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Wayne P. Allen
Principal Manager
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Electronically Filed

December 19, 2019

Kimberly D. Bose, Secretary
Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
825 First Street, N.E.
Washington, D.C. 20426

Subject: Bishop Creek Hydroelectric Project, FERC Project No. 1394
Progress Report 1

Southern California Edison Company (SCE) hereby files with the Federal Energy Regulatory Commission (FERC) its first Progress Report for the Bishop Creek Project (Project No. 1394).

SCE will forward the "Acceptance for Filing" e-mail generated by FERC's e-filing service to all contacts on the distribution list either via e-mail or U.S Mail, as appropriate. This filing will also be placed on SCE's Bishop Creek Relicensing Website (www.sce.com/bishopcreek) where it will be available for download, and available for review by appointment at the Bishop Creek Hydro Headquarters Office – 4000 E. Bishop Creek Road, Bishop, CA 93514.

SCE looks forward to continuing to work with FERC and other interested parties on the Bishop 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 Allen
Principal Manager
Regulatory Support Services
Southern California Edison Company

Attachments:

- Progress Report 1 Memorandum
- Bat Roost Habitat Assessment Technical Memorandum
- IFIM Transect Selection Technical Memorandum
- Bishop Creek Relicensing Project Field Schedule
- Distribution List

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MEMORANDUM

TO:	Federal Energy Regulatory Commission Docket P-1394-080
FROM:	Bishop Creek Relicensing Team
CC:	Technical Work Groups FERC Distribution List
DATE:	December 19, 2019
RE:	Progress Report

INTRODUCTION

On September 4, 2019, as part of the Request for Waiver of 18 Code of Federal Regulation (CFR) 5.11 and 5.12, Southern California Edison (SCE) submitted a revised Technical Study Plan (TSP). As required in 18 CFR 5.11(b)(3), the TSP included provisions for periodic progress reports. These progress reports will be distributed to the Technical Working Group (TWG) and the Federal Energy Regulatory Commission (FERC) on a quarterly basis as required by the Study Plan Determination, November 4, 2019. The progress reports are intended to be brief, technical memoranda that will at a minimum summarize work completed to date, any deviations from previously described methods and any foreseen issues that may warrant further stakeholder consultation. This memorandum serves as the first progress report for the Bishop Creek Relicensing Project (FERC No. 1394), with three more to follow: one each in March and July 2020, with the Initial Study Report (ISR) serving as the final progress report to be filed no later than November 4, 2020.

The relicensing process requires an ISR meeting to be held within 15 days of filing the ISR, and accordingly, SCE will contact relevant agencies to assess availability prior to confirming the filing date of the ISR.

PROGRESS REPORT

As described in the approved TSP, SCE will provide periodic progress reports on a quarterly basis. This first Progress Report is being provided early, because of field work completed in advance of the Study Plan Determination. Table 1 is a summary of the 2019 field efforts conducted as outlined in the revised TSP and approved by FERC on November 4, 2019. Table 2 is the Field Implementation Schedule, outlining surveys completed to date and those currently planned as the relicensing process continues.

Attached to this memorandum are two technical summary memorandums. Appendix A is a Bat Roost Habitat Assessment Technical Memorandum discussing part one of the Bat Study, and Appendix B describes the transect selection portion of the IFIM study.

RESPONSE TO FEDERAL ENERGY REGULATORY COMMISSION COMMENTS AND RECOMMENDATIONS

In the comments filed with FERC on August 29, 2019, the State Water Resource Control Board (SWRCB) requested that the Water Quality Study Plan include monitoring of E. coli. Through

further consultation with the SWRCB, the licensing team revised the water quality implementation plan to monitor for E. coli *in place of* fecal coliform at near shore in Lake Sabrina, South Lake and Intake No. 2 reservoir.

In its Study Plan Determination issued on November 4, 2019, FERC requested that the Wildlife Study Plan be revised to include project related transmission lines to better inform avian protection measures for the project. SCE is currently reviewing its own avian protection guidelines and policies and will make a determination on the need to expand the study area.

TABLE 1 BISHOP CREEK HYDRO RELICENSING PROJECT 2019 FIELD STUDY SUMMARY

STUDY NAME	STUDY STATUS	MODIFICATIONS TO METHODOLOGY AND/OR NEEDED CONSULTATION
TERRESTRIAL AND BOTANICAL STUDY PLANS		
TERR 1 - Assessment of Bishop Creek Riparian Community	SCE conducted riparian vegetation surveys throughout the 2019 field season focusing on the regulated stream reaches below project diversions and reservoirs.	No changes or modifications to methodology.
TERR 2 – Invasive Plants	SCE conducted surveys for invasive plants on multiple visits to the study area during the 2019 field season, focused on a 500-foot survey area around each project facility (powerhouses, dams, diversions, value houses and access roads and recreation facilities within the Project area) and an increased survey area around Plant 4 to document black locust populations.	No changes or modifications to methodology.
TERR 3 – Assessment of Special Status Plants	SCE conducted surveys for special status plants on multiple visits to the study area during the 2019 field season. The study area consists of the project facilities including powerhouses, dams, diversions, valve houses and access roads including a 500-foot survey area buffer around each facility.	No changes or modifications to methodology.
TERR 4 – Wildlife	The proposed study area for the field surveys includes a 500-foot buffer area around the following project facilities: powerhouses, dams, diversions, flowline starting at Intake No. 2, valve houses and other outbuildings, and access roads. The proposed study area includes the areas of lakes and other impoundments that are located within 500 feet of project facilities. Cameras were placed along the above ground flowline at mule deer crossings between Intake 2 and powerhouse No 2. See Appendix A: Bat Roost Habitat Assessment for more information on that portion of the wildlife study.	FERC's Study Plan Determination recommends expanding the study area for TERR 4 to include transmission facilities, for purposes of ensuring protection to migratory birds and raptors. SCE will make necessary modifications to goals and objectives of this study and make a determination if additional data collection is necessary. • General wildlife surveys were reduced to one field survey in 2019. • Goshawk surveys were postponed to the 2020 field season • Bat surveys were reduced to a bat roost habitat assessment. • Bat acoustic surveys were postponed to the 2020 field season. After consultation with the U.S. Forest Service (USFS), an additional winter bat survey was added and will be conducted in January 2020. See Appendix A: Bat Roost Habitat Assessment Technical Memorandum.
AQUATICS AND AQUATIC PROCESSES STUDY PLANS		
AQ 1 – Instream Flow Needs and Assessment	Phase 1 – Mesohabitat survey was conducted in September 2019. Survey results, study sites and provisional transect site selection were conducted with the Fisheries TWG via conference call/webinars during October 2019. Detailed drone imagery was collected as part of the Mesohabitat study and was used to identify transects via Skype during the October meeting.	At the October 2019 Aquatics TWG web-meeting, high quality drone imagery collected during the Mesohabitat study was reviewed; The TWG decided to select the majority of the transect sites via webinar (Skype) as opposed to selecting them in the field, which proved to be an efficient means of reducing level of effort for both stakeholders and SCE. The USFS proposed using Habitat Criteria Mapping

STUDY NAME	STUDY STATUS	MODIFICATIONS TO METHODOLOGY AND/OR NEEDED CONSULTATION
	Final transect selection and IFIM field surveys were completed in the field in early November 2019. The survey included 8 of the 10 Bishop Creek reaches. See Appendix B: IFIM Transect Selection Technical Memorandum for more information.	(HCM) instead of the PHABSIM model in some reaches. The TWG concluded that the remaining two reaches could not be modeled using the PHABSIM model, and so will be surveyed using the HCM method in 2020 as recommended by USFS. The HCM will also be used for the Birch-McGee study area in 2020.
AQ 2 – Operations Model	The Operations Model has been configured and populated with historic data. The Relicensing Team is calibrating the model with SCE Operations and will be ready to demonstrate its basic functions in 2020.	No changes or modifications to methodology. Consistent with California Department of Fish and Wildlife's comments on the Pre-Application Document (PAD) dated August 29, 2019, the Operations Model will be used to assist in demonstrating the natural hydrograph.
AQ 3 – Fish Distribution Baseline Study (Creek)	Electrofishing was conducted in late September 2019 at four sites within the study area and gill-netting was performed at two intake pools. The study area includes areas downstream of South Lake, Lake Sabrina and select Bishop Creek bypass reaches.	No changes or modifications to methodology.
AQ 4 –Baseline Fish Distribution Study (Reservoirs)	This study plan will be implemented in 2020.	No changes or modifications to methodology.
AQ 5 – Water Quality	This study plan will be implemented in 2020.	Based on comments from the SWRCB on the PAD and follow-up communications, E. coli has been substituted for fecal coliform in sampling at near shore in Lake Sabrina, South Lake and Intake No. 2 reservoir. A revised Water Quality Implementation Plan will be submitted with Progress Report 2.
AQ 6 – Sediment and Geomorphology	Sediment surveys were conducted in September 2019.	No changes or modifications to methodology.
HUMAN ENVIRONMENT AND COMMUNITY STUDY PLANS		
REC 1 – Recreation Use and Needs	This study plan will be implemented in 2020.	On July 18, 2019, USFS filed a letter commenting, in part, on the Recreation Use and Needs Study Plan (REC 1). On August 29, 2019, SCE filed updated TSPs to address comments received from stakeholders and FERC staff during the scoping process. As part of the response to the USFS' July 18, 2019 comments, SCE committed to continue to collaborate with USFS staff prior to the 2020 field season to: 1) determine an appropriate frequency of summer and winter general recreation surveys that would provide a statistically supported assessment of average use and adequate qualitative feedback regarding user perceptions and experience at each site; and 2) develop and finalize both on-site and off-site survey instruments and methodologies.

STUDY NAME	STUDY STATUS	MODIFICATIONS TO METHODOLOGY AND/OR NEEDED CONSULTATION
		SCE and USFS staff conducted a conference call on July 3and November 7, 2019 to discuss these items. During the November 7, 2019 conference call, SCE and USFS staff came to agreement on many issues related to the outstanding items and are revising survey schedule and instruments accordingly. Discussions will continue with the goal of resolving all outstanding items by early January 2020.
REC 2 – Recreation Facilities Condition and Public Accessibility	This study plan will be implemented in 2020.	No changes or modifications to methodology.
LAND 1 – Project Boundary and Lands	This study plan will be implemented in 2020.	No changes or modifications to methodology.
CULT 1 – Cultural Resources	This study plan will be implemented in 2020.	No changes or modifications to methodology. The Relicensing Team has received one of two required Bureau of Land Management (BLM) Permits, with the remaining expected in January 2020.
CULT 2 – Tribal Resources	Tribal Resources will be implemented in 2020.	No changes or modifications to methodology. The Relicensing Team received the USFS Special Use Permit and does not require a BLM permit for this study

Appendix A

Bat Roost Habitat Assessment Memo

MEMORANDUM

November 21, 2019

To:
Mr. Finlay Anderson
Kleinschmidt Group

From:
Brad R. Blood, PhD
Steve Norton
Psomas

Subject: Results of a Bat Roost Habitat Assessment Conducted for the Bishop Creek Hydroelectric Relicensing Project in Inyo County, California

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This memorandum presents the results of a bat roost habitat assessment (Order: *Chiroptera*) at the Bishop Creek Hydroelectric Project (Federal Energy Regulatory Commission [FERC] Project No. 1394-080; hereinafter referred to as the "Project"). The Project is located along Bishop Creek southwest of the City of Bishop, Inyo County, California (Attachment A). The habitat assessment was conducted to determine potential for bat day-roosts at project facilities. This habitat assessment did not include any species-specific focused surveys.

PROJECT BACKGROUND

Southern California Edison Company (SCE) is the licensee, owner, and operator of the existing hydroelectric facilities subject to the relicensing effort. The project is predominantly located on Bishop Creek and also includes facilities on Birch and McGee Creeks. SCE operates the project under a 30-year license issued by FERC on July 19, 1994. As the current license is due to expire on June 30, 2024, SCE has initiated the formal relicensing process utilizing the Integrated Licensing Process with FERC. No changes in project operations or existing facilities are anticipated if a new license were issued.

In advance of filing the Notice of Intent (NOI) and Pre-Application Document (PAD), SCE, Kleinschmidt, Psomas, and others have worked with stakeholders to identify necessary studies, with the goal of accelerating FERC's ability to issue a Study Plan Determination. Efforts began over one year prior to formal initiation of the process with FERC, through a series of Technical Working Group meetings that were held in Bishop, California.

During the Technical Working Group meetings, stakeholders identified the need to conduct a wildlife study to determine if special status wildlife species are utilizing project facilities for nesting, roosting, foraging, or sheltering, and if so, how project operations may affect these species. The literature review revealed records of the presence of special status bat species in the vicinity of the Project including Townsend's big-eared bat (*Corynorhinus townsendii*) a U.S. Forest Service Sensitive Species and a California Species of Special Concern, and spotted bat (*Euderma maculata*) a California Species of Special Concern. Therefore, special status bat species were identified as needing further study in support of Project relicensing.

ENVIRONMENTAL SETTING

The Project facilities are in the Owens Valley and along the eastern Sierra Nevada mountains. The Project facilities include powerhouses, dams, impoundments including South Lake and Lake Sabrina, diversions, weirs, outbuildings, valve houses, access roads, and the flowline. The Project's facilities are sited along Bishop Creek and its tributaries including South Fork, Middle Fork, Green Creek, Birch Creek, and McGee Creek. Bishop Creek is tributary to the Owens River. Project facilities occur across privately and federally held properties (federal lands include those held and managed by the US Forest Service [USFS] and US Bureau of Land Management [BLM]). Subsequently, land uses adjacent to the Project also varies including residential, grazing, public recreation, federally-designated Wilderness land, etc.

The Project area is one of moderate to steep ridge and valley topography. Elevations within the drainages range from approximately 4,000 feet above mean sea level (msl) to over 13,000 feet above msl. Bishop Creek is a major stream with a total drainage area of approximately 70-square-miles, flowing northeastward approximately 28 miles from its headwaters in the Sierra Nevada to its confluence with the Owens River at the City of Bishop. The North, Middle and South forks of Bishop Creek originate in nearby glacial basins separated by ridges. South Lake and Lake Sabrina are the major storage reservoirs in the watershed.

The Project area consists upland vegetation communities in higher terraces areas and a mixture of floodplains, wetlands, riparian and littoral communities within and adjacent to Bishop Creek. Plant community types consist of alpine grasses and forbs, alpine mixed scrub, barren, bitterbrush, saltbush, curl-leaf mountain mahogany, Great Basin mixed scrub, rabbitbrush, basin sagebrush, Great Basin – desert mixed scrub, blackbush, eastside pine, annual grasses and forbs, perennial grasses and forbs, lodgepole pine, high desert mixed scrub, singleleaf pinyon pine, limber pine, canyon live oak, subalpine conifers, whitebark pine, wet meadows, riparian mixed hardwood, willow, quaking aspen, perennial lake or pond, water, and willow (shrub).

The study area identified for the bat roost habitat assessment associated with the project primarily focus on a 500-foot buffer area surrounding the project facilities at 14 discrete locations along Bishop Creek, Birch Creek, and McGee Creek (Attachment A). These facilities specifically include:

- Powerhouse No. 6;
- Powerhouse No. 5 (including Intake No. 6 Dam);
- Powerhouse No. 4 (including Intake No. 5 Dam);
- Powerhouse No. 3 (including Intake No. 4 Dam);
- Powerhouse No. 2 (including Intake No. 3 Dam);
- Intake No. 2 Dam;
- Longley Dam (Longley and McGee Lakes);
- McGee Creek Diversion;
- Birch Creek Diversion;
- Sabrina Dam (Lake Sabrina);
- South Fork Diversion;
- Weir Lake Diversion;
- Green Creek Diversion; and
- Hillside Dam and South Lake Dam (Hillside and South Lakes).

These Project facilities extend from approximately 10,700 feet above mean sea level (AMSL) at Longley Lake to approximately 4,500 feet AMSL at Powerhouse No 6. There is perennial above-ground water (Bishop Creek or its tributaries) at each of the facilities. Vegetation types in the study area vary greatly

and include tree, shrub, and herb-dominated vegetation types in addition to barren (i.e. fully-developed) areas. Some of the facilities, specifically the powerhouses, are open, multi-story buildings adjacent to these open waters and associated vegetation. Representative site photographs are shown in Attachment B.

The facilities on Birch Creek and McGee Creek (Longley Dam, McGee Creek Diversion, and Birch Creek Diversion) were not accessible during the habitat assessment due to poor road conditions resulting from higher-than-normal snow levels.

METHODS

A review of the existing literature was conducted to determine the potential for special status bat species to occur in the vicinity of the Project. This review included previous biological reports prepared for individual projects and the Environmental Assessment for the Bishop Creek Project (FERC 1991). To obtain information on known special status bat species reported to occur in the Project vicinity, the CDFW's California Natural Diversity Database (CNDDB) (CDFW 2019) was queried for special status wildlife species for the following U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles: Coyote Flat, North Palisade, Tungsten Hills, Mt. Darwin, Mount Tom, Bishop, and Mt. Goddard. Other sources in the literature review included: Morrison (2018), Anderson et. al. 2018, Pierson and Rainey (2018).

On June 10, 2019, bat expert Dr. Michael Morrison and Psomas bat specialist Steve Norton conducted a habitat assessment at Project facilities along Bishop Creek. As noted above, facilities on Birch Creek and McGee Creek were not accessible and were excluded from the survey effort. The habitat assessment was conducted to determine potential for significant bat roosts at Project facilities, i.e. Project buildings and associated structures. Significant roosts consist of potential maternity roosts or winter hibernacula. Large mature trees were present at many of the project facilities and those trees also have potential to support roosting bats. Trees were not surveyed for past or present bat roosts because there are not currently any non-invasive survey techniques available to identify tree roosts. Dr. Morrison and Mr. Norton inspected project structures with the potential to support roosting bats for signs of past and present bat use (e.g., urine staining, guano deposits, vocalizations, etc.). All evidence of roosting was recorded in field notes and marked on maps. Active roost sites were also photographed.

RESULTS

Of all the project facilities inspected, the powerhouses were determined to be the most suitable for bat day roosting. Appurtenant structures, such as sheds and warehouses, were also inspected; however, no evidence of day-roosting was observed, and the other structures did not provide environmental conditions equivalent to the powerhouses, such as accessibility, thermal insulation, heat sources, etc. Table 1 shows the project buildings inspected and the presence of any roosting sign.

TABLE 1
ROOSTING SIGN OBSERVED

Project Building	Sign Present	Potential Maternity Roost
Powerhouse No. 6	None	No
Powerhouse No. 5	Current	Yes
Powerhouse No. 4	None	No
Powerhouse No. 3	Previous	No
Powerhouse No. 2*	Current	Yes

* Powerhouse No. 2 showed evidence of previous, non-maternity day-roosting. The active maternity roost is located in the transformer shed located at this facility (immediately adjacent to the powerhouse).

No sign of roosting was observed in Powerhouse No. 6 or Powerhouse No. 4 and no bat day roosting is anticipated at either facility. Powerhouse No. 3 contained limited bat guano likely resulting from bat night-roosting activity within the Powerhouse; no significant bat roosts occur in Powerhouse 3. Powerhouse 6 and Powerhouse 5 were both supporting active bat day roosting during the survey. The species present could not be determined, but more than five bats were observed roosting in crevices at both powerhouses. Both roosts have potential to support maternity roosting.

Tailraces are channels that convey water away from project turbines. The tailraces associated with the project vary in size and diameter at the different powerhouses, but all are concrete and all experience high levels of water flow at intermittent times. The flushing events that occur intermittently in the tailraces are likely to deter any roosting. Regardless, the tailraces at Powerhouses No. 6, No. 5, and No. 2 are substantially taller and wider than the others and have some limited potential to support bat roosting. The underground extent of those tailraces is not accessible for a daytime visual survey.

CONCLUSIONS

Potential maternity roosts occur at Powerhouses No. 5 and No. 2. The remaining powerhouses are not likely to support maternity roosting. No maternity roosting is anticipated at project facilities without powerhouses, including the facilities not surveyed on Birch Creek and McGee Creek. These locations do not likely contain structures with features necessary to support maternity roosts, including heat sources and insulation. None of the facilities were inspected for sign of hibernacula. Surveys to determine hibernacula can only occur during the winter months. A winter roost survey has been scheduled to take place during the winter of 2019-2020.

The tailraces at Powerhouses No. 6, No. 5, and No. 2 have limited potential to support roosting bats; however, they are not accessible for daytime visual surveys.

Based on these results, a study plan for an acoustic bat survey will be prepared and will take place during the 2020 field season.

If you have any questions regarding the content of this memorandum, please contact Brad Blood or Steve Norton at (714) 751-7373.

Attachments: A – Vicinity Map
B – Site Photographs

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REFERENCES

Anderson, A.P., J.E. Light, O.M. Takano, and M.L. Morrison. 2018. Population Structure of Townsend's Big-Eared Bat (*Corynorhinus townsendii*) in California. Journal of Mammalogy, 99 93): 646-658.

California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database (CNDDB) Records of Occurrence for: Coyote Flat, North Palisade, Tungsten Hills, Mt. Darwin, Mount Tom, Bishop, and Mt. Goddard, California. Sacramento, CA: CDFW, Natural Heritage Division.

Federal Energy Regulatory Commission (FERC). 1991. Environmental Assessment, Bishop Creek Project (FERC Project No. 1394-004).

Morrison, M.L. (2018). Townsend's Big-Eared Bat Surveys. Spring Through Fall 2018. Survey Report prepared for California Department of Fish and Wildlife.

Pierson, E.D., and W.E. Rainey. 2018. Distribution, Status, and Management of Townsend's Big-Eared Bat (*Corynorhinus townsendii*) in California. Bird and Mammal Conservation Program Technical Report No. 96-7.

ATTACHMENT A

VICINITY MAP

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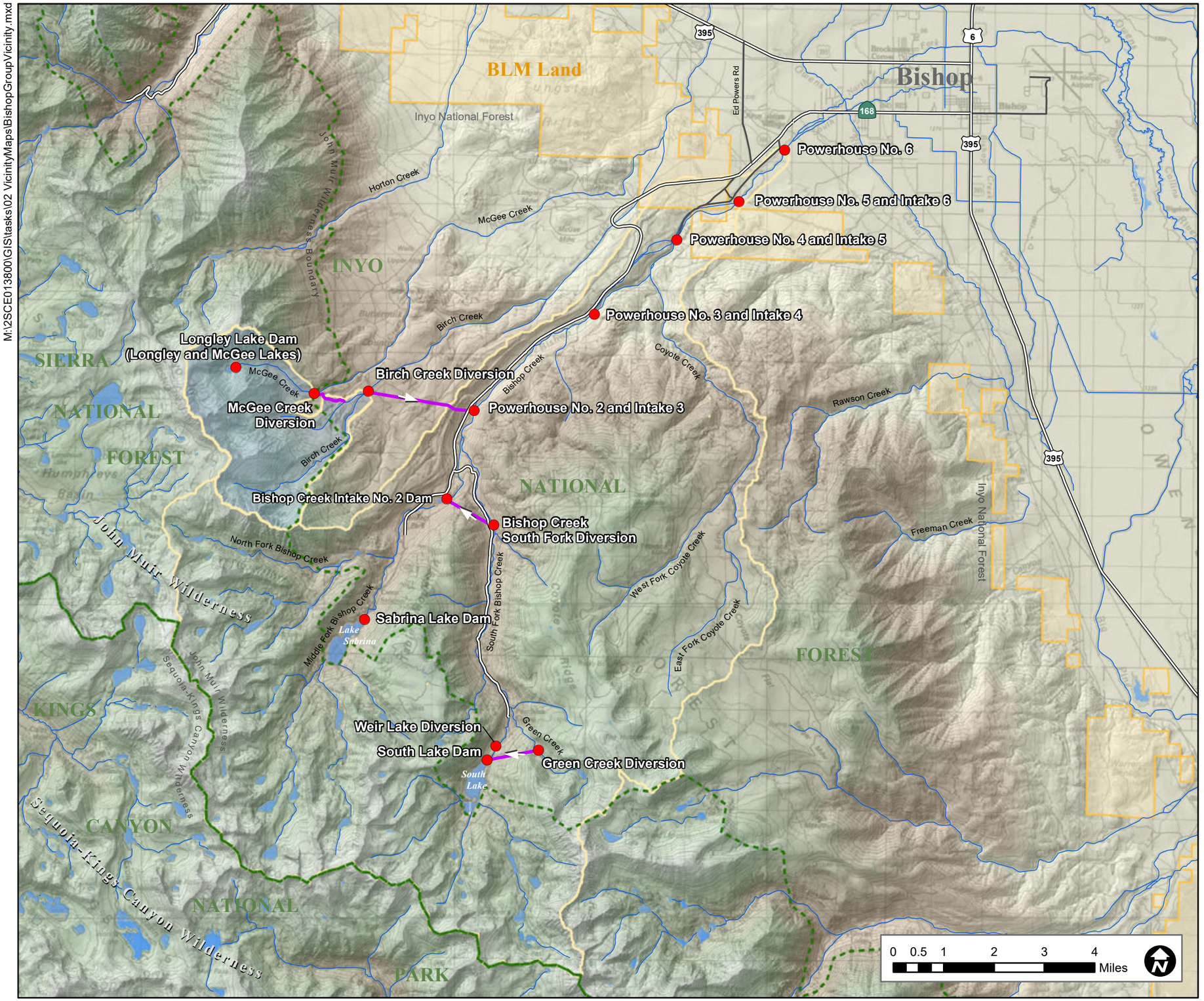

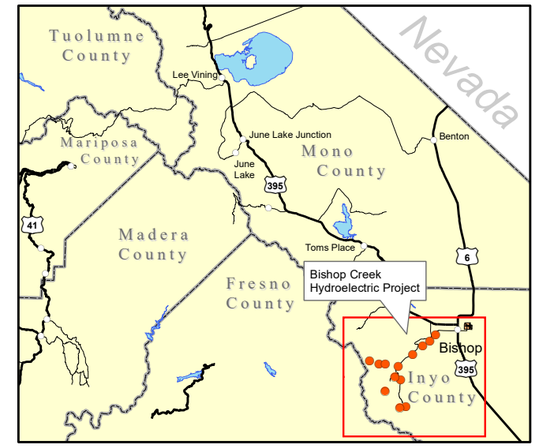

Regional Location

Legend

- Project Facility Site Locations
- Diversion Channels, Pipelines, & Penstocks
- National Forest/National Park Boundary
- Wilderness Area Boundary
- Bureau of Land Management (BLM) Boundary

Bishop Creek Hydroelectric Project Vicinity Map

PSOMAS

Attachment A

ATTACHMENT B

SITE PHOTOGRAPHS

Powerhouse No. 2: Exterior view of the transformer shed facing southeast. The transformer shed is presumed to be supporting an active maternity roost.

Powerhouse No. 2: Interior view of the transformer shed facing north. Bats were roosting inside the crest of the ceiling between the rafter beams.

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Site Photographs

Attachment B-1

Bishop Creek Hydroelectric Project

PSOMAS

Powerhouse No. 2: Interior view of the floor of the transformer shed facing west. Substantial guano had accumulated below the equipment since it was last cleaned (likely within the last month).

Powerhouse No. 2: View of the tailrace facing southwest. The volume of water expelled during facility flushing events does not completely inundate this tailrace leaving marginal suitable bat roosting habitat.

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Site Photographs

Attachment B-2

Bishop Creek Hydroelectric Project

PSOMAS

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Powerhouse No. 3: Interior view of the powerhouse facing west. The roof and ceiling design are similar to Powerhouse 2 transformer shed, however, no evidence of day-roosting was observed.

Powerhouse No. 3: Interior view of the powerhouse facing east. The circular vent present at many of the facilities is a good entrance/emergence feature for bats. Evidence of night roosting (urine staining) is visible on right side of photograph.

Powerhouse No. 3: View of the tailrace facing northwest. This smaller tailrace is completely inundated during facility flushing events and has no potentially suitable bat roosting habitat.

Powerhouse No. 4: Exterior view of the powerhouse facing south. No sign of bat roosting was observed at this facility.

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Site Photographs

Attachment B-4

Bishop Creek Hydroelectric Project

PSOMAS

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Powerhouse No. 4: Interior view of the powerhouse facing northwest. No sign of bat roosting was observed at this facility.

Powerhouse No. 4: View of the tailrace facing west. This larger tailrace does not completely inundate during facility flushing events leaving potentially suitable bat roosting habitat.

Powerhouse No. 5: Exterior view of the powerhouse facing southeast. The powerhouse is presumed to be supporting an active maternity roost.

Powerhouse No. 5: Interior view of the powerhouse facing west. The active roost is located in the steel gusset at the peak of the roof highlighted by the flashlight beam in the photograph.

Powerhouse No. 5: Interior view of the powerhouse facing west. Guano accumulation is visible on the white beams below the roost in the dark gusset. Dark urine staining is also visible below the gusset.

Powerhouse No. 5: View of the tailrace facing west. This larger tailrace does not completely inundate during facility flushing events leaving potentially suitable bat roosting habitat.

Powerhouse No. 6: Interior view of the powerhouse facing northwest. No sign of bat roosting was observed at this facility.

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Site Photographs

Attachment B-8

Bishop Creek Hydroelectric Project

PSOMAS

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Appendix B

IFIM Transect Selection Memo

BISHOP CREEK PROJECT
INSTREAM FLOW NEEDS

TO: Bishop Relicensing TWG

FROM: Brandon Kulik, Kleinschmidt

CC Matt Woodhull, Southern California Edison
Finlay Anderson, Kleinschmidt

SUBJECT: PHABSIM transect selection - Summary of conference call

DATE: October 25, 2019

Southern California Edison (SCE) is currently undergoing relicensing for the Bishop Creek Hydroelectric Project (FERC Project No. 1394) (Project), utilizing the Integrated Licensing Process (ILP) pursuant to 18 CFR § 5.6, with additional consultation conducted early in the process to allow certain field studies to be implemented without delay. During consultation the Fisheries Technical Working Group (TWG) identified the need for an Instream Flow Incremental Methodology (IFIM) study to assess and potentially refine the existing minimum flow requirements below the Project's spillways. Existing minimum flows are based on the results of an IFIM study conducted during the prior relicensing (EA, 1986). The IFIM study will be supported by a Physical Habitat Simulation (PHABSIM) model, and as such, SCE subsequently developed a study plan in consultation with the TWG to address the issue which calls for a mesohabitat survey the Bishop Creek study area as a precursor for selecting study sites for further PHABSIM modeling. During September 2019, SCE conducted a mesohabitat survey (See memo of October 4, 2019) that informed the TWG 's initial selection of reach-specific study sites. This memo summarizes transect selection decisions completed by the TWG on the conference call of October 24, 2019.

The TWG convened a webinar-format conference call on October 24 to scrutinize detailed aerial drone photography and high-resolution video flyovers of each reach. Each flyover was reviewed and discussed. Movie clips were rerun and paused at candidate transect locations and boundaries. An image was harvested from each video so that specific collectively selected transects could be marked to document decisions.

Reaches are numbered sequentially from downstream to upstream following the pattern established in the prior IFIM Study (*EA Engineering, Science and Technology, Inc. 1988*). Reach boundaries occur at key hydrologic influences such as spillways and confluences of major tributaries including Coyote Creek, and the Middle and South forks of Bishop Creek, for a total of 10 reach segments. For purposes of this memo, transects have been provisionally numbered sequentially from downstream to upstream, following standard PHABSIM protocol.

A study site was located in each reach. The TWG agreed that the focus should be on **critical** habitat rather than **representative** habitat. Critical habitat refers to those mesohabitats that are strategic to the targeted species and life stages regardless of whether it is a commonly-occurring mesohabitat or not. For example, the mesohabitat mapping survey demonstrated that cascades, high gradient riffles and plunge pools are dominant mesohabitats in most of the reaches. However, it was agreed that the target species (*Brown trout, Owens sucker and speckled dace*) all prefer the less commonly-occurring lower gradient mesohabitat such as pools, runs and lower gradient riffles. The TWG further targeted a minimum of three transects per study site to ensure that natural variability of stream morphology, cover and hydraulics was adequately captured. The exact number of transects per reach would, however, be governed by local site-specific stream channel complexity.

It was also recognized that the high gradient of reaches 4 and 6 resulted in such a high degree of cascade and plunge pool hydraulics that modeling was infeasible. Instead the group agreed that Habitat Criteria Modeling (HCM) approach suggested by Tristan Leong (USFS) would be substituted[1].

The subject reaches are shown in Figure 1.

Bishop Creek. This portion of the study area was divided into a total of six hydrologic reaches on Bishop Creek, numbered from downstream to upstream. Flows in Reaches 1 and 2 are influenced by releases from the Intake 6 and Intake 5 spillways, respectively. Reach 3 flow is influenced by releases from Intake 4 and Coyote Creek discharge; Reach 4 is solely influenced by releases from Intake 4. Reach 5 is influenced by releases from Intake 3. Reach 6 receives flow from both the Middle Fork and the South Fork of Bishop Creek.

Middle Fork Bishop Creek. Reach 7 is influenced by releases from Intake 2; Reach 8 is influenced by releases from Sabrina Lake.

South Fork Bishop Creek. Reach 9 is influenced by releases from the Intake 2 diversion; Reach 10 is influenced by releases from South Lake.

[1] The HCM relies on obtaining empirical measurements at specific flow "snapshots" with no simulation or extrapolation to other flows.

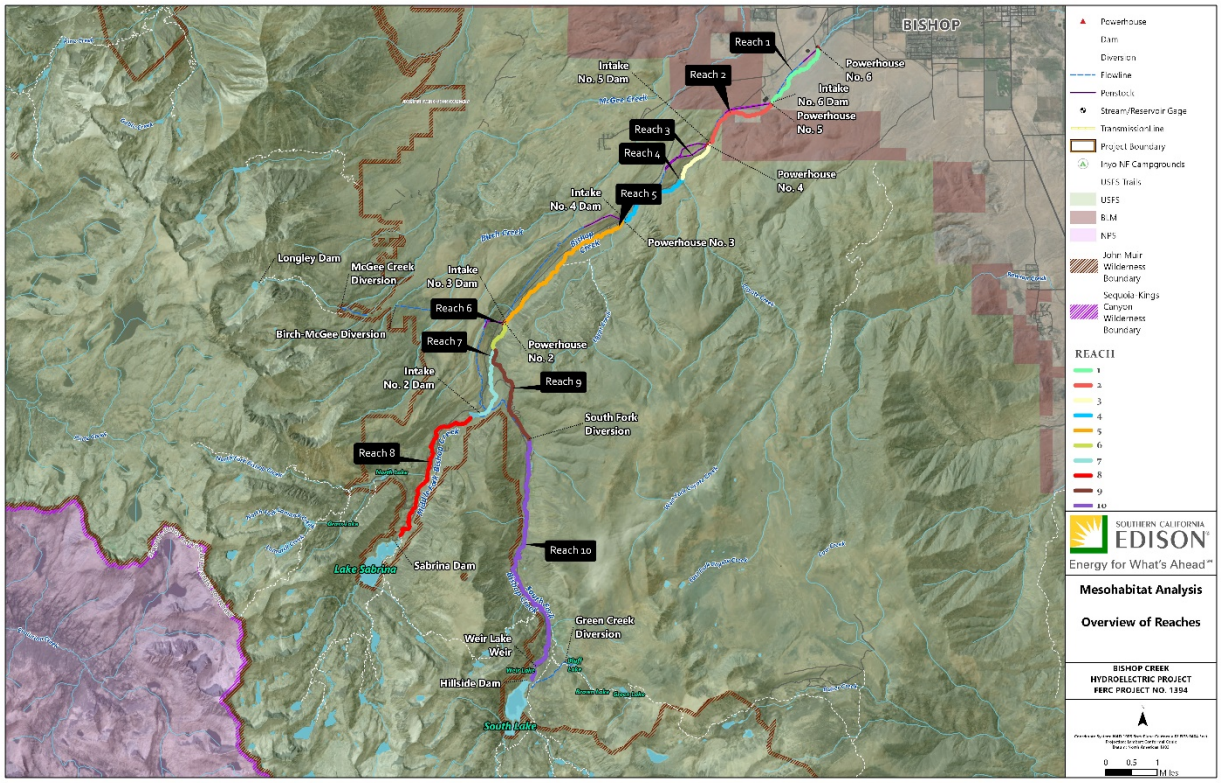

FIGURE 1 BISHOP CREEK IFIM STUDY AREA.

SUMMARY

Reach 1

Critical mesohabitat in this reach was identified as the repeating pattern of low gradient riffle/shallow pool complexes. The overall pattern repeats, but there are variations in microhabitat features such as channel geometry, substrate, and presence/absence of point bars.

PHOTO PLATE 1 REACH 1, BISHOP CREEK.

Reach 2

Mesohabitat in this reach is dominated by riffles separated by steeper cascades. The IFIM study site was located in a section of riffle, mixed with shallow pools that likely transition to runs at higher flows. A total of four transects were selected to characterize both riffles and pool/runs

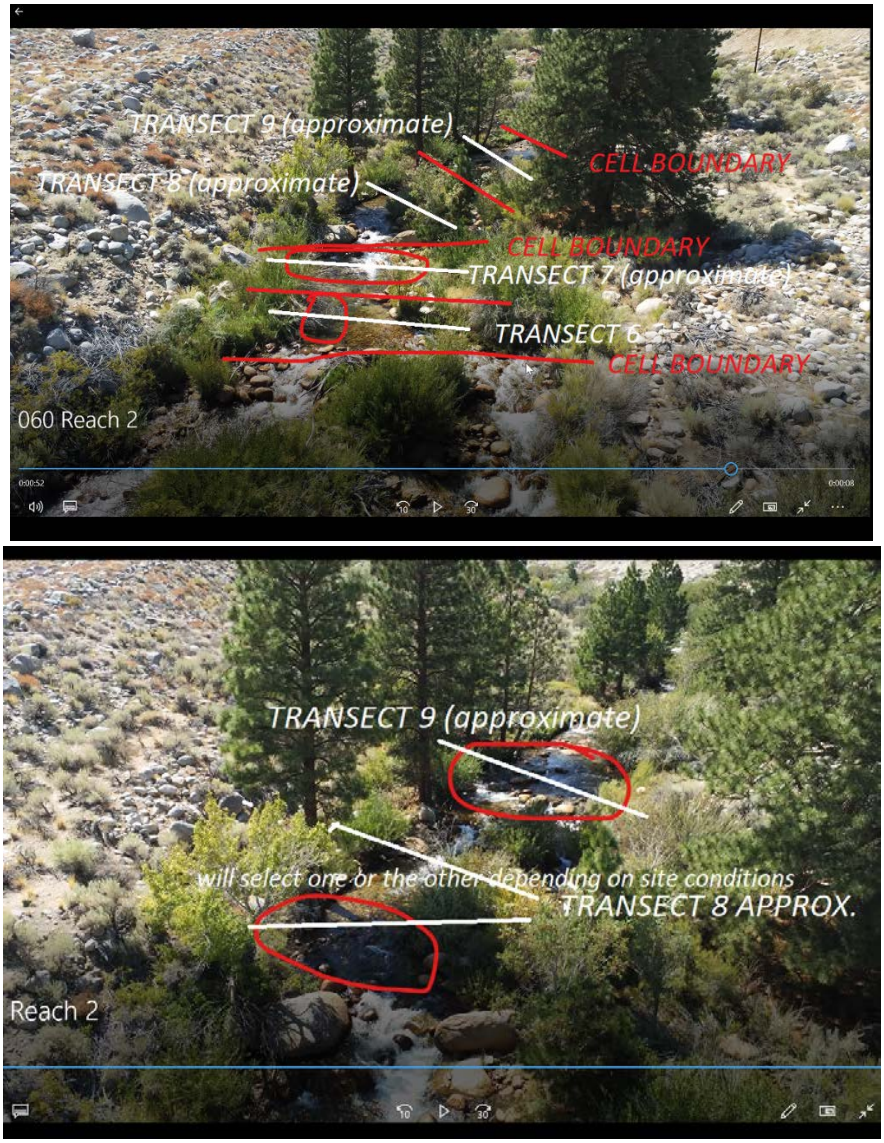

PHOTO PLATE 2. STUDY SITE 2, BISHOP CREEK. (*SECOND PHOTO SHOWS TRANSECTS 8 AND 9 MORE CLEARLY*)

Reach 3

Critical habitat in Reach 3 is dominated by riffle mesohabitat with scattered small pools. A total of four transects were selected to depict both pool and riffle habitat variations.

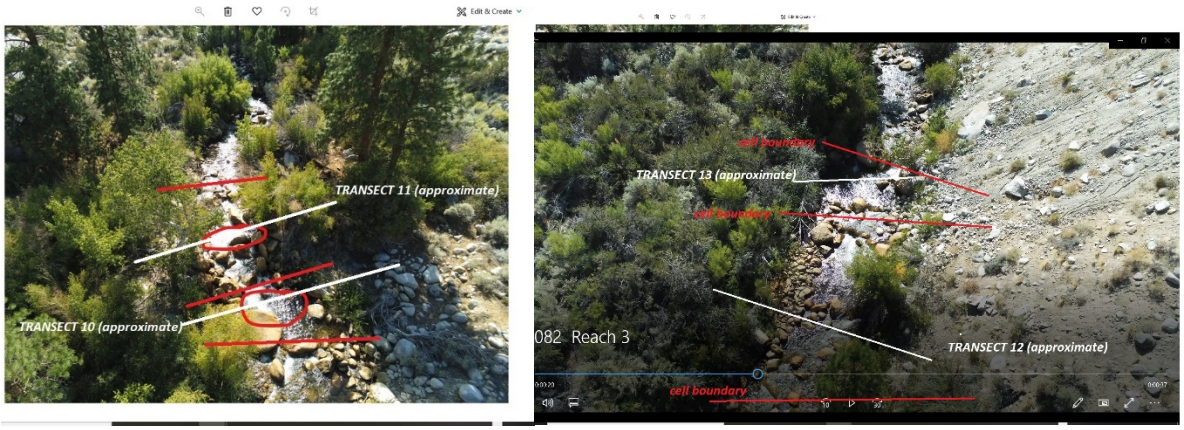

PHOTO PLATE 3 REACH 3 IFIM STUDY SITE

Reach 4

Reach 4 is dominated by very high gradient riffles (i.e., approximately 5% or greater slopes); cascades (25%) and step pools (23%) . The TWG concluded that this site would be best documented using the HCM methodology. It was agreed that the field team could select two pools to survey. Each pool should depict a balance of different cover quality and volume conditions to the extent possible.

PHOTO PLATE 4. CASCADE/STEP POOL MESOHABITAT IN REACH 4, BISHOP CREEK.

Reach 5

Reach 5 is dominated by cascade mesohabitat (58%); riffle (21%) and cascade/riffle complexes. The TWG determined that the lower gradient riffle habitat was the most critical in this reach. Three transects were selected to account for natural channel variability.

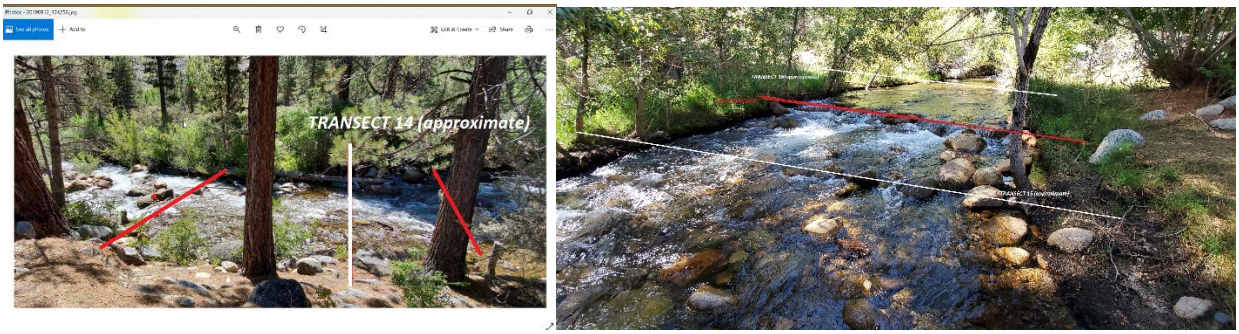

PHOTO PLATE 5. STUDY SITE 5, BISHOP CREEK.

Reach 6

Reach 6 is dominated by cascade mesohabitat. It will receive the same treatment as Reach 4.

Reach 7

Reach 7 is dominated by high gradient riffle (53%) and cascade (30%) mesohabitat; riffle (15%) and occasional riffle-pool (2%) mesohabitats are also present. Pools are extremely small. The TWG determined that the lower gradient riffle habitat was the most critical in this reach. Three transects were selected to account for natural channel variability and to capture both riffle and pool mesohabitats.

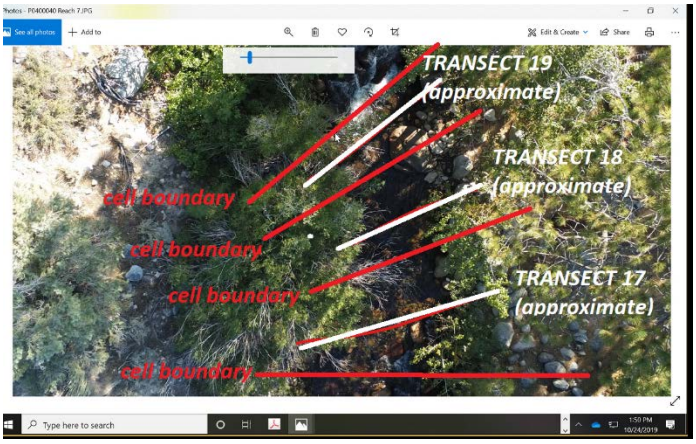

PHOTO PLATE 6. STUDY SITE 7, BISHOP CREEK.

Reach 8

Reach 8 contains significant low gradient habitats, including consecutive run, run-pool, and pool habitat in the Aspendell vicinity, collectively contributing approximately 19% of the mesohabitat in this reach. This area has numerous braided channels, woody debris and varied substrates. Such expansive complexes are relatively unique in this watershed and are rich in woody debris cover, including scour holes, undercut banks, and overhead cover. The TWG concluded that this was the most critical habitat to model in this reach. However, after review of video and photos, it was concluded that a site visit would be required to adequately select transects[2]. It is anticipated that 3 or 4 transects may be required to characterize the critical mesohabitat in this reach.

PHOTO PLATE 7. REPRESENTATIVE RUN-POOL, RIFFLE, MESOHABITAT IN REACH 8, MIDDLE FORK BISHOP CREEK.

Reach 9

Reach 9 is dominated by cascades and riffles. The TWG determined that low gradient riffles were the critical habitat in this reach, located a study site in the low gradient riffle near the U.S. Forest Service's Four Jeffreys Campground, and selected three transects to portray natural stream channel variability. The study site boundary will be established to avoid any hydraulic influence of the road bridge.

[2] A site visit has been tentatively scheduled for November 4, 2019.

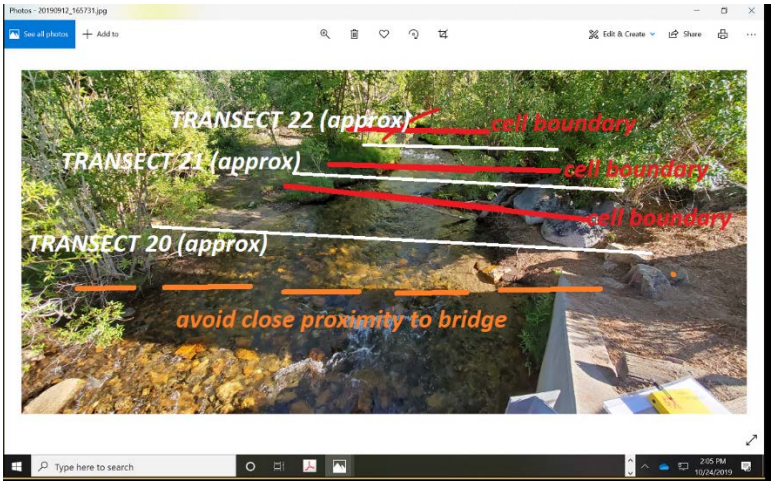

PHOTO PLATE 8 STUDY SITE 9, SOUTH FORK BISHOP CREEK.

Reach 10

Reach 10 is generally high gradient, but also is comprised of meandering run habitat, with sand and gravel substrates, and extensive meadow surrounding with riparian brush. The runs feature excellent undercut banks as well as large boulder object cover. The TWG concluded that this was the most critical habitat to model in this reach. Two study sites were selected. Although channel conditions are relatively uniform, Site 10 A (at the lower end of this mesohabitat unit) includes run-pool characteristics with gravel dominated substrate, along with undercut banks and large object cover; Site 10A (at the upper end of this unit) is a riffle/run transition area with cobble and small boulder substrate. A total of four transects will be deployed. It was concluded that the field team could select transect locations at the time of the field study. Photo Plate 9 proposes a conceptual layout of the two sites.

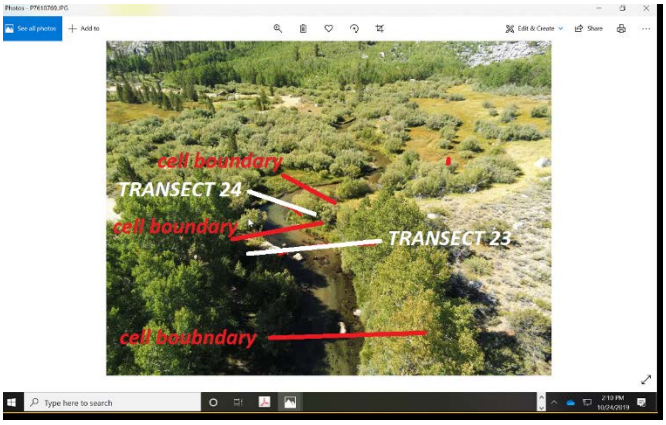

PHOTO PLATE 9. REACH 10 IFIM STUDY SITE, AND PROPOSED TRANSECT LOCATIONS.

SUMMARY

REACH	TRANSECTS	NOTES
Reach 1	5	
Reach 2	4	
Reach 3	3	
Reach 4	2	Pocket pools will be survey using HCM methodology
Reach 5	3	
Reach 6	2	Pocket pools will be survey using HCM methodology
Reach 7	3	
Reach 8	Approximately 4	To be determined by TWG site visit
Reach 9	3	
Reach 10	4	To be located by field crew at time of survey

LITERATURE CITED

EA Engineering, Science and Technology, Inc. (EA). 1988. Instream flow and fisheries report for the Bishop Creek Hydroelectric Project. EA, Lafayette, CA. January 1986. 23 p. plus attachments.

Table 2

Bishop Creek Relicensing Field Schedule

Study Plan LAST UPDATE 11/26/2019 All dates 2019 unless otherwise noted	Scheduling Constriaints/Parameters/Duration	Technical Lead(s)	Target Date	2019 Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
TERR 1 - Riparian Assessment												
Existing Condition												
Hydrology / Data Collection		E Read	Jun 3-10 & Jul 29-Aug 2									
Geomorphology / Channel Cross Sections		E Read	Jun 3-10 & Jul 29-Aug 2									
Vegetation Data collection (to be completed during Bishop Creek Riparian Monitoring Project)		E Read	Jun 3-10; Jul 29-Aug 2; Sept 15-19									
Data Analysis		E Read										
TERR 2 - Invasive Plants												
Early Season		E Read	Jun 10-13									
Mid Season		E Read	Jul 29-Aug 2									
TERR 3 - RTE Plants												
Early Season	First sampling dependent on seasonal phenology	E Read	Jun 10-13									
Mid Season		E Read	Aug 5-9									
TERR 4 - Wildlife Resources												
General	One field week needed (Monday to Friday)	B. Blood	Aug 5-9									
Mule Deer	1/2 day walking survey and camera set-up + follow-up for camera down load by SCE Ops	B. Blood	Aug 5-9									
Download camera photos prior to departing		B. Blood	Aug 5-9									
Monthy camera downloading		B. Blood	Monthly									
Photo review and cateloguing		B. Blood	Monthly									
Willow Flycatcher Habitat (FS criteria)		B. Blood	Aug 5-9									
Prepare General Wildlife Interim Reports		B. Blood	Aug 5-9									
Safety Training - Gen Wildlife		B. Blood	Aug 5-9									
Bat Habitat Survey Sumer 2019		B. Blood	Jun 10-14									
Bat Habitat Survey Winter 2020		B. Blood	Jan-20									
Special Status Amphibian Surveys		B. Blood	Sept 21-27									
Goshawk	2 days/ 3 nights (included in general survey schedule	B. Blood	Jun 10-14, 2020									
Review Goshawk listening protocols/Preliminary identificaiton of Listening Stations		B. Blood	Jun 10-17, 2020									
Prepare General Wildlife Interim Reports		B. Blood	Oct-Nov									
Safety Training -Bat Acoustics		B. Blood	Jun 1-14, 2020									
Bat Accoustic Survey		B. Blood	Jun 10-14, 2020									
Bat Accoustic Data Analysis		B. Blood	Aug 2020									
Bat Acoustic Report		B. Blood	Jul 20-Sept 2020									

Study Plan LAST UPDATE 11/26/2019 All dates 2019 unless otherwise noted	Scheduling Constriaints/Parameters/Duration	Technical Lead(s)	Target Date	2019
				Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec
AQ 1 - Instream Flow Condition Assessment (IFIM)				
Messohabitat Reconnaisance	One week needed, timing flexible depending on Plant needs and pilot availabaility	B. Kulik	Sept 9-13	
Messohabitat mapping and site selection	One week needed, flow should be at current min flow requirements	B. Kulik	Sept 16-27	
Site Selection/Identification (California Protocol/Stratification)	One week needed, timing flexible depending on Plant needs	B. Kulik	Sept 16-27	
Transect survey and calibration flow collection			see below	
Study Reach 1 (Plants 2-5)	One week needed, timing flexible depending on Plant needs	B. Kulik	Nov 4-9	
Study Reach 2 (South Branch)	One week needed, timing flexible depending on Plant needs	B. Kulik	Nov 4-9	
Study Reach 3 (Middle Branch)	One week needed, timing flexible depending on Plant needs	B. Kulik	Nov 4-9	
AQ 3 - Fish Distribution (Creek)				
data collection at Longley Resevoir	TWO WEEKS?	B. Kulik	mid-June 2020	
data collection ain forebay reservoirs	TWO WEEKS?	B. Kulik	mid-June 2020	
lay out out sampling sites according to Sada		B. Kulik	Sept 21-27	
AQ 4 - Fish Distribution (Reservoir)				
Spring Sampling	Time around sucker spawning	B. Kulik	June 2020	
Boat electrofishing / bathymetry to be done as close to max pool as possible		B. Kulik	Jun-20	
Sucker survey timed to coincide when sucker are in the shallows		B. Kulik	Jun-20	
AQ 5 - Water Quality				
Vertical Profiles of DO/Water Temp Events				
Lake Sabrina		M. Donovan	Ongoing; once per month	
South Lake		M. Donovan	Ongoing; once per month	
Bishop Creek DO/Water Sampling Events (13 locations)		M. Donovan	Ongoing	
Secchi Disk Readings				
Lake Sabrina		M. Donovan	Ongoing; once per month	
South Lake		M. Donovan	Ongoing; once per month	
Water Quality Constiutents (Turbidity, EC, TDS, PO4, Total N, and NO3)				
Lake Sabrina (2 per month)		M. Donovan	Ongoing; twice per month	
South Lake (2 per month)		M. Donovan	Ongoing; twice per month	
8 locations on Bishop Creek (1 per month)		M. Donovan	Ongoing; once per month	

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AQ 6 - Sediment Modeling				
Sediment Site Reconnaisance	Need low flow in streams, 3 days	T. Kreider	Jul 29-Aug 2	
Sediment Site Recovery from Prior Studies	Occurs during same visit as above, but will need to occur when E. Read is in field to consult on prior monitoring sites. 1 day	T. Kreider	Jul 29-Aug 2	
	Need low flow in streams, 4 day field effort	T. Kreider	Sept. 9-13	
LWM and Bed Substrate Field Survey	Need low flow in streams, 1.5 day field effort, occur with Cross Section Field Survey visit	T. Kreider	Sept. 9-13	
Bedload Sediment Measurement - Site 4.2	Need higher flow in stream or reservoir release by SCE, occurs after Cross Section Survey, 1.5 day	T. Kreider	mid-July 2020	
Bedload Sediment Measurement - Site 6	Need higher flow in stream or reservoir release by SCE, occurs after Cross Section Survey, 1.5 day	T. Kreider	mid-July 2020	
LAND 1 - Project Boundary and Lands				
No field work planned unless verification of land		Harper	Not scheduled	
REC 1 - Recreation Use and Needs				
Drone Aerial Imagery Collection of Recreation Sites	DRONE COORDINATED W IFIM	Harper	Sept 9-13	
General Recreation Site Inventory		Harper	June 2020	
Staffing of Temporary Survey Clerks (may not require field mobilization)		Harper	Q2, 2020	
General Recreation Surveys (summer)		Harper	mid-July 2020	
General Recreation Surveys (winter) at Lake Sabrina, South Lake, and Intake No. 2 rec areas		Harper	mid-July 2020	
Spot Counts		Harper	mid-July 2020	
Creel Surveys		Harper	mid-July 2020	
REC 2 - Facilities Condition Assessment				
Facilities Condtiion Assessment at Lake Sabrina, South Lake, and Intake No. 2 Recreation Areas		Harper	June 2020	
Facilities Condtiion Assessment at Lake Sabrina, South Lake, and Intake No. 2 Recreation Areas		Harper	June 2020	
Dispersed Use Assessment, Field Verification		Harper	June 2020	
CULT 1 - Cultural Resources Study				
Archaelolgical Survey	Agreement APE, APRA Permits, Organic Act Permit	Compas		
Upper Bishop Creek - Southfork		Siskin	Q2, 2020	
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PSOMAS, Shelly Davis-King, E. Read, McKay & Sposito			*Alternative*											
			Reporting/non-field											

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