



Bishop Creek Project (P-1394) Relicensing

Technical Workgroup Meeting

May 7, 2020

FERC Project Update

- November 4, 2019: Study Plan Determination Issued
- December 2019: Progress Report 1 Submitted
- April 2020: Progress Report 2 Submitted
 - Call with FERC
 - May 7th TWG meeting
- Upcoming Summer 2020 Field Surveys
 - Water Quality
 - Sediment
 - Bats
 - Reservoir Fish Surveys and Bathymetry
 - Owens Sucker
 - Electrofishing
 - IFIM Birch McGee Creeks
- Initial Study Report
 - Due to FERC Nov 4 2020
 - ISR Meeting within 15 days of filing

Resource Areas



Fish and Aquatics: IFIM

Fisheries and Aquatic Resources: IFIM

Study Goals and Objectives

- Determine the range of flows necessary to provide suitable habitat for:
 - brown trout population in Bishop Creek
 - Middle and South forks of Bishop Creek,
 - Bypass reaches below intakes 2, 3, 4, 5 and 6,
 - Below the South Fork Diversion,
 - Potential native non-game species below Plant 4.



IFIM Work completed to date

- September 2019 Surveys
 - Mesohabitat Survey
- October 2019 Consultation
 - Review mesohabitat data and select study sites
 - Select transects within most study sites
 - Modify field methods for two study sites
- November 2019 Consultation and Surveys
 - Meet on-site to select transects at pre-determined study sites
 - Data collection at study sites
- January – February 2020
 - Develop and finalize habitat suitability rating criteria
- **PHABSIM**
 - November 2019
 - Survey transects and gather hydraulic data
 - December 2019 – January 2020
 - Data entry, QC
 - February 2020
 - Calibrate and run hydraulic models
 - March 2020
 - Run habitat model, review and analyze model output, draft report

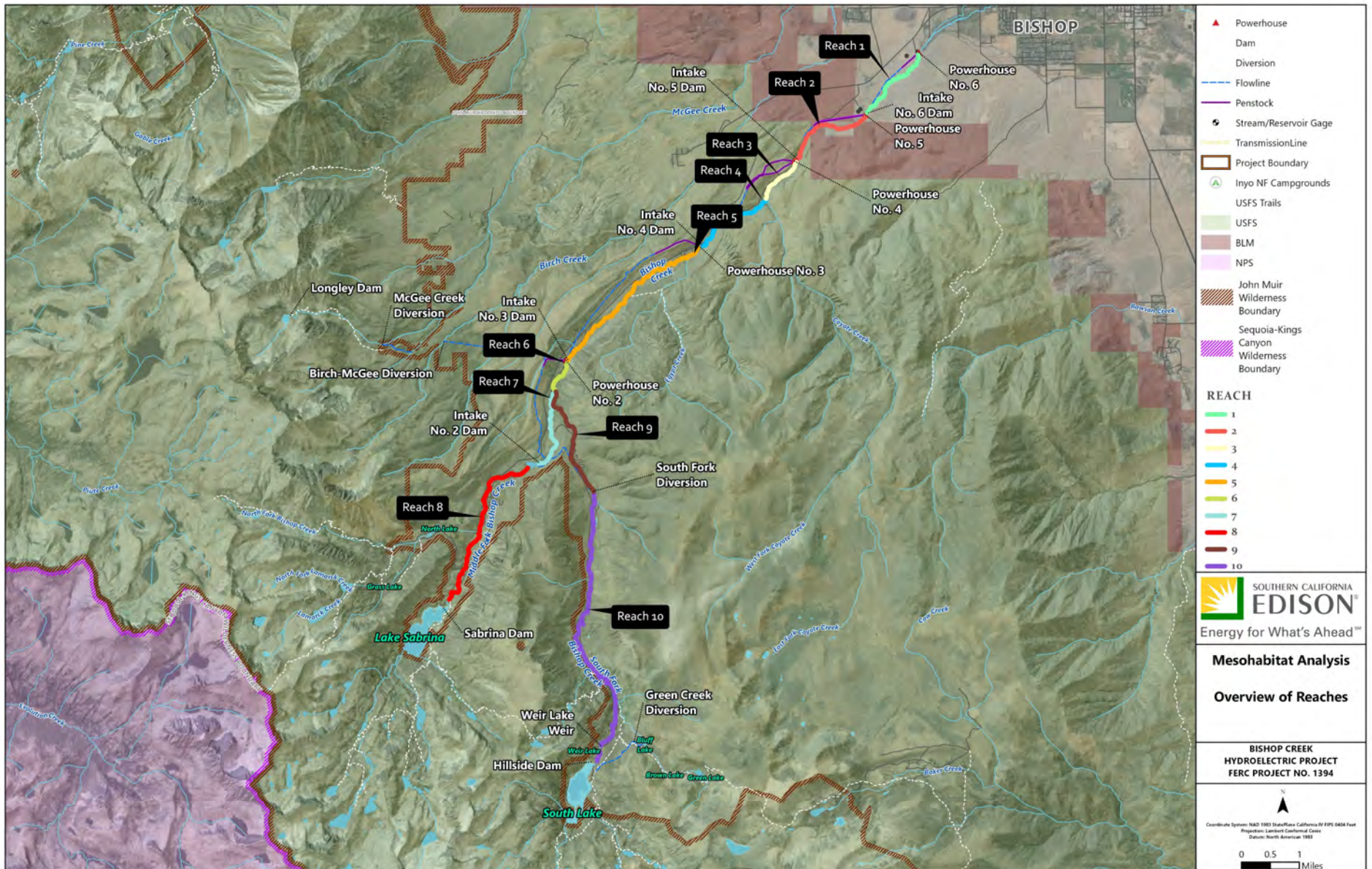


IFIM

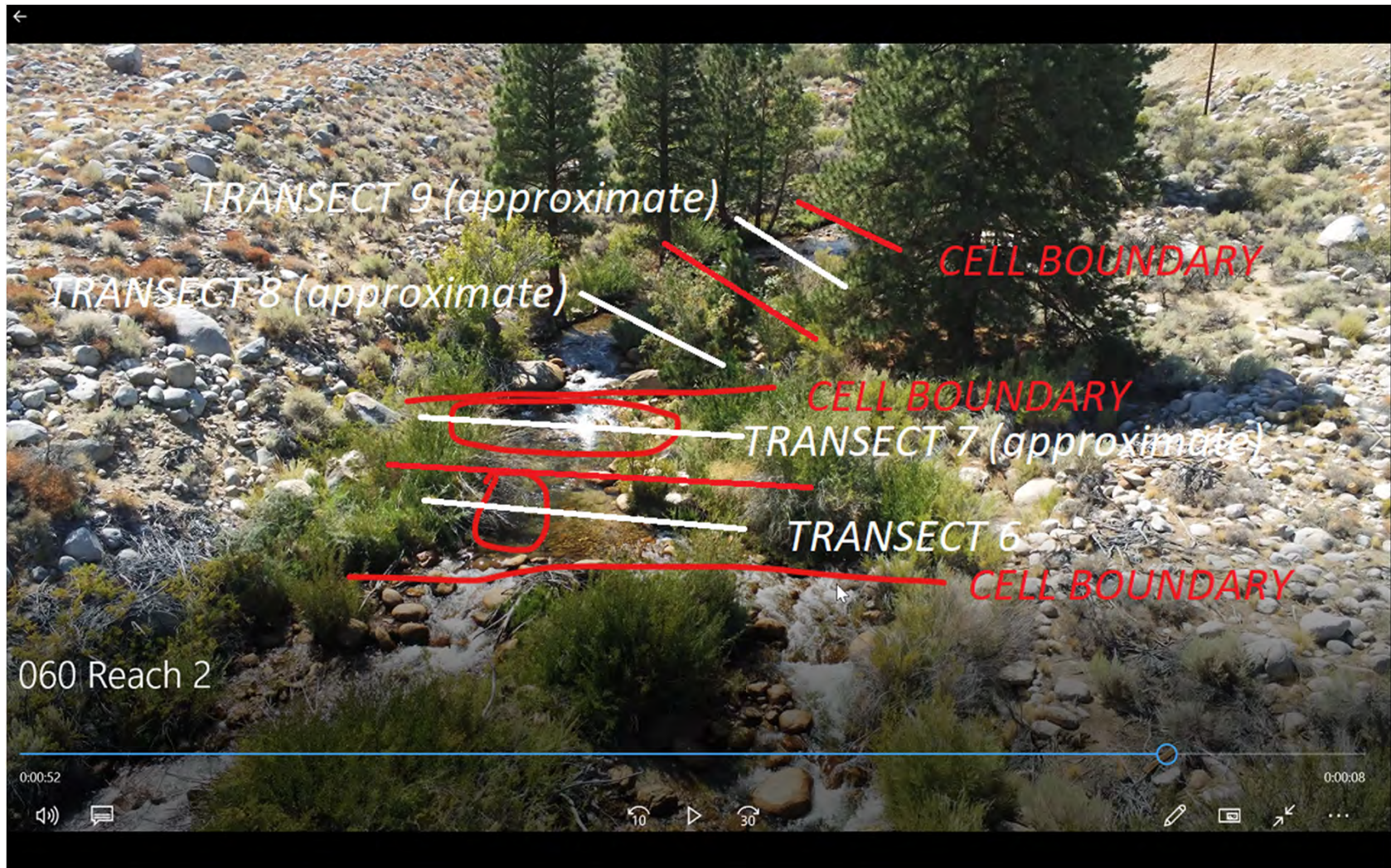
Modifications from Existing Approved Plan

- Habitat Criteria Method substituted for PHABSIM in reaches where hydraulic simulation is not feasible
 - Reaches 4 and 6 - high gradient cascades and plunge pools
 - Part of reach 8 - multiple split channels

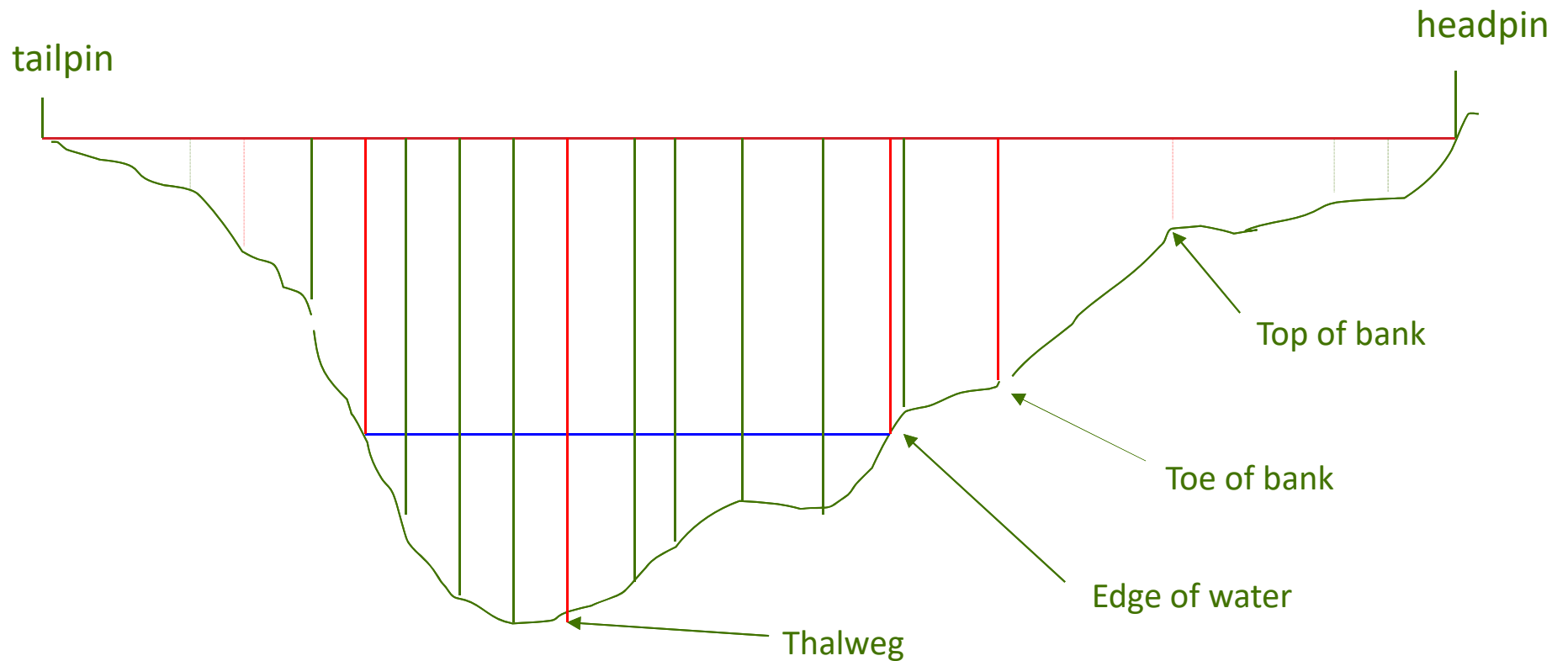




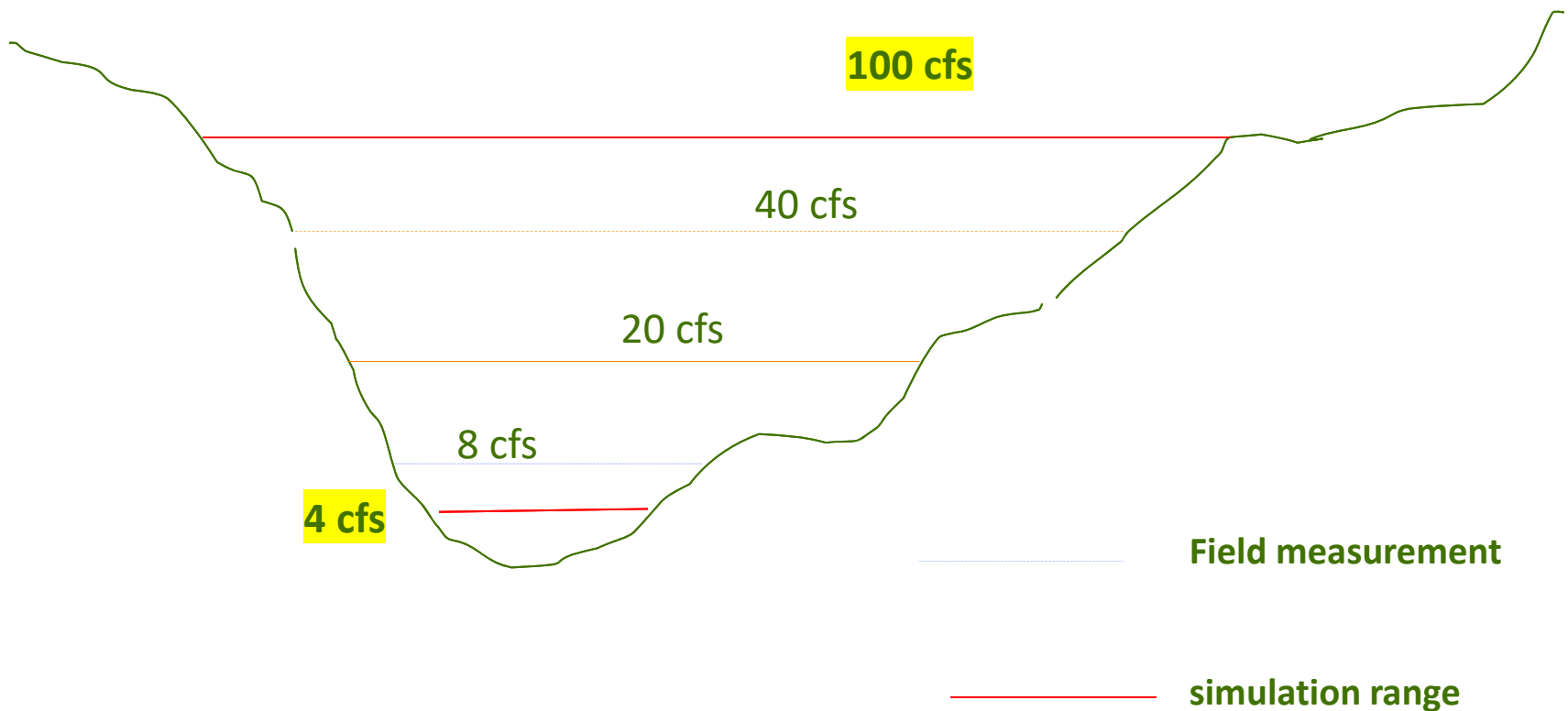
Typical study site layout

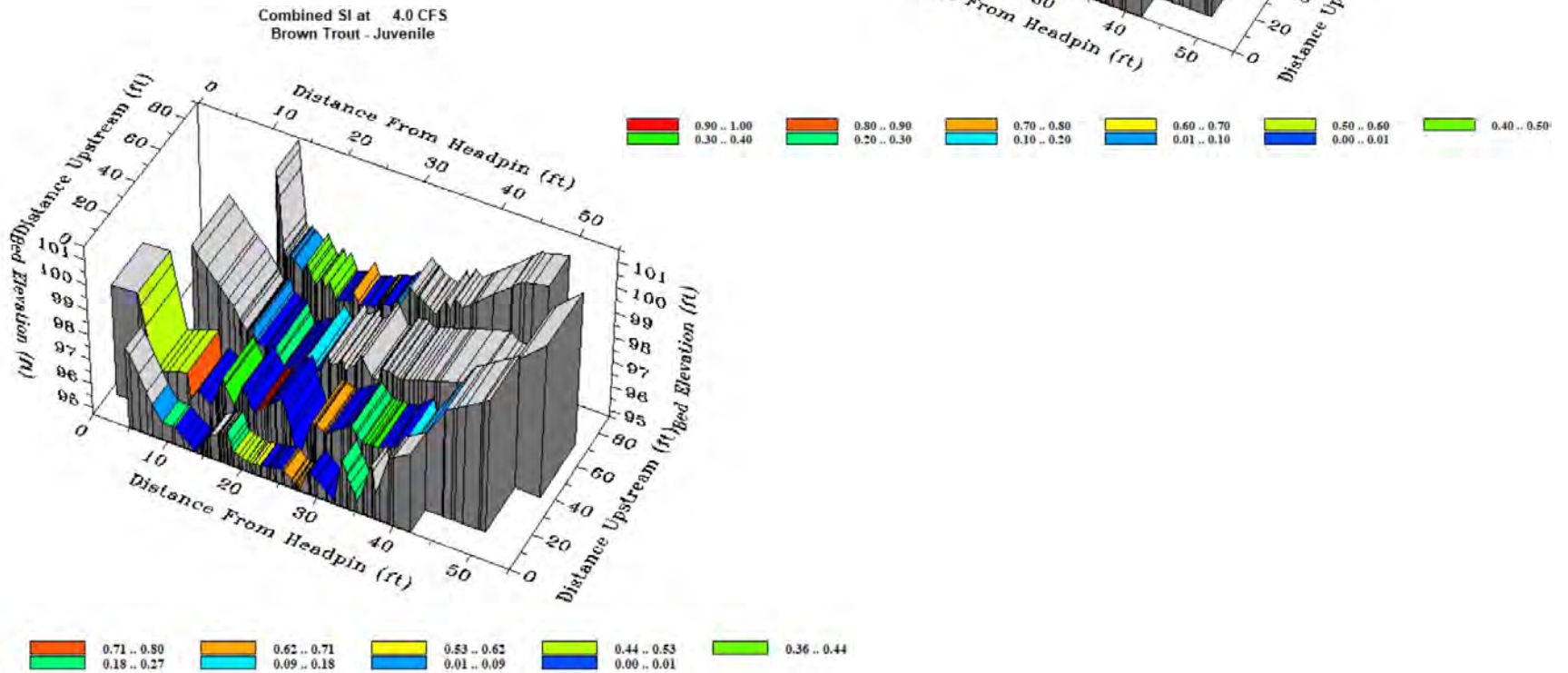
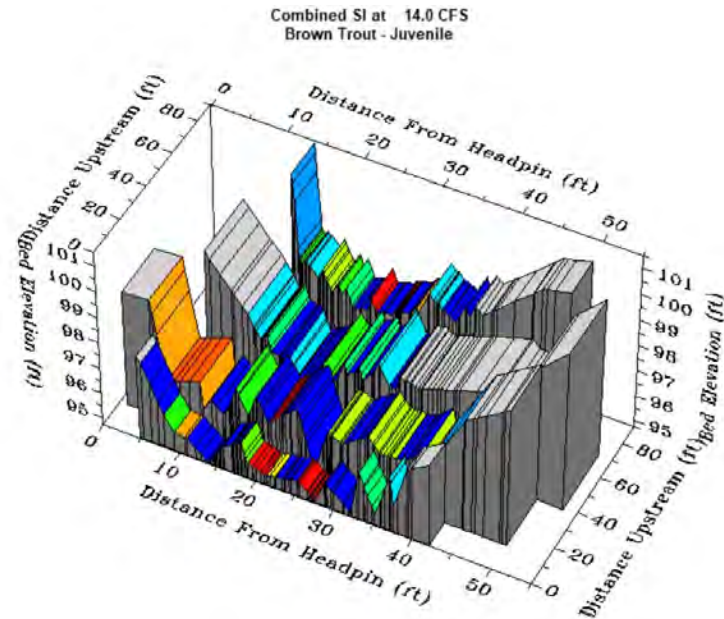
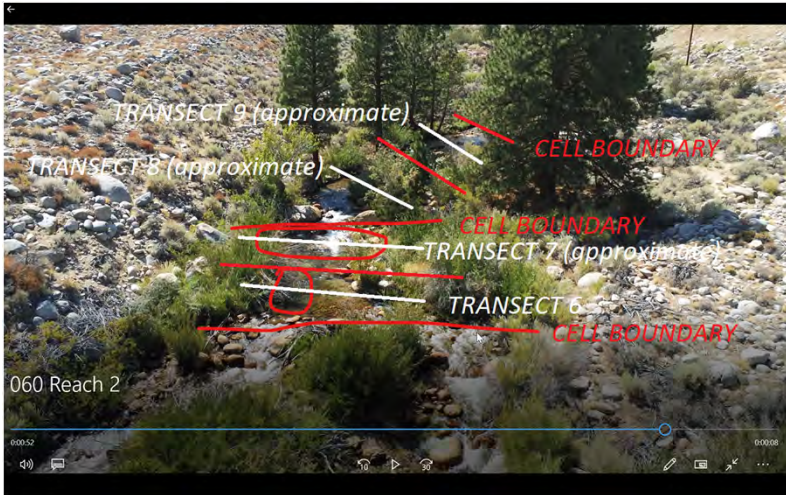


Verticals are located along each transect to capture key substrate and profile features



calibration flows allow for simulation
from 4 to 100 cubic feet per second





IFIM Reach 2

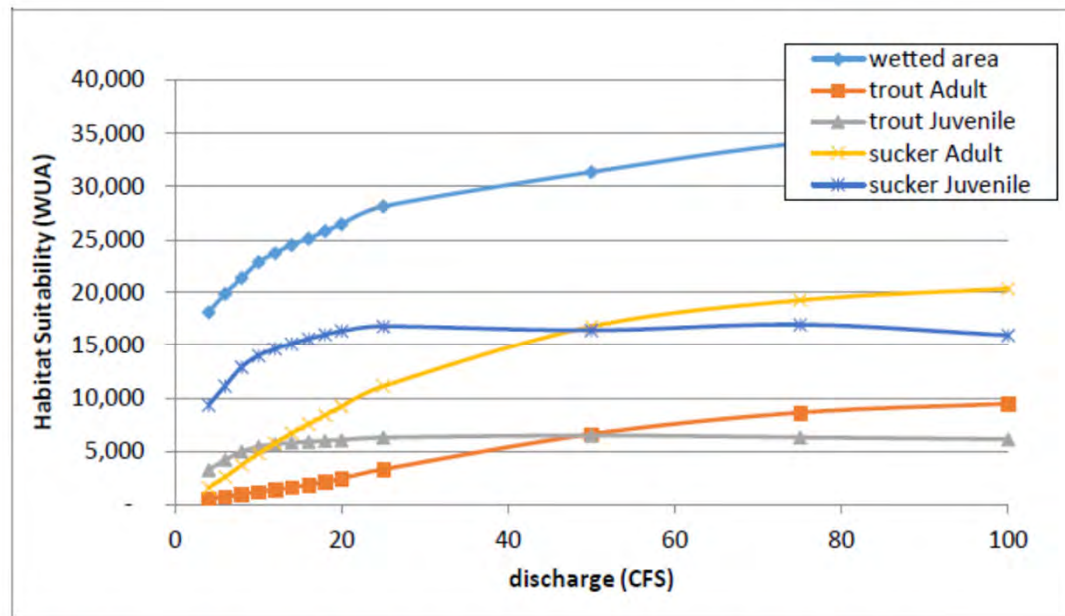
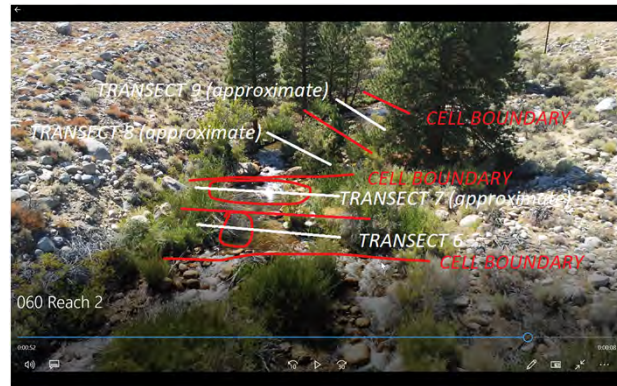


FIGURE 2.2 REACH 2 HABITAT SUITABILITY BETWEEN 4 AND 100 CFS

IFIM Reach 5



PHOTO 2.4 REACH 5 STUDY SITE

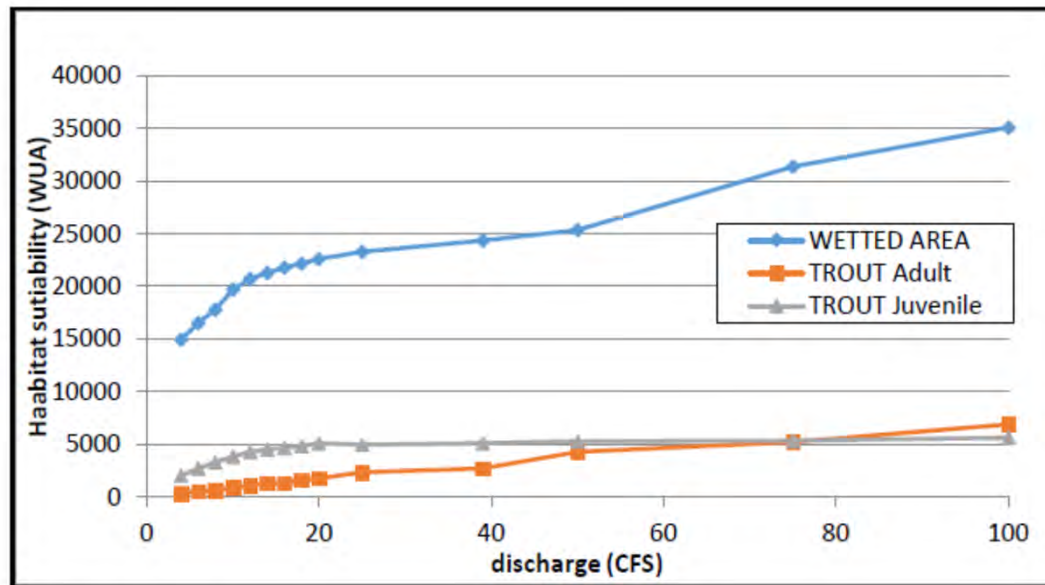


FIGURE 2.4 HABITAT SUITABILITY REACH 5

IFIM Reach 10

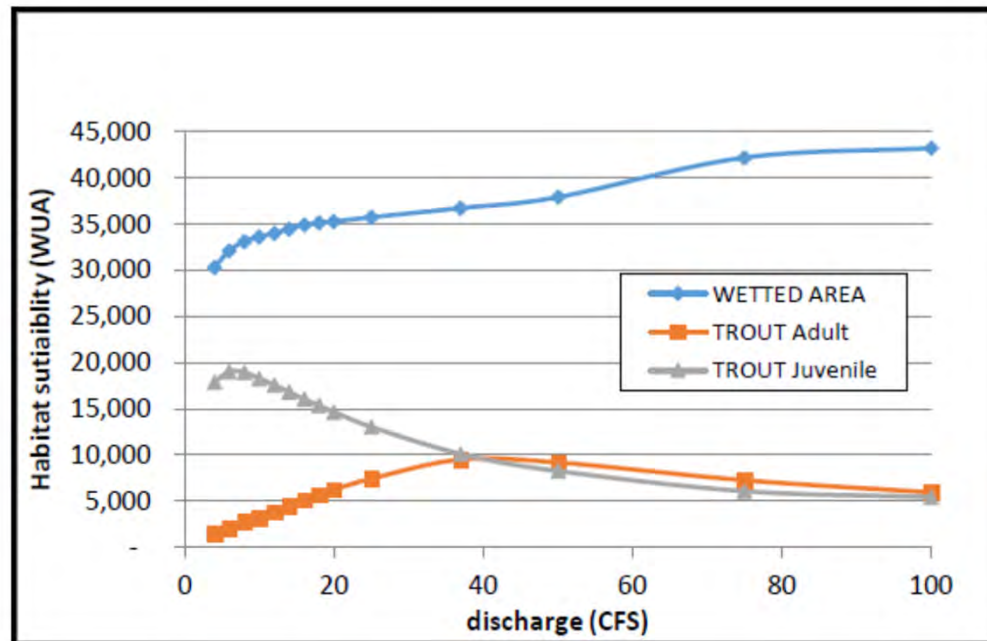
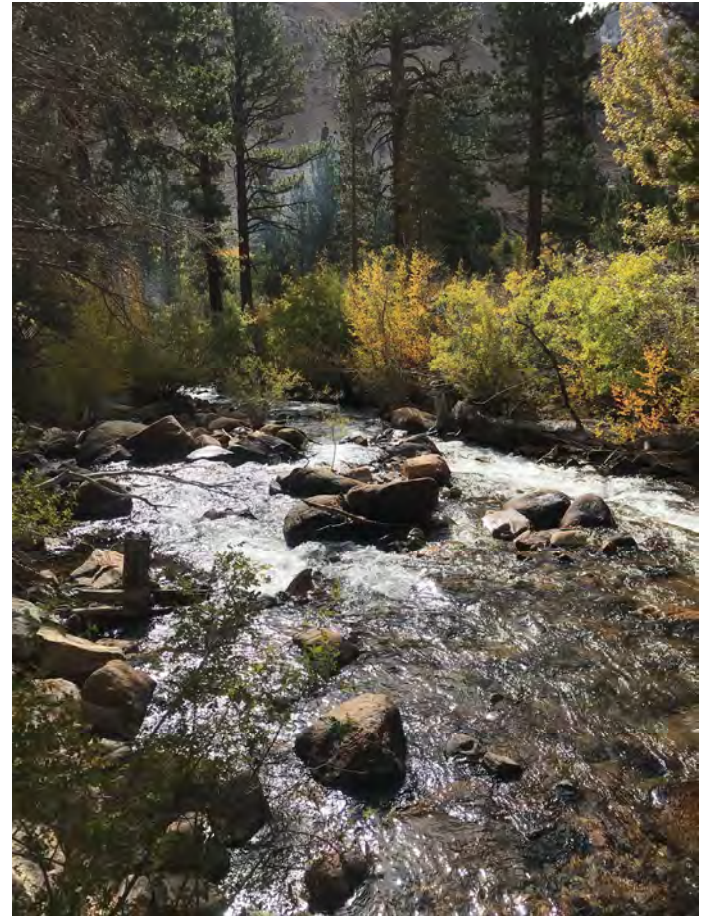


FIGURE 2.11 HABITAT SUITABILITY REACH 10

IFIM: 2020 Study Plan Activities

- Owens Speckled dace
 - HSC curves under development by CDFW
 - Additional PHABSIM simulation runs in reaches 1 and 2
- HCM assessment of Reaches 4 and 6
- Scope and survey Birch and McGee creeks brook trout and Owens speckled dace suitability using HCM method or equivalent



Fish Assessment

Bishop Creek Fish Distribution

Study Goals and Objectives

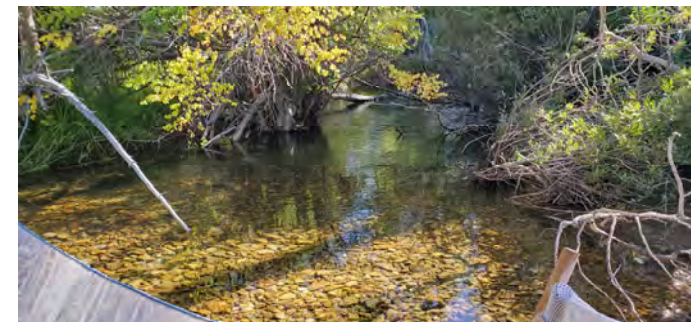


- Portray the current distribution of all fish species and the growth and density of wild brown trout populations in the Project Area.
 - identify the extent to which naturally reproducing brown trout populations are consistent with historic levels
 - Evaluate population, health, and condition of recreationally important trout species (e.g., brown trout, rainbow trout, and brook trout in lotic habitat affected by Project operations.
 - Assess whether recruitment of Owens sucker has occurred in Bishop Creek downstream of Lake Sabrina and South Lake
 - Assess the distribution of other fish species in Project waters
- Determine whether Project facilities and operations are consistent with the Desired Conditions described in the Land Management Plan for the Inyo National Forest (USDA 2018).

Bishop Creek Fish Distribution: 2019 Study Plan Activities

Methods

- Historic Bishop Creek sites
 - Block net/multiple-pass backpack shocking
 - Fish counted measured and weighed
 - Scale samples collected for fish aging
- Intakes 4 and 5
 - Overnight experimental gillnet sets
 - Scale samples collected for fish aging
- South and Middle forks
 - Block net / single pass backpack shocking
 - Fish counted measured and weighed
 - Scale samples collected for fish aging
- Fish scale aging performed by CDFW



Fish Distribution Study Area



Bishop Creek watershed downstream of Project reservoirs (i.e., South Lake and Lake Sabrina) to Plant 5.

- Two sample sites were selected for comparison with historical fish monitoring data from Bishop Creek
- Four sample sites (South Fork, Middle Fork, Intake 4 and Intake 5) were selected to assess fish species distribution
 - Included habitat potentially suitable for Owens sucker such as low gradient runs and deep pools.

Bishop Creek Fish Distribution: Catch summary

Table 3. Fish species captured by sample site via single-pass electrofishing, multiple-pass electrofishing, and gill netting during the Stream Fish Distribution Study, September 2019.

Fish species (common name)	Sada 5	Sada 3	South Fork	Cardinal	Forebay 4	Forebay 5
Brown trout	186	103	45	145	2	7
Rainbow trout	8	10	3	1	1	4
Brook trout	0	0	0	0	0	1
Total	194	113	48	146	3	12

- Owens sucker were not detected
- Larger fish occurred at intakes and low gradient runs
- Relatively few rainbow trout and brook trout
- Rainbow trout included both hatchery and wild origin
- Brown trout showed evidence of good spawning recruitment

Bishop Creek Fish Distribution: Results at Sada site 5

- Same site as IFIM study site 2
- Multiple age classes present
 - Some adults 4 years+ old
- Dominated by YOY and yearlings
 - Evidence of spawning recruitment
- Density has increased over time
- Biomass has remained relatively stable

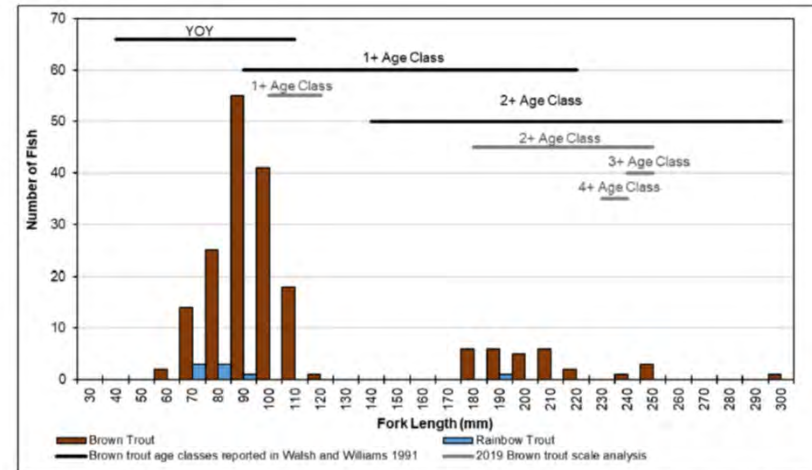


Figure 4. Length-frequency and age class structure of trout species captured by electrofishing at the Sada 5 sample site in September 2019 compared to brown trout age classes identified in 1991 by Walsh and Williams (1991).

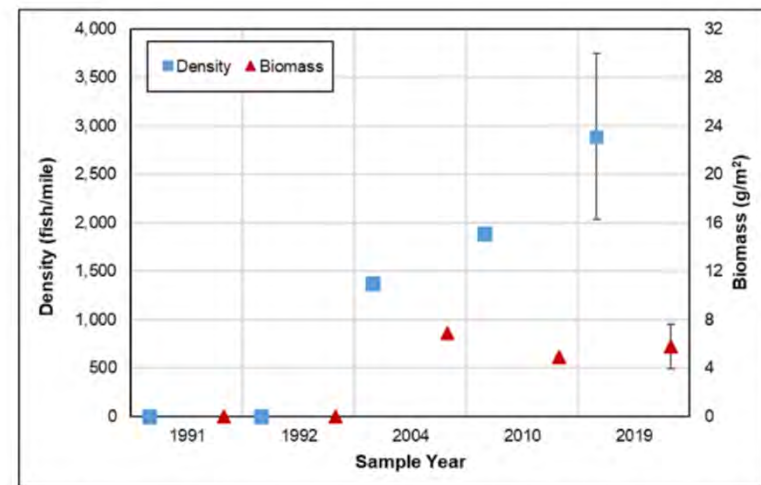
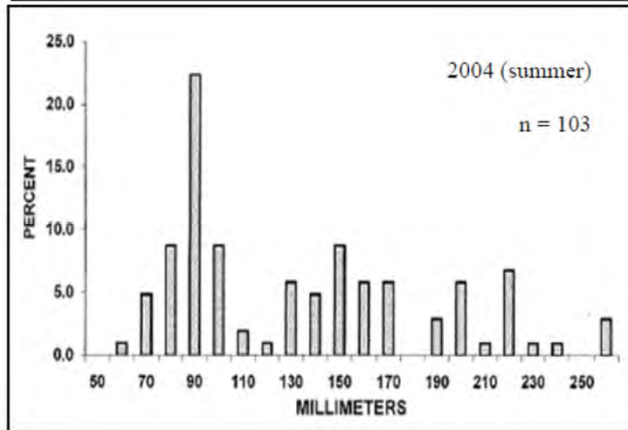
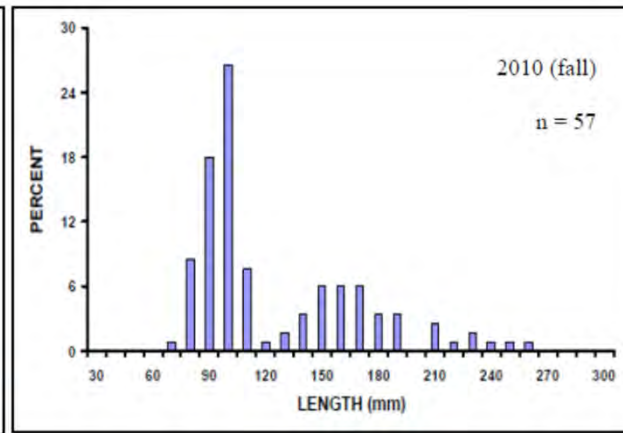
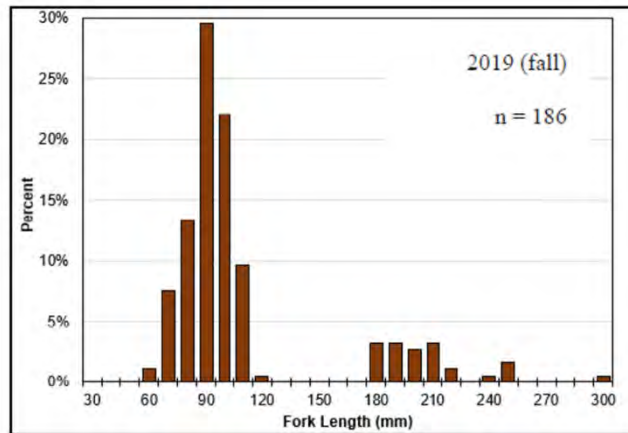


Figure 9. Brown trout estimated density and biomass at the Sada 5 sample site during 2019 (with 95% confidence intervals) and previous studies. (Note, this location was dry during 1991 and 1992, so no fish were captured during those years).

Bishop Creek Fish Distribution: Results at Sada site 5



- Length frequency remains similar since 2004
- Average fish condition was similar across years
- Fish condition factors are within the range considered healthy for trout populations in Sierra Nevada mountain streams

Bishop Creek Fish Distribution: Results at Sada site 3

- Multiple age classes present
 - Some adults 7 years+ old
- Bi-modal distribution of YOY/yearlings and 2+ adults
- Density had been declining since 1991 but has risen since 2010
- Biomass had been declining since 1991 but has risen since 2010

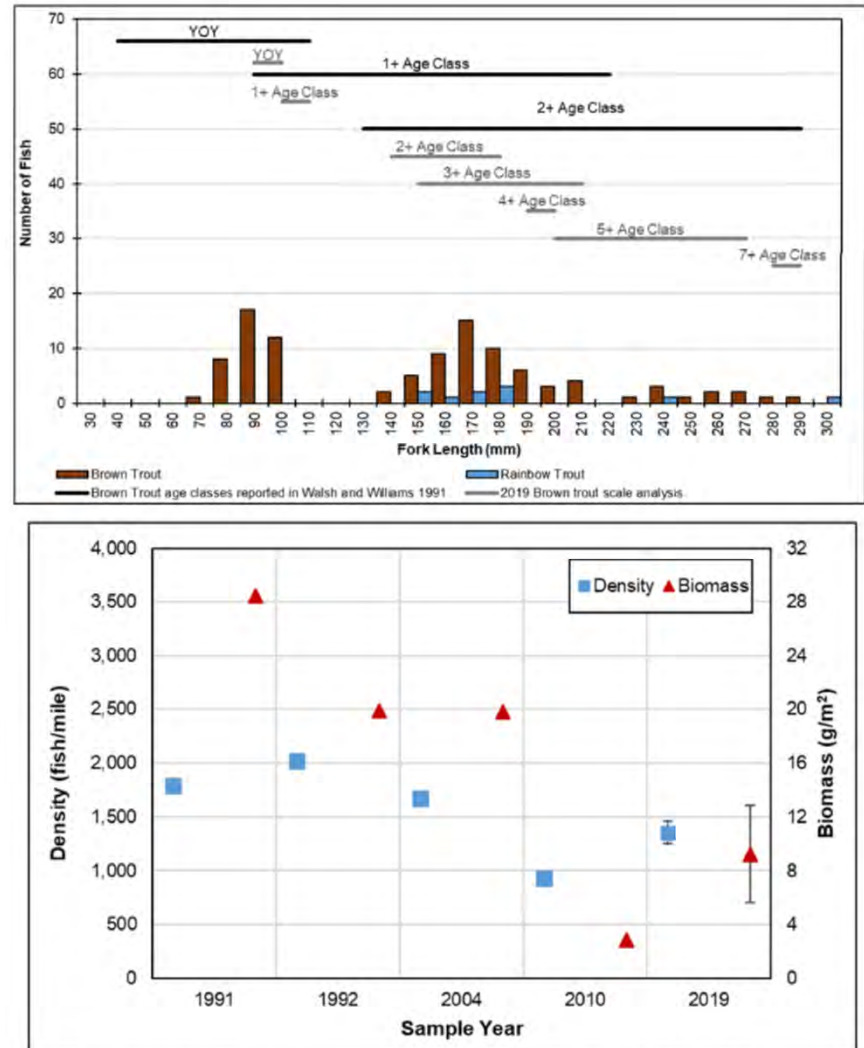
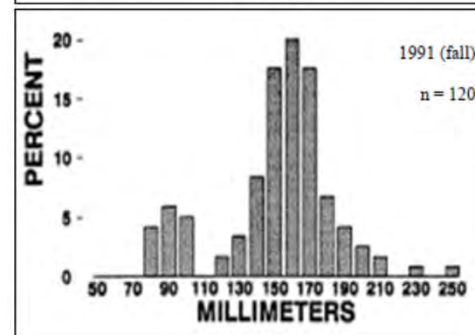
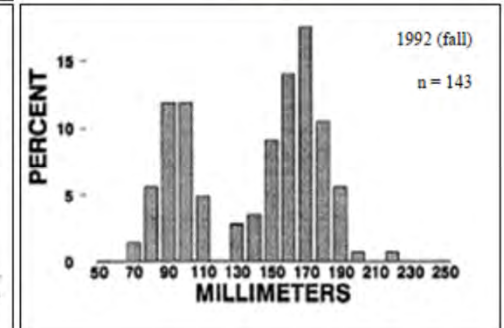
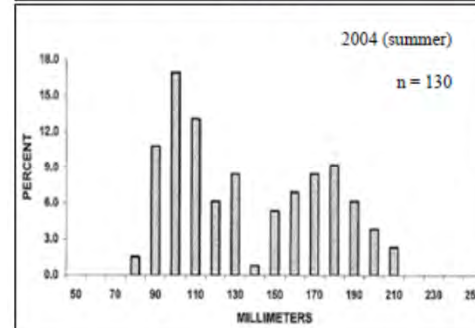
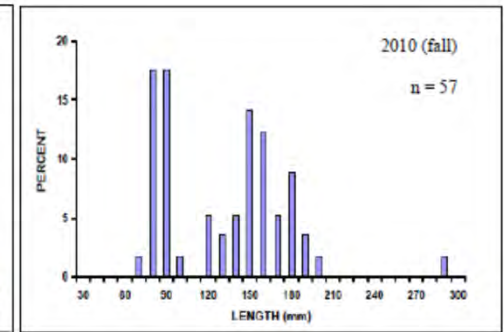
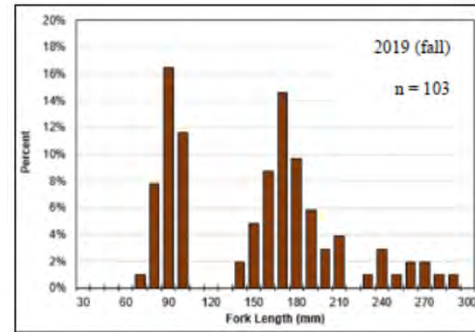


Figure 10. Brown trout estimated density and biomass in Bishop Creek at the Sada 3 sample site during 2019 (with 95% confidence intervals) and previous studies.

Bishop Creek Fish Distribution: Results at Sada site 3

- Same two size cohorts consistently present since 1991
- in 2019 there was an additional cohort of larger (250-300mm) fish present that were absent in all prior years
- Average fish condition was similar across years
- Fish condition factors are within the range considered healthy for trout populations in Sierra Nevada mountain streams



Bishop Creek Fish Distribution

Results suggest that trout populations within the study area are consistent with the Inyo National Forest Desired Conditions described in the Land Management Plan (USDA 2018) as they relate to ecological sustainability and diversity of plant and animal communities.

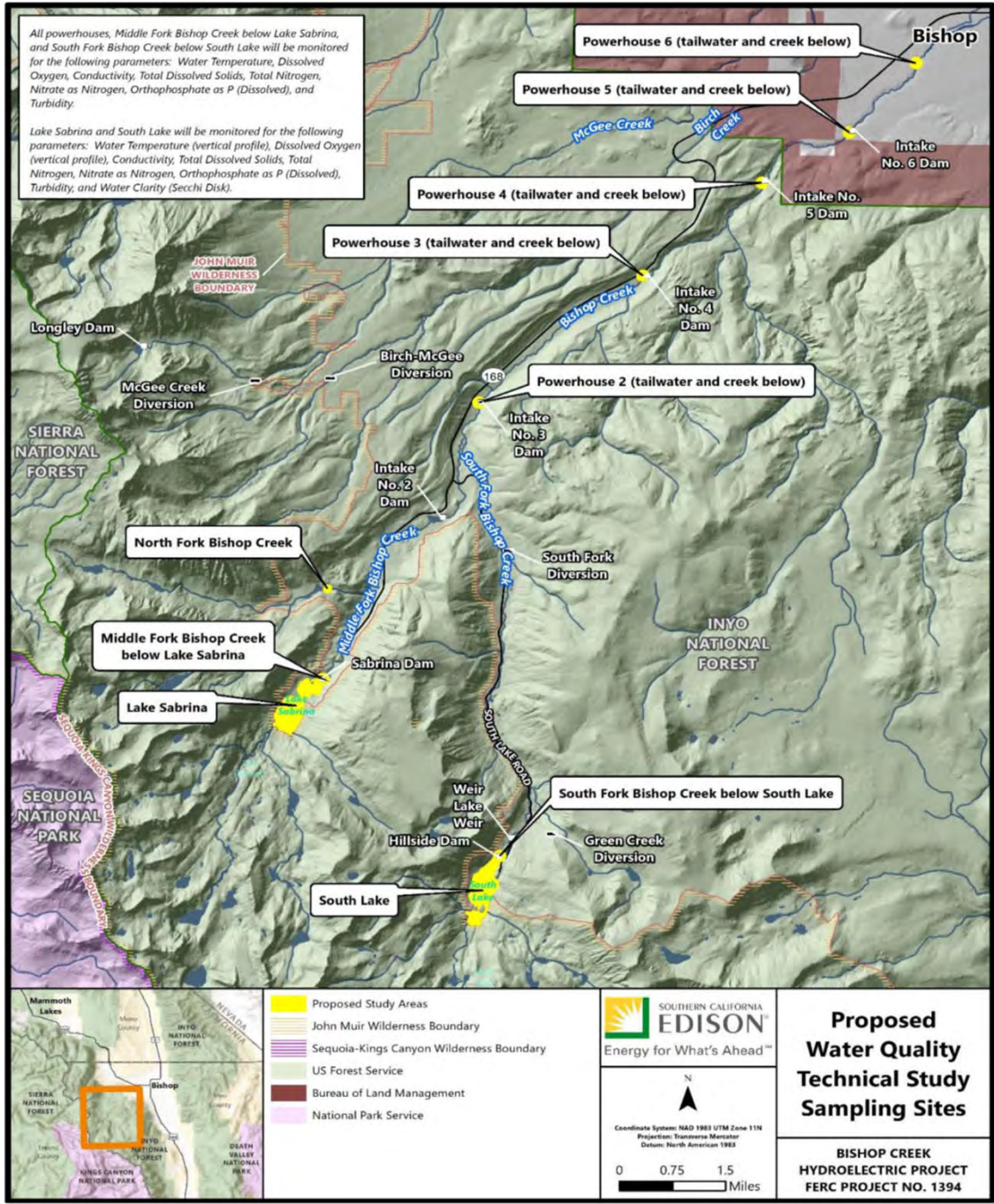
- **SPEC-FW-DC) 01:** Sustainable populations of native and desirable nonnative, plant and animal species are supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the Inyo National Forest.
- SPEC-FW-DC) 05: The Inyo National Forest provides high quality hunting and fishing opportunities. Habitat for nonnative fish and game species is managed in locations and ways that do not pose substantial risk to native species, while still contributing to economies of local communities.
- CA-RIV-DC) 01: Stream ecosystems, riparian corridors, and associated stream courses sustain ecosystem structure; are resilient to natural disturbances (such as flooding) and climate change; promote the natural movement of water, sediment and woody debris; and provide habitat for native aquatic species or desirable nonnative species.

Bishop Creek Fish Distribution: 2020 Study Plan Activities

- No additional creek fishery studies are anticipated
- No Modifications from Existing Approved Plan necessary
- Reservoir studies are anticipated for 2020
 - Bathymetric survey of South and Sabrina lakes (summer)
 - Owens sucker survey of Sabrina Lake (June-July)
 - Fish distribution survey of South Lake, Sabrina lake and Longley Reservoir (summer)

Water Quality Study Plan Review

- Monitor WQ (Turb., Cond., TDS, PO_4^{-3} , NO_3 , N-tot) on a regular basis at multiple sites:
 - Bishop Creek, South Lake, Lake Sabrina
- Monitor water temperature & DO for 2 years at:
 - Bishop Creek, South Lake, Lake Sabrina
- Monitor E. coli at recreation areas in July-Aug.
 - Intake No. 2 reservoir, South Lake, Lake Sabrina
- Ensure future Project facilities & operations are:
 - Consistent with WQ goals and objectives for Bishop Creek in the Basin Plan
 - Consistent with desired conditions in the 2018 Inyo National Forest Management Plan



Water Quality 2019 Study Plan Activities

- What did we accomplish?
 - Development of WQ Implementation Plan
 - Sets forth procedures for WQ Study implementation
 - Potential impacts from South Lake Rd Work
- Modifications from Existing Approved Plan
 - No changes from approved plan

Water Quality 2020 Study Plan Activities

- What is left to do and what do we intend to do?
 - Confirm access to all sites
- Process and Plan
 - SNARL will process E.coli and if required, qPCR
 - E. coli sample collection may be dictated by proposed road constr. activities & assoc. delays
- Schedule
 - Field recon in late May to confirm site locations and access
 - Commence Field Program in June through October

Sediment and Geomorphology

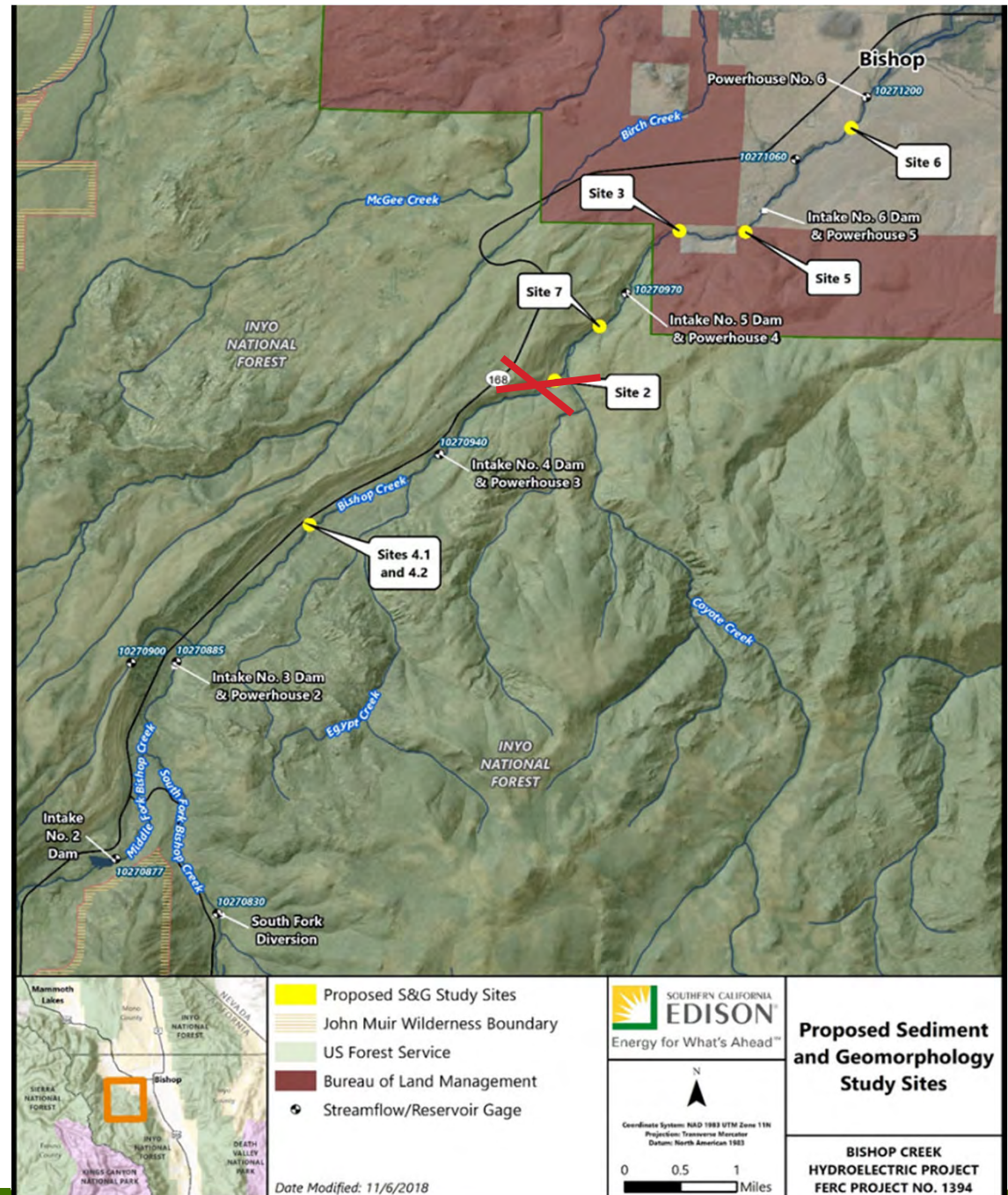
Sediment and Geomorphology: Objectives

- Determine flow conditions in which sediment is mobilized in the stream channel
- Understand if and how LWM is mobilized
- Evaluate flows that could mobilize sediments and LWM from forebays
- Evaluate how operations (flow release timing, magnitude, and duration) could be modified to provide sediment transport flows
- Understand potential sediment inputs and impacts from higher flows to reaches below Plant 6 from proposed changes in flow/operations

Sediment and Geomorphology: Proposed Sites

Dropped Site #2

- Abandoned by Riparian Study previously
- Historic pins not able to be located
- No historic record of cross sections for reference



Sediment and Geomorphology: 2019 Study Plan Activities

Site-wide Data (Sites 4.1, 4.2, 7, 3, 5, and 6)

1. Pfankuch channel stability rating
2. Channel slope and cross section



Sediment and Geomorphology: 2019 Study Plan Activities

Site-wide Data (Sites 4.1, 4.2, 7, 3, 5, and 6)

1. Pfankuch channel stability rating
2. Channel slope (elevation change divided by stream length)
3. Riffle Substrate D50 and D84
4. LWM assessment



Sediment and Geomorphology: 2019 Study Plan Activities

- **Site-wide Data (Sites 4.1, 4.2, 7, 3, 5, and 6)**

1. Pfankuch channel stability rating
2. Channel slope (elevation change divided by stream length)
3. Riffle Substrate D50 and D84
4. LWM assessment
5. Sediment sizing for excavated sediments from Intakes 2, 4, 5, and 6, and LADWP impoundment

Sediment and Geomorphology: 2019 Study Plan Activities

Intake 2 Sediment Pile



Sediment and Geomorphology: 2019 Study Plan Activities

Intake 4 Sediment Pile



Sediment and Geomorphology: 2019 Study Plan Activities

Intake 5 Sediment Pile



Sediment and Geomorphology: 2019 Study Plan Activities

Intake 6 Sediment Pile



Sediment and Geomorphology: 2019 Study Plan Activities

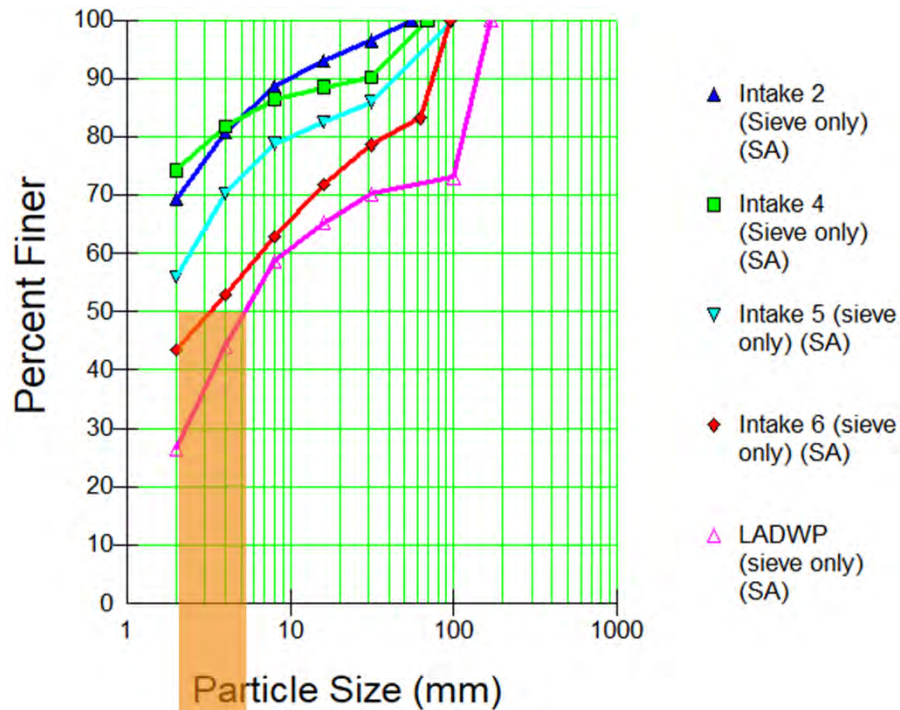
LADWP (below Powerhouse 6) Sediment Pile



Sediment and Geomorphology: 2019 Study Plan Activities

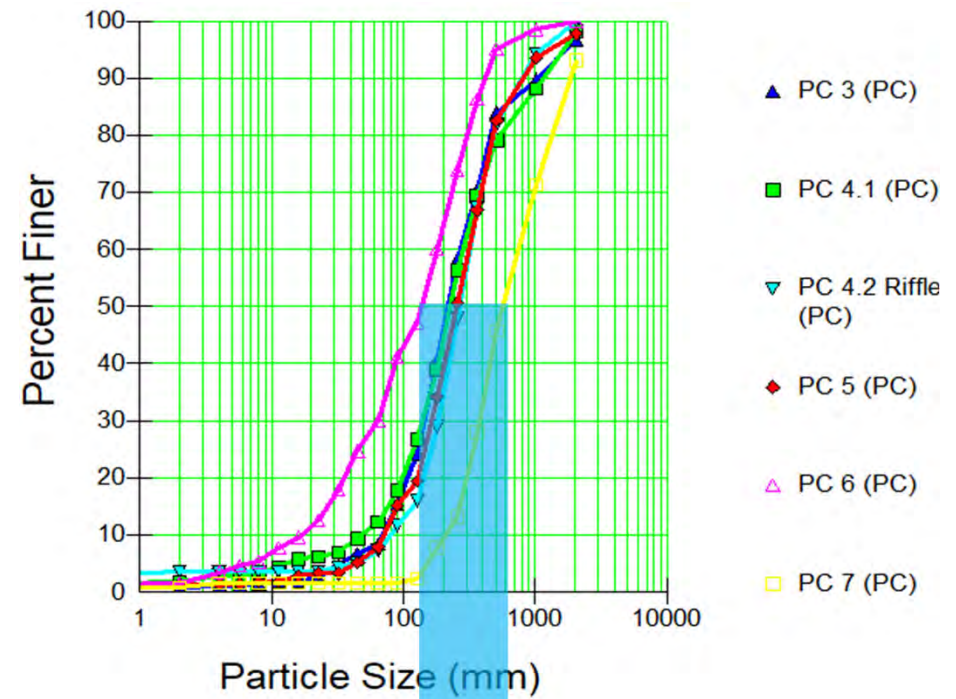
Preliminary Results: Sediment Sizes

Intake Sediment



D50: <6 mm

Bishop Riffles



D50: 150-600 mm

Sediment and Geomorphology: 2019 Study Plan Activities

Preliminary Results:

1. Bishop Creek is stable given past bankfull flows
2. Sediment input from streambanks and stream bed in the Project reach is low
3. Study reach riffles are generally cobble and any intake sediments released into Bishop Creek would likely pass on to the next intake downstream



vs.



Sediment and Geomorphology: 2020 Study Plan Activities

Requested Modifications from Existing Approved S&G Plan

1. Drop Site #2
2. Drop Bedload
Sediment Sampling
Event
 1. Part of Task 1: field
study
 2. Task 3: annual sediment
budget
 3. Task 4: substrate
mobility



Sediment and Geomorphology: 2019 Study Plan Activities

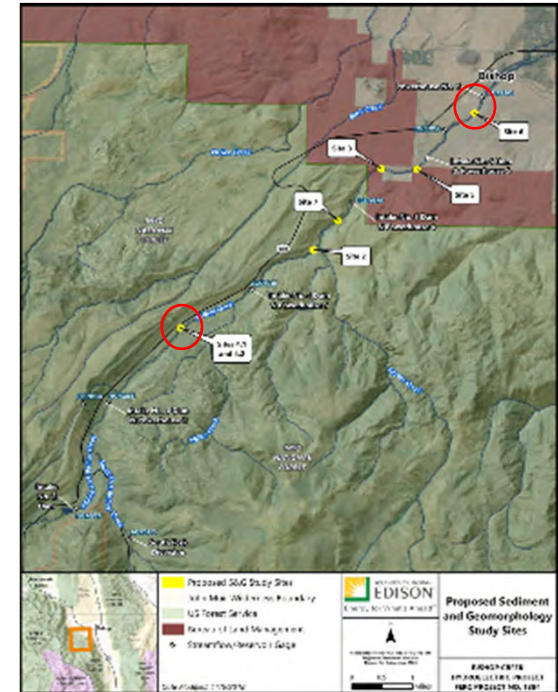
Requested Modifications from Existing Approved S&G Study Plan

1. Drop Site #2 (due to lack of historic data)
2. Drop Bedload Sediment Sampling Event (due to safety)
3. Add Tracer Rock Study
 1. Field study
 2. Define substrate mobility
 3. Evaluate flushing flows

Sediment and Geomorphology: 2020 Study Plan Activities

Tracer Rock Study

- Objective:
 - confirm that most small (<60 mm) substrates are mobilized through the Project during high flows
 - better understand substrate mobility during high flows
- At 2 existing study sites: Site 4 and Site 6
- "tag" tracer rocks of desired size classes (8-360 mm)
 - Paint
 - PIT tag
- Recover tracer rocks after a high flow (late 2020 or 2021)
- Determine size class mobilized by highest flow
- Use to inform Task 5: Evaluation of flushing flows



Sediment and Geomorphology: 2020 Study Plan Activities

- Tracer Study: 2020-2021
 - Place tracers: 2020 (flow dependent)
 - Recover tracers: late 2020 or summer 2021
 - After high flow event (typical spring flow)
- Draft S&G Study Report: Fall 2021
 - earlier if study is complete in 2020

Operations Model

Bishop Creek Operations Model

- **Goals**

- Develop a robust Operations Model (Model) to assist SCE and stakeholders in understanding how Project operations interact with Bishop Creek hydrology.
- Determine effective operating limits for all units to accurately represent installed and dependable capacity for licensing documents.

Bishop Creek Operations Model

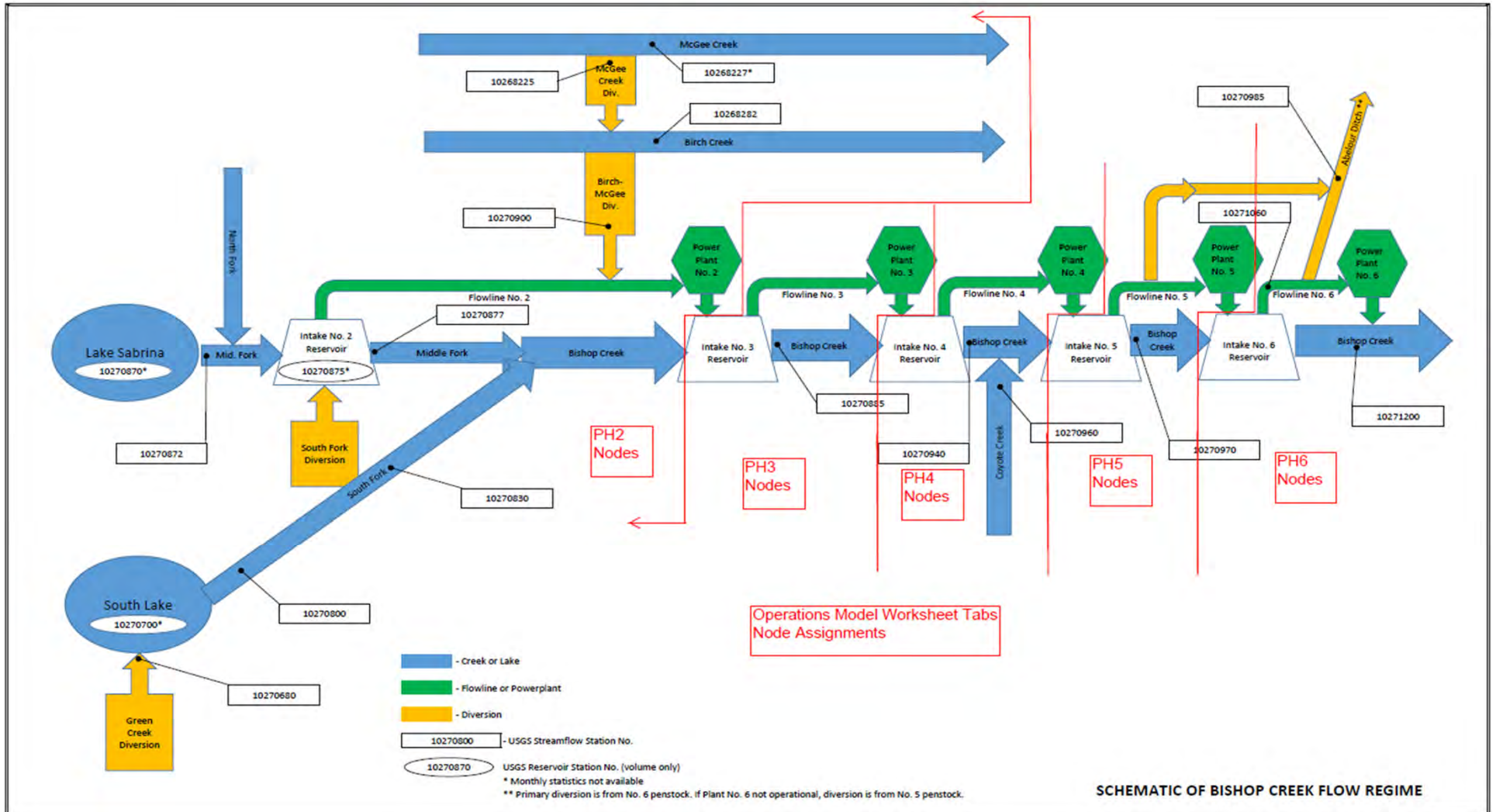
- **Objectives**

- Accurately model the systems inflows, outflows, and generation nodes.
- Align model with needs of other relicensing studies and information needs.
- Develop procedures to configure model for alternative operational scenarios and document results.

Operations Model

- Status of Model
 - Review of operational and generation “nodes” (structure)
 - Developed hydrology base on
 - Wet, Mean, Dry Years
 - Historic Hydrograph
 - Gaged inputs
 - Synthesized inputs
 - Gaps
 - Flow routing
 - Review of constraints
 - Minimum Flows
 - Chandler Decree
 - Physical limitations
 - Hydraulic capacity
 - Reservoir storage

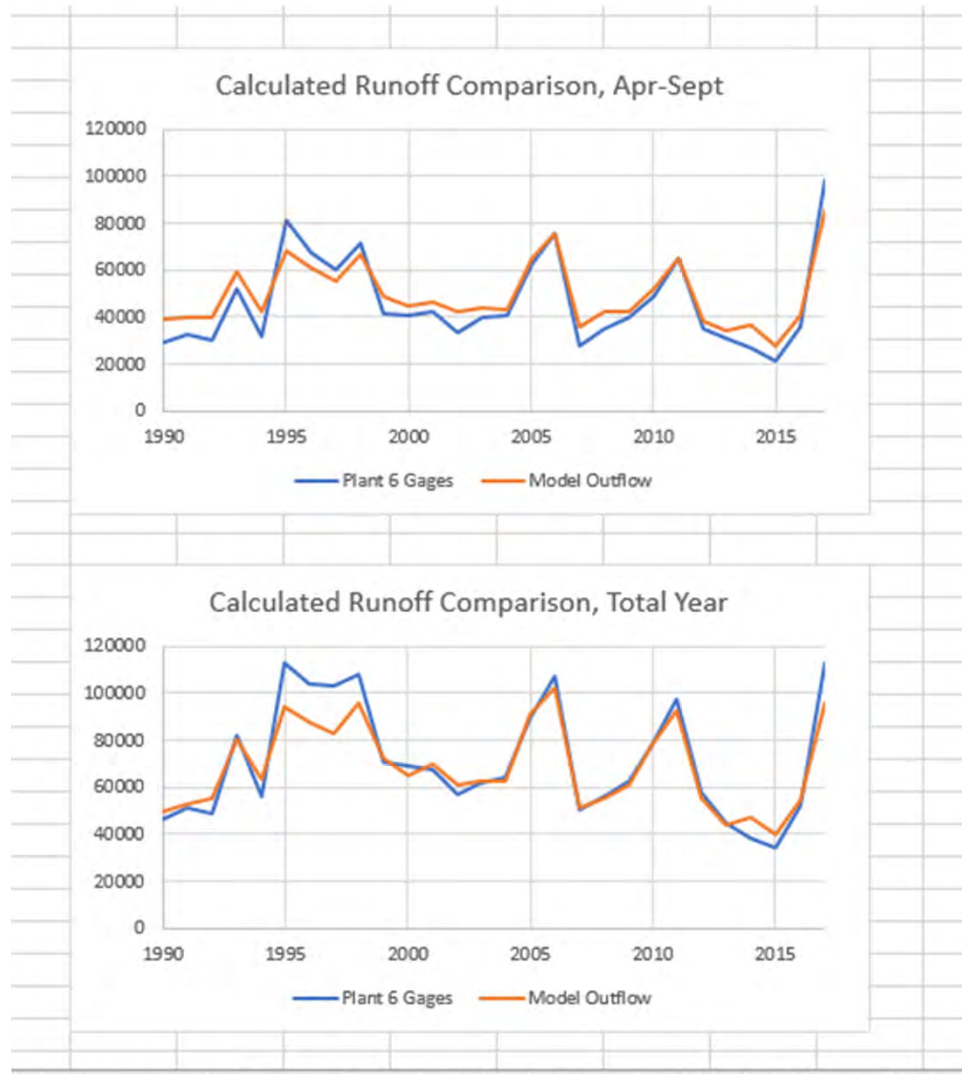
Operations Model – Structure and Nodes



Operations Model – 2020 Workplan

- Integrate Hydrology, Constraints and Nodes
- Model ability to allocate water resources
 - Wet, mean, dry years (based on snowpack)
 - Discuss definitions/criteria
 - Compliance goals
 - To come from studies (iterative approach)
 - Operational needs
- Develop approach for TWG requests of model runs – to be ready concurrent to Integrated Study Report (ISR) meeting
 - Template for inputs and desired outputs

Operations Model – Hydrology Status



Operations Model – 2020 Workplan

- Templates
 - Anticipated Inputs (Proposed)
 - Flow Rate (cfs)
 - Location
 - Date Ranges (when Seasonally Varying)
 - Duration (if not continuous)
 - Desired Outputs (For Discussion)
 - Metrics: percent of days met, etc.
 - Important Thresholds for Additional Consideration
 - Ex: Get 75% target? What percent of time?

Recreation Needs and Land Use

Recreation and Land Use: Planned Activities

REC 1- Recreation Use and Needs

- Off-Site Recreation Use Survey
- General Recreation Use Survey
- Creel Survey
- Spot Counts
- Traffic Counters
- Trail Counters

REC 2 - Recreation Facilities Condition and Public Accessibility

- Full Facilities Condition Assessment and Inventory
- Dispersed Use Assessment
- Operations and Maintenance Economics Assessment



LAND 1 - Project Boundary and Lands

- Assess Project Boundary for Accuracy
- Determine Project Lands Needed for Operation (including roads and spoil areas)
- Assess Project Boundary for Potential Modifications
- Confirm Ownership of Project Lands

Recreation and Land Use: 2019-2020 Study Plan Consultation

- Consultation with USFS and Modifications to REC 1 & REC 2 Study Plans
 - On-Site Survey Frequency & Instrument
 - Off-Site Survey Methods & Instrument
 - South Lake Road Construction (Summer 2020)
 - Affected activities moved to 2021 recreation season
 - General Recreation Use Survey [on-site] (REC 1)
 - Off-Site Recreation Use Survey [Year 2] (REC 1)
 - Creel Survey (REC 1)
 - Spot Counts (REC 1)
 - Traffic Counters (REC 1)
 - Trail Counters (REC 1)

Recreation and Land Use: Look Ahead

2020 Study Season:

- Off-Site Recreation Use Survey [*Year 1*] (REC 1)
- Full Facilities Condition Assessment and Inventory (REC 2)
- Dispersed Use Assessment (REC 2)
- Operations and Maintenance Economics Assessment (REC 2)
- All LAND 1 Activities (Initial Assessment and Consultation)

2021 Study Season:

- General Recreation Use Survey [*on-site*] (REC 1)
- Off-Site Recreation Use Survey [*Year 2*] (REC 1)
- Creel Survey (REC 1)
- Spot Counts (REC 1)
- Traffic Counters (REC 1)
- Trail Counters (REC 1)
- All LAND 1 Activities (Final Project Boundary and Land Use Assessment)

Botanical Resources

Botanical Resources: Riparian Community Analysis

Study Goals and Objectives

- Characterize the riparian community using the long-term monitoring dataset generated from monitoring conducted in compliance with the existing license in terms of the goals and objectives of riparian ecosystem health contained in the Land Management Plan for the Inyo National Forest (USDA 2018).
- Review and assess black cottonwood abundance and determine whether the decline observed in 2014 (baseline) is within a natural range of variability or could be related to Project operations.
- Ensure that future Project facilities and operations are consistent with the Desired Conditions described in the Land Management Plan for the Inyo National Forest (USDA 2018) as they relate to ecological sustainability and diversity of plant and animal communities. (this goal addressed in last slide)



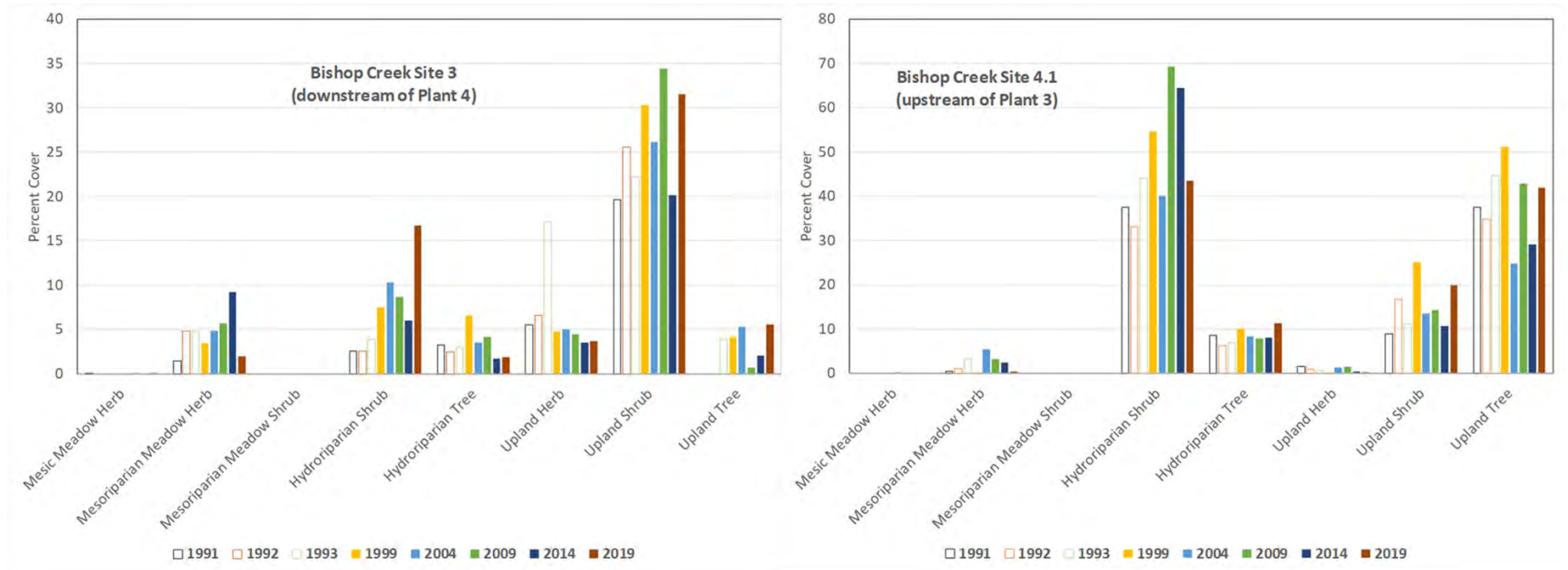
Riparian Community Analysis

2019 Methods and Work Completed

- Re-analyzed vegetation data collected as part of the riparian monitoring program required under the existing license, recent (2019) data included.
- Two types of analyses:
 - Grouped species according to shared life histories (guilds) instead of just riparian v. upland
 - Examined trends in abundance of black cottonwood (*Populus trichocarpa*) over time



Riparian Community Analysis Guild Analysis Results



Historically ephemeral in dry and normal years

Historically perennial

Consistent with previous reports, riparian communities at historically summer-dry sites showed the greatest response to minimum instream flows

Riparian Community Analysis Guild Analysis Results

Black Cottonwood Abundance (Percent Cover)

	Baseline*			Post-Baseline				
	1991	1992	1993	1999	2004	2009	2014	2019
Site 4.1	7.5	6.0	5.7	9.1	8.2	7.7	5.8	11.2
Site 4.2	12.6	11.9	13.2	15.2	12.3	10.7	7.3	2.2
Site 5	0.3			1.2	1.3	1.7	0.5	1.4

*Before minimum instream flows

- At Site 5, where flow was ephemeral in dry to normal years, abundance of black cottonwoods increased after flow releases began but declined in 2014 for unknown reasons. However, the same trend was observed at one of the perennial sites (4.1). At both of these sites, abundance trended upward in 2019.
- In contrast, at the second site with perennial flow (4.2) black cottonwood abundance has been declining and this trend continued into 2019. The cause(s) is unknown but appears unrelated to Project operations.

Botanical Resources: Invasive Plant Species

Study Goals and Objectives

- Classify and map the existing population of invasive plants in the Project area
- Assess the extent to which the Project may contribute to the spread of invasive plants which could adversely impact native ecosystems in the study area
- Ensure that future Project facilities and operations are consistent with the Desired Conditions, Goals, and Standards described in the Land Management Plan for the Inyo National Forest (USDA 2018) as they relate to ecological sustainability and biodiversity (this goal addressed in last slide)

Invasive Plant Species Observed

16 out of 57 Cal-IPC listed species observed. Hairy whitetop (*Lepidium appelianum*; formerly *Cardaria pubescens*) was observed in a landscaped area around Plant 4 during a tour in 2018.

While not native to California, this species is not listed by Cal-IPC and has not been observed elsewhere in the Project area.

Scientific Name	Common Name	Cal-IPC Rating
<i>Bromus diandrus</i>	ripgut grass	Moderate
<i>Bromus rubens</i>	red brome	High
<i>Bromus tectorum</i>	cheat grass	High
<i>Cirsium vulgare</i>	bull thistle	Moderate
<i>Cynodon dactylon</i>	Bermuda grass	Moderate
<i>Dactylis glomerata</i>	orchard grass	Limited
<i>Descurainia sophia</i>	tansy mustard	Limited
<i>Erodium cicutarium</i>	redstem filaree	Limited
<i>Festuca arundinacea</i>	tall fescue	Moderate
<i>Holcus lanatus</i>	common velvet grass	Moderate
<i>Plantago lanceolata</i>	English plantain	Limited
<i>Robinia pseudoacacia</i>	black locust	Limited
<i>Rubus armeniacus</i>	Himalayan blackberry	High
<i>Rumex crispus</i>	curly dock	Limited
<i>Salsola tragus</i>	Russian thistle	Limited
<i>Verbascum thapsus</i>	woolly mullein	Limited

Botanical Resources: Special Status Plant Species

Study Goals and Objectives

- Classify and map the existing distribution of special status plants (including aquatic plants) in the Project area and Project affected reaches;
- Assess the extent to which the Project may affect rare, threatened, endangered or other special status species; and
- Ensure that future Project facilities and operations are consistent with the Desired Conditions, Goals and Standards described for animal and plant species in the Land Management Plan for the Inyo National Forest (USDA 2018). (this goal addressed in last slide)

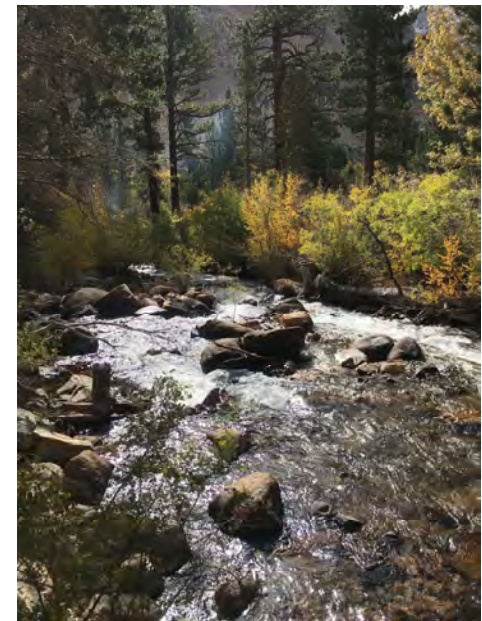
Special Status Plant Species Observed

Scientific/ Common Name	State Status and CRPR Rank	Blooming Period/Fertile	Habitat	Likelihood for Occurrence/Occurrence Notes
<i>Eriastrum sparsiflorum</i> few-flowered eriastrum	CRPR 4.3	May-Sept	Chaparral, cismontane woodland, Great Basin scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland from 3,527 ft. to 5,610 ft.	Observed in the Survey Area at six Project facilities during the 2019 survey effort and along stream reaches downstream of Powerhouse 4, and along a reach of Birch Creek downstream of the diversion during riparian monitoring activities. This species has also been reported adjacent to Highway 168, 0.6 miles northwest of Powerhouse 3 and Intake 4.
<i>Lomatium rigidum</i> stiff lomatium	CRPR 4.3	Apr-May	Great Basin scrub and pinyon and juniper woodland from 3,937 ft. to 7,218 ft.	Observed in the Survey Area at four Project facilities during the 2019 survey effort. This species has been reported at multiple locations within the Project vicinity, with the closest ones 200 feet west of Powerhouse 2 and Intake 3, and in 2009 at a riparian monitoring site upstream of Powerhouse 5.
<i>Parnassia parviflora</i> small-flowered grass-of-Parnassus	CRPR 2B.2	Aug-Sept	Wet areas, meadows and rocky seeps from 6,594 ft. to 9,104 ft.	Observed in the Survey Area at one Project facility during the 2019 survey effort. This species was last recorded in 1937 in Buttermilk Country, outside the Project watershed's northern boundary, 1.9 miles north of Birch-McGee Diversion.
<i>Penstemon papillatus</i> Inyo beardtongue	CRPR 4.3	Jun-Jul	Pinyon and juniper woodland and subalpine coniferous forest from 6,562 ft. to 9,843 ft.	This species has been reported at multiple locations within the Project vicinity, with the closest one 570 feet south of the Survey Area at Lake Sabrina. Not observed during 2019 survey effort around the facilities, but was observed in 2019 at the riparian monitoring site located downstream of the McGee Creek diversion dam.
<i>Ranunculus hydrocharoides</i> frog's-bit buttercup	CRPR 2B.1	Jun-Sept	In or bordering shallow springs or freshwater marshes and seeps from 4,133 ft. to 7,611 ft.	Observed in the Survey Area at one Project facility during the 2019 survey effort. This species has been recorded outside the Project watershed's northern boundary, 3.5 miles from Powerhouse No. 6, located in a channel within the town of Bishop.
<i>Triglochin palustris</i> marsh arrow-grass	CRPR 2B.3	July-Aug	Meadows and seeps, freshwater marsh, subalpine coniferous forest from 6,988 ft. to 11,597 ft.	Observed in the Survey Area at one Project facility during the 2019 survey effort. This species has been recorded 0.8 miles southwest of Bishop Creek Intake No. 2, 0.15 miles east of Highway 168.

Botanical Resources Next Steps

To ensure that future Project facilities and operations are consistent with the Desired Conditions, Goals and Standards described for animal and plant species in the Land Management Plan for the Inyo National Forest (USDA 2018):

- Update existing plans for protection of special status plants and controlling spread of invasive plants.
- Riparian community analyses indicate existing minimum flow program has benefitted natives. No change in Project operations is warranted at this time.



Wildlife Resources

Wildlife Resources

Study Goals and Objectives

- Determine if mule deer and/or other wildlife use at existing crossing structures.
- Identify management and other special status species from existing information and site-specific surveys in the Project area including:
 - Yosemite toad and Sierra yellow-legged frog
 - Southwestern willow flycatcher
 - Goshawk
 - Bats
- To protect avian species that use existing project transmission facilities under the current license



Wildlife Resources

2019 Study Plan Activities

- Mule Deer
 - Installed Wildlife Cameras
 - Pedestrian Survey
 - Surveyed Project area in August.
- Bat Habitat Survey
 - Summer and Winter Habitat Roost Surveys complete



- Amphibian Survey
 - One pedestrian survey complete

Wildlife Resources 2019 Study Plan Findings

- Mule Deer
 - Documented mule deer and other wildlife using flowline deer crossings installed by SCE
- 3 special status species observed
 - Golden Eagle, Bald Eagle and Goshawk
- Southwestern Willow Flycatcher
 - No nesting habitat in Project Area/ None observed
- Bat Habitat
 - **Summer Use:** Potential maternity roosts at Powerhouses 2 and 5
 - Remaining powerhouses not likely to support maternity roosting
- Amphibians
 - No special status amphibians observed
 - Large population of predatory trout in Bishop Creek
 - Yosemite toad never known from Bishop Creek
- **Winter Use:** No sign of current roosting
- Determined 2 Powerhouses (4 & 6) have no potential for winter roosting
- Other Powerhouses unlikely winter hibernacula

Wildlife Resources: 2020 Study Plan Activities

- General wildlife surveys at project facilities will include:
 - Continue use of trail cameras along flowline road and potentially other facilities.
- Acoustic bat surveys planned to target Powerhouses 2, 3, 5 and 6.
- No further surveys for amphibians or Goshawk are planned.



Questions

