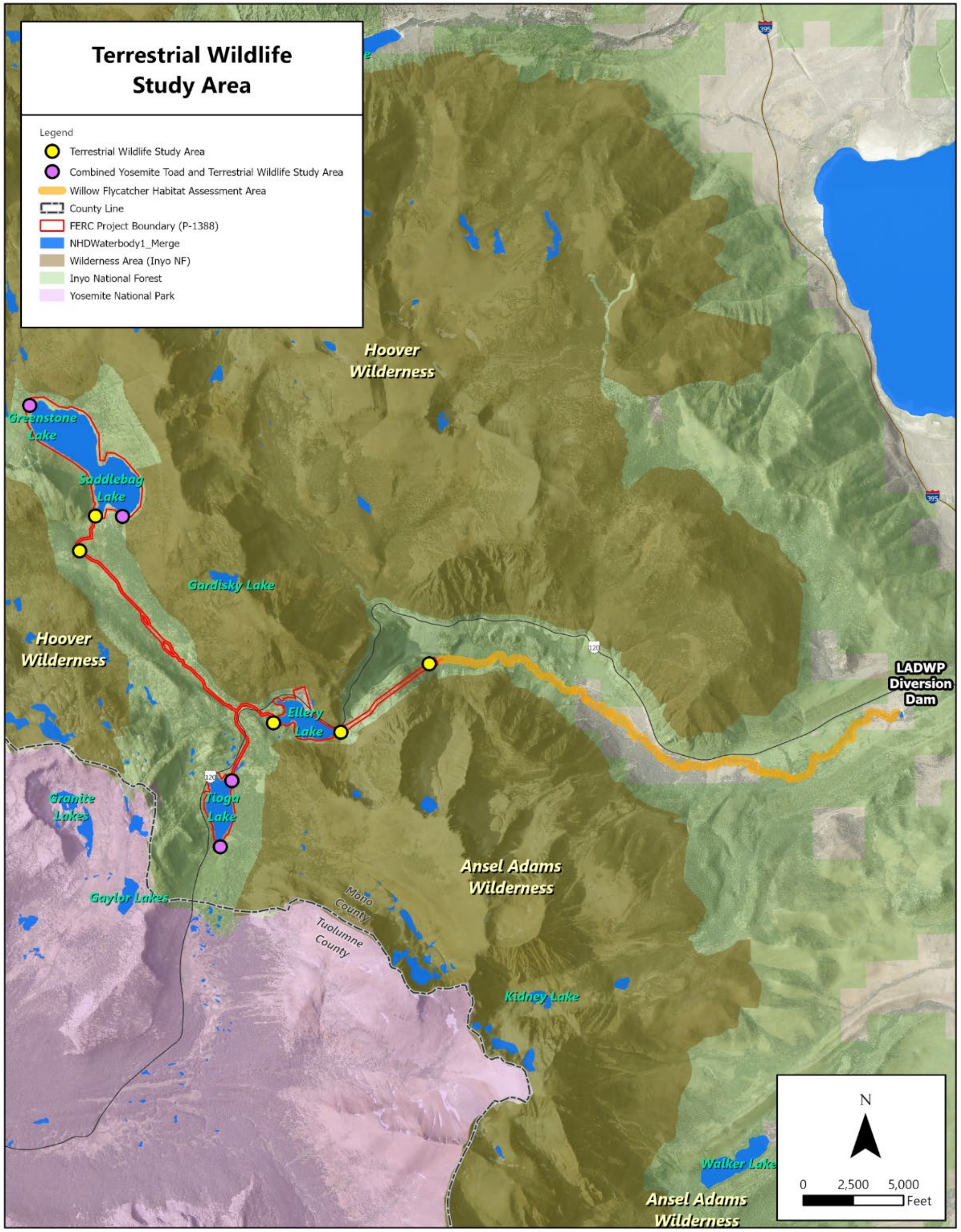
Botanical Resources (TERR-1)

Next Steps

- 2023 surveys to document any additional special-status plant and/or invasive species populations and to add new observations to the plant compendium

Wildlife Resources (TERR-2)

Terrestrial Wildlife Study Area Map



Wildlife Resources (TERR-2)

Goals/Objectives

- Build a compendium of wildlife species occurring within the Project areas
- Identify rare, threatened, and endangered riparian birds in the area during general wildlife surveys
- Determine persistence of known Yosemite toad (*Anaxyrus canorus*) populations within the Project Area and identify active breeding locations
- Determine interactions between dispersed recreational use and breeding habitat for Yosemite toad
- Develop sufficient data for informal and formal consultation needs for U.S. Fish and Wildlife Service with respect to the Yosemite toad
- Assess willow flycatcher (*Empidonax traillii*) nesting habitat downstream of the Project between Poole Powerhouse and the reservoir at the LADWP Diversion Dam

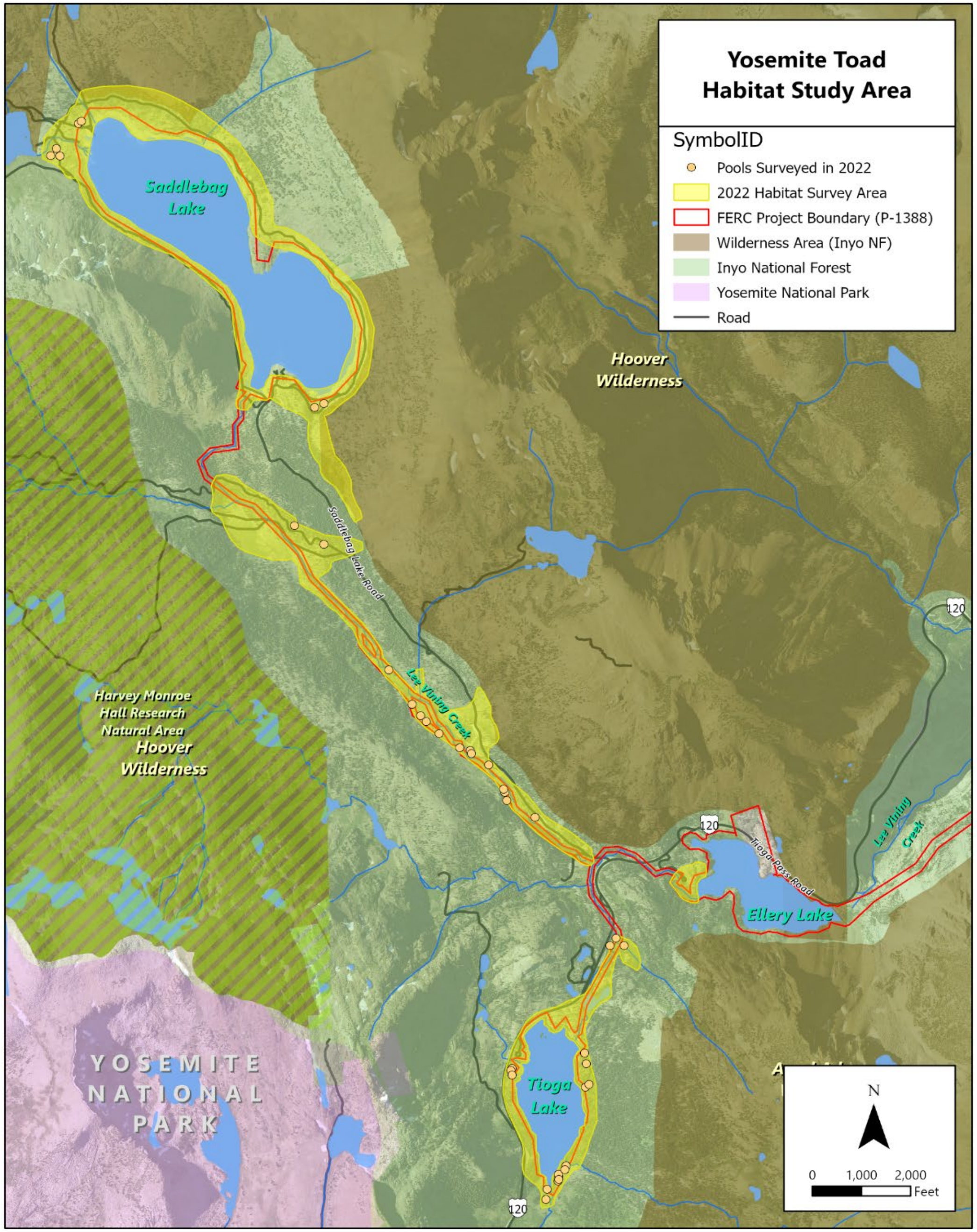
Wildlife Resources (TERR-2)

Modifications to Methods

- Expanded survey efforts for Yosemite toad and toad habitat were expanded in consultation with California Department of Fish and Wildlife (e.g., pools, meadows in upper floodplain of Lee Vining Creek, meadow south of Saddlebag Lake, and along Lee Vining Creek between reservoirs)
- Added an additional field visit (five visits were conducted instead of four)
- Deployment of the two cameras were limited to months where the cameras would not be buried in snow

Wildlife Resources (TERR-2)

Yosemite Toad Habitat Study Area Map



Wildlife Resources (TERR-2)

Preliminary Data Summary

- General wildlife
- Yosemite toad
- Willow flycatcher habitat


Yellow-bellied marmot at Saddlebag Lake (2022).


Yosemite toad in known breeding pool south of Saddlebag Lake (2022).

Wildlife Resources (TERR-2)

Black bear at Tioga Lake (2022).

Mountain garter snake along Lee Vining Creek (2022).

General Wildlife Preliminary Data Summary

- Observed 53 wildlife species during surveys or through review of wildlife cameras
- Of the 53 species, 7 were special status (Endangered, Threatened, Fully Protected, or State Species of Special Concern)
  - Yosemite toad, snowshoe hare, white-tailed jackrabbit, olive-sided flycatcher, bald and golden eagle, and peregrine falcon
- No rare, threatened, or endangered riparian bird species (including willow flycatcher) were observed

Wildlife Resources (TERR-2)


Adult Yosemite toad in amplexus at known breeding pool south of Saddlebag Lake (2022).

Yosemite Toad Preliminary Data Summary

- Eggs, tadpoles, subadult, and adult Yosemite toad observed at known breeding pool south of Saddlebag Lake
- Study area expanded to include potential breeding habitat adjacent to FERC boundary, such as along portions of Lee Vining Creek downstream of Saddlebag
- Unidentified tadpoles observed in pool adjacent to Lee Vining Creek; pool dried up before identification could be made
- Multiple adult mountain garter snakes (known amphibian predator) observed along Lee Vining Creek

Wildlife Resources (TERR-2)

Riparian vegetation between Aspen Campground and Lower Lee Vining Creek Campground (2022).

Riparian vegetation between Aspen Campground and Lower Lee Vining Creek Campground (2022).

Willow Flycatcher Habitat Data Summary

- Reach between Aspen Campground and Lower Lee Vining Campground supports potentially suitable nesting habitat
- Closest record of nesting approximately 4 miles south in Pumice Valley

Wildlife Resources (TERR-2)

Next Steps


Least chipmunk at Saddlebag Lake (2022).

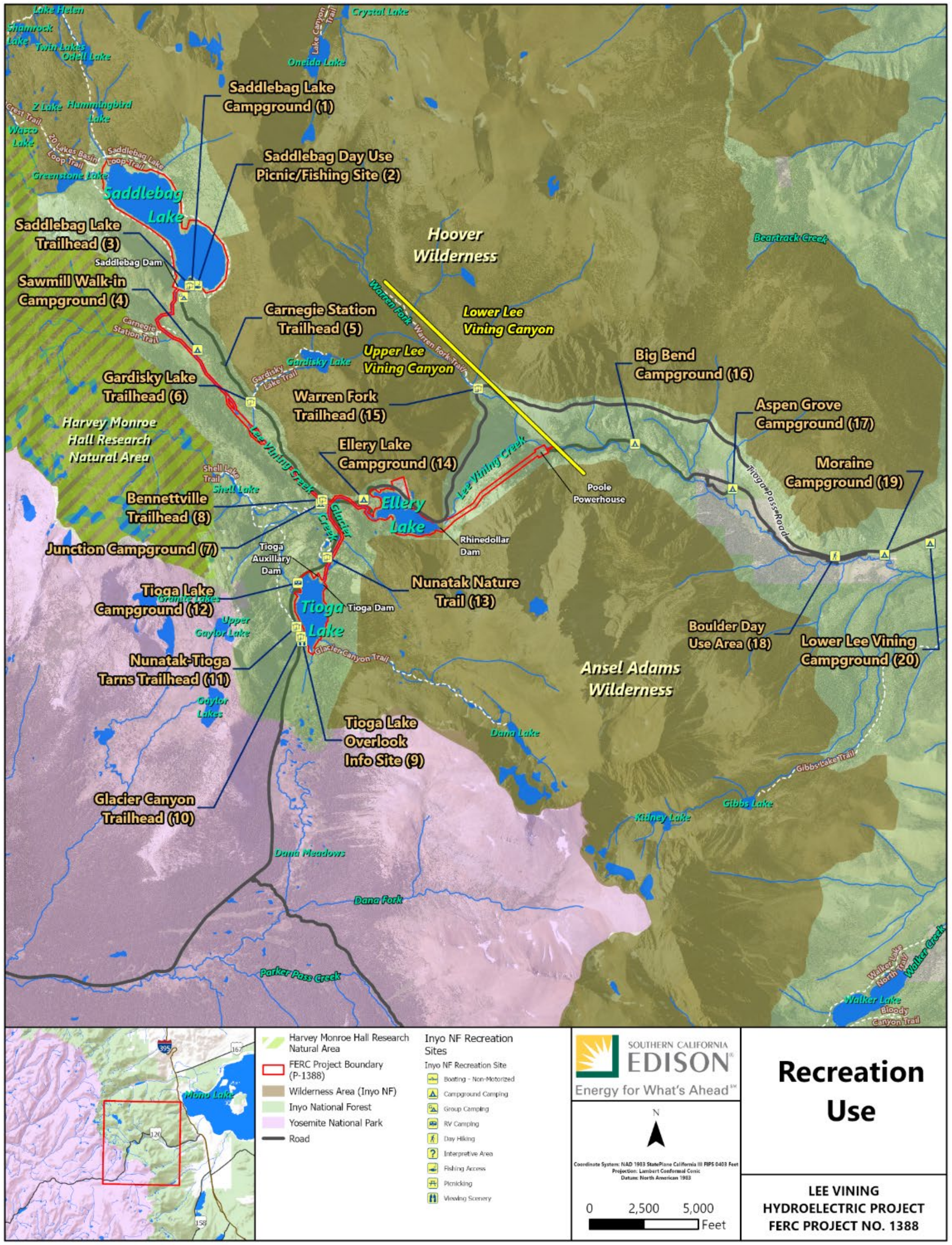
- Update compendium with 2023 field survey observations for the Final Technical Report
- Continue visual encounter surveys focused on Yosemite toad in 2023; conduct more detailed mapping of potential breeding habitat within the expanded Yosemite toad study area
- Coordinating with Project Team Rec specialist to survey dispersed rec use at known Yosemite toad breeding site
- The willow flycatcher habitat assessment survey effort is complete, and no additional surveys are anticipated

Questions?


10-Minute Break

Recreation Use and Needs Assessment (REC-1)

Study Area Map



Recreation Use and Needs Assessment (REC-1)

Goals/Objectives

- Characterize existing recreation:
  - Opportunities
  - Visitation
  - Visitor characteristics
  - Needs
  - Preferences
- Estimate current recreational fishing in Project creeks and reservoirs
- Estimate future recreational demand and needs
- Assess consistency of current recreation opportunities with the Desired Conditions, Goals, Standards, and Guidelines in the Land Management Plan for the Inyo National Forest (USFS, 2019)

Recreation Use and Needs Assessment (REC-1)

Modifications to Methods

- Survey dates were shifted due to campground and road opening dates early in the recreation season
- An unrelated field staff injury resulted in moving one survey day from July into September
- Surveys were conducted only in English rather than English and Spanish as originally proposed
- Cattleguard Campground consists of an administrative building and is not open to public use and therefore was not surveyed

Recreation Use and Needs Assessment (REC-1)

Location of Survey (Site ID)	Surveys Accepted	Surveys Declined	Total Surveys
Saddlebag Lake Rec Areas (1, 2, 3)	50	9	59
Sawmill Walk-in Campground (4)	20	2	22
Carnegie Station Trailhead (5)	5	1	6
Gardisky Lake Trailhead (6)	8	3	11
Junction Campground, Bennettville Trailhead (7, 8)	42	10	52
Tioga Lake Overlook Info Site, Glacier Canyon Trailhead (9, 10)	31	11	42
Nunatak-Tioga Tarns Trailhead (11)	1	0	1
Tioga Lake Campground (12)	22	9	31
Nunatak Nature Trail (13)	5	1	6
Ellery Lake Campground (14)	19	4	23
Warren Fork Trailhead (15)	1	1	2
Big Bend Campground (16)	27	8	35
Aspen Grove Campground (17)	38	8	46
Boulder Day Use Area (18)	1	0	1
Moraine Campground (19)	24	4	28
Lower Lee Vining Campground (20)	36	11	47
Totals	**330**	**82**	**412**

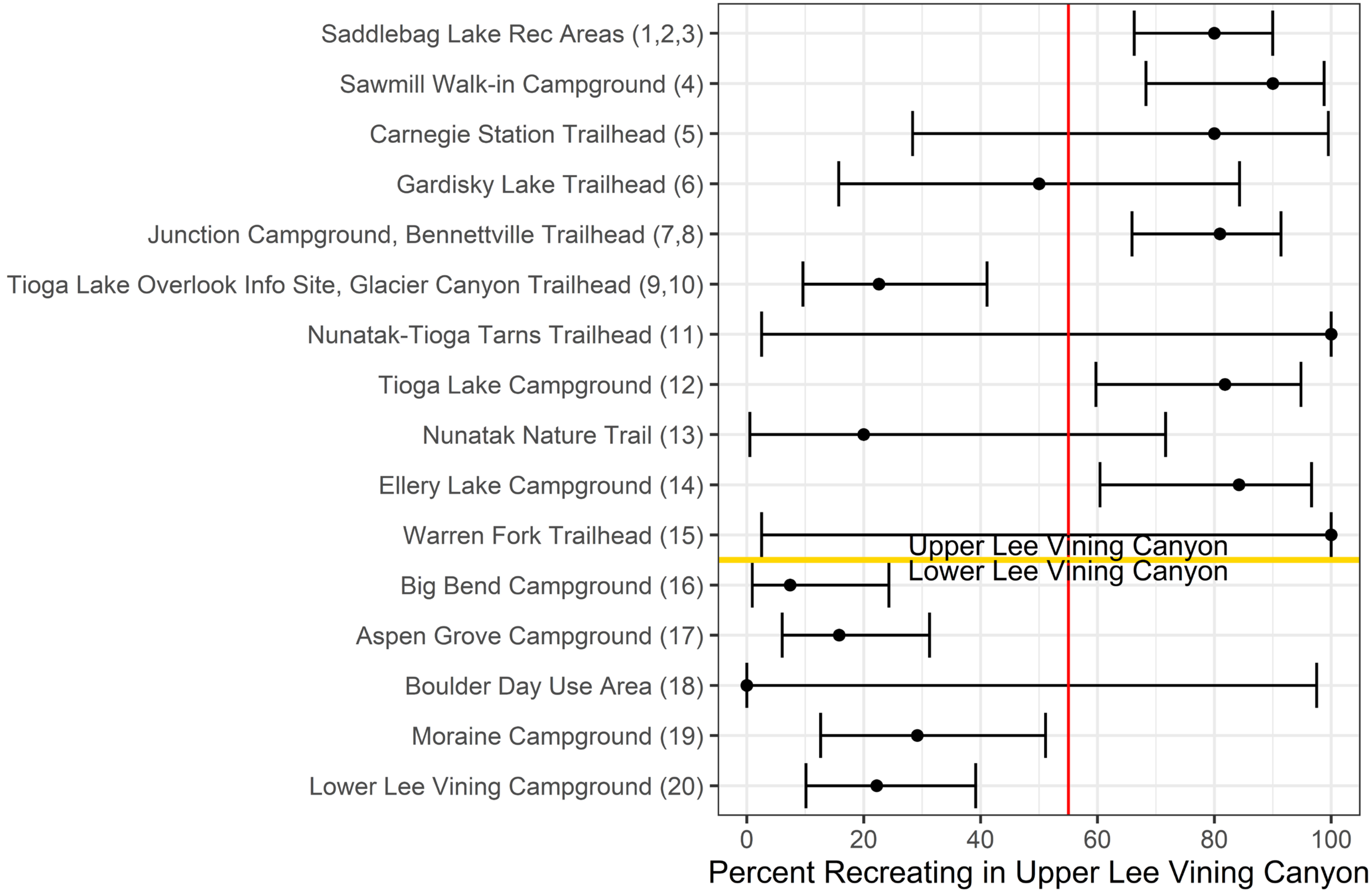
Recreation Use and Needs Assessment (REC-1)

Location of Survey (Site ID)	Main Survey Question Response							
	Passing through on my way to Yosemite National Park	Passing through on my way to Eastern Sierras (Mono Lake, June Lake, Mammoth Lakes, Bishop, etc.)	Recreate in the Upper Lee Vining Canyon (Saddlebag Lake, Lee Vining Creek, Tioga Lake, Glacier Creek, Ellery Lake, etc.)	Recreate in the Lower Lee Vining Canyon (Campgrounds and Lee Vining Creek access below Poole Powerhouse)	Other	User Surveys (2023)	Spot Counts (2023)	Counters (2023)
Upper Lee Vining Canyon								
Saddlebag Lake Rec Areas (1, 2, 3)	7	3	40	0	0	Yes	Yes	Yes
Sawmill Walk-in Campground (4)	2	0	18	0	0	Yes	Yes	Yes
Carnegie Station Trailhead (5)	0	1	4	0	0	No	No	No
Gardisky Lake Trailhead (6)	1	2	4	0	1 – Locals from Mono fire and forest service hiking Gardisky	No	No	No
Junction Campground, Bennettville Trailhead (7, 8)	7	1	34	0	0	Yes	Yes	Yes
Tioga Lake Overlook Info Site, Glacier Canyon Trailhead (9, 10)	11	11	7	1	1 – Motorcycle ride	Yes	Yes	No
Nunatak-Tioga Tarns Trailhead (11)	0	0	1	0	0	No	No	No
Tioga Lake Campground (12)	3	1	18	0	0	Yes	Yes	Yes
Nunatak Nature Trail (13)	4	0	1	0	0	No	No	No
Ellery Lake Campground (14)	3	0	16	0	0	Yes	Yes	Yes
Warren Fork Trailhead (15)	0	0	1	0	0	No	No	No
Lower Lee Vining Canyon								
Big Bend Campground (16)	0	2	2	22	1 – Going to Bridgeport area	No	No	No
Aspen Grove Campground (17)	4	0	6	28	0	No	No	No
Boulder Day Use Area (18)	0	0	0	1	0	No	No	No
Moraine Campground (19)	3	0	7	14	0	No	No	No
Lower Lee Vining Campground (20)	1	1	8	24	2 – Driving through to Orange County Passing through to Washington	No	No	No
Totals	**46**	**22**	**167**	**90**	**5**			

Recreation Use and Needs Assessment (REC-1)

Location (Site ID)	Number of Visitors Encountered	Number of Surveys Accepted	Number Recreating in Upper Lee Vining Canyon	Percent Recreating in Upper Lee Vining Canyon	Lower 95% CL	Upper 95% CL
Upper Lee Vining Canyon						
Saddlebag Lake Rec Areas (1,2,3)	59	50	40	80%	66%	90%
Sawmill Walk-in Campground (4)	22	20	18	90%	68%	99%
Carnegie Station Trailhead (5)	6	5	4	80%	28%	99%
Gardisky Lake Trailhead (6)	11	8	4	50%	16%	84%
Junction Campground Bennettville Trailhead (7, 8)	52	42	34	81%	66%	91%
Tioga Lake Overlook Info Site, Glacier Canyon Trailhead (9, 10)	42	31	7	23%	10%	41%
Nunatak-Tioga Tarns Trailhead (11)	1	1	1	100%	2.5%	100%
Tioga Lake Campground (12)	31	22	18	82%	60%	95%
Nunatak Nature Trail (13)	6	5	1	20%	0.5%	72%
Ellery Lake Campground (14)	23	19	16	84%	60%	97%
Warren Fork Trailhead (15)	2	1	1	100%	2.5%	100%
Lower Lee Vining Canyon						
Big Bend Campground (16)	35	27	2	7%	0.9%	24%
Aspen Grove Campground (17)	46	38	6	16%	6.0%	31%
Boulder Day Use Area (18)	1	1	0	0%	0%	98%
Moraine Campground (19)	28	24	7	29%	13%	51%
Lower Lee Vining Campground (20)	47	36	8	22%	10%	39%

Recreation Use and Needs Assessment (REC-1)



Recreation Use and Needs Assessment (REC-1)

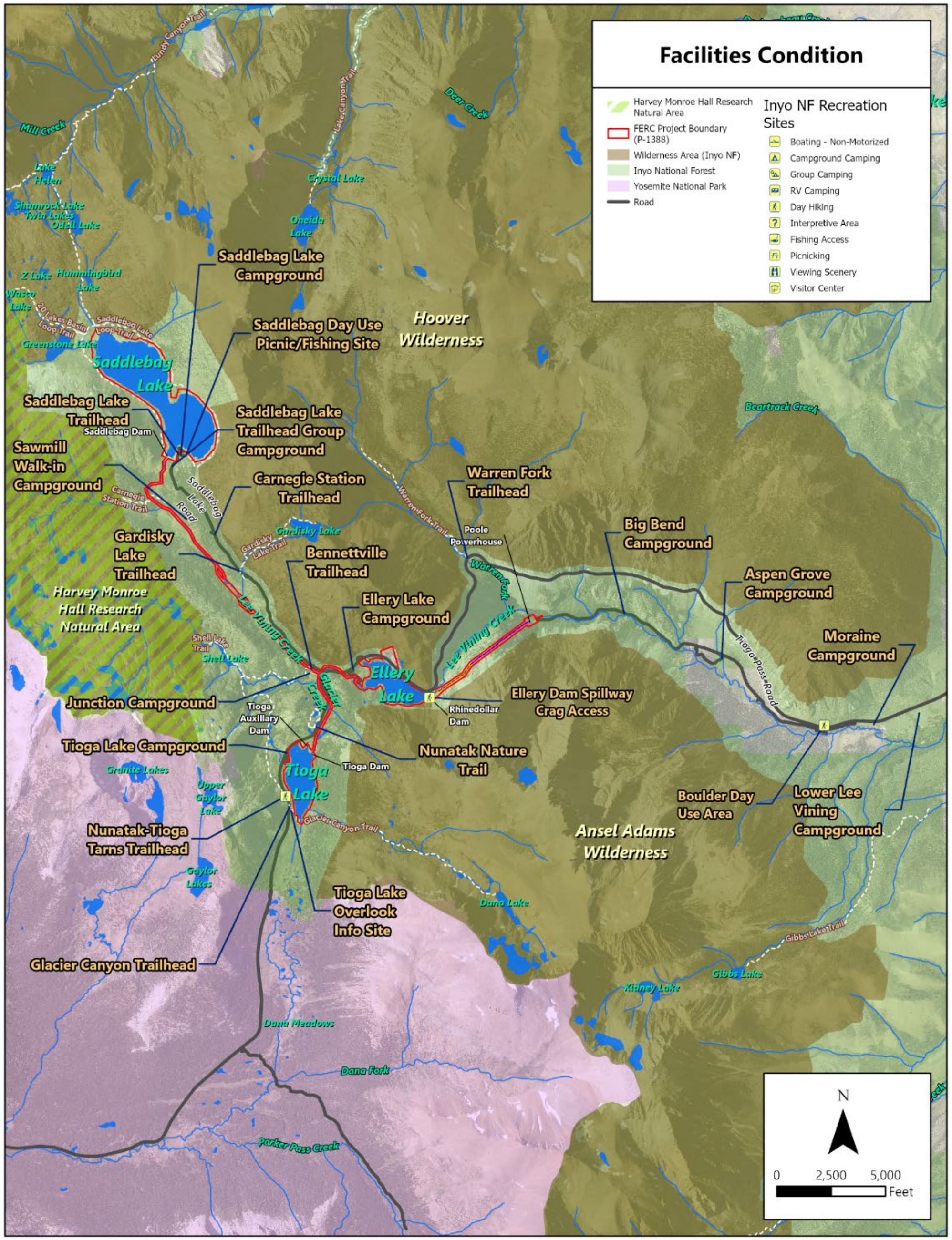
Next Steps

- March 1 TWG meeting
- Additional data will be collected for Study REC-1 in 2023
- SCE will work with the Recreation and Land Use TWG to finalize survey forms prior to the 2023 field season.
- 2023 Study elements:
  - Winter and summer survey locations and schedule
  - 2023 survey/interview forms
  - Spot count schedule
  - Traffic and trail counter numbers and locations
  - Creel survey dates, schedule, and forms


Questions?

Existing Recreation Facilities Condition Assessment (REC-2)

Study Area Map



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Recreation Facilities Condition Assessment (REC-2)

Goals/Objectives

- Identify existing dispersed or informal use areas, including documentation of existing conditions (2022 Study Season)
- Conduct a facility inventory and condition assessment at existing recreation facilities and associated parking areas, including an evaluation of signage and public safety features (2023 Study Season)
- Assess the carrying capacity and potential need for expansion, or alteration of existing recreation facilities (2023 Study Season)
- Assess the condition and potential for universal accessibility, where feasible (2023 Study Season)
- Assess the consistency of current facilities with the Desired Conditions, Goals, Standards, and Guidelines described in the Land Management Plan for the Inyo National Forest (USFS 2019) (2023 Study Season)

Recreation Facilities Condition Assessment (REC-2)

Dispersed Use Observations Aerial Imagery Assessment

Site	Boating	Pull Out	Trailhead	Other	Site Total
Ellery	--	4	2	--	6
Saddlebag	1	--	--	1	2
Tioga	1	2	---	--	3
Type Total	2	6	2	1	11

Dispersed Use Observation Points, In-field Observation

Site	Boating	Pull Out	Trailhead	Campsite	Fire Pit	Site Total
Ellery	--	7	2	--	3	12
Saddlebag	1	--	--	--	--	1
Tioga	1	5	--	2	3	11
Type Total	2	12	2	2	6	24

Total Length of Social Trails (feet)

Site	Aerial Imagery Assessment	In-field Observation
Ellery	6,140.5	8,930.1
Rhinedollar	3,607.1	3,607.1
Saddlebag	4,308.0	7,047.5
Tioga	1,817.3	9,923.6
Grand Total	15,872.9	29,508.3

Recreation Facilities Condition Assessment (REC-2)

Next Steps

- March 1 TWG meeting
- Conduct facilities condition assessments
- Findings from this study will be used to inform potential locations for additional user interviews, spot counts, or traffic/trail counters in REC-1 activities to be performed during the 2023 field season

Questions?

RELICENSING SCHEDULE OVERVIEW

Relicensing Process Schedule

Date	Activity
January/February 2023	2022 Progress Report meeting
Spring – Fall 2023	2023 field studies
Spring 2023	Select Technical Reports • Stream and Reservoir Water Quality Study (WQ-1) • Reservoir Fish Population Study (AQ-1) • Stream Fish Populations Study (AQ-2) • General Botanical Resources Survey (TERR-1)
Fall 2023	• Operations and Hydrology Model (AQ-5)
Spring 2024	Remaining Technical Reports • Aquatic Habitat Mapping and Sediment Characterization (AQ-3) • Aquatic Invasive Plants Survey (AQ-4) • Lower Lee Vining Creek Channel Morphology (AQ-6) • General Wildlife Resources Survey (TERR-2) • Project Lands and Roads Assessment (LAND-1) • Visual Resource Assessment (LAND-2) • Recreation Use Assessment (REC-1) • Facilities Condition Assessment (REC-2) • Cultural Resources (CUL-1) • Tribal Resources (TR-1)
September 2024	SCE Files Draft License Application
January 2025	SCE Files Final License Application

How to Stay Involved

- Check the Project website for updates/news at www.sce.com/leevining
- You can view other SCE relicensing Projects at www.sce.com/regulatory/hydro-licensing
- Sign up to receive Project-related emails through the Contact Registration Form/Project Questionnaire on the Project website
- Sign up for FERC's for e-subscription (docket number "P-1388") at www.ferc.gov
- Email Carissa Shoemaker with questions carissa.shoemaker@erm.com

Final Questions?

Thank you!

DRAFT MEETING NOTES*

LEE VINING, FERC PROJECT NO. 1388

2022 PROGRESS REPORT STAKEHOLDER MEETING

FEBRUARY 1, 2023, 9:00 AM–12:00 PM

**These meeting notes are documentation of general discussions from the meeting held on the above-noted date and focus on stakeholder questions and comments. These notes are not a verbatim account of proceedings and do not represent any final decisions or official documentation for the project or participating agencies.*

1.0 OBJECTIVES

- Information sharing and high-level review of preliminary data from 2022 studies
- Preview 2023 field season

2.0 ATTENDEES

Relicensing Team Members

Audry Williams, Southern California Edison (SCE)
Martin Ostendorf, SCE
Matt Woodhall, SCE
Seth Carr, SCE
Finlay Anderson, Kleinschmidt
Shannon Luoma, Kleinschmidt
Kelly Larimer, Kleinschmidt
Arianna Bresnan, Kleinschmidt
Angela Whelpley, Kleinschmidt
Isha Deo, Kleinschmidt
Bret Hoffman, Kleinschmidt
Carissa Shoemaker, ERM
Heather Neff, Stillwater
Noah Hume, Stillwater
Ken Jarrett, Stillwater
Ian Pryor, Stillwater
Allison Rudalevige, Psomas
Brad Blood, Psomas
Steve Norton, Psomas
Edith Read, E Read and Associates, Inc.

Technical Working Group Members & Interested Parties

Ashley Blythe Haverstock, U.S. Forest Service (USFS)
Adam Barnett, USFS
Richard McNeill, USFS
Nathan Sill, USFS
Thomas Torres, USFS
Michael Wiese, USFS
Stephanie Heller, USFS
Sheila Irons, USFS
Todd Ellsworth, USFS
Monique Sanchez, USFS
Chad Mellison, U.S. Fish and Wildlife Service (USFWS)
Amy Chandos, California Department of Fish and Wildlife (CDFW)
Michael Tovar, CDFW
Alyssa Marquez, CDFW
Beth Lawson, CDFW
Nick Buckmaster, CDFW
James Erdman, CDFW

Adam Cohen, State Water Resources Control Board (SWRCB)
Jennifer Watts, SWRCB
Bryan Muro, SWRCB
Bartshe Miller, Mono Lake Committee (MLC)
Greg Reis, MLC
Sue Burak, Snow Survey Associates
Chris Shutes, California Sport Protection Alliance (CSPA)
Saeed Jorat, Los Angeles Department of Water and Power (LADWP)
Ty Tyler, Access Fund

3.0 COMPILED ACTION ITEMS

- **Relicensing Team** will send Chris Shutes a link to the Progress Report, Carissa will forward to him.
- **Relicensing Team** will clarify water quality (WQ) fish/mercury information in follow-up email.
- **Relicensing Team** will schedule an Aquatics/Hydrology Technical Working Group (TWG) meeting for the Operations Model spring of 2023.
- **Relicensing Team** will incorporate information pertaining to bat surveys into the Final Terrestrial Report.
- **Relicensing Team** to add Richard McNeill's whitebark pine elevation reference to Technical Report.
- **Relicensing Team** to check in with Jessica Lundquist at University of Washington for stage data in Warren Fork.
- **USFS Richard McNeill** to send further comments regarding botany surveys and infrastructure and invasive species and sensitive plants.
- **CDFW**'s fisheries biologist was not able to join, but they will provide further comments.
- **Greg from MLC** to provide comments on elevations of the Normalized Difference Vegetation Index (NDVI) sites could factor.
- **Relicensing Team** will discuss botanical survey areas with Richard McNeill and provide spatial data as available.
- **CDFW Alyssa Marquez** needs info/will follow up on Tech Memos and request the ArcGIS information.
- **Relicensing Team** to follow up with Alyssa Marquez to answer her channel morphology questions.

4.0 WELCOME AND INTRODUCTIONS

Shannon Luoma, Kleinschmidt, welcomed TWG members to the meeting, introduced the Relicensing Team, and provided an overview of the agenda. Audry Williams, SCE, provided a tribal land recognition. Matthew Woodhall, SCE, introduced the SCE Team and provided a safety moment. Shannon Luoma, Kleinschmidt, introduced the Consultant Team.

The purpose of the call was to share information and give a high-level review of preliminary data from the 2022 studies and preview the 2023 field season.

5.0 RELICENSING SCHEDULE OVERVIEW

Shannon Luoma, Kleinschmidt, provided an overview of the Process Review and the Traditional Licensing Process (TLP). The agencies' involvement in the technical Study Plans typically ends with the FERC comment period, which occurs after the first stage of consultation. SCE chose to add additional steps to maintain collaboration with the TWG members, including: 2022 TWG meetings, revised Study Plans and a Final Study Plan Meeting, and these progress report meetings. The implementation schedule for studies was reviewed, as well as the FERC filing schedule.

- Question (Q) (Chris Shutes): Asked where he can find the Tech Memos.
  - Response (R) (Team): Carissa Shoemaker will forward him a copy of the 2022 Progress Report. (Complete)

6.0 CULTURAL AND TRIBAL STUDY PLANS DISCUSSION

Topic: Cultural Resources (CUL-1). See slides for further details.

There were no questions or comments from stakeholders.

Topic: Tribal Resources (TRI-1). See slides for further details.

There were no questions or comments from stakeholders.

7.0 FISH, AQUATICS, AND HYDROLOGY STUDY PLANS DISCUSSION

Topic: Stream and Reservoir Water Quality Study (WQ-1). See slides for further details.

Stakeholder questions and comments are summarized below:

- (Q) (Greg Reis): Table A5 lists 9 sites in the creek where WQ is being measured, what is happening on the dates vs the continuous measurements?
  - (R) (Team): There is continuous turbidity logging.
- (Q) (Alyssa Marquez): In Table 2.1-1, I'd expect that the hydro resource optimization site immediately below Poole Powerhouse wouldn't show anything, why not have a turbidity monitor above the LADWP diversion dam? How immediately below pool? It seems odd that there is no testing done above the dam.
  - (R) (Team): There actually are two loggers below Poole Powerhouse, one is a few hundred yards below and the other is farther down near the LADWP diversion dam. There is no sampling above the powerhouse because there is no change to project operations being proposed that would affect sediment above the powerhouse.
- (Q) (Alyssa Marquez): Could you explain how you measured the depth profiles at the deepest ice-free spots and compare them to the actual deepest spot in the lake? Will we be able to get to that depth this year? May be frozen again this year.
  - (R) (Team): We generally have good circulation top to bottom. It is possible we missed low oxygen conditions in the lowest elevations because of the ice. There was an oxygen depletion at depth, so it is plausible that there is nutrient loading in hypoxic sediments. We will capture it as best we can in 2023 if it is occurring. We will do new profiles and nutrient samples at depth. Ice cover complicates the picture, but we assume we will see

consistent chemical columns in winter and spring. We could see elevated nutrient contents in winter. We don't intend to do ice drilling, but we could delay a little in spring to get to open water.

- (Q) (Alyssa Marquez): On the Saddlebag Lake WQ-1 graph, could you explain the leap in specific conductivity at 3 meters?
  - (R) (Team): This is caused by spring runoff mineral content conditions. Likely from inflow rather than something diffusing out of the sediments.
- (Q) (Alyssa Marquez): We aren't expecting to see stratification in Ellery Lake?
  - (R) (Team): Correct, because it is so shallow.
- (Q) (Alyssa Marquez): Regarding the mercury fish sampling, all fish caught were just barely an edible size. Assuming mercury bioaccumulates, should we catch bigger fish since smaller fish are less likely to have more mercury? It would be good to get surveys of bigger fish.
  - (R) (Team): We did detect low amounts mercury in all samples, but none of the results exceeded the criteria. Mercury is found in fish all throughout the Sierra Nevada. The results will be available in the spring Technical Report, but we did achieve our study's objective to get enough fish above the 9" minimum length. We aren't seeing double or triple mercury results, so we don't expect that finding larger fish would be necessary for the purpose of this study. Additional gill netting would be a large and difficult effort, for not very useful results. All fish sampled fell within the Study Plan parameters for size.
  - (R) (Alyssa Marquez): I will pass this information on to our fish biologists.
  - (R) (Team): We will clarify and follow up in an email after the comment period ends.
- (Q) (Alyssa Marquez): We don't have background turbidity data for this project. If CDFW will introduce sediment back into the system it will be difficult to get this approved, like the issue we had at Bishop Creek. Can we put a monitor above the project to measure turbidity? It would be good to have background data for future purposes if we don't currently have it.
  - (R) (Team): We are doing point comparisons above and below Poole and can look and compare these and still get useful information. It is too late this year to add a monitor to catch spring runoff, as everything is frozen up. On Bishop, the sediment issue is an enhancement, not mitigation. The purpose of our information sharing today is focused on implementation of Study Plans we worked on to this point. However, we aren't at that point where we are evaluating turbidity issues, effects, enhancements vs agency goals/objectives. We can have more focused dialogue in the future once the results come back and we can discuss them then. Taking point samples and making inferences may be easier than a continuously running instrument; we do have some of this information already. Sampling is appropriate below Poole Powerhouse because the resource optimization releases are relatively new since the last relicensing and it is important to be able to characterize this.
  - (R) (Team): We will assess the possibility of adding monitors above the project or taking spot readings at important times.
- (Q) (Greg Reis): Progress Report Table 5.2-1 shows turbidity measurements at Lee Vining Creek inflow to Saddlebag. Is that not continuous?
  - (R) (Team): Correct, that is not continuous.
- (Q) (Beth Lawson): We recognize the turbidity was an issue for Lahontan Regional Water Quality Control Board, if there is an ability to collect additional data knowing this was a problem last

time (at Bishop Creek), it is all in our interest to collect this info in the field, it may not be an effect now, but reservoirs capture sediment, we should consider this earlier rather than later. I want to recognize this was a problem that delayed us later in previous projects, so we should collect more data upfront. It doesn't seem like a big additional field work effort.
  - (R) (Team): We can discuss this in a more focused TWG discussion.
- (Q) (Greg Reis): If the turbidity measurements above LADWP diversion dam are not continuous, I'd recommend making those continuous in 2023. The only date listed where hydro resource optimization (HRO) occurred last year was the October date, and the peak flow was near midnight, when sampling presumably didn't occur. In order to better characterize HRO impacts, continuous data above diversion should be collected.
  - (R) (Team): We will have a tough time getting continuous monitors in this spring. We can include this in a focused discussion, including the larger water resources TWG. Lower Lee Vining Creek does have two continuous monitoring sites.

Topic: Reservoir Fish Population Study (AQ-1). See slides for further details.

Stakeholder questions and comments are summarized below:

- (Q) (Richard McNeill): Do you have any ideas about why different species were found in each reservoir?
  - (R) (Team): Potentially there are more brown trout in Ellery Lake because they have access to Lee Vining Creek, which is an active breeding ground for brown trout. Other lakes might have limited access to tributaries; those locations may be preferable for brook trout.
- (Q) (Alyssa Marquez): We couldn't have our fisheries biologist join this meeting this morning, they may want to comment later on these studies.
  - (R) (Team): Thank you for letting us know.

Topic: Stream Fish Populations Study (AQ-2). See slides for further details.

There were no questions or comments from stakeholders.

Topic: Operations Model (AQ-5)

Stakeholder questions and comments are summarized below:

- (Q) (Greg Reis): About 20 years ago, Jessica Lundquist (University of Washington) had a stage recorder in Warren Fork for a couple of years. Those data might be helpful in estimating Warren Fork flows.
  - (R) (Team): Relicensing Team will attempt to reach out to request her data.
- (Q) (Greg Reis): Will there be a draft Ops Model in fall 2023 that we can comment on?
  - (R) (Team): Yes, that is our intent.
- (Q) (Beth Lawson): Can we discuss this more in a TWG? You can show us what you are developing and how we can use it. We'd like to input different scenarios with different monthly time series, water year types, and power generation impacts. I want to front load and get it tuned to have functionality we will need later. Sometimes agencies don't know what we want early on, sometimes we are deep in data and conversations and then we identify something we

can put in. For example, pulse flows and ramp downs may be discussed. I'm willing to look at an in-progress tool, but I'm afraid seeing it this fall will be too late.
    - (R) (Team): We definitely want this to be useful and have the correct inputs, outputs, controls, metrics, etc. We can discuss this further in a TWG, earlier than this fall. Everything comes down to stage or cubic feet per second (cfs) at given locations of interest, water year type, and distribution. Timing, flow, and stage are usually included. We can share our model draft in a TWG when it is ready.
- (Q) (Chris Shutes): The Tech Memo talks about power generation. Optimization represents SCE operations and how we best make use of load and pricing opportunities. Something to think about is how much you're going to let folks see so we can better understand interests of SCE when making recommendations in something like ramping for example to get an understanding of what constrains your operations. Some historical data evaluation might be helpful to see as well.
    - (R) (Team): This is something we can talk about, in terms of operation. In terms of the level of transparency, we will have to work with SCE as we move along as some of that information is closely held. We can look at some dependent variables with SCE to look into historic data.
- (Q) (Alyssa Marquez): Just to confirm the timeline, the Relicensing Team will set up another meeting and you'll share the Operations Model? Do you know when you'll be ready to share it?
    - (R) (Team): We have just received some of the data from SCE operations and we are still analyzing what we received and that is a process, so we can't commit to an exact timeline right now. The Operations Model isn't dependent on field surveys so it can get done on its own schedule. It's always our goal to keep stakeholders engaged and informed and we will continue to do that for the Operations Model even before it is distributed, once we get to that point where we have something to share, we will reach out to stakeholders for interest and opinions. We will reach out to schedule smaller TWG meeting(s) when we are ready, this spring.

Topic: Lower Lee Vining Creek Channel Morphology (AQ-6). See slides for further details.

Stakeholder questions and comments are summarized below:

- (Q) (Alyssa Marquez): Why are we only doing morphology studies downstream of FERC project and not within the boundary? Is there previous data from existing FERC licenses?
    - (R) (Team): Heather: The goal of this study was to evaluate potential effects on channel morphology from hydro resource optimization, which is downstream of Poole Powerhouse. We have some existing general descriptions of morphologic characteristics, and the instream flows continue to be similar to the past, so no real reason to expect changes from the project. The project as it currently operates is considered the baseline and no changes are proposed. The riparian monitoring sites have geomorphology cross sections between Saddlebag Lake and Slate Creek, too.
    - *[Alyssa dropped off the call during this response and missed some of the discussion, the Relicensing Team to follow up separately.]*

- (Q) (Greg Reis): Below Saddlebag there have been variances granted by USFS to allow more flows to be released in the winter rather than summer, reversing the typical flows. Could that be considered a project change and could it impact geomorphology?
  - (R) (Team): The license calls out the flows below Saddlebag per water year types. We're not anticipating doing anything different for next license. To our knowledge, that is an acceptable condition under the license, our anticipated operation would be the same as they are now.

8.0 TERRESTRIAL AND BOTANICAL STUDY PLANS DISCUSSION

Topic: General Botanical Resources Survey (TERR-1). See slides for further details.

Stakeholder questions and comments are summarized below:

- (Q) (Richard McNeill): Could you go back to the NDVI histograms and can you give us a better idea of what these numbers mean? Do you have precipitation data to plot with this? Could you also include the entire basin precipitation data and so we can understand how they all relate to each other?
  - (R) (Team): NDVI ranges from 0 to 1. Lower values are non-vegetation or low value vegetation. Greener vegetation has higher values. NDVI is primarily used in agricultural settings for healthy fields vs drought-stressed fields. This was a riparian setting with lots of willows, where leaf sides can be greener or shinier, more reflective. The NDVI values are not super important, but comparing the sites year to year is the goal. We're mostly looking at the relative values and control for year to year. We could add precipitation data, to assess if precipitation data has any effects between years. It's important to note that the precipitation data would be basin-scale and not site specific.
- (Q) (Greg Reis): I was wondering how elevations of the NDVI sites could factor in with the later snow melt. Thinking about 2016 Lee Vining following a long drought and thinking about lower elevation sites.
  - (R) (Team): We have not done any multi-variate analysis for this, yet. We would need to look at variables that are different between sites and see if they have an effect on the data. Asked Greg to add that question to his comments on the Tech Memos and we can assess from there.
- (Q) (Richard McNeill): I have mapped Whitebark pine (*Pinus albicaulis*) down to 7,'00', 37.930352°, -119.176096° in summer 2022.
  - (R) (Team): Thank you, we can add that to the Technical Report.
- (Q) (Richard McNeill): During the review of everything last year, I made comments of needing an accurate list of infrastructures. It seems like some areas were not surveyed, such as roads that go to the dam, it doesn't seem like we have an accurate list. The list provided doesn't help with spatial setup, we need a map. How do you list roads that don't have names or random buildings around the dams? Surveys have already started, so if we add more infrastructure to the list, how is that addressed? This should have been clarified before we started surveying. The dam road appears to have been partially surveyed, the penstock was partially surveyed, such as the area used by recreational users. I'm mostly concerned about invasive plant species coming in and being carried around the project areas.

  - (R) (Team): We responded to your infrastructure email question with a list; and a list of project facilities to be surveyed were included in the Study Plan. Additionally, completing this list and mapping the project-related infrastructure is the focus of our LAND-1 Study. The botanical survey did cover the penstock and associated climbing areas. Allison has dropped off, so the Team will connect with her and respond to this via email regarding areas you might be concerned about.
- (Q) (Richard McNeill): I would like to have spatial data for the survey area, I don't need survey results, I just want to get a clear understanding of where was surveyed.
  - (R) (Team): We can provide that once it is available.

Topic: General Wildlife Resources Survey (TERR-2). See slides for further details.

Stakeholder questions and comments are summarized below:

- (Q) (Alyssa Marquez): Thank you for the presentation, CDFW is happy with Yosemite toad surveys and all the effort going into that.
  - (R) (Team): Thank you.
- (Q) (Alyssa Marquez): I didn't see any information on bat surveys or results in the Tech Memo. I can provide comments on that later, too.
  - (R) (Team): Thanks for pointing that out. The facilities were inspected for bat roosts but the results accidentally did not make it into the Tech Memo. Results will be added into the spring 2024 Technical Report.
- (Q) (Thomas Torres): I'm looking forward to talking about Yosemite toad tomorrow in our meeting.
  - (R) (Team): We are looking forward to that as well.

9.0 RECREATION AND LAND USE STUDY PLANS DISCUSSION

Topic: Recreation Use Assessment (REC-1). See slides for further details.

Stakeholder questions and comments are summarized below:

- (Q) (Adam): Where did 55% threshold come from?
  - (R) (Team): The Tech Memo has an explanation of the threshold, please refer to that.

Topic: Existing Recreation Facilities Condition Assessment (REC-2). See slides for further details.

There were no questions or comments from stakeholders.

10.0 SCHEDULE AND NEXT STEPS

The Relicensing Team provided a schedule of upcoming important dates and events.

- (Q) (Alyssa Marquez): Are there no other required timelines other than what was listed? In the meantime, should we schedule these small TWG meetings or will you reach out to schedule them? The Tech Reports aren't formal in a TLP?
  - (R) (Team): The next official deadline is the Draft License Application (DLA) filing in 2024, but currently our plan is to release Draft Technical Reports for completed studies as

they become available, with the first batch in the spring of 2023 and the remaining in the spring of 2024. The Tech Reports are typically filed together with the DLA but we will send them out separately before then. The Relicensing Team (Carissa Shoemaker) will reach out to schedule the next TWG.

Topic: Other Action Items

No comments or questions were received at this time.

11.0 FINAL Q&A

- (Q) (Alyssa Marquez): I will follow up on specific Tech Memos and request the ArcGIS information that would be useful.

The Relicensing Team adjourned the meeting.

USFS AND CDFW COMMENT LETTERS

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USDA United States Department of Agriculture
Forest Service
Inyo National Forest
351 Pacu Lane, Suite 200
Bishop, CA 93514
(760) 873-2400
(760) 873-2538 TDD

File Code: 2770
Date: February 21, 2023

Wayne Allen
Principal Manager
Southern California Edison Company
1515 Walnut Grove Avenue
Rosemead, CA 91770

RE: FOREST SERVICE COMMENTS ON THE 2022 PROGRESS REPORT FOR THE LEE VINING HYDROELECTRIC PROJECT, FERC PROJECT P-1388

Dear Mr. Allen:

The Forest Service is providing the following response to the 2022 Progress Report filed by Southern California Edison Company (Licensee) for the Lee Vining Hydroelectric Project (FERC No. P-1388). This response is being submitted by the USDA Forest Service, Inyo National Forest, hereafter referred to as "Forest Service".
This filing includes one attachment (Attachment 1) with the comments.

The Forest Service appreciates the opportunity to comment on the Progress Report, and we look forward to working with the Licensee on the relicensing of this project. If you have any questions regarding this filing, please contact Public Services Staff Officer, Adam Barnett, Inyo National Forest, at 760-873-2461or by electronic mail at adam.barnett@usda.gov.

Sincerely,

LESLEY YEN
Digitally signed by LESLEY YEN
Date: 2023.02.21 09:15:27 -08'00'

LESLEY YEN
Forest Supervisor
cc: FERC service list

Enclosures

CERTIFICATE OF SERVICE

I, Monique Sanchez, Regional Hydropower Coordinator for the U.S. Forest Service, hereby certify that a copy of the forgoing COMMENTS on the Relicensing Application by the Forest Service have been served upon each person designated on the official Service List compiled by the Secretary for the Lee Vining Hydroelectric Project, P-1388.

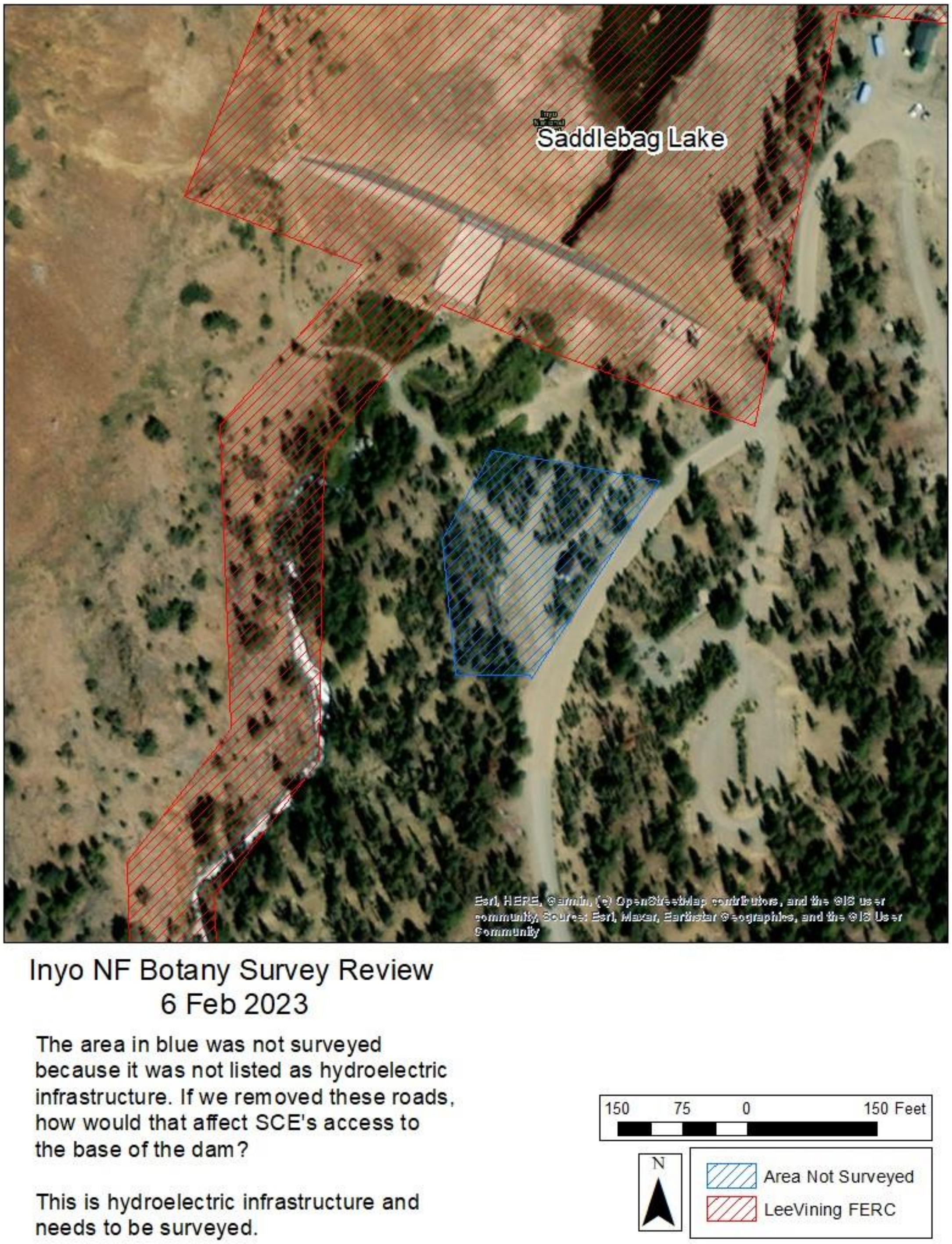
/s/ Monique Sanchez

Monique Sanchez, Regional Hydropower Coordinator

INF Response to SCE Re: Lee Vining FERC relicensing study interim results

General Botanical Resources Survey (TERR-1)

1. Botanical survey should include areas used to access project infrastructure such as the Saddlebag Lake dam. The Forest Service requests a thorough review of the project area to identify similar locations that have not been surveyed.



Recreation Use Assessment (REC-1)

1. Study results (Table 4-3) indicate substantial use of the upper canyon for recreation by campers staying at Lower Lee Vining Campground (22%) and Moraine Campground (29%). Survey results at both locations are within the 50% confidence interval threshold established by SCE. INF requests that these locations be included in the 2023 continuation of REC-1 to capture potential use displaced by the lack of available campsites in the upper canyon. Displaced visitors are exactly the people who could be best able to inform the extent to which additional camping capacity may be needed in the upper canyon.

2. Because winter 2022/2023 may be a near-record snow year, springtime could present an opportunity to measure substantial over-snow recreation in the project area including snowmobiling and skiing. The INF requests that the 2023 survey be designed to capture over-snow use in addition to summer recreation uses by surveying in April and May.

Existing Recreation Facilities Condition Assessment (REC-2)

1. Based on the findings from REC-1 in 2022, recreation in the upper canyon was the primary activity for users of Sawmill Walk-in Campground and Junction Campground (Figure 4-1). Include these campgrounds in the recreation facilities condition survey in 2023. Survey responses at both campgrounds are well within the 50% confidence interval threshold set by SCE in REC-1.

2. REC-1 results indicate that a substantial portion of visitors staying at Lower Lee Vining Campground (22%) and Moraine Campground (29%) recreate in the upper canyon as their primary activity. These two lower canyon campgrounds should be included in the REC-2 recreation facilities condition assessment in 2023 because of their potential nexus with the project and the possibility that improving these campgrounds may be an option if improvements at upper canyon campgrounds are prevented by physical or biological constraints.

Document Content(s)

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

Via e-mail

February 22, 2023

Matthew Woodhall
Southern California Edison
Generation-Regulatory Support Services/ Project Lead
1515 Walnut Grove Ave
Rosemead, CA 91770
matthew.woodhall@sce.com

Subject: California Department of Fish and Wildlife Comments on Southern California Edison's 2022 Progress Report for the Relicensing of the Lee Vining Creek Hydroelectric Project, FERC Project No. 1388

Dear Mr. Woodhall:

The California Department of Fish and Wildlife (CDFW) has received and reviewed the *2022 Progress Report* drafted by Southern California Edison (SCE) for the Federal Energy Regulatory Commission (FERC) relicensing of the Lee Vining Creek Hydroelectric Project (Project, FERC No. 1388). The 2022 Progress Report, which includes the Lee Vining TERR-1 Botanical Attachment, was provided to the Project's Technical Working Group (TWG) members via email on January 23, 2023. Additionally, on February 1, 2023, a TWG meeting was held where the results of the Progress Report were presented and TWG members could provide verbal comment to SCE. As requested by SCE, CDFW is now providing written comments and recommendations on the Progress Report. Additional CDFW questions and comments that were not addressed during the Progress Report meeting due to lack of time are included below.

AUTHORITIES

CDFW is the relevant State fish and wildlife agency for resource consultation pursuant to the Federal Power Act Section 10(j) (16 U.S.C. section 803 (j)). The fish and wildlife resources of the State of California are held in trust for the people of the State by and through CDFW (Fish & G. Code § 711.7). CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish & G. Code § 1802). Information generated through the appropriate studies will be utilized by CDFW in the development of recommendations.

The mission of CDFW is to manage California's diverse fish, wildlife, and plant resources, and the habitats on which they depend, for their ecological values and for their use and enjoyment by the public. It is the goal of CDFW to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife, and plant species within the

FERC-designated boundaries of the Project, as well as the areas adjacent to the Project in which resources are affected by ongoing Project operations, maintenance, and recreational activities.

PROGRESS REPORT RECOMMENDATIONS, COMMENTS AND QUESTIONS

Table 2-1 Project Relicensing Field Study Summary

General Comment

- **Recommendations**: (WQ-1 Stream and Reservoir Quality) CDFW does not believe that one year of turbidity logging is sufficient to capture a representative picture of the turbidity in the Lee Vining Creek system. Since turbidity loggers were not installed until summer of 2022, please retain the existing turbidity logger for at least one more year to ensure SCE obtains data for spring and to help detect any turbidity differences between years.

WQ-1 Stream and Reservoir Water Quality Technical Memo

General Comment

- **Recommendation**: CDFW recommends SCE manage the Projects operations in a way that allow for elements of the natural flow regime (e.g., pulse flows, baseflows recession flows) to perform distinct ecological and geomorphic functions and provide for specific life history and habitat needs of fish and wildlife species. Input and movement of sediment through river systems during peak flow events is an import ecological and geomorphic function and it is well documented that dams impede and remove sediment from impacted stream reaches downstream of the dams. Reintroduction of the removed sediment into the sediment starved stream system during peak flow events is a potential solution. However, to implement such protection, mitigation, and enhancement (PME) measures, turbidity levels in the replenished stream system need to remain within the Lahontan Regional Water Quality Control Boards' (LRWQCB) Basin Plan standards. Thus, data on the background turbidity or natural turbidity of the system is required for LRWQCB to determine if reintroduction of sediment into the system would violate the basin plan. To obtain this background turbidity data, CDFW recommends that SCE install turbidity loggers in locations in the stream system that allow for collection of the systems background turbidity. The 2023 anticipated large spring runoff would be a good time to acquire turbidity data during a higher turbidity year.

3.1 Modifications to Methods

- **Question**: Why did SCE not conduct *In situ* turbidity sampling? Will SCE conduct *in situ* turbidity sampling in 2023?

- **Question**: How could measuring the depth profiles at the *deepest* ice-free location, rather than maximum depth, affect the results or interpretation?
- **Question**: Why did SCE not collect analytical samples at depth from Saddlebag Lake and Tioga Lake when the reservoirs were stratified? What does SCE intend to do if the lakes cannot be sampled in 2023?
- **Question**: Why was water temperature not collected in stream reaches?

Figure 5.1-1 Saddlebag Vertical Profiles Measured in Spring 2022

- **Comment:** Please include a discussion in the Progress Report on why data (e.g., pH, temperature, and specific conductivity) varies between reservoirs. For example, why does specific conductance increase at Saddlebag Lake when depth is greater than three meters?
- **Comment**: Please include the Target Reporting Limit (for the basin plan) in the Progress Report. Currently the Progress Report only includes laboratory reporting (RL) and laboratory detection limit (DL).
- **Request**: Please include graphs in the Progress Report comparing each water quality parameter at all the reservoir locations.

Table 5.1-1 Analytical Laboratory Data

- **Question:** Many of the orthophosphate samples were received by the analytical laboratory outside of the Environmental Protection Agency (EPA) recommended holding time of the samples. Does SCE plan to retake these samples?

Consistency with Study Plan

- **Request:** Please make the temperature and dissolved oxygen (DO) profiles collected in Project reservoirs in 2015, 2016, and 2017 available to the TWG members.
- **Request:** Please provide all preliminary data provided in the PAD in the Progress Report (e.g., links or attachment).
- **Comment:** In the Progress Report, please address that DO in Project reservoirs and in Project-affected streams exceeded the published limits for water quality objectives in the LRWQCB Basin Plan.

AQ-1 Reservoir Fish Populations and AQ-2 Stream Fish Populations

General Comments

- **Comment:** CDFW has reviewed the 2022 Progress Report and does not currently have concerns assuming that the fish sample size is of sufficient size to assess fish populations in the streams and reservoirs.
- **Questions:** Did surveyors observe anchor ice formation in the stream reaches?

3.1 Modification of Methods

- **Comment**: Mortality of fish can be reduced by watching set gill nets.

AQ-3 Aquatic Habitat Mapping and Sediment Characterization

General Comment

- The aquatic habitat mapping and sediment characterization study has not been implemented yet and CDFW has no comments.

AQ-4 Aquatic Invasive Plants

General Comment

- The aquatic invasive plant study has not been implemented yet. However, CDFW would like to take this opportunity to restate CDFW comments provided to SCE on 1/14/2022 during the PAD Comment period: CDFW requested that nutrient monitoring of Project reservoir hypolimnion and outlets be conducted to determine the potential impact on the growth and spread of the nonnative, invasive Didymo (*Didymosphenia geminate*). This request was provided for the WQ-1 Study Plan but is also relevant here. SCE has not included sampling of the Project reservoirs outlets for nutrients in the WQ-1 Study Plan but did mention that nutrient concentrations were measured in all Project reservoirs and their outlets streams between 2015 and 2017. Please provide this data in future Progress Reports.

AQ-5 Operations Model

Section 3.2.2. Resource Optimization Model

- **Recommendation**: Section 3.2.2 describes the development of a Resource Optimization Model that is being used to "form an understanding of the properties of resource optimization operations in Lee Vining Creek." It is unclear whether SCE plans to share any of the information in the Resource Optimization Model with relicensing participants. CDFW requests that any results of the resource optimization be shared with relicensing participants so that stakeholders may understand how the Project is being used to optimize environmental, water delivery, and power generation during the life of the next FERC license.

Section 5.0 Next Steps

- **Recommendation**: This section states that "upon completion and calibration, the model will be distributed to interested Stakeholders for review and comment." As requested in the February 1, 2023, Progress Report Meeting, CDFW recommends that SCE's modelers meet with interested stakeholders in small-group technical team meetings during the process of calibration and before completion of the modeling, not after. Stakeholders may have suggestions for improvement of the model platform that would allow the model to be most effectively used to evaluate a range of different potential alternative flow proposals.

Comments about Still Missing AQ-5 Components

- **Comment**: CDFW has concerns regarding several aspects described in the *Operations Modeling Technical Memo*. Specifically, the lack of 1) development of unimpaired hydrology and 2) lack of a path for stakeholders to consider and compare the tradeoffs between Project revenue and alternative flow scenarios.

  In CDFW's study plan request sent on March 25, 2022, CDFW requested that along with the operations modeling, unimpaired hydrology should be developed by SCE at multiple points in the stream system. CDFW stated that unimpaired hydrology is used when considering the results of other resource studies and aquatic populations in the watershed and would be used to compare to historic operations as well as proposed operational scenarios when developing resource management measures. In the *Final Technical Study Plans*, filed by SCE on April 25, 2022, SCE rejected CDFW's request and stated that SCE and FERC use the current baseline conditions (existing Project) to identify and analyze any potential effects. CDFW disagrees and urges SCE to develop an unimpaired hydrologic dataset for the Project. The unimpaired hydrologic dataset is not only used to compare to pre-Project conditions, but is used during development of protection, mitigation and enhancement (PM&E) measures to look at functional flow information including low flows, pulse flows, snowmelt runoff information, and seasonal high flows, if necessary, to improve aquatic habitats. The stated goal of this study is to "Develop a robust Operations Model to assist SCE and Stakeholders in understanding how Project operations interact with Lee Vining hydrology." Although SCE only hopes to compare to existing conditions, there is no way to assess what components of a hydrograph can be restored without understanding the timing and magnitude of available water.

  CDFW additionally requested in our March 25, 2022 letter that the operations model should include a module or post processing tool that allows all relicensing participants and FERC to understand clearly the financial impact (both gross generation and revenue) of new bypass requirements, ramping rate changes, and pulse flow requirements on Project finances. In the *Final Technical Study Plans*, filed by SCE on April 25, 2022, SCE rejected this request stating that SCE considers generation and revenue to be internal considerations that should not drive discussions surrounding potential effects. CDFW disagrees with this assessment, and notes that most PM&E discussions in FERC relicensing's are driven by financial as well as water management implications of any alternative proposals. As CDFW noted in our study plan comments, in discussions of PM&E measures, all relicensing participants should have the ability to understand how any proposed measures are balanced with Project generation impacts. Without this tool, SCE can say “yes” or “no” to PM&E measures, but both FERC and relicensing participants have no ability to understand why those decisions were made and where there is negotiating space and potential tradeoffs to be made around each of those potential measures. Sections 4(e) and 10(a)(1) of the Federal Power Act requires the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection of, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. With no financial analysis to consider the power generation benefits of one alternative proposal versus another, there is no way for any entity except SCE to determine whether there is any balancing of power generation versus enhancement to fish and wildlife.

CDFW is making the request now to SCE to develop unimpaired hydrology and a method to look at overall and peaking generation comparisons of operations model alternatives. If these components are not developed at this step in the relicensing, CDFW will plan to submit these during third stage consultation as specified in the Traditional Licensing Process (TLP) regulations. CDFW staff recommend that these tools be developed by SCE and utilized now so that they may be used during relicensing PM&E measure discussions.

AQ-6 - Lower Lee Vining Creek Channel Morphology

Comments about Still Missing AQ-6 Components

- **Comment**: CDFW has concerns about the lack of assessment of the channel morphology within the FERC Project area. CDFW believes that it is necessary to gather channel morphology data within the FERC Project area to understand the habitat-flow relationship, to protect wildlife resources and inform future licensing conditions.

  In CDFW’s study plan request sent on March 25, 2022, CDFW requested that an instream flow study be conducted within the FERC Project area. In the *Final Technical Study Plans*, filed by SCE on April 25, 2022, SCE rejected this request stating that CDFW’s new flow study was submitted after the comment period and that the *AQ-3 Aquatic Habitat Mapping and Sediment Characterization* study addresses CDFW’s request for a qualitative habitat mapping study. It is CDFW’s understanding that after the first stage of consultation is concluded (ending after all participating agencies, Native American tribes, and members of the public provide written comments or 60 days after the joint meeting is held [up to 120 days, if extended], whichever occurs first), resource agencies can request the applicant to do necessary and appropriate studies or gather additional information. CDFW does not agree that the AQ-3 study addresses CDFW’s request. AQ-3 does not propose to conduct surveys to document the current flow-habitat relationship within the Project area. AQ-3 is currently designed with the view that the limiting factor for trout is available spawning habitat, but CDFW does not agree with this viewpoint and believes an instream flow study is necessary to inform decision making. Additionally, the determination of available spawning habitat should be supported by a proportional stock distribution analysis. The 1992 instream flow analysis for brook and brown trout should not be the sole habitat-flow data utilized to inform license conditions 30 years later and an updated instream flow analysis conducted within the FERC Project area needs to be conducted. Due to the underlying glacial geology and the steep gradient of the Lee Vining Creek system within the Project area, CDFW believes using a *Habitat Criteria Mapping Method* or *MesoHABSIM* would be more appropriate than an *Instream Flow Incremental Methodology* (IFIM).

TERR-1 General Botanical Resources Survey

General Comments

- **Comment**: Mountain bent grass (*Agrostis humilis*) is listed as a rank 2B.3 plant, meaning, except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2B would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act (FESA). With California Rare Plant Rank 2B, the California Native Plant Society (CNPS) recognizes the importance of protecting the geographic range of widespread species and protects the diversity of California's flora to help maintain evolutionary processes and genetic diversity within species. All of the plants constituting California Rare Plant Rank 2B meet the definitions of the California Endangered Species Act (CESA) of the California Fish and Game Code (FGC) and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to the California Environmental Quality Act (CEQA), or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380. Ranks at each level also include a threat rank, with mountain bent grass identified as 0.3 – Not very threatened in CA (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known). However, since the Threat Rank guidelines only represent a starting point in the assessment of threat level, other factors such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Rank.

- **Comment**: The CNPS identifies that mountain bent grass is threatened by foot traffic and vehicles and possibly threatened by grazing and trampling. SCE should identify the potential for these threats and any other threats (e.g., maintenance activities) at each population location to determine the vulnerability, condition of occurrences and if PME measures are needed (e.g., signage, fencing).

- **Comment**: On January 14th, 2022, CDFW proposed a *Riparian Monitoring and Community Health Study*. SCE responded that 'sufficient data exists from ongoing Riparian Monitoring Evaluations conducted as part of the license'. SCE has shared with CDFW via email various *Riparian Reports* associated with the existing FERC License requirements; however, these reports should be made available for review on the Projects relicensing website. Additionally, SCE responded in the *Revised Technical Study Plans* that raw data would be provided to the TWG. This data should also be made available on the Projects relicensing website. Although SCE has not agreed to conduct additional evaluations of riparian communities within the FERC Project boundary, all existing available data that SCE produced as part of the license (e.g., riparian monitoring and evaluations) should be made available for review now. Providing this data later with the Draft License Application will not provide stakeholders sufficient time to review the data in a meaningful way.

<u>Attachment 1 – TERR 1 Mapbook</u>

- **Comment**: Much of the Botanical Resource study area is outside of the FERC Project area and is focused only around Project facilities or recreational areas. Does sufficient data exist to provide a baseline of the distribution of special status plant species within the FERC Project area? Additionally, the Botanical Resource study area does not encompass Lee Vining Creek just east of the Sawmill campground, an area disturbed by several fishing access trails. Documentation of special status plant species around fishing access trails is necessary to determine Project impacts related to recreation.

TERR-2 General Wildlife Resources Survey

<u>3.2 General Wildlife Surveys</u>

- **Comment**: In Section 6.1.1 *Pedestrian Surveys* of the *Final Technical Study Plans* filed by SCE on April 25, 2022, it states that "All Project facilities will be inspected for evidence of bat roosting". The Progress Report does not mention that bat surveys were conducted, and no associated results of those surveys are provided. During the Feb 1, 2022, meeting Psomas (SCE Consultants) stated that they thought bat surveys were conducted and subsequently followed up with an email stating they performed the effort and would incorporate bat survey results into the Technical Memo. CDFW does not currently have access to the results of the bat survey and therefore cannot comment directly on those results. However, the following comments are relevant to the FERC Project, bat survey methodology, and bat ecology.

North American bats use a wide variety of roost sites, including crevice's, cavities and foliage. In a natural setting, this can include dark chambers such as caves or large tree hollows, rock crevices, exfoliating tree bark, and damaged wood snags. Bats will also roost in cave-like spaces and/or crevices in man-made structures, such as old mine workings, cave-like spaces under transformer pads, gaging stations, storage buildings, crevices above sliding doors, control rooms, tunnels, buildings, and bridges. The Project area includes natural aquatic habitats (e.g., reservoirs, rivers), mixed conifer forests, and open habitat that could support roosting, foraging, and migration for various bat species. Large complex structures in the Project area, like the Pool Powerhouse and other associated facilities, offer crevices and cavities that are suitable bat roosting habitat.

A 2001 paper[1] documents six bat species on Lee Vining Creek: big brown bat (*Eptesicus fuscus),* silver-haired bat *(Lasionycteris noctivagans),* hoary bat *(Lasiurus cinereus),* long-eared myotis (*Myotis evotis),* little brown bat (*Myotis lucifugus),* long-legged myotis (*Myotis Volans).* Evaluating the significance of a bat roost from a resource management perspective depends both on what species of bats are present and how those species are using the roost. During the summer months, bats of many species will occupy one site during the day (= day roost) and one or more at night (= night roosts). Night roosts are sites, usually near foraging areas, at which bats rest (often in aggregations) between foraging episodes. In night roosts, they may process large insect prey, feed dependent young, and engage in social interactions. While night roosts are usually sites that offer protection from wind and/or rain, and are somewhat buffered against temperature fluctuations, they also are often in more exposed settings than day roosts. Day roosts are generally selected for low disturbance, protection from predators, and warmth.

During the late spring through the early fall, the most demographically significant roosts are those used by breeding females to raise young (=nursery/maternity roosts). Temperatures in maternity roosts often exceed 37°C. Colony size varies widely among and within species. Those bat species most frequently associated with reservoirs (*Myotis yumanensis* and *Myotis lucifugus*) can form relatively large colonies (from several hundred up to several thousand) in structures, although tree roosts identified by radiotracking are much smaller. Natural features and man-made structures

[1] Pierson, E.D., W. E. Rainey, and C. J. Corben. 2001. Seasonal Patterns of Bat Distribution along an Altitudinal Gradient in the Sierra Nevada.

may also serve as day-roosts for males or non-reproductive females during the summer, as temporary aggregation sites for migrating animals in the spring and fall, and as hibernating sites in the winter.

Only conducting pedestrian surveys for bats during the day is not sufficient to identify bat presence or absence in the Project area. All structures must be visually inspected for bats or bat sign (guano, culled insect parts, or urine stains) during the day, however, additional methods are needed. Any structures that were not completely surveyed or are known to have day roosting bats, must also be observed at evening emergence (from just prior to sunset until one hour after sunset or until 15 minutes after the last bat emerged) using both night vision equipment and one or more bat detectors to record echolocation calls. To guide management recommendations, bat species identification is needed at all structures in the Project area receiving bat use . To facilitate bat species identification, animals should be captured.

- **Comment**: The Progress Report should include at a minimum:
    - A description of the desktop analysis conducted (e.g., CNDDB, literature records, museums records)
    - A list of bat species with the potential (or that have been documented) to occur in the Project area, their conservation status, and an associated species account.
    - A description of the methodology used to conduct the bat surveys of the Project area.
    - A list and map of all SCE's facilities and associated structures in the Project area (e.g., tunnels, gaging stations, storage buildings, control rooms, tunnels, buildings, and bridges), if the facilities were surveyed (or a description of why the facility was not surveyed), when the facilities were surveyed (date and time), and a description of each facility as it relates to bat roosting.

- **Comment**: **Please provide the information requested below.** The following activities were listed in Section 6.1.1 *Pedestrian Surveys* of the *Final Technical Study Plans* filed by SCE on April 25, 2022, but were not mentioned or included in the Progress Report:

    - "*Observations of active or abandoned raptor nests will be recorded using a hand-held Global Positioning System (GPS) unit and mapped onto the field map.*" The Progress Report makes no mention of active or abandoned raptor nests and does not provide GPS points or a map. **Please provide his information with the Progress Report.**

- "*Active searches for reptiles and amphibians will be conducted. Methods will include lifting, overturning, and carefully replacing objects such as rocks, boards, and debris*." The Progress Report makes no mention of amphibian or reptile species or surveys. **Please provide this information, including methodology, with the Progress Report.**

- "*Biologists will perform pedestrian surveys within the terrestrial wildlife study area to (1) ground-truth the potentially suitable habitat maps developed during the literature review and (2) document any wildlife observations. Pedestrian surveys will be performed with binoculars to directly observe wildlife."* The Progress Report makes no mention of the results of ground-truthing the potentially suitable habitat maps developed during the literature review and does not provide the suitable habitat maps. **Please provide this information in the Progress Report.**

- "*All wildlife species observed will be recorded in field notes to species (if possible) and location on field maps*." No maps of wildlife species observed were provided in the Progress Report. **Please provide this information in the Progress Report.**

GIS DATA REQUEST

CDFW requests the following spatial data be provided in as shapefiles or geodatabase:

- Sampling sites for water quality, bacterial, turbidity and fish tissue sampling
- Reaches for the Channel Morphology Study
- Botanical Study Area boundary
- NDVI
  - Sampling plots (wet meadow)
  - Sampling plots (willow riparian scrub)
  - Study Sites (Test)
  - Study Sites (Control)
- Special-status plant species populations
- Tunnel from Ellery to Pool Powerhouse
- Gaging Stations
- Yosemite Toad - 2022 Habitat Survey Area and pools surveyed in 2022
- Terrestrial Wildlife Study Areas

OTHER

- CDFW requests that SCE make the 1933 Sales Agreement between Southern Sierras Power Company and LADWP available on the Projects relicensing website.
- CDFW requests that SCE make the following resource management plans available on the Projects relicensing website:
    - Avian Protection Plan and Bird Nesting Guidelines (includes provisions for reporting wildlife and avian interactions with the Project)
    - Vegetation Management Operations Manual
    - Invasive Mussel Prevention Plan
    - Fire Suppression Plan (part of the Project's Emergency Action Plan)
    - Soil Disposal Plan

CONCLUSION

CDFW appreciates the opportunity to comment on the DLA filed by SCE for the FERC relicensing of the Lee Vining Creek Hydroelectric Project. CDFW looks forward to further discussions with the Technical Working Group members.

If you have any question pertaining to this letter, please contact Alyssa Marquez, at (760) 567-0332 or Alyssa.Marquez@wildlife.ca.gov.

Sincerely,

Trisha A. Moyer

Trisha Moyer

Habitat Conservation Program Supervisor
Inland Deserts Region 6, Eastern Sierra

cc: California Department of Fish and Wildlife

Alisa Ellsworth, Environmental Program Manager
Alisa.Ellsworth@wildlife.ca.gov

Alyssa Marquez, FERC Coordinator R6 HabCon North
Alyssa.Marquez@wildlife.ca.gov

Beth Lawson, Senior Hydraulic Engineer
Beth.Lawson@wildlife.ca.gov

Document Content(s)

Lee Vining Creek FERC (P-1388) Progress Report Comment Letter_2.22.23.pdf.1

SCE RESPONSES TO COMMENTS

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#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
1	WQ-1	CDFW	**Recommendations:** CDFW does not believe that one year of turbidity logging is sufficient to capture a representative picture of the turbidity in the Lee Vining Creek system. Since turbidity loggers were not installed until summer of 2022, please retain the existing turbidity logger for at least one more year to ensure SCE obtains data for spring and to help detect any turbidity differences between years.	Consistent with the WQ-1 Study Plan, SCE proposes to monitor the following water quality study components in 2023 (the second year of data collection): • reservoir profiles (dissolved oxygen, temperature, pH, specific conductivity, turbidity); • reservoir and stream water quality sampling (in situ; total dissolved solids [TDS], total suspended solids [TSS], ammonium [NH4], nitrate [NO3], and orthophosphate [PO4], total phosphorus [TP]); and • bacterial sampling, and hydro-resource optimization turbidity monitoring. Results will be provided in a Final WQ-1 Technical Report in Spring, 2024.
2	WQ-1	CDFW	**Recommendation:** CDFW recommends SCE manage the Projects operations in a way that allow for elements of the natural flow regime (e.g., pulse flows, baseflows recession flows) to perform distinct ecological and geomorphic functions and provide for specific life history and habitat needs of fish and wildlife species. Input and movement of sediment through river systems during peak flow events is an import ecological and geomorphic function and it is well documented that dams impede and remove sediment from impacted stream reaches downstream of the dams. Reintroduction of the removed sediment into the sediment-starved stream system during peak flow events is a potential solution. However, to implement such protection, mitigation, and enhancement (PME) measures, turbidity levels in the replenished stream system need to remain within the Lahontan Regional Water Quality Control Boards' (LRWQCB) Basin Plan standards. Thus, data on the background turbidity or natural turbidity of the system is required for LRWQCB to determine if reintroduction of sediment into the system would violate the basin plan. To obtain this background turbidity data, CDFW recommends that SCE install turbidity loggers in locations in the stream system that allow for collection of the systems background turbidity. The 2023 anticipated large spring runoff would be a good time to acquire turbidity data during a higher turbidity year.	SCE is not proposing changes to operations. Additionally, any changes made would be susceptible to the recreation management requirements in the existing license. The Lee Vining Creek system is a granitic system with limited sediment throughout. To date, SCE and their Operations team have not noted any significant sediment deposits behind the dams. It is also worth noting that the reservoirs are drained each year, per the existing license requirements, thus reducing additional potential for sediment trapping. First-year study results from 2022 included in the Interim WQ-1 Technical Report (to be distributed spring 2023) indicate turbidity at inflow locations and throughout the FERC Project area is very low. Snow accumulation will likely prevent site access during spring 2023 runoff, water quality data will be collected, spot measurements will be collected as conditions and

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
				access allow in addition to the already planned sampling effort, to allow point comparisons to continuous data collected at downstream locations. Results will be provided in a Final WQ-1 Technical Report in Spring 2024.
3	WQ-1	CDFW	**Question:** Why did SCE not conduct In situ turbidity sampling? Will SCE conduct in situ turbidity sampling in 2023?	Turbidity was not collected during Summer 2022 because of probe malfunction in the field. SCE will conduct in situ turbidity monitoring in 2023. Results will be provided in a Final WQ-1 Technical Report in Spring 2024.
4	WQ-1	CDFW	**Question:** How could measuring the depth profiles at the deepest ice-free location, rather than maximum depth, affect the results or interpretation?	As demonstrated by profiles provided in the Progress Report Tech Memo for Ellery and Tioga lakes, water quality conditions are uniform with depth during spring. Thermal stratification may change oxidation/reduction conditions and affect nutrient and metal speciation at depth. Because no stratification was present in Saddlebag Lake in spring, results obtained at shallower depths are sufficient to characterize unsampled (hypolimnetic) portions of Saddlebag Lake.
5	WQ-1	CDFW	**Question:** Why did SCE not collect analytical samples at depth from Saddlebag Lake and Tioga Lake when the reservoirs were stratified? What does SCE intend to do if the lakes cannot be sampled in 2023?	Thermal stratification was not evident in the field; therefore, the field team only collected samples at the surface, consistent with the Study Plan. SCE will collect samples at depth during 2023 water quality sampling at all Project Reservoirs.
6	WQ-1	CDFW	**Question:** Why was water temperature not collected in stream reaches?	In situ and analytical water quality parameters, including water temperature, were collected at all Project reservoirs and stream study sites in spring, summer, and fall. Results will be described in the Interim WQ-1 Technical Report.

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
7	WQ-1	CDFW	**Comment:** Please include a discussion in the Progress Report on why data (e.g., pH, temperature, and specific conductivity) varies between reservoirs. For example, why does specific conductance increase at Saddlebag Lake when the depth is greater than three meters?	The intention of the Progress Report Tech Memo was to update stakeholders on the progress of each study at that time. Findings from 2022 data collection are presented in the Interim WQ-1 Technical Report (to be distributed Spring 2023). In addition to stratification effects upon atmospheric exchanges at the water surface, a number of factors may affect variations of in situ water quality between reservoirs and inflowing waters at differing times of the year. Interpretation of results and potential Project effects will be described in the Draft License Application.
8	WQ-1	CDFW	**Comment:** Please include the Target Reporting Limit (for the basin plan) in the Progress Report. Currently, the Progress Report only includes laboratory reporting (RL) and laboratory detection limit (DL).	Target Reporting Limits, as presented within the Lahontan Regional Water Quality Control Boards' (LRWQCB) Basin Plan, will be included in the Interim WQ-1 Technical Report.
9	WQ-1	CDFW	**Request:** Please include graphs in the Progress Report comparing each water quality parameter at all the reservoir locations.	A summary of 2022 water quality data collection at all reservoir locations will be included in the Interim WQ-1 Technical Report.
10	WQ-1	CDFW	**Question:** Many of the orthophosphate samples were received by the analytical laboratory outside of the Environmental Protection Agency (EPA) recommended holding time of the samples. Does SCE plan to retake these samples?	Spring samples were qualified due to shipping times outside of Licensee control. Samples were overnight shipped from Mammoth Lakes to the lab on the day of the collection immediately following sampling. Note that orthophosphate holding times during summer and fall were sufficient, and the same lab was used during spring, summer, and fall sampling. SCE does not currently intend to retake these samples.
11	WQ-1	CDFW	**Request:** Please make the temperature and dissolved oxygen (DO) profiles collected in Project reservoirs in 2015, 2016, and 2017 available to the TWG members.	2015, 2016, and 2017 reservoir profile data from Cohen (2019) will be summarized in the Final WQ-1 Technical Report.
12	WQ-1	CDFW	**Request:** Please provide all preliminary data provided in the PAD in the Progress Report (e.g., links or attachments).	Data presented in the PAD will be incorporated into the Final Technical Reports as appropriate.
13	WQ-1	CDFW	**Comment:** In the Progress Report, please address that DO in Project reservoirs and in Project-affected streams exceeded the published limits for water quality objectives in the LRWQCB Basin Plan.	A comparison to LRWQCB Basin Plan objectives will be provided in the Interim WQ-1 Tech Report. In general, due to site elevations and high temperatures during

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
				summer and fall, dissolved oxygen concentrations in Project reservoirs, Project-affected stream reaches, and reservoir inflow locations are near or below minimum water quality objectives both above and below Project reservoirs.
14	AQ-1/2	CDFW	**Comment:** CDFW has reviewed the 2022 Progress Report and does not currently have concerns assuming that the fish sample size is of sufficient size to assess fish populations in the streams and reservoirs.	Comment noted.
15	AQ-1/2	CDFW	**Questions**: Did surveyors observe anchor ice formation in the stream reaches?	No observations of anchor ice were made during the 2022 stream fish surveys.
16	AQ-1/2	CDFW	**Comment:** The mortality of fish can be reduced by watching set gill nets.	Thank you for your comment. Gill-netting study methods were adjusted in the field to address concerns of fish injury; method adjustments included increasing net check frequency and reducing total soak times. Because gill nets were deployed at night to increase capture rates for nocturnal salmonid (e.g., brown trout) and at depths of 20 feet or more in many locations, fish could not be observed in the net without pulling the net to the surface. Watching gill nets while they were deployed was not a suitable approach for reducing fish injury and mortality.
17	AQ-3	CDFW	The aquatic habitat mapping and sediment characterization study has not been implemented yet and CDFW has no comments.	Comment noted.
18	AQ-4	CDFW	The aquatic invasive plant study has not been implemented yet. However, CDFW would like to take this opportunity to restate CDFW comments provided to SCE on 1/14/2022 during the PAD Comment period: CDFW requested that nutrient monitoring of Project reservoir hypolimnion and outlets be conducted to determine the potential impact on the growth and spread of the nonnative, invasive Didymo (*Didymosphenia geminate*). This request was provided for the WQ-1 Study Plan but is also relevant here. SCE has not included sampling of the Project reservoir outlets for nutrients in the WQ-1 Study Plan but did mention that nutrient concentrations were measured in all Project reservoirs and their outlet streams between 2015 and 2017. Please provide this data in future Progress Reports.	Please see Table 5.2-8 of the PAD for a summary of nutrients (ammonium [NH_4], nitrate [NO_3], and orthophosphate [PO_4]) and dissolved oxygen (DO) concentrations measured in Project reservoirs and their outlet streams between 2015 and 2017. Results of Study AQ-4 (Aquatic Invasive Plants) and nutrient data, including both historic and Study WQ-1 results, will be evaluated in the Draft License Application.

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
19	AQ-5	CDFW	**Recommendation**: Section 3.2.2 describes the development of a Resource Optimization Model that is being used to "form an understanding of the properties of resource optimization operations in Lee Vining Creek." It is unclear whether SCE plans to share any of the information in the Resource Optimization Model with relicensing participants. CDFW requests that any results of the resource optimization be shared with relicensing participants so that stakeholders may understand how the Project is being used to optimize environmental, water delivery, and power generation during the life of the next FERC license.	SCE will provide stakeholders with the Resource Optimization Model and seek stakeholder input on the model later this year (2023). The model is still being developed and cannot be shared yet.
20	AQ-5	CDFW	**Recommendation:** This section states that "upon completion and calibration, the model will be distributed to interested stakeholders for review and comment." As requested in the February 1, 2023, Progress Report Meeting, CDFW recommends that SCE's modelers meet with interested stakeholders in small-group technical team meetings during the process of calibration and before completion of the modeling, not after. Stakeholders may have suggestions for improvement of the model platform that would allow the model to be most effectively used to evaluate a range of different potential alternative flow proposals.	Per discussions at the February 1, 2023, Progress Report Meeting, SCE intends to hold an Aquatics TWG meeting in May 2023 to discuss the operations model and to seek stakeholder input.
21	AQ-5	CDFW	**Comment**: CDFW has concerns regarding several aspects described in the Operations Modeling Technical Memo. Specifically, the lack of 1) development of unimpaired hydrology and 2) lack of a path for stakeholders to consider and compare the tradeoffs between Project revenue and alternative flow scenarios. In CDFW's study plan request sent on March 25, 2022, CDFW requested that along with the operations modeling, unimpaired hydrology should be developed by SCE at multiple points in the stream system. CDFW stated that unimpaired hydrology is used when considering the results of other resource studies and aquatic populations in the watershed and would be used to compare to historic operations as well as proposed operational scenarios when developing resource management measures. In the Final Technical Study Plans, filed by SCE on April 25, 2022, SCE rejected CDFW's request and stated that SCE and FERC use the current baseline conditions (existing Project) to identify and analyze any potential effects. CDFW disagrees and urges SCE to develop an unimpaired hydrologic dataset for	SCE appreciates that the operations model will need to clarify parameters that are used to manage the resource optimization flows; however, it is not anticipated that stakeholders will be provided with a model to "compare Project revenue and alternative flow scenarios." It is proposed that SCE and stakeholders identify measures that meet their desired future conditions based on the benefits to environmental resource management, and SCE will then determine if the economics of the Project will support those measures and propose alternate operations as needed. For relicensing purposes, the project baseline is the existing conditions of the Lee Vining Project. SCE's approach is to develop the unimpaired hydrograph as represented by reservoir inflows on a daily basis, and therefore the model will be able to discern the natural

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
			the Project. The unimpaired hydrologic dataset is not only used to compare to pre-Project conditions, but is used during the development of protection, mitigation and enhancement (PM&E) measures to look at functional flow information including low flows, pulse flows, snowmelt runoff information, and seasonal high flows, if necessary, to improve aquatic habitats. The stated goal of this study is to "Develop a robust Operations Model to assist SCE and stakeholders in understanding how Project operations interact with Lee Vining hydrology." Although SCE only hopes to compare to existing conditions, there is no way to assess what components of a hydrograph can be restored without understanding the timing and magnitude of available water.	hydrograph in Lee Vining Creek and Glacier Creek above Ellery Lake. Certain inputs from ungauged sources (Slate Creek and Warren Fork) will add uncertainty. SCE would like confirmation on what CDFW means by unimpaired hydrologic data set (if different from what is described above) and what information is being requested with regards to "specific locations," recognizing that there will be very little difference between inflows and locations in bypass reaches given how the Project operates (that is, essentially as "run-of-project" with minimal discretion as provided by constraints on reservoir operations set by Forest Service Conditions and the Sales Agreement). SCE has already proposed a Technical Working Group (TWG) meeting in May 2023 to discuss model parameters, and we suggest this can be explored further at that meeting (planned for May 2023).
22	AQ-5	CDFW	CDFW additionally requested in our March 25, 2022, letter that the operations model should include a module or post processing tool that allows all relicensing participants and FERC to understand clearly the financial impact (both gross generation and revenue) of new bypass requirements, ramping rate changes, and pulse flow requirements on Project finances. In the Final Technical Study Plans, filed by SCE on April 25, 2022, SCE rejected this request stating that SCE considers generation and revenue to be internal considerations that should not drive discussions surrounding potential effects. CDFW disagrees with this assessment, and notes that most PM&E discussions in FERC relicensing's are driven by financial as well as water management implications of any alternative proposals. As CDFW noted in our study plan comments, in discussions of PM&E measures, all relicensing participants should have the ability to understand how any proposed measures are balanced with Project generation impacts. Without this tool, SCE can say "yes" or "no" to PM&E measures, but both FERC and relicensing participants have no ability to understand why those decisions were made and where there is negotiating space and potential tradeoffs to be made around each of those potential	See comments above regarding sharing granular data regarding the financial connection between operational inputs. SCE makes business decisions on a range of valuations and the type of data being described in this request represents only part of the picture and is overly simplistic. Exhibit D of the Draft and Final License Application will provide a connection between the revenue/costs associated with each PME and that provides FERC and stakeholders with data to understand how SCE assigns valuation to its operational decisions. Exhibit D, Exhibit H, and the developmental analysis in Exhibit E provide sufficient information for FERC to meet its requirements under sections 4(e) and 10(a)(1) of the Federal Power Act. SCE's obligation is to provide this information to FERC in its expected format. FERC will include this information in its NEPA along with the environmental

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			measures. Sections 4(e) and 10(a)(1) of the Federal Power Act requires the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection of, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. With no financial analysis to consider the power generation benefits of one alternative proposal versus another, there is no way for any entity except SCE to determine whether there is any balancing of power generation versus enhancement to fish and wildlife. CDFW is making the request now to SCE to develop unimpaired hydrology and a method to look at overall and peaking generation comparisons of operations model alternatives. If these components are not developed at this step in the relicensing, CDFW will plan to submit these during third stage consultation as specified in the Traditional Licensing Process (TLP) regulations. CDFW staff recommend that these tools be developed by SCE and utilized now so that they may be used during relicensing PM&E measure discussions.	analysis and stakeholders will have multiple opportunities to review and comment. Regarding the second part of this comment (unimpaired hydrology), please see response to comment #21. SCE has no objections, provided this does not lead to a significant expansion of data collection. There are ungauged streams about which SCE has limited knowledge –a rational method for extracting that hydrology and folding it into our dataset can be provided, but SCE does not agree with the need for additional gaging and field data collection to provide this requested information.

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23	AQ-6	CDFW	**Comment:** CDFW has concerns about the lack of assessment of the channel morphology within the FERC Project area. CDFW believes that it is necessary to gather channel morphology data within the FERC Project area to understand the habitat-flow relationship, to protect wildlife resources and inform future licensing conditions. In CDFW's study plan request sent on March 25, 2022, CDFW requested that an instream flow study be conducted within the FERC Project area. In the Final Technical Study Plans, filed by SCE on April 25, 2022, SCE rejected this request stating that CDFW's new flow study was submitted after the comment period and that the AQ-3 Aquatic Habitat Mapping and Sediment Characterization study addresses CDFW's request for a qualitative habitat mapping study. It is CDFW's understanding that after the first stage of consultation is concluded (ending after all participating agencies, Native American tribes, and members of the public provide written comments or 60 days after the joint meeting is held [up to 120 days, if extended], whichever occurs first), resource agencies can request the applicant to do necessary and appropriate studies or gather additional information. CDFW does not agree that the AQ-3 study addresses CDFW's request. AQ-3 does not propose to conduct surveys to document the current flow-habitat relationship within the Project area. AQ-3 is currently designed with the view that the limiting factor for trout is available spawning habitat, but CDFW does not agree with this viewpoint and believes an instream flow study is necessary to inform decision making. Additionally, the determination of available spawning habitat should be supported by a proportional stock distribution analysis. The 1992 instream flow analysis for brook and brown trout should not be the sole habitat-flow data utilized to inform license conditions 30 years later and an updated instream flow analysis conducted within the FERC Project area needs to be conducted. Due to the underlying glacial geology and the steep gradient of the Lee Vining Creek system within the Project area, CDFW believes using a Habitat Criteria Mapping Method or MesoHABSIM would be more appropriate than an Instream Flow Incremental Methodology (IFIM).	Although dams can affect channel morphology by trapping sediment and altering flow regimes, sediment accumulation behind Lee Vining Project dams has not been identified as an issue by SCE or stakeholders. Further, SCE does not propose to alter peak or minimum streamflows from existing conditions. SCE is evaluating channel morphology in the reach below Poole Powerhouse where hydro-optimization occurs in Study AQ-6. Additionally, existing information to describe habitat-flow relationships throughout Lee Vining Creek, including the following reaches: Upper Lee Vining Creek between Saddlebag and Ellery Lake (SCE, 1986) and Lower Lee Vining Creek below Poole Powerhouse (FERC, 1992). No instream flow studies have been conducted or proposed on Glacier Creek below Tioga Lake; instream flow assessments in this reach would not significantly inform PME measures because of the limited amount of storage available and the overarching habitat management goal of maintaining year-round flow in the creek. Study AQ-3 was designed in response to a CDFW request during TWG Meetings for qualitative assessment of habitat and characterization of sediments; it is not focused solely on spawning. SCE did not reject the referenced study request in 2022 due to timeliness, it was rejected because SCE believes it to be unnecessary and unwarranted. No Study Requests meeting FERC Study Request Criteria described in 18 CFR §5.9 have been received surrounding this topic. Study AQ-3 Habitat Mapping and Sediment Characterization includes a survey of the entire FERC Project Boundary. Further, stock distribution will be assessed for potential Project effects

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				in the Draft License Application. CDFW believes Habitat Criteria Mapping would be a more appropriate methodology than PHABSIM for establishing habitat-flow relationships for brown and brook trout. The justification provided by CDFW is based on the age of the data and glacial geology and the steep gradient of the Lee Vining Creek system within the FERC Project area. PHABSIM studies have been effectively implemented in dozens of high-gradient streams in California for decades, including CDFW's Instream Flow Incremental Methodology studies of nearby Mill Creek, Wilson Creek, and Rush Creek. SCE disagrees that the existing information is no longer valid and believes that outcomes of a new instream flow study would be similar to those already existing because of the steep and stable nature of the channel. The new study would also require a significant level of effort and would not provide significant additional information for developing PME measures. SCE intends to have conversations with the Agencies about the appropriate flow regime for Lee Vining and Glacier creeks prior to the development of the Final License Application.

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24	TERR-1	CDFW	**Comment:** Mountain bent grass (Agrostis humilis) is listed as a rank 2B.3 plant, meaning, except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2B would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act (FESA). With California Rare Plant Rank 2B, the California Native Plant Society (CNPS) recognizes the importance of protecting the geographic range of widespread species and protects the diversity of California's flora to help maintain evolutionary processes and genetic diversity within species. All of the plants constituting California Rare Plant Rank 2B meet the definitions of the California Endangered Species Act (CESA) of the California Fish and Game Code (FGC) and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to the California Environmental Quality Act (CEQA), or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380. Ranks at each level also include a threat rank, with mountain bent grass identified as 0.3 – Not very threatened in CA (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known). However, since the Threat Rank guidelines only represent a starting point in the assessment of threat level, other factors such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Rank.	Comment noted.
25	TERR-1	CDFW	**Comment:** The CNPS identifies that mountain bent grass is threatened by foot traffic and vehicles and possibly threatened by grazing and trampling. SCE should identify the potential for these threats and any other threats (e.g., maintenance activities) at each population location to determine the vulnerability, condition of occurrences and if PME measures are needed (e.g., signage, fencing).	Project-related effects will be addressed in the Draft License Application.

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26	TERR-1	CDFW	**Comment:** On January 14th, 2022, CDFW proposed a Riparian Monitoring and Community Health Study. SCE responded that 'sufficient data exists from ongoing Riparian Monitoring Evaluations conducted as part of the license'. SCE has shared with CDFW via email various Riparian Reports associated with the existing FERC License requirements; however, these reports should be made available for review on the Projects relicensing website. Additionally, SCE responded in the Revised Technical Study Plans that raw data would be provided to the TWG. This data should also be made available on the Projects relicensing website. Although SCE has not agreed to conduct additional evaluations of riparian communities within the FERC Project boundary, all existing available data that SCE produced as part of the license (e.g., riparian monitoring and evaluations) should be made available for review now. Providing this data later with the Draft License Application will not provide stakeholders sufficient time to review the data in a meaningful way.	The historic riparian reports are available on the FERC E-library and several have been previously shared on a secure Project Sharefile folder. This folder has been updated to include the latest information and has been distributed to stakeholders. Raw data conducted as part of the relicensing will be provided to stakeholders via Sharefile after it has been through a proper Quality Assurance / Quality Control process.
27	TERR-1	CDFW	Much of the Botanical Resource study area is outside of the FERC Project area and is focused only around Project facilities or recreational areas. Does sufficient data exist to provide a baseline of the distribution of special status plant species within the FERC Project area? Additionally, the Botanical Resource study area does not encompass Lee Vining Creek just east of the Sawmill campground, an area disturbed by several fishing access trails. Documentation of special status plant species around fishing access trails is necessary to determine Project impacts related to recreation.	Prior to going into the field, a literature review was conducted to identify special-status and invasive plant species with potential to occur (or have been reported to occur) in the FERC Project Boundary. The study area focused on areas surrounding above-ground Project facilities, areas within the influence of the Project operations and formal INF recreation facilities. The area around Lee Vining Creek below Sawmill Campground is considered dispersed use, is not an official INF recreation facility and includes no formal trails. Additionally, this area is not within influence of Project operations. For these reasons, SCE does not intend to survey this area.
28	TERR-1	USFS	Botanical survey should include areas used to access project infrastructure such as the Saddlebag Lake dam. The Forest Service requests a thorough review of the project area to identify similar locations that have not been surveyed. (See Figure "Inyo NF Botany Survey Review 6 Feb 2023").	The access road to Saddlebag Lake dam will be added to the botanical survey area this summer (2023).

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29	TERR-2	CDFW	**Comment:** In Section 6.1.1 Pedestrian Surveys of the Final Technical Study Plans filed by SCE on April 25, 2022, it states that "All Project facilities will be inspected for evidence of bat roosting." The Progress Report does not mention that bat surveys were conducted, and no associated results of those surveys are provided. During the Feb 1, 2022, meeting Psomas (SCE Consultants) stated that they thought bat surveys were conducted and subsequently followed up with an email stating they performed the effort and would incorporate bat survey results into the Technical Memo. CDFW does not currently have access to the results of the bat survey and therefore cannot comment directly on those results. However, the following comments are relevant to the FERC Project, bat survey methodology, and bat ecology. North American bats use a wide variety of roost sites, including crevice's, cavities and foliage. In a natural setting, this can include dark chambers such as caves or large tree hollows, rock crevices, exfoliating tree bark, and damaged wood snags. Bats will also roost in cave-like spaces and/or crevices in man-made structures, such as old mine workings, cave-like spaces under transformer pads, gaging stations, storage buildings, crevices above sliding doors, control rooms, tunnels, buildings, and bridges. The Project area includes natural aquatic habitats (e.g., reservoirs, rivers), mixed conifer forests, and open habitat that could support roosting, foraging, and migration for various bat species. Large complex structures in the Project area, like the Pool Powerhouse and other associated facilities, offer crevices and cavities that are suitable bat roosting habitat. A 2001 paper1 documents six bat species on Lee Vining Creek: big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), long-eared myotis (*Myotis evotis*), little brown bat (*Myotis lucifugus*), long-legged myotis (*Myotis Volans*). Evaluating the significance of a bat roost from a resource management perspective depends both on what species of bats are present and how those species are using the roost. During the summer months, bats of many species will occupy one site during the day (= day roost) and one or more at night (= night roosts). Night roosts are sites, usually near foraging areas, at which bats rest (often in aggregations) between foraging episodes. In night roosts, they may process large insect prey, feed dependent young, and engage in	Bat roost surveys were conducted as specified in the Study Plan but were not included in the technical memo. Survey documentation/observations will be included in the Final Technical Report.

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			social interactions. While night roosts are usually sites that offer protection from wind and/or rain, and are somewhat buffered against temperature fluctuations, they also are often in more exposed settings than day roosts. Day roosts are generally selected for low disturbance, protection from predators, and warmth. During the late spring through the early fall, the most demographically significant roosts are those used by breeding females to raise young (nursery/maternity roosts). Temperatures in maternity roosts often exceed 37°C. Colony size varies widely among and within species. Those bat species most frequently associated with reservoirs (*Myotis yumanensis* and *Myotis lucifugus*) can form relatively large colonies (from several hundred up to several thousand) in structures, although tree roosts identified by radiotracking are much smaller. Natural features and man-made structures may also serve as day-roosts for males or non-reproductive females during the summer, as temporary aggregation sites for migrating animals in the spring and fall, and as hibernating sites in the winter. Only conducting pedestrian surveys for bats during the day is not sufficient to identify bat presence or absence in the Project area. All structures must be visually inspected for bats or bat sign (guano, culled insect parts, or urine stains) during the day, however, additional methods are needed. Any structures that were not completely surveyed or are known to have day roosting bats, must also be observed at evening emergence (from just prior to sunset until one hour after sunset or until 15 minutes after the last bat emerged) using both night vision equipment and one or more bat detectors to record echolocation calls. To guide management recommendations, bat species identification is needed at all structures in the Project area receiving bat use. To facilitate bat species identification, animals should be captured.	

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
30	TERR-2	CDFW	**Comment:** The Progress Report should include at a minimum: - A description of the desktop analysis conducted (e.g., CNDDB, literature records, museums records) - A list of bat species with the potential (or that have been documented) to occur in the Project area, their conservation status, and an associated species account. - A description of the methodology used to conduct the bat surveys of the Project area. - A list and map of all SCE's facilities and associated structures in the Project area (e.g., tunnels, gaging stations, storage buildings, control rooms, tunnels, buildings, and bridges), if the facilities were surveyed (or a description of why the facility was not surveyed), when the facilities were surveyed (date and time), and a description of each facility as it relates to bat roosting.	Comment noted. Bat roost surveys were conducted as specified in the Study Plan. Survey documentation/observations will be provided in the Final Technical Report.
31	TERR-2	CDFW	**Comment:** Please provide the information requested below. The following activities were listed in Section 6.1.1 Pedestrian Surveys of the Final Technical Study Plans filed by SCE on April 25, 2022, but were not mentioned or included in the Progress Report: "Observations of active or abandoned raptor nests will be recorded using a hand-held Global Positioning System (GPS) unit and mapped onto the field map." The Progress Report makes no mention of active or abandoned raptor nests and does not provide GPS points or a map. Please provide his information with the Progress Report. "Active searches for reptiles and amphibians will be conducted. Methods will include lifting, overturning, and carefully replacing objects such as rocks, boards, and debris." The Progress Report makes no mention of amphibian or reptile species or surveys. Please provide this information, including methodology, with the Progress Report. "Biologists will perform pedestrian surveys within the terrestrial wildlife study area to (1) ground-truth the potentially suitable habitat maps developed during the literature review and (2) document any wildlife observations. Pedestrian surveys will be performed with binoculars to directly observe wildlife." The Progress Report makes no mention of the results of ground-truthing the potentially suitable habitat maps developed during the literature review and does not provide the suitable habitat maps.	Raptor nest observations and locations will be provided in the Final Technical Report. Both reptile and amphibian species observed during the surveys are listed in the wildlife compendium within the Progress Report Tech Memo. The herpetofauna survey methods match those listed in the Technical Study Plan as noted on page G-5 of the Progress Report Tech Memo. The Final Technical Report will include a discussion of results from ground-truthing potentially suitable habitat identified during the literature search. Locations of wildlife species observations were included in the compendium, but not shown on a field map; maps showing observed species' general locations will be provided in the Final Technical Report.

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			Please provide this information in the Progress Report. "All wildlife species observed will be recorded in field notes to species (if possible) and location on field maps." No maps of wildlife species observed were provided in the Progress Report. Please provide this information in the Progress Report.	
32	Other	CDFW	CDFW requests the following spatial data be provided as shapefiles or geodatabase: - Sampling sites for water quality, bacterial, turbidity and fish tissue sampling - Reaches for the Channel Morphology Study - Botanical Study Area boundary - NDVI -- Sampling plots (wet meadow) -- Sampling plots (willow riparian scrub) -- Study Sites (Test) -- Study Sites (Control) - Special-status plant species populations - Tunnel from Ellery to Pool Powerhouse - Gaging Stations - Yosemite Toad - 2022 Habitat Survey Area and pools surveyed in 2022 - Terrestrial Wildlife Study Areas	All the requested GIS data will be provided to stakeholders via a secure Sharefile link once it has been through a proper Quality Assurance / Quality Control process.
33	Other	CDFW	CDFW requests that SCE make the 1933 Sales Agreement between Southern Sierras Power Company and LADWP available on the Projects relicensing website.	The Sales Agreement will be provided via a secure ShareFile link.
34	Other	CDFW	CDFW requests that SCE make the following resource management plans available on the Projects relicensing website: - Avian Protection Plan and Bird Nesting Guidelines (includes provisions for reporting wildlife and avian interactions with the Project) - Vegetation Management Operations Manual - Invasive Mussel Prevention Plan - Fire Suppression Plan (part of the Project's Emergency Action Plan) - Soil Disposal Plan	The requested management plans will be posted via a secure ShareFile link.

#	STUDY PLAN	AGENCY	AGENCY COMMENT	RESPONSE
35	REC-1	USFS	Study results (Table 4-3) indicate substantial use of the upper canyon for recreation by campers staying at Lower Lee Vining Campground (22%) and Moraine Campground (29%). Survey results at both locations are within the 50% confidence interval threshold established by SCE. INF requests that these locations be included in the 2023 continuation of REC-1 to capture potential use displaced by the lack of available campsites in the upper canyon. Displaced visitors are exactly the people who could be best able to inform the extent to which additional camping capacity may be needed in the upper canyon.	While SCE agrees the 50% confidence interval threshold is met by both the Lee Vining Campground and Moraine Campground neither of the sites meet the 55% threshold for recreationists recreating in Upper Lee Vining Canyon which was also utilized. Additionally, surveyors asked recreationists if the campground they were staying at was their preferred location. Of the twenty-four (24) recreationists surveyed at the Moraine Campground, none of them indicated they preferred to stay somewhere else. Of the thirty-six (36) recreationists surveyed at the Lower Lee Vining Campground three (3) indicated they would have preferred to stay somewhere other than the sites listed in the survey, one (1) indicated they preferred to stay at Moraine Campground, one (1) indicated they preferred to stay at Tioga Lake Campground however no sites were available. Additionally, it is SCE's understanding, based on conversations at the March 1 REC Technical Working Group meeting, that the USFS feels that information gathered at these locations would be useful in the event that recreation facilities in the FERC Project area need to be expanded and facilities in the Upper Lee Vining Canyon are limited due to geography and topography. However, it is SCE's position that gathering this data now would be premature and there is currently no nexus to these facilities. For these reasons, SCE does not intend to include these two sites in the REC-1 2023 surveys.
36	REC-1	USFS	Because winter 2022/2023 may be a near-record snow year, springtime could present an opportunity to measure substantial over-snow recreation in the project area including snowmobiling and skiing. The INF requests that the 2023 survey be designed to capture over-snow use in addition to summer recreation uses by surveying in April and May.	Snowmobiling and skiing were not previously identified as recreation opportunities to be included, and SCE does not see any Project nexus with these over-snow activities. However, SCE will include them as activity options in the 2023 survey forms when interacting with

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				recreators. Once Tioga Pass Road opens and surveyors are in the Project Area, recreators engaging in these activities will be included opportunistically at the previously identified survey locations. For purposes of ensuring that over-snow use is adequately described in the License Application, SCE would welcome an opportunity to incorporate the revised management plan being developed by the USFS for this area.
37	REC-2	USFS	Based on the findings from REC-1 in 2022, recreation in the upper canyon was the primary activity for users of Sawmill Walk-in Campground and Junction Campground (Figure 4-1). Include these campgrounds in the recreation facilities condition survey in 2023. Survey responses at both campgrounds are well within the 50% confidence interval threshold set by SCE in REC-1.	These campgrounds have been added to the 2023 REC-2 Recreation Facilities Condition Assessment.
38	REC-2	USFS	REC-1 results indicate that a substantial portion of visitors staying at Lower Lee Vining Campground (22%) and Moraine Campground (29%) recreate in the upper canyon as their primary activity. These two lower canyon campgrounds should be included in the REC-2 recreation facilities condition assessment in 2023 because of their potential nexus with the project and the possibility that improving these campgrounds may be an option if improvements at upper canyon campgrounds are prevented by physical or biological constraints.	SCE does not intend to include these sites in the REC-2 study for the reasons previously discussed above (comment 35).