

CUTLER HYDROELECTRIC PROJECT

FERC NO. 2420

Revised Technical Study Plans

Volume III

January 2020



REVISED TECHNICAL STUDY PLANS

CUTLER HYDROELECTRIC PROJECT FERC NO. 2420

Prepared for:

PACIFICORP

HYDRO RESOURCES

1407 WEST NORTH TEMPLE, ROOM 210

SALT LAKE CITY, UT 84116

Prepared by:



**Miriam
Hugentobler**

**River Science
Institute**

JANUARY 2020

**CUTLER HYDROELECTRIC PROJECT
FERC No. 2420****REVISED TECHNICAL STUDY PLANS****TABLE OF CONTENTS**

1.0	OVERVIEW	1-1
1.1	INTRODUCTION	1-1
1.2	PROJECT DESCRIPTION	1-3
1.3	FACILITIES (EXISTING AND PROPOSED)	1-6
1.4	OPERATIONS (EXISTING AND PROPOSED)	1-7
1.5	PROVISIONS FOR PERIODIC PROGRESS REPORTS	1-8
1.6	IMPLEMENTATION SCHEDULE FOR STUDY PROGRAM	1-9
1.7	STUDY PLAN MEETING	1-11
1.8	STUDY PLAN MASTER SCHEDULE	1-11
2.0	TERRESTRIAL AND BOTANICAL REVISED STUDY PLANS	2-1
2.1	THREATENED AND ENDANGERED SPECIES REVISED STUDY PLAN (TERR 1)	2-1
2.1.1	PROJECT NEXUS AND RATIONALE FOR STUDY	2-1
2.1.2	STUDY GOALS AND OBJECTIVES	2-2
2.1.3	REVIEW OF EXISTING INFORMATION	2-3
2.1.4	STUDY AREA	2-3
2.1.5	METHODS	2-5
2.1.6	SCHEDULE AND PERIODIC REPORTING	2-5
2.1.7	LEVEL OF EFFORT AND COST	2-6
2.1.8	PROPOSED STUDY PLAN CONSULTATION RECORD	2-6
2.1.9	REFERENCES	2-6
2.2	SHORELINE HABITAT CHARACTERIZATION REVISED STUDY PLAN (TERR 2)	2-7
2.2.1	PROJECT NEXUS AND RATIONALE FOR STUDY	2-7
2.2.2	STUDY GOALS AND OBJECTIVES	2-7
2.2.3	REVIEW OF EXISTING INFORMATION	2-8
2.2.4	STUDY AREA	2-9
2.2.5	METHODS	2-9
2.2.6	EXISTING DATA AND LITERATURE REVIEW	2-9
2.2.7	VEGETATION CLASSIFICATION	2-10
2.2.8	CUTLER 2019 DRAWDOWN FIELD WORK	2-12
2.2.9	ANALYSIS AND COLLECTION OF ADDITIONAL DATA	2-12
2.2.10	SCHEDULE AND PERIODIC REPORTING	2-13
2.2.11	LEVEL OF EFFORT AND COST	2-14
2.2.12	STUDY PLAN CONSULTATION RECORD	2-14
2.2.13	REFERENCES	2-14
2.3	LAND USE REVISED STUDY PLAN (TERR 3)	2-15
2.3.1	PROJECT NEXUS AND RATIONALE FOR STUDY	2-15
2.3.2	STUDY GOALS AND OBJECTIVES	2-17
2.3.3	REVIEW OF EXISTING INFORMATION	2-17

2.3.4	STUDY AREA	2-18
2.3.5	METHODS	2-20
2.3.6	SCHEDULE AND PERIODIC REPORTING	2-22
2.3.7	LEVEL OF EFFORT AND COST	2-24
2.3.8	STUDY PLAN CONSULTATION RECORD	2-25
2.3.9	REFERENCES	2-25
3.0	FISH AND AQUATIC RESOURCES REVISED STUDY PLANS	3-1
3.1	FISH AND AQUATIC REVISED STUDY PLAN (AQ 1).....	3-1
3.1.1	PROJECT NEXUS AND RATIONALE FOR STUDY	3-1
3.1.2	STUDY GOALS AND OBJECTIVES.....	3-1
3.1.3	REVIEW OF EXISTING INFORMATION.....	3-2
3.1.4	STUDY AREA	3-2
3.1.5	METHODS	3-2
3.1.6	SCHEDULE AND PERIODIC REPORTING	3-7
3.1.7	LEVEL OF EFFORT AND COST	3-7
3.1.8	STUDY PLAN CONSULTATION RECORD	3-7
3.1.9	REFERENCES	3-8
3.2	WATER QUALITY REVISED STUDY PLAN (AQ 2).....	3-10
3.2.1	PROJECT NEXUS AND RATIONALE FOR STUDY	3-10
3.2.2	STUDY GOALS AND OBJECTIVES.....	3-11
3.2.3	REVIEW OF EXISTING INFORMATION – PHASE 1	3-11
3.2.4	STUDY AREA	3-12
3.2.5	METHODS	3-14
3.2.6	SCHEDULE AND PERIODIC REPORTING	3-18
3.2.7	LEVEL OF EFFORT AND COST	3-18
3.2.8	STUDY PLAN CONSULTATION RECORD	3-18
3.2.9	REFERENCES	3-18
3.3	HYDRAULIC MODELING REVISED STUDY PLAN (AQ 3).....	3-20
3.3.1	PROJECT NEXUS AND RATIONALE FOR STUDY	3-20
3.3.2	STUDY GOALS AND OBJECTIVES.....	3-20
3.3.3	REVIEW OF EXISTING INFORMATION.....	3-20
3.3.4	STUDY AREA	3-21
3.3.5	METHODS	3-21
3.3.6	SCHEDULE AND PERIODIC REPORTING	3-24
3.3.7	LEVEL OF EFFORT AND COST	3-25
3.3.8	STUDY PLAN CONSULTATION RECORD	3-26
3.3.9	REFERENCES	3-26
3.4	SEDIMENTATION REVISED STUDY PLAN (AQ 4)	3-27
3.4.1	PROJECT NEXUS AND RATIONALE FOR STUDY	3-27
3.4.2	STUDY GOALS AND OBJECTIVES.....	3-28
3.4.3	REVIEW OF EXISTING INFORMATION.....	3-28
3.4.4	STUDY AREA	3-29
3.4.5	METHODS	3-34
3.4.6	ANALYSIS AND REPORTING	3-38
3.4.7	SCHEDULE AND PERIODIC REPORTING	3-39
3.4.8	LEVEL OF EFFORT AND COST	3-40

3.4.9	REVISED STUDY PLAN CONSULTATION RECORD	3-40
3.4.10	REFERENCES	3-40
4.0	HUMAN ENVIRONMENT REVISED STUDY PLANS	4-1
4.1	RECREATION RESOURCES REVISED STUDY PLAN (REC 1)	4-1
4.1.1	PROJECT NEXUS AND RATIONALE FOR STUDY	4-1
4.1.2	STUDY GOALS AND OBJECTIVES	4-1
4.1.3	REVIEW OF EXISTING INFORMATION	4-2
4.1.4	STUDY AREA	4-2
4.1.5	METHODS	4-4
4.1.6	SCHEDULE AND PERIODIC REPORTING	4-7
4.1.7	LEVEL OF EFFORT AND COST	4-8
4.1.8	REVISED STUDY PLAN CONSULTATION RECORD	4-8
4.1.9	REFERENCES	4-8
4.2	CULTURAL RESOURCES REVISED STUDY PLAN (CULT 1)	4-10
4.2.1	PROJECT NEXUS AND RATIONALE FOR STUDY	4-10
4.2.2	STUDY GOALS AND OBJECTIVES	4-11
4.2.3	REVIEW OF EXISTING INFORMATION	4-12
4.2.4	STUDY AREA	4-12
4.2.5	METHODS	4-16
4.2.6	SCHEDULE AND PERIODIC REPORTING	4-22
4.2.7	LEVEL OF EFFORT AND COST	4-24
4.2.8	REVISED STUDY PLAN CONSULTATION RECORD	4-24
4.2.9	REFERENCES	4-24
5.0	REQUESTED STUDIES NOT ADOPTED	5-1

APPENDICES

APPENDIX A	PAD/SD1 RESPONSE TO COMMENTS TABLE	A-1
APPENDIX B	PSP RESPONSE TO COMMENTS TABLE	B-1
APPENDIX C	STUDY PLAN MASTER SCHEDULE	C-1
APPENDIX D	CONSULTATION RECORD	D-1

LIST OF TABLES

TABLE 1-1	CUTLER RELICENSING TIMELINE FOR ILP PRE-FILING ACTIVITIES	1-9
TABLE 3-1	SAMPLING TRANSECT LOCATIONS AND SAMPLE NUMBERS	3-14
TABLE 4-1	DRONE DOCUMENTATION OF CUTLER RECREATION SITES DURING DRAWDOWN	4-7
TABLE 4-2	PROPOSED STUDY AREAS FOR STUDY COMPONENTS	4-15

LIST OF FIGURES

FIGURE 1-1	CUTLER PROJECT LOCATION MAP	1-4
FIGURE 1-2	BEAR RIVER BASIN AND PRE-HISTORIC LAKE BONNEVILLE SHORELINE.....	1-5
FIGURE 2-1	STUDY AREA AND POTENTIAL HABITAT OF THE UTE LADIES’-TRESSES ORCHID SURVEY	2-4
FIGURE 2-2	PROPOSED LAND USE STUDY AREA.....	2-19
FIGURE 3-1	TRANSECT LOCATIONS FOR MACROINVERTEBRATE BIOASSESSMENT	3-5
FIGURE 3-2	TRANSECT AND MONITORING LOCATIONS FOR PHOSPHORUS AND DISSOLVED OXYGEN.....	3-13
FIGURE 3-3	MONITORING LOCATIONS FOR WATER QUALITY SUMMARY ANALYSIS	3-17
FIGURE 3-4	SEDIMENT COMPOSITION STUDY REACHES	3-31
FIGURE 3-5	PROPOSED PHOSPHORUS SAMPLING LOCATIONS	3-33
FIGURE 4-1	RECREATION STUDY PLAN AREA.....	4-3
FIGURE 4-2	PROPOSED CULTURAL AREA OF POTENTIAL EFFECT	4-13

REVISED TECHNICAL STUDY PLANS**CUTLER HYDROELECTRIC PROJECT
FERC PROJECT NO. 2420****PACIFICORP
SALT LAKE CITY, UTAH****1.0 OVERVIEW**

1.1 INTRODUCTION

PacifiCorp is the licensee, owner, and operator of the Cutler Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project No. 2420. The Project is located on the Bear River in Cache and Box Elder counties in Utah, approximately 3 miles west of the city of Logan at the closest point, on approximately 9,500 acres of lands owned and managed by PacifiCorp. PacifiCorp operates the Project under a 30-year license issued by FERC on April 29, 1994; the current license will expire on March 31, 2024. PacifiCorp initiated the formal relicensing process utilizing the Integrated Licensing Process (ILP) by filing the Notice of Intent (NOI) and Pre-Application Document (PAD) with FERC on March 29, 2019.

PacifiCorp initiated early contact with stakeholders, as described in the PAD (Section 2.0 and 3.5). The process started with a public event on February 13, 2019, the purpose of which was to inform the public about the Project and upcoming opportunities to participate in the relicensing process.¹ On June 25, 2019, PacifiCorp hosted an additional workshop (in parallel to the FERC relicensing process) to create opportunities for stakeholders to identify questions and potential issues that would be appropriate for the relicensing process and provide comments on the Proposed Study Plan (PSP) annotated outlines.² On June 26 and 27, 2019, FERC hosted two Scoping Meetings (a morning and afternoon session)^{3,4} and a site visit. These workshops helped develop a common understanding of the issues to be addressed during the relicensing. Stakeholders provided input on draft PSP annotated outlines that were developed in response to

¹ [Cutler Relicensing Public Workshop – Meeting Summary \(February 13, 2019\)](#)

² [Cutler Relicensing Stakeholder Workshop – Meeting Summary \(June 25, 2019\)](#)

³ [Transcript of the morning Scoping Meeting \(June 27, 2019\)](#)

⁴ [Transcript of the afternoon Scoping Meeting \(June 27, 2019\)](#)

the previous workshops and other stakeholder input. Stakeholders were invited to provide comments on the PAD, Scoping Document 1 (SD1), and to propose any additional studies by the required July 29, 2019 ILP deadline. These comments were summarized in the Response to Comments table for the PAD and SD1 (Appendix A). Appendix A summarizes stakeholders' comments on the PSP annotated outlines, the PAD, and SD1, and how PacifiCorp addressed those comments. If PacifiCorp did not incorporate a comment or accommodate a request, PacifiCorp provided rationale based on Project-specific information with references to FERC ILP Study Plan criteria (when applicable), which is outlined in Appendix A and Section 5.0.

PacifiCorp invited federal and state agencies, non-governmental organizations (NGOs), and Native American tribes and tribal organizations to participate in the public meeting, workshops, scoping meeting, and site visit. During these meetings and through FERC eLibrary submission, stakeholders and PacifiCorp identified the need to conduct the studies contained in the PSP. The PSP detailed the study objectives, study area, methods, and schedule for each study.

On October 8, 2019, PacifiCorp hosted the ILP-required Study Plan Meeting in Logan, Utah. Stakeholders, along with FERC, were invited to attend, and discuss study plan requests and comments submitted by July 29, 2019 on SD1, the study plan annotated outlines, and the PAD, as well as PacifiCorp's original responses to these requests/comments.⁵

Additionally, beginning October 28 and 29, 2019, through November 30, 2019, PacifiCorp hosted a number of supplemental stakeholder-specific meetings with the Bear River Canal Company (BRCC), Utah Department of Agriculture and Food (UDAF), Utah Division of Water Quality (UDWQ), Logan City, Bear Lake Watch, and the Bridgerland Audubon Society (BAS). PacifiCorp and these respective stakeholders discussed concerns and requests, and came to agreement on multiple study requests and revisions to this Revised Study Plan (RSP).

Section 7 of the PAD (Volume I)⁶ summarized identified issues and provided an overview of the Technical Studies that PacifiCorp believes will address questions regarding Project impacts. Appendix B contains the original stakeholder comment or study request, the original PacifiCorp

⁵ [Cutler Relicensing Study Plan Meeting – Meeting Summary \(October 8, 2019\)](#)

⁶ The PAD was submitted as two volumes. Volume I contained the Notice of Intent to File Application for New License and the PAD. Volume II contained all appendices.

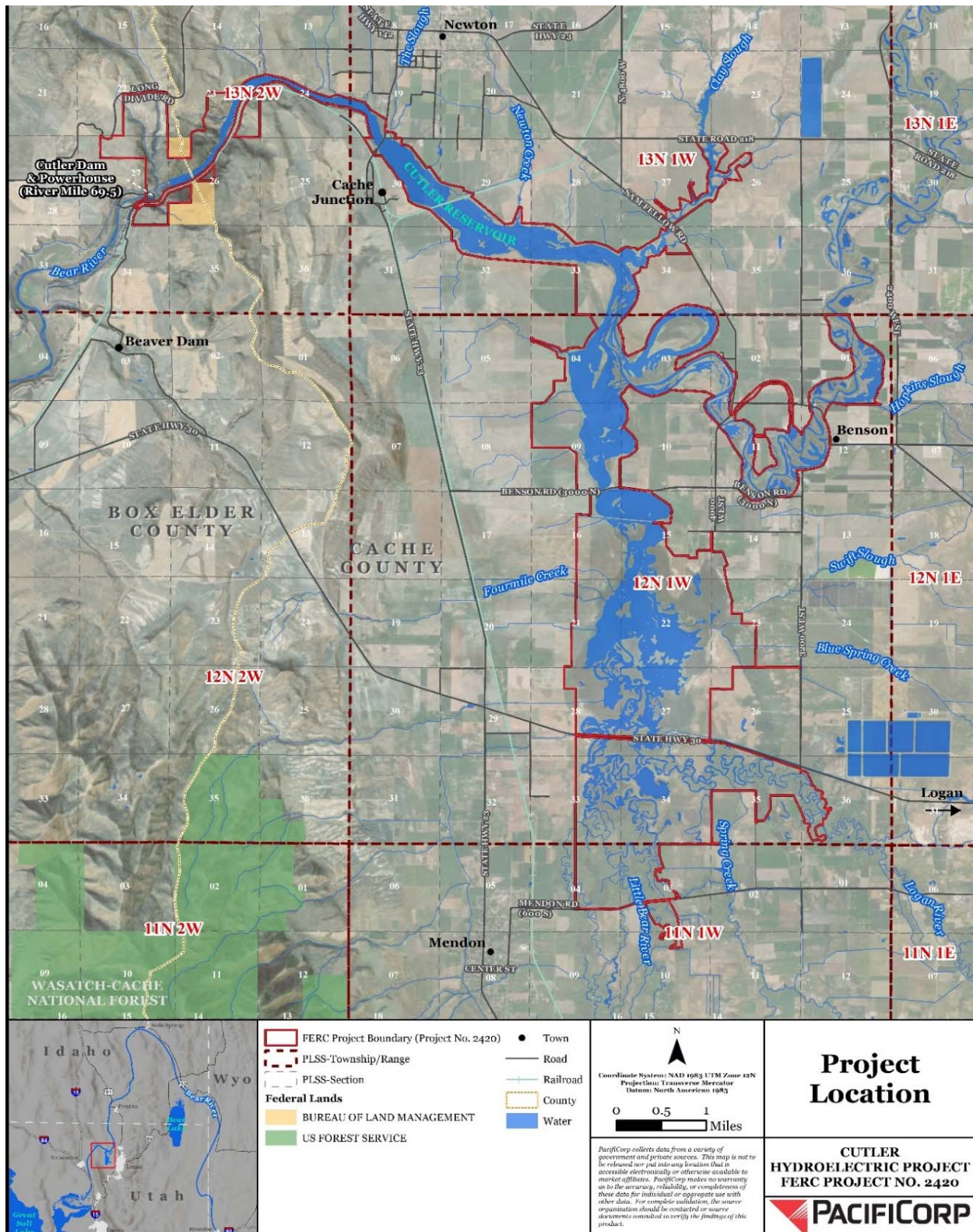
response, and the revised responses edited to describe the consensus reached at the collaborative meetings held in October and November of 2019.

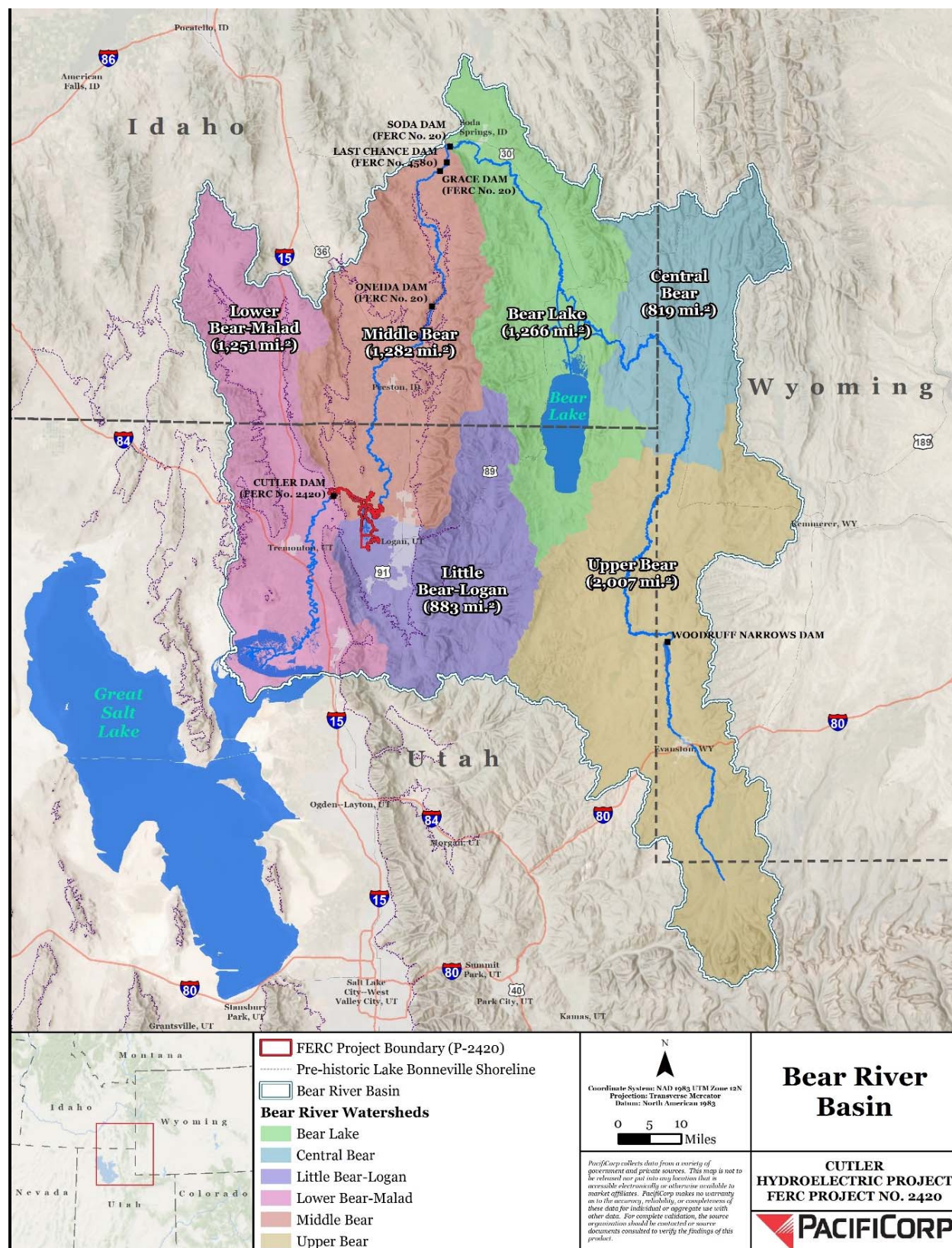
It is PacifiCorp's belief that this RSP, as amended and detailed from the earlier annotated outline and the PSP, captures the appropriate range of issues that FERC and stakeholders identified during the scoping process under 18 Code of Federal Regulation (CFR) § 5.8 (Notice of Commencement of Proceeding and Scoping Document) and § 5.9 (Comments and Information or Study Requests). This RSP contains a history of all comments and stakeholder informal consultation received during the process.

1.2 PROJECT DESCRIPTION

The Project facilities are located in northern Utah in Cache and Box Elder counties, northwest of the city of Logan (Figure 1-1). The Project's facilities are sited along the Bear River and its tributaries. The Bear River is the largest tributary to the Great Salt Lake, both in length and volume. Project facilities are wholly located on private lands.

The Bear River is a 350-mile-long river that forms a large U-shape around the northern end of the Wasatch Mountain Range, beginning on the north slope of the Uinta Mountains in northern Utah east of the Wasatch Range, spanning across southwestern Wyoming, southeastern Idaho, and back into northeastern Utah on the west side of the Wasatch Range. The mainstem of the Bear River begins at elevation 8,510 feet at the confluence of Hayden Fork and Stillwater Fork in the Uinta Mountains in Summit County, Utah. The tributary drains mountainous areas and farmlands northeast of the Great Salt Lake and southeast of the Snake River Plains, forming an approximately 7,500-square-mile basin (Figure 1-2).





Source: PacifiCorp 2018

FIGURE 1-2 BEAR RIVER BASIN AND PRE-HISTORIC LAKE BONNEVILLE SHORELINE

The Bear River is identified as the longest river in North America that does not reach the ocean. From the Uinta Mountains, the Bear River flows north towards Wyoming, through the town of Evanston, then meanders along the Wyoming-Utah state border, until it turns west into Idaho, past the city of Montpelier where it meets with the Bear Lake Outlet Canal, which flows from Bear Lake. At the north end of the Wasatch Range near the city of Soda Springs, Idaho, the Bear River makes a U-turn and heads south past the towns of Grace and Preston, Idaho, and Cornish and Trenton, Utah. Once entering Utah, the Bear River meanders through the Bear River Bottoms and turns north again as it flows through the Project. After passing Cutler Dam, the river flows through the Bear River Migratory Bird Refuge and ends in the Great Salt Lake.

The hydrology of the Bear River is heavily influenced by dams and diversions that are used for agricultural and hydroelectric purposes. There are three hydroelectric plants and five dams on the mainstem Bear River in the Bear River basin downstream of Bear Lake and upstream of the Project. The Soda, Grace, and Oneida developments were all licensed together in 2003 as the Bear River Project (FERC No. 20). Additionally, Last Chance (FERC No. 4580), Cutler (FERC No. 2420), Paris (FERC No. 703), and the Lifton Pump Station at Bear Lake, are all owned by PacifiCorp and operated in a coordinated fashion, although all hydropower generated is subordinate to the irrigation water rights that are diverted through the system. The Project is heavily influenced by the nearby agricultural lands in all three states it traverses; there are an estimated additional 450 irrigation companies that own and operate other water withdrawal and delivery systems within the Bear River watershed.

1.3 FACILITIES (EXISTING AND PROPOSED)

PacifiCorp is not proposing any modifications to generation facilities for the next license term.

The Project consists of a reservoir with a surface area of approximately 5,459 acres, with storage of approximately 10,321 acre-feet at a normal maximum operating elevation of 4,407.5 feet mean sea level (msl), a concrete gravity arch dam that has an overall length along the centerline of the crest of 545 feet including two irrigation canal intakes near the top at the abutments (109 feet high by 7 feet wide at its narrowest location), a gated-overflow spillway that contains four 30-foot-wide by 14-foot-high radial gates with crest elevation at 4,394.5 feet, a 7-foot-diameter low-level opening located near the base of the dam controlled by a slide gate (currently non-

operational due to upstream siltation), an intake tower and cylinder gate with a maximum travel of 17.75 feet to full open, two irrigation canal intakes (on either side of the dam), a 1,157-foot-long by 18-foot-diameter steel flowline, an 81-foot-high by 45-foot-diameter Johnson Differential surge tank, two steel bifurcating penstocks, a brick powerhouse, two General Electric generating units with a total installed capacity of 30 megawatts (MW), two vertical Francis turbines, a 115-kilowatt (kw) emergency generator, and all appurtenant facilities.

A more detailed Project description and photographs of these features are provided in the PAD.

1.4 OPERATIONS (EXISTING AND PROPOSED)

PacifiCorp is evaluating whether to modify routine operational limitations (i.e., to lower the low elevation limit, keeping the upper elevation limit the same, thus increasing the reservoir elevation operating limit), or to keep them generally the same for the next license term; both could enable the Project to participate in the Western Energy Imbalance Market (EIM) and better match on-going changes to the regional power grid, incorporating increasing power generation from variable renewable resources and other power generation and distribution changes that are occurring throughout the industry.⁷

Since the Project became operational, power markets have undergone changes in sources of generation and how power is marketed and distributed. The rapid growth of alternative power generation requires adjustments to how traditional baseload power is integrated with the new sources. PacifiCorp operates the Project by diverting flows from the Bear River. Although the Project is typically operated in a run-of-river mode, some of the 10,321-acre-foot storage capability of the reservoir can be utilized for minor load-following purposes when sufficient inflows are available. PacifiCorp is considering a suite of operational scenarios described in Section 5.5 of the PAD that will be evaluated during the licensing studies; an operational plan will be proposed in the Draft and Final License Applications, with ample opportunity provided to stakeholders for comments.

In summary, PacifiCorp proposes to evaluate the impacts of modifying the minimum authorized pool elevation. PacifiCorp will evaluate the full operating range from elevation 4,407.5 feet to

⁷ PacifiCorp intends on conducting an operations test in 2020 to better inform the Study Plan results.

approximately 4,396.0 feet (the mechanical limits from the top of the current elevation range to the sill of the spill gates), and adjusting the tolerance range from ± 0.25 foot to ± 0.5 foot. These values represent the maximum range PacifiCorp proposes to explore, for purposes of managing potentially increased daily, weekly, and seasonal reservoir elevation fluctuations to better support variable energy generation needs. Note that during the irrigation season, generally April 15 – October 31, no operational changes to the lower reservoir limits are sought due to irrigation pumping from the reservoir. PacifiCorp is not proposing to permanently lower the reservoir an additional 11 feet (note that 90 percent of the volume of the reservoir is in the top 3 feet, as measured at Cutler Dam, and that 70 percent of the reservoir volume is in the top 1.5 feet), but rather to find an operational range that would allow the Project to be responsive to the short-term demands and load changes that have resulted from grid integration of solar and wind generation resources and the challenges of the EIM, and possibly assist with sediment management as well. This will allow the Project to continue to meet daily high electricity demands as well as to optimize for emergency backup reserves holding outflow steadier, except for the occasional (approximately yearly) event when the emergency backup is needed, and the outflow is increased to allow for maximum power generation (30 MW).

More information and a detailed description of the current Project operations are provided in Section 5.5 of the PAD.

Throughout this RSP, PacifiCorp uses the terms “future” and “proposed” operations to indicate a range of operations that could be proposed and is therefore the basis for the evaluation approach; however, PacifiCorp has not yet determined the final proposed routine operating range for the next license term. This final proposed routine operating range will be described as part of the Draft and Final License Applications and will be analyzed for environmental effects through the Study Plan process.

1.5 PROVISIONS FOR PERIODIC PROGRESS REPORTS

PacifiCorp will follow the standard FERC Study Plan reporting and meeting sequence. After the proposed studies are conducted, PacifiCorp will provide progress reports and study results to stakeholders. PacifiCorp will file a 6-month progress update in the summer of 2020, and an Initial Study Report (ISR), according to the FERC-approved Study Plan Schedule, which will

describe the progress of implementing the Study Plan, schedule, and any changes to the studies or new proposed studies. A Study Plan meeting with stakeholders and FERC staff will take place within 15 days of the ISR filing, and PacifiCorp will file a meeting summary within 15 days of the meeting. As necessary for specific resources, a second study season and Updated Study Report (USR) will be conducted.

1.6 IMPLEMENTATION SCHEDULE FOR STUDY PROGRAM

Table 1-1 provides FERC's required timeline for ILP pre-filing activities. The proposed relicensing schedule was modified after the PAD was filed to accommodate actual filing deadlines based on known dates. The timeline below represents estimated dates for pre-filing activity (per FERC regulations for filing the Draft and Final License Application). An estimated proposed master schedule for implementation of individual studies that captures the start and completion of each study is provided in the Study Plan Master Schedule (Appendix C).

TABLE 1-1 CUTLER RELICENSING TIMELINE FOR ILP PRE-FILING ACTIVITIES

ILP ACTIVITY	ANTICIPATED FILING DATE*
Scoping Meeting	6/27/19
Comments on PAD, SD1 and Study Requests Due	7/29/19
File Proposed Study Plan/FERC Issues SD2	9/11/19
Study Plan Meeting	10/8/19
Comments on Study Plan Due	12/11/19
File Revised Study Plan	1/11/20
Comments on Revised Study Plan Due	1/27/20
FERC Study Plan Determination	2/5/20
<i>File Study Disputes (if necessary)</i>	<i>2/25/20</i>
<i>Select Third Dispute Resolution Panel Member</i>	<i>3/2/20</i>
<i>Convene Dispute Resolution Panel</i>	<i>3/11/20</i>
<i>File Comments on Study Disputes §5.14(l) NLT than 25 days</i>	<i>3/23/20</i>
<i>Dispute Resolution Panel Technical Conference</i>	<i>3/31/20</i>
<i>Issue Dispute Resolution Panel Findings §5.14(k) NLT than 50 days</i>	<i>4/15/20</i>
<i>Issue Director's Study Dispute Determination §5.14 (l) NLT than 70 days</i>	<i>5/5/20</i>
Conduct First Year Studies	
File ISR §5.15(c)(1) (1 year, minus 30 days; ISR report filed on day 365)	2/4/21
ISR Agency Meeting §5.15(c)(2)	2/19/21
ISR Meeting Summary Filed	3/8/21
<i>Conduct Second Year Studies</i>	

ILP ACTIVITY	ANTICIPATED FILING DATE*
<i>File USR** (1 year, minus 30 days; USR report filed on day 365)</i>	<i>2/4/22</i>
<i>USR Agency Meeting</i>	<i>2/21/22</i>
<i>USR Meeting Summary Filed</i>	<i>3/7/22</i>
File DLA*** (150 days before Final Application due date)	11/2/21

* If date fell on Saturday or Sunday, deadline was moved to the following Monday

**USR = Updated Study Report

*** DLA = Draft License Application

Given the degree of early consultation completed to date (both within the relicensing process and throughout PacifiCorp's additional stakeholder outreach), PacifiCorp determined on a case-by-case basis whether some studies should be implemented prior to FERC's formal Study Plan Determination. Criteria for early implementation included: 1) need of the proposed study to inform other studies (i.e., Hydraulic and Sedimentation studies); 2) high degree of confidence that all questions and concerns addressed by the stakeholders will be addressed as necessary; and 3) opportunities for completing studies early enough to have robust conversations with relicensing stakeholders on appropriate protection, mitigation, and enhancement (PME) measures that may be part of the license application. To date, only one study was completed in 2019 (the Threatened and Endangered Species Study) as there is only one known federally listed species in the Project Area, and no habitat for other potential federally listed species (see the PAD and Threatened and Endangered Species Study Plan for additional discussion regarding threatened and endangered species). A drawdown of Cutler Reservoir was conducted in the fall of 2019 for the purpose of obtaining LiDAR and bathymetry data of the reservoir to populate a model that will inform PacifiCorp in determining a range of alternatives for future operations and help inform other studies (e.g. hydraulic modeling and sedimentation). The drawdown was scheduled for the fall of 2019 due to contract and seasonal-based restrictions, and to gather critical information prior to study implementation in 2020. In addition, the drawdown provided a unique opportunity to observe drawdown effects on the different resources and to relate those effects to future operations. Therefore, for several resources, preliminary studies and/or data collection were initiated during the fall 2019 drawdown period, October 25 to November 16, 2019.

1.7 STUDY PLAN MEETING

As required by 18 CFR § 5.11(e), PacifiCorp held a Study Plan meeting within 30 days after the PSP was filed for purposes of clarifying the PSP and any initial information gathering or study requests. The Study Plan meeting was held on Tuesday, October 8, 2019 in Logan, Utah. Similar to past meetings and workshops, there was an afternoon and evening session to best accommodate the public's schedule. Stakeholders and FERC staff were invited to attend and discuss study plan requests and comments submitted by July 29, 2019 on SD1, the study plan annotated outlines, and the PAD, as well as PacifiCorp's original responses to these requests/comments.

1.8 STUDY PLAN MASTER SCHEDULE

PacifiCorp created a master schedule (Study Plan Master Schedule; Appendix C) for proposed studies that includes the tentative date ranges for the start and completion of each study season, for filing 6-month progress update, the ISR, and other pertinent dates based on their relevance to the individual proposed study plans. These milestones are outlined in Appendix C. A schedule for 2021 study implementation, if necessary, will be proposed at a later time.

2.0 TERRESTRIAL AND BOTANICAL REVISED STUDY PLANS

2.1 THREATENED AND ENDANGERED SPECIES REVISED STUDY PLAN (TERR 1)

2.1.1 PROJECT NEXUS AND RATIONALE FOR STUDY

This study plan outlines work related to species listed under the Endangered Species Act (ESA). The ESA was passed in 1973 to protect those plants, animals, and associated habitats that are in danger of becoming extinct. The ESA is administered by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Marine Fisheries Service (NOAA Fisheries). Terrestrial and freshwater species (like those found at the Cutler Project) are the primary responsibility of the USFWS. Species may be listed as endangered or threatened under the ESA. Endangered species are “in danger of extinction throughout all or a significant portion of its range.” Threatened species are “likely to become endangered within the foreseeable future” (USFWS 2017). This study will only address federally listed species under the ESA; several rare or other category of species (such as state-listed) are known to exist within the Project Area—these species and potential effects to them are covered in the Shoreline Habitat Characterization Study Plan (Section 2.2).

Information concerning threatened and endangered species relevant to the Project is summarized in Section 6.7 of the PAD. As described in Section 6.7, one federally listed species, Ute ladies’-tresses orchid (*Spiranthes diluvialis*), is known to occur in and near the Project Area. A large population occurs near the Project Area in the Bear River Land Conservancy’s Mendon Meadow Preserve, while a smaller population occurs within the Project Boundary (SWCA 2018). Other federally listed species are unlikely to occur in the Project Area due to habitat restriction or range constraints, as described in the PAD.

Project operations have the potential to affect federally listed species, specifically Ute ladies’-tresses orchid. Project operations will affect water levels in Cutler Reservoir. Hydrologic conditions are an essential parameter in this species’ habitat requirements. Hydrologic conditions in Ute ladies’-tresses habitat could be influenced by changes in the management of Cutler reservoir. These changes are expected to vary across the Project Area and will be studied specifically in areas of suitable habitat for the orchid.

Under authority of the ESA, federal agencies are required to analyze the effects of actions they undertake or authorize on federally listed species, in consultation with the USFWS. Information regarding the presence of Ute ladies'-tresses orchid in the Project Area is necessary to assess potential effects. Therefore, field surveys utilizing survey methodology based on USFWS recommendations are necessary for this species, as is assessment and disclosure of the potential effects of proposed operational changes on the species and its habitat. Per USFWS protocol, initial surveys were conducted in August 2019, which identified several individuals in the southern end of the Project Area.

The threatened and endangered species study plan includes initial survey work for Ute ladies'-tresses orchid (*Spiranthes diluvialis*) that was completed during the 2019 field season. Additional survey work may be required in subsequent years, depending on regulatory agency review and requirements. In consultation with FERC, the decision to conduct a survey in 2019 was based on requirements in relevant survey protocols which specify potentially multiple years of surveys, as the species can be quite variable and may not be visible above ground every year. The first-year survey in 2019 confirmed the presence of the species in the Project Area following preliminary surveys conducted in 2018, and also provided information regarding the extent of suitable habitat in the Project Area, data about the occurrence of the species in those habitats, and allowed for additional years of surveys to take place without affecting the project calendar if it is determined necessary.

2.1.2 STUDY GOALS AND OBJECTIVES

The Threatened and Endangered Species Study Plan addresses the following goals and objectives:

- Identification of federally listed and other rare or protected plant and terrestrial/aquatic wildlife species potentially occurring in the Project Area, as described in the PAD. Ute ladies'-tresses orchid is the only federally listed species known to occur (or with the potential to occur) in or near the Project Area. Prior to the 2019 field survey work, information about the occurrence of this species within the study area was based on limited surveys conducted during a single season. The objective of this study is to systematically assess and survey the Project Area to estimate the extent of the occurrence of this species within the Project Area.
- Assessment of direct, indirect, and cumulative impacts on federally listed species resulting from the proposed Project operating scenarios.

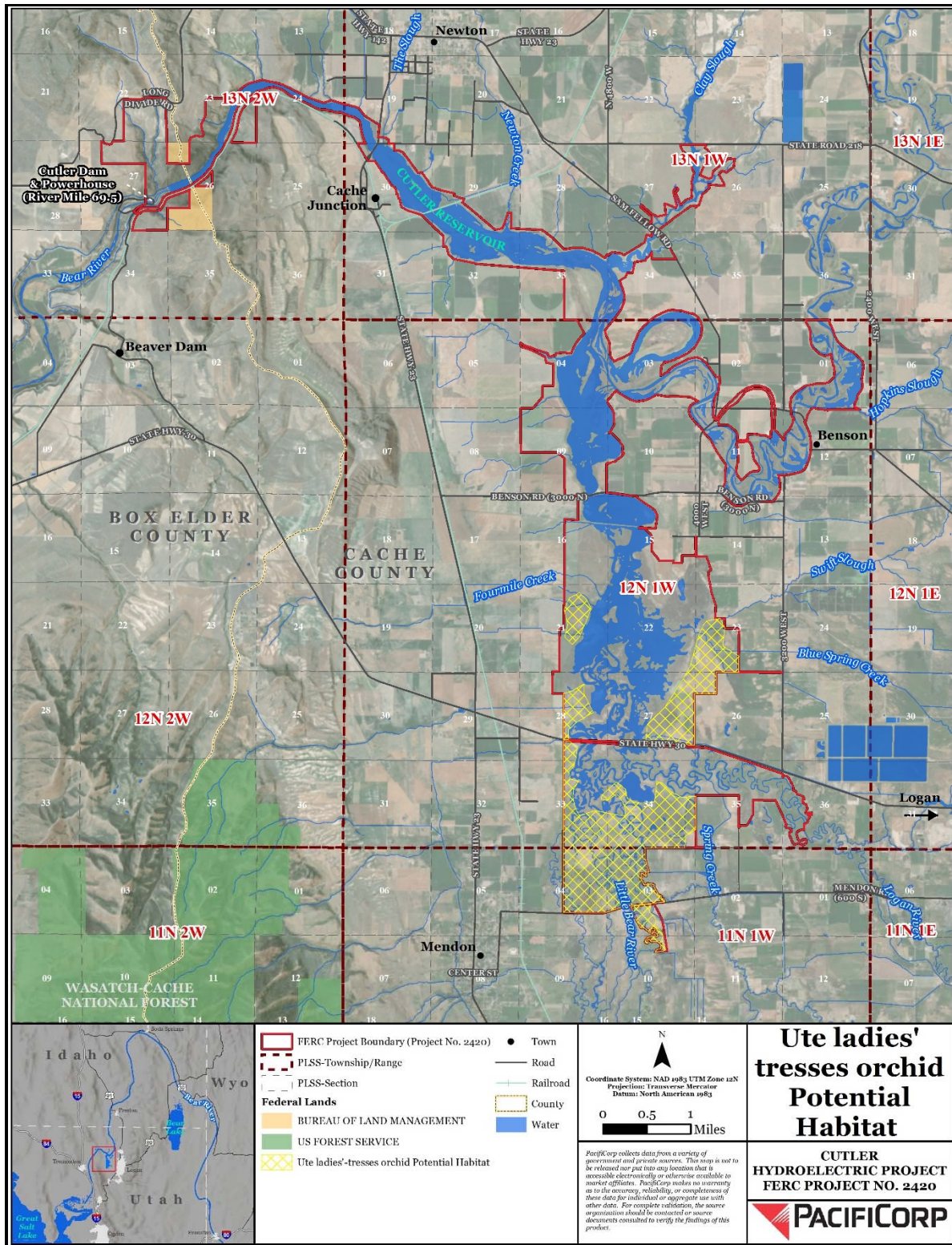
2.1.3 REVIEW OF EXISTING INFORMATION

FERC must comply with the ESA in reissuing a Project license. The ESA and its implementing regulations require the lead federal agency of an undertaking to account for the effects of that undertaking on species listed under the ESA. In addition, certain segments of the public are also interested in rare species, particularly those that are listed under the ESA (information regarding other rare but non-ESA listed species can be found in Section 2.2, Shoreline Habitat Characterization Study Plan). This study will review and incorporate existing information related to the Ute ladies'-tresses orchid and its habitat within the Project Boundary. References for studies, reports, and other sources of information analyzed as part of this study are provided in this section as they are identified. Information sources include but are not limited to the following:

1. U.S. Fish and Wildlife Service. 1992. Interim Survey Requirements for Ute Ladies'-tresses Orchid (*Spiranthes diluvialis*).
2. PacifiCorp. 2019. Pre-Application Document. March 29, 2019.
3. Fertig, W. B., R. Black, and P. Wolken. 2005. Rangewide Status Review of Ute Ladies'-Tresses (*Spiranthes diluvialis*).
4. U.S. Wildflower's database of wildflowers for Utah, <https://uswildflowers.com/wfquery.php?State=UT>.
5. Biotics database. 2005. Utah Division of Wildlife Resources, NatureServe, and the network of Natural Heritage Programs and Conservation Data Centers.
6. Utah National Heritage Program. 2019. Data request/database search.

2.1.4 STUDY AREA

The study area for the Ute ladies'-tresses orchid includes the Cutler Reservoir Project Boundary (Figure 2-1). The 2019 survey focused on suitable habitat for this species, which includes wet meadow and shoreline habitat. All surveyed areas were located inside the Project Boundary, represented by the red outline in Figure 2-1. Figure 2-1 also shows areas within the Project Boundary within which suitable habitat occurs. Suitable habitat for Ute ladies'-tresses is located in the North and South Marsh units.



Source: PacificCorp 2018

FIGURE 2-1 STUDY AREA AND POTENTIAL HABITAT OF THE UTE LADIES'-TRESSES ORCHID SURVEY

2.1.5 METHODS

The Interim Survey Requirements for Ute ladies'-tresses orchid issued November 23, 1992 by the USFWS provides guidance for conducting surveys for Ute ladies'-tresses orchid (USFWS 1992). This methodology was adapted to guide surveys within the Project Area. Typically, this survey protocol requires 3 years of surveys because the species may not flower every year. However, because Ute ladies'-tresses orchid is known to be present in the Project Area, a single year of surveys may suffice to confirm the current status of the population.

The 2019 surveys for Ute ladies'-tresses orchid were completed in August 2019 to correspond with flowering. Based on the results of the 2019 surveys and consultation with regulatory agencies and stakeholders, PacifiCorp will determine whether additional survey years are warranted. The timing of any additional surveys will be based on flowering of known populations.

For the 2019 survey work, the entire Project Area was evaluated to identify areas of potentially suitable habitat, using a combination of aerial imagery and on-the-ground reconnaissance. Areas that were determined to contain potentially suitable habitat were surveyed via pedestrian surveys to provide complete survey coverage of those habitats. Figure 2-1 shows areas inside the Project Boundary where potentially suitable habitat occurs. Potentially suitable habitat occurs in a very fine mosaic pattern with adjacent unsuitable habitat within these polygons. Topographic changes of less than a foot can make an area either too wet or too dry to be potentially suitable habitat, in combination with the occurrence of localized areas of groundwater discharge. Horizontally, these changes can occur in less than 10 feet. The complex interaction of habitat variables at very fine scales requires determinations of suitable habitat to be made in the field. Based on the in-field habitat determination, suitable habitat was surveyed with 100 percent pedestrian survey coverage and data were collected on occurrences of Ute ladies'-tresses orchids.

2.1.6 SCHEDULE AND PERIODIC REPORTING

The 2019 surveys were executed in early August when known local populations of Ute-ladies'-tresses orchids were blooming and easily locatable. Existing data, aerial imagery, and on-the-ground reconnaissance were used to identify potentially suitable habitat and prioritize detailed

field survey locations. The survey work was conducted outside of the reservoir drawdown window in fall 2019, and prior to the issuance of FERC’s Study Plan Determination.

The Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and the ISR.

2.1.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Proposed Threatened and Endangered Species Study is within the range of \$40,000 to \$50,000. The proposed study effort is adequate to provide the level of information needed to understand Project effects, impacts or benefits to the resource, and to determine the need for any specific PME actions.

2.1.8 PROPOSED STUDY PLAN CONSULTATION RECORD

The Proposed Study Plan was developed in collaboration with the stakeholders, including members of the public, agency representatives, NGOs and Native American tribes. The intent of the collaborative process is to achieve consensus, to the degree possible, on the need for specific studies, the key resource questions to be addressed by the studies, the appropriate methodology and level of effort for the study.

No specific comments or suggested modifications were received on the Threatened and Endangered Species Proposed Study Plan TERR 1 (TERR1 Study Plan).

2.1.9 REFERENCES

- SWCA Environmental Consultants (SWCA). 2018. Ute Ladies’-Tresses Reconnaissance Survey Report. Prepared for PacifiCorp. September 2018.
- U.S. Fish and Wildlife Service (USFWS). 2017. Endangered Species: Endangered Species Act Overview. [Online] URL: <https://www.fws.gov/endangered/laws-policies/> Accessed December 6, 2018.
- U.S. Fish and Wildlife Service (USFWS). 1992. Interim Survey Requirements for Ute Ladies’-tresses Orchid (*Spiranthes diluvialis*). November 23, 1992.
https://www.fws.gov/utahfieldoffice/Documents/Plants/SPDI_interimSurveyRequirements_1992.pdf.

2.2 SHORELINE HABITAT CHARACTERIZATION REVISED STUDY PLAN (TERR 2)

2.2.1 PROJECT NEXUS AND RATIONALE FOR STUDY

The proposed changes to Project operations may affect the type and amount of shoreline habitat available at Cutler Reservoir, including spreading invasive species. Changes in project operations may impact nesting birds by increasing water elevations post-nesting, exposing isolated areas to terrestrial predators if water levels drop, or by changing the nature of the habitats.

This study is necessary to comply with, or respond to, federal regulations that protect shorebirds and other terrestrial wildlife (including rare or state-listed conservation priority species) and their habitat, and matters of agency and public interest or concern.

2.2.2 STUDY GOALS AND OBJECTIVES

The Shoreline Habitat Characterization Study Plan addresses the following goals and objectives:

- Quantify changes in littoral habitat.
- Characterize emergent and adjacent wetland and upland vegetation.
- Map invasive species.
- Assess the effect of proposed operational changes on littoral habitats and invasive species distribution and associated effects on terrestrial and amphibian wildlife (Section 2.2).⁸
- Assess the effects of water surface elevation (WSEL) changes, including:
 - The effect of reservoir fluctuations on riparian and wetland habitat and associated wildlife, including waterfowl, wetland-dependent birds, amphibian species, and other terrestrial wildlife dependent on riparian/wetland habitat.
 - Potential effects on upland wildlife habitat and associated wildlife.
 - The potential for introduction and spread of terrestrial and wetland/littoral invasive plant species within the Project Boundary.

⁸ Effects on fish and other aquatic species and impacts due to changes in littoral or loss of terrestrial habitat through erosion will be addressed in separate studies (see discussion below).

2.2.3 REVIEW OF EXISTING INFORMATION

Relevant resource management goals in the 1995 Resource Management Plan (RMP) for Cutler Reservoir related to the Shoreline Habitat Characterization Study Plan include guidelines to “protect, enhance, and develop wildlife habitat.”

Input from stakeholders at public meetings relevant to this Study Plan focused on the potential impacts to migratory birds in the Project Area, and on the potential for the spread of weeds. Therefore, a significant portion of this study will be dedicated to identifying impacts in these two areas. Specifically, examining existing data regarding bird species that could be or are known to be present in the area and their local and national population trends, as well as reviewing existing sources of weed infestation data to facilitate analysis of how infested areas may change or spread as a result of proposed changes in Project operations.

This study will review and incorporate existing information related to shoreline characteristics and habitat within the Project Boundary. References for studies, reports, and other sources of information analyzed as part of this study will be provided as they are identified. This information may include but are not limited to:

1. Hydraulic Modeling Study Plan (Section 3.3) will identify locations where land bridges could form across a range of WSELs corresponding to Project operations. The Hydraulic Modeling Study will also document lateral movement of the reservoir wetted perimeter, if any, including changes in distance from the vegetated shoreline.
2. Sedimentation Study Plan (Section 0) will identify areas where sediment movement may affect shoreline habitat areas.
3. Land Use Study Plan (Section 2.3) will identify areas where shoreline erosion occurs, including potential changes resulting from any change in Project operations.
4. Land Protection Plan – Bear River Watershed Conservation Area (USFWS 2013) will identify existing priority land areas and land management objectives.
5. Utah Wildlife Action Plan (UDWR 2015) is a plan for managing native wildlife species and their habitats under the ESA. UDWR Publication 15-14.
6. The Birds of North America (Rodewald, Cornell Lab of Ornithology 2019). Comprehensive resource for information about bird species in the area. Available for download at www.birdsna.org.

2.2.4 STUDY AREA

The shoreline habitat characterization study area lies within, and surrounding, the ordinary high-water line (OHWL), which is generally defined by the current reservoir elevation range. It includes all shoreline and littoral habitat as well as any upland islands and peninsulas that might support breeding shorebirds, amphibians, and terrestrial wildlife dependent on riparian/wetland habitat. The invasive plant component may involve uplands beyond the littoral zone. All analyzed areas will be located inside the Project Boundary.

2.2.5 METHODS

2.2.5.1 EXISTING DATA AND LITERATURE REVIEW

The review of existing data will include bird species, amphibians, terrestrial wildlife, and weeds dependent on riparian/wetland habitat that are known to be or are likely present in the study area, and the data pertaining to their reproductive characteristics. Existing data sources may include published literature, studies conducted by PacifiCorp, studies conducted by state or federal agencies, studies conducted by Utah State University, eBird data, Breeding Bird Survey data, and data collected by other groups such as NGOs or non-profit groups.

Data generated through the Hydraulic Modeling Study Plan will quantify changes, if any, in wetted perimeter and provide information on how far the water is from the vegetated shoreline under any future operating scenario. The Hydraulic Modeling Study will also identify when and where land-bridges form for a range of reservoir WSELs. The proposed operating scenarios to be evaluated using this tool will be constrained by existing commitments PacifiCorp has for water delivery at different times of the year (e.g., irrigation water delivery during summer months that may preclude lower reservoir levels).

Information about predator use of islands will be gathered from literature review and discussion with managers at the USFWS Bear River Bird Refuge, located approximately 45 river-miles downstream of Cutler Reservoir. Information on existing weed infestations will be gathered from available sources including PacifiCorp, Cache County, and adjacent landowners.

2.2.5.2 VEGETATION CLASSIFICATION

Vegetation classification will be based on aerial drone imagery and LiDAR data collected in the fall of 2019, with ground-truthing as indicated below. Imagery and ancillary LiDAR data will be processed using ENVI Feature Extraction object-oriented classification algorithms. This will be a broad classification identifying habitat types such as: emergent marsh, wet meadow, upland, cropland, mud flats, woody/shrubby vegetation, and bare ground. Identification of areas dominated by weeds such as *Phragmites* (i.e., invasive weeds) may be possible through this process.

The resulting classification will be field validated to ensure accuracy is sufficient for use in this analysis. The accuracy assessment will be conducted by generating stratified random points within each class. The number of random points will be determined using established statistical methods, specifically the sample size equation based on the multinomial distribution developed by Tortora (1978):

$$N = \frac{B\Pi_i(1 - \Pi_i)}{b_i^2}$$

In this equation Π_i is the proportion of the i^{th} class out of k classes that is closest to 50 percent of the total area of the classification, b_i is the desired precision for this class (5 percent is standard and held constant for all classes), and B is determined from the chi squared table with one degree of freedom based on the value of:

$$1 - \frac{\alpha}{k}$$

In this equation α is the 100th percentile of the desired confidence interval (85 percent is standard for landcover mapping products) and k is the number of classes. At this time, Π_i and k are unknown, and it is therefore not possible to determine the number of points needed for a statistically valid sample. However, it is likely that the number of points will be on the order of 500 ± 200 .

Once the number of points needed is determined, the points will be stratified by landcover class. Points will be assigned to each class based on the proportion of the classification they represent,

with a minimum of 30 points per class. For example, if 500 points are needed and there are four classes with proportions of the total measuring 60, 20, 15, and 5 percent, the allocated points would be 300, 100, 75, and 30, respectively. Once the number of points per class is determined, points will be randomly distributed within each class.

Visiting each random point in the field will be necessary to determine the correct class. The class values collected in the field, relative to the class values based on imagery classification, will be compiled in an error matrix from which the standard accuracy statistic \hat{K} can be calculated using the following equation:

$$\hat{K} = \frac{N \sum_{i=1}^k x_{ii} - \sum_{i=1}^k (x_{i+} * x_{+i})}{N^2 - \sum_{i=1}^k (x_{i+} * x_{+i})}$$

where k is the number of landcover classes in the matrix, x_{ii} is the number of observations in row i and column i , and are the totals for row i and column i , and N is the total number of accuracy assessment points. This equation yields values between 0 and 1 with values closer to 1 representing higher agreement between the classification and ground reference information. For landcover classifications of this type, values above 0.8 are considered to have strong agreement and a value above 0.8 will be the goal (Congalton et al. 1983). If this goal cannot initially be met, the classification will be adjusted until the level of agreement between the classification and the ground reference information meets the goal.

Existing weed information, including that from Cache County, PacifiCorp, state and sovereign lands, and adjacent landowners, will be incorporated along with incidental observations gathered during field surveys for Ute-ladies'-tresses orchids or accuracy assessment field efforts. No separate systematic on-the-ground inventory of weeds in the Project Area will be conducted, but the annual PacifiCorp weed monitoring maps and data, incidental data collected during Ute-ladies'-tresses orchids surveys, and accuracy assessment efforts should provide coverage of a significant portion of the Project Area. Specific weeds that will be documented during these efforts include: thistles (*Cirsium* spp.), goatsrue (*Galega officinalis*), dyer's woad (*Isatis tinctoria*), tamarisk (*Tamarix ramosissima*), field bindweed (*Convolvulus arvensis*), puncturevine (*Tribulus terrestris*), and Russian olive (*Elaeagnus angustifolia*).

2.2.5.3 CUTLER 2019 DRAWDOWN FIELD WORK

Fieldwork associated with the Cutler Reservoir drawdown focused on the interaction between WSELs, wetted perimeters, and proximity to habitat types. Land bridge formation connecting islands in the reservoir to the shore was documented for respective reservoir WSELs.

Approximately 10 cameras were installed in areas adjacent to important bird nesting sites. The cameras will validate the wetted perimeter footprint predicted for that location using the hydraulic model developed in the Hydraulic Modeling Study Plan (Section 3.3).

2.2.5.4 ANALYSIS AND COLLECTION OF ADDITIONAL DATA

This study will be conducted in two phases. The first phase will be a preliminary analysis of existing data, information developed as part of this RSP, and proposed operational details provided by PacifiCorp will determine if additional field work is necessary to evaluate the potential effects of future operations.

The preliminary analysis phase will examine how future Project operations may affect respective bird and other rare or sensitive species assumed to be present. The list of species assumed to be present will be based on records for northern Utah and southeast Idaho. The arrival and departure date ranges for each migratory bird species will be defined based on eBird records. Start and end dates for proposed project operations and the associated WSELs and wetted perimeter boundaries will be compared to habitat types used by each bird (and other rare or sensitive) species during the period these species are present. The result of this phase will be a list of species that have the potential to be impacted by Project operations. This list will be organized by those species with potential impacts during the breeding season, non-breeding season, or both, and will highlight birds with a specific conservation status. Effects on non-avian, state-listed species will be similarly analyzed in this phase.

Effects during the breeding season are expected to be somewhat limited by irrigation water delivery obligations, which could occur as early as April of some years. Due to these obligations, Project operations during some of the breeding season are not likely to change appreciably relative to current operations. Should this not prove to be the case (based on results of the hydraulic modelling), as part of the second phase, PacifiCorp would evaluate potential PME measures to minimize Project effects on birds and other rare or sensitive species.

Once the hydraulic study yields information on what habitats, if any, would be affected by future Project operations, the second phase of this analysis would be an assessment of the effects of Project operations on birds/other rare/sensitive species in affected habitats. In order to determine the magnitude of these potential effects, bird surveys during the breeding season would be conducted using the Standardized North American Marsh Bird Monitoring Protocol and standard aerial pair counts for waterfowl (Conway 2011). For the North American Marsh Bird Monitoring, survey routes in the affected habitats would be established and one season of surveys would be conducted to establish a baseline. Other species not targeted by these breeding season protocols would be documented anecdotally. For impacts related to the non-breeding season, the Integrated Waterbird Management & Monitoring (IWMM) program protocols would be used. This program, administered by the U.S. Fish and Wildlife Service, has been developed to monitor non-breeding waterbirds across the country using standardized methods (<https://iwmmprogram.org>).

Phase 2 surveys would only be conducted if the Phase 1 analysis determines there are effects of Project operations that differ from existing conditions. Surveys would only be conducted in those areas where effects would occur, based on the results of the hydraulic modelling. Should surveys be necessary, PacifiCorp will coordinate with local ecologists and stakeholders to identify exact survey locations or routes within the potentially affected areas.

2.2.6 SCHEDULE AND PERIODIC REPORTING

The Shoreline Habitat Characterization Study Plan Report will address the following topics:

- Quantification of potential changes in shoreline habitat composition and area.
- Current status of invasive plant infestations and potential for spread.
- Potential effects of changes in these parameters (shoreline area and composition, and invasive plants) on terrestrial wildlife (primarily migratory birds) and other rare/sensitive species.

The Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020, as well as the phased study work, as necessary. Appendix C also includes the estimated start and completion dates for each study, and estimated filing dates for the 6-month progress update and the ISR.

2.2.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Proposed Shoreline Habitat Characterization Study Plan is within the range of \$90,000 to \$250,000. The proposed study effort is adequate to provide the level of information needed to understand project effects and benefits to the resource, and to determine the need for any specific PME actions.

2.2.8 STUDY PLAN CONSULTATION RECORD

Appendix A outlines comments received from stakeholders for all Study Plans, and how comments were addressed in the TERR2 Study Plan. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on Project-specific information and FERC's Study Plan Criteria (18 CFR § 5.9).

2.2.9 REFERENCES

- Congalton, R.G., Oderwald, R.G. and R.A. Mead. 1983. Assessing Landsat classification accuracy using discrete multivariate statistical techniques. *Photogrammetric Engineering & Remote Sensing*, 49(12):1671-1678.
- Conway, C. 2011. Standardized North American Marsh Bird Monitoring Protocol. *Waterbirds* 34(3):319-346.
- Rodewald, P. (Editor). 2015. The Birds of North America: <https://birdsna.org>. Cornell Laboratory of Ornithology, Ithaca, NY.
- U.S. Fish and Wildlife Service. 2013. Land protection plan—Bear River Watershed Conservation Area. Lakewood, CO: U.S. Department of the Interior, U.S. Fish and Wildlife Service, Regions 1 and 6. 227 p.
- Tortora, R. 1978. A note on sample size estimation for multinomial populations. *The American Statistician*, 32(3):100-102.
- Utah Division of Wildlife Resources (UDWR). 2015. Utah Wildlife Action Plan Joint Team. 2015. Utah Wildlife Action Plan: A plan for managing native wildlife species and their habitats to help prevent listing under the ESA. Publication number 15-14. Utah Division of Wildlife Resources, Salt Lake City, Utah, USA.

2.3 LAND USE REVISED STUDY PLAN (TERR 3)

2.3.1 PROJECT NEXUS AND RATIONALE FOR STUDY

The future Project operations may allow greater fluctuations in reservoir surface elevation than currently occur, resulting in several potential land-use effects. Irrigation water withdrawal at existing diversions and pump sites could be hampered, interfering with use of existing water rights if proposed operation changes occurred during the irrigation season. Fences in place to control livestock movement could be bypassed below the OHWL, providing an opportunity for livestock trespass and/or escape. Increased fluctuations in the reservoir elevation could induce increased bank erosion, reducing adjacent agricultural/grazing land and wildlife habitat as well as impacting scenic and water quality. Scenic quality could be degraded by exposed reservoir bed, if that occurred. Several of these potential effects would vary according to the timing and duration of changes in reservoir elevation.

Sections 7.1.9 and 7.1.10 in the PAD describe the nexus between future Project operation and land use and aesthetic resources, respectively. Irrigation pumps currently withdraw water at many locations along the reservoir shoreline for irrigation purposes. Some irrigators are part of PacifiCorp's Agricultural Lease Program, while others use non-Project-related lands as the destination for the irrigation, domestic, and industrial water rights that are withdrawn on Project lands. Individual pumpers and canal companies that divert from the reservoir would likely not be affected based on the range of elevations and seasons that are being considered. Although it is technically possible that pumped withdrawals could be impacted depending on the location and elevation of each structure, and the actual variability of the reservoir elevations, because meeting all water rights as specified by contract or other controlling document has a higher priority than hydroelectric generation at the Project, it is unlikely that irrigation or other water withdrawals would be affected by future Project operations. Surface elevations at the southern end of the reservoir would be relatively slow to respond to a change in pool elevation compared to the north end, and are unlikely to be affected by normal future Project operations given the inability to lower the reservoir below 4404.5 feet, as measured at Benson Marina, even when the elevation at the dam is below 4390.0 feet. However, the overall depth and gradient of the reservoir are shallow. As a result, the horizontal distance between the historic and proposed minimum pool shorelines could be more drastic in lower gradient areas that could be affected by future reservoir

operations (such as those areas north of the reservoir confluence with the Bear River but south of Cutler Canyon).

Livestock fences are used to manage grazing in pastures adjacent to the Cutler Reservoir. Some fence lines terminate at the shoreline or slightly below the OHWL. This design prevents livestock from moving past the end of the fence into an adjacent pasture. Where possible, PacifiCorp has altered most of the grazing leases to include a setback distance from the shoreline in support of bank stability and improved water quality. However, there are some grazed areas where this was not possible. Any pastures without grazing setbacks and buffer or boundary fences that terminate at the shoreline may need to extend fencing to account for the full range of potential future operating pool elevations.

The proposed change in operations could have impacts on reservoir bank erosion and stability. Any increase in bank erosion could lead to loss of shoreline lands and areas used for wildlife habitat, livestock grazing, and agriculture. Eroding banks could also contribute to water quality degradation and potential impacts on aquatic species. Potential impacts on water quality and aquatic species will be addressed in the Study Plan for each of those resources.

Aesthetic resources have improved dramatically in the past 30 years, due primarily to implementation of the Vegetation Enhancement Plan, which is part of the 1995 Resource Management Plan for the Project. Efforts have focused on removing hundreds of car bodies from the banks (resulting from a previous government [predecessor to the current Natural Resources Conservation Service] initiative to stabilize eroding banks using discarded automobiles), establishing a vegetated shoreline buffer, stabilizing banks, and fencing to exclude agricultural use from the shoreline. Section 7.1.10 in the PAD states “there are currently no known issues regarding scenic quality within the Project Area or associated with the Project facilities or operations.”

The proposed operations could impact scenic quality in several ways. In addition to increased bank erosion, the proposed operating range could periodically expose previously submerged areas of the reservoir bed where shallow, low-gradient conditions exist. Depending on the range of reservoir elevation changes in the future operating regime, these areas may appear as mud flats. These repeatedly exposed mud flats could also become colonized by invasive weeds, such

as *Phragmites*. Eroding banks and shorelines could remove vegetation and potentially increase turbidity in combination with disturbed bed sediment. Each of these impacts could be detrimental to the existing level of scenic and habitat quality at Cutler Reservoir.

2.3.2 STUDY GOALS AND OBJECTIVES

The goals and objectives of the Land Use Study Plan center on characterizing the processes and potential effects of potentially increased fluctuating water levels on land use and aesthetic resources. The Land Use portion of the RSP specifically focuses on water withdrawal infrastructure, fences used for livestock management, shoreline erosive features and control structures, and large-scale impacts on aesthetic resources, specifically scenic quality, from key, high-use viewpoints and areas of frequent recreational use. Addressing impacts on these resources will help PacifiCorp meet resource management goals for Cutler Reservoir (PacifiCorp 1995).

2.3.3 REVIEW OF EXISTING INFORMATION

The 1995 RMP for Cutler Reservoir includes conditions found in Article 402 of the FERC license as well as goals and recommendations from agencies, advisory groups, and the public. Resource management goals in the RMP that are related to this Study Plan include: enhance water quality; protect, enhance, and develop wildlife habitat; enhance scenic quality; and provide agricultural land-use opportunities (PacifiCorp 1995). Reducing erosion from shorelines, river channel banks, and fields will help meet RMP goals for water quality, wildlife habitat, and aesthetic resources. Identifying potential impacts on water withdrawals will help maintain irrigation and agricultural land-use opportunities.

Considerations identified by stakeholders related to this Study Plan are discussed in the FERC scoping document (FERC 2019) and the PAD (PacifiCorp 2019). Other considerations have been gathered during public meetings hosted by PacifiCorp with the intent of identifying specific concerns from stakeholders. Some of the concerns expressed by the public include potential effects of existing and future Project operations on:

- Water withdrawals and the Bear River water rights that support withdrawal at each location
- Discharge from the nearby Logan City Wastewater Treatment Facility (WWTF)

- Reservoir bank erosion and potential loss of shoreline lands that currently include buffers, wildlife habitat, and property leased for agricultural land use
- Channel bank erosion downstream of Cutler Dam resulting from water level fluctuations
- Scenic quality at recreation sites and other high-use viewpoints on and near Cutler Reservoir

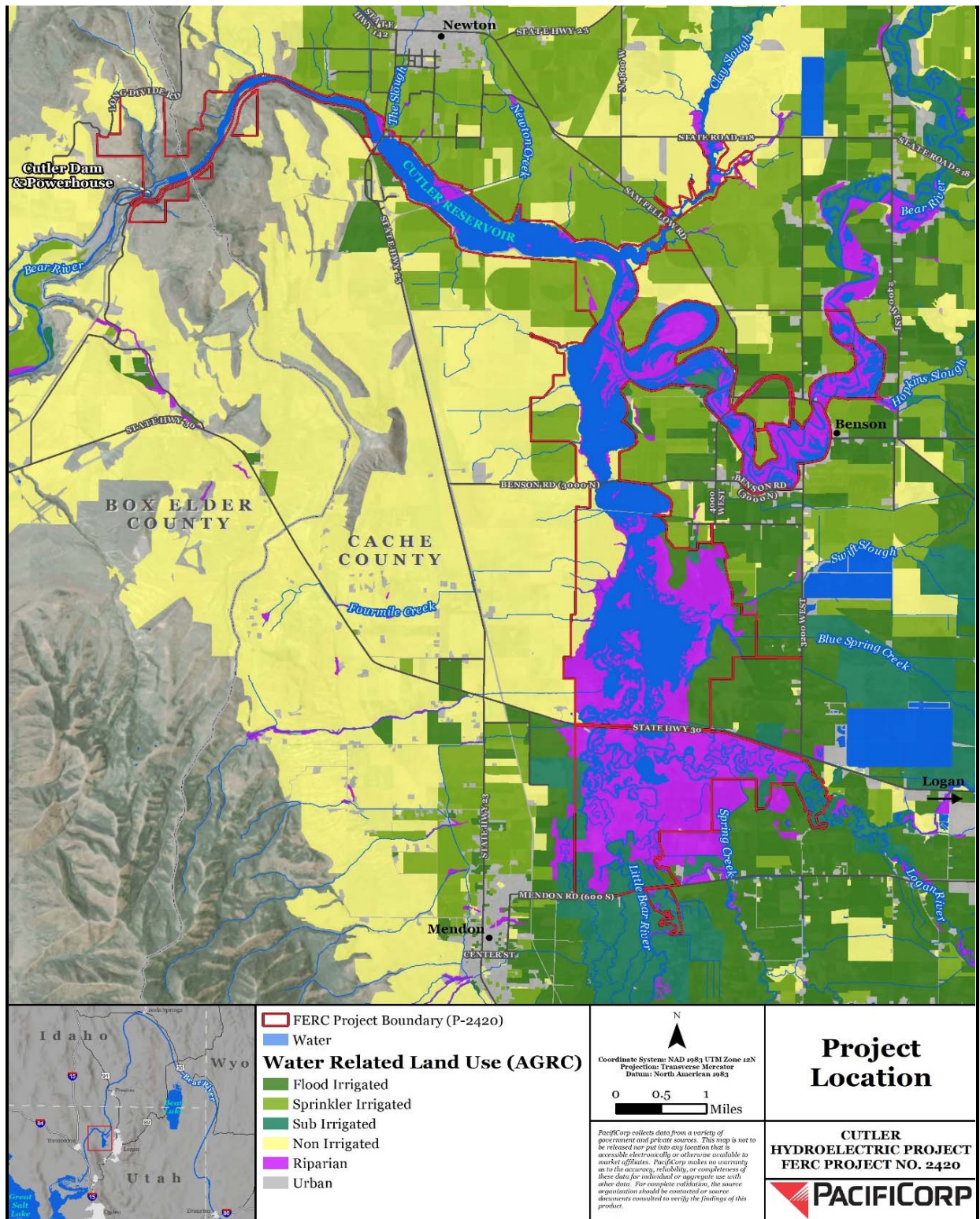
2.3.4 STUDY AREA

The land use component of this Study Plan focuses on the shoreline of Cutler Reservoir, adjacent areas immediately above and below the OHWL defined by the current range of reservoir elevations, and select locations on the Bear River downstream of Cutler Dam (Figure 2-2). Existing water withdrawals occur along the reservoir shoreline. Irrigation pumps are typically used to pull water from the reservoir into canals, ditches, pipes, and other infrastructure that distribute water away from the reservoir. The proposed study area for pumped withdrawals includes all points of withdrawal from Cutler Reservoir, typically below the OHWL. The study area incorporates surface structures (e.g., weirs or headgates) that regulate flow into irrigation systems.

Reservoir shorelines, stream channel banks, and other morphologic features that could be impacted by fluctuating water are included in the study area for eroding banks. The location of some existing erosion sites and erosion-control measures are currently known. There could potentially be additional sites where substantial erosion or instability exist. The study area for eroding banks is accordingly defined as the entire reservoir shoreline, reservoir tributaries, and a reach of the Bear River downstream of Cutler Dam. Eroding banks downstream of Cutler Dam will be studied at select locations. All other erosion study sites will be inside the existing FERC Project Boundary.

The proposed study area for fences is limited to sites where fences terminate at the water's edge.

The aesthetic resources component of this Study Plan targets developed recreational sites on the reservoir as well as viewpoints outside the Project Boundary where large numbers of viewers experience vistas that include the reservoir.



* Select locations will be monitored on the Bear River below Cutler Dam, not shown in this figure.

FIGURE 2-2 PROPOSED LAND USE STUDY AREA

2.3.5 METHODS

PacifiCorp proposes to assess potential impacts on land and aesthetic resources in four general areas as described below.

2.3.5.1 CHARACTERIZE WITHDRAWAL INFRASTRUCTURE

All water withdrawal infrastructure associated with Cutler Reservoir will be inventoried for location, condition (e.g., active versus inactive),⁹ and water rights. Data collection will include existing records, photo interpretation, and field surveys. Existing coverage of irrigation canals and points of withdrawal will be screened prior to field surveys to identify the best access route to each site.

Field surveys of each site will include georeferenced pictures, a description of the irrigation structure type (e.g., pump, irrigation gate, dam safety components, low-level gate), and condition.

Where possible, the location of withdrawal below the OHWL will be recorded with a Global Positioning System (GPS). Field survey measurement data will be organized into geographic information system (GIS) coverage and a database.

Water rights associated with each withdrawal structure will be primarily determined from location and identifying information collected in field surveys. Based on this information, point of diversion coverage maintained by Utah Division of Water Rights (DWRi) will be consulted to connect each withdrawal structure with the associated water right. Given the age of some infrastructure and the status of the Utah DWRi database, it may not be possible to establish the water right for every diversion.

2.3.5.2 CHARACTERIZE FENCES

All fences that terminate below the OHWL defined by the current reservoir elevation range of Cutler Reservoir will be inventoried for location and condition. Existing fence locations included

⁹ Active versus inactive (e.g., physical appearance and other indicators of active operation).

in PacifiCorp mapping coverage will be used to develop field maps and screen potential field survey sites. Aerial imagery may also be consulted to assist in ensuring no fences are missed.

Each fence that terminates at or below the OHWL will be inventoried. Georeferenced pictures of each site will be taken to indicate general fence condition and how the terminal fence end appears in regard to WSEL. Field notes at each site will include a description of the fence condition and need for repairs or potential retrofit (i.e., extension). Results of the fence inventory will be organized into GIS coverage and a database.

2.3.5.3 CHARACTERIZE EROSION FEATURES AND CONTROL STRUCTURES

Erosion features and erosion-control measures in the Cutler Reservoir shoreline area will be inventoried for location and condition. Currently eroded sites, sites with the highest potential for shoreline and channel bank erosion, and sites where PacifiCorp has undertaken erosion-control measures (i.e., plantings, buffers, and fencing) will first be identified using available annual monitoring database and mapping information, and discussions with PacifiCorp employees who are familiar with the area and past erosion-control efforts. Targeted field surveys of these sites will follow. Aerial imagery will be consulted as necessary.

The Land Use Study will identify areas of potential bank erosion by examining aerial photos, LiDAR survey data, and existing GIS mapping information. Existing soil information (SSURGO2)¹⁰ will be used to characterize soil and hydraulic properties of banks for reservoirs and streams. Areas where past bank stabilization efforts have occurred will also be identified. Results from the hydraulic model scenarios will be used to determine the potential maximum change and rate of change in WSEL in areas where bank stability is a concern. These results will be used in combination with existing bank information to identify areas where sloughing may be a concern under the proposed change in reservoir operations.

The Bear River downstream of Cutler Dam will be studied at five to six representative locations to identify potential impacts from fluctuating water levels. The extent of flow attenuation

¹⁰ The SSURGO database contains information about soil as collected by the National Cooperative Soil Survey over the course of a century. The information can be displayed in tables or as maps and is available for most areas in the United States and the Territories, Commonwealths, and Island Nations served by the U.S. Department of Agriculture, Natural Resources Conservation Service.

downstream of Cutler Dam will be estimated based on information from the hydraulic model. Potential areas of bank erosion in the area of attenuation will be monitored during experimental releases in 2020 from Cutler Dam that simulate discharge under the proposed change in reservoir management. The results of the channel erosion field survey will be used in combination with modeled reservoir discharge from Cutler Reservoir to identify potential bank erosion during different times of the year and at different locations. Several commenters expressed an interest in assisting with identifying potential bank sloughing areas of concern downstream of Cutler Dam that may be included in the noted monitoring.

Field surveys of erosion features will include georeferenced photos; GPS locations; field estimations of height and length; and observations of instability, slumping, cracks, and recent disturbance by livestock or recreational use. Existing erosion control structures will be identified in the field. Each structure or other type of measure will be inventoried with georeferenced photos and additional GPS measurements. Needs for repair or retrofit of existing control measures will be assessed with consideration of potential impacts due to increased reservoir fluctuations. All field survey results will be organized in a GIS coverage and a database.

2.3.5.4 CHARACTERIZE VISUAL AESTHETICS

Current visual aesthetics will be documented with a series of photographs, using photographic techniques to simulate the functioning of the human eye. Photo points will include all 15 developed recreation sites operated by PacifiCorp on the reservoir as well as two viewpoints outside the Project Boundary from which public travelers are exposed to panoramic views of the reservoir and its surroundings. Single images reflecting the visitor's primary view will be recorded at each recreation site. The viewpoints outside the Project Boundary are located on Highway 30 where it turns westward to drop into Cache Valley and on the Long Divide Road east of the summit dropping down toward Plymouth. These are the only vehicle access routes into the valley offering views of Cutler Reservoir in the valley bottom.

2.3.6 SCHEDULE AND PERIODIC REPORTING

An ISR will be prepared documenting the study analysis results. The report will include a summary of data collected, followed by discussion and interpretation of the analyses and results. Some topics will use the results of LiDAR, hydraulic modeling, and the sediment study to

determine shoreline and water depth in the vicinity of potentially affected resources resulting from proposed operation scenarios.

All field survey data will be organized in a GIS project and spreadsheets. Field photos will be linked to GIS coverage. Analysis of data will identify direct, indirect, and cumulative effects on these resources resulting from the proposed Project operations. The topics and results of analysis in the report will include the following:

- Water withdrawal infrastructure (as necessary)
- Fences
- Erosion features and control structures
- Aesthetic resources

To assess effects on water-withdrawal infrastructure, results of hydraulic modeling will be used to determine a WSEL at the Cutler Dam where each withdrawal site could be affected. The results will largely be a listing of withdrawal points affected at critical elevations that reflect potential management scenarios for maximum reservoir drawdown below full pool, including but not limited to, 1.5 feet, 3 feet, and full (mechanical limit) drawdown levels. Discussion will introduce other factors such as drawdown timing and duration. The current operating scenarios for managing Cutler Reservoir require that water rights are met under any reservoir management scenario; that will not change as a result of relicensing the Project. Results from the effects analysis on water-withdrawal infrastructure will identify critical minimum surface elevations and seasonal needs for all infrastructure.

Hydraulic modeling will be used to determine the elevation for each fence survey site when the terminal end of the fence would be exposed, leaving enough exposed bed surface for livestock to pass around the end of the fence. Results will be reported in the form of a listing of fences affected at the 3-foot and full drawdown limits (as measured at Cutler Dam). Discussion will consider other factors such as drawdown timing and duration.

Potential effects on erosion features and control structures will be determined on the basis of their current condition and the anticipated impacts of proposed operational changes, as evidenced by the 3-foot and full drawdown scenarios. Interpretation will address issues such as the potential for exposing erodible features that have previously been submerged, downstream bank erosion

including effects from ice movement, and potential for undercutting or otherwise destabilizing erosion control measures.

Effects on aesthetic resources, specifically scenic quality, will be completed using information on the amount and extent of exposed areas resulting from a 3-foot and a full drawdown of the reservoir completed in fall 2019. Baseline photographs of the reservoir at popular recreation sites around the reservoir and other scenic viewpoints (see Methods discussion above) will be compared to duplicates from the same viewpoints, using the same equipment and methods, during the two phases of the fall 2019 drawdown.

The methodology used to describe and interpret differences among the photos will be derived from the publication *Landscape Aesthetics: A Handbook for Scenery Management* (USFS 1995), *Agriculture Handbook 701*, developed by the U.S. Forest Service (USFS) for similar ecosystem management applications. Scenic integrity objectives will be developed that incorporate PacifiCorp's RMP, existing landscape character, and public expectations for Cutler Reservoir's visual aesthetics. Baseline and drawdown photos will then be assessed relative to these scenic integrity objectives using the basic landscape variables of form, line, color, and texture as they occur in this setting. Interpretation will address the effects of seasonality.

Study results will be shared with the recreation and shoreline habitat studies, and others as appropriate, to determine the full effect of proposed changes on each resource.

The Study Plan Master Schedule (Appendix C) outlines implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and the ISR.

2.3.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Proposed Land Use Study Plan is within the range of \$85,000 to \$144,000. The proposed study effort is adequate to provide the level of information needed to understand Project direct, indirect and/or cumulative effects, and to determine the need for any specific PME actions.

2.3.8 STUDY PLAN CONSULTATION RECORD

Appendices A and B outline comments received from stakeholders for all study plans, and how comments were addressed in this RSP. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on Project-specific information and FERC’s Study Plan Criteria (18 CFR § 5.9).

2.3.9 REFERENCES

- Federal Energy Regulatory Commission (FERC). 2019. Scoping Document 1. Cutler Hydroelectric Project Utah. Project No. 2420-054.
- Kleinschmidt Associates (Kleinschmidt). 2018. Cover page photo of the Cutler Reservoir. Matthew Harper.
- PacifiCorp. 2019. Cutler Hydroelectric Project FERC No. 2420 Pre-Application Document Volume I – Main Document. March 2019.
- PacifiCorp. 1995. Resource Management Plan for the Cutler Hydroelectric Project FERC No. 2420. Prepared by PacifiCorp. Assisted by EDAW, Inc, Ecosystem Research Institute, and VESTRA Resources. July 1995.
- U.S. Forest Service. (USFS). 1995. Landscape Aesthetics: A Handbook for Scenery Management. Agriculture Handbook 701. USDA Forest Service.

3.0 FISH AND AQUATIC RESOURCES REVISED STUDY PLANS

3.1 FISH AND AQUATIC REVISED STUDY PLAN (AQ 1)

3.1.1 PROJECT NEXUS AND RATIONALE FOR STUDY

This Fish and Aquatic Resources Study Plan has been prepared to evaluate the environmental conditions, including potential changes in operations, of the Project for FERC relicensing. Operation of the Project may have direct, indirect and/or cumulative effects on fish and aquatic resources.

The rationale for this study includes:

- Future operations may increase levels of reservoir fluctuations and depth of reservoir drawdown. Such actions may affect the aquatic organisms and their habitat; and,
- Information is lacking on benthic invertebrates and mollusks regarding their presence and potential exposure to proposed Project operations.

3.1.2 STUDY GOALS AND OBJECTIVES

The goal of this study is to determine the status of aquatic organisms and their habitat and characterize the benthic invertebrate and mollusk community within the Project Area; to evaluate the effects of the fall 2019 reservoir drawdown on the aquatic community; and to relate potential Project operational changes and the potential effects on the aquatic community within the reservoir.

Objectives will include:

- Summarize existing information on the aquatic organisms and their habitat residing in Cutler Reservoir and its tributaries including the Bear River up to 2 miles downstream of Cutler Dam.
- Determine potential effects of the fall 2019 reservoir drawdown on fish, mollusks, and macroinvertebrates and their habitat in Cutler Reservoir (e.g., stranding/displacement).
- Based on observations during the fall reservoir drawdown, determine potential effects of future Project operations on resident fish, macroinvertebrate, and mollusk habitat in Cutler Reservoir.
- Provide information for National Environmental Policy Act (NEPA) analysis of the affected environment.

3.1.3 REVIEW OF EXISTING INFORMATION

In preparing this Study Plan, PacifiCorp reviewed existing information on aquatic species or relevant management plans for fishery, freshwater mollusks, and the benthic community (Budy et al. 2011, 2007, 2006; Dees 2007; Hovingh 2004; PacifiCorp 2018; Rogers 2017; SWCA 2010; USFWS 2001; UDNR 2017, 2000; UDWR 2019, 2016a, 2016b, 2009; USU 2018; and Wang et al. 2007). Results of this study will inform an evaluation of the proposed action for consistency with the relevant plans.

3.1.4 STUDY AREA

The study area for aquatic resources contains all Project features (encompassing the Project Boundary), which extends, for the purposes of characterization and analysis, from the edge of the Project Boundary and within the reservoir zone of influence of each major tributary to the reservoir. The study area also includes the Bear River up to 2 miles downstream of the dam.

3.1.5 METHODS

3.1.5.1 EXISTING INFORMATION ON THE FISHERIES RESOURCE

Existing information on the fisheries resources in the Study Area will be collected and summarized. In addition, the Utah Division of Wildlife Resources (UDWR) completed an electrofishing survey of the Bear River downstream of Cutler Dam in June 2019, and a mollusk survey of the reservoir during the 2019 fall drawdown. The fisheries work completed on the Bear River will serve to establish the current fishery community downstream of the Project and will be included in the ISR.

3.1.5.2 EFFECTS OF THE FALL 2019 RESERVOIR DRAWDOWN ON THE AQUATIC COMMUNITIES

A drawdown of Cutler Reservoir was conducted in fall 2019 for the purpose of obtaining LiDAR and bathymetry data of the reservoir to populate a model that will inform PacifiCorp in determining a range of alternatives for future operations. The drawdown provided a unique opportunity to observe drawdown effects on the different resources and to relate those effects to future operations.

For the fishery resources, observations of any stranding or isolation were recorded in each of the reservoir units except for the Bear River Unit which, because of its riverine nature, was not likely to have any stranding areas during the drawdown and at the lowest reservoir elevation. Location of stranding areas and isolated pools were identified and georeferenced. The exposed reservoir bottom sediments, which are composed of very fine silt and clay, are virtually impossible to access by foot. During the fall 2019 drawdown, a Marsh Master® (semi-floating tracked vehicle) and an aerial drone were used to survey isolated pools along the perimeter of each reservoir unit. An ArcGIS Collector tracked the Marsh Master and georeferenced each pool that contained live or dead fish. The size of each stranding pool was estimated, and number of fish estimated along with species and size when possible. In addition, all isolated pools that did not contain fish were counted. Locations not accessible by a Marsh Master® were documented using an aerial drone. The drone photographed those pools to verify presence or absence of fish, and georeferenced the pool location.

UDWR surveyed the exposed shorelines and reservoir bed where possible to locate and sample mollusks species in the reservoir drawdown zone and note elevations such that potential effects of future operations can be determined. UDWR focused on locating the California floater (*Anodonta californiensis*), which is a native species. UDWR will provide their data, georeferenced locations, and collection times, which will be referenced to recorded reservoir elevations.

3.1.5.3 RAPID BIOASSESSMENT OF BENTHIC MACROINVERTEBRATES

A bioassessment of benthic macroinvertebrates (described below) will allow for an effect's determination of future project operations on this community.

PacifiCorp will employ the Rapid Bioassessment technique (David et al. 1998) to determine the health of the benthic macroinvertebrate community. Fieldwork was conducted prior to and during the fall 2019 drawdown. Lab work will be conducted in 2020. Survey sites were established in each of the reservoir units, as identified in the 2018 Cutler Hydroelectric Project RMP Five-year Monitoring Report (PacifiCorp 2018). These units are delineated as: South Marsh Unit, North Marsh Unit, Reservoir Unit, Bear River Unit (upstream of the reservoir confluence), and Cutler Canyon Unit (Figure 3-1). However, the Rapid Bioassessment

methodology is not applicable to large rivers so the Bear River Unit was not sampled. In addition, at drawdown the Bear River Unit transformed from a reservoir environment to a riverine one, eliminating the ability to directly compare the two conditions of pre-drawdown and during drawdown. Each unit sampled was assigned between one and seven transects depending on the unit length. Potential study transects were selected in the field, depending on accessibility, prior to the sampling effort. While locating the transects, investigators took care to select sites that did not become dewatered during the drawdown. The protocol for this technique required investigators to choose several representative transects in each unit and then randomly select a transect to sample in each unit. Each transect had a minimum of four sampling sites along the transect line.

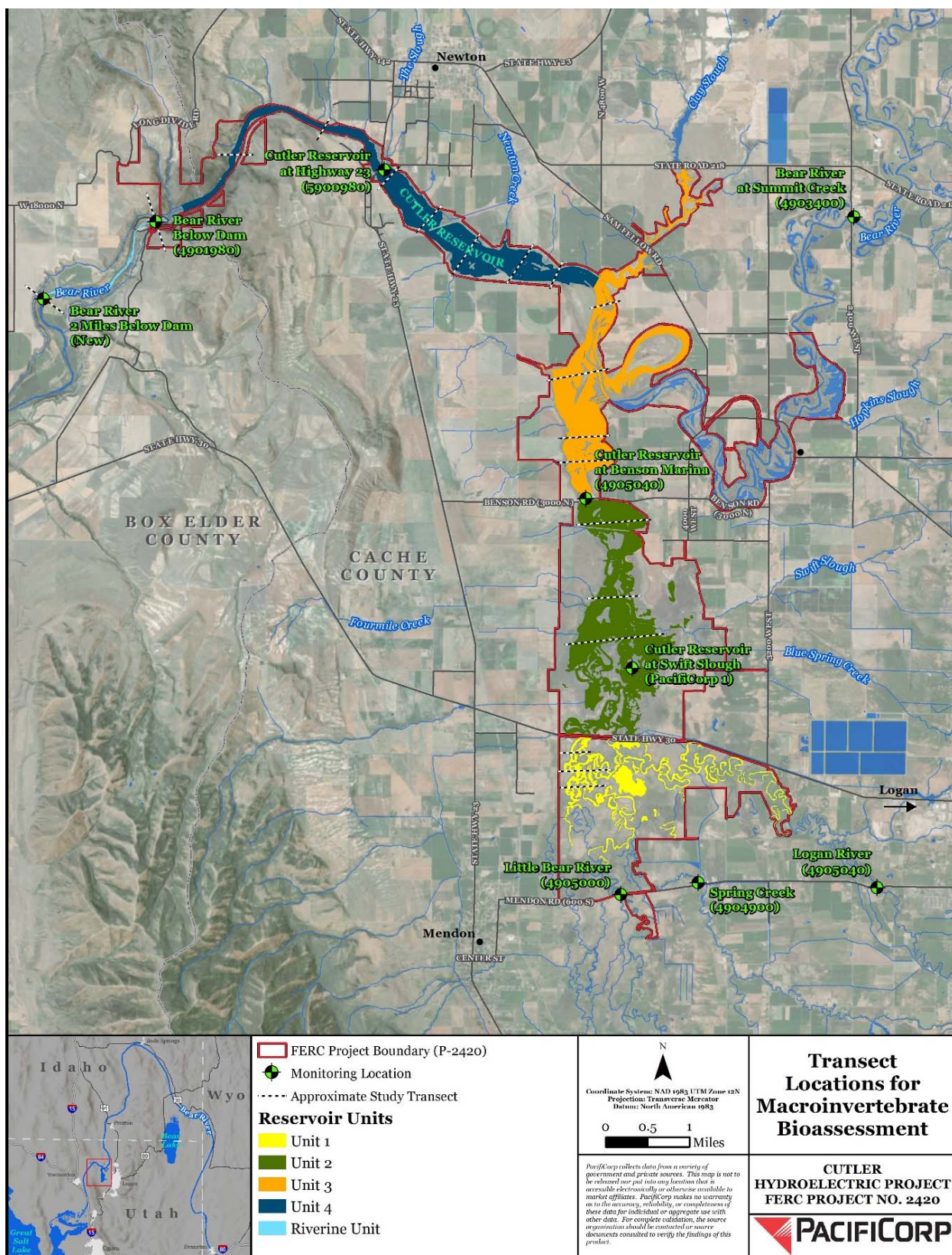


FIGURE 3-1 TRANSECT LOCATIONS FOR MACROINVERTEBRATE BIOASSESSMENT

Samples were collected using either a kick-net to scoop along the bottom or an Eckman dredge depending on the depth. Two kick-net scoops or Eckman grabs were collected at each sample site on every transect. Each sample was rinsed clean and most of the detritus removed (with the exception of filamentous green algae) to assure samplers that they have enough organisms. Any detritus, rocks, wood, or other media were thoroughly cleaned and rinsed to remove any organisms that are clinging to those pieces. In addition, the samples were washed through a 250-micron sieve to remove silt and mud such that the sample is as clean as possible for processing in the lab. A critical component of a successful rapid bioassessment is for samplers to insure, in the field, that they collect at least 100 organisms at each sample site on a transect. All samples were preserved in 95 percent isopropanol and taken to a laboratory setting to sort and identify organisms. Organisms will be sorted to genus for this exercise.

There was a baseline benthic macroinvertebrate survey at each randomly selected transect prior to the drawdown. This baseline Rapid Bioassessment occurred the week of October 14, 2019, prior to the drawdown period. Transects were selected using stratified random sampling with the strata being the reservoir units that were established for PacifiCorp's Cutler RMP monitoring efforts (PacifiCorp 2018). Endpoints for each transect line were georeferenced. Two people plus a boat operator conducted this work over several days. Equipment needed includes GPS locator, small boat, kick-net, Eckman Dredge, sample vials, graduated sieves, buckets, field notebook, small tools, and small brushes to clean substrates such as rocks, wood, and aquatic vegetation.

Following the reservoir drawdown to its lowest level, the Rapid Bioassessment study was repeated at the same locations as the baseline effort, recognizing that some sites will be shallower. If any site is dewatered, then sampling will move perpendicular to the shoreline along the transect line until adequate depth is reached for sampling (at least 0.5 foot).

3.1.5.4 FRESHWATER MOLLUSK SURVEY

During the drawdown conducted in fall 2019, a crew from UDWR surveyed shorelines and accessible reservoir bed to collect mollusk specimens. The crew specifically looked to assess whether the native California floater was present in the reservoir. The crew also looked for non-native bivalves such as the paper pondshell (*Utterbeckia imbecilis*). UDWR noted where native and non-native species are located within the potential operational zone and will provide dates

and times of observation to PacifiCorp to determine reservoir elevations that are critical for bivalve survival.

3.1.5.5 DETERMINE POTENTIAL EFFECTS OF FUTURE PROJECT OPERATIONS ON THE AQUATIC COMMUNITIES

Using a synthesis of existing information, collection of new information, and observations during the fall reservoir drawdown, an analysis of the potential effects of future Project operations on the aquatic communities will be completed.

3.1.6 SCHEDULE AND PERIODIC REPORTING

A Study Plan Report will be prepared documenting the analyses and results of the fish and aquatic community assessment; also included will be a summary of all collected information and discussion of the findings. Specifically, the report will address the following:

- A summary of existing information on fish and aquatic organisms in Cutler Reservoir
- New and existing information on the benthic macroinvertebrate and the mollusk communities including species presence and the extent of exposure under future Project operations
- A description and analysis of how future operations may affect the aquatic reservoir communities using elevation data from the reservoir drawdown and results from the reservoir modeling

The Study Plan Master Schedule (Appendix C) provides the outline for study implementation for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and the ISR.

3.1.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Proposed Fish and Aquatic Study Plan is within the range of \$65,000 to \$75,000. The proposed study effort is adequate to provide the level of information needed to understand Project direct, indirect and/or cumulative effects, and to determine the need for any specific PME actions.

3.1.8 STUDY PLAN CONSULTATION RECORD

Appendix A and B outlines comments received from stakeholders for all Study Plans, and how comments were addressed in the RSP. If stakeholder comments were not incorporated or studies

were not considered, Section 5.0 provides the rationale why based on Project specific information and FERC's Study Plan Criteria (18 CFR § 5.9).

3.1.9 REFERENCES

- Budy, P., M. Baker and S.K. Dahle. 2011. "Predicting fish growth potential and identifying water quality constraints: A spatially-explicit bioenergetics approach." *Environmental Management* 2011: 48: 691. <https://doi.org/10.1007/s00267-011-9717-1>. Accessed July 10, 2019.
- Budy, P., K. Dahle, and G. Thiede. 2007. "An evaluation of the fish community of Cutler Reservoir and the Bear River above the reservoir with consideration of the potential for future fisheries enhancement." 2006 Annual Report to the Utah Department of Environmental Quality. Division of Water Quality.
- Budy, P., K. Dahle, and G. Thiede. 2006. "An evaluation of the fish community of Cutler Reservoir and the Bear River above the reservoir with consideration of the potential for future fisheries enhancement." 2005 Annual Report to the Utah Department of Environmental Quality. Division of Water Quality.
- David S.M., K.M. Somers, R.A. Reid, R.J. Hall and R.E. Girard. 1998. Sampling protocols for the rapid bioassessment of streams and lakes using benthic macroinvertebrates. Queen's Printer for Ontario, 1998.
- Dees, T. 2007. "Effects of wastewater treatment plant discharge on benthic invertebrate communities in Cutler Reservoir." In *Comparison of chemical and biological characteristics in Cutler Reservoir (Utah) near the inflows of the Logan River and the Logan Wastewater Treatment Plant*, edited by W.A. Wurtsbaugh and R. Lockwood. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. https://www.bearriverinfo.org/files-ou/digital-resources/pub_4974621.pdf. Accessed July 11, 2019.
- Hovingh, P. 2004. "Intermountain freshwater mollusks, USA (Margaritifera, Anodonta, Conidea, Valvata, Ferrissia): Geography, conservation, and fish management implications." *Monographs of the Western North American Naturalists* 2:109-135. <https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?referer=http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjf4biXkazfAhXFMd8KHQZ4D-cQFjAAegQICBAC&url=http%3A%2F%2Fscholarsarchive.byu.edu%2Fcgi%2Fviewcontent.cgi%3Farticle%3D1010%26context%3Dmwnan&usg=AOvVaw0wB4W1t6CnuJPuKI-Fr8gs&httpsredir=1&article=1010&context=mwnan>. Accessed July 10, 2019.
- PacifiCorp. 2018. *Cutler Hydroelectric Project Resource Management Plan 5-year Monitoring Report 2013-2017*. PacifiCorp, Salt Lake City, Utah. https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/cutler/03282018_Cutler_RMP-5yr_Monitor.pdf Accessed July 5, 2019.
- Rogers, T. 2017. Environmental DNA sampling of native Utah freshwater mussels at historical locations, and recommendations for future eDNA sampling. Stoller, J. 2007. "Benthic invertebrate biomass and densities in Cutler Reservoir near the inflow of the Logan River

- and the Logan Wastewater Treatment Plant.” In *Comparison of chemical and biological characteristics in Cutler Reservoir (Utah) near the inflows of the Logan River and the Logan Wastewater Treatment Plant*, edited by W.A. Wurtsbaugh and R. Lockwood. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. https://www.bearriverinfo.org/files-ou/digital-resources/pub__4974621.pdf. Accessed July 5, 2019.
- SWCA Environmental Consultants (SWCA). 2010. *Middle Bear River and Cutler Reservoir Total Maximum Daily Load (TMDL)*. Prepared for Utah Division of Water Quality.
- U.S. Fish and Wildlife Service (USFWS). 2001. Status review for Bonneville cutthroat trout (*Oncorhynchus clarki Utah*). U.S. Fish and Wildlife Service Regions 1 and 6, Portland Oregon and Denver Colorado.
- Utah Department of Natural Resources (UDNR). 2017. Final Bear River Comprehensive Management Plan. October 2017.
- Utah Department of Natural Resources (UDNR). 2000. Range-wide Conservation Agreement Strategy for Bonneville Cutthroat Trout (*Oncorhynchus clarki Utah*). Publication Number 00-19. December 2000.
- Utah Division of Wildlife Resources (UDWR). 2019. Field report of electrofishing survey on the Bear River downstream of Cutler dam. Utah Division of Wildlife Resources, Ogden, Utah.
- Utah Division of Wildlife Resources (UDWR). 2016a. Three Species Monitoring Statewide Summary. Roundtail Chub (*Gila robusta*), Bluehead Sucker (*Catostomus discobolus*), Flannemouth Sucker (*Catostomus latipinnis*). Publication Number 17-21.
- Utah Division of Wildlife Resources (UDWR). 2016b. Conservation and Management Plan for Three Fish Species in Utah. Addressing needs for Roundtail Chub (*Gila robusta*), Bluehead Sucker (*Catostomus discobolus*), and Flannemouth Sucker (*Catostomus latipinnis*). Utah Division of Wildlife Resources, Salt Lake City, Utah.
- Utah Division of Wildlife Resources (UDWR). 2009. Rangewide Conservation Agreement and Strategy for Northern Leatherside. Utah Division of Wildlife Resources, Publication No. 9-11. Salt Lake City, Utah.
- Utah State University (USU). 2018. *Watershed Science Annual Class Reports on the Fishery in Cutler Reservoir*. Utah State University, Logan City, Utah.
- Wang, L., D.M. Robertson, and P.J. Garrison. 2007. “Linkages between Nutrients and Assemblages of Macroinvertebrates and Fish in Wadable Streams: Implication to Nutrient Criteria Development.” *Environmental Management* 39: 194-212. <https://doi.org/10.1007/s00267-006-0135-8>. Accessed July 11, 2019.

3.2 WATER QUALITY REVISED STUDY PLAN (AQ 2)

3.2.1 PROJECT NEXUS AND RATIONALE FOR STUDY

The Water Quality Study Plan is part of the overall Cutler Relicensing Study Plan to evaluate the environmental conditions including future Project operations for FERC relicensing. Continued operation of the Project may have direct, indirect, and/or cumulative effects on water quality resources. Comments from FERC staff and stakeholders on the PSP requested that PacifiCorp introduce a two-phased approach to the water quality study plan.

In order to address comments by stakeholders on the Proposed Water Quality Study Plan, PacifiCorp is modifying the PSP to include a two-phased study plan approach.

Phase 1 will be a synthesis of all existing water quality data for Cutler reservoir, with the addition of new water quality data gathered during the fall 2019 drawdown. Data sources will include PacifiCorp, UDWQ, USU, the 2010 TMDL study, and other sources where available. PacifiCorp will issue an interim report at the conclusion of the first year of studies summarizing water quality conditions in the reservoir, identifying data gaps, and detailing any proposed data collection in 2021 (Phase 2) if data gaps are found.

Phase 2 will be implemented during 2021 depending on Phase 1 gap analysis recommendations and conclusions.

The rationale for this study includes:

- There is uncertainty regarding how future Project operations may affect water quality within the FERC Project Boundary and downstream of Cutler Dam; increased levels of reservoir fluctuations may affect water quality, especially turbidity, total phosphorus (TP) release from the reservoir sediments, and dissolved oxygen (DO);
- There is a need to determine the effects of the fall 2019 reservoir drawdown on water quality; especially TP, total suspended solids (TSS), and DO and to relate this information to potential effects of future operations; and,
- Water quality information from past monitoring efforts by PacifiCorp, USU, and UDWQ is readily available. In addition, there are numerous entities managing the five major TMDL designations in the Bear River basin that have been implementing monitoring requirements. However, because several entities have collected and stored data separately, PacifiCorp proposes to synthesize all existing data, including additional data collected during the 2019 drawdown, to provide a more complete understanding of water quality conditions in Cutler Reservoir and the surrounding aquatic environment,

including the 2-mile reach of the Bear River downstream of Cutler Dam (note that if the hydraulic study demonstrates evidence for an altered reach of river [i.e., a reach length affected differently by future dam operations], the downstream reach length may be adjusted).

3.2.2 STUDY GOALS AND OBJECTIVES

The goal of this study is to characterize water quality within the reservoir and zone of influence in the main tributaries, including the Bear River reach up to 2 miles downstream of Cutler Dam, or as adjusted given additional information from the hydraulics study. As stated in Section 3.2.1, Phase 1 objectives will:

- Determine potential effects of continued and future Project operations on water quality of Cutler Reservoir and the Bear River downstream of Cutler Dam;
- Determine the effects of the fall 2019 drawdown on water quality in the reservoir and downstream of Cutler Dam and relate those effects to future operations;
- Synthesize existing water quality information including PacifiCorp's 5-year Water Quality monitoring reports (PacifiCorp 2018), USU publications, and UDWQ periodic water quality monitoring and the TMDL study to characterize the overall Cutler Reservoir water quality environment;
- Provide recommendations to address water quality problems identified; and,
- Provide information for NEPA analysis of the affected environment.

3.2.3 REVIEW OF EXISTING INFORMATION – PHASE 1

Of all the studies and monitoring that has occurred on the Bear River and Cutler Reservoir, perhaps the most important and relevant water quality management issue is the TMDL process that was completed by UDWQ in 2010 (SWCA 2010). That TMDL identified excessive TP and low DO as pollutants of concern and developed target levels for the TMDL study area, which included Cutler Reservoir. The impaired beneficial uses were:

- Class 3B: Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain, and
- Class 3D: Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.

Target allocations were set at the Southern Cutler Reservoir for the summer season to 16,121 kilograms (kg) of TP per season and the winter season to 12,091 kg TP per season, and at the

Northern Cutler Reservoir for the summer season to 29,976 kg TP per season and the winter season to 25,713 kg TP per season.¹¹

The defined target endpoints for Cutler Reservoir were set at:

Dissolved Oxygen

- 1-day minimum DO of 3.0 milligrams per liter (mg/L) throughout the water column
- 7-day average DO to be maintained above 4.0 mg/L
- 30-day average DO to be maintained above 5.5 mg/L

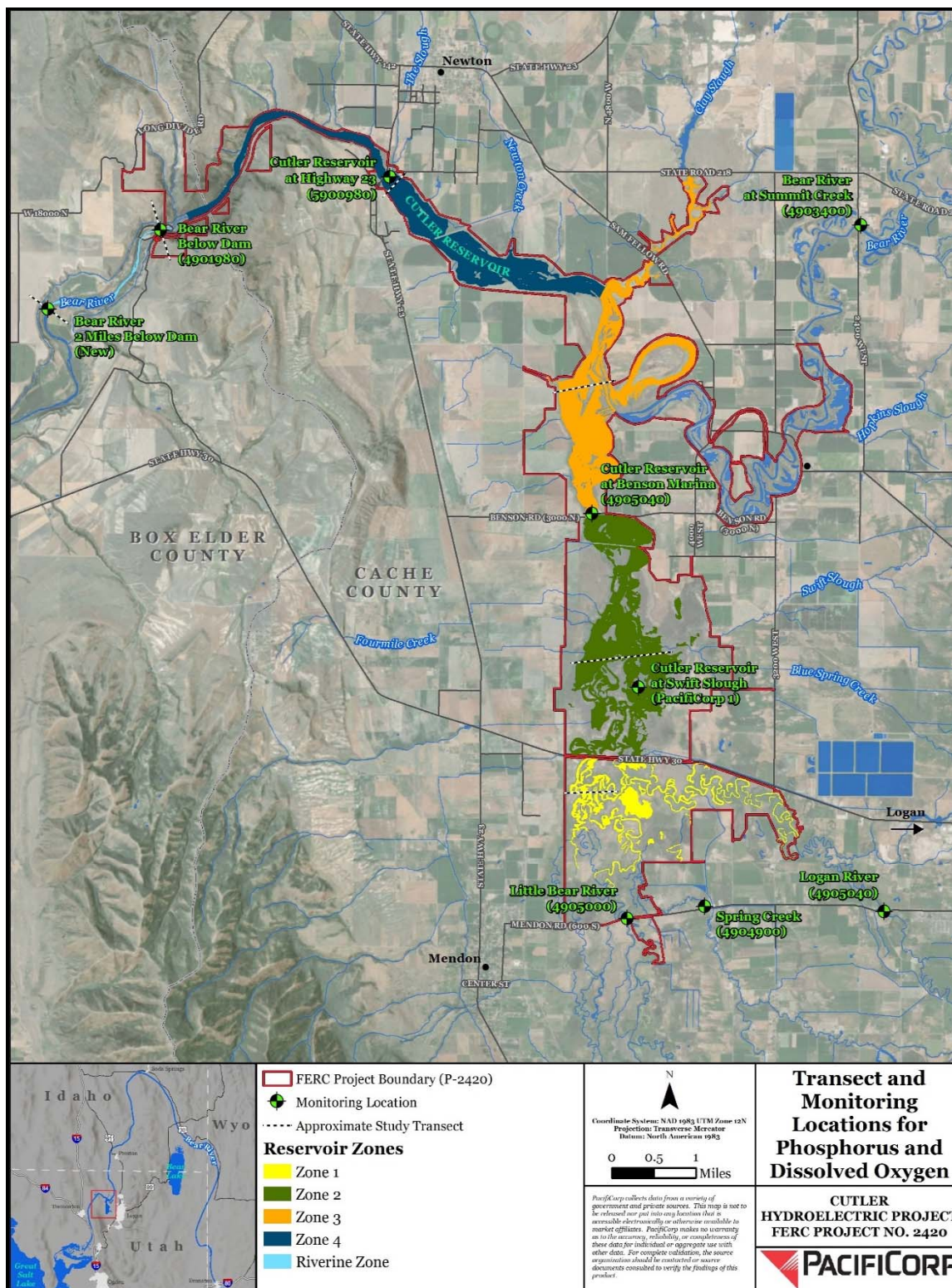
Total Phosphorus

- TP concentration of no more than 0.075 mg/L at Cutler Dam outfall throughout the year
- Mean seasonal (May–October) TP concentration of less than 0.07 mg/L in the Northern Reservoir
- Mean seasonal (May–October) TP concentration of less than 0.09 mg/L in the Southern Reservoir

3.2.4 STUDY AREA

The study area for water quality contains all Project features (encompassed by the Project Boundary), and extends, for the purposes of characterization and analysis, from the edge of the Project Boundary up each major tributary within the reservoir zone of influence. The study area also includes the Bear River up to 2 miles downstream of the dam (or as dictated by the results of the hydraulics modeling, as noted in Section 3.3.3).

¹¹ In the TMDL, the Northern Reservoir and the Southern Reservoir are separated by Benson Road at Benson Marina.



* In the TMDL, the Northern Reservoir and the Southern Reservoir are separated by Benson Road.

FIGURE 3-2 TRANSECT AND MONITORING LOCATIONS FOR PHOSPHORUS AND DISSOLVED OXYGEN

3.2.5 METHODS**3.2.5.1 PHASE 1 – COLLECTION OF PHOSPHORUS AND DISSOLVED OXYGEN SAMPLES DURING THE FALL 2019 DRAWDOWN**

For the purpose of making direct comparisons to water quality data previously collected by PacifiCorp and other entities over the past 24 years, sampling transects for the drawdown were established at or in close proximity to the reservoir water quality sampling stations used for PacifiCorp’s monitoring reports. One exception is that a sampling station was established approximately two miles downstream of the Cutler Dam. Table 3-1 lists the proposed transect or sampling locations and number of samples per transect.

TABLE 3-1 SAMPLING TRANSECT LOCATIONS AND SAMPLE NUMBERS

TRANSECT	NUMBER OF SAMPLES ALONG TRANSECT
Cutler Reservoir in the South Marsh Unit	4
Cutler Reservoir in the North Marsh Unit	4
Cutler Reservoir in the Reservoir Unit	4
Cutler Reservoir in the Cutler Canyon Unit	4
Bear River immediately downstream of Cutler Dam	1
Bear River 2 miles downstream of Cutler Dam	1

Water samples were collected to analyze TP, total dissolved phosphorus, orthophosphate, and DO at each sampling point along a transect near the surface. TP, dissolved phosphorus, and orthophosphate will be analyzed in a laboratory while DO was measured *In situ* using a DO probe. This procedure occurred one week prior to the fall 2019 reservoir drawdown and was repeated within two days during the drawdown at the reservoir’s lowest elevation.

3.2.5.2 PHASE 1 – SYNTHESIZE EXISTING WATER QUALITY DATA

PacifiCorp has collected and analyzed water quality in Cutler Reservoir and four tributaries every five years since 1996 (PacifiCorp 2002, 2008, 2013, 2018). All the data from these monitoring reports were summarized in the Cutler Reservoir 2018 Five-year Monitoring Report (PacifiCorp 2018). UDWQ has monitored water quality in the Bear River and Cutler Reservoir since about 1979 but much of that data has not been summarized or provided in a regular reporting cycle. In addition, the TMDL study (SWCA 2010) provides a rich source of information regarding point and non-point sources and documents the annual nutrient loading

into Cutler Reservoir. Some of the main findings from the TMDL study are outlined in the introduction for this RSP.

USU has produced a number of reports, Master's theses, Doctoral dissertations, and faculty publications that provide a good data set that will be incorporated into a synthesis of all the existing data (e.g., Budy, et al. 2011; Wurtsbaugh and Lockwood 2007) that will include side-by-side comparisons at similar sampling sites used in the past data collection efforts. Ecosystems Research, Inc. also collected a DO data series from 2005 to 2007 for Swift Foods through each year at a number of locations that will be correlated with PacifiCorp sampling locations in the ISR. Ecosystems Research, Inc. DO data are recorded in 15-minute intervals. PacifiCorp will condense this data down to June through September when temperatures are highest to evaluate worst-case scenarios for temperature and DO.

If there is sufficient congruency between the various reports and studies, trend graphs may be incorporated in the synthesis report in an attempt to document any improvements or decrements in water quality conditions over the past several decades. Existing reports that will be reviewed as part of this study have been annotated below.

PacifiCorp 5-year Monitoring Report. 2018.

Per the Cutler FERC license, PacifiCorp began collecting water quality data in 1996. Chemical parameters included nutrient concentrations of phosphorus (total and orthophosphate) and nitrogen as NO₃, NO₂, NH₃, and total Kjeldahl nitrogen (TKN). Physical parameters included temperature, TSS, specific conductivity, pH, and DO values. The samples were collected during five hydroperiods (1996–1998, 2000–2003, 2008, 2013, and 2018). The 2018 report includes all the previous water quality data collected where comparisons are made at each of eight monitoring sites per year.

Budy, P., M. Baker and S.K. Dahle. 2011.

Dr. Budy and two other researchers collected water quality information and fish, plankton, and benthic macroinvertebrate data and used this information to assess fish performance in the highly eutrophic Cutler Reservoir environment. Water quality data collected during this study include temperature, conductivity, total dissolved solids, pH, salinity, turbidity, and DO. In addition, they collected data on secchi depth, TKN, nitrate-nitrite, ammonia, TP, dissolved phosphorus, and soluble reactive phosphorus.

Wurtsbaugh, W.A. and R. Lockwood [eds]. 2007.

The two editors and a group of USU students worked together to gather information related to the Logan City wastewater treatment plant (WWTP) discharge and compared the fisheries, planktonic, and benthic macroinvertebrate communities with that of the

Logan River where it enters Cutler Reservoir. Water quality information collected included TP, DO, temperature, pH, chlorophyll *a*, and turbidity.

The collective data will be analyzed across seasons at sites that correspond with PacifiCorp's sampling sites; locations of these sites are also shown in Figure 3-3. These sites are:

- Logan River
- Spring Creek
- Little Bear River
- Cutler Reservoir at Swift Slough
- Cutler Reservoir at Benson Marina
- Bear River at Summit Creek
- Cutler Reservoir at Highway 23, and
- Bear River below Cutler Dam

In addition, the BRCC has requested PacifiCorp to evaluate existing literature regarding phosphorus concentrations in waterbodies and how that relates to aquatic vegetation production. This analysis will be included in the ISR and the final Water Quality Technical Report.

3.2.5.3 PHASE 1 – SEDIMENT CHARACTERIZATION

Core samples of reservoir sediments will be collected and analyzed for the presence and concentration of nutrients and/or contaminants that may be stirred up and released into the water column during periodic drawdowns under potential future Project operations.

This work will be conducted by the sediment modeling crew and shared with other resource area analyses (refer to Sediment Analysis Study Plan methods). Any TP, dissolved TP and orthophosphate data from the core analysis will be incorporated into the ISR and final Water Quality Technical Report.



A Phase 1 report that will be included as part of the ISR will be prepared documenting the analyses and results of the Water Quality Study; also included will be a summary of all collected information and discussion of the findings. Specifically, the report will address the following:

- Analysis of the reservoir sediments and the level of concentration of nutrients and/or contaminants and the extent to which they could enter the water column under future Project operations
- A description and analysis of how future Project operations may affect water quality within the study area.
- Findings from searching literature for the relationship between phosphorus concentrations in water and aquatic vegetation production.

3.2.6 SCHEDULE AND PERIODIC REPORTING

The Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and ISR.

3.2.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Proposed Water Quality Study Plan is within the range of \$75,000 to \$95,000. The proposed study effort is adequate to provide the level of information needed to understand Project effects, impacts or benefits to the resource, and to determine the need for any specific PME actions.

3.2.8 STUDY PLAN CONSULTATION RECORD

Appendix A outlines comments received from stakeholders for all study plans, and how comments were addressed in the revised AQ2 Study Plan. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on additional Project-specific information and FERC's Study Plan Criteria (18 CFR § 5.9).

3.2.9 REFERENCES

Budy, P., M. Baker and S.K. Dahle. 2011. "Predicting fish growth potential and identifying water quality constraints: A spatially-explicit bioenergetics approach." *Environmental Management* 2011: 48: 691. <https://doi.org/10.1007/s00267-011-9717-1>. Accessed November 29, 2018.

- Dees, T. 2007. “Effects of wastewater treatment plant discharge on benthic invertebrate communities in Cutler Reservoir.” In *Comparison of chemical and biological characteristics in Cutler Reservoir (Utah) near the inflows of the Logan River and the Logan Wastewater Treatment Plant*, edited by W.A. Wurtsbaugh and R. Lockwood. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. https://www.bearriverinfo.org/files-ou/digital-resources/pub_4974621.pdf. Accessed December 19, 2018.
- PacifiCorp. 2018. *Cutler Hydroelectric Project Resource Management Plan 5-year Monitoring Report 2013-2017*. PacifiCorp, Salt Lake City, Utah. https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/cutler/03282018_Cutler_RMP-5yr_Monitor.pdf Accessed December 19, 2018.
- PacifiCorp. 2013. *Water Quality Analysis and Summary for Cutler Reservoir, Utah*. Salt Lake City, Utah: SWCA Environmental Consultants.
- PacifiCorp. 2008. *Water Quality Analysis and Summary for Cutler Reservoir, Utah*. Salt Lake City, Utah: SWCA Environmental Consultants.
- PacifiCorp. 2002. *Cutler Hydro Project No. 2420 Resource Management Plan Five-Year Implementation and Monitoring Report: 1995-2002. Volume 1: Report*. Prepared for Federal Energy Regulatory Commission, Portland Regional Office, Portland, Oregon.
- SWCA Environmental Consultants (SWCA). 2010. *Middle Bear River and Cutler Reservoir Total Maximum Daily Load (TMDL)*. Prepared for Utah Division of Water Quality. <http://www.deq.utah.gov/ProgramsServices/programs/water/watersheds/approvedtmdls.htm>. Accessed November 21, 2018.
- Wurtsbaugh, W.A. and R. Lockwood [eds]. 2007. *Comparison of limnological characteristics in Cutler Reservoir (Utah) near the inflows of the Logan River and the Logan Wastewater Treatment Plant*. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. https://www.bearriverinfo.org/files-ou/digital-resources/pub_4974621.pdf. Accessed December 19, 2018.

3.3 HYDRAULIC MODELING REVISED STUDY PLAN (AQ 3)

3.3.1 PROJECT NEXUS AND RATIONALE FOR STUDY

The Hydraulic Modeling Study Plan will be used to evaluate the existing hydraulic conditions of the Project as well as to assess the feasibility and potential impacts that may result from the potential change in future operations as described in the PAD (PacifiCorp 2019).

A detailed hydraulic model of the Project has not yet been created but is underway following the preliminary LiDAR data collection that occurred during the fall 2019 drawdown, and is expected in 2020. Potential changes in the operation of the Project would change the way in which the system functions hydraulically; potentially affecting inundation boundaries, flow patterns, sediment transport capacity, and other hydraulic behaviors of Cutler Reservoir. Therefore, it is important to create a tool to evaluate potential Project operating scenarios and analyze the potential effects of those scenarios.

To assess potential hydraulic impact from changes in Project operation, a baseline or existing conditions hydraulic model must also be established.

3.3.2 STUDY GOALS AND OBJECTIVES

The purpose of the Study Plan is to develop and collect data for calibration of both 1-dimensional (1D) and 2-dimensional (2D) hydraulic models of the Project Area to be used for hydraulic and sediment transport analysis. This includes portions of the Bear River upstream and downstream of the reservoir. A calibrated hydraulic model will provide a tool that could be used to predict impacts to the hydraulics and sediment transport for any changes to Project operation.

3.3.3 REVIEW OF EXISTING INFORMATION

This Study Plan will 1) review and incorporate existing or recently collected information related to any spatial, terrain, hydrologic, and sediment data, and hydraulic modeling that has been previously completed within the Project Area; and 2) propose a hydraulic model to be used to address questions related to the impact of proposed changes in Project operations on water quality and quantity, as well as sediment transport and mobilization. In addition to informing most all of the other study plans, the results of this modeling effort will also inform discussions regarding potential impacts on water quantity and water delivery in the Project Area and the Bear

River to a relevant distance downstream of Cutler Dam (the precise distance will be set based on model outcomes, as stated previously in Section 3.3.2 and detailed below).

The existing data will be reviewed and incorporated into the proposed hydraulic model, as appropriate. The following is an initial, but not necessarily complete list of data sources to be analyzed as part of this Study Plan (pending data availability):

- Hydraulic models of the Project Area
- Previous LiDAR and bathymetric surveys
- Bridge and other infrastructure hydraulic data
- U.S. Geological Survey (USGS) and PacifiCorp streamflow gage data
- Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) data
- Other hydrological data or reports

3.3.4 STUDY AREA

The study area for the hydraulic modeling effort will include all facilities within the current PacifiCorp Project Boundary, as well as (preliminarily) 2 miles of the Bear River downstream of the PacifiCorp Project Boundary near the Cutler powerhouse. The preliminary 2-mile extension of the study area was based on engineering judgment and aims to capture the change in sediment transport within the Bear River downstream of Cutler Dam; if hydraulic modeling demonstrates that downstream effects are likely to change as a result of potential future Project operations, then the downstream analysis reach length may be changed to correlate with the model findings. That is, the upstream and downstream extents of the original hydraulic model of the Project may be extended based on final model output deliverables and preliminary model results which incorporate updated data.

3.3.5 METHODS

To accomplish the goals and objectives of this study, PacifiCorp is proposing a variety of data review and collection to compile structural, spatial, terrain, and hydrologic data sets for the Project. More specific details on the methodology, timing, and execution of the data collection effort are provided in Section 3.3.5.1, and in the Drawdown Elevation and Model Calibration

Data Acquisition Plan (DEMCDAP), which was prepared for the fall 2019 drawdown.¹² Details on the methodology, timing, and execution of the sediment data collection are provided in the Revised Sedimentation Study Plan. Once compiled, the various data sets will be used as inputs and calibration data for a U.S. Army Corps of Engineers (USACE) HEC-RAS hydraulic model. The calibrated model will be used to develop an understanding of the existing hydraulic conditions, and then used to estimate the impacts of potential changes from potential future Project operations on the hydraulic conditions, sediment transport capacity, and water surface elevations, as well as answer questions posed by other related studies.

3.3.5.1 DATA COLLECTION

Updated LiDAR and aerial imagery were collected during the fall 2019 drawdown of the reservoir to create a detailed terrain surface of the exposed reservoir bed that can be used for hydraulic model development. Detailed bathymetry data will be collected to supplement the areas of the reservoir bed that were still inundated at the maximum drawdown and were therefore not able to be surveyed using LiDAR. Fifteen pressure transducers were placed within the reservoir to collect stage (elevation) data before and during the drawdown event. These data, along with inundation extents developed from the aerial images collected during the LiDAR survey, will be used to calibrate the hydraulic model. Sediment core samples, suspended sediment concentrations, and depth to bedrock (where feasible) were collected before, during, and after (depending on the component) the fall 2019 reservoir drawdown. These data will be used as sediment transport model parameters as well as for calibration of the sediment transport model. More specific details on the sediment data collection are provided in the Cutler Sedimentation Study Plan and the DEMCDAP. Flow data were collected at seven locations within the Project Area. These flow data were combined with detailed evaluation of the hydrologic data gathered from surrounding existing USGS stream gages and PacifiCorp stream gages to quantify groundwater contributions and develop inflow hydrographs to the hydraulic model.

¹² Available upon request.

3.3.5.2 MODEL CONSTRUCTION

Using the updated LiDAR and bathymetry, both 1D and 2D hydraulic models of the Project and necessary surrounding reaches will be constructed. Creation of 1D and 2D hydraulic models will begin with creating a model base geometry, which is defined as 1D cross sections and 2D mesh areas that represent the reservoir, upstream tributaries, and downstream reaches. Once the base geometry is set up, the Cutler Dam structure will be added including the dam crest, spillway, gates, canals, and other features significantly affecting system hydraulics. Both the 1D and 2D models will include boundary conditions at the Bear River, Logan River, Little Bear River, Spring Creek, Clay Slough, Cutler Dam, and Downstream end of the model. If it is determined that there are any significant sources of groundwater inflow within the reservoir those will be added as internal boundary conditions. The 1D model will be used to analyze sediment transport within the reservoir and the 2D model will analyze flow behavior, inundation boundaries, and other hydraulic characteristics of the Project Area.

3.3.5.3 MODEL CALIBRATION

The model will be calibrated based on data collected during the fall 2019 reservoir drawdown and will be performed in two phases. First, the model will be calibrated based on the hydraulics of the reservoir. This will include adjusting hydraulic parameters within the model to reproduce observed stage and flow recorded at USGS gage locations to reproduce observed discharges through Cutler Dam, inundation boundaries within the Project Area, and WSEL data at specific points within the reservoir. Aerial photos collected during the drawdown will be used to verify the inundation boundaries during the drawdown. The second phase of model calibration will be calibrating the sediment transport within the reservoir. This will include adjusting the hydraulic and reservoir bed parameters to match the estimated sediment loading moving through the system during the drawdown. The sediment load will be estimated based on suspended sediment data collected downstream of Cutler Dam and calculating sediment volume lost from the reservoir bed during the drawdown, based on the pre- and post-terrain surfaces developed from the LiDAR and bathymetry. Once the model is constructed, a timestep interval will be determined based on grid cell size, model run time, and model stability. Model stability is often analyzed by examining the Courant numbers within the computational domain. The Courant

number¹³ can help guide both the necessary cell size and the timestep interval required for a stable and accurate model.

3.3.5.4 MODEL IMPLEMENTATION

Once the model is calibrated, it will be used to develop an improved understanding of the existing hydraulic, sediment transport, and water quality conditions under current and potential future operating procedures. The calibrated model will be used to estimate the impacts of potential changes resulting from Project operation on channel hydraulics, sediment transport capacity, inundation boundary, and water quality.

Specifically, the calibrated model will provide water surface elevations, depths, velocities, and shear stresses anywhere within the model boundary. The model will also produce an inundation boundary of the reservoir based on the operations at Cutler Dam. The hydraulic/sediment transport model will also be able to estimate the total bed sediment mobilized within the reservoir due to changes in the operation of Cutler Dam

The model will be useful in answering questions posed by other related studies. Finally, the calibrated model could be used to explore the feasibility and effectiveness of possible mitigation alternatives proposed by PacifiCorp or other stakeholders.

3.3.6 SCHEDULE AND PERIODIC REPORTING

A hydraulic modeling report will be prepared documenting the results of the hydraulic, sediment transport, and water quality evaluations and will include a summary of all collected information and discussion of the analyses. The report will address the topics below:

3.3.6.1 DATA COLLECTION

- What data were collected
- Why the data were collected
- When the data were collected
- How the data were collected
- How the data were used in the modeling effort

¹³ The Courant number is the residence time of water within a model cell.

3.3.6.2 MODEL CONSTRUCTION

- Model geometry
- 1D HEC-RAS model creation and application
- 2D HEC-RAS model creation and application
- Manning's roughness values¹⁴
- Digital terrain data set
- Structural data used in the model

3.3.6.3 MODEL CALIBRATION

- What data were used for calibration
- Calibration results
- Finalized timestep model component and resulting Courant numbers within the computational domain.

3.3.6.4 MODEL IMPLEMENTATION

- Existing conditions (operation) results
- Potential future operational change results and impacts to reservoir hydraulics
- Potential future operational change impacts to other topics (to be determined)

The Revised Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and the ISR.

3.3.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Proposed Hydraulic Modeling Study Plan is within the range of approximately \$130,000. Related preliminary data collection for the LiDAR and bathymetry will add an approximate \$335,000 to the overall cost of this study. The Study Plan would require four months to complete from the delivery of the final combined LiDAR/bathymetric terrain data set. The proposed study effort is adequate to provide the level of information needed to understand Project direct, indirect and/or cumulative effects, and to determine the need for any specific PME actions.

¹⁴ A representation of the conveyance areas resistance to flow—an increased Manning's roughness will decrease velocities across that section.

3.3.8 STUDY PLAN CONSULTATION RECORD

Appendices A and B outline comments received from stakeholders for all study plans, and how comments were addressed in the RSP. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on additional Project-specific information and FERC’s Study Plan Criteria (18 CFR § 5.9).

3.3.9 REFERENCES

PacifiCorp. 2019. Cutler Hydroelectric Project FERC No. 2420 Pre-Application Document Volume I – Main Document. March 2019.

3.4 SEDIMENTATION REVISED STUDY PLAN (AQ 4)

3.4.1 PROJECT NEXUS AND RATIONALE FOR STUDY

There have been few studies on sediment movement and the resultant potential effects on existing resources within the Project Boundary. In the PAD, Water Resource Section 6.3.10 outlined some of the concerns with sediment given the shallow nature of the southern and northern reservoir regions, with average depths of 1.8 feet and 3.6 feet, respectively. Movement of bed sediments, resulting from in-reservoir hydraulics or from mechanical actions such as dredging (a frequently discussed potential PME action) may increase TSS and phosphorus in the water column affecting a number of resources.

The shallow depth and highly silted environment of the reservoir result from the continued import of fine sediment from the Bear River and spring runoff from tributaries entering the southern portion of Cutler Reservoir. Millions of tons of fine sediment were previously deposited in the Bear River, largely as a result of accelerated erosion due to irrigation practices over a century ago (Clyde 1953). Clyde (1953) estimated that as a result of this bench erosion and gully formation, the Bear River bed elevation was raised in excess of 12 feet in places upstream of the Project, and some 6 million tons of sediment were deposited into Cutler Reservoir prior to 1950. However, today the Bear River continues to transport these fine material deposits, along with bank material, into the reservoir.

The nexus for this study is consideration of potential future changes in Project operation that could have the potential to re-suspend and mobilize bed sediments in key areas of and throughout Cutler Reservoir. Changing reservoir surface elevations may accelerate water velocity in reservoir areas that are prone to bed scour or potentially increase lateral scour and bank erosion. During periods of lowered elevation, and the potential complete or partial removal of the historic Wheelon Dam, shifts in deposited material may occur, leading to deposition in deeper zones. The internal movement of sediment could lead to the movement of phosphorus and other pollutants currently bound in bed sediment and affect water quality.

This study will improve the understanding of existing conditions as well as identifying the spatial and temporal extent of potential re-suspension and mobilization of bed sediments, with associated water quality effects, in Cutler Reservoir associated with potential future operational

changes. The study will also address the practicability of dredging as a sediment management measure and assess its potential environmental effects.

3.4.2 STUDY GOALS AND OBJECTIVES

The Sediment Study Plan outlines a three-tiered study designed to address sediment composition, sediment deposition, and phosphorus in sediment throughout Cutler Reservoir.

The objective for defining sediment composition in the Project is to assess the role of potential sediment mobility under a range of operating conditions. Data collected will help provide the foundation for the sediment transport model discussed in the Hydraulics Study Plan. The combination of data collection and modeling will provide a management tool for PacifiCorp to model a range of potential operational conditions and examine the effects on sediment.

Defining the volume and location of accumulated sediments in the reservoir will provide a detailed understanding of sediment deposition. A base map will be generated and used to determine pre-reservoir bed elevations and sediment depth. This will aid in decision-making processes and developing options to control sediment movement.

A final component of the sediment study is examining phosphorus composition and distribution in the Project Area. Phosphorus movement in the reservoir could affect water quality.

Phosphorus is one of the identified pollutants in the Middle Bear River and Cutler Reservoir Total Maximum Daily Load (SWCA 2010). This Study Plan aims to understand the interaction of phosphorus bound in bed sediments and the water column. Understanding the movement and release of the internal phosphorus recycling from bed sediments may provide valuable insight into management of Cutler.

3.4.3 REVIEW OF EXISTING INFORMATION

Currently, there are no Resource Management Goals in the 1995 RMP for Cutler Reservoir that are directly related to sedimentation, although there are for the related resource issues of water quality and scenic resources. The outcome of this study will provide valuable insight into management options for other resource areas (e.g., hydraulic resources, water quality, and aquatic resources).

This Study Plan will complete a literature review and incorporate existing information related to sedimentation within the Project Boundary. References for studies, reports, and other sources of information analyzed as part of this study are provided in this section as they are identified.

Below is a partial list of these readily available information sources:

- *Middle Bear River and Cutler Reservoir Total Maximum Daily Load (TMDL)*. Utah Division of Water Quality (2010).
- Utah Division of Water Quality Ambient Water Quality Data Management System database (AWQMS). 2019.
- United States Geological Survey National Water Information System database (NWIS). 2019.

3.4.4 STUDY AREA

3.4.4.1 SEDIMENT CORING AND COMPOSITION

The sediment distribution analysis will encompass the wetted surface area of Cutler Reservoir with an attempt to survey all critical areas located inside the Project Boundary. Critical areas assessed for sediment composition will be divided into a number of strategic zones, based on factors such as inflow, cutting potential, constrictions that increase velocities, potential for erosion at different elevations, and other factors defined by PacifiCorp's resource specialists. Sediment cores collected are primarily used in developing the sediment transport component of the hydraulics model. Sediment structure inputs provide the model the necessary information to predict scour, deposition, re-suspension, and transport load from the system under a defined model condition. The number of core samples necessary to characterize the sediment structure is dependent upon the sediment variability throughout the reservoir. If the sediment structure is uniform throughout, then as few as 20 samples may be needed to provide the sediment model with enough data to run accurately. Because of the vast area of Cutler, the number of inflows, and the variety of habitats (canyon, open water, and marsh habitats), it is not possible to predict a sufficient number, but rather the study will have the sediment transport model define the necessary number needed for accurate modelling, per standard accepted practice for this discipline.

Strategic study reaches within the Project Boundary are defined as follows (Figure 3-4):

- **Wheelon Reach** from Cutler Dam to Wheelon Dam, to account for sedimentation at the upstream base of Cutler Dam.
- **Canyon Reach** from Wheelon Dam to the Highway 23 bridge, to assess the effects of the historic Wheelon Dam as a factor in sediment accumulation.
- **Reservoir Reach** from Highway 23 bridge upstream to the Bear River Unit, accounting for the formation of large bars with areas of lateral flow, continued deposition, and susceptibility to erosion under lowered elevations.
- **Bear River Inflow Reach** upstream to the Project Boundary. The Bear River is highly channelized in this area and continues to lose volume due to forming natural levees that isolate areas of the reservoir except during high spring flows. Lowered elevations could erode this highly channelized area.
- **North and South Marsh Reach** from Benson Marina and open water habitats south to the Logan River and southern tributaries.

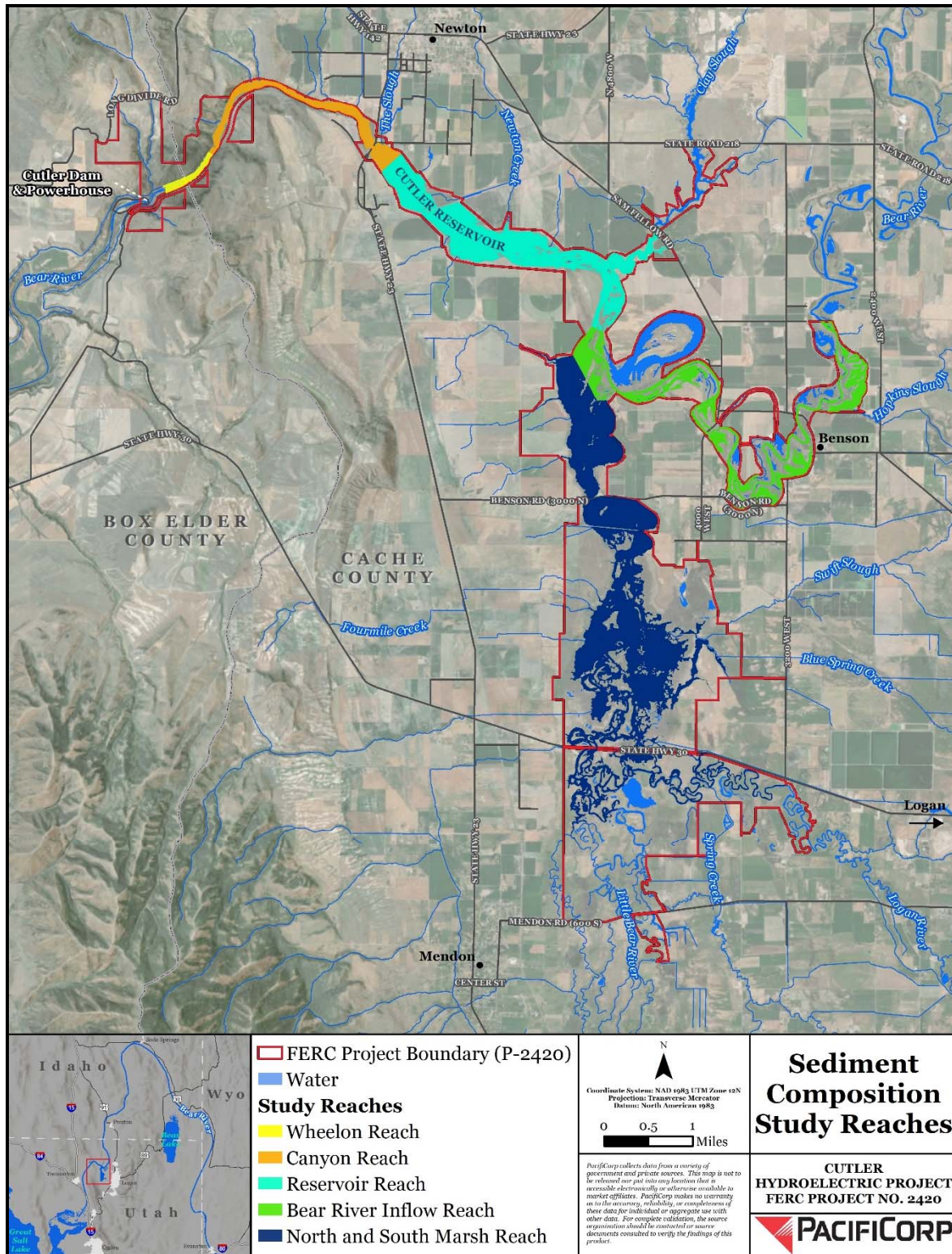
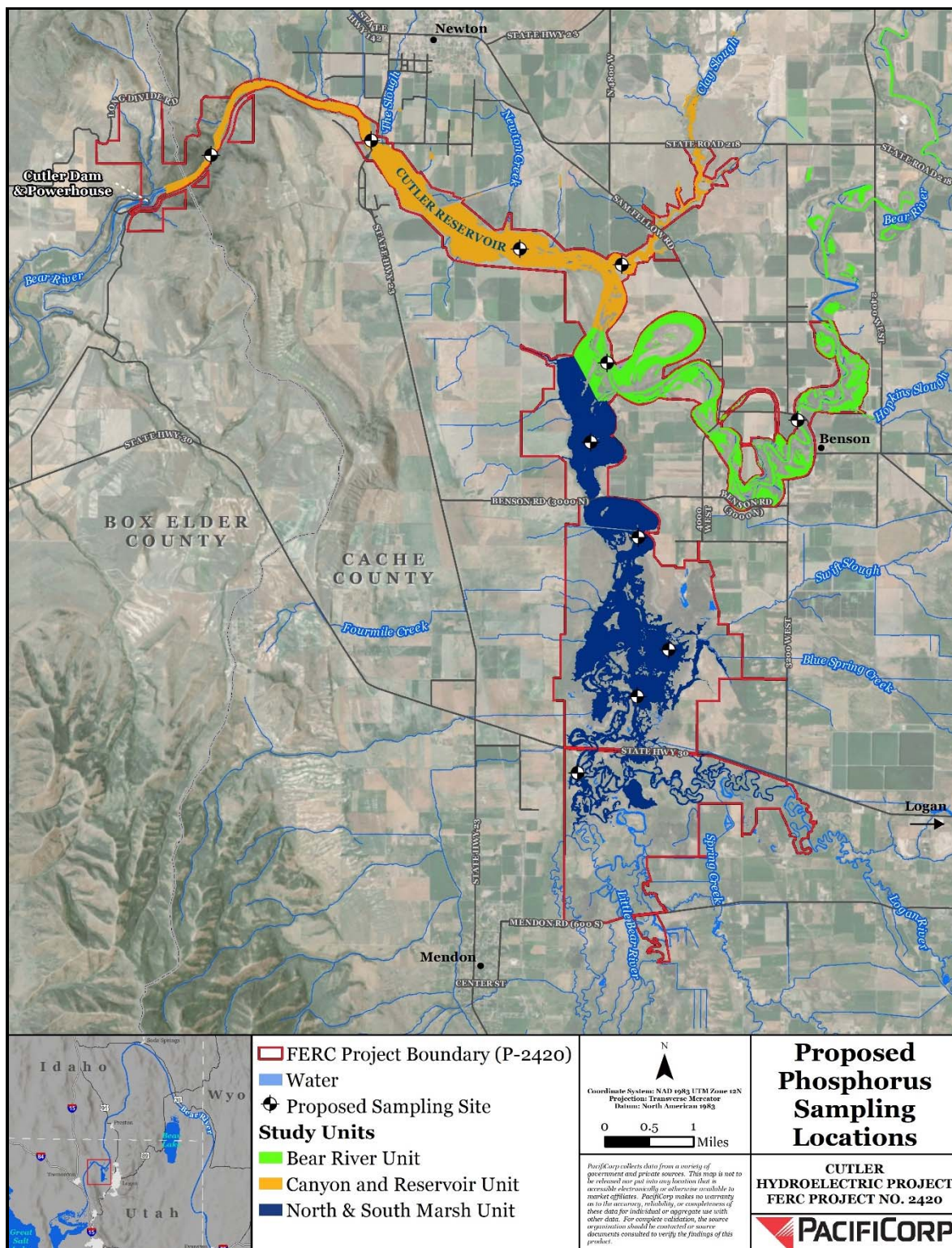


FIGURE 3-4 SEDIMENT COMPOSITION STUDY REACHES

To better understand the interaction between phosphorus in bed sediments and reservoir habitat, additional data collection is proposed. Three areas are defined and will be the primary focus of this study (Figure 3-5):

- **North and South Marsh Unit** - The south portions of the reservoir, which include the Highway 30 to Benson Marina area and the Logan and Little Bear inflow areas (defined in the Cutler RMP as the North and South Marsh Resource Management Areas, respectively). This area has a number of National Pollutant Discharge Elimination System (NPDES) permit dischargers (including Logan City's effluent discharge) and most likely will have the highest concentration of phosphorus in the system. A number of sample sites will be developed to identify sediment movement and potential sources of phosphorus (both external and internal) that could be contributing to the high concentrations found in the reservoir. Sites will include the Logan inflow, the Spring Creek/Little Bear inflow, the large area south of the Railroad Trail and fishing bridge (the North Marsh) where inflow from the Logan WWTF enters the reservoir, and Benson Marina between the fishing bridge and the confluence with the Bear River (Main Reservoir Resource Management Area).
- **Bear River Unit** - The Bear River Resource Management Area upstream of any influence from the southern tributary areas of the North and South marshes. This area has the greatest inflow, a high number of cattle feeding operations, and extensive surface runoff from agricultural operations. Sample sites will include areas above and below pollutant sources to understand the changes that are occurring throughout the marsh and reservoir.
- **Canyon and Reservoir Unit** - Cutler Canyon and Main Reservoir Resource Management Areas combine inflows from the North and South Marsh as well as the Bear River with the addition of Clay Slough inflows. This area combines the vast majority of all inflow and potential dischargers into the system. Samples that are collected here will help develop an understanding of phosphorus distribution in the system. Sample sites will include Clay Slough and sites below Newton Creek inflow, Reservoir at Highway 23, and near the Wheelon Dam.

**FIGURE 3-5 PROPOSED PHOSPHORUS SAMPLING LOCATIONS**

The study area for sediment deposition will include all wetted habitats within the Project Boundary traversable by boat.

3.4.5 METHODS

The scope of the sediment study includes several elements, as outlined below.

The reservoir has been divided into five key areas, as discussed above. A stratified random design with a sample size weighted according to surface area will be used to survey these defined sections of the reservoir. The number of samples will provide sufficient coverage to describe the bed sediment throughout the reservoir and in each key area.

Because Cutler is very shallow, a vibrating corer is the best option for sample collection due to its mobility. The vibrating corer generates acoustic vibrations that mobilize sediment in contact with the core rod, allowing it to penetrate to the point of rejection. Depending on sediment type and sediment layering, this is typically around 20 to 25 feet in clays and silts. Historical data suggests the original channel bed elevations at Benson Bridge, Logan River, Highway 23 bridge, and Wheelon Dam were 4,388.0, 4,388.0, 4,384.0, and 4,388.0 feet National Geodetic Vertical Datum 1929 (NGVD29), respectively (Clyde 1953). Given the WSEL of Cutler (4,407.5 feet), bed elevations suggest all areas upstream of Wheelon Dam could have an expected maximum depth of deposited sediment of 19.5 feet at most sites and up to 23.5 feet at Highway 23 bridge. These depths are well within the penetrative capacity of a vibrating corer.

It is anticipated that reservoir coring will take place in spring 2020 upon Study Plan approval. During sampling, daily field notes will be collected and at a minimum will include:

1. Date, time, location, weather conditions, sample identification (ID), and GPS location.
2. Depth of water in feet and inches, core barrel length in feet, and depth to rejection or bottom depth of sediments in feet and inches.

Core samples that are collected for analysis will include the following inspection and physical parameters:

1. Once cores are removed from the tubes, a preliminary inspection for sediment type using the Wentworth scale will be used to classify cores. Any stratification or changes in sediment type will be noted from top of the reservoir bed down to the closest inch.
2. Samples taken for particle size analysis will be classified using the Unified Soil Classification System (USCS). Notes will be taken if the sample represents a specific core depth or a composite sample within the core. All core depth measurements will

- be noted in feet. To determine the percentage of grain size, USCS standard sieves will be used down to a No. 230 or 63µm sieve. Finer material will be classified using a hydrometer. Prior to hydrometer measurements, each sample will be tested for percent organic material. Sediment samples with more than 30 percent organic material will not be measured for grain size with a hydrometer due to error probability.
3. To test for elasticity or shear strength, sediment cores will be measured in the field using a shear vane.
 4. A minimum of 10 percent of the cores will be tested at depth for the following ions: calcium carbonate (CaCO₃), iron (Fe), aluminum (Al), and TP. CaCO₃ exerts a great influence on phosphate fixation through surface absorption. CaCO₃ can also limit the solubility of phosphate. Fe and Al are two ions that can fix phosphorus through cation exchange, greatly reducing the solubility of phosphorus in oxic conditions.
 5. Three samples sites will be tested for a range of pesticides including dichlorodiphenyldichloroethylene (DDE) and dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyl (PCBs), and Resource Conservation and Recovery Act (RCRA) metals in bed sediments. Locations will include Benson Marina, Highway 23 bridge, and Wheelon Dam. Samples will be composite samples throughout the sediment core.

3.4.5.1 DISTRIBUTION OF PHOSPHORUS IN SEDIMENT

Phosphorus is a key issue regarding water quality in the Project Area. Cutler Reservoir has become a sink for excess external loading of phosphorus that is not consumed biologically, and now carries a significant internal recycling of phosphorus as well. Phosphorus is passed through the Bear River system as a result of surrounding land-use practices combined with surface runoff and NPDES discharges. This accumulation of phosphorus over the decades has pooled in the bed sediments of the reservoir.

TP samples collected by USU over the past decade suggest the North and South Marsh units of Cutler contain the highest concentrations of TP (Wurtsbaugh and Lockwood 2007, Wurtsbaugh et al. 2008, and Mears and Wurtsbaugh 2009). While concentrations are variable from site to site and year to year. TP concentrations are consistently up to five times higher than other locations as a result of continued internal recycling and external loading. Variability in TP concentration may be driven by wastewater discharge timing, load (flow multiplied by concentration), and a range of natural variables.

Potential changes in Project operations could affect velocity and re-suspend sediments which could exacerbate the existing high concentrations found in the water column, and in turn affect the phosphorus load of water leaving the reservoir.

Phosphorus in the upper 4 inches of sediment is most often associated with whole lake metabolism. Phosphorus mobilization can occur down to 10 inches, but the actual depth is dependent on sediment characteristics (Søndergaard et al. 2003). Loosely bound sediment or floc typically has an interstitial void with a large portion of sediment volume composed of water between the particles. This upper region of sediment is highly mobile and poses the greatest potential for resuspension, either from wind-driven mixing in shallow areas or from operational changes in WSEL and water velocity.

General sample locations proposed in Figure 3-5 are loosely predicated on past sampling locations from USU research for TP in Cutler and are generally located near TP loading sources. Precise sampling locations will be selected based upon sediment structure when the first sampling event occurs.

Phosphorus samples will be collected seasonally (four sampling events) to better understand the dynamics and changes that may occur in the system. Temperature, flow, storms, and discharge load may affect the concentrations and metabolism of the reservoir seasonally.

Sampling will occur from a boat to minimize disturbance to the water column or reservoir bed. Each proposed site will include a single vertical sample separated into multiple layers for analysis. A single 4-inch acrylic tube will be gently lowered through the water column and into the bed sediment. The top will be capped to create a vacuum for extraction. Upon removal, the bottom will be capped to eliminate sediment loss and carefully mounted vertically to not disrupt the sediment-water interface. Vertical holes in the tube will drain reservoir column water to the sediment-water interface. Reservoir water will be preserved for phosphorus analysis, including TP and ortho-phosphate (reactive), and will be field filtered using a 0.45- μm filter for total dissolved phosphorus (soluble).

Beginning at the sediment-water interface down to 4 inches, water will be drained from the bed sediments to extract water in the pore spacing¹⁵ in the sediment. If insufficient water is in the pore spacing, water in the sediment column down to 10 inches may be collected. Water in the pore spacing will be field filtered using a 0.45-µm filter and preserved for measurement of total dissolved phosphorus.

As much water as possible will be drained from the sediment core to remove any soluble phosphorus. Sediments will be preserved for TP analysis. All samples will be delivered on ice to a certified lab for analysis.

All equipment will be cleaned and rinsed with deionized water between sample sites. Vacuum flasks and/or geopumps will be flushed, and new filter papers will be used. Field notes at each site will include: date, time of sampling, location ID, weather conditions, and samplers name. Additional measurements of field conditions will include air temperature, water temperature, and DO to document conditions while sampling.

3.4.5.2 DISTRIBUTION OF SEDIMENT DEPOSITS IN CUTLER RESERVOIR

To address the distribution and depth of sediments within the reservoir, a low frequency echosounder is proposed to collect a significant number of sub-bottom recordings. Acoustic sub-bottom profiling draws upon low-frequency sounders in a range up to 50 kilohertz (kHz) to penetrate deep into bed sediments. Coupling the soundings with sediment core analysis greatly expands the resolution of sediment core data for a more accurate picture of sediment types and distribution throughout the reservoir.

Three-frequency (28/50/200 kHz), survey-grade echo-sounding equipment will be used to map the reservoir bathymetry, sediment distribution, and sediment thickness. Two hundred kHz is the industry-standard acoustic frequency for mapping the reservoir bed, while the 28 and 50 kHz frequencies penetrate deeper into the sub-bottom to define historical bed elevations and river channels. An example of this type of equipment is the BBS-3 portable echo sounder with a depth resolution of up to 0.15 centimeters (cm). These echo sounders will be mounted to shallow-draft

¹⁵ Pore space is defined by porosity of a material possessing free space between the mineral grains, expressed as percentage.

craft for use in as little as 0.4-meter (m) water depth. All equipment will be mounted to a boat that will travel numerous transects in the reservoir to map the fine bed detail and simultaneously measure the sub-bottom substrate depth.

Acoustic echo sounding interfaced with a real-time kinematic GPS unit will allow entire lake mapping that is both highly detailed and spatially accurate, typically 2 cm horizontally and 3 cm vertically. Utilizing existing WSEL benchmarks such as the Cutler Dam WSEL or Benson Marina stilling basin WSEL will provide accurate reference points to measure and cross-reference elevation data collected during the surveys. These reference points will be measured daily. To maintain water surface accuracy, shoreline measurements will be taken periodically throughout the day as reference points in the area being surveyed.

Two hours before the beginning of any data collection, the reference GPS base station will be placed in an open sky area to allow for stabilization. Guidelines for selecting areas suitable for reference base stations are as follows:

- Flat or gently sloping for 25 to 30 feet in all directions
- Free of obstructions for 25 to 30 feet in all directions
- A clear view of the sky with no overhanging branches or powerlines
- Documentation of each site will be completed with photographs free of objects or people

Before any survey work begins, the echosounder will be referenced and calibrated using a bar check or stadia rod. Any deviations in depth will be noted, resolved, and recalibrated before beginning survey work.

3.4.6 ANALYSIS AND REPORTING

A report containing the sediment data collection and analysis will be completed and included in the ISR. Data sets generated from the sediment data collection will be used in other resource analyses (e.g., Hydraulics, Land Use, Scenic Resources, and Water Quality Study Reports). Data sets, analysis, and reports are described below.

3.4.6.1 SEDIMENT COMPOSITION AND CORING

Sediment core logs will be generated for all core samples, and much of the sediment core data processed will be used directly in the sediment transport model. A portion of the sediment report will discuss the results of sediment measurements throughout the reservoir including USCS classification as a percentage and concentrations of TP at depth, total organic matter, and analysis for pesticides, PCBs, and heavy metals.

3.4.6.2 DISTRIBUTION OF PHOSPHORUS IN SEDIMENT

The primary focus of this analysis is to explore the exchange of phosphorus between bed sediments and the water column and the potential for re-suspension under a range of operating conditions. The analysis will explore the dynamics of dissolved phosphorus in the interstitial voids of floc sediment, the interaction with the water column, and the potential effects if sediment movement were to occur from a change of operation. Insoluble phosphorus concentrations in bed sediments will be examined and compared to results from core samples taken for phosphorus at varying depths, and a discussion on the absorption and binding potential of ions analyzed on phosphorus will be included.

3.4.6.3 DISTRIBUTION OF SEDIMENT DEPOSITS IN CUTLER RESERVOIR

Analysis of sub-bottom profiling will be used to create a digital map of sediment depth within the reservoir. The analysis will estimate the volume and location of bed sediment based on survey results. Strategic areas of the original reservoir bed may be joined with current bathymetry to estimate water volume increases for various dredging scenarios. This layer output file may also be loaded into the hydraulics and sediment model to illustrate the dynamics and infill that could occur if the decision were made to dredge in some areas of the reservoir.

3.4.7 SCHEDULE AND PERIODIC REPORTING

The Revised Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and the ISR.

3.4.8 LEVEL OF EFFORT AND COST

The estimated cost of conducting the sediment coring and composition is within a range of \$60,000 to \$100,000 based on the number of cores collected, number of samples processed, and analytes selected. To complete the seasonal analysis of sediment phosphorus throughout the reservoir, the anticipated additional cost is within a range of \$25,000 to \$35,000. Analysis of the distribution of sediment throughout Cutler Reservoir based upon coring data and sub-bottom reading, and the level of analysis to include a range of operation scenarios is an additional estimated cost within a range of \$25,000 to \$50,000. The total cost of all components of this study has a range of \$110,000 to \$185,000. The proposed study effort is adequate to provide the level of information needed to understand Project direct, indirect and cumulative effects, and to determine the need for any specific PME actions.

3.4.9 REVISED STUDY PLAN CONSULTATION RECORD

Appendices A and B outline comments received from stakeholders for all Study Plans, and how comments were addressed in the RSP. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on additional Project-specific information and FERC's Study Plan Criteria (18 CFR § 5.9).

3.4.10 REFERENCES

- Clyde, Calvin G. 1953. Sediment Movement in Bear River, Utah. Thesis submitted for Degree of Civil Engineer, Graduate Division, University of California. Berkeley, California. June 1953.
- Mears, J.D. and W.A. Wurtsbaugh (editors) 2009. Limnological Analyses of Cutler Reservoir and Dingle Marsh with Respect to Eutrophication. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. 100 p.
- PacifiCorp. 2019. Cutler Hydroelectric Project FERC No. 2420 Pre-Application Document Volume I – Main Document. March 2019.
- Søndergaard, M., Jensen, J.P., Jeppesen, E. 2003. Role of internal loading on phosphorus in shallow lakes. *Hydrobiologia*. 506-508: 135-145.
- SWCA Environmental Consultants (SWCA). 2010. *Middle Bear River and Cutler Reservoir Total Maximum Daily Load (TMDL)*. Prepared for Utah Division of Water Quality.
- Wurtsbaugh, W.A. and R. Lockwood (editors) 2007. Comparison of Limnological Characteristics in Cutler Reservoir (Utah) near the Inflows of the Logan River and the Logan Wastewater Treatment Plant. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. 100 p

Wurtsbaugh, W.A., B.J. Abbott., and D. Epstein (editors) 2008. Comparative Limnological Analysis of Cutler Reservoir and Dingle Marsh with Respect to Eutrophication. Aquatic Ecology Practicum Class Report, College of Natural Resources, Utah State University. 71 p.

4.0 HUMAN ENVIRONMENT REVISED STUDY PLANS

4.1 RECREATION RESOURCES REVISED STUDY PLAN (REC 1)

4.1.1 PROJECT NEXUS AND RATIONALE FOR STUDY

The Project operates and maintains 15 recreation facilities within the Project Boundary. These facilities consist of boat launches, picnic areas, canoe trails, and hiking trails. PacifiCorp implemented a recreation site development and monitoring program as part of the current license to improve public access and provide recreation facilities inside the Project Boundary. Future operation of the Project will continue to affect recreation opportunities, use patterns, access, and facilities. Changes in Project operations could affect the timing and quality of recreation opportunities and access to Project waters as well as aesthetic resources. This study will establish a baseline of current recreation use and aesthetic resources. This information will form the basis for a recreation plan and potential new license articles to address impacts to recreational and aesthetic resources in the Project Area due to any changes in Project operations.

When making a decision regarding re-issuance of a new license for the Project, FERC considers the recreational and other non-developmental values of the Project, as well as power and developmental values. Part of this decision process is FERC's determination of any conditions that should be included in a new license to be best adapted to improve or develop Project waters for all beneficial public uses. Reasonable consideration of the effects of continued Project operation pertaining to recreational opportunities and access in the Project Boundary is in the public interest.

4.1.2 STUDY GOALS AND OBJECTIVES

The goals of the Recreation Resources Study are to identify the existing recreation opportunities, facilities, and visitor use that may be affected by operation of the Project, and develop measures that could be implemented to mitigate Project effects and/or enhance recreation activities. The specific objectives to meet the goals of the study include:

- Describe existing recreation opportunities and facilities in the Project Boundary
- Quantify visitor use and carrying capacity for Project recreation facilities

- Evaluate if or how changes in Project operations could affect recreation opportunities, patterns in visitor use, public access to the reservoir, and recreation facility usability
- Identify current and projected trends in recreation based on recent or newly conducted surveys and interviews and consultation with stakeholders, regional and statewide plans, and other available data
- Evaluate how changes in Project operations may affect existing visual resource conditions in the vicinity of the Project
- Evaluate how other proposed ongoing actions may affect existing recreation facilities (i.e., widening State Road 30)

4.1.3 REVIEW OF EXISTING INFORMATION

Existing management plans and reports will be used in the development of a baseline understanding of current recreation resources and known recreation use trends. Relevant management plans will include the following:

- PacifiCorp Recreation Site Development Program for Cutler Hydroelectric Project (part of the existing PacifiCorp Cutler Recreation Management Plan)
- PacifiCorp FERC Form 80 Reports for Cutler Hydroelectric Project
- PacifiCorp's Five-Year Monitoring Report series for Cutler Hydroelectric Project
- USFWS Bear River Migratory Bird Refuge Comprehensive Management Plan, 1997
- Utah Department of Natural Resources. Final Bear River Comprehensive Management Plan. October 2017.
- 2014 Utah State Comprehensive Outdoor Recreation Plan (SCORP) (Utah DNR 2013) (SCORP to be updated in 2019).
- 2010 Utah Boating Program Strategic Plan (Utah DNR 2010).

4.1.4 STUDY AREA

The study area for this plan (Figure 4-1) is the area inside the Project Boundary, including the portion of the Bear River directly downstream of the powerhouse.

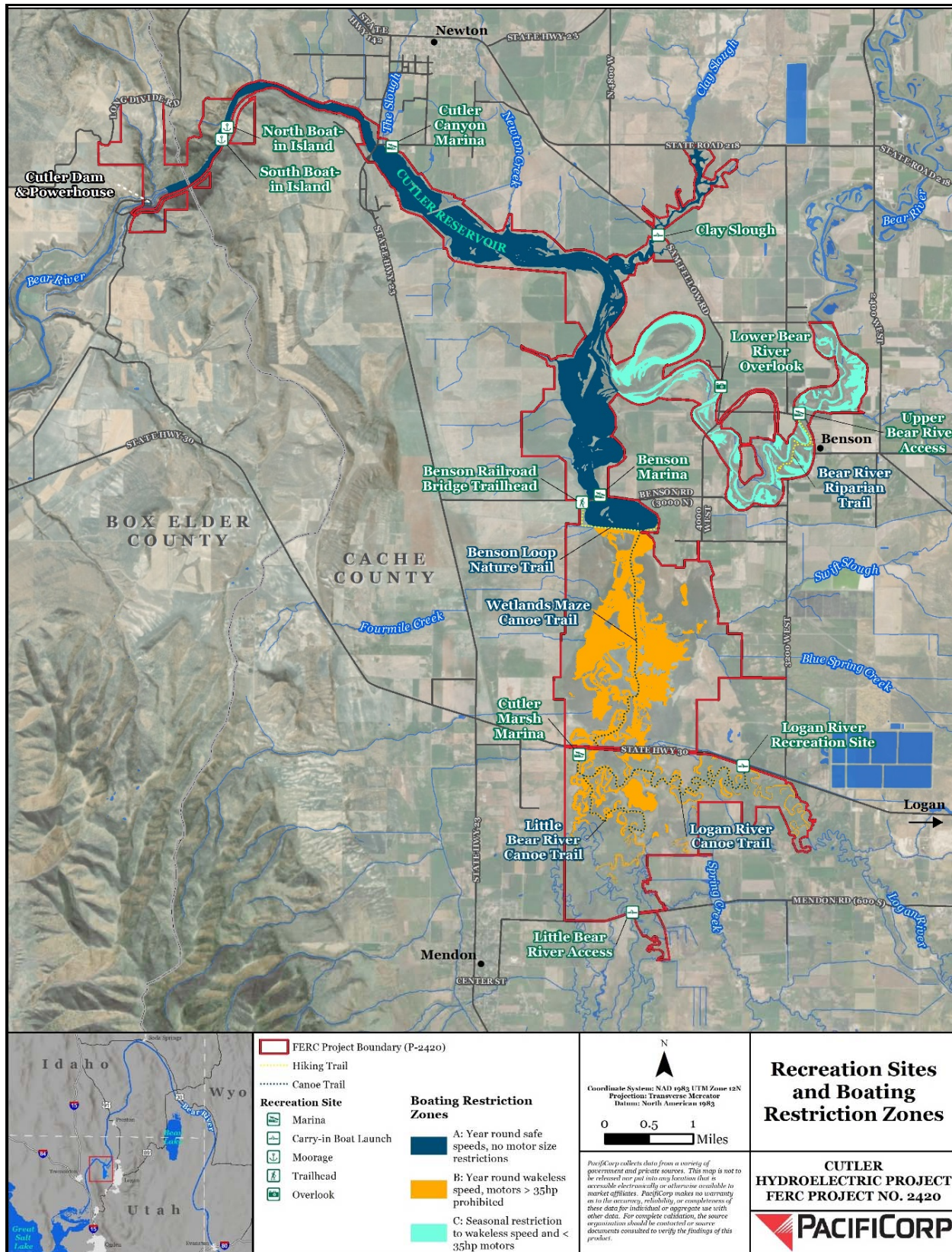


FIGURE 4-1 RECREATION STUDY PLAN AREA

4.1.5 METHODS

This section describes the study methods for evaluating recreation opportunities, facilities, visitor use, and aesthetic resources in the Project Boundary under current operating conditions as well as potential changes in Project operations. The proposed study methods are consistent with professional practices and FERC study requirements under the ILP (FERC 2004) and have been employed at other hydroelectric projects and recreation sites throughout the United States.

Recreation planners will gather information on recreation opportunities, facilities, and visitor use in the Project Boundary using a combination of data collection methods that include the following:

- Desktop Recreation Assessment
- Project Site Assessment
- Recreation Use Counts
- Visitor Survey
- Structured Interviews
- Evaluate Effects of Proposed Project Operational Changes

Using this information, PacifiCorp will complete a Recreation Needs Analysis which will become the Recreation Management Plan for the next license. Each method is described below.

4.1.5.1 DESKTOP RECREATION ASSESSMENT

Initially, recreation planners will complete a Desktop Recreation Assessment to identify existing recreation opportunities and facilities in the Project Area using methods described by Whittaker, Shelby, and Gangemi (2005). Information sources for this assessment will include local, state, and federal recreation plans (listed in Section 4.1.3), recreation guidebooks, maps, tourist information, magazine articles, online descriptions of recreation opportunities and trips, reservoir elevation data, and fishing regulations. The assessment will include existing comprehensive plans applicable to the Project Area. The information obtained in the desktop assessment will be synthesized in a narrative summary describing recreation opportunities, facilities, and restrictions in the Project Boundary with accompanying maps.

4.1.5.2 PROJECT SITE ASSESSMENT

In the Project Site Assessment, recreation planners will observe the recreation opportunities and facilities identified during the Desktop Recreation Assessment. Site visits will be timed to coincide with conditions suitable for recreation activities for first-hand observations. During the site visits, recreation planners will evaluate the potential effect of Project operations on recreation opportunities and facilities.

At each site, the following information will be collected and documented:

- Recreation facility
- Recreation amenities
- Assessment of facility condition
- Handicap accessibility
- Photographs
- Safety/security concerns

An analysis of physical capacity at each recreation site will be completed. This analysis will include an assessment of the physical space available versus actual use (based on use counts below, where available), comparing off-peak and peak use and seasonal use patterns.

4.1.5.3 RECREATION USE COUNTS

Visitor use will be monitored using a combination of traffic counters and trail counters at select sites. Visitor use data will be supplemented with existing data from routine monitoring as specified in PacifiCorp's Five-Year Resource Management Plan Monitoring Report (PacifiCorp 2018).

4.1.5.4 STRUCTURED INTERVIEWS

Structured interviews will be conducted with stakeholders representing recreation organizations as well as individuals with direct knowledge of recreation activities and use patterns within and adjacent to the Project Area (Whittaker et al. 1993 and Whittaker et al. 2005). The structured interviews will be used to help develop the questions for the visitor survey. Where opportunities arise, structured interviews with individuals pursuing recreation opportunities in the Project Boundary will be conducted.

4.1.5.5 VISITOR SURVEY

The visitor survey will be conducted online and designed to query respondents on recreation use patterns and recreation needs in the Project Boundary. The online survey will be organized into four sections: 1) background demographic information; 2) recreation use patterns in the Project Boundary; 3) Cutler recreation facilities used; and 4) recreation needs. Recreation pursuits in the Project, use patterns, facilities, and recreation needs will be tallied from survey questionnaires. The survey questionnaire design will follow accepted practices outlined in Whittaker et al. (1993) and Whittaker, Shelby, and Gangemi (2005).

The survey questions will be developed based on information gathered during the structured interviews. Prior to survey implementation, the survey instrument will be pre-tested, and refined for clarity, if necessary. The pre-test will include a total of 10 to 15 completed surveys, with the intent to receive feedback on readability, length, and general understanding of survey content. If necessary, minor changes to the survey may be made to make the survey easier to complete and/or understand.

The online survey will be open to all members of the public with the intent of getting a broad participant demographic. PacifiCorp will announce the availability of the online survey to stakeholders on the Project service and mail list as well as the Project website. In addition, postcards will be placed at recreation facility sign boards in the Project explaining the purpose of the survey and link to the survey portal. This open-ended distribution method does not permit calculation of a survey response rate. An online survey sample size has not been established.

4.1.5.6 ASSESSMENT OF PROJECT OPERATIONAL CHANGES

Potential future project operational changes and associated changes in reservoir pool elevations will be evaluated to determine potential effects on recreation opportunities, facilities, and visitor use. Cutler Reservoir will be topographically mapped using a combination of LiDAR and bathymetry. In addition, drones were used during the fall 2019 drawdown to document changes in wetted perimeter corresponding to distinct reservoir elevations at Cutler recreation sites (Table 4-1). Field crews marked the wetted perimeter daily with non-permanent survey paint when there was a change in reservoir elevation during the drawdown. Drones captured still photos along a pre-programmed flight path to document lateral changes in wetted perimeter distance across a

range of reservoir elevations. Survey markers with established grids were used to measure changes in lateral distance. Recreation planners will also use the drone photos as well as the LiDAR and bathymetry data to evaluate reservoir access at existing boat ramps and carry-in launches under various Project operational regimes and associated reservoir water elevations. The study will analyze potential changes in water-based recreation opportunities associated with changes in reservoir pool elevations such as motorized and non-motorized navigation. The analysis will consider the seasonality of proposed operational changes relative to recreation use as well as the rate of reservoir drawdown.

TABLE 4-1 DRONE DOCUMENTATION OF CUTLER RECREATION SITES DURING DRAWDOWN

Cutler Recreation Sites	Reservoir Sites	Cutler Marsh Marina
		Benson Marina
		Cutler Canyon Marina
		Clay Slough
	Tributary Sites	Little Bear River Access
		Logan River Recreation Site
		Upper Bear River Access

4.1.6 SCHEDULE AND PERIODIC REPORTING

The recreation portion of the ISR will document the analysis and results in compliance with FERC ILP guidance. This report will include a summary of all information collected and discussion of the findings. Specifically, the report will address the following:

- Information on recreation opportunities, facilities, and visitor use within the Project Boundary
- Assessment of impacts of proposed operational changes on recreation opportunities, facilities, and visitor use as well as aesthetic resources in the Project Boundary
- Analysis of recreation needs in the Project
- Project safety and security needs relative to recreation access

The report and analysis will identify existing and future recreation needs in the Project based on the recreation facility inventory, carrying capacity analysis, current and projected demand, as well as an assessment of recreation trends to determine if the existing Project recreation facilities fulfill intended purpose and meet recreation needs at the Project while at the same time maintaining Project safety and security. The results of this analysis will be used in the development of any necessary recreation resource enhancement measures.

PacifiCorp will synthesize the information gathered in the respective phases of the Recreation Study into a Recreation Management Plan. The Recreation Management Plan will be submitted as part of the License Application and is expected to be incorporated into a new license. Implementation of the Recreation Management Plan will be initiated upon issuance of the new Project license by FERC.

The recreation studies will be completed in one study year. Based on the results provided in the ISR, relicensing participants may request modifications to the recreation study and/or additional information; however, any proposal must demonstrate that the studies that were conducted were not consistent with the approved Study Plan or that the studies were conducted under unusual environmental conditions.

The Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, and the estimated filing dates for the 6-month progress update and the ISR.

4.1.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Recreation Resources RSP is within the range of \$100,000. The proposed study effort is adequate to provide the level of information needed to understand Project effects, impacts or benefits to the resource, and to determine the need for any specific PME actions.

4.1.8 REVISED STUDY PLAN CONSULTATION RECORD

Appendix A and B outline comments received from stakeholders for all study plans, and how comments were addressed in the RSP. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on additional Project-specific information and FERC's Study Plan Criteria (18 CFR § 5.9).

4.1.9 REFERENCES

Federal Energy Regulatory Commission (FERC). 2004. A Guide to Understanding and Applying the Integrated Licensing Process Study Criteria.

PacifiCorp. 2018. Resource management plan five-year monitoring report (2013-2017) for the Cutler Hydroelectric Project (FERC No. P-2420). Prepared for Federal Energy Regulatory Commission, Portland Regional Office, Portland, Oregon.

- U.S. Fish and Wildlife Service. 1997. Bear River Migratory Bird Refuge Comprehensive Management Plan.
- Utah Department of Natural Resources (Utah DNR). 2017. Final Bear River comprehensive management plan and record of decision. Division of Forestry, Fire and State Lands.
- Utah Department of Natural Resources (Utah DNR). 2013. *2014 Utah State Comprehensive Outdoor Recreation Plan*. Division of Utah State Parks and Recreation.
<http://static.stateparks.utah.gov/docs/SCORP2014.pdf>. Accessed December 19, 2018.
- Utah Department of Natural Resources (Utah DNR). 2010. *2010 Utah Boating Program Strategic Plan*. Division of Utah State Parks and Recreation.
<https://stateparks.utah.gov/stateparks/wp-content/uploads/sites/26/2015/03/BoatingStrategicPlan2010.pdf>. Accessed December 19, 2018.
- Whittaker, D., B. Shelby and J.T. Gangemi. 2005. *Flows and Recreation: A Guide to Studies for River Professionals*. Hydropower Reform Coalition, Washington, DC.
- Whittaker, D., B. Shelby, W. Jackson, and R. Beschta. 1993. *Instream flows for recreation: a handbook on concepts and research methods*. U.S. Department of Interior, National Park Service, Anchorage, AK.

4.2 CULTURAL RESOURCES REVISED STUDY PLAN (CULT 1)

4.2.1 PROJECT NEXUS AND RATIONALE FOR STUDY

Existing information concerning the subject of this study proposal is summarized in Section 6.12 of the PAD. As is described there, a few archaeological and historic architectural resources are known within the Project Boundary (not all of which have been formally documented), but only limited cultural resources inventory has been conducted to-date within the Project Boundary. For this reason, it can be expected that there are additional historic and archaeological sites within this area that have not been previously recorded. Based on the previously documented cultural resources in the Project Boundary and an understanding of the area's prehistory and history, it can be expected that undocumented historic and archaeological sites will be related to a variety of prehistoric, ethnohistoric and historic activities, including Native American occupation and Euro-American exploration, settlement, irrigation, and transportation.

Because the cultural resources inventory within the Project Boundary has been limited, there is a need for additional inventory to determine what cultural resources the Project's existing and potential future operations may impact and what the nature of those impacts might be.

The nexus between Project operations and effects on cultural resources is discussed in Section 7.1.11 of the PAD. As noted, current operations under the existing license and potential future operations under the relicensing could have impacts on cultural resources due to fluctuating reservoir levels and wave action from wind-blown or human-caused waves, either of which may result in erosion of cultural resources located along shorelines. It is unknown whether a new lower elevation limit will result in exposure or the potential removal of the historic Wheelon Dam that was inundated by Cutler Reservoir, but if so, deterioration of that structure may be increased. To the extent that river flow fluctuations downstream of the dam or upstream of the reservoir are increased under the proposed operations, erosional effects on cultural resources may increase. Historic resources (e.g., those that comprise the Cutler Hydroelectric Power Plant Historic District (District), Wheelon Dam, or significant irrigation canals) require continued maintenance, repair, upgrading, or removal to meet safety and operational requirements, and those activities may alter important historical characteristics of these resources. Recreational use may have either unintentional (e.g., trampling) or intentional (e.g., looting or vandalism) impacts

on cultural resources. And finally, agricultural activities conducted under PacifiCorp's agricultural leasing program may affect archaeological or historic resources.

Relicensing requirements related to cultural resources are anticipated to be implemented primarily through an Historic Properties Management Plan (HPMP), which will specify management actions designed to resolve all existing and potential Project-related adverse effects on historic properties. Study results will directly inform the HPMP by more completely identifying the cultural resources that will be subject to management actions outlined in the HPMP, and by indicating what management actions will be most useful for avoiding, minimizing, or mitigating effects on cultural resources.

4.2.2 STUDY GOALS AND OBJECTIVES

The goals and objectives of this Study Plan are to more completely identify those cultural resources that are potentially subject to effects from Project operations under the renewed license. Better understanding of the nature of these resources will inform the management actions to be outlined in the HPMP.

Three general categories of studies related to cultural resources are proposed: archaeological, historic architectural, and ethnographic. The information to be obtained from these studies will include that contained in standard cultural resource recording forms (e.g., Utah Archaeology Site Forms [UASFs], an amended National Register Registration Form), consisting of locational and descriptive information about each identified resource and its setting, as well as an evaluation of its National Register of Historic Places (NRHP) eligibility with the applicable NRHP significance criterion/a noted. In addition, further information on the general historic and prehistoric context of cultural resources in the area will be obtained to assist in NRHP eligibility evaluations. Ethnographic information will be obtained by a qualified ethnographer in coordination with participating tribes. This information, as well as resource recording forms, will be included in reports that meet FERC and Utah Division of State History (UDSH, which houses the Utah State Historic Preservation Office [SHPO]) guidelines for archaeological and historic architectural studies.

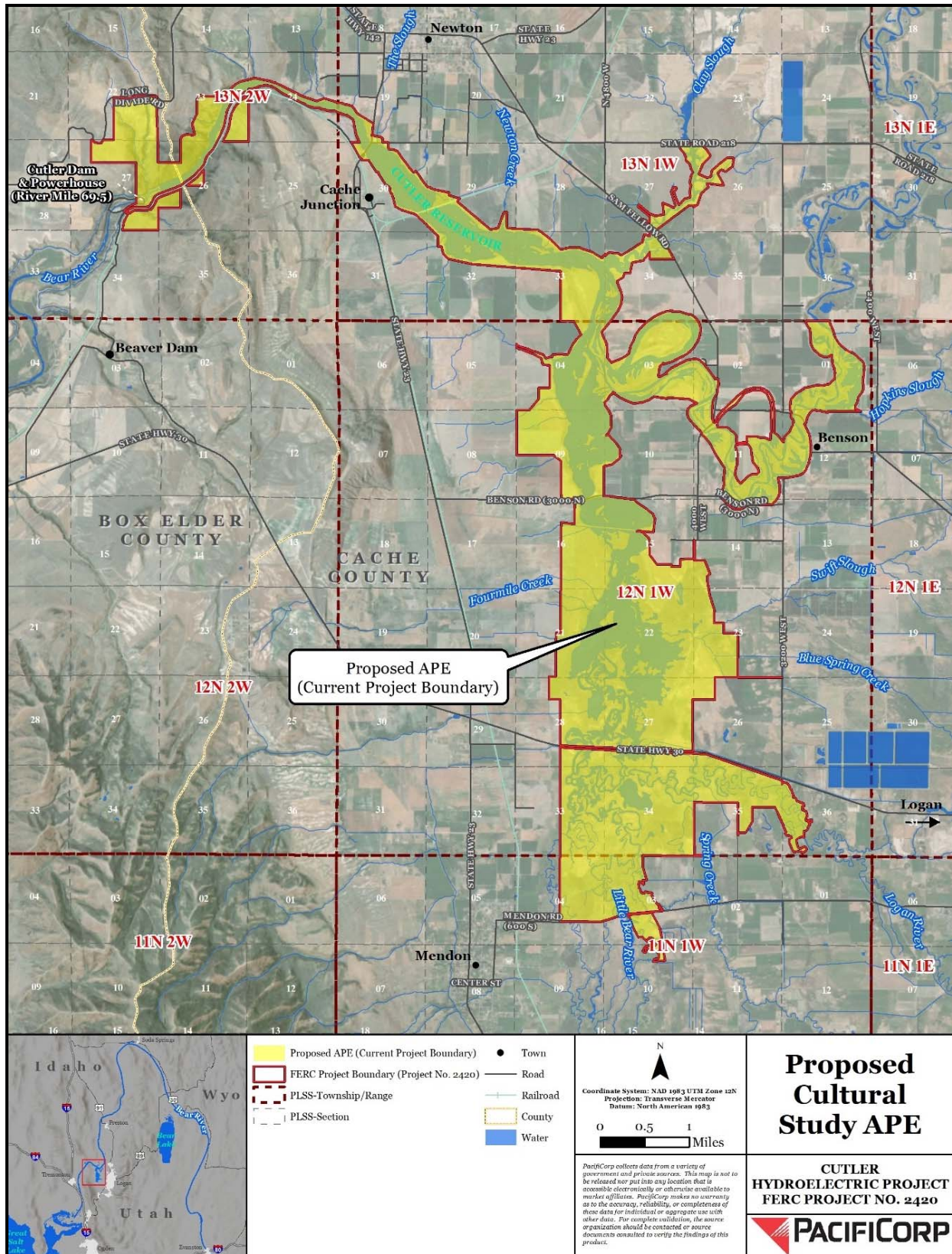
4.2.3 REVIEW OF EXISTING INFORMATION

FERC must comply with Section 106 of the National Historic Preservation Act (Section 106) in reissuing the license. Section 106 and its implementing regulations require the lead federal agency for an undertaking to take into account the effects of that undertaking on historic properties (i.e., properties that are listed on or eligible for the NRHP); to consult with parties such as SHPOs, Indian tribes, local governments, and other parties with a demonstrated interest in the undertaking regarding findings and determinations made during the Section 106 process; and to provide the public with information about the undertaking and its effects on historic properties and seek public comment and input. Pursuant to the Section 106 implementing regulations, PacifiCorp requested permission from FERC to initiate Section 106 consultation for the relicensing. The proposed studies will facilitate FERC's and PacifiCorp's consultation obligations under Section 106 regarding the identification of historic properties and the assessment and resolution of adverse effects, thereby helping meet key management goals for cultural resources.

The overall FERC relicensing process with its scoping component will facilitate public involvement obligations for FERC and PacifiCorp under Section 106.

4.2.4 STUDY AREA

PacifiCorp proposes, per FERC guidance (FERC 2008), that the Project's Area of Potential Effects (APE) for purposes of Section 106 consultation be defined as the Project Boundary, plus any areas upstream or downstream of the Project Boundary that planned hydraulic modeling indicates may be affected by changes in river flow regime (Figure 4-2). In October 2019 the Utah SHPO concurred with this definition of the APE. The proposed APE is shown as the Project Boundary in Figure 4-2; this figure does not include any upstream or downstream areas that may be added to the APE following hydraulic modeling because any such areas are not yet known.



*Pending results of hydraulic modeling.

FIGURE 4-2 PROPOSED CULTURAL AREA OF POTENTIAL EFFECT

PacifiCorp proposes further that the study areas for the proposed archaeological and historic architectural studies consist of those portions of the APE where direct effects on historic properties from proposed Project operations, proposed capital improvements, or other Project-related activity may be anticipated. These proposed study areas are listed in Table 4-2, and a brief rationale for each is provided below. In addition to the studies proposed for these areas, the entire APE will be subject to management actions, such as construction monitoring procedures and discovery protocols, that will be specified in the HPMP.

Proposed Project operations include fluctuating reservoir levels, with a lower low-elevation limit and slightly increased tolerance than under the current license. The proposed study area for potential effects from proposed Project operations is the zone of proposed water-level fluctuation along the shoreline and any such zone along riverbanks downstream and upstream of the reservoir, as well as the Wheelon Dam site, which may be exposed, at least partially, during future low-water periods and may experience increased deterioration as a result. Wheelon Dam may also be altered or removed at some point as a result of future safety and operational requirements.

TABLE 4-2 PROPOSED STUDY AREAS FOR STUDY COMPONENTS

ACTIVITY TYPE	STUDY AREA	STUDY TYPE
Project operations (fluctuating reservoir levels)	Shoreline and riverbanks within zone of water-level fluctuation	Archaeological: intensive-level survey during the fall 2019 drawdown of portions of the water-level fluctuation zone along the reservoir shoreline that are not classified as freshwater emergent wetland in the USFWS NWI; intensive-level survey in first study season of any areas downstream of the dam or upstream of the reservoir that hydraulic modeling indicates may be affected by changes in river flow regime
	Wheelon Dam site	Historic architectural: intensive-level documentation and evaluation of dam during fall 2019 drawdown
Capital improvements	Cutler Hydroelectric Power Plant Historic District	Historic architectural: amendment to National Register Registration Form
Recreation: concentrated use areas	Marinas, boat launches, and hiking trails listed in Cutler Hydroelectric Project PAD Table 6-22	Archaeological: intensive-level survey during fall 2019 drawdown of these plus 100-foot buffer, or 100-foot-wide corridor for trails
Recreation: boating	Shoreline in North Boater Zone A ¹⁶ and Bear River Boater Zone C ¹⁷	Will be covered by intensive-level archaeological shoreline survey described above
Irrigation	Known irrigation pumps/canal intakes and undocumented segments of known canals within Project Boundary	Archaeological: intensive-level survey during fall 2019 drawdown and the first study season of these plus 100-foot buffer, or 100-foot-wide corridor for canals
Agricultural leasing	Agricultural lease areas	Archaeological and historic architectural: reconnaissance-level survey during the first study season

Proposed capital improvements consist of like-for-like replacement of the spillway gates and flowline supports (as needed) and installation of a new retaining wall between the flowline and the river near the base of the dam to protect the flowline from being undermined in high flow

¹⁶ The area north of the Benson Railroad bridge and west of the confluence with the Bear River.

¹⁷ The Bear River area, east of the confluence with Cutler Reservoir (including the “horseshoe area”).

events. These improvements will occur within the District, and the proposed study area for potential effects from these improvements is therefore the District.

Other Project-related activities with potential to affect historic properties are recreation, irrigation, and agricultural leasing.

Land-based recreation occurs in the Project Boundary at locations such as marinas, boat launches, and hiking trails, and has the potential to significantly affect cultural resources in areas where recreational use of land is concentrated. Such areas—specifically, those recreation facilities listed in the Project PAD Table 6-22—plus an appropriate buffer therefore constitute one study area for recreational effects.

Boating is another type of recreational activity within the Project Boundary, and this may affect cultural resources through wave action along the shoreline. This is likely only a potential effect in Cutler Reservoir boating restriction zones A and C because wakeless speeds are required year-round in zone B. The proposed study area for the potential effects of boating is therefore the shoreline within zones A and C, and it is proposed further that this study area be subsumed by the one described above for operational water-level fluctuations.

Irrigation occurs in and around the Project Boundary associated both with PacifiCorp's Agricultural Lease Program and with fulfillment of non-Project related irrigation water rights. Irrigation pumps and other irrigation infrastructure are located at many locations along the reservoir's edge, and many irrigation canals are present in and around the Project Boundary. The proposed study area for potential effects on historic irrigation-related resources is the locations of known such resources plus an appropriate buffer.

Finally, PacifiCorp's Agricultural Lease Program has some potential to affect historic properties, and the proposed study area for such effects consists of leased areas.

4.2.5 METHODS

PacifiCorp proposes to conduct several types of cultural resources studies, each tailored to one or more of the different study areas and types of potential effects as described.

4.2.5.1 ARCHAEOLOGICAL INTENSIVE-LEVEL SURVEY

Archaeological intensive-level survey (ILS) will be conducted for the zone of proposed water-level fluctuation along the shoreline and any such zone that hydraulic modeling may identify along riverbanks downstream and upstream of the reservoir, as well as for the marinas, boat launches, and hiking trails listed in the Project PAD Table 6-22 and for known irrigation pumps or canal intakes and undocumented segments of known canals within the Project Boundary. To maximize accessibility and visibility, an archaeological ILS was conducted during the fall 2019 drawdown for areas that were exposed and reasonably accessible, including portions of the shoreline, recreational areas (marinas, boat launches, and hiking trails), and irrigation infrastructure (pumps, canal intakes, and canals) that are normally inundated by the reservoir. The shoreline, recreational areas, and irrigation infrastructure that were not surveyed during the drawdown will be surveyed during the first study season. Survey of any areas along riverbanks upstream or downstream of the reservoir will also occur during the first study season, following the completion of hydraulic modeling that will delineate any areas subject to effects from changes in river flow regime; the reservoir drawdown is not relevant to survey of such areas that are not along the reservoir.

The ILS survey area for the shoreline will consist of land along the shoreline between the elevations of 4,392.5 feet and 4,410.0 feet, excluding areas classified in the USFWS NWI as freshwater emergent wetland (PAD Figure 6-14). The elevation zone between 4,392.5 feet and 4,410.0 feet equates to the mechanical limits of the reservoir operating range (and is the evaluation range for the future Project operation proposal) and tolerance under the relicense (4,394.5 feet to 4,408.0 feet; PAD Table 5-3) plus a buffer of 2 vertical feet above and below this range. Areas of freshwater emergent wetland will be excluded from survey because they are likely be inaccessible and have limited ground visibility due to dense vegetation cover, even during the reservoir drawdown. It is further noted that the presence of such vegetation within freshwater emergent wetlands may alleviate any impacts to archaeological resources from fluctuating reservoir levels and wave action. GIS tools will be used prior to the survey to define survey area boundaries based on the 4,392.5-foot to 4,410.0-foot elevation zone and NWI freshwater emergent wetland type.

A 100-foot buffer around each recreational area and known piece of irrigation infrastructure will be surveyed, with the exception of hiking trails and irrigation canals, for which a 100-foot-wide corridor centered on the trail or canal will be surveyed. Some known irrigation-related features were identified in the review of existing information conducted for the PAD (PAD Section 6.12.1). Prior to the survey, aerial imagery, historic topographic maps, and other accessible and applicable data sources will be used to identify additional irrigation pumps, canal intakes, or canals within the Project Boundary that require survey (see Land Use Study Section 2.3). Any canal segments that have been adequately documented as archaeological sites within the last 10 years will be excluded from the survey. GIS tools will be used to define survey area boundaries for the recreational areas and irrigation infrastructure prior to the survey.

Hydraulic modeling is planned to be completed in the winter of 2019-2020. It is anticipated that this modeling will determine if there are areas along riverbanks downstream of the dam or upstream of the reservoir that will be subject to measurable and different from the current operations regime water level fluctuations under the proposed operations for the relicensing. If the modeling identifies such areas, those areas will be included in the ILS first study season, during a period of low river flow if possible. In addition, the Project APE will be amended to include these areas if they are outside of the Project Boundary. The Utah SHPO will be consulted on any amendments to the APE. Prior to the survey, GIS tools and hydraulic model results will be used to define any needed survey areas along riverbanks. These areas will consist of the zone of fluctuation in water level, plus a buffer of 2 vertical feet above and below this range.

The ILS will be a pedestrian archaeological survey that will follow methods outlined in UDSH's *Archaeological Compliance Guidance* (State of Utah 2019). The methods will include: using 15-meter survey transect intervals, re-survey of any areas last surveyed 10 or more years ago, use of Bureau of Land Management (BLM) archaeological site and isolated find definitions, and recordation of linear sites following Utah Professional Archaeological Council guidelines. All archaeological sites identified during the survey will be recorded on UASFs; any site that has standing architecture present will also have a UASF prepared for the architectural features. No shovel probing or other forms of subsurface testing will be conducted. All fieldwork and reporting will be supervised by a professional archaeologist who meets the Secretary of the

Interior’s Professional Qualifications Standards for archaeology and holds a valid Public Lands Policy Coordination Office archaeological Principal Investigator permit.

Any areas that are inundated, even during the drawdown, or that cannot be accessed safely will be excluded from the ILS. However, reasonable efforts will be made to conduct reconnaissance survey of any areas that cannot be accessed; for example, shoreline or riverbank sections may be visually inspected from a safe distance upslope or from adjacent agricultural fields using binoculars or a drone. Areas covered by pavement or modern structures, such as marina parking lots or buildings, will be excluded from the ILS.

4.2.5.2 HISTORIC ARCHITECTURAL INTENSIVE-LEVEL SURVEY

An architectural ILS will be conducted for the historic Wheelon Dam, which may experience increased deterioration due to lower water levels under the proposed operations, and which may be altered or removed at some point as a result of future safety and operational requirements. The Wheelon Dam has not previously undergone formal historic architectural documentation. The area that will be subject to this ILS will be the location of the dam as it can be determined from historical sources, such as historical maps and photographs.

The Wheelon Dam historic architectural ILS consists of a field visit and archival research to collect information following methods outlined in UDSH’s *Intensive Level Survey Standard Operating Procedures* for Section 106 undertakings (USHPO 2015a). This includes collecting information necessary for completing a Utah Historic Site Form (UHSF), which includes a location map and sketch map, photographs and drawings of the dam, an architectural description of the dam, the history of the dam’s construction and use, with a summary of historical sources consulted to obtain the construction and use information, and an evaluation of the dam’s eligibility for the NRHP. Preliminary documentation for the Wheelon Dam was conducted during the fall 2019 drawdown, as the dam, which was inundated by the Cutler Reservoir, was exposed during the drawdown. Due to safety and access constraints of documenting the historic dam during the drawdown, a drone was used to capture high-resolution images and video footage not otherwise available. Information and records held by PacifiCorp and any other readily available primary or secondary source documents relating to the history and use of the dam will be consulted to prepare a thorough history and context. Additionally, online sources will be

consulted to locate additional information about the dam that may be available; such sources may include <http://digitalnewspapers.org>, the Library of Congress, and other relevant primary and secondary sources. All fieldwork and reporting will be supervised by a professional architectural historian who meets the Secretary of the Interior's Professional Qualifications Standards for architectural history.

4.2.5.3 HISTORIC ARCHITECTURAL NATIONAL REGISTER REGISTRATION FORM AMENDMENT

Should capital improvements be proposed, an amendment to the District's NRHP nomination form, which dates to 1989, will be prepared. The study area for this component will be the current boundaries of the District. No changes to the District's boundaries are expected to be necessary. This study will occur during the first study season.

The amendment to the District's NRHP nomination form will consist of a field visit and archival research to collect information following the guidelines of the National Register Bulletin *How to Complete the National Register Registration Form* (rev. 1997) (NPS 1997), and the updated photography and mapping policies for the form (NPS 2013). The entire 1989 nomination form, including the Narrative Description and Statement of Significance, will be updated to reflect present-day standards and requirements for NRHP nomination forms. During the field visit, the current condition and integrity of each component of the District will be documented. The District and its components will be photographed to meet current NRHP digital photo policies. Information will be collected to create two maps for submission with the NRHP nomination form: a location map depicting the District within the context of its surrounding area, and a detail map depicting the components of the District. Archival research will involve the collation and synthesis of existing historical information from available sources, such as those described above under the historic architectural ILS study. In addition, an updated NRHP eligibility evaluation will be prepared for the District, and each component of the District will be evaluated to clarify whether it contributes to the District's NRHP eligibility; these evaluations will follow the guidelines of the National Register Bulletin *How to Apply the National Register Criteria for Evaluation* (rev. 1997) (NPS 1990). Evaluations will take into account previous recommendations as well as observations from the field visit. All changes from the previous nomination form will be noted in the new nomination form. All fieldwork and reporting will be

supervised by a professional architectural historian who meets the Secretary of the Interior's Professional Qualifications Standards for architectural history.

4.2.5.4 ARCHAEOLOGICAL AND HISTORIC ARCHITECTURAL RECONNAISSANCE-LEVEL SURVEY

An archaeological and historic architectural reconnaissance-level survey (RLS) will be conducted for agricultural lease areas. These areas have likely been substantially disturbed by past agricultural activities, and the potential for intact cultural resources within them is therefore likely low. The level of effort for study of these areas will be scaled to this potential and will consist of an RLS designed to identify any resources that remain intact, which are likely to be large and easily visible, such as building foundations or standing structures. This study will occur during the first study season.

To conduct this study, professional archaeologists and architectural historians will travel through and around the Project Boundary on roads in vehicles and, if feasible, along the reservoir shoreline in boats, to look for cultural resources within agricultural lease areas. The lease areas and suitable means of access will be identified using GIS tools prior to the survey. Any archaeological resources found will be documented and evaluated for NRHP eligibility in the same manner as resources identified in the archaeological ILS (i.e., a UASF will be prepared). Any historic architectural resources found will be documented and evaluated for NRHP eligibility following methods outlined in UDSH's *Reconnaissance Level Survey Standard Operating Procedures* for Section 106 undertakings (USHPO 2015b). This will include collecting information necessary for completing a Reconnaissance Survey Form and photographic documentation using high-resolution digital photography. NRHP eligibility evaluations for historic architectural resources identified in the RLS will, following UDSH guidance, consist solely of evaluating whether they meet age and integrity requirements; historical research to assess their significance will not be conducted. Measures for further management of any historic architectural resources that are identified as "eligible" in this manner may be specified in the HPMP to be developed for the Project. All fieldwork and reporting will be supervised by a professional archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for archaeology and holds a valid Public Lands Policy Coordination Office archaeological Principal Investigator permit, and by a professional

architectural historian who meets the Secretary of the Interior's Professional Qualifications Standards for architectural history.

4.2.5.5 ETHNOGRAPHIC INVENTORY

Pending tribal participation, an ethnographic inventory will be conducted in coordination with participating tribes to identify historic properties in the proposed APE that have religious and cultural significance to the tribes.

Although there are no tribal lands in or near the Project Boundary, the following tribes are associated with the larger region where the Project is located:

- Northwestern Band of Shoshone Nation
- Shoshone-Bannock Tribes
- Ute Indian Tribe
- Skull Valley Band of Goshute

The tribes listed above will be asked to participate in the ethnographic inventory. If any or all of the tribes agree to participate, a qualified ethnographer will work closely with the participants to identify and appropriately document tribal resources in the proposed APE during the first study season.

4.2.6 SCHEDULE AND PERIODIC REPORTING

Analysis and reporting for the proposed cultural resources studies will follow applicable FERC, UDSH, and National Park Service (NPS) guidelines for archaeological and historic architectural reporting, as outlined in the various guidance documents cited above.

Reporting for the archaeological ILS will follow the requirements of the UDSH *Archaeological Compliance Guidance*. All identified resources will be evaluated for eligibility for the NRHP following UDSH and NPS guidance, and contextual information will be presented as background for such evaluations. UASFs and any UHSFs prepared will be attached to the report. All isolated finds identified during the ILS will be reported in tabular format in an appendix to the report.

Reporting for the Wheelon Dam historic architectural ILS will follow UDSH's *Intensive Level Survey Standard Operating Procedures*. Reporting will include completing a UHSF for the dam,

which will be uploaded to UDSH's online database, and submitting an associated letter report. Photographs of the dam, photocopies of historic photographs and historic drawings or plans (if available), and photocopies of any additional research material will be attached to the UHSF.

Reporting for the District study will consist of submission of an NRHP nomination form amendment, including photographs and maps. Images will be provided in digital format only for submittal to the NRHP, although one printed set may be provided for UDSH's records.

Reporting methods for the archaeological component of the RLS will be the same as those described above for the archaeological ILS. Reporting for the historic architectural component will consist of preparing a report that will follow UDSH's *Reconnaissance Level Survey Standard Operating Procedures* and will include a summary of the relevant aspects of the history of the Project Area and a description of survey results.

Reporting methods for the ethnographic inventory will be approved by participating tribes and all confidential information will remain confidential as requested by the participating tribes.

All reporting will occur after the first study season in 2020. All reports and associated deliverables will be submitted first to PacifiCorp and FERC for review. Following revision based on PacifiCorp's and FERC's input, reports will be submitted to the Utah SHPO and other consulting parties, as appropriate, for review. Final versions will be prepared following receipt of input from SHPO and any other consulting parties. It is anticipated that UDSH will handle submission of the District NRHP nomination form to NPS according to their procedures for NRHP submissions (which include obtaining approval from the Utah Board of State History). To the extent applicable, all deliverables will be submitted in electronic format and suitable for UDSH's e106 process. Any photographic documentation completed as part of any of the proposed studies may be shared with other parties involved in the FERC relicensing process, subject to the approval of PacifiCorp, FERC, and UDSH.

Initial study activities will consist of those that occurred during the reservoir drawdown in the fall of 2019: the archaeological ILS of inundated shoreline, recreational, and irrigation infrastructure areas, and the Wheelon Dam historic architectural ILS field visit. First study season activities will consist of the archaeological ILS of non-inundated shoreline, recreational

areas, irrigation infrastructure, upstream and downstream riverbank areas (if needed), the Wheelon Dam historic architectural ILS archival research, the District NRHP nomination form, and the archaeological and historic architectural RLS of agricultural lease areas. It is not anticipated that cultural resources studies will be required during the second study season.

The Study Plan Master Schedule (Appendix C) provides the outline for study implementation for individual studies for 2019 and 2020. Appendix C includes the estimated start and completion dates for each study, the estimated filing date of the 6-month progress update and for the ISR.

4.2.7 LEVEL OF EFFORT AND COST

The estimated cost of conducting the Cultural Resources Study Plan is within the range of \$110,000 to \$200,000. The proposed study effort is adequate to provide the level of information needed to understand Project direct, indirect, and cumulative effects, and to determine the need for any specific PME actions.

4.2.8 REVISED STUDY PLAN CONSULTATION RECORD

Appendix A and B outline comments received from stakeholders for all study plans, and how comments were addressed in the RSP. If stakeholder comments were not incorporated or studies were not considered, Section 5.0 provides rationale based on additional Project-specific information and FERC's Study Plan Criteria (18 CFR § 5.9).

4.2.9 REFERENCES

Federal Energy Regulatory Commission (FERC). 2008. Preparing Environmental Documents: Guidelines for Applicants, Contractors, and Staff. Federal Energy Regulatory Commission, Office of Energy Projects, Division of Hydropower Licensing. September 2008. Page A-9. Available online.

National Park Service (NPS). 2013.

https://www.nps.gov/nr/publications/bulletins/photopolicy/Photo_Policy_update_2013_05_15.pdf

National Park Service (NPS). 1997. <https://www.nps.gov/nr/publications/bulletins/nrb16a/>

National Park Service (NPS). 1990. <https://www.nps.gov/nr/publications/bulletins/nrb15/>

State of Utah. 2019. https://history.utah.gov/wp-content/uploads/2019/04/ARCH_UTSHPO-Archaeological-Guidance_2019.pdf

- Utah State Historic Preservation Office (USHPO). 2015a. Intensive Level Survey Standard Operating Procedures (For Section 106 Purposes Only). Revised March 2015. Document on file, Utah Division of State History.
- Utah State Historic Preservation Office (USHPO). 2015b. Utah State Historic Preservation Office (2015). Reconnaissance Level Survey Standard Operating Procedures (For Section 106 Purposes Only). Revised March 2015. Document on file, Utah Division of State History.

5.0 REQUESTED STUDIES NOT ADOPTED

Several stakeholders requested studies that PacifiCorp has not adopted as separate stand-alone studies; however, in some cases, PacifiCorp incorporated elements of the request into a specific already-proposed Study Plan. The requested studies not adopted are summarized below, and outlined in depth in the PAD/SD1 Response to Comments Table (Appendix A), PSP Response to Comments Table (Appendix B), and the Consultation Record (Appendix D).

- Expansion of Sedimentation Study: As stated in the PSP filed September 11, 2019, and stated in both meetings with BRCC, PacifiCorp has collected LiDAR data on up to 2 miles of the BRCC canals that originate from Cutler Dam. As previously stated, the LiDAR data will not necessarily provide the quantity of sediment transported into the canals, but a simple load estimate on canal flows and TSS concentrations could be calculated by the BRCC to estimate the annual load of sediment in the canals to assist with its O&M needs.¹⁸ BRCC's December 11, 2019 comments on the PSP retract the previous request to study sediment transport in the BRCC canals. PacifiCorp did adjust sampling efforts during the drawdown to address, in part, BRCC's study request. See PacifiCorp revised response (November 2019) to BRCC Comment 15 in Appendix A, and BRCC Comments 2 and 3 in Appendix B (January 2020).
- Aquatic Weeds and Algae Study Request: PacifiCorp does not propose to study aquatic weeds or algae during the relicensing process, but instead has agreed (as detailed below) to include as part of the Water Quality Study an additional component that addresses BRCC's concern. PacifiCorp believes the requester has not established a Project nexus nor a proposed methodology per the Federal Power Act under 18 CFR §5.9 that would merit PacifiCorp conducting an aquatic or algae study that addresses the transport of weeds in the Project Area or in the BRCC's canals; further PacifiCorp is unaware of any appropriate methodology for such a study. Changing water conditions, especially increased water temperatures, have led to increased aquatic maintenance costs for virtually all canal operators in the region.¹⁹ BRCC's December 11, 2019 comments on the PSP retract the previous request to study aquatic weeds in Cutler Reservoir. PacifiCorp and BRCC have reached agreement to expand, describe, and analyze the relationship between phosphorus and aquatic weed growth as part of the Water Quality Study using existing literature. See PacifiCorp revised responses (November 2019) to BRCC Comments 19 in Appendix A, and BRCC Comment 4 in Appendix B (January 2020).
- Effects of Cutler Reservoir fluctuations on flows and water levels at Bear River Migratory Bird Refuge facilities downstream of Cutler Dam: PacifiCorp maintains the Hydraulic Modeling Study plan scope is an appropriate level of effort given the direct and indirect effects identified in FERC's SD2. PacifiCorp is not proposing to change the overall volume of water flowing downstream. Other large tributaries, multiple

¹⁸ PAD/SD1 Response to Comments Table, Line 15.

¹⁹ PAD/SD1 Response to Comments Table, Line 19.

constriction points, and an unknown number of irrigation withdrawals (potentially a very large number) downstream of Cutler Reservoir could have flow-related impacts on water in the Bird Refuge. However, operation of the Project would not incrementally contribute to these flow-related impacts because there would not be a change in the overall quantity of water flowing downstream as a result of the Project. The Bird Refuge will be addressed as part of the NEPA cumulative effects analysis to the extent that the Bird Refuge is within the geographic scope of effects from operation of the Project. PacifiCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.²⁰ On August 22, 2019, the USFWS and PacifiCorp staff held a conference call to discuss the USFWS Scoping comment letter on the Cutler Hydroelectric Relicensing project. Subsequently, PacifiCorp staff met with USFWS Bear River Bird Refuge (BRBR) personnel on October 7, 2019 to better understand the agency's concerns regarding general Cutler operations, as well as to discuss current and potential future operational scenarios. In that meeting, PacifiCorp explained that the purpose of the drawdown was to conduct preliminary required relicensing studies and clarified it was not a proposal for future operations. The SD2 table labeling the analysis range as the proposed operations range was clarified and addressed in additional detail. PacifiCorp's hydrologist gave a presentation with additional detail regarding current Cutler operations, as several USFWS staff are relatively new to BRBR. Potential future changes in operations can be simulated using the hydraulic model that will be developed as part of the Hydraulic Modeling Study. The discharge from Cutler Dam as a result of these potential future operations can be extracted and quantified for evaluation to the downstream terminus of the hydraulic model boundary (Section 3.3.4 in the RSP detailing the hydraulic model study area). Effects further downstream can then be extrapolated as needed. Potential changes from current operations in discharge from Cutler Dam including frequency of discharge fluctuations associated with shifts in Project operations will be documented in the hydraulic model outputs (Section 3.3.5.4 in the RSP).

- Study to determine how greater reservoir fluctuations and/or the removal of Wheelon Dam could lead to changes in sediment and nutrient transport: PacifiCorp's 2D hydraulic model will be capable of analyzing a range of operations scenarios and associated effects on sediment transport. Data collection for the model will include soil classification as well as phosphorous and other potential pollutant data. The model runs will explore transport through the dam and management decisions to control sediment. These issues will also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the potential future operations.²¹ Although not included as a stand-alone study, the intent of this requested study will be met in the aggregate with the Hydraulic Modeling and Sediment study plans.
- Effects on water quality from fluctuating reservoir levels and Wheelon Dam removal: This specific study request is included as part of PacifiCorp's Water Quality Study which proposes to monitor TP, dissolved phosphorus, orthophosphate, and DO during the drawdown to evaluate the potential for mobilization of nutrients. That data will be used to predict the effect of proposed operations on potentially mobilizing nutrients and levels of

²⁰ PAD/SD1 Response to Comments Table, Line 21.

²¹ PAD/SD1 Response to Comments Table, Line 22.

DO in the reservoir and downstream of the dam; heavy metals and other contaminants will be assessed as part of the Sedimentation Study. These issues will also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.²²

- Fish Entrainment Study: PacifiCorp and the USFWS consulted on two occasions (August 22 and October 1, 2019) to better understand the USFWS's concerns and to address the concern about fish entrainment. The October meeting also included representatives from the Utah Division of Wildlife Resources (UWDR). Following additional discussions and clarifications regarding the current fishery, habitat, and Bear River instream flow conditions below Cutler Dam, PacifiCorp and the USFWS agreed that the issues cited in the USFWS July 2019 comment regarding fish passage and fish screens are not issues requiring an additional study as part of the Cutler Relicensing process. USFWS would like PacifiCorp to include a summary in the Aquatic Resources Technical Report of sampling efforts for bluehead sucker and other native species in the lower Bear River since 1994. For further information see the response to USFWS Comment 21 in Appendix A.
- Study to consider how reductions in the Bear River flows as a function of climate change and warmer air temperatures would impact hydropower generation: PacifiCorp is not proposing to incorporate various climate scenarios in the resource studies. As the commenter notes, there are numerous climate scenarios available to select but none of the climate change models are known to have the accuracy needed to predict the degree of specific resource impacts or serve as the basis for informing license conditions (FERC February 23, 2009 Study Plan Determination for the Yuba-Bear, Drum-Spaulding, and Rollins Projects). Climate change will be addressed as part of FERC's Cumulative Effects analysis. For further information see the response to National Audubon Society Comment 7 in Appendix B.
- Study of methane emission from Cutler and make it clear that the Project is not considered an "emission free" power source: PacifiCorp will review existing information concerning methane emissions from western reservoirs as part of the analysis process, however, PacifiCorp does not intend on drafting a stand-alone study to address potential methane emissions. Neither a Project nexus nor proven methodology consistent with generally accepted practice in the scientific community per the Federal Power Act under 18 CFR §5.9 has not been identified by the commenter.²³
- Analysis of the socioeconomic impacts of the Project: PacifiCorp is not proposing to conduct a Socioeconomic Study as part of this relicensing, as any proposed Project operational changes would not change the socioeconomic framework from the current analysis provided in the PAD. The study elements being requested are part of FERC's Developmental Analysis, and would not normally be a part of a Socioeconomic Study.²⁴

²² PAD/SD1 Response to Comments Table, Line 24.

²³ PAD/SD1 Response to Comments Table, Line 28.

²⁴ PAD/SD1 Response to Comments Table, Line 29.

- Model the Bear River system to include Bear Lake and the hydro plants downstream: PacifiCorp is not proposing to change the withdrawals from Bear Lake nor the operations from projects upstream of Cutler Reservoir. Additionally, PacifiCorp maintains the upstream projects are not hydraulically connected or dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. PacifiCorp responded to this December 2019 comment in Appendix A, Comment 35. As noted in that response, PacifiCorp does not intend to include the upriver Bear River Bottoms (BRB) lands in the Cutler study plan area for analysis of direct effects. As discussed at the October 8, 2019 Study Plan Meeting, FERC stated that no mechanism has been identified linking effects at Cutler Reservoir with effects upstream in these specified riparian lands. Subsequently, on October 29, 2019, PacifiCorp held a collaborative meeting with BAS to discuss study requests and comments. PacifiCorp affirmed their original response that operation of Cutler Reservoir does not impact the 1,900 acres of PacifiCorp-owned riparian lands upstream of the Cutler Hydroelectric Project. As noted in 18 CFR 5.9(b)(5), PacifiCorp believes there is a lack of nexus to project operations, and therefore, does not plan to include these lands in the proposed studies. A Public Interest Consideration per the Federal Power Act under 18 CFR §5.9 is needed to for PacifiCorp to consider merits of this study.²⁵
- Temporal and Spatial Characteristics of the Avian Community: PacifiCorp is not proposing a Temporal and Spatial Characteristics Study of the Avian Community as part of this relicensing, however, PacifiCorp did agree to host further discussions with the Bridgerland Audubon Society and the National Audubon Society with regard to updates to the Shoreline Characterization Study and potentially the Land Use Study.²⁶ As a result of comments from the Bridgerland Audubon Society as well as the National Audubon Society, PacifiCorp has agreed to amend the Shoreline Habitat Characterization Study (SHCS) in Section 2.2 of this RSP to include a second study phase, that, if necessary, would include surveys of bird use in the Project Boundary during the breeding and non-breeding season. The adjustments in the study plan are reflected in Section 2.2 of this RSP. Beyond substantially changing habitat relationships, climate change may also substantially alter species distributions. No analysis we conduct today can avoid this issue, and a habitat-based approach does not seem any more vulnerable to climate change related drawbacks than any other approach. As part of the accuracy assessment, a substantial amount of anecdotal weed data will be collected. It is PacifiCorp's opinion that this new data, in conjunction with existing data, will be adequate for the analysis of future changes in weed distribution as they pertain to operational changes at Cutler. The SHCS will incorporate eBird and Breeding Bird Survey (BBS) data since both of these datasets, while they do not fully capture the information that is needed, will provide useful information. Additionally, Section 2.2.4 has been amended to include the areas surrounding the OHWL. As a result of these revisions to the SHCS, this study request has been resolved. For further information see the response to Bridgerland Audubon Society Comment 3, and National Audubon Society Comment 2 in Appendix B.

²⁵ PAD/SD1 Response to Comments Table, Line 34.

²⁶ PAD/SD1 Response to Comments Table, Line 36.

- Study of cross-sectional diurnal dissolved oxygen: PacifiCorp is conducting a Water Quality Study whose analysis will use existing DO monitoring data collected during 2008 and 2009. These measurements were collected at 15-minutes frequencies for a 7-day periods during most months. This data set will be used to characterize anoxic conditions and seasonal patterns at each monitoring site.²⁷ As noted in Logan City Comment (Appendix A, Comment 2), PacifiCorp will file a progress update with FERC in 2020 and the ISR in early 2021 which will summarize water quality conditions in Cutler Reservoir, identify water quality data gaps and recommendations for a Phase 2 of this study, as needed in 2022. As provided for in the ILP regulations (18 Code 18 CFR § 5.15), Logan City and other stakeholders will have an opportunity to review and comment on both reports as well as provide comments on the need for a second field season.
- Study the potential for dredging to improve fish and wildlife habitat and control *Phragmites*: PacifiCorp is not proposing to include the reach down to the Great Salt Lake as part of its Hydraulic Study as part of this relicensing. A Project nexus nor a Public Interest Consideration per the Federal Power Act under 18 CFR § 5.9 has been established that would help PacifiCorp consider if the study is merited.²⁸ PacifiCorp agrees that the effects of dredging could be informed through various aspects of the Hydraulic Modeling, Sedimentation, and Water Quality Study Plans. However, dredging is a future management action that could be considered as a potential PME measure in the new Cutler FERC license. Dredging is not necessarily a study plan request or comment but could be identified as a PME measure following the completion of the studies proposed in this RSP that are designed to collect information on water quality, fisheries and other aquatic resources. This information, combined with the LIDAR and bathymetry data, would be analyzed upon completion of the field work. Suggestions for future management actions would be one of the outcomes in the data analysis. The potential benefits and impacts of dredging would be considered in the alternatives analysis as part of the NEPA environmental analysis. For further information, review UDWQ Comment 43 in Appendix A.
- Study looking at erosion below the Cutler Dam as a result of water level fluctuations and subsequently wintertime ice fluctuations: In response to this UDWQ/UDAF comment, PacifiCorp has modified the Land Use Study to include monitoring of bank erosion at downstream locations during the winter period. The study plan has been modified in section 2.3.5.3 to include monitoring the Bear River below Cutler Dam at 5-6 representative locations to identify potential impacts from fluctuating water levels. Monitoring will take place below Cutler Dam in the area of flow attenuation as defined by the hydraulic model.²⁹ For further information please review UDAF Comment 41 in Appendix A.
- Study of the effects associated with winter ramping and the effects on bank erosion and water quality: In response to this UDWQ/UDAF comment, PacifiCorp has modified the Land Use Study to include monitoring of bank erosion at downstream locations during

²⁷ PAD/SD1 Response to Comments Table, Line 37.

²⁸ PAD/SD1 Response to Comments Table, Line 38.

²⁹ PAD/SD1 Response to Comments Table, Line 41.

the winter period. The study plan has been modified in section 2.3.5.3 to include monitoring the Bear River below Cutler Dam at 5-6 representative locations to identify potential impacts from fluctuating water levels. Monitoring will take place below Cutler Dam in the area of flow attenuation as defined by the hydraulic model.³⁰ For further information please review UDWQ Comment 45 in Appendix A.³¹

³⁰ PAD/SD1 Response to Comments Table, Line 41.

³¹ PAD/SD1 Response to Comments Table, Line 45.

APPENDIX A

PAD/SD1 RESPONSE TO COMMENTS TABLE

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
1.	City of Logan	Increase water quality monitoring frequency to better understand water quality, independent of hydrologic variation. This should be completed annually and reported with all inflows from gauging stations occurring at the same time. mg/L is not adequate to truly understand the issues. Using the proposed reservoir volume mapping at various water levels and inflows, a representative mass balance can be prepared to quantify the individual impacts.	PacificCorp believes this comment to be a request for a future PME measure, which will be established after the impacts analysis is completed. PacificCorp intends to complete a Water Quality Study during the upcoming study season that will compile previously collected data and reports and combine it with hydrologic data collected as part of this relicensing effort.	<p><u>PacificCorp understands this comment to be focused on future project mitigation measures, rather than a study plan request.</u></p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with Logan City to discuss study requests and comments. As discussed at the meeting, this comment was intended to focus on potential PME measures for the new FERC license rather than a comment on the PSP filed September 11, 2019. Accordingly, comments on future PME measures are premature at this time. Logan City will have multiple opportunities during the FERC relicensing process to provide recommendations on future license requirements.</p> <p>The need for increased frequency of water quality monitoring in a new FERC license will be determined by FERC as part of their independent environmental analysis. The existing information on water quality, in combination with data collected through the proposed field studies, will help inform FERC on the need for this type of PME measure in the next license.</p> <p>As part of the relicensing process, PacificCorp is proposing to complete a Water Quality Study during the upcoming study season that will compile previously collected data and reports and combine it with hydrology information.</p> <p>PacificCorp intends to build both 1D and 2D hydraulic models as a result of the Hydraulic Modeling Study as described in the PSP filed September 11, 2019. The models will provide detailed water surface elevations and flow pattern results at any number of reservoir operation levels.</p>	Resolved
2.	City of Logan	PacificCorp, FERC, and the UDWQ need to publish water quality monitoring reports and data from their studies from 2014 to present, early in the process rather than as a result of the process. PacificCorp recognizes that the 2013 phosphorous data was erroneous. As a result, the ongoing monitoring has not been published since 2008. This must be published for review as soon as possible to ensure that good science is used in the review.	Comment noted. The assertion regarding monitoring result publication is incorrect. PacificCorp published water quality monitoring data from 2013 in the Cutler RMP Five-Year Monitoring Report filed in March 2018; the 2008 water quality data was published in the previous monitoring report in 2013. The RMP reports are based on 5-year monitoring periods, therefore, the next report that contains data from 2013 to 2018 will be published in 2020, rather than 2023 as scheduled, due to the relicensing timeline and proposed data synthesis. All previous Cutler RMP Five-Year Monitoring reports are available for review on the PacificCorp website.	<p><u>PacificCorp will amend the WQ Study Plan to include a phased approach, and include 2018 data in the 2020 Interim Report.</u></p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with Logan City to discuss study requests and comments. PacificCorp elaborated on the available data and current monitoring schedule at the Cutler Project. The available data and timing of publication is described in the September 11, 2019 response to Logan City. UDWQ in a separate stakeholder meeting with PacificCorp confirmed that their data is available to the public including Logan City.</p> <p>An outcome of recent discussions with Logan City was an amended Water Quality Study Plan as proposed by FERC and agreed by participants at the Logan City study plan meeting. Per this verbal agreement, PacificCorp will amend the Water Quality Study Plan adding a two-phased study plan approach.</p> <p>Phase 1 would be a synthesis of existing water quality data for Cutler reservoir. Data sources would include PacificCorp, UDWQ, Utah State University, the Middle Bear and Cutler Reservoir TMDL study, and other sources where available. PacificCorp would request Logan City provide their TMDL monitoring data to be included in the synthesis report.</p> <p>PacificCorp will file an ISR with FERC in 2020 and the Initial Study Report in early 2021 which will summarize water quality conditions in Cutler Reservoir, identify water quality data gaps and recommendations for the Phase 2 study in 2022. As provided for in the ILP regulations (18 Code of Federal Regulation [CFR] § 5.15), Logan City and other stakeholders will have an opportunity to review and comment on the water quality interim report as well as provide comments on the need for a second field season.</p>	Resolved

No	COMMENTER/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
3.	City of Logan	Map areas that became stagnant due to sedimentation or other types of isolation within the reservoir which have higher temperatures and hold the water for long periods of time, thus it becomes toxic. These areas will mobilize stored TP from the sediments as the oxidation states of iron change.	PacifiCorp intends to complete pre- and post-drawdown LiDAR and bathymetry surveys in late 2019 that will inform areas that will potentially "pond" under a range of proposed elevation changes. A range of conditions may occur as a result of the proposed elevation changes including, but not limited to, pH, DO, and temperature changes, along with other chemical processes. PacifiCorp intends to conduct analyses on phosphorus in the bed sediments as well as other ions that may absorb or bind with cation exchange (these may include CaCo3, Al, and Fe).	<p><u>PacifiCorp clarified that detailed mapping of all reservoir areas and elevations is included in the Proposed Study Plan (PSP).</u></p> <p>On October 29, 2019, PacifiCorp held a collaborative meeting with Logan City to discuss study requests and comments. As presented to meeting participants, the LiDAR mapping of Cutler Reservoir in combination with the reservoir bathymetry work will provide detailed bed elevations to delineate areas in the reservoir that have the potential to become isolated. This analysis of the reservoir will be provided in reports in planar and profile illustrations correlated with reservoir elevations. As part of the fall 2019 drawdown, PacifiCorp surveyed areas that could become isolated in Cutler Reservoir. Such pools have been georeferenced and will be incorporated into the geographic information survey (GIS) mapping of Cutler Reservoir. The hydraulic modeling of the reservoir in combination with field observations georeferenced during the fall 2019 drawdown, will reveal areas of the reservoir that potentially have low velocities and may be more isolated from the general recycling of the reservoir volume.</p> <p>The Water Quality Study Plan as filed September 11, 2019 and the proposed amendment as described previously in this comment table, will include an analysis of nutrients in Cutler Reservoir including phosphorus in its various forms.</p>	Resolved
4.	City of Logan	Evaluate the impacts of common carp on the water quality of the Bear River Cutler Reservoir. Studies in Utah Lake should be used to establish a correlation or comparison since both are shallow eutrophic reservoirs. The reservoir and the Bear River are impacted by the feeding habits of the large population of carp. This is reflected when the carp change their feeding habits during the winter months.	PacifiCorp intends to conduct a Water Quality Study that will summarize the results of studies regarding this issue from the Bear River Refuge and other systems similar to the Cutler Reservoir. The Project nexus per the Federal Power Act under 18 CFR §5.9 for this study request is not clear.	<p><u>PacifiCorp clarified that a review of the effects of carp in similar reservoir ecosystems is included in the WQ Study Plan.</u></p> <p>On October 29, 2019, PacifiCorp held a collaborative meeting with Logan City to discuss study requests and comments. An outcome of our discussions was an amended Water Quality Study Plan as proposed by FERC and agreed to by participants at the meeting. The amended water quality study plan (described previously in the revised comment response table) will include a summary of studies regarding carp as described in the Water Quality Study Plan as filed September 11, 2019.</p> <p>Carp are listed as a non-game fish by UDWR but are still managed by the state. This fish species is prolific and found throughout the entire Bear River drainage from near its headwaters to the Great Salt Lake. Based on recent conversations with UDWR, it is unclear that carp can be linked directly as a causal agent to water quality degradation within Cutler Reservoir because removal of carp would not be expected to improve water quality in Cutler Reservoir.</p> <p>The Bear River is subject to anthropogenic impacts such as municipal effluent, irrigation diversion and return flows, seepage of agricultural waste, and industrial discharge all of which impact reservoir water quality.</p>	Resolved
5.	City of Logan	Evaluate the sediment profiles throughout the reservoir to ensure that any sediment movement or removal will not mobilize other contaminants.	Comment noted. PacifiCorp intends to collect samples to be analyzed for specific constituents. These will include metals (RCRA), pesticides, PCBs, AL, FE, P, and CaCo3.	<p><u>PacifiCorp clarified that sediment mapping and coring, and assessment of Resource Conservation and Recovery Act (RCRA) and other contaminants is included within the Water Quality and Sediment Study Plan.</u></p> <p>PacifiCorp is collecting sediment core samples as described in the Water Quality Study Plan as filed September 11, 2019. Randomly selected sediment cores will be sampled and analyzed for specific constituents that may have been deposited over decades in the reservoir. These will include the eight metals listed in the RCRA, pesticides, and, polychlorinated biphenyls (PCBs).</p>	Resolved

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
6.	City of Logan	Develop a 2D water reservoir model based on the LiDAR mapping data being collected. This will help to better evaluate the impacts of a broader range of reservoir operations that are beyond the ability to physically measure given the limited time to complete the study. This will also allow the evaluation of the impacts from an area where measurements will not be easily gathered.	Comment noted. As stated in the PAD and the scoping meetings, a 2D model is proposed. PacificCorp intends to build a Hydraulic Model as a result of the Hydraulic Modeling Study plan. The 2D model will provide a detailed inundation boundary and flow pattern results.	<p><u>PacificCorp clarified that the Hydraulic Study Plan includes both 1D and 2D reservoir modeling.</u></p> <p>PacificCorp intends to build both 1D and 2D hydraulic models as a result of the Hydraulic Modeling Study as described in the PSP filed September 11, 2019. To accomplish the goals and objectives of this study, PacificCorp will collect new data and analyze existing data sets to compile structural, spatial, terrain, and hydrologic data for the Project. Once compiled the data will be used as inputs and calibration for a U.S. Army Corps of Engineers (USACE) HEC-RAS hydraulic model. The calibrated model will provide an understanding of the existing hydraulic conditions in Cutler Reservoir. The hydraulic model will be used to predict hydraulic conditions, sediment transport capacity, and water surface elevations for a range of Project operations. Specifically, the models will provide detailed water surface elevations and flow pattern results at any number of reservoir operation levels. The hydraulic models will also provide analysis for other studies being conducted as part of the relicensing.</p>	Resolved
7.	City of Logan	It is not adequate for PacificCorp to evaluate the impacts of varying operations by simply measuring discrete points of drawdown under controlled inflow conditions. PacificCorp should be required to create the 2D model to allow the evaluation of the boundary conditions to determine overall impacts.	Comment noted. PacificCorp intends on building a Hydraulic Model as a result of the Hydraulic Modeling Study plan. The 2D model will provide a detailed inundation boundary and flow pattern results that will help evaluate boundary conditions and determine overall impacts.	<p><u>PacificCorp clarified that the Hydraulic Study Plan includes both 1D and 2D reservoir modeling.</u></p> <p>PacificCorp agrees a 2D model will be helpful to evaluate a range of operations including current and future reservoir conditions. The Hydraulic Modeling Study Plan filed September 11, 2019 included 1D and 2D hydraulic models. The Hydraulic Modeling Study is described earlier in this revised comment response table. Please refer to that earlier description of the Hydraulic Modeling Study.</p>	Resolved
8.	City of Logan	Use the 2D model to evaluate mitigation options to evaluate drawdown impacts, the potential benefits of limited and large portion dredging, the breaching of the Wheelon Dam, and other proposed options. Breaching Wheelon Dam before verifying that the sediments in the reservoir are not contaminated could be devastating to Cutler Reservoir and the downstream Bear River.	Comment noted. PacificCorp intends on building a Hydraulic Model as a result of the Hydraulic Modeling Study plan. The 2D model will allow PacificCorp to evaluate future PME measures.	<p><u>PacificCorp clarified that the Hydraulic Study Plan includes both 1D and 2D reservoir modeling; the models will be used to evaluate several issues, including future mitigation options.</u></p> <p>PacificCorp agrees a 2D model will be helpful to evaluate any number of mitigation alternatives. The hydraulic model, in combination with analysis of sediment core constituents, will help predict potential mobilization of contaminants from reservoir sediments at respective reservoir elevations. The Hydraulic Modeling Study Plan filed September 11, 2019 included a 1D and 2D hydraulic model. The Hydraulic Modeling Study is described earlier in this revised comment response table. Please refer to that earlier description of the Hydraulic Modeling Study.</p>	Resolved

No	COMMENTER/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
9.	City of Logan	The soils around Cutler Reservoir are highly erosive. Rapid lowering of the water surface, particularly in a repeated nature will create unbalance hydrostatic forces. This will likely cause increased sloughing of the banks. This is a water quality, wetland, and habitat concern that must be addressed. The soils around the reservoir are highly erosive as demonstrated by the concerns in the RMP and the extensive erosion control efforts employed by PacificCorp as part of the existing license. Any proposed modifications must be evaluated for impacts and mitigation efforts employed to protect the banks and the wetlands from erosion as well as to prevent erosion from further harming water quality in the reservoir and downstream. The rapid fluctuations would create unbalanced hydrostatic pressures in the soils and can cause bank failures and sloughing. This would impact water quality, the ecology of the banks, including wetlands and surrounding property owners.	Comment noted. PacificCorp's proposed 2D model will quantify the volume of sediment activated by the reservoir based on the changes in hydraulics caused by the drawdown. However, the hydraulic model will not model/predict bank sloughing quantities and locations. PacificCorp does plan on collecting data before, during and after the drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. The City of Logan is welcome to provide PacificCorp any locations of particular concern with regard to bank erosion or sloughing taking place. These locations will be taken into consideration when choosing final observation sites (see also Land Use Study Plan, section 2.3).	<p><u>PacificCorp clarified that the Land Use and Shoreline Habitat Characterization Study Plans include assessments of bank stability under potential future operating conditions; these assessments can be used to evaluate a number of issues, including future mitigation options.</u></p> <p>The Land Use and Shoreline Habitat Characterization studies will evaluate potential effects on bank erosion at a range of reservoir elevations. Furthermore, Table 2 in FERC’s Scoping Document 2 (SD2) incorrectly labeled the drawdown evaluation as a proposed operations plan for the future license. PacificCorp submitted a clarification letter to FERC regarding Table 2 on October 4, 2019. Future operations of Cutler Reservoir will be evaluated as part of the licensing studies. Wide fluctuations in reservoir pool elevations are not anticipated.</p> <p>PacificCorp's proposed Hydraulic Modeling Study, filed September 11, 2019 and described previously in this comment table, will quantify the range of hydraulic conditions caused by potential changes in water surface elevations associated with reservoir operations.</p> <p>The Land Use Study filed September 11, 2019 included a section specifically designed to investigate bank conditions before, during, and after the 2019 drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. If the City of Logan has any specific locations of particular concern with regard to bank erosion or sloughing taking place, please share those with PacificCorp.</p>	Resolved
10.	City of Logan	Organize a technical advisory committee to help provide technical oversight of the studies on the proposed operations.	PacificCorp is conducting the Cutler relicensing using FERC's ILP. The FERC ILP process provides for regular stakeholder and technical review of Study Plans, including the proposed implementation, data analysis, and reporting through prescribed steps as outlined in the Federal Power Act under 18 CFR § 5.15. There are provisions and steps outlined in this process to adjust studies as necessary based on review of preliminary data. In addition, PacificCorp intends to continue on-going PacificCorp-sponsored collaboration efforts, which will include workshops to address technical issues on an as-needed basis.	<p><u>PacificCorp disagrees that a TAC is necessary, given the parallel collaborative process being undertaken as part of the FERC relicensing process. PacificCorp continues to welcome Logan City and other stakeholders’ participation in the Cutler Relicensing Process.</u></p> <p>PacificCorp is conducting the Cutler relicensing using FERC's ILP. The FERC ILP process provides for regular stakeholder and technical review of Study Plans, including the proposed implementation, data analysis, and reporting through prescribed steps as outlined in the Federal Power Act under 18 CFR § 5.15. There are provisions and steps outlined in this process to adjust studies as necessary based on review of preliminary data. In addition, PacificCorp intends to continue on-going PacificCorp-sponsored collaboration efforts, which will include workshops to address technical issues on an as- needed basis.</p> <p>PacificCorp welcomes Logan City’s participation in the FERC licensing process and PacificCorp’s ongoing collaborative efforts and parallel process to the FERC ILP.</p>	Logan City is encouraged to continue to participate in PacificCorp’s collaborative relicensing process.
11.	City of Logan	Consider the effects on the bank stabilization efforts implemented with nearly stable WSEL restrictions that would potentially no longer be effective.	Comment noted. PacificCorp's intends to conduct a Land Use Study that will address existing concerns with regard to shoreline erosions and impacts of the proposed elevation changes in reservoir operations on the efficacy of past bank stabilization efforts at Cutler Reservoir.	<p><u>PacificCorp clarified that the Land Use and Shoreline Habitat Characterization Study Plans include assessments of bank stability under potential future operating conditions; these assessments can be used to evaluate a number of issues, including future mitigation options.</u></p> <p>The Land Use Study filed September 11, 2019 includes methods to document bank conditions before, during and after the 2019 reservoir drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. The field effort will help document areas of potential shoreline erosion and impacts of the proposed elevation changes in reservoir operations on the efficacy of past bank stabilization efforts at Cutler Reservoir. Bank stabilization efforts already implemented were designed to be effective at a range of WSELs.</p>	Resolved

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
12.	City of Logan	The data presented in the TMDL included oxygen, TP, TSS, ammonia, turbidity, a biologic and fisheries study, and water temperature. All of these will be affected, either positively or negatively, by level fluctuation. These modifications require extensive evaluation in order to protect the ecologic value of the reservoir, water quality both in the reservoir and downstream, and the surrounding properties.	Comment noted. PacificCorp intends to conduct a Water Quality Study, Fish and Aquatic Resources Study, and Hydraulic Modeling Study that will provide the effects of proposed reservoir elevation changes on the prominent environmental issues that exist in the reservoir.	<p><u>PacificCorp clarified that the Water Quality, Fish and Aquatic Resources, and Hydraulic Modeling Study Plans include assessments of water quality parameters and aquatic biota under potential future operating conditions; these assessments can be used to evaluate a number of issues, including future mitigation options.</u></p> <p>PacificCorp filed the PSP on September 11, 2019 to investigate water quality, fish and aquatic resources, and hydraulic modeling. These studies will investigate the effects of proposed reservoir elevation changes on the prominent environmental issues that exist in the reservoir.</p> <p>PacificCorp will also amend the Water Quality Study Plan to add a two-phased study plan approach as described previously in this table of revised responses to comments.</p>	Resolved
13.	City of Logan	Evaluate the water quality impacts on the reservoir associated with upstream BMPs. These will include the construction of the Logan WWTF, JB Swift Wastewater Treatment Plant, Hyrum Wastewater Treatment Plant, water quality projects on the Logan River and the Little Bear River, efforts to eliminate feed lot discharges, conversion of flood irrigation to sprinkler irrigation from the Idaho border all the way to Cutler Reservoir, and the implementation of extensive storm water management programs by each of the cities, as well as Cache County, upstream of Cutler Reservoir, on all of the tributaries. The water quality of the reservoir is affected by all of the region. Address how those efforts have modified the water quality and how any operation modifications will either support or negate those benefits. Any modifications to the reservoir operations, particularly increase in WSELs may jeopardize the discharge, and possibly the operations of the new Logan city WWTF. This \$160 million-dollar regional facility must be protected.	Comment noted. PacificCorp believes this comment is consistent with the cumulative effects analysis that FERC has specified in SD1. PacificCorp's Water Quality Study will inform this analysis.	<p><u>PacificCorp agrees that the cumulative effects analysis of water quality should include existing and proposed upstream BMPs, considering potential future operating conditions.</u></p> <p>PacificCorp is not requesting to raise the maximum water surface elevation of Cutler Reservoir in the new license application.</p> <p>As part of the environmental analysis, FERC will evaluate cumulative effects including actions in the Bear River system potentially affecting water quality. The actions to improve water quality listed in Logan City's letter will be identified in the cumulative effects' analysis during the National Environmental Protection Act process. The Water Quality Study will identify sources of water quality impairment and analyze the interaction of potential future reservoir operations with water quality conditions in the reservoir and downstream. The proposed Water Quality Study will help inform FERC's cumulative effects analysis.</p>	Resolved

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
14.	BRCC	<p>The expansion of the LiDAR study could establish the elevations of the channel in relation to the gates and other fixed items in the system. Through modeling, a third party can:</p> <ol style="list-style-type: none">1) model the performance of their current gate system in a variable operation system to ensure that steady delivery will occur2) determine locations appropriate for weirs3) model the quality of delivery of a weir based on the integrated system4) compare the two resulting qualities of delivery. <p>BRCC requests this variable operation modeling occur and be taken into account by FERC when deciding whether to grant PacificCorp a more flexible operation elevation.</p>	<p>PacificCorp has agreed to collect LiDAR data and provide the data on up to 2 miles of BRCC canals as requested by BRCC, however, a clear Project nexus between the proposed Project operations and Project maintenance of the canals has not been established. PacificCorp believes that the reservoir and dam may be reducing the sediment in the canals since the dam acts as a trap to avoid sediment entering the canals. In the spirit of collaboration, LiDAR data should help confirm quantities of water deliveries under the proposed operations.</p>	<p><u>PacificCorp does not agree to conduct modeling exercises within irrigation canals as specified to inform items 1 through 4.</u></p> <p>As stated in the previous comment, PacificCorp hosted collaborative meetings with BRCC on October 28 and November 14, 2019 to discuss study requests and comments. As stated in the PSP and at both meetings with BRCC, PacificCorp has agreed to collect LiDAR data and provide the data to BRCC on up to 2 miles of BRCC irrigation canals.</p> <p>Responses to BRCC comments 1 through 4 are as follows:</p> <ol style="list-style-type: none">1. PacificCorp will prioritize and continue to honor all water delivery contracts. As a result, PacificCorp does not see the need to conduct a modeling exercise within irrigation canals to demonstrate that the company will continue to meet these contract obligations. Further, as discussed at the November 14, 2019 meeting, PacificCorp presented a cross-section of Cutler Dam demonstrating that the proposed fluctuations in operations will not affect water delivery to BRCC canals.2 - 4. LiDAR data collected in November 2019 should help BRCC identify future weir locations and confirm quantities of water deliveries within irrigation canals. <p>The need for new devices to measure water delivery within irrigation canals falls under water delivery contracts and is outside the FERC relicensing process. Given the outcome of the J-U-B Engineers data review (see Enclosure 4), PacificCorp believes the current water delivery measurement system is accurate, meets industry standards and complies with the 1912 contract. Items 2, 3, and 4 do not warrant study or modeling within the relicensing process as they are not related to hydro project license operation.</p>	<p>Resolved</p> <p>See BRCC PSP comment 1 and 2 in Appendix B withdrawing study request.</p>
15.	BRCC	<p>Expand the Sedimentation Study to include the two main BRCC canals found just below Cutler Dam. The goal of an expanded sedimentation study is to:</p> <ol style="list-style-type: none">1) understand the amount of sediment that is passed from Cutler Dam to the BRCC canals each season2) determine operational practices that could reduce sediment transfer to the canal system.	<p>PacificCorp intends to collect LiDAR data on up to 2 miles of the BRCC canals. The LiDAR data will not necessarily provide the quantity of sediment transported into the canals, but a simple load estimate on canal flows and TSS concentrations could be calculated by the BRCC to estimate the annual load of sediment in the canals to assist with its O&M needs.</p>	<p><u>PacificCorp does not agree to expand the Sedimentation Study as requested in this comment.</u></p> <p>PacificCorp will evaluate LiDAR and bathymetric data in combination with TSS and other water quality data to assess future management actions for best operations of company facilities, while also maintaining contractual obligations to BRCC.</p> <p>Further, although not related to relicensing, BRCC, in the subsequent meetings with PacificCorp on November 14, 2019, indicated the request to expand the Sedimentation Study to include BRCC canals may no longer be a concern if its grant application with Bureau of Reclamation to line the BRCC canal is awarded.</p> <p>Responses to BRCC numbered comments are as follows:</p> <ol style="list-style-type: none">1. Per BRCC’s request, PacificCorp collected TSS data from the West and Hammond canals beginning on October 25, 2019 to help quantify sediment inputs to the canal system during the reservoir drawdown in the fall of 2019. This data will be provided in the FERC ISR in 2020, and in the Initial Study Report at the end of the first year of field study (early 2021). The hydraulic models will estimate the general sediment transport within the reservoir based on the incoming and outgoing sediment data, calculated reservoir velocities, depth calculated from reservoir bed elevation data, and operating water surface elevations.2. One of the outcomes of the relicensing studies will be, in part, an evaluation of deposition of sediments within the reservoir, movement of sediment under a range of operating conditions, and an evaluation of potential tools to manage sediment in the Cutler system.	<p>Resolved</p>

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
16.	BRCC	<p>Expand the LiDAR readings to include the two main BRCC canals to the same 2-mile-distance. PacificCorp's contractual obligations to BRCC are directly related to the condition of the BRCC canals and an expanding LiDAR study and data will be used to:</p> <ol style="list-style-type: none">1) establish the ability of current gate automation systems to provide a steady flow of irrigation and stock water during the newly proposed variable operation2) determine viable locations for better measurement devices3) help determine an appropriate maintenance program for the upper canal system as it relates to silt deposits4) determine the true channel capacity of the respective canals.	<p>PacificCorp intends to collect LiDAR data on up to 2 miles of BRCC canals as requested by BRCC. PacificCorp believes that the reservoir and dam may be reducing the sediment in the canals since the dam acts as a trap to avoid sediment entering the canals. The canal measuring system is calibrated annually or more frequently as needed; in 2019 the accuracy was assessed in conjunction with BRCC and found to be adequate.</p>	<p><u>PacificCorp agrees to include LiDAR on the 2-miles of canals specified; however, PacificCorp notes that sub-items 1-4 are instead irrigation contract related and as such are outside of the scope of relicensing.</u></p> <p>On October 28, 2019 and November 14, 2019, PacificCorp hosted collaborative meetings with BRCC to discuss Cutler relicensing study requests and comments. As stated in the PSP filed September 11, 2019 with FERC, and stated in both meetings with BRCC, PacificCorp has agreed to collect LiDAR data and provide the data on up to 2 miles of BRCC canals that originate from Cutler Dam as requested by BRCC.</p> <p>Future operations at the Cutler Hydroelectric Project would be evaluated to determine the hydro projects’ impact on the surrounding environment, PacificCorp intends to honor the terms of our irrigation contract with BRCC. The need for new devices to measure water delivery, specifically those listed in items 1 through 4 in BRCC’s comments, fall under water delivery contracts and BRCC operational issues. These items are separate from project operation under the license, and hence, outside the FERC relicensing process. PacificCorp appreciates the importance of water delivery to BRCC’s business. Accordingly, PacificCorp hosted the second meeting with BRCC to further discuss the items not related to the FERC relicensing. Additional meetings on these items are likely to occur.</p>	<p>Resolved</p> <p>See BRCC RSP comment 1 and 2 in Appendix B withdrawing study request.</p>
17.	BRCC	<p>Expansion of the LiDAR study would measure the current canal elevations to determine the extent of sedimentation since the last cleaning. This data could then be used to determine an appropriate cycle for cleaning of this section of the canal. The data would assist in a study determining how much sediment is transported to the canals from Cutler Reservoir. Sedimentation will be an issue of increasing concern to BRCC as it affects BRCC’s ability to effectively deliver water to shareholders and remediation is expensive. Moreover, the cost to PacificCorp to expand the LiDAR study would be limited since the river channel along the same length is already being surveyed as part of the current LiDAR study.</p>	<p>PacificCorp intends to collect LiDAR data on up to 2 miles of the BRCC canals. The LiDAR data will not necessarily provide the quantity of sediment transported into the canals, but a simple load estimate on canal flows and TSS concentrations could be calculated by the BRCC to estimate the annual load of sediment in the canals to assist with its O&M needs.</p>	<p><u>As previously stated, although LiDAR data will be collected and provided to BRCC, PacificCorp does not plan to model sediment deposition in the irrigation canals. As noted below, BRCC has also suggested that this study may no longer be necessary, given their recent plans.</u></p> <p>PacificCorp agrees with BRCC that sedimentation is an issue of interest to all entities with canals in the Bear River system. PacificCorp will evaluate the LiDAR and bathymetric data in combination with TSS and other water quality data to assess whether project operations impact sediment levels in irrigation water delivered to BRCC.</p> <p>Per BRCC’s request, PacificCorp collected TSS data from the West and Hammond irrigation canals beginning on October 25, 2019 to help quantify sediment inputs to the canal system during the reservoir drawdown in the fall of 2019. This data will be provided in the FERC ISR in 2020, and in the Initial Study Report at the end of the first year of field study (early 2021).</p> <p>BRCC, in the subsequent meetings with PacificCorp on November 14, 2019, indicated the comment regarding studying sediment in BRCC canals may no longer be a concern if its grant application with Bureau of Reclamation to line the BRCC canal is awarded.</p>	<p>Resolved</p>
18.	BRCC	<p>The suspended solids cause economic loss to the shareholders of BRCC and in turn removes capital from Box Elder County. The data gathered from an expanded sedimentation and LiDAR study could be used to determine the current amount of sediment passed to the canal system. BRCC recommends FERC use the sediment studies to inform whether PacificCorp’s operations can be adjusted to minimize future sediment loading. For example, BRCC recommends FERC review whether the 7-foot low-level passage described on page 7 of the FERC Scoping document can and should be utilized to clear material from the face of the dam. If operated in times of high water (when the spill gates would normally operate), the associated high-water flows would allow additional sedimentation to be carried downstream without adverse effects.</p>	<p>PacificCorp believes the Hydraulic Modeling Study and the Sedimentation Study will help inform future Cutler operations. These results might help the BRCC plan for O&M needs of their canals, which are likely to receive less sediment than if they were withdrawing from a free-flowing river rather than a reservoir.</p>	<p><u>As part of the relicensing effort, PacificCorp is investigating the condition and potential for rehabilitation of the low-level outlet structure for operational purposes.</u></p> <p>PacificCorp will include the condition of the low-level outlet combined with the LIDAR and bathymetry data to help inform future project operations. The potential benefits and impacts of rehabilitating the low-level outlet structure will be considered in the alternatives analysis as part of the National Environmental Policy Act (NEPA) environmental analysis.</p> <p>See also the previous revised comment responses in this table regarding BRCC requests to study sediments.</p>	<p>Resolved</p>

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
19.	BRCC	<p>Requests an additional Study of Aquatic Weeds and Algae. Aquatic weeds and algae impede BRCC’s ability to effectively deliver shareholder water and can represent public safety concerns. Aquatic weeds and algae can clog irrigation infrastructure and canals. Clogged infrastructure can result in costly time delays and damage to personal and real property. Accordingly, aquatic vegetative control efforts constitute the single largest annual expenditure for BRCC. Over the past 4 years, BRCC has seen its control costs double. As a potential conduit for aquatic weeds and algae, BRCC recommends FERC study whether Cutler Reservoir is a contributing source for increased aquatic weeds and algae in BRCC canals. The study will review:</p> <ol style="list-style-type: none">1) the corresponding populations levels of aquatic weeds and algae in Cutler Reservoir and BRCC canals2) the migration of aquatic weed and algae populations into the BRCC canal system through Cutler Reservoir by reproduction or direct relocation3) preventative and mitigation measure to minimize upstream aquatic plant material or algae from flowing into the BRCC canal system. <p>This study will supplement existing BRCC efforts to determine the cause of an increasingly vibrant aquatic weed and algae population. The aquatic weeds and algae which BRCC is most concerned about are: Filamentous Algae, Sago Pondweed, and Horned Pondweed. BRCC also recommends FERC study appropriate aquatic weed and algae prevention and mitigation measures reflecting the results of the initial study. BRCC recommends studying inserting a sample catch screen in the canals below the dam a set number of days each month. A professional biologist should be consulted to develop an appropriate protocol to adequately accomplish the goals of the study.</p>	<p>PacificCorp does not propose to study aquatic weeds or algae during the relicensing process. PacificCorp believes the requester has not established a Project nexus nor a proposed methodology per the Federal Power Act under 18 CFR §5.9 that would merit PacificCorp conducting an aquatic or algae study that addresses the transport of weeds in the Project Area or in the BRCC's canals; further PacificCorp is unaware of any appropriate methodology for such a study. Changing water conditions, especially increased water temperatures, have led to increased aquatic maintenance costs for virtually all canal operators in the region.</p>	<p><u>PacificCorp does not agree with the need for an Aquatic Weeds and Algae Study, and in subsequent discussions, BRCC indicated that the study may not be necessary and would instead prefer to work cooperatively with PacificCorp on this issue outside of the relicensing process.</u></p> <p>For the purposes of the FERC relicensing process, the issue of aquatic weeds and algae will be one of the cumulative effects addressed in the environmental analysis. PacificCorp and BRCC both agree that aquatic weeds and algae are an ongoing issue in the Bear River system compounded by the nutrient loading from municipal sources and multiple land use practices in the watershed. This is a watershed-scale problem not isolated to Cutler Reservoir alone.</p> <p>As highlighted in the Middle Bear and the Cutler Reservoir total maximum daily loads (TMDL), water quality degradation (specifically nutrient inputs) to Cutler Reservoir are substantial and in large measure are independent of Cutler Project operations. This degradation to water quality in Cutler Reservoir can be attributed to a myriad of upstream sources in the Bear River Basin. Specifically, these include the municipal effluent from cities and towns upstream of Cutler Reservoir, industrial effluent including inputs from commercial meat packing plants, animal feed operations, storm water inputs from each of the municipalities as well as most of Cache County, and all tributaries upstream of Cutler Reservoir. The TMDL noted elevated phosphorous levels which promote algal growth. In short, water quality in the reservoir is affected by inputs throughout the basin stretching from Cutler Dam to the headwaters and covering three state water quality jurisdictions. PacificCorp believes this is an issue that reaches far beyond PacificCorp’s ability to resolve and is being addressed cooperatively through the TMDL process.</p> <p>In subsequent discussions with BRCC on October 28, 2019 and November 14, 2019, BRCC and PacificCorp agreed that the near-term construction and operation of the Logan Wastewater Treatment Plant would potentially ameliorate nutrient inputs and water quality degradation to Cutler Reservoir. BRCC believes this may reduce the problem with aquatic weeds and algae plants in BRCC canals.</p> <p>BRCC indicated they prefer to work with PacificCorp outside the FERC relicensing process to cooperate on this issue in lieu of their aquatic weeds and algae study request.</p>	Resolved
20.	Mitchell Moncur; Private Citizen	<p>Mitchell Moncur suggests that the concrete boat ramp needs to be extended located at Cutler Canyon Marina. Suggested the boat ramp be extended 6 to 8 linear feet to prevent scraping and damage to boat trailers to launch boats.</p>	<p>PacificCorp's Recreation Resources Study Plan will inform the effects the proposed operations will have on the usability of boat ramps and in-water recreation. The results of this study will be used to determine whether additional PME measures related to recreation resources are merited. Mr. Moncur spoke with PacificCorp staff and was chiefly interested in measures that could address a boat ramp use concern immediately rather than as a future PME measure; the situation will be assessed during the proposed 2019 Cutler drawdown.</p>	<p>No study plan adjustments proposed in the RSP. The boat ramp condition will be evaluated in the recreation facility inventory and recommendations to improve the ramp will be included in the Recreation Resources Study Final Report.</p>	Resolved

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
21.	USFWS	<p>Study Request: Effects of Cutler Reservoir fluctuations on flows and water levels at Bear River Migratory Bird Refuge facilities downstream of Cutler Dam</p> <p>USFWS is concerned that large swings in the discharge of the Bear River will inhibit water diversions to the refuge, damage refuge infrastructure, or lead to flooding of privately owned property along the Bear River.</p> <p>USFWS recommends that a study be conducted to better characterize the proposed changes in reservoir elevations, Bear River discharge, and what effect it has on downstream facilities (pg. 3 has full details of study request).</p>	<p>PacificCorp maintains the Hydraulic Modeling Study plan scope is an appropriate level of effort given the direct and indirect effects identified in FERC's SD1. PacificCorp is not proposing to change the overall quantity of water flowing downstream. Other large tributaries, multiple constriction points and an unknown number of irrigation withdrawals (potentially a very large number) downstream of Cutler Reservoir could have flow-related impacts on water in the Bird Refuge. However, operation of the Project would not incrementally contribute to these flow-related impacts because there would not be a change in the overall quantity of water flowing downstream as a result of the Project. The Bird Refuge will be addressed as part of the NEPA cumulative effects analysis to the extent that the Bird Refuge is within the geographic scope of effects from operation of the Project. PacificCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.</p>	<p><u>PacificCorp agrees and maintains that the potential effects of reservoir fluctuations downstream of Cutler Dam (including at BRBR) will be assessed by the Hydraulic Modeling Study Plan. PacificCorp clarified current and potential future reservoir operation regimes with USFWS staff, as follows:</u></p> <p>On August 22, 2019, the USFWS and PacificCorp staff held a conference call to discuss the USFWS Scoping comment letter on the Cutler Hydroelectric Relicensing project. Subsequently, PacificCorp staff met with USFWS BRBR personnel on October 7, 2019 to better understand the agency's concerns regarding general Cutler operations, as well as to discuss current and potential future operational scenarios. In that meeting, PacificCorp explained that the purpose of the drawdown was to conduct preliminary required relicensing studies and clarified it was not a proposal for future operations. The SD2 table labeling the analysis range as the proposed operations range was clarified and addressed in additional detail. PacificCorp's hydrologist gave a presentation with additional detail regarding current Cutler operations, as several USFWS staff are relatively new to BRBR.</p>	Resolved
22.	USFWS	<p>Study Request: The refuge occupies portions of the historical Bear River Delta and is the natural location where sediment carried in the Bear River is deposited. Information contained in the PAD notes the potential for two management actions that may release large volumes of sediment (and associated nutrients and contaminants) into the river that may eventually settle onto the refuge: reservoir fluctuations and removal of Wheelon Dam.</p> <p>USFWS recommends a study be conducted to determine how greater reservoir fluctuations and/or the removal of Wheelon Dam could lead to changes in sediment and nutrient transport (details on pg. 4 of comments).</p>	<p>PacificCorp's 2D hydraulic model will be constructed to explore a number of scenarios on operation water elevations and resultant effects on sediment transport. Data collection for the model will include soil classification as well as phosphorous and other potential pollutant data. The model runs will explore transport through the dam and management decisions to control sediment. These issues will be also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.</p>	<p><u>PacificCorp agrees and maintains that the effects of both potential reservoir fluctuations and Wheelon Dam removal will be addressed with the Hydraulic Modeling Study Plan.</u></p> <p>As noted previously, PacificCorp staff met with USFWS staff on August 22, 2019 and October 1 and 7, 2019, to better understand and address the agency's concerns. In those meetings, PacificCorp explained the drawdown study was being conducted for evaluation purposes only and clarified it was not a proposal for future operations. Additional discussions regarding the 1- and 2D modeling proposed in the Study Plan clarified what information would be available to assess and what, if any, changes could occur regarding sediment load at BRBR resulting from future Cutler operations.</p>	Resolved

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
23.	USFWS	<p>USFWS is concerned that fish and other aquatic resources are not able to survive in this portion of the Bear River due to the inability to maintain flows and the inability to pass through the dam.</p> <p>USFWS requests that information on impediments to or opportunities for fish passage be provided and evaluated subject to Section 18 of the Federal Power Act. USFWS also recommends that the Project design consider the installation of fish screens at intake structures for the Project turbines and pumps in order to avoid fish entrainment.</p>	<p>PacificCorp is interested in furthering the discussion with USFWS on impediments to or opportunities for fish passage to be evaluated as part of this relicensing. The need for this study is not clear; as the comment letter noted, there is currently no native or sport fishery downstream of the Project, nor are there threatened or endangered species or anadromous fish issues in or downstream of Cutler Reservoir. The agency resource goals and objectives (and for which species) that would be addressed by studying entrainment mortality or providing fish passage opportunities is not clear. PacificCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.</p>	<p><u>Following additional discussions and clarifications regarding current fishery, habitat, and Bear River instream flow conditions below Cutler Dam, PacificCorp and the USFWS agree that the issues cited in this July 2019 comment (fish passage and fish screens) are not issues requiring additional study as part of the Cutler Relicensing process.</u></p> <p>PacificCorp and the USFWS met twice to better understand the agency’s concerns and to address this specific issue, on August 22, 2019 and on October 1 and 7, 2019. The October meeting also included representatives from the Utah Division of Wildlife Resources (UDWR).</p> <p>In the first meeting, PacificCorp clarified river flows and availability below Cutler, specifically noting the historic irrigation water rights governed by both contract and the Bear River Compact, which, by design, preclude the potential for any flows below the irrigation canals (located at Cutler Dam and upstream of the hydroelectric plant intake) during much of the irrigation season. The impacts of this annual lack of river flow on both the native fishery and the aquatic habitat, which is outside of the influence of the Cutler Project, were discussed. The results of UDWR’s June 2019 electrofishing efforts downstream of Cutler were also discussed, and a second meeting with UDWR staff was arranged for October 1, 2019.</p> <p>At the October 2019 meeting, UDWR provided more detail to the group on recent electrofishing efforts downstream of Cutler. UDWR crew electrofished 15 miles of Bear River starting at the tailrace below Cutler powerhouse. UDWR found absolutely no native fish in the reach of the Bear River below Cutler. UDWR also noted they are not planning to attempt to recover bluehead sucker or other native fish in this segment of the Bear River given the current habitat quality and lack of instream flows resulting from irrigation water deliveries during certain periods of the year.</p> <p>UDWR also stated that Cutler Dam currently serves as a beneficial and wanted upstream migration barrier to non-native fish that UDWR wants to maintain to prevent these non-native species reaching the middle Bear River upstream of and including Cutler Reservoir.</p> <p>In light of the lack of native species, inability to increase instream flows through the license process, resultant degraded aquatic habitat, and need to maintain an upstream passage barrier for non-native fish, USFWS withdrew their comment to investigate fish passage and fish screens at Cutler Dam. USFWS would like PacificCorp to include a summary in the aquatic resources technical report of sampling efforts for bluehead sucker and other native species in the lower Bear River since 1994.</p>	Resolved
24.	USFWS	<p>Study Request: Effects on water quality from fluctuating reservoir levels and Wheelon Dam removal</p> <p>Destabilization of the stream bed or the bed of Cutler Reservoir may entrain and release nutrients and contaminants which would likely be harmful to aquatic wildlife and migratory bird habitat downstream of Cutler Dam. Specific concerns are that excess nutrients could lead to unwanted vegetation and harmful algal blooms, that heavy metals could concentrate in refuge impoundments, that low DO levels could lead to reduced food supply, and that any of these factors may lead to the spread of avian disease.</p> <p>USFWS recommends that a study be conducted to evaluate various water quality parameters that change as a result of greater reservoir level fluctuations and the removal of Wheelon Dam.</p>	<p>PacificCorp's Water Quality Study proposes to monitor TP, dissolved phosphorus, orthophosphate, and DO during the drawdown to evaluate the potential for mobilization of nutrients. That data will be used to predict the effect of proposed operations on potentially mobilizing nutrients and levels of DO in the reservoir and downstream of the dam; heavy metals and other contaminants will be assessed as part of the Sedimentation Study. These issues will also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.</p>	<p><u>PacificCorp agrees and maintains that the Water Quality Study (as noted in the PSP) will address the potential effects on water quality of increased water level fluctuations, and the potential removal of Wheelon Dam.</u></p> <p>PacificCorp staff met with USFWS personnel on August 22, 2019 and October 1 and 7, 2019, to better understand the agency’s concerns related to Water Quality, specifically, mobilization of nutrients and metals. The water quality sections of the PSP were discussed; the USFWS staff participating noted that the PSP should address the issues listed in the USFWS Scoping response letter.</p>	Resolved

No	COMMENTER/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
25.	Utah Rivers Council	Suggests that FERC consider several connected and cumulative actions to comply with NEPA. FERC should consider impacts to the full reach of the river down to the refuge and the entire Great Salt Lake, rather than just 2 miles downstream. The scope of the environmental analysis should include not only the entire reach of the Bear River below Cutler Dam, but the Great Salt Lake as well. FERC should conduct sediment sampling in Cutler Reservoir for depth and composition as sediment has major implications to the potential hydropower generation. URC also suggests a rigorous analysis of the sediment composition to understand what type of pollutants might be washed downstream.	FERC's SD1 identified the Bear River Basin, and the mainstem of the Bear River as the geographic scope for cumulative effects for specific resource areas. Cumulative effects will be determined once more is known about Project impacts on the specific resources. By law, PacificCorp is bound by contractual agreements with irrigators to meet their water needs before using water for Project purposes. PacificCorp is also proposing a Sedimentation Study to address the effects Project operations has on sediment transport, and includes sampling for heavy metals and other contaminants.	<u>FE RC's SD2 expanded the scope of analysis is for cumulative impacts for several resources. The RSP will include additional details regarding the downstream scope of the analysis, and how the affected area downstream of the dam will be calculated through the hydraulic modeling and sedimentation analyses. Sediment core samples will be analyzed for a variety of pollutants, including heavy metals.</u> See the PSP (filed September 8, 2019) for additional details regarding the 1- and 2D hydraulic modeling proposed. Per SD2, FERC's cumulative effects analysis will address the scope of the cumulative analysis as follows: "As evidenced by sediment and soil deposition within the Cutler Reservoir, the Bear River and its basin is susceptible to soil erosion and deposit...it is appropriate to include [these] resources as resources that may be cumulatively affected" (SD2, page 7). "Regarding the downstream extent of the analysis...we do not recommend including the Great Salt Lake within the scope of this analysis" (SD2, page 7).	This is part of FERC's cumulative analysis.
26.	Utah Rivers Council	Suggest FERC conduct an investigation into the stated purpose and need for the Project. An appropriate question for FERC to ask is whether or not the facility generates enough power when it is truly needed. During mid-May to the end of September the facility creates very little power even though the peak power demand months comes during that period. FERC should also ask whether RMP has other power generation options available, either through oncoming solar generation or modernization of electrical grids that could substitute the need for hydropower generation at Cutler Reservoir.	Comment noted. The subject of power generation of Cutler, and how that relates to other power generation alternatives, will be addressed in FERC's Developmental analysis under the category of "Need for Power," which will also address the economic viability of Cutler operating in the future.	No update proposed in RSP.	This is part of FERC's cumulative analysis.
27.	Utah Rivers Council	Suggests that FERC consider how reductions in the Bear River flows as a function of climate change and warmer air temperatures would impact hydropower generation. Increasing air temperatures will result in more rain and less snow in the Bear River watershed. This, in turn, threatens Bear River snowpack, which will have significant impacts on Bear River water users, including RMP. Climate models indicate there may be a 5-15% increase in precipitation levels in Northern Utah, but rising temperatures mean this will occur more frequently as rain-leading to less snow accumulation and an earlier snowmelt.	PacificCorp is not proposing a Hydrological Study during this relicensing that would address climate change or snowpack levels. Whereas PacificCorp agrees with FERC's 2009 determination that climate change is occurring, PacificCorp also agrees with FERC that it is not aware of any climate change models that are known to have the accuracy needed to predict the degree of specific resource impacts and serve as the basis for informing license conditions (FERC February 23, 2009 Study Plan Determination for the Yuba-Bear, Drum-Spaulding, and Rollins Projects). Climate change will be addressed as part of the Cumulative Effects analysis.	No update proposed in RSP.	FERC's determination is that climate change models are not able to accurately predict future conditions.
28.	Utah Rivers Council	Suggests that FERC require an independent study of methane emission from Cutler and make it clear that Cutler Project is not considered an "emission free" power source. The large amounts of sediment and organic matter behind the dam in the reservoir produce methane.	PacificCorp will review existing information concerning methane emissions from western reservoirs as part of the analysis process. A Project nexus nor proven methodology that is consistent with generally accepted practice in the scientific community per the Federal Power Act under 18 CFR §5.9 has been identified.	No update proposed in RSP.	On-Going
29.	Utah Rivers Council	Suggests FERC should conduct a thorough, independent analysis of the socioeconomic impacts of the Project. These include, but are not limited to, the cost of the power generated by the Cutler Project to the consumers and the financial feasibility of the Project over the next 30 years.	Comment noted. PacificCorp is not proposing to conduct a Socioeconomic Study as part of this relicensing, as any proposed Project operational changes would not change the socioeconomic framework from the current analysis provided in the PAD. The study elements being requested are part of FERC's Developmental Analysis and would not normally be a part of a socioeconomic study. Per FERC requirements, an updated socioeconomic analysis will be included in the Draft License Application.	No update proposed in RSP.	This is part of FERC's cumulative analysis.

No	COMMENTER/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
30.	Utah Rivers Council	Suggests that FERC should consider alternatives to issuing a new 30-year license for the Project. URC is suggesting that the Cutler hydropower generation is not needed and could be decommissioned so that the dam use could be changed, with solar power a likely alternative for power generation in Utah.	Comment noted. FERC will consider alternatives in its NEPA analysis.	No update proposed in RSP.	This is part of FERC’s cumulative analysis.
31.	Utah Rivers Council	Suggests a full EIS to be conducted instead of an EA.	Comment noted. Ultimately, FERC will decide whether an EA is sufficient or an EIS is required based on its NEPA implementing regulations and other factors.	No update proposed in RSP.	This is part of FERC’s cumulative analysis.
32.	Bear Lake Watch	Geographic scope of cumulative efforts should be the entire Bear River Basin.	Comment noted. FERC's SD1 identified the Bear River Basin, and the mainstem of the Bear River as the geographic scope for cumulative effects for specific resource areas.	No update proposed in RSP. FERC’s SD2 details the current scope of cumulative impacts for each of the resources identified. FERC modified Section 4.1.2, Geographic Scope, to include a cumulative effects analysis of geology and soil resources from the Bear River Hydroelectric Project P-20 downstream to Great Salt Lake (SD2, page 7).	This is part of FERC’s cumulative analysis.
33.	Bear Lake Watch	The allocations of irrigation water are spelled out in the Amended Bear Lake Settlement Agreement (2004) and should be part of the FERC record for Cutler relicensing.	Comment noted. The Bear Lake Settlement Agreement and all the major water uses are addressed in the PAD in Section 4.3 and thus are part of the FERC record for Cutler relicensing.	No update proposed in RSP.	Resolved
34.	Bear Lake Watch	Requests an additional study that would model the Bear River system to include Bear Lake and the hydro plants downstream. The model should include enough to show what-ifs, impacts of different flow regimes, impacts and reservoir refill times when spinning reserve is needed, impacts and refill times when Cutler is operated at the proposed new levels, and any impacts to Bear Lake.	PacifiCorp is not proposing to change the withdrawals from Bear Lake nor the operations from projects upstream of Cutler Reservoir. Additionally, PacifiCorp maintains the upstream projects are not hydraulically connected or dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. Additionally, upstream projects are not dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. Additionally, a Public Interest Consideration per the Federal Power Act under 18 CFR §5.9 is needed to for PacifiCorp to consider merits of this study.	No update proposed in RSP.	Outside scope of Cutler relicensing.
35.	Bridgerland Audubon Society	It is crucial to include the 1,900 acres of PacifiCorp-owned riparian lands scattered along 35 miles of the Bear River downstream of Idaho state line into the geographical extent for analysis and management of the Cutler Hydroelectric near Benson	PacifiCorp is not proposing to include the 1,900 acres of PacifiCorp-owned riparian lands along 35 miles of the Bear River downstream of the Idaho state line as part of this relicensing. The upstream projects are not dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream parcel.	<u>PacifiCorp does not agree to include the upriver BRB lands in the Cutler Study Plan Area for direct effects (some cumulative effects analysis may occur in the BRB parcels).</u> At the October 8, 2019 PSP meeting, FERC stated that no mechanism has been identified linking effects at Cutler Reservoir with effects upstream in these specified riparian lands. On October 29, 2019, PacifiCorp held a collaborative meeting with BAS to discuss study requests and comments received. PacifiCorp affirmed their original response that operation of Cutler Reservoir does not impact the 1,900 acres of PacifiCorp- owned riparian lands upstream of the Cutler Hydroelectric Project. Due to the lack of nexus to project operations, PacifiCorp will not include these lands in the proposed studies.	Outside scope of Cutler relicensing.

No	COMMENTER/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
36.	Bridgerland Audubon Society	Suggests surveys of the Temporal and Spatial Characteristics of the Avian Community. The goal would be to quantify the temporal and spatial populations of avian species, both on the water and in the uplands around the perimeter, by conducting multiyear population surveys and correlating that data with habitat conditions. (Page 3)	PacifiCorp is not proposing a Temporal and Spatial Characteristics Study of the Avian Community as part of this relicensing. PacifiCorp would be interested in furthering this discussion with the requester after potential effects on various populations have been established in the Shoreline Characterization Study and Land Use Study.	<p><u>PacifiCorp does not agree to requested surveys but is proposing to instead analyze potential effects to various affected habitats and to include other sources of bird occupancy data to correlate potential effects to species occupying Cutler Reservoir.</u></p> <p>On October 29, 2019, PacifiCorp held a collaborative meeting with BAS to discuss study requests and comments received. Based on the discussions at the October 29, 2019 meeting with BAS, PacifiCorp has elected to amend the Shoreline Habitat Characterization Study Plan filed September 11, 2019 with an expanded description of methods and data analysis. These study plan changes will be included in the RSP submitted to FERC on or before January 10, 2020. The following is a list of the changes to the Shoreline Habitat Characterization Study designed to investigate potential project effects on the avian community:</p> <ol style="list-style-type: none">1. Include description of LiDAR and bathymetry data analysis used to delineate reservoir pool elevations for respective shoreline habitats2. Further describe shoreline mapping process using aerial imagery, LiDAR data, and on-the-ground field documentation to delineate shoreline habitats3. Explain how existing bird data, such as (U.S. Geological Survey (USGS) Breeding Bird Survey data, eBird data, Utah Division of Wildlife Resources (UDWR) data, and BAS monitoring data will be used to determine potential bird species that could be present at the Cutler Project;4. Explain how the bird lists from item 3 above will be matched with habitat types, identified using methods described in item 2, to determine which of those species may nest at habitats around Cutler Project;5. Explain how nesting season data for each species from the list generated in item 4 will be gathered from existing sources such as the online reference Birds of North America curated by the Cornell Lab of Ornithology, and eBird species arrival data for migratory species6. The study report will include descriptions of seasonal restrictions on Project operations and reservoir pool imposed by water delivery contracts and other issues restricting operations7. The study report will also analyze the impacts of a range of Project operations on reservoir associated habitats for each species that could nest at the Cutler Project, from the list generated in bullet 48. Results will be entered in the context of larger population trends by examining USGS Breeding Bird Survey trend data	<p>Resolved.</p> <p>A staged study implementation is now proposed.</p>

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
37.	Bridgerland Audubon Society	Suggests a cross-sectional diurnal DO study. The goal of the study would be to better understand the extent of anoxic conditions during the most lethal conditions, typically early mornings in the heat of August, along cross-sections of the reservoir's shallow environments. (Page 4)	Comment noted. PacificCorp is conducting a Water Quality Study whose analysis will use existing DO monitoring data collected during 2008 and 2009. These measurements were collected at 15-minutes frequencies for a 7-day periods during most months. This data set will be used to characterize anoxic conditions and seasonal patterns at each monitoring site.	<p><u>PacificCorp agrees to collect cross-sectional transect data for DO during the 2019 drawdown and has also agreed to a phased approach to the Water Quality Study to further address this request.</u></p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with BAS to discuss study requests and comments received. In a subsequent individual stakeholder meeting (Logan City), PacificCorp, and meeting participants agreed to adopt FERC's recommendation for a two-phased approach in the Water Quality Study. PacificCorp believes the revised Water Quality Study described as follows addresses BAS's comment regarding DO sampling.</p> <p>Phase 1 will include a synthesis of existing WQ data for Cutler reservoir. This effort will include a table of existing WQ data sources, parameters collected, field sampling period, and field sampling locations. Data sources will include PacificCorp, UDWQ, Utah State University, the 2010 Total Maximum Daily Load study, and other sources where available.</p> <p>PacificCorp will file an ISR with FERC in early 2021 which will summarize WQ conditions in Cutler Reservoir, identifying WQ data gaps and recommendations for the Phase 2 study. As provided for in the ILP regulations (18 Code of Federal Regulation [CFR] § 5.15), BAS and other stakeholders will have an opportunity to review and comment on the WQ interim report as well as provide comments on need for a second field season.</p> <p>In addition, DO data was collected along study transects during the drawdown sampling in October and November 2019.</p> <p>UDWQ will complete a WQ study in the BRB in WY2021. PacificCorp will collaborate with Mike Allred, UDWQ, to add Cutler Reservoir locations for DO profiles, if approved by UDWQ management.</p>	Resolved
38.	Gabriel Murray, UDAF	For the purposes of studying potential impacts to downstream landowners and the environment, studies should include area along the river corridor all the way to the Great Salt Lake.	PacificCorp is not proposing to include the reach down to the Great Salt Lake as part of its Hydraulic Study as part of this relicensing. A Project nexus nor a Public Interest Consideration per the Federal Power Act under 18 CFR § 5.9 has been establish that would help PacificCorp consider if study is merited.	No update proposed in RSP.	This is part of FERC's cumulative analysis.
39.	Gabriel Murray, UDAF	Any studies of Cutler Reservoir should consider the potential for dredging to improve fish and wildlife habitat and control <i>Phragmites</i> .	Comment noted. PacificCorp's hydraulic model to be developed as part of the study will have the ability to analyze actions such as dredging, if needed.	No update proposed in RSP.	Resolved
40.	Gabriel Murray, UDAF	Due to rapid changes in climate and advances in data collection/analysis, the permit should only be allowed a 30-year time frame before reevaluating operations.	Comment noted. FERC will consider alternatives in its NEPA analysis.	No update proposed in RSP.	This is part of FERC's cumulative analysis.
41.	Gabriel Murray, UDAF	Suggests a study looking at erosion below the Cutler Dam as a result of water level fluctuations and subsequently wintertime ice fluctuations. This study can be explored through modeling effort and real time data collection.	The hydraulic model will quantify WSEL and the volume of sediment transported up to 2-miles downstream of Cutler Dam based on the change in hydraulics during the drawdown. The hydraulic model is not able to model/predict bank sloughing quantities and locations. However, the Land Use Study will collect data during the drawdown and in the following year to identify potential impacts of proposed operational changes on bank stability and erosion. UDAF is welcome to provide PacificCorp with Bear River channel locations where they are concerned about bank erosion or sloughing. These locations will be taken into consideration when choosing monitoring sites.	<p><u>In response to this UDWQ/UDAF comment, PacificCorp has modified the Land Use Study to include monitoring of bank erosion at downstream locations during the winter period.</u></p> <p>The study plan has been modified in section 2.3.5.3 to include monitoring the Bear River below Cutler Dam at 5-6 representative locations to identify potential impacts from fluctuating water levels. Monitoring will take place below Cutler Dam in the area of flow attenuation as defined by the hydraulic model.</p>	Resolved

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
42.	Michael Allred: Utah DEQ	Suggests that studies include all the area impacted by dam operations which can be observed all the way down to the Bird Refuge.	Cumulative effects downstream at the Bear River Migratory Bird Refuge will be determined once more is known about Project impacts on the resource. PacificCorp would like to understand the agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measure that could inform future license conditions.	<p><u>PacificCorp agrees that the cumulative effects analysis of Project impacts should include the area affected by potential Project operations, consider changes resulting from potential future operating conditions; and the analysis of the area of direct effects be made in part from the results of the Hydraulic study models.</u></p> <p>On October 29, 2019, UDWQ, UDAF and PacificCorp held a collaborative meeting to discuss study requests and comments received. In this meeting, PacificCorp, UDWQ and UDAF discussed the ability of the proposed hydraulic model to model downstream effects that Project operations may potentially have on the bird refuge. As described in the PSP filed September 11, 2019 and further discussed at this meeting, the Hydraulic Modeling Study will develop both one-dimensional (1D) and two-dimensional (2D) hydraulic models capable of illustrating inflows, reservoir volume and outflow under a range of operational scenarios. Field data used to calibrate the model will be collected at the upstream FERC Project Boundary on the Bear River to a location 2 miles downstream of the Project Boundary. The modeled area will include all facilities within the current Project Boundary, as well as up to 2 miles (initially) of the Bear River downstream of the Project Boundary. This includes measuring flow, suspended sediment and turbidity, reservoir stage, and imagery at various locations throughout the modeled area. The field data will be compared to model output as part of the calibration process. PacificCorp will expand the description of the Hydraulic Modeling Study in the RSP submitted to FERC by January 10, 2020.</p> <p>Stakeholders will have an opportunity to review and comment on the RSP. PacificCorp will with FERC an Interim Study Report in early 2021 that captures the findings of the Hydraulic Modeling Study. At that time, as provided for in the ILP regulations (18 CFR § 5.15), UDWQ/UDAF and other stakeholders will review and comment on the adequacy of the hydraulic model to represent downstream effects resulting from Project operations. If additional field data is determined necessary for the model, then FERC could require additional field study in the second study season in 2021.</p> <p>Future Project operations will continue to be bound by existing water delivery agreements with irrigators. Due to the operational constraints imposed by the water agreements and other issues, PacificCorp does not anticipate a substantive change in operations resulting in impacts approximately 48 miles downstream to the Bear River Migratory Bird Refuge. Potential impacts, if any, to the Bear River Migratory Bird Refuge will be included in FERC’s environmental analysis of cumulative effects.</p>	Resolved
43.	Michael Allred: Utah DEQ	Suggests looking into dredging for the positive impact on the fishery, water quality and potentially reduce the <i>Phragmites</i> problem.	Comment noted. The Hydraulic Modeling Study will analyze the impacts to the hydraulics, sediment transport, and water quality within the reservoir that would result from dredging. Additionally, PacificCorp would like to understand the agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measures that could inform future license conditions. Per FERC, the agency should thoroughly explain how the study request relates to that management goal.	<p><u>PacificCorp agrees that the effects of dredging could be informed through various aspects of the Hydraulic, Sedimentation, and WQ Study Plans.</u></p> <p>Dredging is a future management action that could be considered as a potential PME measure in the new Cutler FERC license. Dredging is not necessarily a study plan request or comment but could be identified as a PME measure following the completion of the studies proposed in this RSP that are designed to collect information on water quality, fisheries and other aquatic resources. This information, combined with the LIDAR and bathymetry data, would be analyzed upon completion of the field work. Suggestions for future management actions would be one of the outcomes in the data analysis. The potential benefits and impacts of dredging would be considered in the alternatives analysis as part of the NEPA environmental analysis.</p>	Resolved
44.	Michael Allred: Utah DEQ	Suggests that a 30-year license is more reasonable than 40-50 years. No justification for a longer license.	Comment noted. At a later point during this relicensing process, FERC will consider cost of new license measures and determine new license period accordingly.	<p><u>PacificCorp clarified that this issue will be addressed through the FERC relicensing process.</u></p> <p>Length of the license term is decided by FERC. FERC makes a determination on a license term in consideration of mitigation and capital improvements to the Project, but also in considering opportunities for aligning the license with other activities in the basin. FERC will make this determination at the conclusion of the environmental analysis.</p>	This is part of FERC’s cumulative analysis.

NO	COMMENTS/REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
45.	Michael Allred: Utah DEQ	Suggests a study of the effects associated with winter ramping and the effects on bank erosion and water quality could be determined.	PacificCorp would like to understand the Project nexus, methodology proposed and agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measure that could inform future license conditions. Per FERC, the agency should thoroughly explain how the study request relates to that resource management goal.	<u>In response to this UDWQ/UDAF comment, PacificCorp has modified the Land Use Study to include monitoring of bank erosion at downstream locations during the winter period.</u> The study plan has been modified in section 2.3.5.3 to include monitoring the Bear River below Cutler Dam at 5-6 representative locations to identify potential impacts from fluctuating water levels. Monitoring will take place below Cutler Dam in the area of flow attenuation as defined by the hydraulic model. At the October 29, 2019 meeting in Logan Utah, Mike Allred, UDWQ, agreed to help select sample locations.	Resolved
46.	Bret Holman: Private Citizen	Dropping the water level by 1 to 2 feet would make the current boat ramp unusable for most boats and will also increase the risk of boaters encountering dangerous obstacles that are usually submerged by water. Does not want to see the area made more restrictive as the public originally agreed to the reservoir with the caveat that it would remain a multi-use recreational area.	PacificCorp's Recreation Resources Study Plan will inform the effects the proposed operations will have on the usability of boat ramps and in-water recreation. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.
47.	Nathan Holman: Private Citizen	The majority of the area used for recreation is only 4 to 5 feet deep and a reduction in operating levels would leave the area unusable for motorized boaters. Suggests to limit the time period PacificCorp is allowed to lower the water level to 1 week or less, or during a period of the year when the impact would be minimized.	PacificCorp's Recreation Resources Study Plan will inform the effects the proposed operations will have on the usability of boat ramps and in-water recreation. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.
48.	National Park Service	Cutler Canyon Marina: 1) install additional concrete to the existing pad where the accessible picnic table is located to provide access to the barbeque grill. Expansion should be 5-feet by 13-feet and be on the east side of the existing pad to provide the minimum maneuvering area to and around grill. 2) designated a handicap parking space next to the accessible picnic table 3) designate a handicap parking space near the toilet facility 4) lower the height of the informal sign on the west side of parking lot 5) enlarge the font of printed materials on the sign so it is readable by someone sitting in a car since the sign does to have an accessible route to it.	PacificCorp appreciates the accessibility survey conducted by the NPS in June of 2019. The information provided will be used to improve some items in the short term (prior to license submittal), and will inform the Recreation Resources Study Plan which will assess the adequacy of recreation sites, including any needed improvements required by the ADA. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.
49.	National Park Service	Benson Marina: 1) enlarge handicap parking spaces so that it meets the standard dimensions of a van-accessible spot of 11 feet for parking plus 5 feet for the access aisle 2) install at least one accessible picnic table bench under the covered pavilion 3) provide paved access to the other accessible picnic tables and provide access from the tables to the barbeque grills 4) reduce vertical gap in front of the bathroom 5) improve the route from the parking area to the launch site by creating a firm and stable surface at a grade not exceeding 8 percent	PacificCorp appreciates the accessibility survey conducted by the NPS in June of 2019. The information provided will be used to improve some items in the short term (prior to license submittal), and will inform the Recreation Resources Study Plan which will assess the adequacy of recreation sites, including any needed improvements required by the ADA. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.
50.	National Park Service	Upper Bear River Access: 1) replace handicap parking sign 2) provide improved access to fishing dock 3) add toe-rail to the perimeter of the fishing dock 4) reduce the vertical gap between the walkway to the bathroom and the bathroom's concrete pad.	PacificCorp appreciates the accessibility survey conducted by the NPS in June of 2019. The information provided will be used to improve some items in the short term (prior to license submittal), and will inform the Recreation Resources Study Plan which will assess the adequacy of recreation sites, including any needed improvements required by the ADA. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.

No	COMMENTS/ REQUESTER	COMMENT	PACIFICORP RESPONSE SEPTEMBER 2019	PACIFICORP REVISED RESPONSE NOVEMBER 2019	RESOLUTION
51.	National Park Service	Logan River Recreation Site: 1) improve access to the floating dock by reducing vertical gaps between the pathway and the concrete pad, the pad and the ramp to the dock, and from the ramp to the dock itself 2) increase the width of the dock to a minimum of 60 inches 3) add toe-rails to the dock perimeter.	PacificCorp appreciates the accessibility survey conducted by the NPS in June of 2019. The information provided will be used to improve some items in the short term (prior to license submittal), and will inform the Recreation Resources Study Plan which will assess the adequacy of recreation sites, including any needed improvements required by the ADA. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.
52.	National Park Service	Cutler Marsh Marina: the space within the pavilion should be modified to provide enhanced access. This could be done by increasing the size of the pavilion or by rearranging the tables 1) provide additional concrete around at least one of the grills to provide a minimum maneuvering area of 60-inches by 60-inches 2) reduce vertical lip between the sidewalk and the accessible picnic table 3) add toe-rails to the existing dock 4) the area to the left of the existing boat ramp could be improved to create a self-service, accessible boat launching site	PacificCorp appreciates the accessibility survey conducted by the NPS in June of 2019. The information provided will be used to improve some items in the short term (prior to license submittal), and will inform the Recreation Resources Study Plan which will assess the adequacy of recreation sites, including any needed improvements required by the ADA. The results of this study will be used to determine whether PME measures related to recreation resources are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.
53.	Jason Watterson: Private Citizen	Allowing PacificCorp to open up the operational window of Cutler Reservoir would have dramatic effects on the environment and many users of the reservoir including: Irrigation: pumps along the reservoir could be have their ability to pump irrigation water impacted. Recreation: small variations of the reservoir due to its small size can flood areas or create vast mud flats. Boats and even canoes and kayaks will not be able to operate. If reservoir elevations are significantly varied, recreational use will be limited. The Watterson's host many recreational users each year and this will limit their business. Agriculture: high water levels impact soils and agriculture by pushing salts into the surrounding soils and impact agricultural production. Invasive Species: <i>Phragmites</i> , goatsrue, dyer's woad and another species have dramatically spread through the Project and adjacent areas, increasing water consumption and damaging habitat and agriculture.	PacificCorp will address these impacts as part of the Land Use, Recreation, and the Shoreline Characterization Study plans. The Land Use Study plan will address impacts of the proposed operational changes on irrigation pumps that withdraw from Cutler Reservoir. Each known pump that withdraws from the Reservoir will be assessed. The proposed operational changes will not cause water levels to rise above the OHWL. However, changing reservoir elevations may have potential to create a wet/dry cycle in some areas and subsequently impact soil salinity. The potential for this impact to occur will be addressed in the Land Use Study plan. The Shoreline Characterization Study will address invasive species, including collecting information on where they are, and will analyze the impact of proposed operations on their distribution in the future. The effects of drawdown on recreation will be assessed during the 2019 and 2020 study season, including impacts to the usability of boat ramps and in-water recreation. The results of this study will be used to determine whether PME measures related to recreation are merited.	No update proposed in RSP.	No change needed. Already incorporated into study plan.

Key for Comment Response Table3

2D	2-Dimensional
ADA	Americans with Disabilities Act
Al	Aluminum
BMP	Best Management Practice
BRCC	Bear River Canal Company
CaCo3	Calcium Carbonate
CFR	Code of Federal Regulations
DO	Dissolved Oxygen
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
Fe	Iron
FERC	Federal Energy Regulation Commission
ILP	Integrated Licensing Process
O&M	Operation and Maintenance
OHWL	Ordinary High Water Level
NEPA	National Environmental Protection Act

NPS	National Park Service
PAD	Pre-Application Document
PME	Protection, Mitigation, and Enhancement
Project	Cutler Hydroelectric Project
Refuge	Bear River Bird Refuge
RMP	Resource Management Plan
SD1	Scoping Document 1
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TSS	Total Suspended Solids
UDAF	Utah Department of Agriculture and Food
UDWQ	Utah Division of Water Quality
URC	Utah Rivers Council
USFWS	U.S. Fish and Wildlife Service
WWTF	Wastewater Treatment Facility

APPENDIX B

PSP RESPONSE TO COMMENTS TABLE

CONSULTATION CHRONOLOGY WITH BRIDGERLAND AUDUBON SOCIETY

- BAS original Study Plan Requests prior to release of the PSP and comments on FERC SD1 were submitted July 29, 2019 as shown in Appendix A (Comments 35-37).
- PacifiCorp responded to these initial comments as part of the September 11, 2019 PSP submittal.
- PacifiCorp hosted a Study Plan Meeting on October 8, 2019. BAS was in attendance. The following verbal/whiteboard BAS comments were captured.

STUDY PLAN	COMMENT	COMMENTS	RESPONSE
Shoreline Habitat Characterization	How to characterize weed transport from upstream?	Bryan Dixon, Bridgerland Audubon Society	See PacifiCorp Response to BAS Comment #2 (below).
Shoreline Habitat Characterization	Should study area or FERC boundary extend upstream to include PacifiCorp-owned land (non-Cutler) re: Bear River Bottoms [FERC response: no nexus]	Bryan Dixon, Bridgerland Audubon Society	See PacifiCorp Response to BAS Comment #2 (below).
Water Quality	Review transects for dissolved oxygen monitoring for 2020 sampling.	Bryan Dixon, Bridgerland Audubon Society	See PacifiCorp Response to BAS Comment #4 (below).
Sedimentation	Consider moving Little Bear and Logan sites upstream (however, PacifiCorp wants to sample sites that have been sampled in the past).	Bryan Dixon, Bridgerland Audubon Society	Sampling sites in the South Marsh are generally predicated on past sampling locations. Exact locations will be dependent on sediment structure as outlined in Section 3.4.5.1. Moving sites upstream into riverine habitats will not benefit or enhance the study and understanding with the exchange of P between the water column and the sediment bed.

- BAS and PacifiCorp met on October 29, 2019 to discuss the original comments/responses.
- On November 30, 2019 PacifiCorp released a letter to stakeholders and FERC documenting the October 29th discussions, and revising their original responses to comments based on new dialogue.
- PacifiCorp’s revised responses from November 2019 are captured in Appendix A (above).
- On December 11, 2019, BAS submitted the following comments documenting what BAS believes are outstanding and/or resolved items.

No	COMMENTS/REQUESTER	COMMENTS RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
1.	Bridgerland Audubon Society	Settlement Agreement Approach: <div><div>1.</div><div>BAS states that “two big advantages of the Settlement Agreement approach are an ongoing funding stream for new projects not yet envisioned and an advisory committee made up of expertise from PacifiCorp, agencies, and non-governmental organizations (NGOs) that know and have the greatest interest in the environment affected by the project.</div><div>2.</div><div>Ongoing funding vastly increases the opportunities to respond to changing conditions, such as invading non-indigenous plants or changes in ranges of various bird species. Since the funding comes from private sector, it also offers the opportunity for leveraging many federal, state, and private sector funding programs, thereby vastly increasing the capacity for mitigation. We can’t know or prioritize the best approaches to ensuring healthy habitats twenty years from now, much less forty years. A shorter license period or a dynamic advisory committee offers that opportunity” (BAS Comments, pg. 2).</div></div>	PacifiCorp appreciates BAS’s interest and long-term commitment to be actively engaged in the management of Project lands. Settlement agreements can occur as part of or outside the FERC regulatory process for relicensing projects. Settlement agreements are not required to establish dynamic management approaches or leverage funding sources dependent on private sector contributions, although that was the approach taken with PacifiCorp’s Bear (FERC Project No. 20) relicensing in 2003, that specific type of relicensing outcome is no longer allowable under current FERC policy. PacifiCorp will incorporate the results of the respective resource studies into the Draft License Application submitted to FERC as part of this relicensing process. The Draft License Application will include proposed measures to manage resources in the Project during the next license term. The need for partnerships and technical committees for input on respective resource management plans will be considered in the Draft License Application.
2.	Bridgerland Audubon Society	Expansion of Project Boundaries: <div><div>1.</div><div>[On the topic of upstream BRB lands]: BAS states “that FERC and PacifiCorp maintain that the boundaries of the Cutler Hydroelectric Project cannot be extended further upstream because operation of the project doesn’t affect upstream flows and conditions. But, since PacifiCorp owns those lands and is responsible for their management and the management of those lands affects conditions at Cutler (e.g., weeds, sedimentation), considerations at Cutler do affect PacifiCorp’s management of those lands.</div><div>2.</div><div>FERC acknowledged that management and mitigation strategies on those upstream lands could be dictated in part by considerations at Cutler, but we believe that these lands, lying as they do between Oneida Reservoir and Cutler Reservoir and encompassing nearly thirty-five miles of river banks, do have a “nexus to the downstream Cutler Project” and should be part of the Cutler project so that ratepayer funds can be legitimately spent on land management” (BAS Comments, pg. 3).</div></div>	PacifiCorp responded to this December 2019 comment in Appendix A, Comment 35. As noted in that response, PacifiCorp does not intend to include the upriver BRB lands in the Cutler study plan area for analysis of direct effects. As discussed at the October 8, 2019 Study Plan Meeting, FERC stated that no mechanism has been identified linking effects at Cutler Reservoir with effects upstream in these specified riparian lands. Subsequently, on October 29, 2019, PacifiCorp held a collaborative meeting with BAS to discuss study requests and comments. PacifiCorp affirmed their original response that operation of Cutler Reservoir does not impact the 1,900 acres of PacifiCorp-owned riparian lands upstream of the Cutler Hydroelectric Project. As noted in 18 CFR 5.9(b)(5), PacifiCorp believes there is a lack of nexus to project operations, and therefore, does not plan to include these lands in the proposed studies.

No	COMMENTER/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
3.	Bridgerland Audubon Society	<p>Avian Population Surveys</p> <ol style="list-style-type: none">1. BAS states that “PacifiCorp amended the Shoreline Habitat Characterization Study Plan filed September 11, 2019 with an expanded description of methods and data analysis. These study plan changes are to be included in the Revised Study Plan (RSP) submitted to FERC on or before January 10, 2020 [a list of changes implemented into the Shoreline Habitat Study were outlined].”2. “PacifiCorp is still relying almost exclusively on “desktop analyses.” No surveys of actual bird populations around Cutler are proposed, either short or long term.”3. PacifiCorp is still relying “entirely on correlations with habitat, identified using aerial imagery and in only broad categories (“such as short herbaceous vegetation, tall herbaceous vegetation, woody vegetation, and bare ground”, page 2-9 of PSP2). Those correlations and relationships may be changing substantially with climate change, making future correlations less useful.”4. PacifiCorp does “propose to map weeds...but only plan to consult existing data from Cache County, PacifiCorp, and adjacent landowners; “No separate systematic on-the-ground inventory of weeds in the Project Area will be conducted.” To their credit, however, they propose to extend the study boundary for invasive species to include upland islands and peninsulas.”5. “The breeding season is the most critical time and the most likely to be affected by changes in operation of Cutler; data collected during the drawdown in November 2019 is of little use in assessing future habitat.”6. As a result of the reliance on remote sensing and correlations with habitat, there will be no testing or development of avian population censusing techniques that could be repeated in the future (by either professionals or volunteers) to assess changes in populations that might suggest a closer look at operations.”7. There are no BBS routes in the Cache Valley bottom, approximately 4,500’. The closest BBS routes are in Temple Fork twenty miles east at 6,500’, Blacksmith Fork to Hardware Ranch 20 miles southeast at 4,800’ (and not currently assigned), near Plymouth 15 miles northwest at 4,500’, and near Honeyville 20 miles southwest at 4,240’ (and not currently assigned).”8. “eBird depends too heavily on the convenient participation of interested individuals.”9. “PacifiCorp is only proposing studying shoreline habitat within the ordinary high-water level (OHWL). That excludes adjacent habitat where species may rely on access to water but may not otherwise spend time in that habitat; e.g., Greater Sandhill Crane, herons, White-faced Ibis, Marsh Wren, Song Sparrow.”10. “Section 2.2.7 claims “The proposed study effort is adequate to provide the level of information needed to understand project effects, impacts or benefits to the resource, and to determine the need for any specific PME (protection, mitigation, and enhancement) actions.” But without direct data on avian populations, we won’t have very concrete information on which PME actions to undertake.”	<p>As a result of comments from the Bridgerland Audubon Society as well as the National Audubon Society, PacifiCorp has agreed to amend the Shoreline Habitat Characterization Study (SHCS) in Section 2.2 of this RSP to include a second study phase, that, if necessary, would include surveys of bird use in the Project Boundary during the breeding and non-breeding season. The adjustments in the study plan are reflected in Section 2.2 of this RSP.</p> <p>Beyond substantially changing habitat relationships, climate change may also substantially alter species distributions. No analysis we conduct today can avoid this issue, and a habitat-based approach does not seem any more vulnerable to climate change related drawbacks than any other approach.</p> <p>As part of the accuracy assessment, a substantial amount of anecdotal weed data will be collected. It is PacifiCorp’s opinion that this new data, in conjunction with existing data, will be adequate for the analysis of future changes in weed distribution as they pertain to operational changes at Cutler.</p> <p>The SHCS will incorporate eBird and BBS data since both of these datasets, while they do not fully capture the information that is needed, will provide useful information.</p> <p>Additionally, Section 2.2.4 has been amended to include the areas surrounding the OHWL.</p> <p>As a result of these revisions to the SHCS, these comments have been resolved.</p>
4.	Bridgerland Audubon Society	<p>Assessing Dissolved Oxygen Conditions Outside of the Main River Channels:</p> <ol style="list-style-type: none">1. “UDWQ limited their sampling to easy-to-reach sites, such as under bridges. These locations were not representative of the bulk of the reservoir because bridges were placed where there was a narrowing of the water, creating a restriction which increases water velocity and turbulence, and which, in turn, increases dissolved oxygen. Left unmeasured were the backwaters of the reservoir, the majority of the areal extent of potential habitat. It may be that these areas are supersaturated as a result of algal photosynthesis, but we don’t know. Further, the times when dissolved oxygen is lowest is during the warmest months (typically July and August) when water temperatures are higher and DO capacity lower.”<ul style="list-style-type: none">o BAS “appreciates” and supports PacifiCorp’s revised plan: “UDWQ will complete a WQ study in the BRB in WY2021 (water year 2021). PacifiCorp will collaborate with Mike Allred, UDWQ, to add Cutler Reservoir locations for DO profiles, if approved by UDWQ management.”	<p>At the October 29, 2019 consultation meeting with Logan City, PacifiCorp agreed to collect cross-sectional transect data for DO during the 2019 drawdown, and also agreed to a phased approach to the Water Quality Study to further address this request. Additionally, a representative from UDWQ who attended the meeting with BAS suggested that with approval of UDWQ management, DO profiles could be added to their WY2021 planned monitoring.</p> <p>For a full description of the revisions to the RSP, please see PacifiCorp’s response to Comment 37 in Appendix A.</p>
5.	Bridgerland Audubon Society	<p>Impacts of Increased Reservoir Drawdowns on Fishes and Benthic Invertebrates:</p> <ol style="list-style-type: none">1. BAS states that “removing operational procedures that have protected fish spawning and other parts of their life history could have major impacts on the fishery and the entire ecosystem. Drawdowns not only influence the fish community directly, but also can have major impacts on the benthic	<p>As previously noted, PacifiCorp has contractual obligations for irrigation water delivery. Any potential operational changes for Cutler Reservoir will occur in the late fall and winter time frames when irrigation has ceased. During that time of year, fish spawning does not occur, and young-of-year fish have developed sufficiently to avoid stranding. PacifiCorp appreciates the literature suggestions. Carmignani and Roy (2017) is a paper that focuses primarily on winter drawdowns for prolonged duration.</p>

No	COMMENTER/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
		<p>invertebrates (Carmignani and Roy 2017; Rose and Mesa 2013). Most studies have addressed seasonal drawdowns (including winter drawdowns that negatively impact fishes), and apparently few have addressed the impacts of short-term hydropower peaking of the type envisioned by PacificCorp. Frequent drawdowns for hydropeaking could also have important impacts on the invertebrates that are the prey base for both fish and birds” (BAS Comments, pg. 6).</p> <p>2. BAS requests that “we request that PacificCorp’s evaluation of increased reservoir drawdowns carefully evaluate how both the <i>magnitude</i> and the <i>frequency</i> of these fluctuations would influence the fish community and benthic invertebrates.”</p> <p>3. BAS requests a “justification of the removal of fish ‘spawning’ as a consideration for reservoir operations is needed, particularly since the majority of the sport and nongame species mentioned above spawn in the reservoir during the April-June period that is currently protected (PAD; Fig. 5- 3). However, it is not only this spawning period that is important for fishes and invertebrates, and consequently the impact of increased draw-down magnitude and frequency needs to be evaluated throughout the year.”</p>	<p>As stated in the BAS comment letter, this common type of operation does not apply to the proposed operations for Cutler Reservoir. Rose and Mesa (2013) focuses on summer drawdowns which do not apply to Cutler operations. PacificCorp will use the data collected during the drawdown study to evaluate the potential effects of the potential future operating scenarios, particularly to address the effect of the magnitude and frequency of potential fluctuations on fish, birds, or benthic macroinvertebrates.</p> <p>PacificCorp will evaluate a suite of potential future operating scenarios that include the frequency and magnitude of reservoir fluctuations and the effects on fish and benthic macroinvertebrates. Similar to other aquatic and terrestrial wildlife, hydraulic modeling will be utilized to determine what, if any, effects would be expected for spawning fish resulting from potential future operations.</p>

CONSULTATION CHRONOLOGY WITH BEAR RIVER CANAL COMPANY

- BRCC original Study Plan Requests prior to release of the PSP and comments on FERC SD1 were submitted July 17, 2019, as shown in Appendix A (Comments 14-19).
- PacifiCorp responded to these initial comments as part of the September 11, 2019 Proposed Study Plan submittal.
- PacifiCorp hosted a Study Plan Meeting on October 8, 2019. BRCC was in attendance. The following verbal/whiteboard BRCC comments were captured.

STUDY PLAN	COMMENT	COMMENTER	RESPONSE
Cultural Resources Study Plan	Cultural study indicates old canal channel but only to the boundary.	Trevor Nielson, BRCC	PacifiCorp proposes, per FERC guidance (FERC 2008), that the Project’s Area of Potential Effects (APE) for purposes of Section 106 consultation be defined as the Project Boundary, plus any areas upstream or downstream of the Project Boundary that planned hydraulic modeling indicates may be affected by changes in the river flow regime (Figure 4-2). The APE (as agreed to by Utah SHPO office), is shown as the Project Boundary in Figure 4-2; this figure does not include any upstream or downstream areas that may be added to the APE following hydraulic modeling because any such areas are not yet known. In addition, canals will be documented 400 meters in each direction outside the survey area per Utah Division of State History guidance for documenting linear sites.
General Comments	PacifiCorp meet with Bear River Canal Company (BRCC) regarding their study plan comments before comment submittal	Trevor Nielson, BRCC	PacifiCorp convened a meeting with BRCC October 28, 2019 and November 14, 2019 to discuss study plan comments and the 1912 contract. PacifiCorp submitted a summary of the discussion in those first meeting and revised responses to BRCC study requests on December 10, 2019. Several Nov/Dec 2019 telephone calls also helped to clarify/resolve study requests. See PacifiCorp revised responses (November 2019) to BRCC Comments 14 through 19 in Appendix A.
	BRCC looking to their TCCC objective	Trevor Nielson, BRCC	BRCC provided additional explanation regarding their objectives to phase in TCCC throughout the BRCC canal system to improve efficiency of water delivery at the October 28, 2019 consultation meeting with PacifiCorp. BRCC explained that accurate, precise and timely information on water delivery to the irrigation system is needed to implement the benefits of the TCCC. See PacifiCorp revised responses (November 2019) to BRCC Comments 14 and 16 in Appendix A regarding accuracy and precision of water delivery to BRCC canal. In their December 11, 2019 PSP comments, BRCC withdrew their July 17, 2019 study request to model the performance of the current gate system in a variable operation system to ensure steady delivery of water to the BRCC canal. See BRCC PSP Comment 1 in Appendix B.
	BRCC looking for partnership with PacifiCorp in objectives.	Trevor Nielson, BRCC	PacifiCorp convened a meeting with BRCC October 28, 2019 and November 14, 2019 to discuss study plan comments and the 1912 contract. PacifiCorp and BRCC identified items where the two parties could potentially work together on items of mutual interest. These areas of agreement are identified in PacifiCorp’s December 10, 2019 FERC submittal summarizing discussions in those meetings and revised responses to BRCC study requests. Furthermore, BRCC’s PSP comments filed December 11, 2019 to FERC identify areas where the two parties will work together on items of mutual interest. See BRCC PSP comment 1 through 4 in Appendix B. In addition, see PacifiCorp revised responses (11/2019) to BRCC comments 14 through 19 in Appendix A.
	BRCC delivery measurement analysis concern; Not just sedimentation (that is the smaller part)	Trevor Nielson, BRCC	PacifiCorp convened a meeting with BRCC October 28, 2019 and November 14, 2019 to discuss study plan comments and the 1912 contract. A primary concern for BRCC expressed at these meetings was accurate, precise and timely information on water delivery to the irrigation system. See PacifiCorp revised responses (November 2019) to BRCC comments 14 and 16 in Appendix A regarding accuracy and precision of water delivery to BRCC canal. In their December 11, 2019 PSP comments, BRCC withdrew their July 17, 2019 study request to model the performance of the current gate system and install weirs for improved measurement of water delivery. See BRCC PSP Comments 1 and 2 in Appendix B.

- Subsequently, on October 28, 2019, BRCC and PacifiCorp met to discuss the PAD and October 8, 2019 Study Plan meeting comments/responses.
- On November 30, 2019 PacifiCorp released a letter to stakeholders and FERC documenting the October 28 and Nov 14 discussions, and revising their original responses to comments based on new dialogue.
- During the November 14, 2019 meeting, BRCC and PacifiCorp discussed BRCC irrigation canals and how those relate to the 1912 contract and to distinguish between relicensing issues and 1912 contract issues.
- PacifiCorp’s revised responses from November 2019 are captured in Appendix A (above).
- On December 11, 2019, BRCC submitted the following comments documenting what BRCC believes are outstanding and/or resolved items.

No	COMMENTS/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
1.	Bear River Canal Company	Flow Modeling to Address Variability in Delivery <div><div>1. “Because of PacificCorp’s and BRCC’s willingness to explore programmatic changes to the current automation system, BRCC agrees that modeling does not need to be conducted at this time and retracts its request for this study; however, BRCC expressly reserves the right to request this item be revisited in the between-season data review/study and address this matter directly if these programmatic adjustments do not result in the steady flows.</div><div>2. We feel that PacificCorp could make the adjustments in preparation for the 2020 operating season and allow those changes to be tested through the seasons. If these efforts are unsuccessful, BRCC will renew its request to FERC for flow modeling.</div><div>3. BRCC feels that waiting to see if the programmatic adjustments are effective seems to be the prudent and reasonable course of action at this time” [bold text added for emphasis] (BRCC Comments, pg. 3-4).</div></div>	<p>PacificCorp appreciates BRCC’s submission of revised study plan comments reflecting the collaborative efforts to resolve outstanding study requests originally filed July 17, 2019 with FERC. PacificCorp also appreciates BRCC’s willingness to work with PacificCorp to identify solutions to the current automation system used for water deliveries to BRCC canals. PacificCorp looks forward to continuing our collaborative efforts to identify solutions to the current automation system used for water deliveries to BRCC canals.</p> <p>See PacificCorp revised responses (November 2019) to BRCC Comments 14 and 16 in Appendix A regarding accuracy and precision of water delivery to BRCC canal.</p>
2.	Bear River Canal Company	Study to Inform Site Selection for Improved Measurement Devices <div><div>1. “BRCC adamantly disagrees with PacificCorp’s assertion that updating its measurement equipment is not a PacificCorp responsibility and rejects PacificCorp’s justification for not improving measurement equipment and protocols...however [bold text added for emphasis], after reviewing the available data provided in these meetings, it has become clear to BRCC that there is a consensus between the parties on the general area to locate upgraded measurement devices....BRCC thus conditionally retracts its request for a study to inform site selection for improved measurement devices.”</div><div>2. “If in further discussions and deliberations with PacificCorp it becomes clear that additional study is needed to address the issue, BRCC expressly reserves the right to reopen this request” (BRCC Comments, pg. 4).</div></div>	<p>PacificCorp appreciates BRCC’s submission of revised study plan comments reflecting the collaborative efforts to resolve outstanding study requests originally filed July 17, 2019 with FERC PacificCorp also appreciates BRCC’s willingness to work with PacificCorp to identify solutions to the current automation system used for water deliveries to BRCC canals. PacificCorp looks forward to continuing our collaborative efforts to identify solutions to the current automation system used for water deliveries to BRCC canals.</p> <p>See PacificCorp revised responses (November 2019) to BRCC Comments 14 and 16 in Appendix A regarding accuracy and precision of water delivery to BRCC canal.</p>
3.	Bear River Canal Company	Study of Transportation of Sediment to BRCC Canals <div><div>1. “At the time BRCC requested a sediment study, BRCC was in the process of drafting an extensive Master Plan. The BRCC’s Master Plan is now complete and calls for installing a several thousand-foot concrete canal liner starting where BRCC takes control of the canal and responsibility for water deliveries. If the liner is installed, it is anticipated that the sediment concerns originally expressed by BRCC will be alleviated and an additional sediment study is not needed.</div><div>2. “If BRCC is not successful in its BOR WaterSMART Grant Application...serious concerns over sedimentation in the upper reaches of BRCC canals and their effects on water delivery constraints linked to the Cutler Dam remain.</div><div>3. BRCC thus conditionally retracts its request of a study to the transportation of sediment through BRCC canals” [bold text added for emphasis] (BRCC Comments, pg. 4).</div></div>	<p>PacificCorp appreciates BRCC’s submission of revised study plan comments reflecting the collaboration efforts to resolve outstanding study requests filed July 17, 2019 with FERC. BRCC’s December 11, 2019 comments on the PSP retract the previous request to study sediment transport in the BRCC canals. PacificCorp did adjust sampling efforts during the drawdown to address, in part, BRCC’s study request 15.</p> <p>See PacificCorp revised response (November 2019) to BRCC Comment 15 in Appendix A.</p>
4.	Bear River Canal Company	Aquatic Weed Study <div><div>1. “BRCC has agreed to withdraw its request for a discreet aquatic weeds study in exchange for PacificCorp issuing a Revised Study Plan that expands existing water quality studies to include aquatic weed issues in the West and Hammond (East) Canals. [bold text added for emphasis]</div><div>2. BRCC and PacificCorp have agreed to add to these existing studies an analysis of the effect of</div><div>3. phosphorus levels on macrophytes aquatic weed growth. BRCC requests the impacts of phosphorus loading on aquatic macrophyte and algae populations be projected for a 30-year window. PacificCorp has agreed to use available literature to inform how past, current, and projected phosphorus levels will change aquatic macrophyte and algae production (as a percentage increase/decrease). We request a 30-year projection to inform the NEPA analysis because the new license may be issued to that length of time or longer” (BRCC Comments, pg. 5).</div></div>	<p>PacificCorp appreciates BRCC’s submission of revised study plan comments reflecting the collaborative efforts to resolve outstanding study requests originally filed July 17, 2019 with FERC. BRCC’s December 11, 2019 comments on the PSP retract the previous request to study aquatic weeds in Cutler Reservoir. PacificCorp and BRCC have reached agreement to expand, describe, and analyze the relationship between phosphorus and aquatic weed growth as part of the Water Quality Study using existing literature.</p> <p>See PacificCorp revised responses (November 2019) to BRCC Comments 19 in Appendix A.</p>

CONSULTATION CHRONOLOGY WITH LOGAN CITY

- Logan City original Study Plan Requests prior to the Scoping Meeting and the release of the PSP, and their comments on FERC SD1 were submitted June 24, 2019 as shown in Appendix A (Comments 1-13).
- PacifiCorp responded to these initial comments as part of the September 11, 2019 Proposed Study Plan submittal.
- PacifiCorp hosted a Study Plan Meeting on October 8, 2019. Logan City was not in attendance.
- Logan City and PacifiCorp met on October 29, 2019 to discuss the original comments/responses.
- On November 30, 2019 PacifiCorp released a letter to stakeholders and FERC documenting the October 29th discussions, and revising their original responses to comments based on new dialogue.
- PacifiCorp’s revised responses from November 2019 are captured in Appendix A (above).
- On December 11, 2019, Logan City submitted the following comments documenting what Logan City believes are outstanding and/or resolved items.

No	COMMENTER/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
1.	Logan City	Logan City expresses that it is “not clear if they [PacifiCorp] will look at the mass of sediments and phosphorous moving in the system. With fluctuating hydrologic conditions associated with regular drought/flood cycles in the West, increased flows will cause dilution, but the mass of inflow mat not be changing or event increasing. This is important in order to understand the mass loading in the reservoir and downstream. Periodic flushing and dilution from high flows may mask the continuing accumulations, particularly of phosphorus in the system. For these reasons, a mass balanced approach needs to be considered” (Logan City Comments, pg. 4).	<p>Suspended sediment and phosphorus data were collected upstream, downstream, and within the reservoir during the drawdown event. However, there is no plan to continue to monitor these levels as part of the hydraulic modeling study plan.</p> <p>Water quality sampling and analysis for Phase 2 of the Water Quality Study Plan will be determined in the ISR submitted to FERC as part of the relicensing process. See PacifiCorp revised response November 2019 to Logan City comment 2 in Appendix A.</p> <p>The need for increased frequency of water quality monitoring in a new FERC license will be determined by FERC as part of their independent environmental analysis. See PacifiCorp revised response November 2019 to Logan City Comment 1 in Appendix A.</p> <p>The hydraulic/sediment transport model will be able to estimate the total bed sediment mobilized within the reservoir due to potential changes in the operation of Cutler Dam (Section 3.3.5.4 in the RSP). The model will provide key data to understand the operating conditions that mobilize sediment. The study will not have the capability to model a mass balance of phosphorus levels within the reservoir. Cutler Reservoir does not generate phosphorus or sediment but is a sink for incoming load from natural processes as well as NPDES permittees.</p> <p>The reservoir is regulated by Utah water quality standards expressed as concentrations that protect beneficial use. These regulations are not based on loads as are some local NPDES discharge permit holders. PacifiCorp does not believe it is necessary to conduct a mass balance of the system as it provides no benefit to the relicensing process of Cutler. Any limits to the proposed operation would be constrained by water column concentration.</p>
2.	Logan City	After reviewing all of the previous reports from 2002, and in discussions with regulatory agencies, including Utah Division of Water Quality, concerns were raised that the 2013 data were either erroneous or anomalous and not representative of what is taking place in the reservoir and downstream. In June the additional data had not been available for review from the UDWQ. As stated by Eve Davies on the phone call with FERC on October 29, 2019, it appears that the water quality issues have returned to the pre-2013 levels. This again reiterates the discussion in Item 1 of the need for more frequent reporting and moving from mg/L basis, but to also look at the mass balance in future licensing requirements” (Logan City, pg. 4).	PacifiCorp disagrees with the content and intent of the October 29, 2019 statement. The need for increased frequency of water quality monitoring in a new FERC license will be determined by FERC as part of their independent environmental analysis. See PacifiCorp revised response November 2019 to Logan City Comment 1 in Appendix A.
3.	Logan City	“Logan believes that this [<i>PacifiCorp completing a detailed LiDAR and bathymetry mapping effort, and conduct analysis on phosphorous in bed sediments</i>] will be critical to being able to model and understand the water quality impacts, both good and bad, of the proposed operational modifications” Logan City Comments, pg. 5).	Comment noted.
4.	Logan City	Logan City clarified that the intent of their comment on common carp in the Bear River and Cutler Reservoir are “to provide clarification that the water quality impacts of the operations of the reservoir <u>may</u> be masked by the carp and invasive species” (Logan City Comments, pg. 5).	See PacifiCorp revised response November 2019 to Logan City Comment 4 in Appendix A.

No	COMMENTER/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
5.	Logan City	<p>“While the hydraulic analysis can identify the water surface profile mobilization, it will not identify slope stability. Slope stability is a geotechnical investigation, similar to the Bishops' modified slice method, which will identify the areas where slopes are too steep to be stable with repeated water level fluctuations. FERC is encouraged to consult internally with their Dam Safety experts regarding this methodology. Areas of concern are noted all up and down the Bear River and the Logan River where annual spring high water increases the water level, and then as the water level lowers, the hydrostatic pressures trapped in the slow draining soils cause bank sloughing. These soils then disperse and are carried downstream” (Logan City Comments, pg. 6).</p> <p>Logan City requests that this soil stability component be included in the Land Use Study.</p>	<p>Comment noted. Although the hydraulic model and corresponding analysis will not quantify slope stability of reservoir shores and Bear River channel banks below Cutler Dam, the model can define the range and rate of change in WSEL that reservoir banks would experience under the proposed changes in reservoir management. This information, coupled with existing data from soil surveys and other information, will help identify which bank areas may be susceptible to increased instability as a result of potential future operation changes. PacificCorp has a robust Dam Safety Program, overseen by FERC, that is in effect with the current license, and will continue to be in any future license period. See PacificCorp revised response November 2019 to Comments 9, 11, and 41 in Appendix A as well as response to Logan City Comment 8 in Appendix B.</p>
6.	Logan City	<p>On the topic of Water Quality: “When the model type was discussed, one of the participants stated that a full mixing model will be used because of the very shallow nature of the reservoir. However, this comment is opposite of the conditions in a shallow reservoir where varying temperatures, restricted flow paths, and water quality variations create hydraulic separations and flow shortcuts rather than full mixing. These issues can be seen in Google Earth photos, as infrequent as they are collected, on the Bear River, Little Bear River, Swifts Slough, Clay Slough, the Island area adjacent to the Bear River, etc. While the dam may reflect full mixing within the reservoir, the full mixing assumption does not apply because the upper section does not satisfy the conditions for a full-mixing model” (Logan City Comments, pg. 7).</p>	<p>At the October 29, 2019 collaboration meeting with Logan City, PacificCorp agreed to amend the Water Quality Study adding a two-phased study plan approach. Phase 1 would be filed with FERC as part of the ISR providing recommendations on the Phase 2 scope of work if warranted. As such, it is premature at this time to determine the type of modeling that should occur in advance of Phase 1 being initiated. See PacificCorp revised response November 2019 to Logan City Comment 2 in Appendix A.</p>
7.	Logan City	<p>“As part of the fieldwork to be completed in the Shoreline Habitat Characterization Proposed Study Plan (TERR2) Section 2.2, Logan City encourages PacificCorp to also locate key weeds and invasive species to their notes while performing their ENVI calibration and Ute-ladies'-tresses orchid. In addition to <i>Phragmites</i>, we recommend mapping and identifying for treatment goatsrue (<i>Galega officinalis</i>) which is a Class 1B weed, dyer’s woad (<i>Isatis tinctoria</i>) which is a Class 2 weed, tamarisk (<i>Tamarix ramosissima</i>) a Class 3 weed, field bindweed (<i>Convolvulus</i> sp.) a Class 3 weed, Puncturevine (<i>Tribulus terrestris</i>) a Class 3 weed, and Russian olive (<i>Elaeagnus angustifolia</i>) a Class 4 weed. While Logan recognizes that PacificCorp has had a monumental task to deal with weeds in the project area, we believe this is a good opportunity to identify potential problem areas while performing the other studies and field calibration” (Logan City Comments, pg. 8).</p>	<p>As requested, PacificCorp has agreed to add these specific weeds to the list of species to be documented. See Section 2.2.5.2.</p>
8.	Logan City	<p>As part of the Land Use Proposed Study Plan (TERR 3):</p> <ul style="list-style-type: none">• PacificCorp has recognized the potential impacts on pumping stations. the Logan City WWTF (Section 2.3.3. pg. 2-14). and several other uses. The plan specifically recognizes the impacts of possible erosion both in the reservoir and possibly downstream. Logan City recognizes this effort and is appreciative of these efforts. However. one source of sediments, particularly sensitive to rapid increases and decreases in water surface elevations are from sloughing. Where erosion is primarily the result of shear stresses associated with velocities, wind, and flowing water. sloughing may result from unbalanced forces in the soils. generally related to differential heads or pore pressures. According to the NRCS Web Soil Survey, the majority of the soils in the project area are silts, silt loams. and complex soils with silt in excess of 45 percent while clay concentrations in Box Elder County are typically less than 25 percent and 20 to 50 percent in Cache County. These ratios are commonly associated with weak soils that can be slow draining and have low soil shear strength. thereby more subject to sloughing-a type of shear failure. This is seen commonly along the Logan River every summer after the high spring runoff. While mapping the Land Use. Logan City encourages PacificCorp to perform a bank stability analysis both along Cutler Reservoir and downstream along the Bear River, using the Modified Bishops method or similar applicable method, to determine the stability of the soils in response to the frequent water level fluctuations.	<p>Potential impacts on bank stability resulting from rapid change in water surface elevation are described in Section 2.3.5.3 of the RSP. This section also describes how bank erosion will be monitored in 2020 at several locations downstream of Cutler dam during reservoir discharge events designed to simulate the proposed change in operations.</p> <p>Logan City’s concerns with bank stability due to changing WSEL have been addressed previously in PacificCorp’s revised response November 2019 to Comments 9 and 11 in Appendix A and the response to Comment 5 in Appendix B.</p> <p>Additional detail has been added to Section 2.3.5.3 of the RSP to describe existing information and the methods that will be used to evaluate areas of potential instability. Given the proposed narrow range of potential future operational scenarios, corresponding lack of substantial change in water surface elevation, and our understanding of existing bank conditions, we anticipate that a qualitative analysis will suffice to characterize potential impacts on bank stability. If existing data indicate that the potential exists for increased instability, further quantitative analysis of impacts on bank stability (e.g. Modified Bishop’s method or other methods approved by the U.S. Army Corps of Engineers) will be conducted. At this time PacificCorp anticipates that further quantitative analysis will not be needed.</p>

No	COMMENTER/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
9.	Logan City	<p>Water Quality is proposed for the study in Section 3.2.</p> <p>a. In section 3.2.3, please also reference R3 I 7-2 Standards of Quality for Waters of the State as established by the State of Utah and as required by the Clean Water Act. This rule defines water quality standards (R317-2-7) and the Antidegradation Policy (R3 I 7-2-3). These standards and policies establish limits for constituents beyond just phosphorus and dissolved oxygen set forth in the TMDL reference in the document.</p> <p>b. Section 3.2.5.1 states that “Any relevant TP, dissolved TP and orthophosphate data from the core analysis will be provided...” Please define the phrase “Any relevant.”</p> <p>c. Section 3.2.5.2 states that samples will be selected along several transects for TP, orthophosphate, and DO. These appear to be grab samples and can be useful. However, DO in Cutler is highly affected by the time of day as documented in the TMDL and well known by PacifiCorp. Figure I, taken from the TMDL. Appendix C, reflects the variation of temperature, DO, and the percentage of saturation. Figure I demonstrates that Cutler Reservoir experiences extreme fluctuations at any given point in the system reflecting the strong influence of algae in the system with oxygen ranging from 40 percent to 140 percent of saturation within a 24-hour period. Additionally, the fall drawdown has taken place in November. which may also affect the sensitivity of the data due to the difference in the algae growth and population, water temperature, and increased inflows from freshwater sources associated with the cessation of irrigation diversions. Based on this information, Logan City recommends establishing the sondes at discrete locations around the cross-section to measure the DO over time, similar to the TMDL, at the transects. Logan City agrees that the water quality will vary from the top of the water surface profile to the bottom with the top typically having much better-dissolved oxygen this time of year. As a result, not all points on each transect at both depths would be reasonable. However, establishing the sondes at two locations and two depths for each transect would be reasonable. This recognizes that the transects would be taken on different days.</p> <p>d. Section 3.2.5.3 states that, “If applicable, trend graphs may be incorporated in the synthesis report...” Logan City recommends that trend graphs be included to reflect both mg/L and tons or lbs per year. This will be important since high flow years such as 2011 through 2012 may dilute the mg/L, but actually, increase the mass (tons/year or lbs/year) being carried into or out of the reservoir.</p> <p>e. Section 3.2.5.3 also states that the Study Plan report will provide “A description and analysis of how proposed operations may affect water quality within the study area.” How this analysis of the proposed operations will be accomplished has not been documented in the Study. Rather, it focuses extensively on data review and collection, but very little on the analyses. In the October 29, 2019 meeting with Logan City, a representative of PacifiCorp stated that a water quality model would be used, and that full mixing would be assumed. However, as stated in Logan City's responses above, the full mixing within the reservoir assumption does not apply. The specific modeling approach and assumptions have not been stated and need to be clarified and justified.</p>	<p>a. The 2010 TMDL, and by association the Utah State Water Quality standards, are referenced in Section 3.2.3 of the RSP.</p> <p>b. Section 3.2.5.1 will be revised in the following manner: “Any TP, dissolved TP and orthophosphate data from the core analysis will be incorporated into the final Water Quality Technical Report.”</p> <p>c. Sampling methods described in Section 3.2.5.2 are specifically designed to measure differences between pre-drawdown conditions and conditions during the drawdown period. The recent drawdown sampling reflects conditions expected in late fall and winter.</p> <p>d. Not all the available data correspond directly from study to study so it may not be feasible to develop trend graphs for comparison purposes. As stated, if applicable, PacifiCorp will do so.</p> <p>e. At the October 29, 2019 collaborative meeting with Logan City, PacifiCorp agreed to amend the Water Quality Study adding a two-phased study plan approach. Phase 1 would be filed with FERC as part of the ISR providing recommendations on the Phase 2 scope of work if warranted. As such, it is premature at this time to determine the type of modeling that should occur in advance of Phase 1 being initiated. These changes are noted in Section 3.2.1. See PacifiCorp revised response November 2019 to Logan City Comment 2 in Appendix A.</p>
10.	Logan City	<p>a. The Study states in section 3.3.5.2 that “the 2D model will be used to analyze flow behavior, inundation boundaries, and other hydraulic characteristics...”. Logan City recommends that the characteristics of water surface elevations, velocities, and shear stresses be specifically added. They are calculated with the model run and can be used to quickly generate a GIS map useful in demonstrating the overall reservoir flow patterns and the detailed effects of proposed operation modifications. Additionally, it will be useful in documenting any areas that will be sensitive to specific erosion based on shear stresses and the results of the sediment cores and mapping effort.</p> <p>b. To prevent complications in the analyses and the evaluations of the operating conditions being evaluated, Logan City recommends the following:</p> <p>i. In order to fully capture the impact of the changes in operations of the power plant to meet the fluctuations in the power grid associated with solar and wind power supplies, the time step associated with the model may be from 1 minute to 30 seconds, possibly even shorter.</p>	<p>a. PacifiCorp will include water surface elevations, velocities, and shear stress output as part of the Hydraulic Modeling Study (Section 3.3.5.4 of the RSP).</p> <p>b. (i) At this time the final timestep of the hydraulic/sediment transport model is unknown. The model timestep will be finalized after the construction of the 2D mesh is complete, the model has been successfully calibrated, and the interval at which potential future operational changes of Cutler Dam are finalized. Once these items are completed the resulting timestep will be determined based on model run time, model stability, and the interval of any proposed changes in dam operations (i.e., if PacifiCorp wants to see changes made at 5-minute intervals the timestep would not be greater than 5 minutes).</p> <p>b. (ii) The Courant number of the model will be examined as part of the model stabilization and calibration as outlined in Section 3.3.5.3 of the RSP.</p>

No	COMMENTS/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
		<p>ii. Based on the time step the expected velocities in the reservoir, it will be necessary to set the grid size such that the Courant number is less than 2.0. The Courant number is defined as:</p> <div>$\frac{Velocity \cdot \Delta X}{\Delta Time} < 2.0.$</div>	
11.	Logan City	<p>Sedimentation Proposed Study Area (AQ4)</p> <p>a. In section 3.4.1, the Study references Clyde’s report that the erosion in the Bear River Basin. It references that today the Bear River “continues to transport these fine material deposits along with river banks into the reservoir.” Correctly stated, “Even with the efforts in the Bear River Basin to reduce erosion, stabilize private and Federal lands from a sheet, rill, and gully erosion, and bank stabilization efforts the Bear River and its tributaries continue to carry large amounts of fine material deposits into the reservoir.”</p> <p>b. Figure 3-5 in the Study shows the locations for proposed sampling locations. Many of the sampling locations are near the channel focus points where velocities will be higher and will tend to mobilize the fine sediments. We recommend some additional sampling locations based on more significant sediment deposition. While these locations are not necessarily subject to erosion with fluctuations, they will identify the conditions that would be experienced if the erosion is increased outside of the concentrated flow areas. Logan has provided recommendations for modifications to the sampling locations.</p> <p>c. Section 3.4.5 parameter #4 states that a small percentage of the cores be tested at depth for various important water quality parameters. However, “small percentage” isn’t defined. Please define this percentage. It is recommended that it be at least 25 percent of the samples.</p> <p>d. Section 3.4.5 parameter #5 states that three samples will be tested for pesticides and RCRA metals. The heavy metals and pesticides will tend to bond with the clays. These will be more likely to settle in the deposition areas outside of the main flow areas. Flushing in the areas around flow restriction zones will likely move the fine-grained silts and clays during high flow years such as 2011. This is reflected in the deepwater sections located at the bridge crossings, inflow area of the Bear River, and other flow restriction areas.</p> <p>e. Page 3-34 talks about the field data collection “may” include air temperature, water temperature, DO, and pH to log conditions while sampling. Logan City believes the “may” should be changed to “will.”</p> <p>f. Page 3-34. The last paragraph states: Two hours before the beginning of any data collection, the reference GPS base station will allow for stabilization... This sentence is incomplete and needs to be clarified. As an alternative, the Utah HARN network is tied to the Logan City base station and is available through the VRS network with the cell phone. This will simplify the establishment of accurate GPS measurements.</p>	<p>a. Comment noted.</p> <p>b. Comment noted. Clarity is provided in Section 3.4.5.1 of the RSP. Figure 3-5 shows the proposed general sampling locations for phosphorus. Sediment structure will determine the precise sampling location. However, PacificCorp stands by the general area proposed for sampling locations. The sampling location selected by Logan City in the North Marsh is near the Logan River historical channel. The channel consists of relatively armored bed sediments in the area and has low potential for sediment core sampling.</p> <p>c. PacificCorp clarified this in Section 3.4.5 of the RSP. Ten percent of the cores will be used for baseline data.</p> <p>d. Comment noted.</p> <p>e. PacificCorp revised Section 3.4.5.1 in the RSP to reflect the request for collecting baseline ambient and water quality data.</p> <p>f. Comment noted.</p>

CONSULTATION CHRONOLOGY WITH USFWS

- USFWS original Study Plan Requests prior to release of the PSP and their comments on FERC SD1 were submitted July 29, 2019 as shown in Appendix A (Comments 21-24).
- PacifiCorp responded to these initial comments as part of the September 11, 2019 Proposed Study Plan submittal.
- USFWS and PacifiCorp held a phone conference on August 22 and October 1, 2019, as well as an in-person meeting with USFWS Bear River Bird Migratory Refuge staff on October 7, 2019 to discuss the original comments/responses.
- PacifiCorp hosted a Study Plan Meeting on October 8, 2019. USFWS was in attendance.
- On November 30, 2019 PacifiCorp released a letter to stakeholders and FERC documenting the August 22, October 1, and October 7 discussions, and revising their original responses to comments based on new dialogue.
- PacifiCorp’s revised responses from November 2019 are captured in Appendix A (above).
- On December 11, 2019, USFWS submitted the following comments documenting what USFWS believes are outstanding and/or resolved items.

No.	COMMENTS/ REQUESTER	COMMENT RECEIVED ON PSP DECEMBER 2019	PACIFICORP RESPONSE JANUARY 2020
1.	USFWS Mountain Prairie Region – Division of Water Resources	PacifiCorp indicated that the EIM flows will be short in nature (~5 minutes) and that these discharges will be attenuated once the flows reach the Refuge downstream....[USFWS] would prefer to see some sort of mock scenario that details a typical week and how the EIM flows will affect discharge from Cutler Dam.”	Proposed change in operations can be simulated using the hydraulic model that will be developed as part of the Hydraulic Modeling Study Plan. The discharge from Cutler Dam as a result of these potential future operations can be extracted and quantified for evaluation to the downstream terminus of the hydraulic model boundary (Section 3.3.4 in the RSP detailing the hydraulic model study area). Effects further downstream can then be extrapolated as needed.
2.	USFWS Mountain Prairie Region – Division of Water Resources	Our concern with EIM flows is not with the cumulative volume being delivered to the Refuge, it is the frequency in changes of the discharge rate and the effect on river stage that may require different water management operations at the Refuge. Th discharge from Cutler Dam may already be an output of the Hydraulic Modeling Study and no additional analysis or changes to the Proposed Study Plan may be needed. USFWS want to ensure that the changes in the Bear River discharge downstream of Cutler due to the proposed EIM operational changes are clearly described and changes are easily reviewed to understand any downstream impacts.	Potential changes from current operations in discharge from Cutler Dam including frequency of discharge fluctuations associated with shifts in Project operations will be documented in the hydraulic model outputs (Section 3.3.5.4 in the RSP).

ADDITIONAL CONSULTATION CONDUCTED WITH STAKEHOLDERS

No	COMMENTER/ REQUESTER	COMMENT RECEIVED AT OCTOBER 8, 2019 STUDY PLAN MEETING	PACIFICORP RESPONSE JANUARY 2020
1.	Jim Watterson	<p>At the October 8, 2019 Study Plan meeting, there were several noted comments from Mr. Watterson that PacificCorp captured. Below are those comments/requests.</p> <ol style="list-style-type: none">1. Check with Jim Watterson on cultural sites.2. How could the state work with PacificCorp to manage issues (like noise) across jurisdictions? e.g., “No Wake Zone”3. Evaluate types of access at different sites.4. Visitor use survey will tease out recreationists and their impacts on wildlife.5. Can wildlife tracks be documented [used to identify predators]? Attraction may not be there in the fall, so results may not be representative.6. Make sure to use the right technique on macroinvertebrate study – match geology.7. ~10 or 11 sites were selected for phosphorus study. Ensure there are enough sites to adequately characterize the very large reservoir8. Consider looking as far as Amalga Bridge9. Evaluate impacts at SR 218 (Amalga) bridge10. Consider flying LiDAR over Amalga Bridge	<p>PacificCorp Responses to Mr. Watterson’s list of comments are tabulated below in chronological order:</p> <ol style="list-style-type: none">1. PacificCorp contacted Jim and Jason Watterson regarding cultural sites during the 2019 drawdown and will continue to coordinate with the Wattersons regarding cultural sites during the 2020 study season.2. This is not a study plan comment. Study results may identify opportunities for the state of Utah Division of Parks and Recreation (the regulatory authority over boating and waterways in Utah) to implement regulations consistent with recreation needs, safety and wildlife protection in different zones of Cutler Reservoir.3. The Recreation Study Plan described in Section 4.1 of the RSP includes an evaluation of access at respective recreation sites and the types of recreation activities associated with those recreation sites.4. Impacts to wildlife will be described through the Shoreline Habitat Characterization study. The recreation study is not designed to study impacts to wildlife.5. As discussed in the October 8, 2019 meeting, an effort to survey for predator tracks during the fall 2019 drawdown would serve limited purpose since the attraction of nesting birds would not be present. As a matter of curiosity, any predator tracks present during camera maintenance work were noted. However, on the days this work was conducted, tracks were difficult to detect since temperatures were below freezing and the mud froze rapidly after being exposed.6. PacificCorp will employ an Eckman dredge to sample the reservoir bottom for benthic macroinvertebrates (BMI). Most of the substrate in Cutler Reservoir is fine silt and clay, The Eckman dredge is the most suitable device for sampling BMI in this type of substrate. Section 3.1.5.3 in the RSP references this sampling method.7. The sites selected in the past for PacificCorp’s Resource Management Plan represented the five units in the reservoir (South Marsh, North Marsh, Bear River, Reservoir, and Canyon units) plus the Bear River downstream of Cutler Dam. Sampling in these areas is representative of the different characteristics of the reservoir. In addition, key areas of known phosphorus inputs were selected to capture the major zones of phosphorus loading. The water quality sampling locations including phosphorus are listed in Section 3.2.5.2, Table 3-1 of the RSP.8. Amalga Bridge is located outside the FERC project boundary and is not proposed as a sampling location. PacificCorp does not believe Cutler Reservoir water surface elevations have an effect on Bear River conditions at Amalga Bridge, although a pressure transducer was placed there during the 2019 drawdown specifically to address the upstream limits of reservoir flow effects.9. See response to bullet 8 above.10. See response to bullet 8 above.
2.	National Audubon Society	<p><u>Shoreline Habitat Characterization Study</u></p> <p>In general, we are pleased that PacificCorp plans to undertake a Shoreline Habitat Characterization Study (SHCS) as described in Section 2.2 of the PSP (Sept 2019). However, we have several comments concerning the proposed design of that study as further explained.</p> <p>Comment 1(a): It appears that the SHCS does not incorporate generally accepted standards for habitat-based assessments of project impacts. According to the PSP, the intent of the SHCS is to use a habitat-based assessment to evaluate how altered project operations may affect wildlife species, including shorebirds. Well-established protocols by the U.S. Fish and Wildlife Service outline how such habitat-based assessments should be planned and executed (available at https://www.fws.gov/policy/ESMindex.html). These procedures have been further discussed in publications including:</p> <ul style="list-style-type: none">• Brooks, R.P. 1997. Improving habitat suitability index models. Wildlife Society Bulletin. 25:163-167.• Van Horne, B., and J.A. Wiens. 1991. Forest bird habitat suitability models and the development of general habitat models. U.S. Fish and Wildlife Service, Fish Wild. Res. 8. 31 pp. <p>We recommend that PacificCorp modify the SHCS to better align with well-established protocols in several important (but not exhaustive) ways; in particular:</p>	<p>Habitat types in Section 2.2.5.2 have been revised to more accurately reflect the types of habitat available within the Project Boundary. A more detailed habitat modeling approach, such as those recommended, may be necessary if phase 1 of the study determines that there are areas where habitat would be degraded, and Phase 2 indicates that those habitats are being utilized.</p> <p>The RSP does not select representative species to be evaluated because all species with a specific conservation status will be evaluated.</p> <p>As a result of comments from the Bridgerland Audubon Society as well as the National Audubon Society, PacificCorp has agreed to amend the Shoreline Habitat Characterization Study (SHCS) in Section 2.2 of this RSP to include a second study phase, that, if necessary, would include surveys of bird use in the Project Boundary during the breeding and non-breeding season. Should these surveys be necessary, PacificCorp will work with local avian ecologists to select appropriate sites for surveying. The adjustments in the study plan are reflected in Section 2.2 of this RSP.</p> <p>As a result of these changes reflected in the RSP, PacificCorp believes that National Audubon’s comments are resolved.</p>

No	COMMENTER/ REQUESTER	COMMENT RECEIVED AT OCTOBER 8, 2019 STUDY PLAN MEETING	PACIFICORP RESPONSE JANUARY 2020
		<p>1. The SHCS does not select specific species for evaluation. Because individual species have specific habitat requirements and niches, relevant aspects of habitat cannot be assumed to be universally representative. The selection process should consider species of national, regional, and local conservation concern, the importance of Utah to the species’ overall conservation, urgency and effectiveness of management actions to benefit the species, the ability to monitor the species, and the ability of the species to act as a surrogate for the health of other species and the ecosystem as a whole. Multiple species that can represent the different habitat types will be necessary to assess adequately the health of habitat types present in the system. There are many examples of species selection in the literature including:</p> <ul style="list-style-type: none">• Millsap, B.A., et al. 1990. Setting priorities for the conservation of fish and wildlife species in Florida. Wildlife Monograph No. 111. 57pp.• Carignan, V., and M. Villard. 2002. Selecting indicator species to monitor ecological integrity: a review. Environmental Monitoring and Assessment. 78:45-61. <p>The literature and data source review outlined in the SHCS could form the basis for selecting species for assessment. Additionally, to inform this species selection, we recommend that PacificCorp also review documentation pertaining to Cutler Reservoir’s Important Bird Area status (available at: https://www.audubon.org/important-bird-areas) and further consult with local avian ecologists. Avian experts associated with Audubon organizations would be willing to provide further input to assist PacificCorp in the species selection process.</p> <p>2. In the SHCS it appears that methods, rather than selected species, will dictate the vegetation types that will be evaluated. According to the SHCS, LiDAR and aerial imagery will be used to map short herbaceous vegetation, tall herbaceous vegetation, woody vegetation, and bare ground. However, the SHCS does not explain, how and why these vegetation types are relevant to the wildlife species of interest, or if those considerations will be further clarified in a more detailed design of the SHCS. Selecting a specific set of species (see preceding bullet point) will clarify important habitat characteristics and whether LiDAR and aerial imagery can be used to assess those characteristics.</p> <p>3. The SHCS indicates that field data will be collected to validate maps of vegetation types, but it does not reference any plan to assess the abundance/occupancy/reproductive performance of wildlife species to verify that these vegetation types (or other habitat features) are meaningful to species. Habitat models verified with species-relevant performance metrics increase confidence that models are meaningful and can provide a meaningful assessment of project impacts. We recommend that the SHCS study plan be revised to align with accepted standards for habitat-based assessments of project impacts.</p> <p>Comment 1(b): We agree with Bridgerland Audubon Society’s comment from the previous PSP review and their correspondence with PacificCorp that it is important to incorporate surveys of the temporal and spatial characteristics of the avian community at Cutler Reservoir. Rather than try to merge the vegetation surveys with bird habitat monitoring, or tweaking the vegetation/shoreline monitoring to address bird habitat, another approach that could potentially be used as an alternative to 1(a) above, is for PacificCorp to use the LiDAR data to identify specific habitats, such as shallow mudflat areas that would be exposed at the various fluctuating operational elevations during appropriate times of year (e.g. spring and fall migrations and breeding season). Target those areas (or subset of them) to monitor using standardized bird survey protocols during appropriate seasons for bird usage to establish baseline data from 2020 and use this information to model potential impacts at various operation levels. PacificCorp should then continue to monitor target shorebird habitat locations (or subset of them) for at least the first 5 years (and at a lesser intensity for the term of the license) following implementation of any new permitted operational levels to determine usage by shorebirds at target locations and any increases or</p>	

No	COMMENTER/ REQUESTER	COMMENT RECEIVED AT OCTOBER 8, 2019 STUDY PLAN MEETING	PACIFICORP RESPONSE JANUARY 2020
		<p>decreases in habitat. This could also be designed for waterbirds and wading birds such as White-faced Ibis, for example.</p> <p>We suggest that PacificCorp work with local avian ecologists to develop standardized survey protocol for avian monitoring, including identifying appropriate times of year to monitor and species selection (using easily identifiable species to avoid misidentifications). Standardized survey work can be cost effective but needs to be designed appropriately to capture meaningful data and identify changes in habitat use through time. Birds don’t always exhibit site fidelity for foraging and breeding so it would be important to document variability associated with foraging and breeding preferences (with longer term monitoring) versus effects of pool elevation changes. The longer the baseline data and the longer the post-elevated pool monitoring, the better.</p>	
3.	National Audubon Society	<p>According to PSP section 2.2.3 and 2.2.5.3, the impact of altered operations on land bridge formation with respect to nesting shorebirds, will be investigated (see concerns in Comment 3 below). In addition to this, the study should evaluate how altered operations will affect water depths and water quality conditions key to the foraging success of shorebirds and other wildlife. PacificCorp recognized the potential for impacts to foraging in the ‘littoral’ zone in section 7.1.6 of its Pre-Application Document Volume I (March 2019). The LiDAR data and hydraulic modeling offer clear opportunities for a foraging habitat assessment.</p>	<p>The hydraulic modeling study will produce a reservoir map of spatial depth that can be used to assess the water surface, depths, and velocities of water anywhere within the reservoir (See Section 3.3.5.4 of the RSP).The Water Quality Study (see Section 3.2 of the RSP) will investigate water quality conditions within the reservoir. Results from these two technical study plans will help inform PacificCorp and participants in the relicense proceeding how proposed project operations may affect food resources for foraging birds in the littoral zone.</p>
4.	National Audubon Society	<p>To the best of our ability to interpret, the SHCS includes a plan to assess predator use of land bridges formed by a reservoir drawdown during fall 2019 (PSP 2.2.5.3). The plan indicates this will include placement of approximately 10 cameras at and around important bird nesting sites. However, without nesting and/or breeding birds present, we do not think it is possible to make a determination concerning the presence of predators and predation on nesting and/or breeding birds. The likely outcome is a study that underestimates the degree of predation pressure on nesting and breeding birds. Given this limitation in the study design, the resulting inferences will not provide an adequate understanding of the impact if land bridges will be in place during nesting and breeding season. As environmental and operational conditions permit, use of land bridges by predators should be evaluated during the nesting and breeding season.</p>	<p>This comment stems from a misunderstanding of the purpose of the time-lapse cameras. While it is true that data from these cameras will be used to analyze the risk posed to nesting habitat on islands if water levels drop, causing land bridges to form and predators to gain access to nesting habitats, the exact way the cameras would be utilized was not fully described and therefore misunderstood. Section 2.2.5.2 has been revised to address this misunderstanding.</p> <p>In short, the primary purpose of these cameras is to calibrate and verify the hydraulic model to ensure that any conclusions drawn by the model match with observations at these locations. PacificCorp understands the importance of the colonial nesting breeding bird islands in the reservoir. The cameras will document what, if any, effects of potential future changes in operations could result, and will inform the development of PME measures, if necessary.</p> <p>Photographs may be analyzed for the presence of terrestrial predators, but this use is secondary to the model calibration use and only tangentially related to the analysis of the impacts of potential land-bridge formation on breeding birds.</p>
5.	National Audubon Society	<p>We agree with the USFWS requested studies of the effects of Cutler Reservoir operations on downstream flows and water levels and water quality (PSP page A-8). We ask that PacificCorp reconsider its stated reasons (PSP page A-8) for not pursuing this study, particularly from an ecological perspective.</p> <p>One of the primary reasons given for not pursuing this study is that the altered operations will not change the “...overall quantity of water flowing downstream” (PSP page A-8). However, it is well established that natural and managed ecological systems are sensitive to aspects of water flows beyond simple quantity. Other flow aspects of importance include timing, volume, duration, rate of change, and frequency of flows. For an excellent overview, see: Poff et al. 1997. The Natural Flow Regime. BioScience. 47:769-784.</p> <p>It is unlikely that the altered operations will leave all ecologically important aspects of flow unaltered.</p> <p>Moreover, the Hydraulic Study referenced in 3.3 and as part of the rationale for not adopting the USFWS comment, does not appear to incorporate the potential impacts to the lower part of Bear River or the Refuge. It is unclear how leaving such an assessment to the NEPA cumulative effects analysis as PacificCorp indicates, without having the underlying study/modeling to inform the cumulative effects analysis will provide a meaningful assessment.</p>	<p>See PacificCorp’s January 2020 response to Comments 1 and 2 from the USFWS for effects of dam operations on downstream flows (Appendix B).</p> <p>See PacificCorp’s September 2019 response and November 2019 revised response to Comment 21 in Appendix A from the USFWS for proposed model extension to Bear River Migratory Bird Refuge.</p>

No	COMMENTER/ REQUESTER	COMMENT RECEIVED AT OCTOBER 8, 2019 STUDY PLAN MEETING	PACIFICORP RESPONSE JANUARY 2020
		<p>Additionally, flows in the Bear River have been correlated with ecological conditions in areas of Bear River Bay beyond the Bear River Migratory Bird Refuge. See for example: Cavitt, J. 2013. Avian population analysis of the Willard Spur. Final Report to the Utah Division of Water Quality. 25 pp.</p> <p>For this reason, we support USFWS request for a study of downstream effects. We also suggest extending it spatially to consider the impacts on Bear River Bay and recognized areas of importance within the bay, including the refuge and Willard Spur.</p>	
6.	National Audubon Society	<p>We request that PacifiCorp consider designing and implementing its Hydraulic Model (PSP section 3.3) in a manner that will allow it to be integrated with other locally important modeling frameworks. Among these other frameworks are (1) the RiverWare model currently being developed by the States of Idaho, Utah, Wyoming and PacifiCorp to assess the effects of the proposed Bear Lake appropriations on Bear River hydrology; and (2) the Great Salt Lake Integrated Model being used to assess the impacts of land use, water-use, and climate changes on the Great Salt Lake elevation. Model integration will allow PacifiCorp to leverage its existing resource commitments to begin producing a set of models capable of evaluating system-wide operations versus one-off, project-specific models.</p> <p>Importantly, PacifiCorp is involved in both the Bear River hydrology model and the Hydraulic Model referenced in PSP section 3.3. Integrating these tools to assess impacts in the lower Bear River from changes in operations at the Cutler Reservoir would seem to be a reasonable possibility.</p>	<p>PacifiCorp maintains that the proposed boundary of the hydraulic model (including shifting, if any,as indicated by the model analysis, [Section 3.3.4]) includes all areas that would be directly affected by potential future changes in operations. The development, calibration, and use of the hydraulic model for the purposes of answering the questions outlined in the PSP report will be the first priority of the modeling effort. Integration of the model to other software or other models could potentially be used by other parties in the future to assist with their research interests. The tri-state framework and Great Salt Lake model referenced by National Audubon are outside the scope of the Cutler Project relicensing effort.</p>
7.	National Audubon Society	<p>There are various climate scenarios that could be incorporated into the studies and models to develop a better understanding of the potential changes in the project area and Bear River hydrology. These scenarios could at a minimum provide the basis for possible license conditions should those scenarios play out over the long-proposed licensing period of 40 to 50 years. Such an important influencing factor should not be omitted from the studies. Moreover, having the ability to consider climate change in the cumulative effect’s analysis (as the response indicates) necessitates the need for at least some climate scenario modeling.</p>	<p>PacifiCorp is not proposing to incorporate various climate scenarios in the resource studies. As the commenter notes, there are numerous climate scenarios available to select but none of the climate change models are known to have the accuracy needed to predict the degree of specific resource impacts or serve as the basis for informing license conditions (FERC February 23, 2009 Study Plan Determination for the Yuba-Bear, Drum-Spaulding, and Rollins Projects). Climate change will be addressed as part of FERC’s Cumulative Effects analysis.</p>
8.	Elliott Mott	<p>Drawdown mechanics = water will pass through the units</p>	<p>That is correct. Water will pass through the turbines to implement the drawdown.</p>
9.	FERC	<p>FERC provided valuable insight into improvements that could be made to multiple resource study plans to improve analysis and feedback from stakeholders and FERC. FERC suggested that PacifiCorp improve:</p> <ul style="list-style-type: none">• Add descriptions of why specific sampling points or critical areas were chosen to be studied as part of multiple resource study plans.• Specify in study plans the quantity and location of specific sampling sites for the Sedimentation and Water Quality studies.• For the Water Quality study, summarize existing studies references in study plans.• For the Shoreline Habitat Characterization Study, build on existing information in the study plan so that stakeholders can understand what do not need to be ground-truthed.• Follow up with stakeholders on flows downstream of Cutler to the refuge, algae and weeds, and temporal and spatial characteristics of the avian community.	<ul style="list-style-type: none">• As shown in Appendix B, and the edits made in specific study plans, PacifiCorp incorporated FERC’s suggestion to clarify and specify the details of the study plans.• PacifiCorp has made multiple improvements to the PSP and the RSP that incorporate both stakeholder and FERC feedback.• PacifiCorp has added annotated bibliographies for the studies referenced as part of the Water Quality study.• The Shoreline Habitat Characterization Study has been improved and elaborated upon for the RSP, and responses and specific changes are noted throughout Appendix B.• Several studies, including Water Quality and Shoreline Habitat Characterization, now include a phased approach to better characterize what potential effects may result from possible future changes to operations, based on initial analysis utilizing the new hydraulic model output with other existing information, prior to additional new data collection.• PacifiCorp has been diligently working with stakeholders to understand these study requests, and has incorporated some of the suggested feedback into the studies, as well as expanding the Shoreline Habitat Characterization Study.
10.	UDWQ	<p>The Utah Division of Water Quality (UDWQ) appreciated the opportunity provided by PacifiCorp on October 29, 2019 to discuss comments submitted by UDWQ to the Federal Energy Regulatory Commission (FERC) on PacifiCorp's Proposed Technical Study Plans (PSP) in July 2019. The proposed changes PacifiCorp made in response to comments were incorporated into the Revised Study Plan (RSP) and sufficiently addressed UDWQ's comments and concerns. UDWQ has no additional study-related concerns and supports PacifiCorp proceeding with submitting the proposed RSP to FERC.</p>	<p>Updates per consultation with the UDWQ have been incorporated into the Water Quality Study. See PacifiCorp revised responses in Appendix A for UDWQ Comments 42 through 45. No further updates are proposed in RSP.</p>

APPENDIX C

STUDY PLAN MASTER SCHEDULE

Revised Study Activity 2019-2021	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Cultural																			
Drawdown Fieldwork		X	X	X	X														
Field Studies & Analysis												X	X	X					
6-Month Progress Update													X						
Initial Study Report																		X	X
Fish & Aquatic																			
Drawdown Fieldwork				X	X														
Field Studies & Analysis								X	X	X	X	X	X	X	X	X	X		
6-Month Progress Update													X						
Initial Study Report																		X	X
Hydraulic Modeling																			
Drawdown Fieldwork				X	X														
Field Studies & Analysis							X	X	X	X									
6-Month Progress Update													X						
Initial Study Report																		X	X
Land Use																			
Field Studies & Analysis							X	X	X	X	X	X	X	X	X	X	X		
6-Month Progress Update													X						
Initial Study Report																		X	X
Recreation																			
Field Studies & Analysis									X	X	X	X	X	X	X	X			
6-Month Progress Update													X						
Initial Study Report																		X	X
Sedimentation																			
Field Studies & Analysis			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6-Month Progress Update													X						
Initial Study Report																		X	X

Revised Study Activity 2019-2021	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Shoreline Habitat Characterization																			
Phase 1 Desktop Analysis								X	X	X	X	X	X						
Phase 2 Bird Surveys															X	X	X	X	X
6-Month Progress Update													X						
Initial Study Report																		X	X
Threatened and Endangered Species Survey																			
Field Studies & Analysis	X	X	X										X	X					
6-Month Progress Update													X						
Initial Study Report																		X	X
Water Quality																			
Drawdown Fieldwork				X	X	X													
Drawdown-Specific Reporting							X	X											
Field Studies & Analysis																X	X	X	X
6-Month Progress Update													X						
Initial Study Report																		X	X

X Estimated proposed study season.

X FERC/ILP Regulatory Milestone

X Second study season (if necessary)

Date Dates in Blue text represent 2019

Date Dates in Green text represent 2020

Date Dates in Orange text represent 2021

APPENDIX D

CONSULTATION RECORD

From: [Miriam Hugentobler](#)
To: [David Cottle](#)
Cc: blue@bearlakewatch.com; khatoon.melick@ferc.gov; [Kenneth Hogan](#)
Subject: Cutler Hydro Relicensing - Study Plan Consultation Meeting
Date: Friday, December 06, 2019 9:31:46 AM
Attachments: [Cutler Study Plan Consultation Letter - BLW.pdf](#)

Dear Mr. Cottle,

Thank you again for meeting with PacifiCorp to discuss Bear Lake Watch's study requests for the Cutler Hydroelectric Project relicensing process. Attached is a cover letter and comment response table, as discussed during our informal meeting on November 19, 2019.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document as well. Please let me know if you have any questions.

Eve Davies, Principal Scientist

Renewable Resources, PacifiCorp

1407 West North Temple, Ste. 110

Salt Lake City, Utah 84116

801-220-2245

801-232-1704 (cell)



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

December 6, 2019

VIA E-MAIL TO BEARLAKEWATCH@AOL.COM

Mr. David Cottle
Co-Executive Director
Bear Lake Watch
4544 Hwy 89
Fish Haven, Idaho 83287

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mr. Cottle:

Thank you for your participation in study plan consultation meetings for the Cutler Hydroelectric Project (Project) relicensing process in June, October, and November 2019. Bear Lake Watch (BLW) submitted comments and study plan requests to the Federal Energy Regulatory Commission (FERC) in July 2019, and also attended and contributed to the October 8, 2019, public workshop focused on PacifiCorp's Proposed Study Plan (PSP), which was filed with FERC on September 11, 2019. Subsequently, PacifiCorp communicated with BLW to determine if BLW was interested in a meeting to discuss their earlier comments. BLW and PacifiCorp met informally on November 19, 2019 and discussed BLW's more recent concerns regarding aquatic invasive species (one has recently been reported at Bear Lake), and the proposed sediment modeling in the reservoir, as well as the updated BLW comment response table. The purpose of the meeting was to gain a better understanding of BLW's comments and study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP, and attempt to reach agreement on remaining comments regarding the PSP. PacifiCorp has made considerable progress addressing BLW's study plan comments, including preparation of a table of PacifiCorp's revised responses to BLW's study plan requests that is enclosed with this letter. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record and will be updated as necessary.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. If you choose to comment on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP), and those that may no longer be applicable as a result of our various meetings. As stated by FERC at the October 8, 2019 study plan meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meeting. Stakeholders will have the opportunity to review and comment on the RSP following that January 10, 2019 filing.

Please contact me directly if you feel the attached comment table does not accurately capture the adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Claudia Cottle, Co-Executive Director, Bear Lake Watch
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosure:

Table of BLW Comments, Study Plan Requests, and PacifiCorp Revised Responses

ENCLOSURE

BEAR LAKE WATCH STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (NOVEMBER 2019)
<u>Geographic scope of cumulative efforts should be the entire Bear River Basin.</u>	Comment noted. FERC's SD1 identified the Bear River Basin, and the mainstem of the Bear River as the geographic scope for cumulative effects for specific resource areas.	<u>No proposed change to the Revised Study Plan (RSP).</u> FERC's SD2 details the current scope of cumulative impacts for each of the resources identified. FERC modified Section 4.1.2, <i>Geographic Scope</i> , to include a cumulative effects analysis of geology and soil resources from the Bear River Hydroelectric Project P-20 downstream to Great Salt Lake (SD2, page 7).
<u>The allocations of irrigation water are spelled out in the Amended Bear Lake Settlement Agreement (2004) and should be part of the FERC record for Cutler relicensing.</u>	Comment noted. The Bear Lake Settlement Agreement and all the major water uses are addressed in the PAD in Section 4.3 and thus are part of the FERC record for Cutler relicensing.	<u>No proposed change to the RSP.</u>
<u>Requests an additional study that would model the Bear River system to include Bear Lake and the hydro plants downstream.</u> The model should include enough to show what-ifs, impacts of different flow regimes, impacts and reservoir refill times when spinning reserve is needed, impacts and refill times when Cutler is operated at the proposed new levels, and any impacts to Bear Lake.	PacifiCorp is not proposing to change the withdrawals from Bear Lake nor the operations from projects upstream of Cutler Reservoir. Additionally, PacifiCorp maintains the upstream projects are not hydraulically connected or dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. Additionally, upstream projects are not dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. Additionally, a Public Interest Consideration per the Federal Power Act under 18 CFR §5.9 is needed to for PacifiCorp to consider merits of this study.	<u>No update proposed in RSP.</u>

From: [Miriam Hugentobler](#)
To: jaron_andrews@fws.gov
Cc: erin_holmes@fws.gov; Michael_Dunphy@fws.gov; paul_abate@fws.gov; george_weekley@fws.gov; khatoon.melick@ferc.gov; [Kenneth Hogan](#)
Subject: Cutler Hydro Relicensing - Study Plan Consultation Meetings
Date: Thursday, December 05, 2019 3:29:26 PM
Attachments: [Cutler Study Plan Consultation Letter - USFWS.pdf](#)

Dear Mr. Andrews,

Thank you again for meeting with PacifiCorp to discuss U.S. Fish and Wildlife Service's study requests for the Cutler Hydroelectric Project relicensing process. Attached is a cover letter and comment response table from our meetings on August 22, 2019, and October 1 and 7, 2019.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document as well. Please let me know if you have any questions.

Eve Davies, Principal Scientist

Renewable Resources, PacifiCorp

1407 West North Temple, Ste. 110

Salt Lake City, Utah 84116

801-220-2245

801-232-1704 (cell)



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

December 5, 2019

VIA E-MAIL TO JARON_ANDREWS@FWS.GOV

Mr. Jaron Andrews
Hydrologist, Division of Water Resources
Mountain-Prairie Region
U.S. Fish and Wildlife Service
P.O. Box 25486, DFC
Denver, Colorado 80225

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mr. Andrews:

Thank you for your participation in study plan consultation meetings for the Cutler Hydroelectric Project (Project) relicensing process on August 22, 2019 and October 1 and 7, 2019. These meetings focused on U.S. Fish and Wildlife Service's (USFWS) comments and study plan requests submitted to the Federal Energy Regulatory Commission (FERC) in July 2019, and a discussion of PacifiCorp's Proposed Study Plans (PSP) filed with FERC on September 11, 2019. The purpose of the meetings was to gain a better understanding of USFWS's comments and study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP or were no longer applicable, and attempt to reach agreement on remaining comments regarding the PSP. PacifiCorp has made considerable progress addressing USFWS's study plan comments including preparation of a table of PacifiCorp's revised responses to USFWS's study plan requests that is enclosed with this letter. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. If you choose to comment on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP), and those that may no longer be applicable as a result of our various meetings. As stated by FERC at the October 8, 2019 study plan meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meetings. Stakeholders will have the opportunity to review and comment on the RSP following that January 10, 2019 filing.

Please contact me directly if you feel the attached comment table does not accurately capture the adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Erin Holmes, USFWS, Bear River Migratory Bird Refuge
Michael Dunphy, USFWS, Bear River Migratory Bird Refuge
Paul Abate, USFWS, Utah Ecological Services Field Office
George Weekly, USFWS, Utah Ecological Services Field Office
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosure:

Table of USFWS Comments, Study Plan Requests, and PacifiCorp Revised Responses

ENCLOSURE

TABLE OF USFWS'S STUDY REQUESTS AND PACIFICORP REVISED RESPONSES

USFWS STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (NOVEMBER 2019)
<p>Study Request: Effects of Cutler Reservoir fluctuations on flows and water levels at Bear River Migratory Bird Refuge (BRBR) facilities downstream of Cutler Dam</p> <p>USFWS is concerned that large swings in the discharge of the Bear River will inhibit water diversions to BRBR, damage BRBR infrastructure, or lead to flooding of privately owned property along the Bear River.</p> <p>USFWS recommends that a study be conducted to better characterize the proposed changes in reservoir elevations, Bear River discharge, and what effect it has on downstream facilities (pg. 3 has full details of study request).</p>	<p>PacifiCorp maintains the Hydraulic Modeling Study Plan scope is an appropriate level of effort given the direct and indirect effects identified in FERC's SD1. PacifiCorp is not proposing to change the overall quantity of water flowing downstream. Other large tributaries, multiple constriction points, and an unknown number of irrigation withdrawals (potentially a very large number) downstream of Cutler Reservoir could have flow-related impacts on water in BRBR. However, operation of the Project would not incrementally contribute to these flow-related impacts because there would not be a change in the overall quantity of water flowing downstream as a result of the Project. BRBR will be addressed as part of the NEPA cumulative effects analysis to the extent that BRBR is within the geographic scope of effects from operation of the Project. PacifiCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.</p>	<p>PacifiCorp agrees and maintains that the potential effects of reservoir fluctuations downstream of Cutler Dam (including at BRBR) will be assessed by the Hydraulic Modeling Study Plan. PacifiCorp clarified current and potential future reservoir operation regimes with USFWS staff, as follows:</p> <p>On August 22, 2019, the USFWS and PacifiCorp staff held a conference call to discuss the USFWS Scoping comment letter on the Cutler Hydroelectric Relicensing project. Subsequently, PacifiCorp staff met with USFWS BRBR personnel on October 7, 2019 to better understand the agency's concerns regarding general Cutler operations, as well as to discuss current and potential future operational scenarios. In that meeting, PacifiCorp explained that the purpose of the drawdown was to conduct preliminary required relicensing studies and clarified it was not a proposal for future operations. The SD2 table labeling the analysis range as the proposed operations range was clarified and addressed in additional detail. PacifiCorp's hydrologist gave a presentation with additional detail regarding current Cutler operations, as several USFWS staff are relatively new to BRBR.</p>

USFWS STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (NOVEMBER 2019)
<p><u>Study Request: BRBR occupies portions of the historical Bear River Delta and is the natural location where sediment carried in the Bear River is deposited. Information contained in the PAD notes the potential for two management actions that may release large volumes of sediment (and associated nutrients and contaminants) into the river that may eventually settle onto BRBR: reservoir fluctuations and removal of Wheelon Dam.</u></p> <p>USFWS recommends a study be conducted to determine how greater reservoir fluctuations and/or the removal of Wheelon Dam could lead to changes in sediment and nutrient transport (details on pg. 4 of comments).</p>	<p>PacificCorp's 2D hydraulic model will be constructed to explore a number of scenarios on operation water elevations and resultant effects on sediment transport. Data collection for the model will include soil classification as well as phosphorous and other potential pollutant data. The model runs will explore transport through the dam and management decisions to control sediment. These issues will be also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.</p>	<p><u>PacificCorp agrees and maintains that the effects of both potential reservoir fluctuations and Wheelon Dam removal will be addressed with the Hydraulic Modeling Study Plan.</u></p> <p>As noted previously, PacificCorp staff met with USFWS staff on August 22, 2019 and October 1 and 7, 2019, to better understand and address the agency's concerns. In those meetings, PacificCorp explained the drawdown study was being conducted for evaluation purposes only and clarified it was not a proposal for future operations. Additional discussions regarding the 1- and 2D modeling proposed in the Study Plan clarified what information would be available to assess and what, if any, changes could occur regarding sediment load at BRBR resulting from future Cutler operations.</p>
<p>USFWS is concerned that fish and other aquatic resources are not able to survive in this portion of the Bear River due to the inability to maintain flows and the inability to pass through the dam.</p> <p><u>USFWS requests that information on impediments to or opportunities for fish passage be provided and evaluated subject to Section 18 of the Federal Power Act. USFWS also recommends that the Project design consider the installation of fish screens at intake structures for the Project turbines and pumps in order to avoid fish entrainment.</u></p>	<p>PacificCorp is interested in furthering the discussion with USFWS on impediments to or opportunities for fish passage to be evaluated as part of this relicensing. The need for this study is not clear; as the comment letter noted, there is currently no native or sport fishery downstream of the Project, nor are there threatened or endangered species or anadromous fish issues in or downstream of Cutler Reservoir. The agency resource goals and objectives (and for which species) that would be addressed by studying entrainment mortality or providing fish passage opportunities is not clear. PacificCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.</p>	<p><u>Following additional discussions and clarifications regarding current fishery, habitat, and Bear River instream flow conditions below Cutler Dam, PacificCorp and the USFWS agree that the issues cited in this July 2019 comment (fish passage and fish screens) are not issues requiring additional study as part of the Cutler Relicensing process.</u></p> <p>PacificCorp and the USFWS met twice to better understand the agency's concerns and to address this specific issue, on August 22, 2019 and on October 1, 2019. The October meeting also included representatives from the Utah Division of Wildlife Resources (UWDR).</p> <p>In the first meeting, PacificCorp clarified river flows and availability below Cutler, specifically noting the historic irrigation water rights governed</p>

USFWS STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (NOVEMBER 2019)
		<p>by both contract and the Bear River Compact, which, by design, preclude the potential for any flows below the irrigation canals (located at Cutler Dam and upstream of the hydroelectric plant intake) during much of the irrigation season. The impacts of this annual lack of river flow on both the native fishery and the aquatic habitat, which is outside of the influence of the Cutler Project, were discussed. The results of UDWR's June 2019 electrofishing efforts downstream of Cutler were also discussed, and a second meeting with UDWR staff was arranged for October 1, 2019.</p> <p>At the October 2019 meeting, UDWR provided more detail to the group on recent electrofishing efforts downstream of Cutler. UDWR crew electrofished 15 miles of Bear River starting at the tailrace below Cutler powerhouse. UDWR found absolutely no native fish in the reach of the Bear River below Cutler. UDWR also noted they are not planning to attempt to recover bluehead sucker or other native fish in this segment of the Bear River given the current habitat quality and lack of instream flows resulting from irrigation water deliveries during certain periods of the year. UDWR also stated that Cutler Dam currently serves as a beneficial and wanted upstream migration barrier to non-native fish that UDWR wants to maintain to prevent these non-native species reaching the middle Bear River upstream of and including Cutler Reservoir.</p> <p>In light of the lack of native species, inability to increase instream flows through the license process, resultant degraded aquatic habitat, and need to maintain an upstream passage barrier for</p>

USFWS STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (NOVEMBER 2019)
		non-native fish, USFWS withdrew their comment to investigate fish passage and fish screens at Cutler Dam. USFWS would like PacificCorp to include a summary in the aquatic resources technical report of sampling efforts for bluehead sucker and other native species in the lower Bear River since 1994.
<p><u>Study Request: Effects on water quality from fluctuating reservoir levels and Wheelon Dam removal</u></p> <p>Destabilization of the stream bed or the bed of Cutler Reservoir may entrain and release nutrients and contaminants which would likely be harmful to aquatic wildlife and migratory bird habitat downstream of Cutler Dam. Specific concerns are that excess nutrients could lead to unwanted vegetation and harmful algal blooms, that heavy metals could concentrate in BRBR impoundments, that low DO levels could lead to reduced food supply, and that any of these factors may lead to the spread of avian disease.</p> <p>USFWS recommends that a study be conducted to evaluate various water quality parameters that change as a result of greater reservoir level fluctuations and the removal of Wheelon Dam.</p>	<p>PacificCorp's Water Quality Study proposes to monitor total phosphorus, dissolved phosphorus, orthophosphate, and dissolved oxygen (DO) during the drawdown to evaluate the potential for mobilization of nutrients. These data will be used to predict the effect of proposed operations on potentially mobilizing nutrients and levels of DO in the reservoir and downstream of the dam; heavy metals and other contaminants will be assessed as part of the Sedimentation Study. These issues will also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.</p>	<p><u>PacificCorp agrees and maintains that the Water Quality Study (as noted in the Proposed Study Plan [PSP]) will address the potential effects on water quality of increased water level fluctuations, and the potential removal of Wheelon Dam.</u></p> <p>PacificCorp staff met with USFWS personnel on August 22, 2019 and October 1 and 7, 2019, to better understand the agency's concerns related to Water Quality, specifically, mobilization of nutrients and metals. The water quality sections of the PSP were discussed; the USFWS staff participating noted that the PSP should address the issues listed in the USFWS Scoping response letter.</p>

From: [Miriam Hugentobler](#)
To: [Gabe Murray](#)
Cc: [Michael Allred](#); khatoon.melick@ferc.gov; [Kenneth Hogan](#)
Subject: Cutler Hydro Relicensing - Study Plan Meeting Followup
Date: Monday, December 02, 2019 2:40:49 PM
Attachments: [Cutler Study Plan Consultation Letter - UDAF.pdf](#)

Dear Stakeholder,

Thank you again for meeting with PacifiCorp to discuss your study requests and comments. As promised, attached is the cover letter, comment response table, and meeting summary from our individual meetings following the October 8, 2019 Proposed Study Plan stakeholder meeting.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document, as well. Please let me know if you have any questions, and thank you for your patience over this holiday season.

[Eve Davies, Principal Scientist](#)

[Renewable Resources, PacifiCorp](#)

[1407 West North Temple, Ste. 110](#)

[Salt Lake City, Utah 84116](#)

[801-220-2245](#)

[801-232-1704 \(cell\)](#)



Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

November 30, 2019

VIA E-MAIL TO GMURRAY@UTAH.GOV

Mr. Gabriel Murray
Utah Department of Agriculture and Food
Cache County Courthouse
179 N Main St.
Logan, UT 84321

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mr. Murray,

Thank you for your participation in the additional study plan consultation meeting for the Cutler Hydroelectric Project (Project) relicensing process hosted by PacifiCorp on October 29, 2019. The meeting focused on Utah Division of Water Quality's (UDWQ) and Utah Department of Agriculture and Food's (UDAF) study plan requests submitted to the Federal Energy Regulatory Commission (FERC) in July 2019, and discussion of PacifiCorp's Proposed Technical Study Plans (PSP) filed with FERC on September 11, 2019. The meeting purpose was to gain a better understanding of UDWQ and UDAF's study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP, and an attempt to reach agreement on remaining study plan comments. PacifiCorp has made considerable progress addressing UDWQ/UDAF's study plan comments and has prepared a meeting summary that is enclosed with this letter along with a table of PacifiCorp's revised responses to your study plan requests. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. As you draft your comments on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP) in our meeting with UDWQ and UDAF on October 29, 2019. As stated by FERC at the October 8, 2019 meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.



Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meeting. Stakeholders will have the opportunity to review and comment on the RSP following that January 10, 2019 filing.

Please contact me directly no later than December 4, 2019 if you feel the attached comment table does not accurately capture the agreed adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Mike Allred, UDWQ
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosures:

- 1) UDWQ/UDAF October 29, 2019 Study Plan Consultation Meeting Summary
- 2) Table of UDWQ/UDAF's Study Plan Requests and PacifiCorp's Revised Responses
- 3) Meeting Flipcharts

ENCLOSURE 1

**UDWQ-UDAF
OCTOBER 29, 2019
STUDY PLAN CONSULTATION MEETING SUMMARY**

CUTLER HYDROELECTRIC PROJECT (FERC No. 2420)
STUDY PLAN CONSULTATION MEETING SUMMARY
UTAH DEPT OF ENVIRONMENTAL QUALITY/DIVISION OF WATER QUALITY AND
PACIFICORP

OCTOBER 29, 2019, 11:00 A.M. – 1:00 P.M.
CIRRUS ECOLOGICAL SOLUTIONS, 965 S. 100 WEST, LOGAN, UT

This meeting was requested by PacifiCorp in follow up to the October 8, 2019 Study Plan Workshop to review and discuss UDWQ's and UDAF's study requests related to PacifiCorp's Proposed Study Plan.

ATTENDEES

Utah Dept of Environmental Quality/Division of Water Quality (UDWQ)		
Mike Allred	Watershed Scientist	
Jodi Gardberg	Watershed Protection Section Manager	By phone
Leanna Littler	401 Water Quality Certification Coordinator	By phone
Utah Dept of Agriculture and Food		
Gabriel Murray	Bear River Watershed Coordinator	
Federal Energy Regulatory Commission (FERC)		
Ken Hogan	Fisheries Biologist	By phone
Kelly Wolcott	Wildlife Biologist	By phone
Robin Cleland	Attorney	By phone
PacifiCorp		
Eve Davies	PacifiCorp Cutler Relicensing Manager	
Connely Baldwin	Water Resources Engineer	
Todd Olson	Director of Compliance	By phone
PacifiCorp Consultants		
John Gangemi	Facilitator, River Science Institute	
Lindsey Kester	Project Manager, SWCA	
Frank Shrier	Fisheries Biologist, SWCA	By phone
Nuria Holmes	Regulatory Consultant, Kleinschmidt Associates	By phone
Ben Cary	Hydraulic Engineer, Kleinschmidt Associates	By phone
Justin Barker	GIS/Water Quality, Cirrus	
Matt Westover	Wildlife Biologist/Shoreline, Cirrus	
Eric Duffin	Watershed Scientist, Cirrus	

MEETING AGENDA AND OBJECTIVES

1. Introductions
2. Review UDWQ/UDAF comments related to study plans
3. Gain clear understanding of stakeholder comment
4. Distinguish study plan comments from potential future license condition requests
5. Resolve comments where applicable
6. Determine need for additional meetings

MATERIALS

- Table of UDWQ/UDAF Study Requests and PacifiCorp Responses
- Meeting Flipcharts

MEETING SUMMARY

The purpose of the meeting was to review UDWQ/UDAF's July 2019 study requests (as distilled from UDWQ/UDAF's Scoping response *prior* to release of the Proposed Study Plan [PSP]; see Enclosure 2), identify elements of the UDWQ/UDAF comments already included in the original version of the PSP filed September 11, 2019, discuss UDWQ/UDAF study plan requests/comments not currently incorporated into the PSP and identify opportunities to adjust study plans where applicable to include UDWQ/UDAF study plan requests/comments. Enclosure 2 lists UDWQ/UDAF July 2019 comments, PacifiCorp's response to UDWQ/UDAF scoping comments related to the studies in the September 11, 2019 PSP and revised response to UDWQ/UDAF comments following consultation during the October 29, 2019 meeting in Logan, UT.

PacifiCorp described the broad picture of the FERC Integrated Licensing Process (ILP) timeline identifying the multiple opportunities in the process for stakeholders to comment. PacifiCorp provided a summary of the regulatory milestones and collaborative workshops providing input into development of the PSP. PacifiCorp pointed out that some stakeholder comments cover broader issues in the FERC ILP or other forums outside of FERC licensing. For example, some comments are recommendations for conditions in the next license term. These types of comments will be addressed during license implementation as protection, mitigation and enhancement (PM&E) measures. The focus of this meeting was stakeholder requests/comments relative to the PSP. PacifiCorp emphasized the near-term milestone in the license process is the review and approval of the Revised Study Plan (RSP). Stakeholder comments on the PSP are due December 11, 2019 to FERC. PacifiCorp hopes UDWQ/UDAF's comments on the PSP acknowledge the study plan revisions agreed to in the October 29, 2019 meeting.

PacifiCorp will submit the RSP to FERC January 10, 2020. The RSP will incorporate agreements reached in the October 29, 2019 meeting with UDWQ/UDAF as well as consider other comments filed directly with FERC. Stakeholders will have an opportunity to review and comment on the RSP as well. FERC will make a study plan determination February 10, 2020. PacifiCorp will implement approved study plans in 2020. PacifiCorp will file an interim report with FERC at the conclusion of the first year of study. Stakeholders will also have an opportunity to review and comment on the interim report.

PacifiCorp noted because there will be a 401 Certification process for the project, PacifiCorp would like to arrange a meeting with UDWQ to develop a timeline for this process. Littler (UDWQ) said Cutler is one of her first relicensing projects, as she came in at the end of Weber relicensing. UDWQ and PacifiCorp both expressed an interest in communicating sooner rather than later to establish a timeline for the 401 Certification process and identify UDWQ information needs. PacifiCorp noted the 401 Certification process used for Weber Hydroelectric Project relicensing worked well and expressed a desire to follow those procedures for Cutler. PacifiCorp noted the water quality issues of the reservoir are in large measure, not Project related, but instead are related to impacts resulting from water quality impairments of the various tributaries to the Project.

REVIEW OF STUDY REQUESTS

HYDRAULIC MODELING STUDY

UDWQ/UDAF were curious about the capabilities of the Hydraulic Modeling Study and if it would be able to illustrate the rate of change in reservoir water surface elevations (WSE) associated with power generation as well as changes downstream in stage height. FERC staff were also curious about the hydraulic model's capabilities for analyzing project effects. In particular, FERC wanted to know what kind of time periods the model was capable of analyzing. Specifically, could short time frames (5-minute intervals) be modeled, all the way to daily, weekly, and seasonal changes. FERC noted the longer time frames may be needed to examine potential project effects.

PacifiCorp provided an explanation of the model's capabilities noting that it will illustrate reservoir WSEs, inflow, power generation outflow, irrigation outflow, downstream discharge and rate of change. PacifiCorp explained the model is best suited for analysis of shorter time frames. Longer time periods are better analyzed using a simple excel spread sheet and graphic tools.

PacifiCorp emphasized they have not yet proposed an operating range.

LAND USE STUDY

UDWQ/UDAF reiterated their request to include investigation of bank erosion at downstream locations in the winter. PacifiCorp informed UDWQ/UDAF they are adding this request to the Land Use Study. PacifiCorp plans to monitor bank erosion at five to six downstream locations. PacifiCorp requested UDWQ/UDAF's participation in site selection. UDWQ/UDAF agreed to provide input on the monitoring sites.

DREDGING

PacifiCorp requested UDWQ provide more detail regarding *Phragmites* and benefits of dredging as stated in UDWQ's comment. PacifiCorp expressed a concern about water quality impacts associated with dredging and the inability to actually solve the *Phragmites* issue through dredging. The group discussed the issues associated with treating *Phragmites* including the following; issues with draining/storing dredged materials, water quality issues in the reservoir and downstream while dredging, and sustainability of dredging. PacifiCorp pointed out that dredging falls under a future management action as opposed to study request.

The group agreed UDWQ's comment about dredging would be considered later as a potential PM&E.

LICENSE TERM

Regarding UDWQ/UDAF's comment on the term of the new license, PacifiCorp noted that 40 years is now the default length, and there are specific guidelines from FERC as to whether they assign a longer or shorter license term. Exceptions for a 40-year term are as follows: 1) coordinating with other projects in the basin; 2) if the license term is supported by a settlement agreement; or 3) the applicant can substantiate a longer term with substantial investments to the project. The 30- to 50-year term is intended to provide some security regarding the Federal Power Act.

OFF-SITE PROJECT MITIGATION

In response to a question regarding the potential for eventual off-site Project mitigation, FERC reiterated its current policy for Project mitigation to be on-site and be related to concrete/discrete actions, rather than be 'funds.' Off-site mitigation may be considered if mitigation is not possible inside the Project Boundary. For off-site mitigation, an island could potentially be added to the FERC Project Boundary for the mitigation measure if it requires ongoing maintenance. PacifiCorp made it clear they do not support creating mitigation 'islands' outside the Project Boundary.

UDWQ Water Quality Sampling and Reporting

UDWQ conducts intensive water quality monitoring in 6-year cycles. The next monitoring period for the Bear River is water year (WY) 2021. Given other stakeholder study requests, PacifiCorp requested UDWQ include additional sampling locations in Cutler Reservoir. UDWQ will make the request to their management but informed the PacifiCorp that the additional sampling effort must be justified to be approved. PacifiCorp also asked if water quality (WQ) data from UDWQ's WY 2015/2016 are available. UDWQ stated the data are currently available and the WQ report will be available February 2020.

Relicensing Schedule and Timeframes

PacifiCorp reviewed Cutler relicensing project timelines and upcoming deadlines for UDWQ/UDAF staff.

ACTION ITEMS

- | | |
|--------|-------------------------------------------------------------------------------------------------------------------|
| Allred | • Check aerial imagery, provide recommendations for areas to model for bank stability |
| Davies | • Set up a meeting with Littler, UDWQ, to develop a timeline for the 401 Certification process |
| All | • Study Plan comments due to FERC by December 11, 2019 |
| | • Davies, PacifiCorp, to communicate directly with stakeholders on comment resolution in advance of this deadline |

ENCLOSURE 2

TABLE OF UDWQ/UDAF STUDY REQUESTS AND PACIFICORP REVISED RESPONSES

UDWQ/UDAF STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Suggests that studies include all the area impacted by dam operations which can be observed all the way down to the Bird Refuge.</u></p>	<p>Cumulative effects downstream at the Bear River Migratory Bird Refuge would be determined once more is known about Project impacts on the resource. PacificCorp would like to understand the agency-specific resource management goals per 18 Code of Federal Regulation (CFR) § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measure that could inform future license conditions.</p>	<p><u>PacificCorp agrees that the cumulative effects analysis of Project impacts should include the area affected by potential Project operations, consider changes resulting from potential future operating conditions; and the analysis of the area of direct effects be made in part from the results of the Hydraulic study models.</u></p> <p>On October 29, 2019, UDWQ, UDAF and PacificCorp held a collaborative meeting to discuss study requests and comments received. In this meeting, PacificCorp, UDWQ and UDAF discussed the ability of the proposed hydraulic model to model downstream effects that Project operations may potentially have on the bird refuge. As described in the PSP filed September 11, 2019 and further discussed at this meeting, the Hydraulic Modeling Study will develop both one-dimensional (1D) and two-dimensional (2D) hydraulic models capable of illustrating inflows, reservoir volume and outflow under a range of operational scenarios. Field data used to calibrate the model will be collected at the upstream FERC Project Boundary on the Bear River to a location 2 miles downstream of the Project Boundary. The modeled area will include all facilities within the current Project Boundary, as well as up to 2 miles (initially) of the Bear River downstream of the Project Boundary. This includes measuring flow, suspended sediment and turbidity, reservoir stage, and imagery at various locations throughout the modeled area. The field data will be compared to model output as part of the calibration process. PacificCorp will expand the description of the Hydraulic Modeling Study in the RSP submitted</p>

UDWQ/UDAF STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
		<p>to FERC by January 10, 2021. Stakeholders will have an opportunity to review and comment on the RSP. PacificCorp will file a progress report with FERC in 2020 and an Interim Study Report in early 2021 that captures the findings of the Hydraulic Modeling Study. At that time, as provided for in the ILP regulations (18 CFR § 5.15), UDWQ/UDAF and other stakeholders will review and comment on the adequacy of the hydraulic model to represent downstream effects resulting from Project operations. If additional field data is determined necessary for the model, then FERC could require additional field study in the second study season in 2021.</p> <p>Future Project operations will continue to be bound by existing water delivery agreements with irrigators. Due to the operational constraints imposed by the water agreements and other issues, PacificCorp does not anticipate a substantive change in operations resulting in impacts approximately 48 miles downstream to the Bear River Migratory Bird Refuge. Potential impacts, if any, to the Bear River Migratory Bird Refuge will be included in FERC's environmental analysis of cumulative effects.</p>
<p><u>Suggests looking into dredging for the positive impact on the fishery, water quality and potentially reduce the <i>Phragmites</i> problem.</u></p>	<p>Comment noted. The Hydraulic Modeling Study will analyze the impacts to the hydraulics, sediment transport, and water quality within the reservoir that would result from dredging. Additionally, PacificCorp would like to understand the agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform quantitative measures that could inform future license</p>	<p><u>PacificCorp agrees that the effects of dredging could be informed through various aspects of the Hydraulic, Sedimentation, and WQ Study Plans.</u></p> <p>Dredging is a future management action that could be considered as a potential PM&E measure in the new Cutler FERC license. Dredging is not necessarily a study plan request or comment but could be identified as a PM&E measure following</p>

UDWQ/UDAF STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
	conditions. Per FERC, the agency should thoroughly explain how the study request relates to that management goal.	the completion of the studies proposed in this RSP that are designed to collect information on water quality, fisheries and other aquatic resources. This information, combined with the LIDAR and bathymetry data, would be analyzed upon completion of the field work. Suggestions for future management actions would be one of the outcomes in the data analysis. The potential benefits and impacts of dredging would be considered in the alternatives analysis as part of the NEPA environmental analysis.
<u>Suggests that a 30-year license is more reasonable than 40-50 years.</u> No justification for a longer license.	Comment noted. At a later point during this relicensing process, FERC will consider the cost of new license measures and determine new license period accordingly.	<u>PacifiCorp clarified that this issue will be addressed through the FERC relicensing process.</u> Length of the license term is decided by FERC. FERC makes a determination on a license term in consideration of mitigation and capital improvements to the Project, but also in considering opportunities for aligning the license with other activities in the basin. FERC will make this determination at the conclusion of the environmental analysis.
<u>Suggests a study of the effects associated with winter ramping and the effects on bank erosion and water quality could be determined.</u>	PacifiCorp would like to understand the Project nexus, methodology proposed and agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measure that could inform future license conditions. Per FERC, the agency should thoroughly explain how the study request relates to that resource management goal.	<u>In response to this UDWQ/UDAF comment, PacifiCorp has modified the Land Use Study to include monitoring of bank erosion at downstream locations during the winter period.</u> The study plan will be amended to include monitoring of five to six locations in based on operational limits during the winter period. At the October 29, 2019 meeting in Logan Utah, Mike Allred, UDWQ, agreed to help select sample locations.

ENCLOSURE 3

MEETING FLIPCHARTS

UDEQ Meeting 10-29-2019 ①

Modeling effort: Will it cover
a range beyond future operating
range.

Downstream Sampling

Bank Erosion locations
determined collaboratively w/
UDEQ/UDAF

2 Mile Sample Point
Preliminary Determination on
downstream effects

FLIPCHART 1

- 401 Certification Process – PacifiCorp would like to meet with UDEQ to establish timeline for 401 and materials needed.
 - Davies will set up a meeting with Littler
- Cumulative water quality effects – how to tease out PacifiCorp effects from overall water quality in the system
 - Reservoir
 - Downstream
 - Seasonally

FLIPCHART 2

2 UDEQ 10-29-2019 (3)

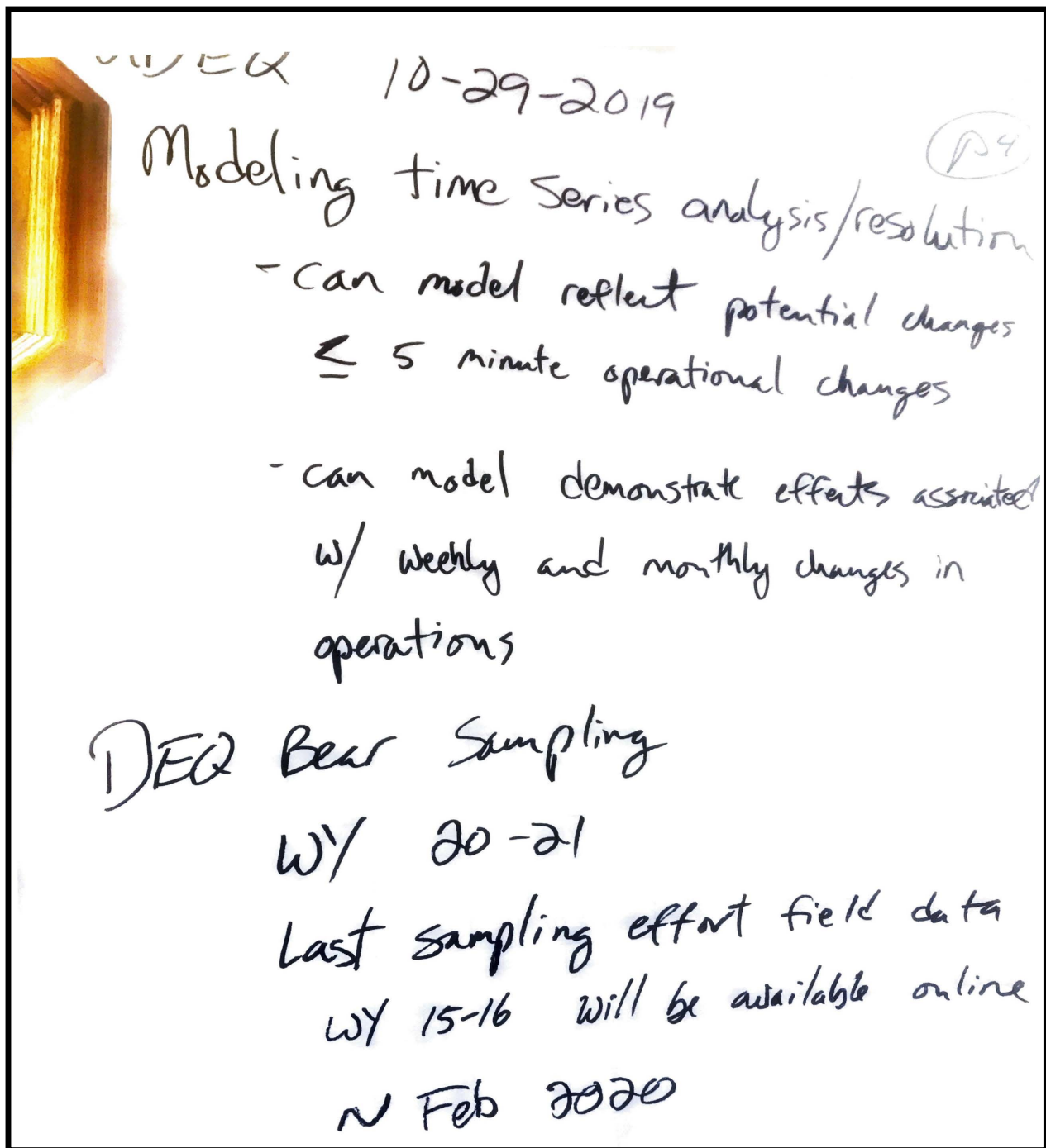
E Dredging Benefits:

Potential for site specific mechanical dredging in shallow (isolated) bays to control phragmites

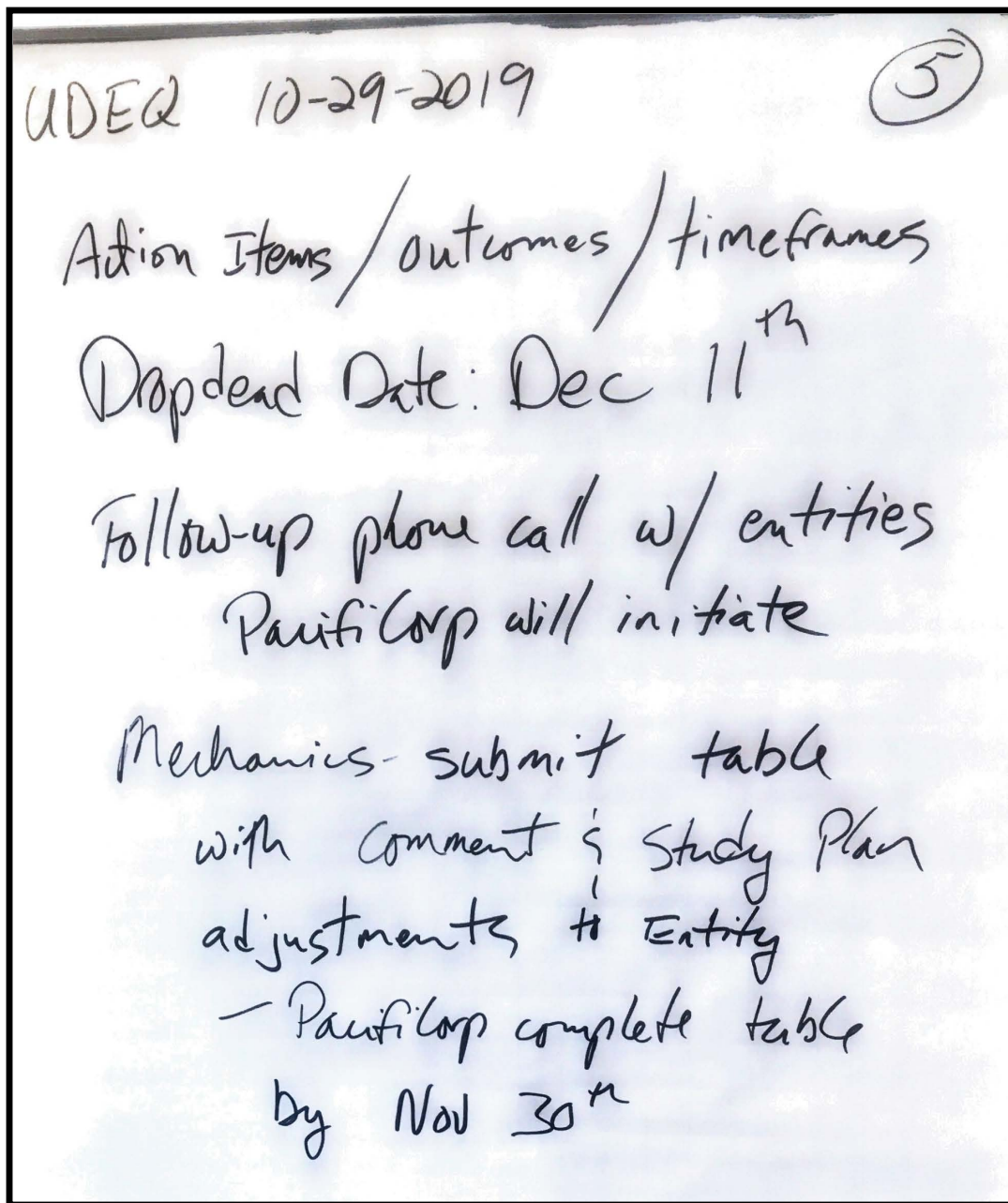
- Issues with draining/storing dredged materials
- WA issues w/ dredging
- Sustainability of mechanical dredging in light of sediment imp

Resolution → Dredging will be considered in PME measures after Data analysis.

FLIPCHART 3



FLIPCHART 4



FLIPCHART 5

From: [Miriam Hugentobler](#)
To: [Michael Allred](#)
Cc: [Jodi Gardberg](#); [Leanna Littler](#); [Gabe Murray](#); khatoon.melick@ferc.gov; [Kenneth Hogan](#)
Subject: Cutler Hydro Relicensing - Study Plan Consultation Meeting
Date: Monday, December 02, 2019 2:39:11 PM
Attachments: [Cutler Study Plan Consultation Letter - UDWO.pdf](#)

Dear Stakeholder,

Thank you again for meeting with PacifiCorp to discuss your study requests and comments. As promised, attached is the cover letter, comment response table, and meeting summary from our individual meetings following the October 8, 2019 Proposed Study Plan stakeholder meeting.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document, as well. Please let me know if you have any questions, and thank you for your patience over this holiday season.

[Eve Davies, Principal Scientist](#)

[Renewable Resources, PacifiCorp](#)

[1407 West North Temple, Ste. 110](#)

[Salt Lake City, Utah 84116](#)

[801-220-2245](#)

[801-232-1704 \(cell\)](#)



Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

November 30, 2019

VIA E-MAIL TO MDALLRED@UTAH.GOV

Mr. Michael Allred
Bear River Watershed Coordinator/Environmental Scientist
Utah Department of Environmental Quality/Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah. 84114-4870

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mr. Allred:

Thank you for your participation in the additional study plan consultation meeting for the Cutler Hydroelectric Project (Project) relicensing process hosted by PacifiCorp on October 29, 2019. The meeting focused on Utah Division of Water Quality's (UDWQ) and Utah Department of Agriculture and Food's (UDAF) study plan requests submitted to the Federal Energy Regulatory Commission (FERC) in July 2019, and discussion of PacifiCorp's Proposed Technical Study Plans (PSP) filed with FERC on September 11, 2019. The meeting purpose was to gain a better understanding of UDWQ and UDAF's study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP, and an attempt to reach agreement on remaining study plan comments. PacifiCorp has made considerable progress addressing UDWQ's study plan comments and has prepared a meeting summary that is enclosed with this letter along with a table of PacifiCorp's revised responses to your study plan requests. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. As you draft your comments on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP) in our meeting with UDWQ and UDAF on October 29, 2019. As stated by FERC at the October 8, 2019 meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meeting. Stakeholders will have the opportunity to review and comment on the RSP following that January 10, 2019 filing.



Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

Please contact me directly no later than December 4, 2019 if you feel the attached comment table does not accurately capture the agreed adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Jodi Gardberg, UDWQ
Leanna Littler, UDWQ
Gabriel Murray, Utah Department of Agriculture and Food
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosures:

- 1) UDWQ October 29, 2019 Study Plan Consultation Meeting Summary
- 2) Table of UDWQ's Study Plan Requests and PacifiCorp's Revised Responses
- 3) Meeting Flipcharts

ENCLOSURE 1

**UDWQ-UDAF
OCTOBER 29, 2019
STUDY PLAN CONSULTATION MEETING SUMMARY**

CUTLER HYDROELECTRIC PROJECT (FERC No. 2420)
STUDY PLAN CONSULTATION MEETING SUMMARY
UTAH DEPT OF ENVIRONMENTAL QUALITY/DIVISION OF WATER QUALITY AND
PACIFICORP

OCTOBER 29, 2019, 11:00 A.M. – 1:00 P.M.
CIRRUS ECOLOGICAL SOLUTIONS, 965 S. 100 WEST, LOGAN, UT

This meeting was requested by PacifiCorp in follow up to the October 8, 2019 Study Plan Workshop to review and discuss UDWQ's and UDAF's study requests related to PacifiCorp's Proposed Study Plan.

ATTENDEES

Utah Dept of Environmental Quality/Division of Water Quality (UDWQ)		
Mike Allred	Watershed Scientist	
Jodi Gardberg	Watershed Protection Section Manager	By phone
Leanna Littler	401 Water Quality Certification Coordinator	By phone
Utah Dept of Agriculture and Food		
Gabriel Murray	Bear River Watershed Coordinator	
Federal Energy Regulatory Commission (FERC)		
Ken Hogan	Fisheries Biologist	By phone
Kelly Wolcott	Wildlife Biologist	By phone
Robin Cleland	Attorney	By phone
PacifiCorp		
Eve Davies	PacifiCorp Cutler Relicensing Manager	
Connely Baldwin	Water Resources Engineer	
Todd Olson	Director of Compliance	By phone
PacifiCorp Consultants		
John Gangemi	Facilitator, River Science Institute	
Lindsey Kester	Project Manager, SWCA	
Frank Shrier	Fisheries Biologist, SWCA	By phone
Nuria Holmes	Regulatory Consultant, Kleinschmidt Associates	By phone
Ben Cary	Hydraulic Engineer, Kleinschmidt Associates	By phone
Justin Barker	GIS/Water Quality, Cirrus	
Matt Westover	Wildlife Biologist/Shoreline, Cirrus	
Eric Duffin	Watershed Scientist, Cirrus	

MEETING AGENDA AND OBJECTIVES

1. Introductions
2. Review UDWQ/UDAF comments related to study plans
3. Gain clear understanding of stakeholder comment
4. Distinguish study plan comments from potential future license condition requests
5. Resolve comments where applicable
6. Determine need for additional meetings

MATERIALS

- Table of UDWQ/UDAF Study Requests and PacifiCorp Responses
- Meeting Flipcharts

MEETING SUMMARY

The purpose of the meeting was to review UDWQ/UDAF's July 2019 study requests (as distilled from UDWQ/UDAF's Scoping response *prior* to release of the Proposed Study Plan [PSP]; see Enclosure 2), identify elements of the UDWQ/UDAF comments already included in the original version of the PSP filed September 11, 2019, discuss UDWQ/UDAF study plan requests/comments not currently incorporated into the PSP and identify opportunities to adjust study plans where applicable to include UDWQ/UDAF study plan requests/comments. Enclosure 2 lists UDWQ/UDAF July 2019 comments, PacifiCorp's response to UDWQ/UDAF scoping comments related to the studies in the September 11, 2019 PSP and revised response to UDWQ/UDAF comments following consultation during the October 29, 2019 meeting in Logan, UT.

PacifiCorp described the broad picture of the FERC Integrated Licensing Process (ILP) timeline identifying the multiple opportunities in the process for stakeholders to comment. PacifiCorp provided a summary of the regulatory milestones and collaborative workshops providing input into development of the PSP. PacifiCorp pointed out that some stakeholder comments cover broader issues in the FERC ILP or other forums outside of FERC licensing. For example, some comments are recommendations for conditions in the next license term. These types of comments will be addressed during license implementation as protection, mitigation, and enhancement (PM&E) measures. The focus of this meeting was stakeholder requests/comments relative to the PSP. PacifiCorp emphasized the near-term milestone in the license process is the review and approval of the Revised Study Plan (RSP). Stakeholder comments on the PSP are due December 11, 2019 to FERC. PacifiCorp hopes UDWQ/UDAF's comments on the PSP acknowledge the study plan revisions agreed to in the October 29, 2019 meeting.

PacifiCorp will submit the RSP to FERC January 10, 2020. The RSP will incorporate agreements reached in the October 29, 2019 meeting with UDWQ/UDAF as well as consider other comments filed directly with FERC. Stakeholders will have an opportunity to review and comment on the RSP as well. FERC will make a study plan determination February 10, 2020. PacifiCorp will implement approved study plans in 2020. PacifiCorp will file an interim report with FERC at the conclusion of the first year of study. Stakeholders will also have an opportunity to review and comment on the interim report.

PacifiCorp noted because there will be a 401 Certification process for the project, PacifiCorp would like to arrange a meeting with UDWQ to develop a timeline for this process. Littler (UDWQ) said Cutler is one of her first relicensing projects, as she came in at the end of Weber relicensing. UDWQ and PacifiCorp both expressed an interest in communicating sooner rather than later to establish a timeline for the 401 Certification process and identify UDWQ information needs. PacifiCorp noted the 401 Certification process used for Weber Hydroelectric Project relicensing worked well and expressed a desire to follow those procedures for Cutler. PacifiCorp noted the water quality issues of the reservoir are in large measure, not Project related, but instead are related to impacts resulting from water quality impairments of the various tributaries to the Project.

REVIEW OF STUDY REQUESTS

HYDRAULIC MODELING STUDY

UDWQ/UDAF were curious about the capabilities of the Hydraulic Modeling Study and if it would be able to illustrate the rate of change in reservoir water surface elevations (WSE) associated with power generation as well as changes downstream in stage height. FERC staff were also curious about the hydraulic model's capabilities for analyzing project effects. In particular, FERC wanted to know what kind of time periods the model was capable of analyzing. Specifically, could short time frames (5-minute intervals) be modeled, all the way to daily, weekly, and seasonal changes. FERC noted the longer time frames may be needed to examine potential project effects.

PacifiCorp provided an explanation of the model's capabilities noting that it will illustrate reservoir WSEs, inflow, power generation outflow, irrigation outflow, downstream discharge and rate of change. PacifiCorp explained the model is best suited for analysis of shorter time frames. Longer time periods are better analyzed using a simple excel spread sheet and graphic tools.

PacifiCorp emphasized they have not yet proposed an operating range.

LAND USE STUDY

UDWQ reiterated their request to include investigation of bank erosion at downstream locations in the winter. PacifiCorp informed UDWQ they are adding this request to the Land Use Study. PacifiCorp plans to monitor bank erosion at five to six downstream locations. PacifiCorp requested UDWQ's participation in site selection. UDWQ agreed to provide input on the monitoring sites.

DREDGING

PacifiCorp requested UDWQ provide more detail regarding *Phragmites* and benefits of dredging as stated in UDWQ's comment. PacifiCorp expressed a concern about water quality impacts associated with dredging and the inability to actually solve the *Phragmites* issue through dredging. The group discussed the issues associated with treating *Phragmites* including the following; issues with draining/storing dredged materials, water quality issues in the reservoir and downstream while dredging, and sustainability of dredging. PacifiCorp pointed out that dredging falls under a future management action as opposed to study request.

The group agreed UDWQ's comment about dredging would be considered later as a potential PM&E.

LICENSE TERM

Regarding UDWQ's comment on the term of the new license, PacifiCorp noted that 40 years is now the default length, and there are specific guidelines from FERC as to whether they assign a longer or shorter license term. Exceptions for a 40-year term are as follows: 1) coordinating with other projects in the basin; 2) if the license term is supported by a settlement agreement; or 3) the applicant can substantiate a longer term with substantial investments to the project. The 30- to 50-year term is intended to provide some security regarding the Federal Power Act.

OFF-SITE PROJECT MITIGATION

In response to a question regarding the potential for eventual off-site Project mitigation, FERC reiterated its current policy for Project mitigation to be on-site and be related to concrete/discrete actions, rather than be 'funds.' Off-site mitigation may be considered if mitigation is not possible inside the Project Boundary. For off-site mitigation, an island could potentially be added to the FERC Project Boundary for the mitigation measure if it requires ongoing maintenance. PacifiCorp made it clear they do not support creating mitigation 'islands' outside the Project Boundary.

UDWQ Water Quality Sampling and Reporting

UDWQ conducts intensive water quality monitoring in 6-year cycles. The next monitoring period for the Bear River is water year (WY) 2021. Given other stakeholder study requests, PacifiCorp requested UDWQ include additional sampling locations in Cutler Reservoir. UDWQ will make the request to their management but informed the PacifiCorp that the additional sampling effort must be justified to be approved. PacifiCorp also asked if water quality (WQ) data from UDWQ's WY 2015/2016 are available. UDWQ stated the data are currently available and the WQ report will be available February 2020.

Relicensing Schedule and Timeframes

PacifiCorp reviewed Cutler relicensing project timelines and upcoming deadlines for UDWQ/UDAF staff.

ACTION ITEMS

- | | |
|--------|-------------------------------------------------------------------------------------------------------------------|
| Allred | • Check aerial imagery, provide recommendations for areas to model for bank stability |
| Davies | • Set up a meeting with Littler, UDWQ, to develop a timeline for the 401 Certification process |
| All | • Study Plan comments due to FERC by December 11, 2019 |
| | • Davies, PacifiCorp, to communicate directly with stakeholders on comment resolution in advance of this deadline |

ENCLOSURE 2

TABLE OF UDWQ/UDAF STUDY REQUESTS AND PACIFICORP REVISED RESPONSES

UDWQ/UDAF STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Suggests that studies include all the area impacted by dam operations which can be observed all the way down to the Bird Refuge.</u></p>	<p>Cumulative effects downstream at the Bear River Migratory Bird Refuge would be determined once more is known about Project impacts on the resource. PacificCorp would like to understand the agency-specific resource management goals per 18 Code of Federal Regulation (CFR) § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measure that could inform future license conditions.</p>	<p><u>PacificCorp agrees that the cumulative effects analysis of Project impacts should include the area affected by potential Project operations, consider changes resulting from potential future operating conditions; and the analysis of the area of direct effects be made in part from the results of the Hydraulic study models.</u></p> <p>On October 29, 2019, UDWQ, UDAF and PacificCorp held a collaborative meeting to discuss study requests and comments received. In this meeting, PacificCorp, UDWQ and UDAF discussed the ability of the proposed hydraulic model to model downstream effects that Project operations may potentially have on the bird refuge. As described in the PSP filed September 11, 2019 and further discussed at this meeting, the Hydraulic Modeling Study will develop both one-dimensional (1D) and two-dimensional (2D) hydraulic models capable of illustrating inflows, reservoir volume and outflow under a range of operational scenarios. Field data used to calibrate the model will be collected at the upstream FERC Project Boundary on the Bear River to a location 2 miles downstream of the Project Boundary. The modeled area will include all facilities within the current Project Boundary, as well as up to 2 miles (initially) of the Bear River downstream of the Project Boundary. This includes measuring flow, suspended sediment and turbidity, reservoir stage, and imagery at various locations throughout the modeled area. The field data will be compared to model output as part of the calibration process. PacificCorp will expand the description of the Hydraulic Modeling Study in the RSP submitted to FERC by January 10, 2021. Stakeholders will</p>

UDWQ/UDAF STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
		<p>have an opportunity to review and comment on the RSP. PacificCorp will file a progress report with FERC in 2020 and an Interim Study Report in early 2021 that captures the findings of the Hydraulic Modeling Study. At that time, as provided for in the ILP regulations (18 CFR § 5.15), UDWQ and other stakeholders will review and comment on the adequacy of the hydraulic model to represent downstream effects resulting from Project operations. If additional field data is determined necessary for the model, then FERC could require additional field study in the second study season in 2021.</p> <p>Future Project operations will continue to be bound by existing water delivery agreements with irrigators. Due to the operational constraints imposed by the water agreements and other issues, PacificCorp does not anticipate a substantive change in operations resulting in impacts approximately 48 miles downstream to the Bear River Migratory Bird Refuge. Potential impacts, if any, to the Bear River Migratory Bird Refuge will be included in FERC's environmental analysis of cumulative effects.</p>
<p><u>Suggests looking into dredging for the positive impact on the fishery, water quality and potentially reduce the <i>Phragmites</i> problem.</u></p>	<p>Comment noted. The Hydraulic Modeling Study will analyze the impacts to the hydraulics, sediment transport, and water quality within the reservoir that would result from dredging. Additionally, PacificCorp would like to understand the agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform quantitative measures that could inform future license conditions. Per FERC, the agency should</p>	<p><u>PacificCorp agrees that the effects of dredging could be informed through various aspects of the Hydraulic, Sedimentation, and WQ Study Plans.</u></p> <p>Dredging is a future management action that could be considered as a potential PM&E measure in the new Cutler FERC license. Dredging is not necessarily a study plan request or comment but could be identified as a PM&E measure following the completion of the studies proposed in this RSP</p>

UDWQ/UDAF STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
	thoroughly explain how the study request relates to that management goal.	that are designed to collect information on water quality, fisheries and other aquatic resources. This information, combined with the LIDAR and bathymetry data, would be analyzed upon completion of the field work. Suggestions for future management actions would be one of the outcomes in the data analysis. The potential benefits and impacts of dredging would be considered in the alternatives analysis as part of the NEPA environmental analysis.
<u>Suggests that a 30-year license is more reasonable than 40-50 years.</u> No justification for a longer license.	Comment noted. At a later point during this relicensing process, FERC will consider the cost of new license measures and determine new license period accordingly.	<u>PacifiCorp clarified that this issue will be addressed through the FERC relicensing process.</u> Length of the license term is decided by FERC. FERC makes a determination on a license term in consideration of mitigation and capital improvements to the Project, but also in considering opportunities for aligning the license with other activities in the basin. FERC will make this determination at the conclusion of the environmental analysis.
<u>Suggests a study of the effects associated with winter ramping and the effects on bank erosion and water quality could be determined.</u>	PacifiCorp would like to understand the Project nexus, methodology proposed and agency-specific resource management goals per 18 CFR § 5.9(b)(2) and how the requested modification to studies would inform a quantitative measure that could inform future license conditions. Per FERC, the agency should thoroughly explain how the study request relates to that resource management goal.	<u>In response to this UDWQ/UDAF comment, PacifiCorp has modified the Land Use Study to include monitoring of bank erosion at downstream locations during the winter period.</u> The study plan will be amended to include monitoring of five to six locations in based on operational limits during the winter period. At the October 29, 2019 meeting in Logan Utah, Mike Allred, UDWQ, agreed to help select sample locations.

ENCLOSURE 3

MEETING FLIPCHARTS

UDEQ Meeting 10-29-2019 ①

Modeling effort: Will it cover
a range beyond future operating
range.

Downstream Sampling

Bank Erosion locations
determined collaboratively w/
UDEQ/UDAF

2 Mile Sample Point
Preliminary Determination on
downstream effects

FLIPCHART 1

- 401 Certification Process – PacifiCorp would like to meet with UDEQ to establish timeline for 401 and materials needed.
 - Davies will set up a meeting with Littler
- Cumulative water quality effects – how to tease out PacifiCorp effects from overall water quality in the system
 - Reservoir
 - Downstream
 - Seasonally

FLIPCHART 2

2 UDEQ 10-29-2019 (3)

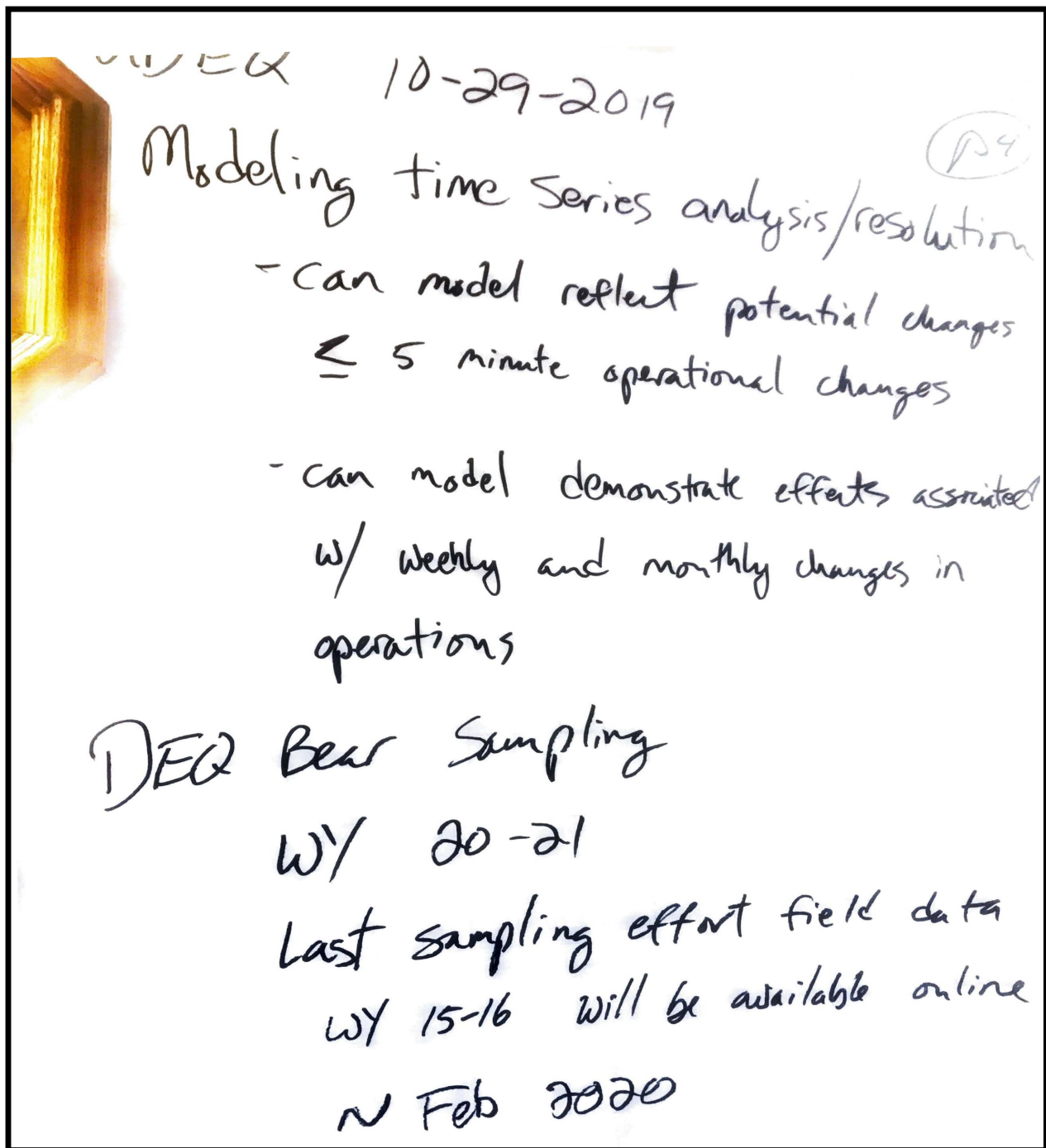
E Dredging Benefits:

Potential for site specific mechanical dredging in shallow (isolated) bays to control phragmites

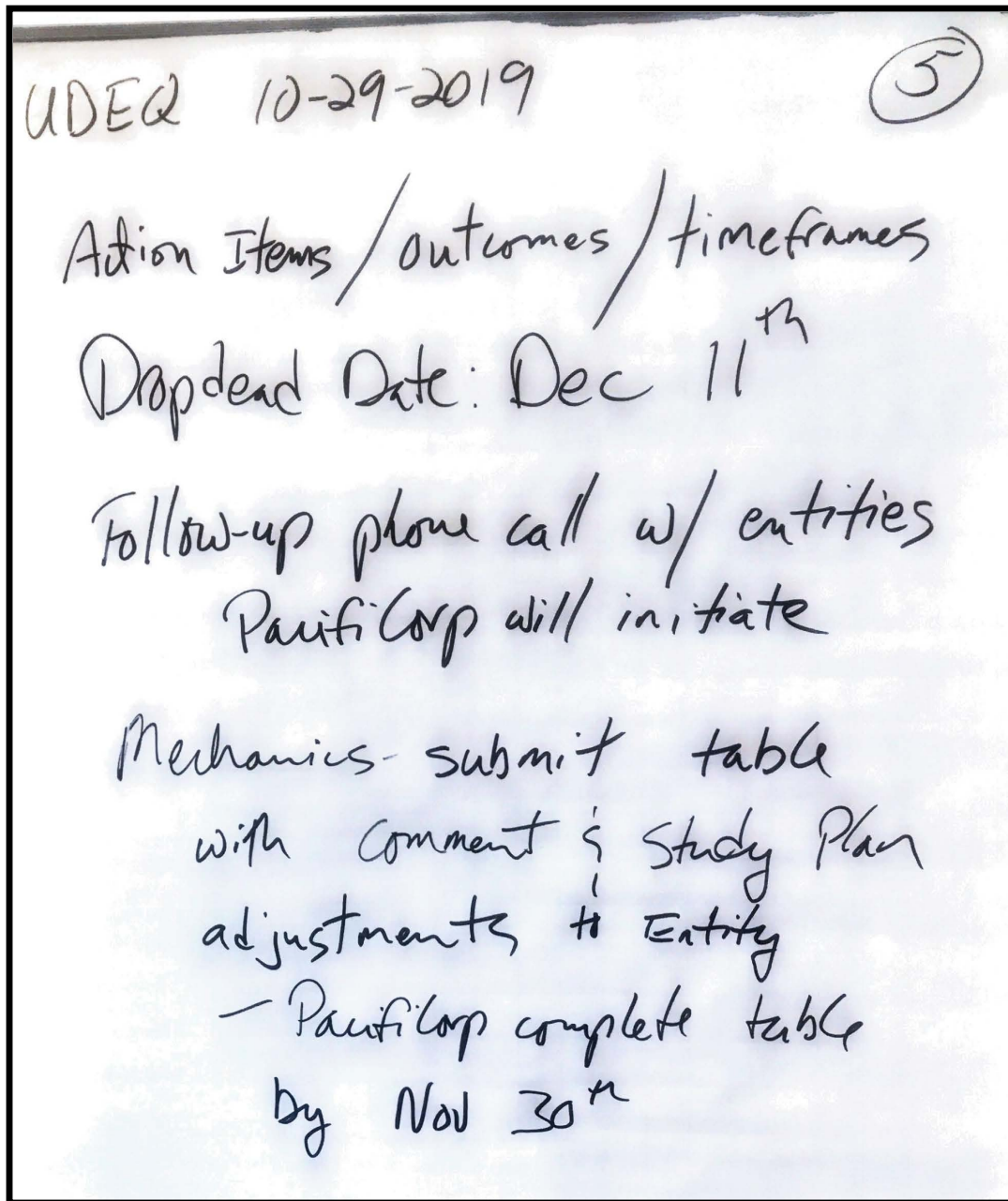
- Issues with ~~draining~~ draining/storing dredged materials
- WA issues w/ dredging
- Sustainability of mechanical dredging in light of sediment imp

Resolution → Dredging will be considered in PME measures after Data analysis.

FLIPCHART 3



FLIPCHART 4



FLIPCHART 5

From: [Miriam Hugentobler](#)
To: [Trevor Nielson](#)
Cc: khatoon.melick@ferc.gov; [Kenneth Hogan](#); eel@clydesnow.com; DBR@clydesnow.com;
John.Sample@pacificorp.com; dwright@mwjlaw.com; jmabey@mwjlaw.com; clmarblefarms@gmail.com;
slyons@boxeldercounty.org
Subject: Cutler Hydro Relicensing - Study Plan Consultation Meeting
Date: Monday, December 02, 2019 2:45:15 PM
Attachments: [Cutler Study Plan Consultation Letter - BRCC.pdf](#)

Dear Stakeholder,

Thank you again for meeting with PacifiCorp to discuss your study requests and comments. As promised, attached is the cover letter, comment response table, and meeting summary from our individual meetings following the October 8, 2019 Proposed Study Plan stakeholder meeting.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document, as well. Please let me know if you have any questions, and thank you for your patience over this holiday season.

Eve Davies, Principal Scientist

Renewable Resources, PacifiCorp

1407 West North Temple, Ste. 110

Salt Lake City, Utah 84116

801-220-2245

801-232-1704 (cell)



November 30, 2019

VIA E-MAIL TO TREVOR@BRCANAL.COM

Mr. Trevor Nielson
General Manager
Bear River Canal Company
275 N 1600 E
Tremonton, UT 84337-8826

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mr. Nielson:

Thank you for your participation in the additional study plan consultation meetings for the Cutler Hydroelectric Project relicensing process hosted by PacifiCorp on October 28 and November 14, 2019. The meeting focused on Bear River Canal Company's (BRCC) study plan requests submitted to the Federal Energy Regulatory Commission (FERC) in July 2019, and a discussion of PacifiCorp's Proposed Technical Study Plans (PSP) filed with FERC on September 11, 2019. The meeting purposes were to gain a better understanding of BRCC's study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP, and attempt to reach agreement on remaining study plan comments. PacifiCorp and BRCC made considerable progress addressing BRCC's comments regarding study plans; PacifiCorp has prepared a meeting summary that is enclosed with this letter along with a table of PacifiCorp's revised responses to your study plan requests. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. As you draft your comments on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP) in our meetings with BRCC on October 28 and November 14, 2019, as well as those issues in which later information (i.e., the canal-lining grant submission), may have altered your previous comment. As stated by FERC at the October 8, 2019 meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meeting. Stakeholders will have the opportunity to review and comment on the RSP following that January 10, 2019 filing.



Please contact me directly no later than December 4, 2019 if you feel the attached comment table does not accurately capture the agreed adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Curtis Marble, President, BRCC
Emily Lewis, Attorney for BRCC
Brent Rose, Attorney for BRCC
Scott Lyons, Box Elder County Senior Planner
John Sample, Attorney for PacifiCorp
David Wright, Attorney for PacifiCorp
John Mabey, Attorney for PacifiCorp
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosures:

- 1) BRCC October 28, 2019 Study Plan Consultation Meeting Summary
- 2) Table of BRCC's Study Plan Requests and PacifiCorp's Revised Responses
- 3) October 28, 2019, Meeting Flipcharts
- 4) Corrections to J-U-B Engineers September 2019 discharge measurements

ENCLOSURE 1

**BEAR RIVER CANAL COMPANY
OCTOBER 28, 2019
STUDY PLAN CONSULTATION MEETING SUMMARY**

CUTLER HYDROELECTRIC PROJECT (FERC No. 2420)
STUDY PLAN CONSULTATION MEETING SUMMARY
BEAR RIVER CANAL COMPANY AND PACIFICORP

OCTOBER 28, 2019, 1:00 P.M. – 3:30 P.M.
PACIFICORP'S NORTH TEMPLE OFFICE, RM. 210B
SALT LAKE CITY, UT

This meeting was requested by both BRCC and PacifiCorp in follow up to the October 8, 2019 Study Plan Workshop to review and discuss BRCC's study requests related to PacifiCorp's Proposed Study Plan.

ATTENDEES

Bear River Canal Company (BRCC)		
Trevor Nielson	General Manager	
Emily E. Lewis	Attorney	
Federal Energy Regulatory Commission (FERC)		
Ken Hogan	Fisheries Biologist	By phone
Kelly Wolcott	Wildlife Biologist	By phone
Robin Cleland	Attorney	By phone
Khatoon Melick	Project Engineer	By phone
PacifiCorp		
Eve Davies	PacifiCorp Cutler Relicensing Manager	
Connely Baldwin	Water Resources Engineer	
Buffi Morris	Property Department	
Chris Jorgensen	Property Department	
John Sample	Legal Department	By phone
Devin Pharis	Director of Plant Operations	By phone
Jack Kolkman	Plant Director	
Todd Olson	Director of Licensing and Compliance	By phone
PacifiCorp Consultants		
John Gangemi	Facilitator, River Science Institute	
Lindsey Kester	Project Manager, SWCA	
Frank Shrier	Fisheries Biologist, SWCA	By phone
Nuria Holmes	Regulatory Consultant, Kleinschmidt Associates	By phone
Ben Cary	Hydraulic Engineer, Kleinschmidt Associates	By phone
Justin Barker	GIS/Water Quality, Cirrus	By phone
Matt Westover	Wildlife Biologist/Shoreline, Cirrus	By phone
Eric Duffin	Watershed Scientist, Cirrus	By phone
U.S. Geological Survey (USGS)		
Ryan Rowland	Data Chief, Utah Water Science Center	
Mike Freeman	Hydrologic Technician	

MEETING AGENDA AND OBJECTIVES

1. Introductions
2. Distinguish comments related to study plans from other comments included in the BRCC comment letter

3. Review flow measurement monitoring, then open discussion regarding other BRCC comments
4. Review comments related to study plans
5. Gain clear understanding of BRCC study comments
6. Resolve comments where applicable
7. Determine need for additional meetings

MATERIALS

- Table of BRCC Study Requests and PacifiCorp Responses
- Meeting Flipcharts

MEETING SUMMARY:

The purpose of the meeting was to: review BRCC's July 2019 study request (as distilled from BRCC Scoping response *prior* to release of the Proposed Study Plan [PSP], [Enclosure 2]); identify elements of the BRCC study plan request/comments already included in the original version of the PSP filed September 11, 2019; and, discuss BRCC's study plan requests/comments not currently incorporated into the PSP and identify opportunities to adjust study plans where applicable to include BRCC study plan requests/comments. Enclosure 2 lists BRCC July 2019 study plan requests/comments, PacifiCorp's response to BRCC study plan requests/comments in the September 11, 2019 PSP, and revised response to BRCC study plan requests/comments following consultation during October 28 and November 14, 2019¹ meetings in Salt Lake City.

PacifiCorp described the broad picture of the FERC Integrated Licensing Process (ILP) timeline, identifying the multiple opportunities in the process for stakeholders to comment. PacifiCorp provided a summary of the regulatory milestones and collaborative workshops providing input into development of the PSP, and eventually the Revised Study Plan (RSP). PacifiCorp pointed out that some of BRCC's comments cover broader issues in the FERC ILP or other forums outside of FERC licensing, such as the 1912 contract for irrigation water delivery. The focus of this meeting was stakeholder study requests/comments relative to the PSP. PacifiCorp emphasized that the near-term milestone in the license process is the review and approval of the RSP.

Stakeholder comments on the PSPs are due December 11, 2019 to FERC. PacifiCorp hopes BRCC's study plan requests/comments on the PSP acknowledge the study plan revisions agreed to in the October 28, 2019 meeting [and subsequent meeting with BRCC on November 14, 2019 in Salt Lake City].

BRCC informed PacifiCorp that Box Elder County plans to write a letter in support of BRCC's comments. PacifiCorp needed to be aware, because as a political body, Box Elder County will need additional time to review PacifiCorp's revised responses and obtain proper approvals prior

¹ A second meeting between PacifiCorp and BRCC was held on November 14, 2019, to further discuss BRCC irrigation canal operational issues and how those relate to the 1912 irrigation water delivery contract between PacifiCorp and BRCC, and to further distinguish between 1912 contract issues and relicensing project issues.

to submitting a letter to FERC [For that reason, the County Planner was copied on this communication]. BRCC legal counsel will also be filing a letter to FERC for the record. PacifiCorp will submit the RSP to FERC January 10, 2020. The RSP will incorporate agreements reached in the October and November 2019 meetings with BRCC as well as consider other comments filed directly with FERC. Stakeholders will have an opportunity to review and comment on the RSP as well.

PacifiCorp expressed its interest in setting up a follow-up meeting to discuss BRCC comments on irrigation water delivery [As noted above, PacifiCorp and BRCC also met on November 14, 2019 in Salt Lake City to discuss BRCC comments focused on irrigation water delivery and the 1912 irrigation contract].

BRCC requested time to present a 46-slide PowerPoint on the BRCC canal system. The group agreed to a change in the meeting agenda to accommodate the presentation. The PowerPoint was forwarded electronically to phone participants. A summary of several slides within BRCC's PowerPoint presentation is provided below. The group agreed to start with Meeting Objective 2, Flow Measurement Monitoring to allow U.S. Geological Survey (USGS) staff to leave early if desired.

FLOW MEASUREMENT MONITORING IN BRCC CANALS – GROUP DISCUSSION WITH USGS

PacifiCorp described the frequency and type of flow measurements taken in the east and west irrigation canals. USGS, in turn, described their monitoring of PacifiCorp gages on the Bear River and irrigation canals, in part, to confirm rating curves. USGS typically visits the gages across a range of flows to capture peak and low flows. USGS said the discharge measurements at the east and west canals are +/- 5 percent accuracy. USGS indicated that discharge measurements within +/- 5 percent are the industry standard and considered “good.”

BRCC informed the group that they contracted a third party (J-U-B Engineers) to measure discharge in the east and west irrigation canals on two dates in September 2019 to verify accuracy of the rating curves for each canal channel. PacifiCorp indicated they were unaware of this third-party measurement prior to BRCC's announcement at the October 8, 2019 PSP meeting. BRCC's contractor, J-U-B Engineers, estimated that on two dates in September 2019 the rating curve was off by approximately 3.5 percent on one date and 9 percent on the other from the discharge measures.

BRCC expressed that while +/- 5 percent accuracy may not sound like much, for BRCC that amounts to 20 farmers who do not receive their water. BRCC needs the water delivered when crops are actively growing. BRCC stated that a weir-based system would improve discharge data accuracy; PacifiCorp noted that they do not necessarily agree with that statement. USGS said weirs have a nice, defined geometry but must be kept clean to perform well. PacifiCorp indicated they would support BRCC installing a weir if their stakeholders want it, but since PacifiCorp is already delivering water within industry standards, why would PacifiCorp customers need to pay to install a weir to replace a system that is working accurately?

FERC asked if there was a study request regarding weirs. If so, data is needed to support that request. From FERC's perspective, a weir would be a protection, mitigation, and enhancement

(PM&E) measure. FERC indicated the group's discussion was focusing on solutions without having first defined the problem. Topics for study plans should focus on data gaps and questions that need to be answered through studies.

Since the October 28, 2019 meeting, PacifiCorp received J-U-B Engineers' September 2019 discharge data for review. PacifiCorp subsequently identified an error in J-U-B Engineers' discharge calculations that omitted the final step necessary, per the USGS protocol, to provide better accuracy. PacifiCorp's data corrections, using the additional final step, were reviewed and approved by USGS. The corrected discharge measurements indicated the canal rating curves ranged from 0.6 percent to 2.7 percent accuracy to the measured discharge value (Enclosure 4). This level of accuracy falls into the highest standard of measurement and is considered "excellent" by USGS.

BRCC POWERPOINT PRESENTATION

A substantial portion of the meeting was dedicated to BRCC's PowerPoint presentation. BRCC's key points in the presentation were concern with the accuracy and timing of water delivery under current operations, the variability of water delivery under current operations, increased complexity in the next license with a "more variable" operating regime, monetization of crop impacts to individual BRCC shareholders, and interpretation of 1912 irrigation contract obligations. BRCC wanted to be sure there is an avenue to appeal to FERC if water delivery is compromised in the next license. PacifiCorp informed BRCC they can appeal to FERC at any time if BRCC believes PacifiCorp is not in compliance with license conditions. PacifiCorp understands that BRCC desires the most accurate data but does not agree that PacifiCorp's customers should fund this effort. Points of discussion associated with specific slides are included below.

Upon completion of the presentation, the group reviewed BRCC's concerns. FERC indicated that they understand BRCC's concerns regarding changes in the reservoir pool elevation's potential effect on canal gates.² FERC advised that BRCC articulate why the irrigation water delivery modeling effort is needed. Likewise, FERC advised PacifiCorp to articulate why current operations are capable of meeting BRCC's water delivery needs [The cross-sectional diagram referenced in footnote 2 and presented in the November 14, 2019 meeting helped to increase BRCC's understanding of this element of the discussion].

BRCC thought simulation rather than modeling could be used to address whether the system could respond quickly enough to changes in demand from BRCC. PacifiCorp said proposed operations are not so complicated that modeling is required, stating that PacifiCorp could adjust operations to account for the range of elevations. PacifiCorp emphasized future operations would

² In the subsequent November 14, 2019 meeting with BRCC, PacifiCorp provided a cross-sectional view of Cutler Dam illustrating the location of reservoir pool elevations relative to height of canal gate structures. The canal intakes are located approximately 16 feet lower than the normal reservoir pool elevation. The illustration helped BRCC better understand potential water surface elevation fluctuations relative to canal intakes and timing. This understanding may have eliminated the need for modeling future project operations potential impacts on irrigation water delivery to BRCC canals.

not vary during the irrigation season. BRCC stated they believe they can work with PacifiCorp on this issue and avoid a FERC study request.

- Slide 11 (Current Season's Data) – BRCC reviewed the current season's data and said it shows that particularly in June, BRCC is getting 5 cubic feet per second (cfs) less flow than they should be getting. BRCC said crop losses could be up to \$75,000 for losing a single irrigation turn in a single month, for example, in June. PacifiCorp noted slide shows discharge is within a 3 percent error, which is what a weir would provide. PacifiCorp said flows within a 5 percent error is the best that can be done.
- Nielson (BRCC) compared PacifiCorp and J-U-B data on two dates in September. One showed 3.5 percent, the other 9 percent over-performance. USGS said friction in canals can affect the measurements and could cause the differences seen. BRCC will provide the J-U-B data to PacifiCorp.³
- Slide 12 (Ability to Adjust) – Regarding variability, BRCC is concerned that gate adjustments sometimes take 7 to 9 hours to settle to the desired level. According to BRCC, this is not a “steady and sure flow” as required in the 1912 contract article. BRCC said technology exists for this to happen much more quickly. BRCC said it is not a problem with the operators, it is a problem with PacifiCorp's automatic gate, and that gates do not meet industry standard. PacifiCorp asked if there is an industry standard, and if so, what is it? BRCC said it depends. PacifiCorp disagreed with the interpretation of the contract language and whether either the accuracy or the variability of water deliveries under the contract are relicensing issues at all.
- Slide 28 (How Does It Work?) – BRCC would like to implement a Total Canal Control (TCC) system over the next several years. BRCC needs accurate measurements at the head of the canal to implement TCC. BRCC plans to apply for grants to implement a hybrid TCC. PacifiCorp asked if it would be possible to apply for a grant to include the proposed weir. BRCC said yes, but the 1912 contract says PacifiCorp must deliver water. PacifiCorp understands that it must deliver water and why it is beneficial for BRCC's shareholders to have the highest degree of accuracy possible, but PacifiCorp has an obligation to keep electricity rate costs down to customers, and again noted that PacifiCorp believes that the degree of accuracy as verified by the USGS is acceptable both by industry standards and 1912 contract terms. Further, why should PacifiCorp's customers pay for an additional level of accuracy for the benefit of BRCC's stakeholders? BRCC claimed that it is the law. PacifiCorp noted they certainly want to comply with the law but disagreed that BRCC's interpretation is what the law requires. PacifiCorp is not sure how this relates to relicensing and asked FERC to comment on this. PacifiCorp and BRCC may have differences of opinion in what the law requires.

³ J-U-B Engineers data omitted a final step needed to most accurately calculate discharge. Corrected discharge measures incorporating the final step indicated the canal rating curves actually ranged from 0.6 percent to 2.7 percent accuracy relative to the measured discharge value (Enclosure 4). USGS considers accuracy ≤ 3 percent accuracy to be “excellent.”

- Slide 30 and 31 (BRCC's Response to PacifiCorp's Comments) – PacifiCorp recognizes that the performance of the gate is important to BRCC.
- Slide 33 (Sediment in the Transition Zone) – BRCC indicated LiDAR data is more important for sediment in the transition zone and could be used to assess an appropriate canal cleaning rotation. BRCC is planning to install concrete lining on the section of canal at the transition zone. BRCC wants to establish a cleaning rotation and it recognizes the need for regular canal maintenance.
- Slide 35 (Sediment Passed to Canal System) – BRCC would not be okay with a Cutler operations proposal that causes more sedimentation in the canals. The original study plan only included measurement of sedimentation in the river, not sedimentation of the irrigation canal water. PacifiCorp confirmed that total suspended solid sampling in the canals was added to the study plan.

AQUATIC WEEDS AND ALGAE STUDY REQUEST

PacifiCorp is currently considering this request internally and will have an answer before the December 11, 2019 deadline for study plan comments (i.e., the goal is to address this by the end of November 2019)⁴.

BRCC believes the algae problem will improve once Logan City gets its new wastewater treatment plant online. BRCC recommended delay of an algal study until after Logan City's new wastewater treatment plant comes online. BRCC would be willing to drop this issue if PacifiCorp is willing to bring in experts, etc. PacifiCorp requested BRCC's literature regarding aquatic weeds.

DRAWDOWN SCHEDULE AGREEMENT

PacifiCorp informed the group that a compromise was reached between BRCC and PacifiCorp on the upcoming drawdown schedule. The drawdown will now ensure stock watering. FERC requested receipt of a copy of the agreement.

⁴ PacifiCorp was to address alternative aquatic weed and algae study by the end of November, however, BRCC has subsequently decided to withdraw this study request and instead work cooperatively with PacifiCorp on this issue.

ACTION ITEMS

- | | |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nielson,
BRCC | <ul style="list-style-type: none">• Provide J-U-B's (BRCC's consultant) instrument calibration information to PacifiCorp• Provide flow measurement data files to PacifiCorp• Provide relevant literature on aquatic weeds |
| BRCC &
PacifiCorp | <ul style="list-style-type: none">• Hold a follow-up meeting to discuss gate controls performance• Continue discussion of canal discharge modeling/simulation• 1912 Contract: Determine obligations under the contract and who is responsible |
| PacifiCorp | <ul style="list-style-type: none">• File drawdown agreement with BRCC to FERC• Internal discussion of aquatic weeds study, Nielson (BRCC) to provide relevant literature• Communicate with BRCC prior to December 11, 2019 deadline (target date: end of November 2019)• Update FERC on progress reached to resolve areas of dispute with BRCC on study requests |

ENCLOSURE 2

TABLE OF BRCC STUDY REQUESTS AND PACIFICORP REVISED RESPONSES

BRCC STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Expand the LiDAR readings to include the two main BRCC canals to the same 2-mile distance.</u></p> <p>PacifiCorp's contractual obligations to BRCC are directly related to the condition of the BRCC canals and an expanding LiDAR study and data will be used to:</p> <ol style="list-style-type: none"> 1) establish the ability of current gate automation systems to provide a steady flow of irrigation and stock water during the newly proposed variable operation 2) determine viable locations for better measurement devices 3) help determine an appropriate maintenance program for the upper canal system as it relates to silt deposits 4) determine the true channel capacity of the respective canals. 	<p>PacifiCorp intends to collect LiDAR data on up to 2 miles of BRCC canals as requested by BRCC. PacifiCorp believes that the reservoir and dam may be reducing the sediment in the canals since the dam acts as a trap to avoid sediment entering the canals. The canal measuring system is calibrated annually or more frequently as needed; in 2019 the accuracy was assessed in conjunction with BRCC and found to be adequate.</p>	<p><u>PacifiCorp agrees to include LiDAR on the 2 miles of canals specified; however, PacifiCorp notes that sub-items 1-4 are instead irrigation contract-related and as such are outside of the scope of relicensing.</u></p> <p>On October 28, 2019 and November 14, 2019, PacifiCorp hosted collaborative meetings with BRCC to discuss Cutler relicensing study requests and comments. As stated in the PSP filed September 11, 2019 with FERC, and stated in both meetings with BRCC, PacifiCorp has agreed to collect LiDAR data and provide the data on up to 2 miles of BRCC canals that originate from Cutler Dam as requested by BRCC.</p> <p>Future operations at the Cutler Hydroelectric Project will be evaluated to determine the hydro project's impact on the surrounding environment, PacifiCorp intends to honor the terms of its irrigation contract with BRCC. The need for new devices to measure water delivery, specifically those listed in items 1 through 4 in BRCC's comments, fall under water delivery contracts and BRCC operational issues. These items are separate from project operation under the license, and hence, outside the FERC relicensing process.</p> <p>PacifiCorp appreciates the importance of water delivery to BRCC's business. Accordingly, PacifiCorp hosted the second meeting with BRCC to further discuss the items not related to the FERC relicensing. Additional meetings on these items are likely to occur.</p>

BRCC STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>The expansion of the LiDAR study could establish the elevations of the channel in relation to the gates and other fixed items in the system.</p> <p><u>Through modeling, a third party can:</u></p> <ol style="list-style-type: none"> 1) <u>model the performance of the current gate system in a variable operation system to ensure that steady delivery will occur</u> 2) <u>determine locations appropriate for weirs</u> 3) <u>model the quality of delivery of a weir based on the integrated system</u> 4) <u>compare the two resulting qualities of delivery.</u> <p>BRCC requests this variable operation modeling occur and be taken into account by FERC when deciding whether to grant PacificCorp a more flexible operation elevation.</p>	<p>PacificCorp has agreed to collect LiDAR data and provide the data on up to 2 miles of BRCC canals as requested by BRCC. In the spirit of collaboration, LiDAR data should help confirm quantities of water deliveries under the proposed operations.</p>	<p><u>PacificCorp does not agree to conduct modeling exercises within irrigation canals as specified to inform items 1 through 4.</u></p> <p>As stated in the previous comment, PacificCorp hosted collaborative meetings with BRCC on October 28 and November 14, 2019 to discuss study requests and comments. As stated in the PSP and at both meetings with BRCC, PacificCorp has agreed to collect LiDAR data and provide the data to BRCC on up to 2 miles of BRCC irrigation canals.</p> <p>Responses to BRCC comments 1 through 4 are as follows:</p> <p>1. PacificCorp will prioritize and continue to honor all water delivery contracts. As a result, PacificCorp does not see the need to conduct a modeling exercise within irrigation canals to demonstrate that the company will continue to meet these contract obligations. Further, as discussed at the November 14, 2019 meeting, PacificCorp presented a cross-section of Cutler Dam demonstrating that the proposed fluctuations in operations will not affect water delivery to BRCC canals.</p> <p>2 - 4. LiDAR data collected in November 2019 should help BRCC identify future weir locations and confirm quantities of water deliveries within irrigation canals.</p> <p>The need for new devices to measure water delivery within irrigation canals falls under water delivery contracts and is outside the FERC relicensing process. Given the outcome of the J-U-B Engineers data review (see Enclosure 4), PacificCorp believes the current water delivery measurement system is accurate, meets industry standards and complies with the 1912 contract. Items 2, 3, and 4 do not warrant study or modeling within the relicensing process as they are not related to hydro project license operation.</p>

BRCC STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>Expansion of the LiDAR study would measure the current canal elevations to determine the extent of sedimentation since the last cleaning. This data could then be used to determine an appropriate cycle for cleaning of this section of the canal. <u>The date would assist in a study determining how much sediment is transported to the canals from Cutler Reservoir.</u> Sedimentation will be an issue of increasing concern to BRCC as it affects BRCC's ability to effectively deliver water to shareholders and remediation is expensive. Moreover, the cost to PacificCorp to expand the LiDAR study would be limited since the river channel along the same length is already being surveyed as part of the current LiDAR study.</p>	<p>PacificCorp intends to collect LiDAR data on up to 2 miles of the BRCC canals. The LiDAR data will not necessarily provide the quantity of sediment transported into the canals, but a simple load estimate on canal flows and total suspended solids (TSS) concentrations could be calculated by the BRCC to estimate the annual load of sediment in the canals to assist with its operation and maintenance (O&M) needs.</p>	<p><u>As previously stated, although LiDAR data will be collected and provided to BRCC, PacificCorp does not plan to model sediment deposition in the irrigation canals. As noted below, BRCC has also suggested that this study may no longer be necessary, given their recent plans.</u></p> <p>PacificCorp agrees with BRCC that sedimentation is an issue of interest to all entities with canals in the Bear River system. PacificCorp will evaluate the LiDAR and bathymetric data in combination with TSS and other water quality data to assess whether project operations impact sediment levels in irrigation water delivered to BRCC.</p> <p>Per BRCC's request, PacificCorp collected TSS data from the West and Hammond irrigation canals beginning on October 25, 2019 to help quantify sediment inputs to the canal system during the reservoir drawdown in the fall of 2019. This data will be provided in the FERC interim progress report in 2020, and in the Initial Study Report at the end of the first year of field study (early 2021).</p> <p>BRCC, in the subsequent meetings with PacificCorp on November 14, 2019, indicated the comment regarding studying sediment in BRCC canals may no longer be a concern if its grant application with Bureau of Reclamation to line the BRCC canal is awarded.</p>

BRCC STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Expand the Sedimentation Study to include the two main BRCC canals located just below Cutler Dam.</u> The goal of an expanded sedimentation study is to:</p> <ol style="list-style-type: none"> 1) understand the amount of sediment that is passed from Cutler Dam to the BRCC canals each season 2) determine operational practices that could reduce sediment transfer to the canal system 	<p>PacificCorp intends to collect LiDAR data on up to 2 miles of the BRCC canals. The LiDAR data will not necessarily provide the quantity of sediment transported into the canals, but a simple load estimate on canal flows and TSS concentrations could be calculated by the BRCC to estimate the annual load of sediment in the canals to assist with its O&M needs.</p>	<p><u>PacificCorp does not agree to expand the Sedimentation Study as requested in this comment.</u></p> <p>PacificCorp will evaluate LiDAR and bathymetric data in combination with TSS and other water quality data to assess future management actions for best operations of company facilities, while also maintaining contractual obligations to BRCC.</p> <p>Further, although not related to relicensing, BRCC, in the subsequent meetings with PacificCorp on November 14, 2019, indicated the request to expand the Sedimentation Study to include BRCC canals may no longer be a concern if its grant application with Bureau of Reclamation to line the BRCC canal is awarded.</p> <p>Responses to BRCC numbered comments are as follows:</p> <ol style="list-style-type: none"> 1. Per BRCC's request, PacificCorp collected TSS data from the West and Hammond canals beginning on October 25, 2019 to help quantify sediment inputs to the canal system during the reservoir drawdown in the fall of 2019. This data will be provided in the FERC interim progress report in 2020, and in the Initial Study Report at the end of the first year of field study (early 2021). The hydraulic models will estimate the general sediment transport within the reservoir based on the incoming and outgoing sediment data, calculated reservoir velocities, depth calculated from reservoir bed elevation data, and operating water surface elevations. 2. One of the outcomes of the relicensing studies will be, in part, an evaluation of deposition of sediments within the reservoir, movement of sediment under a range of operating conditions, and an evaluation of potential tools to manage sediment in the Cutler system.

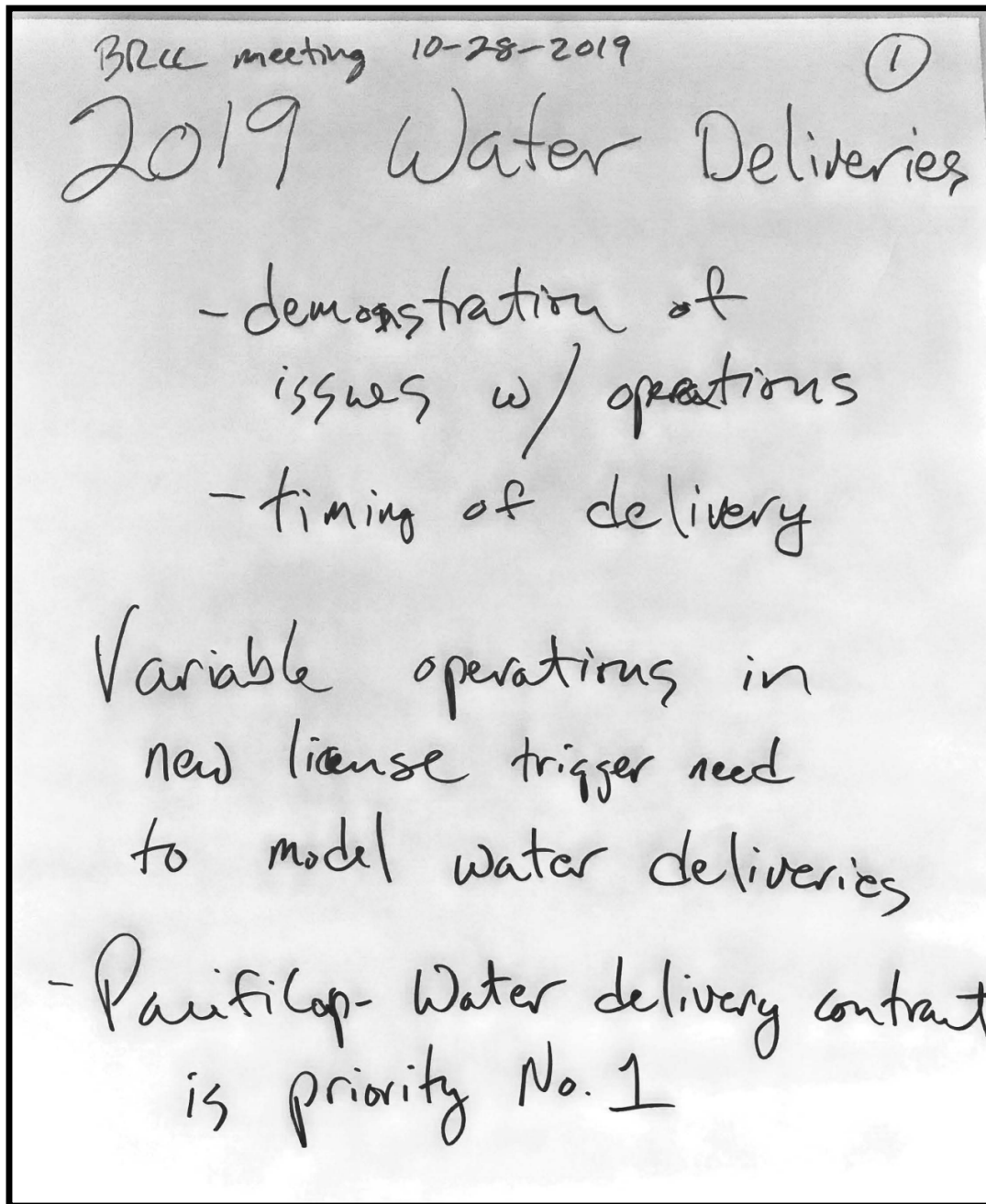
BRCC STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>The suspended solids cause economic loss to the shareholders of BRCC and in turn removes capital from Box Elder County. The data gathered from an expanded sedimentation and LiDAR study could be used to determine the current amount of sediment passed to the canal system. BRCC recommends FERC use the sediment studies to inform whether PacifiCorp's operations can be adjusted to minimize future sediment loading. For example, <u>BRCC recommends FERC review whether the 7-foot low-level passage described on page 7 of the FERC Scoping Document can and should be utilized to clear material from the face of the dam.</u> If operated in times of high water (when the spill gates would normally operate), the associated high-water flows would allow additional sedimentation to be carried downstream without adverse effects.</p>	<p>PacifiCorp believes the Hydraulic Modeling Study and the Sedimentation Study will help inform future Cutler operations. These results might help BRCC plan for O&M needs of their canals, which are likely to receive less sediment than if they were withdrawing from a free-flowing river rather than a reservoir.</p>	<p><u>As part of the relicensing effort, PacifiCorp is investigating the condition and potential for rehabilitation of the low-level outlet structure for operational purposes.</u> PacifiCorp will include the condition of the low-level outlet combined with the LIDAR and bathymetry data to help inform future project operations. The potential benefits and impacts of rehabilitating the low-level outlet structure will be considered in the alternatives analysis as part of the National Environmental Policy Act (NEPA) environmental analysis.</p> <p>See also the previous revised comment responses in this table regarding BRCC requests to study sediments.</p>

<p><u>BRCC Requests an additional Study of Aquatic Weeds and Algae.</u></p> <p>Aquatic weeds and algae impede BRCC's ability to effectively deliver shareholder water and can represent public safety concerns. Aquatic weeds and algae can clog irrigation infrastructure and canals. Clogged infrastructure can result in costly time delays and damage to personal and real property. Accordingly, aquatic vegetative control efforts constitute the single largest annual expenditure for BRCC. Over the past 4 years, BRCC has seen its control costs double. As a potential conduit for aquatic weeds and algae, BRCC recommends FERC study whether Cutler Reservoir is a contributing source for increased aquatic weeds and algae in BRCC canals. The study will review:</p> <ol style="list-style-type: none"> 1) the corresponding populations levels of aquatic weeds and algae in Cutler Reservoir and BRCC canals 2) the migration of aquatic weed and algae populations into the BRCC canal system through Cutler Reservoir by reproduction or direct relocation 3) preventative and mitigation measure to minimize upstream aquatic plant material or algae from flowing into the BRCC canal system. <p>This study would supplement existing BRCC efforts to determine the cause of an increasingly vibrant aquatic</p>	<p>PacifiCorp does not propose to study aquatic weeds or algae during the relicensing process. PacifiCorp believes the requester has not established a Project nexus nor a proposed methodology per the Federal Power Act under 18 CFR §5.9 that would merit PacifiCorp conducting an aquatic or algae study that addresses the transport of weeds in the Project Area or in the BRCC's canals; further PacifiCorp is unaware of any appropriate methodology for such a study. Changing water conditions, especially increased water temperatures, have led to increased aquatic maintenance costs for virtually all canal operators in the region.</p>	<p><u>PacifiCorp does not agree with the need for an Aquatic Weeds and Algae Study, and in subsequent discussions, BRCC indicated that the study may not be necessary and would instead prefer to work cooperatively with PacifiCorp on this issue outside of the relicensing process.</u></p> <p>For the purposes of the FERC relicensing process, the issue of aquatic weeds and algae will be one of the cumulative effects addressed in the environmental analysis. PacifiCorp and BRCC both agree that aquatic weeds and algae are an ongoing issue in the Bear River system compounded by the nutrient loading from municipal sources and multiple land use practices in the watershed. This is a watershed-scale problem not isolated to Cutler Reservoir alone.</p> <p>As highlighted in the Middle Bear and the Cutler Reservoir total maximum daily loads (TMDL), water quality degradation (specifically nutrient inputs) to Cutler Reservoir are substantial and in large measure are independent of Cutler Project operations. This degradation to water quality in Cutler Reservoir can be attributed to a myriad of upstream sources in the Bear River Basin. Specifically, these include the municipal effluent from cities and towns upstream of Cutler Reservoir, industrial effluent including inputs from commercial meat packing plants, animal feed operations, storm water inputs from each of the municipalities as well as most of Cache County, and all tributaries upstream of Cutler Reservoir. The TMDL noted elevated phosphorous levels which promote algal growth. In short, water quality in the reservoir is affected by inputs throughout the basin stretching from Cutler Dam to the headwaters and covering three state water quality jurisdictions. PacifiCorp believes this is an issue that reaches far beyond PacifiCorp's ability to resolve and is being addressed cooperatively through the TMDL process.</p> <p>In subsequent discussions with BRCC on October 28, 2019 and November 14, 2019, BRCC and PacifiCorp agreed that the near-term construction and operation of the Logan Wastewater Treatment Plant would potentially ameliorate nutrient inputs and water quality degradation to Cutler Reservoir. BRCC believes this may reduce the problem with aquatic weeds and algae plants in BRCC canals.</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

BRCC STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>weed and algae population. The aquatic weeds and algae which BRCC is most concerned about are: filamentous algae, Sago pondweed, and horned pondweed. BRCC also recommends FERC study appropriate aquatic weed and algae prevention and mitigation measures reflecting the results of the initial study. BRCC recommends studying inserting a sample catch screen in the canals below the dam a set number of days each month. A professional biologist should be consulted to develop an appropriate protocol to adequately accomplish the goals of the study.</p>		<p>BRCC indicated they prefer to work with PacificCorp outside the FERC relicensing process to cooperate on this issue in lieu of their aquatic weeds and algae study request.</p>

ENCLOSURE 3

OCTOBER 28, 2019 MEETING FLIPCHARTS



FLIPCHART 1

BRCC 10-28-2019 ②

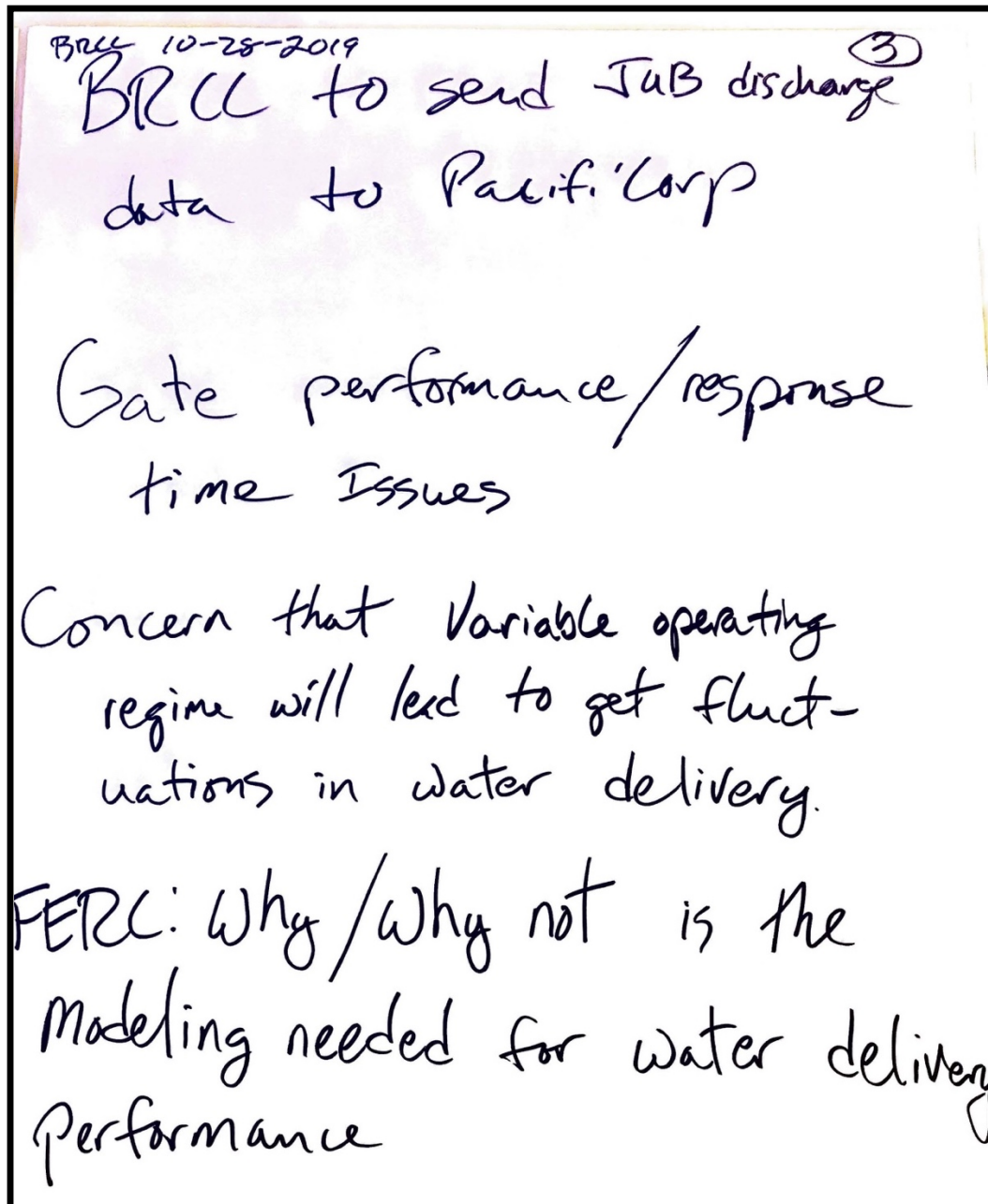
Study Request in this Issue?

- ① Are the gates/infrastructure meeting the desired flow? Auto gate controls
- ② Is current gaging ~~gaging~~ ~~controls~~ measurement correct?

FERC: What information is needed to make the determination that a PMSE is warranted.

BRCC to send 2019 data to PacifiCorp

FLIPCHART 2



FLIPCHART 3

BRLC meeting 10-28-2019 (4)
Is this more a design demonstration
rather than modeling?
- New Design for control scheme
Follow-up: BRLC; Pacificorp
to meet focused on
Gate controls performance
TBD
BRLC working toward hybrid
TCL system in next 5-7 yrs

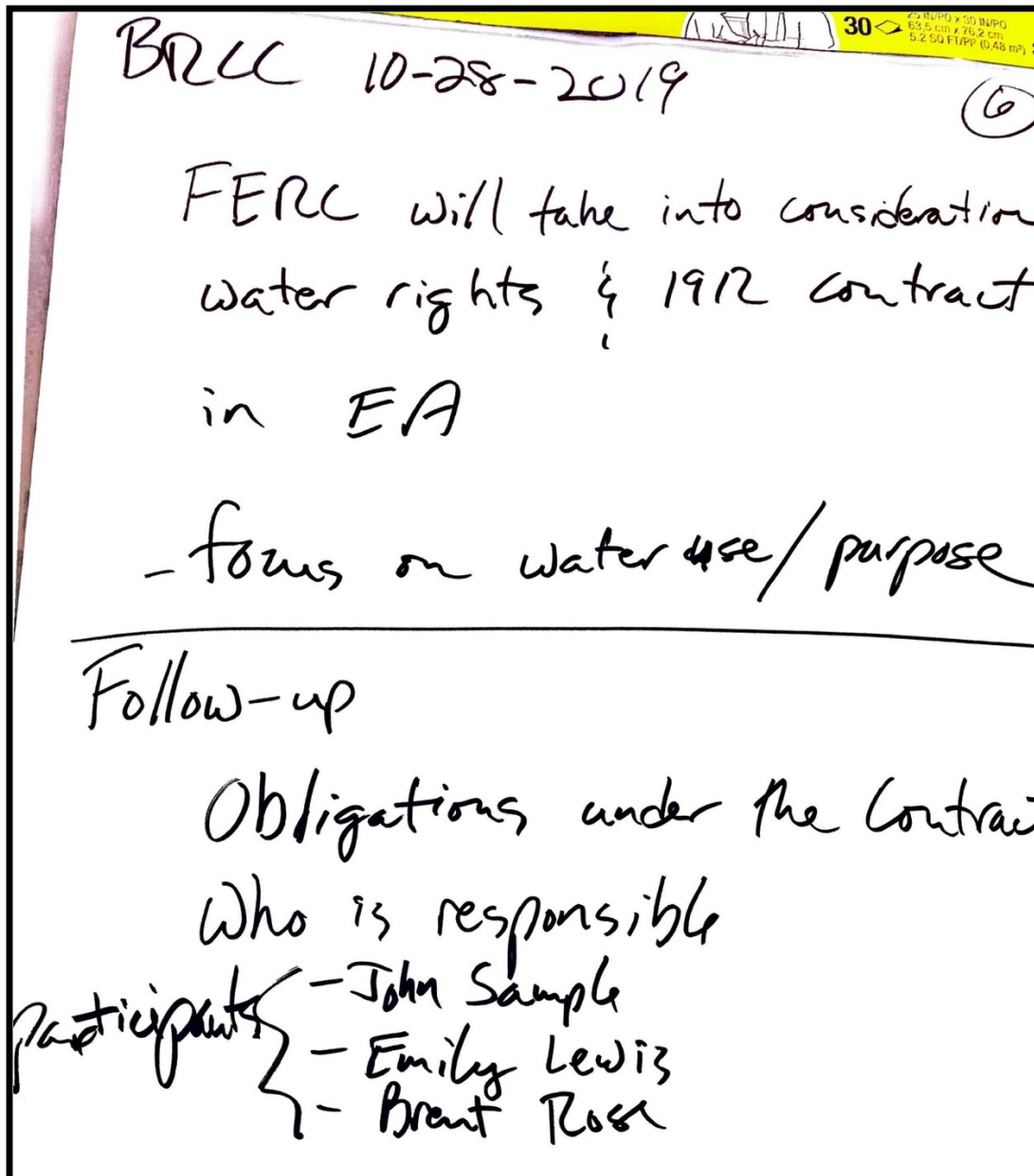
FLIPCHART 4

BRCC 10-28-2019 (5)
Where does the 1912 contract obligations fit into relicensing?

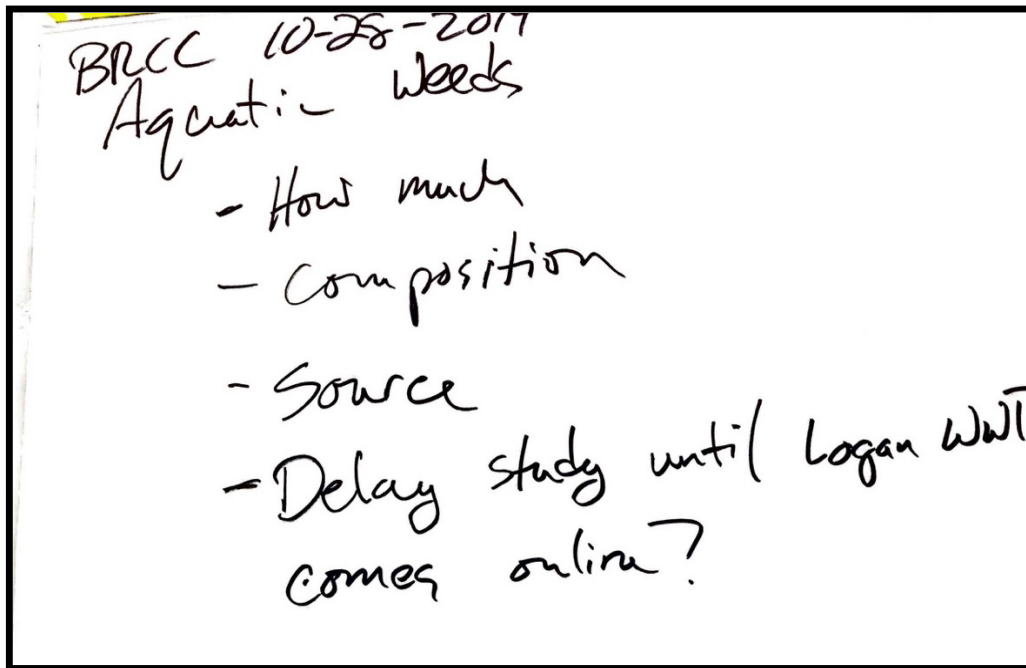
Aquatic weeds/algae study
- PacifiCorp investigating potential study methods
- will check back in w/ BRCC & FERC prior to 12/11
→ End of November

Box Elder City will file study comment letter -- Needs more time to review BRCC letter

FLIPCHART 5



FLIPCHART 6



FLIPCHART 7

ENCLOSURE 4

EMAIL REGARDING CORRECTIONS TO J-U-B ENGINEERS SEPTEMBER 2019 DISCHARGE MEASUREMENTS

From: Baldwin, Connely <Connely.Baldwin@pacificorp.com>
Date: November 22, 2019 at 3:22:47 PM MST
Subject: Review of J-U-B Cutler West Canal flow verification measurements
To: Trevor Nielson <trevor@brcanal.com>, Christopher Slater (cslater@JUB.com)
<cslater@JUB.com>
Cc: Davies, Eve
<Eve.Davies@pacificorp.com>, Khatoon.Melick@ferc.gov, Kenneth.Hogan@ferc.gov, Rowland, Ryan <rrowland@usgs.gov>, Pharis, Devin <Devin.Pharis@pacificorp.com>

Trevor and Chris,

See the attached review of the three recent J-U-B Cutler West Canal flow verification measurements. Also attached are the final QRev summaries, showing the results of the final processing step. Thanks for sharing the data. As you'll note in the review, I coordinated and got the input from the United States Geological Survey. I was pleased to see that the range of percent differences between the measured discharge and the rated discharge decreased from 3-5.7% to 0.6-2.1%. While it is apparent to you, it may be worth noting that these measurements were made without any initial coordination with PacifiCorp and without adjusting the rating table. However, the results were consistent with recent discharge measurements made by both PacifiCorp and United States Geological Survey.

Thanks,
Connely Baldwin
Hydrologist

**Evaluation of September 2&10, 2019 West Canal Discharge Measurements made by J-U-B
PacifiCorp - November 21, 2019**

The raw data collection methodology was executed fairly close to the protocol, with a few areas for possible improvement which did not affect the overall accuracy of the measurements:

- On a couple of measurements there was no 10-second pause at the edge of the channel to collect velocity measurements used to estimate the edge discharge.
- A couple of the stationary moving-bed tests were just a little shy of 5 minutes.
- The total contact time was a little short of the recommended 12 minutes for two of the measurements.
- The L/R edges were transposed resulting in negative flow rates (United States Geological Survey convention is: left bank is on the left hand side when looking downstream)

However, following data collection, the measurements were missing one final processing step (using a software named "QRev", developed by the United States Geological Survey), which uses the measured velocity profile to extrapolate the top and bottom areas of the channel that the ADCP can't measure. The default extrapolation in WinRiver II data processing software was used, which assumes the velocity profile follows a power-law relationship with a 1/6 coefficient. The actual velocity profile does not fit this default, as velocity was at a maximum in the central portion of the profile with velocities *decreasing* towards the water surface (see Figure 1). Reprocessing the measurement using QRev improves the accuracy of the discharge measurement. In this case, a 3-point extrapolation for the upper unmeasured area and a no-slip power law with a best-fit coefficient for the unmeasured area in the bottom of the channel were best.

See below a tabular summary comparison of the raw JUB discharge values with the final processed discharge values. The range of % differences decreased from 3-5.7% to 0.6-2.1%. See details in the tables below.

Date/Time	Station Name: West_Main_1	Station Number: 44+00									
	Meas per JUB (Default Extrapolation)	Diff (cfs)	% Diff	Meas processed by CKB in Qrev (Fitted Extrapolation)	Uncertainty per Qrev	High Uncertainty	Low Uncertainty	Rated PROVISIONAL Flow	Diff (cfs)	% Diff	
9/2/2019 8:42 – 9:13	704	21	3.0%	687	4.50%	718	656	683	4	0.6%	
Date/Time	Station Name: Site 1 good	Station Number: 44+00									
	Meas per JUB (Default Extrapolation)	Diff	% Diff	Meas processed by CKB in Qrev (Fitted Extrapolation)	Uncertainty per Qrev	High Uncertainty	Low Uncertainty	Rated PROVISIONAL Flow	Diff (cfs)	% Diff	
9/10/2019 08:50 – 9:05	655	37	5.7%	631	4.8%	661	601	618	13	2.1%	
Date/Time	Station Name: West main camp fife	Station Number: 76+00									
	Meas per JUB (Default Extrapolation)	Diff (cfs)	% Diff	Meas processed by CKB in Qrev (Fitted Extrapolation)	Uncertainty per Qrev	High Uncertainty	Low Uncertainty	Rated PROVISIONAL Flow	Diff (cfs)	% Diff	
9/10/2019 10:16 – 10:32	636	19	3.0%	626	4.50%	654	598	617	9	1.4%	

Additional Details

As an example for the Sept 10 measurement at Station 76+00, the observed velocity profile with the default extrapolation is shown in Figure 1 (screenshots from QRev). Figure 2 shows the site-specific fitted extrapolation. The bottom of the two methods are similar, but the top is very different and results in a 1.6% difference in the overall discharge result. The default extrapolation overestimates the velocity in the top of the profile, while the 3-point fit extrapolation for the top correctly extends the “bending” of the velocity profile as the depth decreases.

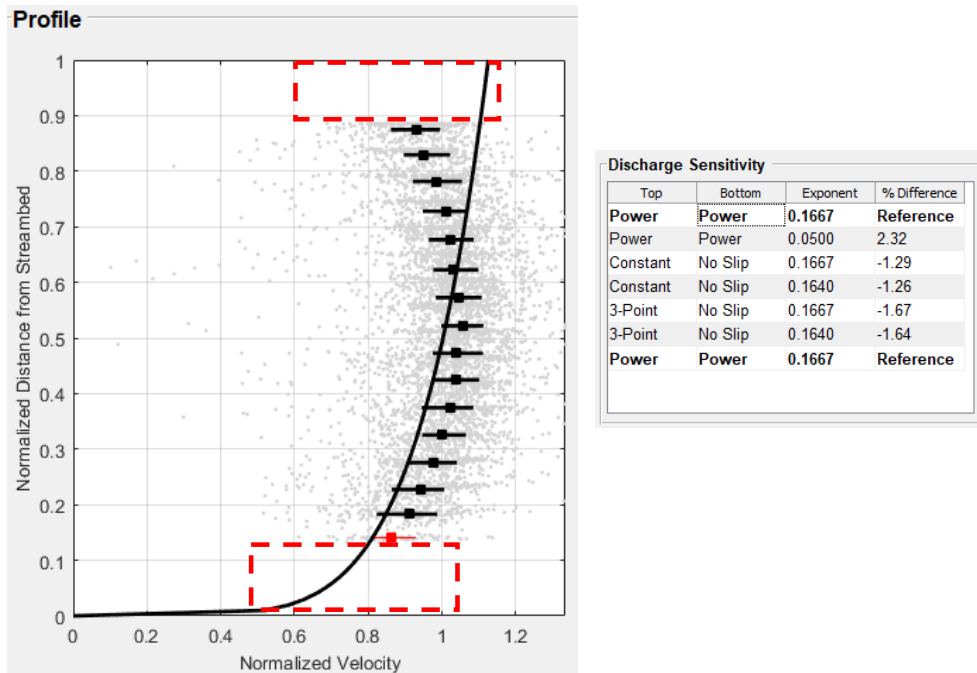


Figure 1. Observed velocity profile (grey dots with overall mean and variability shown by black squares and horizontal lines). The curved line shows the default power-law 0.1667 coefficient fit to the velocity profile used to extrapolate the unmeasured velocities at the top and bottom of the profile (in the areas highlighted by boxes with red dashed line). The overall effect of the different extrapolation techniques on the final discharge as compared to the currently selected profile is shown in the Discharge Sensitivity table.

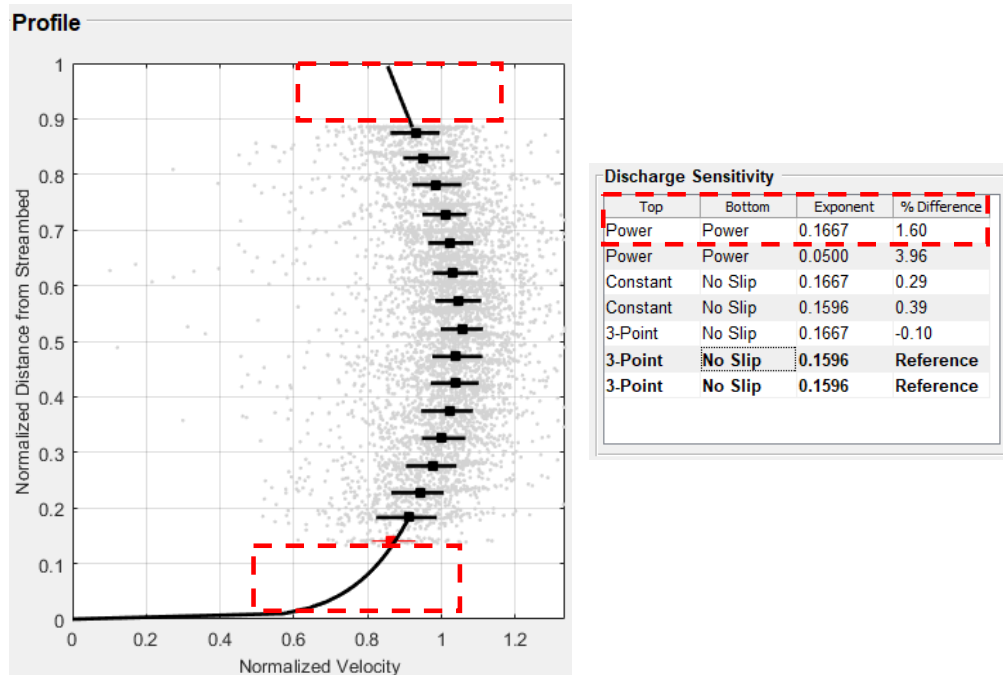


Figure 2. Similar to Figure 1, but with data-specific fit to the velocity profile. The overall effect of the different extrapolation techniques on the final discharge as compared to the selected profile (bolded) is shown in the Discharge Sensitivity table.

United States Geological Survey Comments

I passed along the information provided by J-U-B as well as my additional processing and they responded by email as shown below.

Thu 11/14/2019 3:00 PM
Rowland, Ryan rrowland@usgs.gov
Re: Cutler West Canal BRCC consultant (JUB) measurements
comparison/evaluation

Hi Connely,

One of our senior Hydro Techs with 22 years experience and I looked over the files. We agree with applying the 3-pt/power (fit coefficient) per QRev. The numbers in the summary excel file are correct. Your comments regarding the measurements are accurate.

Please let me know if you have any questions.

Ryan

Additional Comments

If J-U-B will be making additional flow rate verification measurements in the future, I and the United States Geological Survey would be willing to meet and discuss the additional processing steps described in this document. From comments Chris Slater of J-U-B made, it appears they are aware of the software and have it installed, so it should not take very long to explain our suggestions.

Also, the United States Geological Survey has a recorded webinar that appears to have a good amount of detail (titled "Introduction to QRev 3.2x" and available at <https://hydroacoustics.usgs.gov/training/webinars.shtml>). It may be good to have the meeting after all attendees have reviewed that information.

QRev Discharge Summary Note

Station Name: West main camp fife

Site ID:

Total Q (ft³/s): -625.709

Estimated Uncertainty (%): 4.5

User Rating: Not Rated

Transect Discharge

File Name	Start Edge	Start Time	End Time	Top Q (ft ³ /s)	Middle Q (ft ³ /s)	Bottom Q (ft ³ /s)	Total Q (ft ³ /s)
west main camp fife_0_000.PD0	Right	09/10/2019 10:16:07	09/10/2019 10:18:29	-62.913	-479.209	-86.189	-633.065
west main camp fife_0_001.PD0	Left	09/10/2019 10:19:24	09/10/2019 10:21:22	-58.975	-457.014	-78.618	-599.378
west main camp fife_0_002.PD0	Right	09/10/2019 10:22:00	09/10/2019 10:23:55	-63.803	-464.508	-84.024	-617.173
west main camp fife_0_003.PD0	Left	09/10/2019 10:25:02	09/10/2019 10:26:56	-62.397	-479.792	-80.973	-628.114
west main camp fife_0_004.PD0	Right	09/10/2019 10:27:49	09/10/2019 10:29:44	-65.127	-483.814	-87.457	-640.823
west main camp fife_0_005.PD0	Left	09/10/2019 10:30:01	09/10/2019 10:31:48	-64.855	-484.602	-81.238	-635.699

User Comments

Extrapolation 11/14/2019 09:13:13: Top of profile bends over, so use 3-point extrapolation, not constant.
FileSave 11/14/2019 09:14:18: ckb_20191114_091418_QRev by p13624 Q=-625.709 ft3/s

QRev Messages

Transects: Duration of selected transects is less than 720 seconds;
Moving-Bed Test: The moving-bed test(s) has warnings, please review tests to determine validity;
Site Info: Station number not entered;

Edges

File Name	Left Edge Type	Left Edge Coefficient	Left Edge Distance (ft)	Left Edge Q (ft ³ /s)	Right Edge Type	Right Edge Coefficient	Right Edge Distance (ft)	Right Edge Q (ft ³ /s)
west main camp fife_0_000.PD0	Triangular	0.3535	2	-0.292	Triangular	0.3535	3	-4.46
west main camp fife_0_001.PD0	Triangular	0.3535	2	-0.482	Triangular	0.3535	3	-4.29
west main camp fife_0_002.PD0	Triangular	0.3535	2	-0.762	Triangular	0.3535	3	-4.077
west main camp fife_0_003.PD0	Triangular	0.3535	2	-0.493	Triangular	0.3535	3	-4.456
west main camp fife_0_004.PD0	Triangular	0.3535	2	-0.716	Triangular	0.3535	3	-3.712
west main camp fife_0_005.PD0	Triangular	0.3535	2	-0.31	Triangular	0.3535	3	-4.691

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%2076+00%20... 11/14/2019

Measurement Details

File Name	Mean Temp (°C)	Mean Salinity (ppt)	Duration (s)	Width (ft)	Area (ft²)	Mean Boat Speed (ft/s)	Q/A (ft/s)	Course Made Good (°)	Mean Flow Direction (°)	Invalid Depth Cells (%)	Invalid Ens (%)	Mean Pitch (°)	Pitch Std Dev (°)	Mean Roll (°)	Roll Std Dev (°)
west main camp fife_0_000.PD0	19.3	0	143	50.884	243.659	0.354	-2.598	62	329	0	5.8	0	0	0	0
west main camp fife_0_001.PD0	19.4	0	118	48.786	230.417	0.402	-2.601	208	307	0	0	0	0	0	0
west main camp fife_0_002.PD0	19.4	0	115	51.147	242.782	0.418	-2.542	61	329	0	0	0	0	0	0
west main camp fife_0_003.PD0	19.4	0	114	49.617	240.286	0.431	-2.614	210	307	0.1	1	0	0	0	0
west main camp fife_0_004.PD0	19.4	0	115	52.117	247.92	0.44	-2.585	61	330	0.1	0	0	0	0	0
west main camp fife_0_005.PD0	19.5	0	107	51.085	243.01	0.462	-2.616	210	306	0	0	0	0	0	0

Processing

Software: QRev - 3.43
Navigation Reference: BT
Composite Tracks: Off
Magnetic Variation: 0
Depth Reference: BT
Extrapolation Method (Top/Bottom Exponent): 3-Point/No Slip Exp: 0.164

Instrument Details

Model: StreamPro
Frequency: 2000
Serial Number: 1986
Firmware Version: 31.16
Instrument Configuration: Fixed CR1 TS WF3 WN20 WS10 WM12 WizardWM12 WN30 WS9 WP6 User

Quality Assurance

Diagnostic Test Results: Pass
Compass Calibration Results: No
Moving Bed Test Type: Stationary
Moving Bed Condition: No

QRev Summary File: ckb_20191114_091418_QRev
 QRev Stylesheet Version: 0.70

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%2076+00%20... 11/14/2019

QRev Discharge Summary Note

Station Name: West_Main_1

Site ID: 44+00

Total Q (ft³/s): -686.591

Estimated Uncertainty (%): 4.5

User Rating: Not Rated

Transect Discharge

File Name	Start Edge	Start Time	End Time	Top Q (ft ³ /s)	Middle Q (ft ³ /s)	Bottom Q (ft ³ /s)	Total Q (ft ³ /s)
44+00(1)_0_000.PD0	Right	09/03/2019 08:42:23	09/03/2019 08:45:00	-62.539	-494.783	-83.035	-651.185
44+00(1)_0_001.PD0	Left	09/03/2019 08:45:35	09/03/2019 08:47:27	-66.452	-500.804	-92.595	-671.434
44+00(1)_0_002.PD0	Right	09/03/2019 08:47:58	09/03/2019 08:49:46	-64.552	-522.498	-89.562	-687.379
44+00(1)_0_003.PD0	Left	09/03/2019 08:50:06	09/03/2019 08:52:06	-67.179	-521.559	-89.586	-689.208
44+00(1)_0_006.PD0	Right	09/03/2019 08:57:42	09/03/2019 08:59:56	-65.24	-487.487	-85.377	-648.639
44+00(1)_0_007.PD0	Left	09/03/2019 09:00:17	09/03/2019 09:02:10	-67.345	-527.082	-97.543	-702.924
44+00(1)_0_008.PD0	Right	09/03/2019 09:03:06	09/03/2019 09:05:02	-68.45	-500.607	-88.636	-668.351
44+00(1)_0_009.PD0	Left	09/03/2019 09:05:14	09/03/2019 09:07:04	-69.605	-539.085	-99.404	-718.721
44+00(1)_0_010.PD0	Right	09/03/2019 09:08:52	09/03/2019 09:10:35	-69.972	-530.772	-92.341	-704.242
44+00(1)_0_011.PD0	Left	09/03/2019 09:10:46	09/03/2019 09:12:48	-69.951	-546.908	-96.102	-723.827

User Comments

FileSave 11/14/2019 09:03:11: ckb20191114_090311_QRev by p13624 Q=-686.591 ft3/s

QRev Messages

Edges

File Name	Left Edge Type	Left Edge Coefficient	Left Edge Distance (ft)	Left Edge Q (ft ³ /s)	Right Edge Type	Right Edge Coefficient	Right Edge Distance (ft)	Right Edge Q (ft ³ /s)
44+00(1)_0_000.PD0	Triangular	0.3535	3	-3.543	Triangular	0.3535	3	-7.285
44+00(1)_0_001.PD0	Triangular	0.3535	3	-3.796	Triangular	0.3535	3	-7.79
44+00(1)_0_002.PD0	Triangular	0.3535	3	-3.643	Triangular	0.3535	3	-7.122
44+00(1)_0_003.PD0	Triangular	0.3535	3	-3.647	Triangular	0.3535	3	-7.233

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%204400%20S... 11/14/2019

44+00(1) _0_006.PD0	Triangular	0.3535	3	-3.377	Triangular	0.3535	3	-7.155
44+00(1) _0_007.PD0	Triangular	0.3535	3	-3.586	Triangular	0.3535	3	-7.37
44+00(1) _0_008.PD0	Triangular	0.3535	3	-3.749	Triangular	0.3535	3	-6.908
44+00(1) _0_009.PD0	Triangular	0.3535	3	-3.649	Triangular	0.3535	3	-6.976
44+00(1) _0_010.PD0	Triangular	0.3535	3	-3.987	Triangular	0.3535	3	-7.169
44+00(1) _0_011.PD0	Triangular	0.3535	3	-4.015	Triangular	0.3535	3	-6.85

Measurement Details

File Name	Mean Temp (°C)	Mean Salinity (ppt)	Duration (s)	Width (ft)	Area (ft²)	Mean Boat Speed (ft/s)	Q/A (ft³/s)	Course Made Good (°)	Mean Flow Direction (°)	Invalid Depth Cells (%)	Invalid Ens (%)	Mean Pitch (°)	Pitch Std Dev (°)	Mean Roll (°)	Roll Std Dev (°)
44+00(1) _0_000.PD0	22.2	0	157	33.438	155.898	0.257	-4.177	54	320	0.1	0.8	0	0	0	0
44+00(1) _0_001.PD0	22.2	0	112	35.18	160.973	0.324	-4.171	211	310	0.1	0	0	0	0	0
44+00(1) _0_002.PD0	22.2	0	108	34.611	161.134	0.33	-4.266	53	323	0	1.1	0	0	0	0
44+00(1) _0_003.PD0	22.1	0	120	35.57	164.974	0.295	-4.178	217	310	0	0	0	0	0	0
44+00(1) _0_006.PD0	22.1	0	135	34.301	157.135	0.282	-4.128	55	321	0.1	0.9	0	0	0	0
44+00(1) _0_007.PD0	22.1	0	113	36.734	170.497	0.33	-4.123	216	310	0	2.2	0	0	0	0
44+00(1) _0_008.PD0	22.1	0	116	35.912	162.433	0.332	-4.115	57	322	0	0	0	0	0	0
44+00(1) _0_009.PD0	22.1	0	110	35.595	165.524	0.33	-4.342	214	310	0	0	0	0	0	0
44+00(1) _0_010.PD0	22.1	0	103	36.49	168.311	0.366	-4.184	52	322	0.3	0	0	0	0	0
44+00(1) _0_011.PD0	22.1	0	121	36.068	169.716	0.291	-4.265	216	312	0.1	0	0	0	0	0

Processing

Software: QRev - 3.43
Navigation Reference: BT
Composite Tracks: Off
Magnetic Variation: 0
Depth Reference: BT
Extrapolation Method (Top/Bottom Exponent): 3-Point/No Slip Exp: 0.2285

Instrument Details

Model: StreamPro
Frequency: 2000
Serial Number: 1986
Firmware Version: 31.16
Instrument Configuration: Fixed CR1 TS WF3 WN20 WS10 WM12 WizardWM12 WN30 WS10 WP6 User

Quality Assurance

Diagnostic Test Results: Pass
Compass Calibration Results: No
Moving Bed Test Type: Stationary
Moving Bed Condition: No

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%204400%20S... 11/14/2019

QRev Summary File: ckb20191114_090311_QRev
QRev Stylesheet Version: 0.70

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%204400%20S... 11/14/2019

QRev Discharge Summary Note

Station Name: Site 1 good

Site ID:

Total Q (ft³/s): -631.384

Estimated Uncertainty (%): 4.8

User Rating: Not Rated

Transect Discharge

File Name	Start Edge	Start Time	End Time	Top Q (ft ³ /s)	Middle Q (ft ³ /s)	Bottom Q (ft ³ /s)	Total Q (ft ³ /s)
Good Site 1_0_001.PD0	Right	09/10/2019 08:50:04	09/10/2019 08:52:03	-54.452	-488.854	-79.447	-631.815
Good Site 1_0_003.PD0	Left	09/10/2019 08:54:36	09/10/2019 08:56:11	-58.979	-495.133	-79.719	-643.055
Good Site 1_0_004.PD0	Right	09/10/2019 08:56:47	09/10/2019 08:58:09	-56.645	-504.346	-84.215	-654.692
Good Site 1_0_005.PD0	Left	09/10/2019 08:58:48	09/10/2019 09:00:37	-51.63	-460.574	-79.635	-600.858
Good Site 1_0_006.PD0	Right	09/10/2019 09:01:31	09/10/2019 09:03:08	-57.531	-483.306	-73.105	-623.731
Good Site 1_0_007.PD0	Left	09/10/2019 09:03:30	09/10/2019 09:05:00	-55.183	-486.234	-83.943	-634.156

User Comments

Edges 11/14/2019 09:07:54: A few edges were very different than all the rest of the measurements, replaced erroneous edges with average of consistent edge estimates.
Extrapolation 11/14/2019 09:08:54: The top of the profile appears to bend over some, use 3-point extrapolation instead of constant.
FileSave 11/14/2019 09:10:33: ckb20191114_091033_QRev by p13624 Q=-631.385 ft3/s

QRev Messages

Transects: Duration of selected transects is less than 720 seconds;
SYSTEM TEST: No system test;
TEMP.: The difference between ADCP and reference is > 2: 2.0 C;
Moving-Bed Test: The moving-bed test(s) has warnings, please review tests to determine validity;
Site Info: Station number not entered;
Edges: Excessive boat movement in right edge ensembles;
Edges: Excessive boat movement in left edge ensembles;
EDGES: Left edge type is not consistent;
EDGES: Right edge type is not consistent;

Edges

File Name	Left Edge Type	Left Edge Coefficient	Left Edge Distance (ft)	Left Edge Q (ft ³ /s)	Right Edge Type	Right Edge Coefficient	Right Edge Distance (ft)	Right Edge Q (ft ³ /s)
Good Site 1_0_001.PD0	Triangular	0.3535	4	-4.328	Triangular	0.3535	2.5	-4.737
Good Site 1_0_003.PD0	Triangular	0.3535	4	-4.865	Triangular	0.3535	2.5	-4.361

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%204400%20S... 11/14/2019

Good Site 1_0_004.PD0	User Q		4	-5	Triangular	0.3535	2.5	-4.487
Good Site 1_0_005.PD0	Triangular	0.3535	4	-4.52	User Q		2.5	-4.5
Good Site 1_0_006.PD0	Triangular	0.3535	4	-5.378	Triangular	0.3535	2.5	-4.408
Good Site 1_0_007.PD0	Triangular	0.3535	4	-4.604	Triangular	0.3535	2.5	-4.197

Measurement Details

File Name	Mean Temp (°C)	Mean Salinity (ppt)	Duration (s)	Width (ft)	Area (ft²)	Mean Boat Speed (ft/s)	Q/A (ft³/s)	Course Made Good (°)	Mean Flow Direction (°)	Invalid Depth Cells (%)	Invalid Ens (%)	Mean Pitch (°)	Pitch Std Dev (°)	Mean Roll (°)	Roll Std Dev (°)
Good Site 1_0_001.PD0	19.1	0	120	36.327	158.349	0.354	-3.99	60	323	0	2.9	0	0	0	0
Good Site 1_0_003.PD0	19.1	0	94	36.228	156.926	0.436	-4.098	218	308	0	2.4	0	0	0	0
Good Site 1_0_004.PD0	19.1	0	82	36.204	166.577	0.445	-3.93	59	323	0	4.1	0	0	0	0
Good Site 1_0_005.PD0	19.1	0	109	34.199	148.286	0.41	-4.052	211	310	0.1	1	0	0	0	0
Good Site 1_0_006.PD0	19.1	0	97	36.148	157.997	0.394	-3.948	63	324	0	1.2	0	0	0	0
Good Site 1_0_007.PD0	19.1	0	90	35.501	154.392	0.463	-4.107	217	309	0	2.5	0	0	0	0

Processing

Software: QRev - 3.43
Navigation Reference: BT
Composite Tracks: Off
Magnetic Variation: 0
Depth Reference: BT
Extrapolation Method (Top/Bottom Exponent): 3-Point/No Slip Exp: 0.2331

Instrument Details

Model: StreamPro
Frequency: 2000
Serial Number: 1986
Firmware Version: 31.16
Instrument Configuration: Fixed CR1 TS WF3 WN20 WS10 WM12 WizardWM12 WN30 WS8 WP6 User

Quality Assurance

Diagnostic Test Results: None
Compass Calibration Results: No
Moving Bed Test Type: Stationary
Moving Bed Condition: No

QRev Summary File: ckb20191114_091033_QRev
QRev Stylesheet Version: 0.70

file:///R:/flowdata/other/BRCC%20JUB%20West%20Canal%202019/Sta%204400%20S... 11/14/2019

From: [Miriam Hugentobler](#)
To: [Bryan Dixon](#)
Cc: [Hilary Shughart](#); [Wayne Wurtsbaugh](#); khatoon.melick@ferc.gov; [Kenneth Hogan](#)
Subject: Cutler Hydro Relicensing - Study Plan Meeting Followup
Date: Monday, December 02, 2019 2:42:40 PM
Attachments: [Cutler Study Plan Consultation Letter - BAS.pdf](#)

Dear Stakeholder,

Thank you again for meeting with PacifiCorp to discuss your study requests and comments. As promised, attached is the cover letter, comment response table, and meeting summary from our individual meetings following the October 8, 2019 Proposed Study Plan stakeholder meeting.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document, as well. Please let me know if you have any questions, and thank you for your patience over this holiday season.

[Eve Davies, Principal Scientist](#)

[Renewable Resources, PacifiCorp](#)

[1407 West North Temple, Ste. 110](#)

[Salt Lake City, Utah 84116](#)

[801-220-2245](#)

[801-232-1704 \(cell\)](#)



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

November 30, 2019

VIA E-MAIL TO BDIXON@XMISSION.COM

Mr. Bryan Dixon
Bear River Project Manager
Bridgerland Audubon Society
PO Box 3501
Logan, UT 84323

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mr. Dixon:

Thank you for your participation in the additional study plan consultation meeting for the Cutler Hydroelectric Project (Project) relicensing process hosted by PacifiCorp on October 29, 2019. The meeting focused on Bridgerland Audubon Society's (BAS) study plan requests submitted to the Federal Energy Regulatory Commission (FERC) in July 2019, and a discussion of PacifiCorp's Proposed Technical Study Plans (PSP) filed with FERC on September 11, 2019. The meeting purpose was to gain a better understanding of BAS's study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP, and an attempt to reach agreement on remaining comments regarding the PSP. PacifiCorp has made considerable progress addressing BAS's study plan comments including preparation of a meeting summary that is enclosed with this letter along with a table of PacifiCorp's revised responses to BAS' study plan requests. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. As you draft your comments on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP) in our meeting with BAS on October 29, 2019. As stated by FERC at the October 8, 2019 meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meeting. Stakeholders will have the opportunity to review and comment on the RSP following that January 10, 2019 filing.



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

Please contact me directly no later than December 4, 2019 if you feel the attached comment table does not accurately capture the agreed adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Hilary Shughart, President, BAS
Wayne Wurtsbaugh, BAS, USU
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosures:

- 1) BAS October 29, 2019 Study Plan Consultation Meeting Summary
- 2) Table of BAS Study Plan Requests and PacifiCorp Revised Responses
- 3) Meeting Flipcharts

ENCLOSURE 1

**BRIDGERLAND AUDUBON SOCIETY
OCTOBER 29, 2019
STUDY PLAN CONSULTATION MEETING SUMMARY**

CUTLER HYDROELECTRIC PROJECT (FERC No. 2420)
STUDY PLAN CONSULTATION MEETING SUMMARY
BRIDGERLAND AUDUBON AND PACIFICORP

OCTOBER 29, 2019, 1:00 P.M. – 3:00 P.M.
CIRRUS ECOLOGICAL SOLUTIONS, 965 S. 100 WEST, LOGAN, UT

This meeting was requested by PacificCorp in follow up to the October 8, 2019 Study Plan Workshop to review and discuss BAS's study requests related to PacificCorp's Proposed Study Plan.

ATTENDEES

Bridgerland Audubon Society (BAS)		
Bryan Dixon	Bear River Project Manager	
Wayne Wurtsbaugh, PhD	Utah State University; Watershed Sciences Dept.	
Hillary Shughart	President	
Federal Energy Regulatory Commission (FERC)		
Ken Hogan	Fisheries Biologist	By phone
Kelly Wolcott	Wildlife Biologist	By phone
Robin Cleland	Attorney	By phone
Khatoon Melick	Project Engineer	By phone
PacificCorp		
Eve Davies	PacificCorp Cutler Relicensing Manager	
Connely Baldwin	Water Resources Engineer	
PacificCorp Consultants		
John Gangemi	Facilitator, River Science Institute	
Lindsey Kester	Project Manager, SWCA	
Frank Shrier	Fisheries Biologist, SWCA	By phone
Nuria Holmes	Regulatory Consultant, Kleinschmidt Associates	By phone
Ben Cary	Hydraulic Engineer, Kleinschmidt Associates	By phone
Justin Barker	GIS/Water Quality, Cirrus	
Matt Westover	Wildlife Biologist/Shoreline, Cirrus	
Eric Duffin	Watershed Scientist, Cirrus	
Utah Department of Water Quality (UDWQ; interested party)		
Mike Allred	Watershed Scientist	

MEETING AGENDA AND OBJECTIVES

1. Introduction
2. Review BAS's comments related to study plans
3. Gain clear understanding of comments
4. Resolve comments where applicable
5. Determine need for additional discussion

MATERIALS

- Table of BRCC Study Requests and PacificCorp Responses
- Meeting Flipcharts

MEETING SUMMARY

The purpose of the meeting was to review BAS's July 2019 study requests (as distilled from BAS's scoping response *prior* to release of the Proposed Study Plan [PSP]; see Enclosure 2), identify elements of the BAS study requests already included in the original version of the PSP filed September 11, 2019, discuss BAS study plan requests/comments not currently incorporated into the PSP, and identify opportunities to adjust study plans where applicable to include BAS study plan requests/comments. Enclosure 2 provides BAS' July 2019 comments, PacifiCorp's response to BAS comments in the September 11, 2019 PSP, and the revised responses to BAS comments following consultation during at the October 29, 2019 meeting in Logan, Utah.

PacifiCorp described the broad picture of the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) timeline identifying the multiple opportunities in the process for stakeholders to comment. PacifiCorp provided a summary of the regulatory milestones and collaborative workshops providing input into development of the PSPs. PacifiCorp pointed out that some stakeholder comments cover broader issues in the FERC ILP or other forums outside of FERC licensing. For example, some comments are recommendations for conditions in the next license term. These types of comments will be addressed during license implementation as protection, mitigation and enhancement (PM&E) measures. The focus of this meeting was stakeholder requests/comments relative to PSPs. PacifiCorp emphasized that the near-term milestone in the license process is the review and approval of the Revised Study Plan (RSP). Stakeholder comments on the PSPs are due December 11, 2019 to FERC. PacifiCorp hopes BAS's comments on the PSP acknowledge the study plan revisions agreed to in the October 29, 2019 meeting.

PacifiCorp will be submitting the RSP to FERC by January 10, 2020. The RSP will incorporate agreements reached in today's meeting with BAS, as well as consider other comments filed directly with FERC. Stakeholders will have an opportunity to review and comment on the RSP as well.

BAS questioned how the Cutler relicensing process differs from that used for the Bear River in southeast Idaho and why this process was chosen over that one. FERC explained the ILP used for Cutler did not exist at the time of the Bear River relicensing. Settlement agreement with stakeholders, which is more common in the Alternative Licensing Process or Traditional Licensing Process, can be included in an ILP but FERC now focuses on tangible mitigation projects rather than creating funds as was done for the Bear River Project (i.e., an action component rather than a money component). BAS emphasized the positive aspects of a coordinating committee, such as the one created for the Bear River in Idaho, because the committee stays involved during the entire period of the license as conditions at the project and science evolve. BAS is interested in exploring the potential for forming such a committee, especially as a means of leveraging additional funding sources for projects of mutual interest. A conversation ensued on the Bear River Relicensing Settlement Agreement.

BAS expressed concern about having conditions and measures locked in for 40 years, especially given changes that may occur due to climate change. FERC noted that license terms used to be 30 to 50 years. Now 40 years is the default term length, and there are specific guidelines from FERC as to whether they assign a longer or shorter license term. Exceptions for a 40-year term are as follows: 1) coordinating with other projects in the basin; 2) if the license term is supported

by a settlement agreement; or 3) the applicant can substantiate a longer term with substantial investments to the project. The 30- to 50-year term is intended to provide some kind of security in response to the Federal Power Act – it steers away from having a “living license.”

REVIEW OF BAS STUDY REQUESTS

INCLUSION OF BEAR RIVER BOTTOMS LANDS IN THE PROPOSED STUDIES

PacifiCorp reiterated the reasons the company does not favor inclusion of the Bear River Bottoms (BRB) lands in the Cutler license process (either within the Project Boundary or as part of the studies). FERC stated the regulatory reasons why the upstream lands were not deemed to have a nexus to the downstream Cutler Project.

SURVEYS OF THE AVIAN COMMUNITY

BAS stated that operation of the Cutler Project affects bird populations, but there is currently no data about where, when, or which populations, and it is one of the most profound wildlife uses in this area. Anecdotal information indicates that bird populations at Cutler may be declining but there is no quantitative data to support this observation. BAS has some data, but the State has very little. BAS believes population data would be very difficult to obtain given the diversity of habitat and the study plan timeframe, and nothing could be done in the study plan period to obtain data over time, but a baseline could be started in the study plan implementation period.

FERC stated that current FERC practice regarding long-term monitoring is that the monitoring must be tied to a specific license requirement to demonstrate that it has been met. In addition, requests for long-term monitoring are best suited for later, when comments on the proposed PM&E measures will be addressed. PacifiCorp noted it may be worthwhile to engage with the State on long-term monitoring plans at Cutler.

BAS wanted to know how PacifiCorp planned to evaluate the impacts of reservoir fluctuations on birds and fish. Issues of concern included data gaps on bird species present at Cutler, mapping of nesting habitat, fluctuation in water surface elevations (WSE) inundating and/or exposing nests. FERC expressed the need to document potential project operation effects on bird populations. The group had a lengthy discussion on the field methods and analysis proposed in the Shoreline Habitat Characterization Study. PacifiCorp explained how the study would delineate shoreline habitat and utilize information on bird species expected and observed at Cutler; additional discussion suggested more detailed explanations of habitat characterization and quantification were needed in the study plan. PacifiCorp also noted that WSE fluctuations in future operations would be restricted during irrigation season (spring, summer, and fall) to meet water delivery contracts. PacifiCorp agreed to include information on water delivery contract obligations in the RSP. PacifiCorp also noted that results from the Shoreline Habitat Characterization Study might lead to a license condition restricting WSE fluctuations during nesting season.

PacifiCorp agreed to adjust the Shoreline Habitat Characterization Study based on discussions with the group. Revisions to the study plan are summarized in the comment response table (Enclosure 2). PacifiCorp will incorporate these changes into the RSP which will be submitted to FERC by January 10, 2020.

DISSOLVED OXYGEN

BAS explained their request for a diurnal dissolved oxygen (DO) study with cross-sectional transects. BAS noted that previous studies of DO were limited to easily accessible locations (e.g., highway bridges) which may not necessarily be representative of other locations in Cutler Reservoir. The group discussed DO conditions in Cutler Reservoir and causes of low DO. PacifiCorp explained that the Water Quality Study¹ will assemble and summarize all existing DO data for Cutler.

Utah Department of Water Quality (UDWQ) (a representative attended the BAS meeting) was asked to consider expanding water quality (WQ) monitoring sample locations in Cutler Reservoir in the upcoming Bear River monitoring in water year (WY) 2021 (beginning October 2020). UDWQ stated they would discuss the need to add sampling sites in Cutler with upper management. UDWQ noted the group would need to convince UDWQ management why the additional sample sites are necessary.

ACTION ITEMS

- | | |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All | <ul style="list-style-type: none">• Study Plan comments are due to FERC by December 11, 2019• Davies to communicate directly with stakeholders on study plan adjustments in response to comments in advance of this deadline |
| PacifiCorp | <ul style="list-style-type: none">• Research data sources for winter reservoir conditions.• Shoreline habitat study<ul style="list-style-type: none">- Include illustration of water delivery contract constraints restricting future reservoir operations- Further describe methods in shoreline habitat study as it relates to documenting habitat for bird nesting and reservoir pool elevations |
| Allred | <ul style="list-style-type: none">• Gather other water quality data sources for study plan• Confirm UDWQ water quality monitoring at Cutler in WY 2021 |

¹ In a subsequent meeting with Logan City on October 29, 2019, PacifiCorp agreed with FERC's recommendation to amend the Water Quality Study Plan into a two-phased study approach. The amended study plan is described in PacifiCorp's revised response (Enclosure 2); this approach was also subsequently described to BAS during a call on Nov 22, 2019.

ENCLOSURE 2

TABLE OF BAS'S STUDY REQUESTS AND PACIFICORP REVISED RESPONSES

BRIDGERLAND AUDUBON STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>It is crucial to include the 1,900 acres of PacificCorp-owned riparian lands scattered along 35 miles of the Bear River downstream of Idaho state line into the geographical extent for analysis</u> and management of the Cutler Hydroelectric near Benson.</p>	<p>PacificCorp is not proposing to include the 1,900 acres of PacificCorp-owned riparian lands along 35 miles of the Bear River downstream of the Idaho state line as part of this relicensing. The upstream Projects are not dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream parcel.</p>	<p><u>PacificCorp does not agree to include the upriver BRB lands in the Cutler Study Plan Area for direct effects (some cumulative effects analysis may occur in the BRB parcels).</u></p> <p>At the October 8, 2019 PSP meeting, FERC stated that no mechanism has been identified linking effects at Cutler Reservoir with effects upstream in these specified riparian lands.</p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with BAS to discuss study requests and comments received. PacificCorp affirmed their original response that operation of Cutler Reservoir does not impact the 1,900 acres of PacificCorp-owned riparian lands upstream of the Cutler Hydroelectric Project. Due to the lack of nexus to project operations, PacificCorp will not include these lands in the proposed studies.</p>

BRIDGERLAND AUDUBON STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Suggest surveys of the Temporal and Spatial Characteristics of the Avian Community.</u> The goal would be to quantify the temporal and spatial populations of avian species, both on the water and in the uplands around the perimeter, by conducting multiyear population surveys and correlating that data with habitat conditions.</p>	<p>PacificCorp is not proposing a Temporal and Spatial Characteristics Study of the Avian Community as part of this relicensing. PacificCorp would be interested in furthering this discussion with BAS after potential effects on various populations have been established in the Shoreline Characterization Study and Land Use Study.</p>	<p><u>PacificCorp does not agree to requested surveys but is proposing to instead analyze potential effects to various affected habitats and to include other sources of bird occupancy data to correlate potential effects to species occupying Cutler Reservoir.</u></p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with BAS to discuss study requests and comments received. Based on the discussions at the October 29, 2019 meeting with BAS, PacificCorp has elected to amend the Shoreline Habitat Characterization Study Plan filed September 11, 2019 with an expanded description of methods and data analysis. These study plan changes will be included in the RSP submitted to FERC on or before January 10, 2020. The following is a list of the changes to the Shoreline Habitat Characterization Study designed to investigate potential project effects on the avian community:</p> <ol style="list-style-type: none"> 1. Include description of LiDAR and bathymetry data analysis used to delineate reservoir pool elevations for respective shoreline habitats 2. Further describe shoreline mapping process using aerial imagery, LiDAR data, and on-the-ground field documentation to delineate shoreline habitats 3. Explain how existing bird data, such as (U.S. Geological Survey (USGS) Breeding Bird Survey data, eBird data, Utah Division of Wildlife Resources (UDWR) data, and BAS monitoring data will be used to determine potential bird species that could be present at the Cutler Project; 4. Explain how the bird lists from item 3 above will be matched with habitat types, identified using methods described in item 2, to determine which of those species may nest at habitats around Cutler Project; 5. Explain how nesting season data for each species from the list generated in item 4 will be gathered from existing sources such as the online reference Birds of North America curated by the Cornell Lab of Ornithology, and eBird species arrival data for migratory species 6. The study report will include descriptions of seasonal restrictions on Project operations and reservoir pool imposed by water delivery contracts and other issues restricting operations 7. The study report will also analyze the impacts of a range of Project operations on reservoir associated habitats for each species that could nest at the Cutler Project, from the list generated in bullet 4 8. Results will be entered in the context of larger population trends by examining USGS Breeding Bird Survey trend data

BRIDGERLAND AUDUBON STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Suggest a cross-sectional diurnal DO study.</u> The goal of the study would be to better understand the extent of anoxic conditions during the most lethal conditions, typically early mornings in the heat of August, along cross-sections of the reservoir's shallow environments.</p>	<p>Comment noted. PacificCorp is conducting a Water Quality Study which will utilize existing DO monitoring data collected during 2008 and 2009. These measurements were collected at 15-minutes frequencies for a 7-day periods during most months. This data set will be used to characterize anoxic conditions and seasonal patterns at each monitoring site.</p>	<p><u>PacificCorp agrees to collect cross-sectional transect data for DO during the 2019 drawdown and has also agreed to a phased approach to the Water Quality Study to further address this request.</u></p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with BAS to discuss study requests and comments received. In a subsequent individual stakeholder meeting (Logan City), PacificCorp, and meeting participants agreed to adopt FERC's recommendation for a two-phased approach in the Water Quality Study. PacificCorp believes the revised Water Quality Study described as follows addresses BAS's comment regarding DO sampling.</p> <p>Phase 1 will include a synthesis of existing WQ data for Cutler reservoir. This effort will include a table of existing WQ data sources, parameters collected, field sampling period, and field sampling locations. Data sources will include PacificCorp, UDWQ, Utah State University, the 2010 Total Maximum Daily Load study, and other sources where available.</p> <p>PacificCorp will file an interim progress report with FERC in 2020 and the Initial Study Report in early 2021 which will summarize WQ conditions in Cutler Reservoir, identifying WQ data gaps and recommendations for the Phase 2 study in 2022. As provided for in the ILP regulations (18 Code of Federal Regulation [CFR] § 5.15), BAS and other stakeholders will have an opportunity to review and comment on the WQ interim report as well as provide comments on need for a second field season.</p> <p>In addition, DO data was collected along study transects during the drawdown sampling in October and November 2019.</p> <p>UDWQ will complete a WQ study in the BRB in WY2021. PacificCorp will collaborate with Mike Allred, UDWQ, to add Cutler Reservoir locations for DO profiles, if approved by UDWQ management.</p>

ENCLOSURE 3

MEETING FLIPCHARTS

Bridgeland Audobon 10-29-2019

①

Does PacifiCorp anticipate a Coordinating
Committee for Cutler License

→ BAs would like to explore
potential for forming a
Coordinating Committee

- take advantage of other funding
sources
- New Science
- New gov't programs
- New ideas generated from
Committee interaction

FLIPCHART 1

BAS 10-29-2019

Avian Community (2)

- no data on Avian community at population level
- anecdotal information that community/populations declining
- State's responsibility to monitor
- Need baseline

Can population level trends be measured in 2 study seasons

FERC Policy - Monitoring

Long term monitoring requirements need to be connected to a license condition objective e.g. tangible license result

FLIPCHART 2

UITS 10-29-2019 (3)

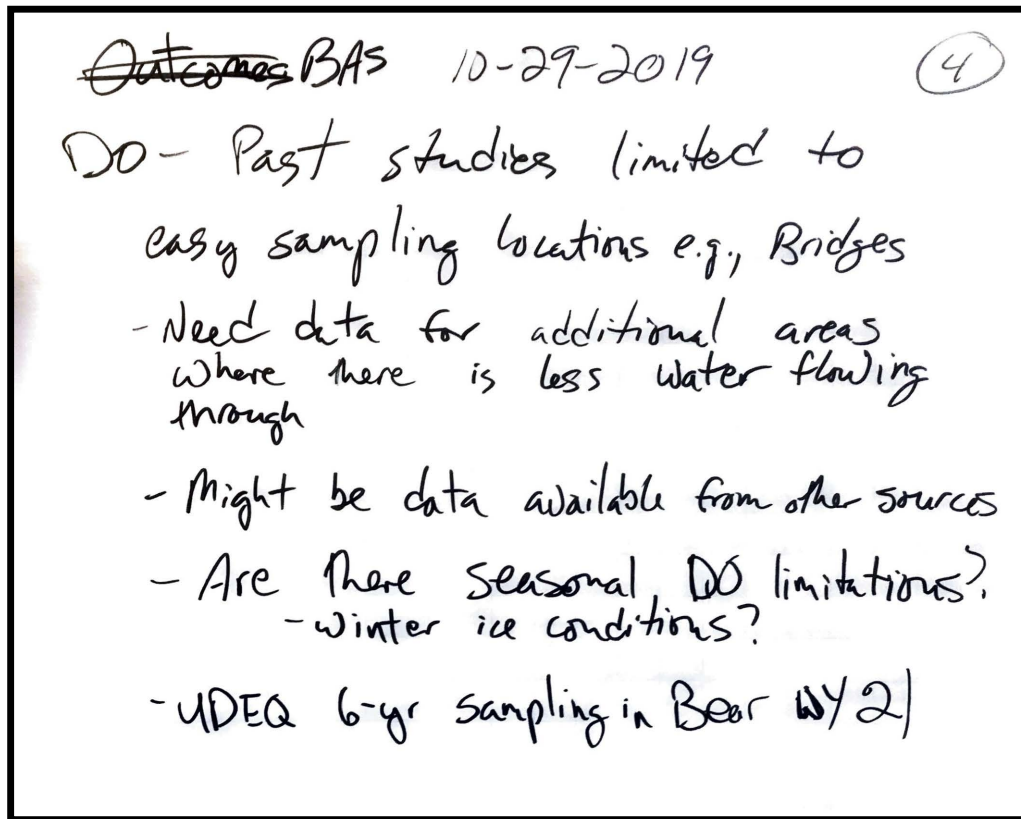
How will new Reservoir operation plan potentially impact positively or negatively for waterfowl and other birds?

- Shoreline habitat study will delineate habitats and associated bird communities
- Future license will include floor & ceiling for reservoir pool elevations
- Operations may be restricted during nesting season

at is →

- Overlap of irrigation season pool elevation to make deliveries & potential effect on avian community e.g. timing of irrigation deliveries & breeding season

FLIPCHART 3



FLIPCHART 4

(5)

BAS 10-29-2019

Outcomes / Action items / timelines

Research data sources for winter
reservoir conditions
Who - PacifiCorp

Shoreline Habitat Study

- Show water delivery contracts
restricting future ops.
- Further describe methods

DO - UDEQ will check on
WY 21 monitoring in Cutler

PacifiCorp will gather other data
sources for study plan

FLIPCHART 5

From: [Miriam Hugentobler](#)
To: holly.daines@loganutah.org
Cc: [Issa Hamud](#); [Lance Houser](#); tyler.richards@loganutah.org; mark.nielsen@loganutah.org; khatoon.melick@ferc.gov; [Kenneth Hogan](#)
Subject: Cutler Hydro Relicensing - Study Plan Consultation Meeting
Date: Monday, December 02, 2019 2:37:14 PM
Attachments: [Cutler Study Plan Consultation Letter - Logan City.pdf](#)

Dear Stakeholder,

Thank you again for meeting with PacifiCorp to discuss your study requests and comments. As promised, attached is the cover letter, comment response table, and meeting summary from our individual meetings following the October 8, 2019 Proposed Study Plan stakeholder meeting.

The comment response table is designed to let you know what PacifiCorp has committed to change in the upcoming *Revised* Study Plan, so that you can best frame any response you may choose to make to FERC on the Proposed Study Plan. Your comments are due to FERC via electronic filing by December 11, 2019, and will clarify for FERC the extent to which differences remain between the RSP and your concerns. We appreciate if your comments highlight those areas of concern that remain, but also especially areas that we have come to agreement on. This will help FERC understand where to focus their assessment on resource concerns.

Once the Revised Study Plan is filed by PacifiCorp in January, you will have the opportunity to comment on that document, as well. Please let me know if you have any questions, and thank you for your patience over this holiday season.

Eve Davies, Principal Scientist

Renewable Resources, PacifiCorp

1407 West North Temple, Ste. 110

Salt Lake City, Utah 84116

801-220-2245

801-232-1704 (cell)



Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

November 30, 2019

VIA E-MAIL TO HOLLY.DAINES@LOGANUTAH.ORG

Mayor Holly Daines
Logan City Hall
290 North 100 West
Logan, Utah 84321

**Subject: Cutler Hydroelectric Project
FERC Project No. 2420
Stakeholder Outreach**

Dear Mayor Daines:

Thank you for Logan City's participation in the additional study plan consultation meeting for the Cutler Hydroelectric Project relicensing process hosted by PacifiCorp on October 29, 2019. The meeting focused on Logan City's study plan requests submitted to the Federal Energy Regulatory Commission (FERC) in July 2019, and a discussion of PacifiCorp's Proposed Study Plans (PSP) filed with FERC on September 11, 2019. The meeting purpose was to gain a better understanding of Logan City's study requests, demonstrate where comments were incorporated into the September 11, 2019 version of the PSP, and attempt to reach agreement on remaining study plan comments. PacifiCorp made considerable progress addressing Logan City's study plan comments including preparing a meeting summary that is enclosed with this letter along with a table of PacifiCorp's revised responses to Logan City's requests regarding the PSP. This correspondence will be filed with FERC as part of the Cutler relicensing consultation record.

The 90-day stakeholder comment period on the PSP closes December 11, 2019. Until that time, you have the opportunity to comment directly on the PSP. As you draft your comments on the PSP, PacifiCorp requests that you acknowledge the changes PacifiCorp agreed to incorporate into the Revised Study Plan (RSP) in our meeting with Logan City on October 29, 2019. As stated by FERC at the October 8, 2019 meeting, and in our subsequent meetings with stakeholders, it is important that FERC understand when consensus has been reached on outstanding study-related concerns so that FERC can better inform their Study Plan Determination and later environmental analysis.

PacifiCorp will submit the RSP to FERC on or before January 10, 2020. The RSP will incorporate the changes identified in our consultation meeting. Stakeholders will have the opportunity to review and comment on the RSP following the January 10, 2019 filing.



**Pacific Power |
Rocky Mountain Power**
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

Please contact me directly no later than December 4, 2019 if you feel the attached comment table does not accurately capture the agreed adjustments to the study plans. It would be my pleasure to set up a telephone meeting, conference call or meet you in person.

PacifiCorp appreciates your continued support and participation in the Cutler relicensing process. We look forward to hearing from you.

Sincerely,

A handwritten signature in blue ink that reads "Eve Davies".

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
Eve.Davies@pacificorp.com

cc: Issa Hamud, Environmental Director, Logan City
Lance Houser, P.E., Franson Engineers
Tyler Richards, Environmental Engineer, Logan City
Mark Nielsen, Construction Engineer, Logan City Wastewater Treatment Plant
Khatoon Melick, FERC
Ken Hogan, FERC

Enclosures:

- 1) Logan City October 29, 2019 Study Plan Consultation Meeting Summary
- 2) Table of Logan City's Study Plan Requests and PacifiCorp Revised Responses

ENCLOSURE 1

**LOGAN CITY
OCTOBER 29, 2019
STUDY PLAN CONSULTATION
MEETING SUMMARY**

CUTLER HYDROELECTRIC PROJECT (FERC No. 2420)
STUDY PLAN CONSULTATION MEETING SUMMARY

LOGAN CITY AND PACIFICORP

OCTOBER 29, 2019, 3:00 P.M. – 5:00 P.M.

CIRRUS ECOLOGICAL SOLUTIONS, 965 S. 100 WEST, LOGAN, UT

This meeting was requested by PacificCorp in follow up to the October 8, 2019 Study Plan Workshop to review and discuss Logan City's study requests related to PacificCorp's Proposed Study Plan.

ATTENDEES

Logan City		
Issa Hamud	Environmental Director	By phone
Lance Houser	P.E., Franson Engineering	By phone
Tyler Richards	Environmental Engineer	By phone
Mark Nielsen	Construction Engineer, Logan Wastewater Treatment Plant	By phone
Federal Energy Regulatory Commission (FERC)		
Ken Hogan,	Fisheries Biologist	By phone
Kelly Wolcott	Wildlife Biologist	By phone
PacificCorp		
Eve Davies	PacificCorp Relicensing Manager	
Connely Baldwin	Water Resources Engineer	
PacificCorp Consultants		
John Gangemi	Facilitator, River Science Institute	
Lindsey Kester	Project Manager, SWCA	
Frank Shrier	Fisheries Biologist, SWCA	By phone
Nuria Holmes	Regulatory Consultant, Kleinschmidt Associates	By phone
Ben Cary	Hydraulic Engineer, Kleinschmidt Associates	By phone
Justin Barker	GIS/Water Quality, Cirrus	
Eric Duffin	Watershed Scientist, Cirrus	

MEETING AGENDA AND OBJECTIVES

1. Introductions
2. Review Logan City's comments related to study plans
3. Gain clear understanding of Logan City's comments
4. Distinguish study plan comments from potential future license condition requests
5. Resolve comments where applicable
6. Determine need for additional meetings

MATERIALS PROVIDED

- Logan City Study Request Table and PacificCorp Responses

MEETING SUMMARY

The purpose of the meeting was to review Logan City's July 2019 study requests (as distilled from Logan City's Scoping response *prior* to release of the Proposed Study Plan [PSP]; see Enclosure 2), identify elements of Logan City's comments already included in the original version of the PSP filed September 11, 2019, discuss study plan requests/comments not currently incorporated into the PSP, and identify opportunities to adjust study plans where applicable to include Logan City study plan requests/comments. Enclosure 2 lists Logan City's July 2019 comments, PacifiCorp's response to Logan City's comments in the September 11, 2019 PSP and revised responses to Logan City's comments following consultation during at the October 29, 2019 meeting in Logan, Utah.

PacifiCorp described the broad picture of the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) timeline identifying the multiple opportunities in the process for stakeholders to comment. PacifiCorp provided a summary of the regulatory milestones and collaborative workshops providing input into development of the PSP. PacifiCorp pointed out that some stakeholder comments cover broader issues in the FERC ILP or other forums outside of FERC licensing. For example, some comments are recommendations for conditions in the next license term. These types of comments will be addressed during license implementation as protection, mitigation, and enhancement (PM&E) measures. The focus of this meeting was stakeholder requests/comments relative to the PSP. PacifiCorp emphasized the near-term milestone in the license process is the review and approval of the PSP. Stakeholder comments on the PSP are due December 11, 2019 to FERC. PacifiCorp hopes Logan City's comments on the PSP acknowledge the study plan revisions agreed to in the October 29, 2019 meeting.

PacifiCorp will submit the RSP to FERC January 10, 2020. The RSP will incorporate agreements reached in this meeting with Logan City as well as consider other comments filed directly with FERC. Stakeholders will have an opportunity to review and comment on the RSP as well. FERC will make a study plan determination February 10, 2020. PacifiCorp will implement approved study plans in 2020 and file an interim report with FERC at the conclusion of the first year of study. Stakeholders will have an opportunity to review and comment on the interim report.

Logan City stated it is not clear what PacifiCorp is proposing for future project operations, so it is difficult to know what kind of studies to suggest. PacifiCorp explained that they are planning a broad range of studies including a hydraulic modeling effort that will later inform them of the best operating parameters, given both grid operations needs and customer benefits. PacifiCorp noted they will not raise the maximum water surface elevation of Cutler Reservoir in the new license but there may be additional variability in water surface elevation. As part of these studies, PacifiCorp is determining whether the current operating band can be expanded, although the upper elevation limit would not change. The studies will help inform PacifiCorp what range of reservoir and powerhouse operations are possible and advantageous for our customers in the next license term. This information will help the Cutler Project operate better with variable energy sources like wind and solar. Variations in Cutler Project operations are limited because 90 percent of Cutler's volume is in the top 3 feet of the reservoir. As a result, future operations would likely be proposed within the top 3 feet. Current operations are constrained to the top 18 inches. Logan City expressed concern that drawing down Cutler more than 18 inches could

impact aquatic life. Logan City noted they would be opposed to any changes proposed to the current operating range.

Logan City informed the group that they believe that the wastewater treatment plant's operations plan could change based on conditions in the reservoir which could cost them a lot of money. Hence, Logan City is anxious to understand the proposed operational plan before commenting on study plans. FERC noted they understand Logan City's concern about the uncertainty associated with Project operations but emphasized that future operations will not be defined in the study plan development phase.

PacifiCorp restated that the purpose of today's meeting is to provide input on study plans and that it is in Logan City's best interest to weigh in on the study plans rather than saying they will not participate until PacifiCorp's operations plan is known. PacifiCorp tried to determine why Logan City believes that the new wastewater plant could be affected by the operation of the downstream Cutler Reservoir. FERC advised Logan City to clearly state the issue that needs to be addressed.

Logan City asked for clarification on the process. PacifiCorp and FERC provided clarification, emphasizing there will be many additional steps for input. This is not a final decision on whether there should be a license. FERC advised Logan City to make clear their concerns. That is, what is critical to Logan City, assuming it is within the FERC study criteria. A copy of FERC's study criteria has been posted to PacifiCorp's Cutler web page.

Logan City asked if they need to request a cumulative impacts analysis. FERC stated they typically address cumulative impacts and that it relies on information from interested parties and the applicant.

REVIEW OF STUDY REQUEST COMMENTS

Logan City's comments were reviewed in the order they appear in the attached comment table. A summary of the group discussion is organized in the respective sections below.

FREQUENCY OF WATER QUALITY MONITORING

PacifiCorp asked Logan City to clarify if this comment was intended for the proposed water quality study plan or a request to increase water quality monitoring in the next license; Logan City responded that it was the latter. PacifiCorp noted that requirements for increased water quality monitoring in the next license will be determined by FERC at the conclusion of their environmental analysis. Logan City will have an opportunity to provide a recommendation to FERC later in the licensing process.

PUBLISH WATER QUALITY MONITORING REPORTS

Logan City explained the need for previous water quality monitoring data before they could evaluate PacifiCorp's Water Quality Study Plan. PacifiCorp relayed to Logan City that Utah Division of Water Quality (UDWQ) informed them in a meeting earlier that day that UDWQ data from water years (WY) 2015/2016 are now available online. Considerable discussion

ensued regarding available water quality data. FERC suggested a two-phased study plan approach to address Logan City's concerns: Phase 1) gather and analyze existing data to determine if it is sufficient; and Phase 2) collect additional field data based on results of Phase 1. Details of the two-phased approach are provided in the revised comment response table (Enclosure 2). Logan City commented they would like to see PacifiCorp's operations proposal as part of Phase 2. FERC informed Logan City that PacifiCorp is not likely to have an operations plan formalized at that time, but the licensing process does provide an opportunity for Logan City to respond to the interim study report and when PacifiCorp submits their proposed operations plan. FERC also stated that if data are determined to be inadequate, then FERC can require additional study.

PacifiCorp agreed to amend the Water Quality Study Plan incorporating the two-phased study approach. Logan City indicated they are comfortable with the two-phased study approach.

MAP ISOLATED AREAS IN THE RESERVOIR

PacifiCorp informed Logan City that LiDAR and reservoir bathymetry will be used to identify these areas.

EVALUATE THE IMPACTS OF COMMON CARP

PacifiCorp informed Logan City the study includes a literature review examining impacts of carp on water quality, including studies from systems similar to Cutler reservoir, such as Utah Lake.

EVALUATE SEDIMENT PROFILES IN THE RESERVOIR

PacifiCorp informed Logan City that the Water Quality Study Plan filed September 11, 2019 includes sampling sediment cores in the reservoir.

DEVELOP A 2D MODEL

PacifiCorp informed Logan City the Hydraulic Modeling Study Plan includes a one-dimensional (1D) and a two-dimensional (2D) model. The 2D model will provide a detailed boundary inundation area and flow patterns over a range of reservoir water surface elevations. The models will allow PacifiCorp, FERC, and stakeholders to evaluate overall impacts.

BANK EROSION

Logan City requested collection of soil profile data. PacifiCorp asked if Logan City considers the existing SURGO2 data (as detailed in the PSP) adequate. Logan City said the SURGO2 data seem inaccurate but did not provide any details illustrating their concern. Logan City believes there are certain areas where soil profile data should be collected. PacifiCorp informed Logan City that the Land Use Study will investigate bank conditions before, during, and after the 2019 drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability.

TECHNICAL ADVISORY GROUP

PacifiCorp stated they do not believe a technical advisory group is necessary at this time in the relicensing process, as that function is taking place through the additional collaborative license process that PacifiCorp has undertaken. PacifiCorp believes the current collaborative process being implemented as part of the licensing process is sufficient as it allows any stakeholder to take part in all elements of the relicensing process to the degree they wish.

EFFECTS ON BANK STABILIZATION EFFORTS

PacifiCorp stated the Land Use Study will document bank conditions before, during, and after the drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. Logan City is welcome to provide PacifiCorp any locations of particular concern with regard to bank erosion or sloughing.

EFFECT OF PROJECT OPERATIONS ON TOTAL MAXIMUM DAILY LOAD

PacifiCorp noted that relicensing is entirely separate from the Clean Water Act required total maximum daily load (TMDL) process, and that TMDL requirements, including the overall load limits, would still be in force, and further, that no compliance points would change. Logan City explained that they are concerned that effects of the Cutler relicensing could potentially affect Logan City's required wastewater treatment plant plans, through affecting water quality throughout the reservoir. PacifiCorp noted the concern but stated that they believe that the downstream Cutler Reservoir would not affect Logan City's planned wastewater treatment plant (WWTP) and associated compliance requirements. Overall, this issue should be addressed through the adoption of the two-phased Water Quality Study Plan approach.

WATER QUALITY IMPACTS ON THE RESERVOIR ASSOCIATED WITH UPSTREAM BEST MANAGEMENT PLANS

Logan City asked whether a cumulative impacts analysis would be included, considering various upstream planned and potential water quality mitigation projects. FERC stated they address cumulative impacts in the environmental analysis.

CUTLER RELICENSING PROJECT TIMELINE

- Deadline for comments on PacifiCorp's PSP is December 11, 2019
- Meeting summaries will be distributed along with the comment table filled in with PacifiCorp's revised responses by the end of November 2019
- PacifiCorp will amend the PSP to include the agreed-upon phased approach in the RSP
- The RSP would reflect the changes as discussed

ACTION ITEMS

- | | |
|------------|-----------------------------------------------------------------------|
| PacifiCorp | • Modify PSP to include a phased approach |
| | • Provide meeting notes and table of comments to meeting participants |
| Logan City | • PSP comments due to FERC by December 11, 2019 |

ENCLOSURE 2

LOGAN CITY STUDY REQUEST TABLE AND PACIFICORP REVISED RESPONSES

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Increase water quality monitoring frequency to better understand water quality, independent of hydrologic variation.</u> This should be completed annually and reported with all inflows from gauging stations occurring at the same time. Milligrams per liter (mg/L) is not adequate to truly understand the issues. Using the proposed reservoir volume mapping at various water levels and inflows, a representative mass balance can be prepared to quantify the individual impacts.</p>	<p>PacifiCorp believes this comment to be a request for a future PME measure, which will be established after the impacts analysis is completed. PacifiCorp intends to complete a Water Quality Study during the upcoming study season that will compile previously collected data and reports and combine it with hydrologic data collected as part of this relicensing effort.</p>	<p><u>PacifiCorp understands this comment to be focused on future project mitigation measures, rather than a study plan request.</u></p> <p>On October 29, 2019, PacifiCorp held a collaborative meeting with Logan City to discuss study requests and comments. As discussed at the meeting, this comment was intended to focus on potential PM&E measures for the new FERC license rather than a comment on the PSP filed September 11, 2019. Accordingly, comments on future PM&E measures are premature at this time. Logan City will have multiple opportunities during the FERC relicensing process to provide recommendations on future license requirements.</p> <p>The need for increased frequency of water quality monitoring in a new FERC license will be determined by FERC as part of their independent environmental analysis. The existing information on water quality, in combination with data collected through the proposed field studies, will help inform FERC on the need for this type of PM&E measure in the next license.</p> <p>As part of the relicensing process, PacifiCorp is proposing to complete a Water Quality Study during the upcoming study season that will compile previously collected data and reports and combine it with hydrology information.</p> <p>PacifiCorp intends to build both 1D and 2D hydraulic models as a result of the Hydraulic Modeling Study as described in the PSP filed September 11, 2019. The models will provide detailed water surface elevations and flow pattern results at any number of reservoir operation levels.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>PacifiCorp, FERC, and the UDWQ need to publish water quality monitoring reports and data from their studies from 2014 to present, early in the process rather than as a result of the process.</u> PacifiCorp recognizes that the 2013 phosphorous data was erroneous. As a result, the ongoing monitoring has not been published since 2008. This must be published for review as soon as possible to ensure that good science is used in the review.</p>	<p>Comment noted. The assertion regarding monitoring result publication is incorrect. PacifiCorp published water quality monitoring data from 2013 in the Cutler Resource Management Plan Five-Year Monitoring Report filed in March 2018; the 2008 water quality data was published in the previous monitoring report in 2013. The RMP reports are based on 5-year monitoring periods, therefore, the next report that contains data from 2013 to 2018 will be published in 2020, rather than 2023 as scheduled, due to the relicensing timeline and proposed data synthesis. All previous Cutler RMP Five-Year Monitoring reports are available for review on the PacifiCorp website.</p>	<p><u>PacifiCorp will amend the WQ Study Plan to include a phased approach, and include 2018 data in the 2020 Interim Report.</u></p> <p>On October 29, 2019, PacifiCorp held a collaborative meeting with Logan City to discuss study requests and comments. PacifiCorp elaborated on the available data and current monitoring schedule at the Cutler Project. The available data and timing of publication is described in the September 11, 2019 response to Logan City. UDWQ in a separate stakeholder meeting with PacifiCorp confirmed that their data is available to the public including Logan City.</p> <p>An outcome of recent discussions with Logan City was an amended Water Quality Study Plan as proposed by FERC and agreed by participants at the Logan City study plan meeting. Per this verbal agreement, PacifiCorp will amend the Water Quality Study Plan adding a two-phased study plan approach.</p> <p>Phase 1 would be a synthesis of existing water quality data for Cutler reservoir. Data sources would include PacifiCorp, UDWQ, Utah State University, the Middle Bear and Cutler Reservoir TMDL study, and other sources where available. PacifiCorp would request Logan City provide their TMDL monitoring data to be included in the synthesis report.</p> <p>PacifiCorp will file an interim progress report with FERC in 2020 and the Initial Study Report in early 2021 which will summarize water quality conditions in Cutler Reservoir, identify water quality data gaps and recommendations for the Phase 2 study in 2022. As provided for in the ILP regulations (18 Code of Federal Regulation [CFR] § 5.15), Logan City and other stakeholders will have an opportunity to review and comment on the water quality interim report as well as provide comments on the need for a second field season.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Map areas that become stagnant due to sedimentation or other types of isolation within the reservoir which have higher temperatures and hold the water for long periods of time, thus it becomes toxic.</u></p> <p>These areas will mobilize stored total phosphorus (TP) from the sediments as the oxidation states of iron change.</p>	<p>PacifiCorp intends to complete pre- and post-drawdown LiDAR and bathymetry surveys in late 2019 that will inform areas that potentially "pond" under a range of proposed elevation changes. A range of conditions may occur as a result of the proposed elevation changes including, but not limited to, pH, dissolved oxygen, and temperature changes, along with other chemical processes. PacifiCorp intends to conduct analyses on phosphorus in the bed sediments as well as other ions that may absorb or bind with cation exchange (these may include calcium carbonate, aluminum, and iron).</p>	<p><u>PacifiCorp clarified that detailed mapping of all reservoir areas and elevations is included in the proposed Study Plan.</u></p> <p>On October 29, 2019, PacifiCorp held a collaborative meeting with Logan City to discuss study requests and comments. As presented to meeting participants, the LiDAR mapping of Cutler Reservoir in combination with the reservoir bathymetry work will provide detailed bed elevations to delineate areas in the reservoir that have the potential to become isolated. This analysis of the reservoir will be provided in reports in planar and profile illustrations correlated with reservoir elevations. As part of the November 2019 drawdown, PacifiCorp surveyed areas that could become isolated in Cutler Reservoir. Such pools have been georeferenced and will be incorporated into the geographic information survey (GIS) mapping of Cutler Reservoir. The hydraulic modeling of the reservoir in combination with field observations georeferenced during the November 2019 drawdown, will reveal areas of the reservoir that potentially have low velocities and may be more isolated from the general recycling of the reservoir volume.</p> <p>The Water Quality Study Plan as filed September 11, 2019 and the proposed amendment as described previously in this comment table, will include an analysis of nutrients in Cutler Reservoir including phosphorus in its various forms.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Evaluate the impacts of common carp on the water quality of the Bear River Cutler Reservoir.</u> Studies in Utah Lake should be used to establish a correlation or comparison since both are shallow eutrophic reservoirs. The reservoir and the Bear River are impacted by the feeding habits of the large population of carp. This is reflected when the carp change their feeding habits during the winter months.</p>	<p>PacificCorp intends to conduct a Water Quality Study that will summarize the results of studies regarding this issue from the Bear River Refuge and other systems similar to the Cutler Reservoir. The Project nexus per the Federal Power Act under 18 CFR §5.9 for this study request is not clear.</p>	<p><u>PacificCorp clarified that a review of the effects of carp in similar reservoir ecosystems is included in the WQ Study Plan.</u></p> <p>On October 29, 2019, PacificCorp held a collaborative meeting with Logan City to discuss study requests and comments. An outcome of our discussions was an amended Water Quality Study Plan as proposed by FERC and agreed to by participants at the meeting. The amended water quality study plan (described previously in the revised comment response table) water quality will include a summary of studies regarding carp as described in the Water Quality Study Plan as filed September 11, 2019.</p> <p>Carp are listed as a non-game fish by UDWR but are still managed by the state. This fish species is prolific and found throughout the entire Bear River drainage from near its headwaters to the Great Salt Lake. Based on recent conversations with UDWR, it is unclear that carp can be linked directly as a causal agent to water quality degradation within Cutler Reservoir because removal of carp would not be expected to improve water quality in Cutler Reservoir.</p> <p>The Bear River is subject to anthropogenic impacts such as municipal effluent, irrigation diversion and return flows, seepage of agricultural waste, and industrial discharge all of which impact reservoir water quality.</p>
<p><u>Evaluate the sediment profiles throughout the reservoir to ensure that any sediment movement or removal would not mobilize other contaminants.</u></p>	<p>Comment noted. PacificCorp intends to collect samples to be analyzed for specific constituents. These samples will include metals (RCRA), pesticides, PCBs, aluminum, iron, phosphorus, and calcium carbonate.</p>	<p><u>PacificCorp clarified that sediment mapping and coring, and assessment of Resource Conservation and Recovery Act (RCRA) and other contaminants is included within the Water Quality and Sediment Study Plan.</u></p> <p>PacificCorp is collecting sediment core samples as described in the Water Quality Study Plan as filed September 11, 2019. Randomly selected sediment cores will be sampled and analyzed for specific constituents that may have been deposited over decades in the reservoir. These will include the eight metals listed in the RCRA, pesticides, and, polychlorinated biphenyls (PCBs).</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Develop a 2D water reservoir model based on the LiDAR mapping data being collected.</u> This would help to better evaluate the impacts of a broader range of reservoir operations that are beyond the ability to physically measure given the limited time to complete the study. This would also allow the evaluation of the impacts from an area where measurements would not be easily gathered.</p>	<p>Comment noted. As stated in the Pre-Application Document (PAD) and the scoping meetings, 1D and 2D models are proposed. PacificCorp intends to build a Hydraulic Model as a result of the Hydraulic Modeling Study plan. The 2D model will provide a detailed inundation boundary and flow pattern results.</p>	<p><u>PacificCorp clarified that the Hydraulic Study Plan includes both 1D and 2D reservoir modeling.</u></p> <p>PacificCorp intends to build both 1D and 2D hydraulic models as a result of the Hydraulic Modeling Study as described in the PSP filed September 11, 2019. To accomplish the goals and objectives of this study, PacificCorp will collect new data and analyze existing data sets to compile structural, spatial, terrain, and hydrologic data for the Project. Once compiled the data will be used as inputs and calibration for a U.S. Army Corps of Engineers (USACE) HEC-RAS hydraulic model. The calibrated model will provide an understanding of the existing hydraulic conditions in Cutler Reservoir. The hydraulic model will be used to predict hydraulic conditions, sediment transport capacity, and water surface elevations for a range of Project operations. Specifically, the models will provide detailed water surface elevations and flow pattern results at any number of reservoir operation levels. The hydraulic models will also provide analysis for other studies being conducted as part of the relicensing.</p>
<p><u>It is not adequate for PacificCorp to evaluate the impacts of varying operations by simply measuring discrete points of drawdown under controlled inflow conditions. PacificCorp should be required to create the 2D model to allow the evaluation of the boundary conditions to determine overall impacts.</u></p>	<p>Comment noted. PacificCorp intends to build a Hydraulic Model as a result of the Hydraulic Modeling Study plan. The 2D model will provide a detailed inundation boundary and flow pattern results that will help evaluate boundary conditions and determine overall impacts.</p>	<p><u>PacificCorp clarified that the Hydraulic Study Plan includes both 1D and 2D reservoir modeling.</u></p> <p>PacificCorp agrees a 2D model will be helpful to evaluate a range of operations including current and future reservoir conditions. The Hydraulic Modeling Study Plan filed September 11, 2019 included 1D and 2D hydraulic models. The Hydraulic Modeling Study is described earlier in this revised comment response table. Please refer to that earlier description of the Hydraulic Modeling Study.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Use the 2D model to evaluate mitigation options to evaluate drawdown impacts, the potential benefits of limited and large portion dredging, the breaching of the Wheelon Dam, and other proposed options.</u> Breaching Wheelon Dam before verifying that the sediments in the reservoir are not contaminated could be devastating to Cutler Reservoir and the downstream Bear River.</p>	<p>Comment noted. PacificCorp intends to build a Hydraulic Model as a result of the Hydraulic Modeling Study plan. The 2D model will allow PacificCorp to evaluate future PME measures.</p>	<p><u>PacificCorp clarified that the Hydraulic Study Plan includes both 1D and 2D reservoir modeling; the models will be used to evaluate several issues, including future mitigation options.</u></p> <p>PacificCorp agrees a 2D model will be helpful to evaluate any number of mitigation alternatives. The hydraulic model, in combination with analysis of sediment core constituents, will help predict potential mobilization of contaminants from reservoir sediments at respective reservoir elevations. The Hydraulic Modeling Study Plan filed September 11, 2019 included a 1D and 2D hydraulic model. The Hydraulic Modeling Study is described earlier in this revised comment response table. Please refer to that earlier description of the Hydraulic Modeling Study.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>The soils around Cutler Reservoir are highly erosive. Rapid lowering of the water surface, particularly in a repeated nature would create unbalance hydrostatic forces. This would likely cause increased sloughing of the banks. This is a water quality, wetland, and habitat concern that must be addressed. The soils around the reservoir are highly erosive as demonstrated by the concerns in the RMP and the extensive erosion control efforts employed by PacificCorp as part of the existing license. <u>Any proposed modifications must be evaluated for impacts and mitigation efforts employed to protect the banks and the wetlands from erosion as well as to prevent erosion from further harming water quality in the reservoir and downstream. The rapid fluctuations would create unbalanced hydrostatic pressures in the soils and can cause bank failures and sloughing.</u> This would impact water quality, the ecology of the banks, including wetlands and surrounding property owners.</p>	<p>Comment noted. PacificCorp's proposed 2D model will quantify the volume of sediment activated by the reservoir based on the changes in hydraulics caused by the drawdown. However, the hydraulic model will not model/predict bank sloughing quantities and locations. PacificCorp does plan on collecting data before, during and after the drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. The City of Logan is welcome to provide PacificCorp any locations of particular concern with regard to bank erosion or sloughing taking place. These locations will be taken into consideration when choosing final observation sites (see also Land Use Study Plan, section 2.3).</p>	<p><u>PacificCorp clarified that the Land Use and Shoreline Habitat Characterization Study Plans include assessments of bank stability under potential future operating conditions; these assessments can be used to evaluate a number of issues, including future mitigation options.</u></p> <p>The Land Use and Shoreline Habitat Characterization studies will evaluate potential effects on bank erosion at a range of reservoir elevations. Furthermore, Table 2 in FERC's Scoping Document 2 (SD2) incorrectly labeled the drawdown evaluation as a proposed operations plan for the future license. PacificCorp submitted a clarification letter to FERC regarding Table 2 on October 4, 2019. Future operations of Cutler Reservoir will be evaluated as part of the licensing studies. Wide fluctuations in reservoir pool elevations are not anticipated.</p> <p>PacificCorp's proposed Hydraulic Modeling Study, filed September 11, 2019 and described previously in this comment table, will quantify the range of hydraulic conditions caused by potential changes in water surface elevations associated with reservoir operations.</p> <p>The Land Use Study filed September 11, 2019 included a section specifically designed to investigate bank conditions before, during, and after the 2019 drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. If the City of Logan has any specific locations of particular concern with regard to bank erosion or sloughing taking place, please share those with PacificCorp.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Organize a technical advisory committee (TAC) to help provide technical oversight of the studies on the proposed operations.</u></p>	<p>PacificCorp is conducting the Cutler relicensing using FERC's ILP. The FERC ILP process provides for regular stakeholder and technical review of Study Plans, including the proposed implementation, data analysis, and reporting through prescribed steps as outlined in the Federal Power Act under 18 CFR § 5.15. There are provisions and steps outlined in this process to adjust studies as necessary based on review of preliminary data. In addition, PacificCorp intends to continue on-going PacificCorp-sponsored collaboration efforts, which will include workshops to address technical issues on an as-needed basis.</p>	<p><u>PacificCorp disagrees that a TAC is necessary, given the parallel collaborative process being undertaken as part of the FERC relicensing process. PacificCorp continues to welcome Logan City and other stakeholders' participation in the Cutler Relicensing Process.</u></p> <p>PacificCorp is conducting the Cutler relicensing using FERC's ILP. The FERC ILP process provides for regular stakeholder and technical review of Study Plans, including the proposed implementation, data analysis, and reporting through prescribed steps as outlined in the Federal Power Act under 18 CFR § 5.15. There are provisions and steps outlined in this process to adjust studies as necessary based on review of preliminary data. In addition, PacificCorp intends to continue on-going PacificCorp-sponsored collaboration efforts, which will include workshops to address technical issues on an as-needed basis.</p> <p>PacificCorp welcomes Logan City's participation in the FERC licensing process and PacificCorp's ongoing collaborative efforts and parallel process to the FERC ILP.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Consider the effects on the bank stabilization efforts implemented with nearly stable water surface level restrictions that would potentially no longer be effective.</u></p>	<p>Comment noted. PacificCorp's intends to conduct a Land Use Study that will address existing concerns regarding shoreline erosions and impacts of the proposed elevation changes in reservoir operations on the efficacy of past bank stabilization efforts at Cutler Reservoir.</p>	<p><u>PacificCorp clarified that the Land Use and Shoreline Habitat Characterization Study Plans include assessments of bank stability under potential future operating conditions; these assessments can be used to evaluate a number of issues, including future mitigation options.</u></p> <p>The Land Use Study filed September 11, 2019 includes methods to document bank conditions before, during and after the 2019 reservoir drawdown that might provide insight into the impacts that repeated drawdowns could have on bank stability. This includes time-lapse photography of various sites that could be more susceptible to bank erosion during the drawdown. The field effort will help document areas of potential shoreline erosion and impacts of the proposed elevation changes in reservoir operations on the efficacy of past bank stabilization efforts at Cutler Reservoir. Bank stabilization efforts already implemented were designed to be effective at a range of WSLs.</p>
<p><u>The data presented in the TDML included oxygen, total phosphorus, total suspended solids, ammonia, turbidity, a biologic and fisheries study, and water temperature. All of these would be affected, either positively or negatively, by level fluctuation.</u> These modifications require extensive evaluation to protect the ecologic value of the reservoir, water quality both in the reservoir and downstream, and the surrounding properties.</p>	<p>Comment noted. PacificCorp intends to conduct a Water Quality Study, Fish and Aquatic Resources Study, and Hydraulic Modeling Study that will provide the effects of proposed reservoir elevation changes on the prominent environmental issues that exist in the reservoir.</p>	<p><u>PacificCorp clarified that the Water Quality, Fish and Aquatic Resources, and Hydraulic Modeling Study Plans include assessments of water quality parameters and aquatic biota under potential future operating conditions; these assessments can be used to evaluate a number of issues, including future mitigation options.</u></p> <p>PacificCorp filed the PSP on September 11, 2019 to investigate water quality, fish and aquatic resources, and hydraulic modeling. These studies will investigate the effects of proposed reservoir elevation changes on the prominent environmental issues that exist in the reservoir.</p> <p>PacificCorp will also amend the Water Quality Study Plan to add a two-phased study plan approach as described previously in this table of revised responses to comments.</p>

LOGAN CITY STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p><u>Evaluate the water quality impacts on the reservoir associated with upstream best management plans (BMP).</u> These include the construction of the Logan WWTF, JB Swift Wastewater Treatment Plant, Hyrum Wastewater Treatment Plant, water quality projects on the Logan River and the Little Bear River, efforts to eliminate feed lot discharges, conversion of flood irrigation to sprinkler irrigation from the Idaho border all the way to Cutler Reservoir, and the implementation of extensive storm water management programs by each of the cities, as well as Cache County, upstream of Cutler Reservoir, on all of the tributaries. The water quality of the reservoir is affected by all of the region. Address how those efforts have modified the water quality and how any operation modifications would either support or negate those benefits. Any modifications to the reservoir operations, particularly increase in WSLs may jeopardize the discharge, and possibly the operations of the new Logan city WWTF. This \$160 million-dollar regional facility must be protected.</p>	<p>Comment noted. PacificCorp believes this comment is consistent with the cumulative effects analysis that FERC has specified in SD1. PacificCorp's Water Quality Study will inform this analysis.</p>	<p><u>PacificCorp agrees that the cumulative effects analysis of water quality should include existing and proposed upstream BMPs, considering potential future operating conditions.</u></p> <p>PacificCorp is not requesting to raise the maximum water surface elevation of Cutler Reservoir in the new license application.</p> <p>As part of the environmental analysis, FERC will evaluate cumulative effects including actions in the Bear River system potentially effecting water quality. The actions to improve water quality listed in Logan City's letter will be identified in the cumulative effects analysis during the National Environmental Protection Act process. The Water Quality Study will identify sources of water quality impairment and analyze the interaction of potential future reservoir operations with water quality conditions in the reservoir and downstream. The proposed Water Quality Study will help inform FERC's cumulative effects analysis.</p>

From: [Frank Shrier](#)
To: [Nuria Holmes](#)
Subject: FW: Cutler Reservoir California Floater Survey
Date: Friday, December 06, 2019 12:39:43 PM

This email from Chante at UDWQ provided Lat/Long locations of their mollusk surveys

From: Frank Shrier
Sent: Sunday, November 17, 2019 9:50 AM
To: Frank Shrier <Frank.Shrier@swca.com>
Subject: FW: Cutler Reservoir California Floater Survey

The sites that I provided UTM's are just point locations to the overall site. No beginning or end UTM's.

From: Chante Lundskog <clundskog@utah.gov>
Sent: Thursday, November 14, 2019 4:01 PM
To: Frank Shrier <Frank.Shrier@swca.com>
Subject: Re: Cutler Reservoir California Floater Survey

EXTERNAL: This email originated from outside SWCA. Please use caution when replying.

10/28/2019

Site #1 (416841 4633014) - 9:15-10:15 am
Site #2 (421894 4631357) - 10:50-11:20 am

11/4/2019

Site #3 (Cutler Marsh Marina) - 9:00-10:00 am
Site #4 (Benson Marina) - 10:30-11:30 am

11/8/2019

Site #1 revisit and Site #5 surveyed as one large area - 9:00-11:30 am
Site # 6 (414555 4633984) - 12:30-1:00 pm

On Thu, Nov 14, 2019 at 4:39 PM Frank Shrier <Frank.Shrier@swca.com> wrote:

Chante, do you have approximate times for each survey day so I can relate times with reservoir elevations?

From: Chante Lundskog <clundskog@utah.gov>
Sent: Thursday, November 14, 2019 9:40 AM
To: Frank Shrier <Frank.Shrier@swca.com>
Cc: Chance Broderius <cbroderius@utah.gov>; Chris Penne <chrispenne@utah.gov>; Davies, Eve <eve.davies@pacificorp.com>; Lindsey Kester <lkester@swca.com>
Subject: Cutler Reservoir California Floater Survey

EXTERNAL: This email originated from outside SWCA. Please use caution when replying.

Hi all,

We concluded our survey last Friday. Below is a brief overview of what we found.

10/28/2019

Site #1 (416841 4633014) - we found 55 (47 live/eight recently dead) paper pondshells located in about 2' of water in silt/mud substrate.

Site #2 (421894 4631357) - we did not find any individuals of either species. Substrate did not appear to be suitable for mussels, and the water was stained.

11/4/2019

Site #3 (Cutler Marsh Marina) - we found 23 (eight live/15 recently dead) paper pondshells located in silt/mud near the channels.

Site #4 (Benson Marina) - we found 272 (37 live/235 recently dead) paper pondshells located in silt/mud throughout the flats.

11/8/2019

Site #5 (418046 4631816) - we found ten paperpondshells (recently dead) and three California floater shell (did not appear to be recently dead). The California floater shells were located in a riffle with about six inches of silt/mud substrate with a hardened bottom.

Site #1 (revisit after the reservoir was at full draw down) - we found five California floater shells adjacent to the river channel in a similar location to Site #5. There was a riffle with six inches of silt/mud substrate with a hardened bottom. We found some smaller specimens which is a good sign.

Site # 6 (414555 4633984) - we found four recently dead paper pondshells.

Based on our observations, I surmise there are limited numbers of California floater inhabiting the reservoir. I believe there is a small population of living individuals, but I think a diving survey is required as I believe these individuals inhabit deeper portions of the reservoir located near the river channel.

I've attached some pictures of the specimens we collected. Thanks for the help, and I hope things went well for the rest of you during the drawdown.



--
Chante' Lundskog

Northern Region Aquatic Biologist
Utah Division of Wildlife Resources
Ogden, UT
Phone: 385-333-2560
Email: clundskog@utah.gov

--

Chante' Lundskog

Northern Region Aquatic Biologist
Utah Division of Wildlife Resources
Ogden, UT
Phone: 385-333-2560
Email: clundskog@utah.gov

Cutler Hydroelectric Project Relicensing - Study Plan Request Follow up

Miriam

Thu, Nov 14, 2:26 PM

Hugentobler <cutlerlicense@gmail.com>

To: zach@utahrivers.org, jon@utahrivers.org, graham@utahrivers.org

Cc: John Gangemi <nordich2o@centurytel.net>, Nuria Holmes
<Nuria.Holmes@kleinschmidtgroup.com>, Lindsey Kester <lkester@swca.com>, Eve Davies
<eve.davies@pacificorp.com>

Dear Zach, Jon and Graham,

Thank you for continued participation in the Cutler Hydroelectric Project relicensing process. As an engaged participant, you are aware that PacifiCorp's Proposed Technical Study Plans were filed with the Federal Energy Regulatory Commission on September 11, 2019 for 90-day public review. The review period closes December 11, 2019.

The study plans include a summary of comments and study requests received from stakeholders, including interested members of the public, state and federal agencies, and non-governmental organizations. PacifiCorp reviewed the comments and study requests, as well as its proposed responses at a study plan workshop in Logan, Utah, on October 8, 2019. Based in part on discussions held with workshop participants at the October 8 meeting, PacifiCorp set up several follow-up meetings designed to discuss and resolve stakeholder comments on the study plans.

PacifiCorp would like to extend the same invitation to Utah Rivers Council. Please contact me directly within the next week if you would like to discuss your study request and PacifiCorp's response. I'd be glad to set up a telephone meeting or conference call. PacifiCorp appreciates your continued support and participation in the relicensing process. We look forward to hearing from you.

Thank you,

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)

From: Jon Carter [<mailto:jon@utahrivers.org>]
Sent: Friday, November 22, 2019 1:45 PM
To: Miriam Hugentobler <cutlerlicense@gmail.com>
Cc: zach@utahrivers.org; graham@utahrivers.org; John Gangemi <nordich2o@centurytel.net>; Nuria Holmes <Nuria.Holmes@kleinschmidtgroup.com>; Lindsey Kester <lkester@swca.com>; Davies, Eve <Eve.Davies@pacificorp.com>
Subject: [INTERNET] Re: Cutler Hydroelectric Project Relicensing - Study Plan Request Follow up

Hi Eve,

Thank you for reaching out to us at Utah Rivers Council. We would welcome the follow-up response regarding our study requests for the Cutler Hydroelectric Project relicensing process.

With the holidays upon us, we would be grateful if we could set up a call the first week of December, ideally on either the 4th or 5th. Would either of those dates work for you?

Thanks again for reaching out and we look forward to talking more.

Regards,
Jon

On Nov 22, 2019, at 3:10 PM, Davies, Eve <Eve.Davies@pacificorp.com> wrote:

Hi Jon-

Would you like to meet (in person or by phone) to discuss or just have us send you our response table? Thanks-Eve

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 110
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)

On Fri, Nov 22, 2019 at 4:25 PM Jon Carter <jon@utahrivers.org> wrote:
Hi Eve,

If you could send us your response table, we will review that first. If we have any follow-up questions, we could then look at setting up a phone/conference call with you. How does that sound?

Cheers,
Jon

From: Jon Carter [<mailto:jon@utahrivers.org>]
Sent: Friday, November 22, 2019 4:25 PM
To: Davies, Eve <Eve.Davies@pacificorp.com>
Cc: Miriam Hugentobler <cutlerlicense@gmail.com>; zach@utahrivers.org; graham@utahrivers.org; John Gangemi <nordich2o@centurytel.net>; Nuria Holmes <Nuria.Holmes@kleinschmidtgroup.com>; Lindsey Kester <lkester@swca.com>
Subject: [INTERNET] Re: [INTERNET] Re: Cutler Hydroelectric Project Relicensing - Study Plan Request Followup

Hi Eve,

If you could send us your response table, we will review that first. If we have any follow-up questions, we could then look at setting up a phone/conference call with you. How does that sound?

Cheers,
Jon

On Nov 22, 2019, at 6:07 PM, Davies, Eve <Eve.Davies@pacificorp.com> wrote:

Sounds good- we'll get it to you soonest, likely early Dec at this point-
Eve

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 110
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)

Re: Cutler Hydroelectric Project Relicensing - Study Plan Request Follow up

Miriam
Hugentobler <cutlerlicense@gmail.com>
To: jon@utahrivers.org, Eve.davies@pacificorp.com

Thu, Dec 5, 5:07 PM

Jon,

Attached per your request to Eve Davies is PacifiCorp's response to Utah Rivers Council's comments and study plan requests for the Cutler Hydroelectric Project relicensing process. Please contact Eve this week if you would like to arrange a time to discuss any questions or comments you may have. Here's her direct contact information:

Eve Davies, Principal Scientist
Renewable Resources, PacifiCorp
1407 West North Temple, Ste. 210
Salt Lake City, Utah 84116
801-220-2245
801-232-1704 (cell)
eve.davies@pacificorp.com

UTAH RIVERS COUNCIL STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>Suggests that FERC consider several connected and cumulative actions to comply with NEPA. FERC should consider impacts to the full reach of the river down to the refuge and the entire Great Salt Lake, rather than just 2 miles downstream. The scope of the environmental analysis should include not only the entire reach of the Bear River below Cutler Dam, but the Great Salt Lake as well. FERC should conduct sediment sampling in Cutler Reservoir for depth and composition as sediment has major implications to the potential hydropower generation. URC also suggests a rigorous analysis of the sediment composition to understand what type of pollutants might be washed downstream.</p>	<p>FERC's SD1 identified the Bear River Basin, and the mainstem of the Bear River as the geographic scope for cumulative effects for specific resource areas. Cumulative effects will be determined once more is known about Project impacts on the specific resources. By law, PacificCorp is bound by contractual agreements with irrigators to meet their water needs before using water for Project purposes. PacificCorp is also proposing a Sedimentation Study to address the effects Project operations has on sediment transport, and includes sampling for heavy metals and other contaminants.</p>	<p>FERC's SD2 expanded the scope of analysis for cumulative impacts for several resources. The Revised Study Plan (RSP) will include additional details regarding the downstream scope of the analysis, and how the affected area downstream of the dam will be calculated through the hydraulic modeling and sedimentation analyses. Sediment core samples will be analyzed for a variety of pollutants, including heavy metals.</p> <p>See the Proposed Study Plan (filed September 8, 2019) for additional details regarding the 1- and 2D hydraulic modeling proposed.</p> <p>Per SD2, FERC's eventual cumulative effects analysis will address the scope of the cumulative analysis as follows.</p> <ul style="list-style-type: none"> - "As evidenced by sediment and soil deposition within the Cutler Reservoir, the Bear River and its basin is susceptible to soil erosion and deposit...it is appropriate to include [these] resources as resources that may be cumulatively affected" (SD2, page 7). - "Regarding the downstream extent of the analysis...we do not recommend including the Great Salt Lake within the scope of this analysis" (SD2, page 7).

Table of Study Requests and Revised Responses

UTAH RIVERS COUNCIL STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<p>Suggest FERC conduct an investigation into the stated purpose and need for the Project. An appropriate question for FERC to ask is whether or not the facility generates enough power when it is truly needed. During mid-May to the end of September the facility creates very little power even though the peak power demand months comes during that period. FERC should also ask whether RMP has other power generation options available, either through oncoming solar generation or modernization of electrical grids that could substitute the need for hydropower generation at Cutler Reservoir.</p>	<p>Comment noted. The subject of power generation of Cutler, and how that relates to other power generation alternatives, will be addressed in FERC's Developmental analysis under the category of "Need for Power," which will also address the economic viability of Cutler operating in the future.</p>	<p>No update proposed in RSP.</p>
<p>Suggests that FERC consider how reductions in the Bear River flows as a function of climate change and warmer air temperatures would impact hydropower generation. Increasing air temperatures will result in more rain and less snow in the Bear River watershed. This, in turn, threatens Bear River snowpack, which will have significant impacts on Bear River water users, including RMP. Climate models indicate there may be a 5-15% increase in precipitation levels in Northern Utah, but rising temperatures mean this will occur more frequently as rain-leading to less snow accumulation and an earlier snowmelt.</p>	<p>PacificCorp is not proposing a Hydrological Study during this relicensing that would address climate change or snowpack levels. Whereas PacificCorp agrees with FERC's 2009 determination that climate change is occurring, PacificCorp also agrees with FERC that it is not aware of any climate change models that are known to have the accuracy needed to predict the degree of specific resource impacts and serve as the basis for informing license conditions (FERC February 23, 2009 Study Plan Determination for the Yuba-Bear, Drum-Spaulding, and Rollins Projects). Climate change will be addressed as part of the Cumulative Effects analysis.</p>	<p>No update proposed in RSP.</p>

Table of Study Requests and Revised Responses

UTAH RIVERS COUNCIL STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<u>Suggests that FERC require an independent study of methane emission from Cutler and make it clear that Cutler Project is not considered an "emission free" power source.</u> The large amounts of sediment and organic matter behind the dam in the reservoir produce methane.	Comment noted. PacificCorp will review existing information concerning methane emissions from western reservoirs as part of the analysis process. Neither a Project nexus nor proven methodology that is consistent with generally accepted practice in the scientific community per the Federal Power Act under 18 CFR §5.9 has been identified.	<u>No update proposed in RSP.</u>
<u>Suggests FERC should conduct a thorough, independent analysis of the socioeconomic impacts of the Project.</u> These include, but are not limited to, the cost of the power generated by the Cutler Project to the consumers and the financial feasibility of the Project over the next 30 years.	Comment noted. PacificCorp is not proposing to conduct a Socioeconomic Study as part of this relicensing, as any proposed Project operational changes would not change the socioeconomic framework from the current analysis provided in the PAD. The study elements being requested are part of FERC's Developmental Analysis and would not normally be a part of a socioeconomic study. Per FERC requirements, an updated socioeconomic analysis will be included in the Draft License Application.	<u>No update proposed in RSP.</u>
<u>Suggests that FERC should consider alternatives to issuing a new 30-year license for the Project.</u> URC is suggesting that the Cutler hydropower generation is not needed and could be decommissioned so that the dam use could be changed, with solar power a likely alternative for power generation in Utah.	Comment noted. FERC will consider alternatives in its NEPA analysis.	<u>No update proposed in RSP.</u>
<u>Suggests a full EIS to be conducted instead of an EA.</u>	Comment noted. Ultimately, FERC will decide whether an EA is sufficient or an EIS is required based on its NEPA implementing regulations and other factors.	<u>No update proposed in RSP.</u>

UTAH RIVERS COUNCIL STUDY REQUESTS	PACIFICORP RESPONSE (9/11/2019)	PACIFICORP REVISED RESPONSE (11/2019)
<u>Geographic scope of cumulative efforts should be the entire Bear River Basin.</u>	Comment noted. FERC's SD1 identified the Bear River Basin, and the mainstem of the Bear River as the geographic scope for cumulative effects for specific resource areas.	<u>No update proposed in RSP.</u> FERC's SD2 details the current scope of cumulative impacts for each of the resources identified. FERC modified section 4.1.2, <i>Geographic Scope</i> , to include a cumulative effects analysis of geology and soil resources from the Bear River Hydroelectric Project P-20 downstream to Great Salt Lake (SD2, page 7).
<u>The allocations of irrigation water are spelled out in the Amended Bear Lake Settlement Agreement (2004) and should be part of the FERC record for Cutler relicensing.</u>	Comment noted. The Bear Lake Settlement Agreement and all the major water uses are addressed in the PAD in Section 4.3 and thus are part of the FERC record for Cutler relicensing.	<u>No update proposed in RSP.</u>
<u>Requests an additional study that would model the Bear River system to include Bear Lake and the hydro plants downstream.</u> The model should include enough to show what-ifs, impacts of different flow regimes, impacts and reservoir refill times when spinning reserve is needed, impacts and refill times when Cutler is operated at the proposed new levels, and any impacts to Bear Lake.	PacifiCorp is not proposing to change the withdrawals from Bear Lake nor the operations from projects upstream of Cutler Reservoir. Additionally, PacifiCorp maintains the upstream projects are not hydraulically connected or dependent on the operations of the downstream Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. Additionally upstream projects are not dependent on the operations of the Cutler Reservoir; nor will the reservoir have impacts to the tailwater of the nearest upstream dam. Additionally, a Public Interest Consideration per the Federal Power Act under 18 CFR §5.9 is needed to for PacifiCorp to consider merits of this study.	<u>No update proposed in RSP.</u>

From: [Frank Shrier](#)
To: [Nuria Holmes](#)
Subject: FW: Tuesday BAS/Pacificorp meeting - Lunch
Date: Friday, December 06, 2019 12:46:00 PM

From: Wayne Wurtsbaugh [<mailto:wayne.wurtsbaugh@usu.edu>]
Sent: Monday, October 28, 2019 10:48 AM
To: Miriam Hugentobler <miriam.hugentobler@gmail.com>; Bryan Dixon <bdixon@xmission.com>; Hilary Shughart <hilary.shughart@gmail.com>
Cc: Davies, Eve <Eve.Davies@pacificorp.com>
Subject: [INTERNET] Re: Tuesday BAS/Pacificorp meeting - Lunch

Colleagues;

Attached are some class reports on Cutler Reservoir that my class did several years ago. There's some data in there that's relevant to the oxygen questions that Audubon is posing. I believe PacificCorp already has these reports, although they may have lost track of them in the interim.

Cheers,

Wayne

On 10/28/2019 8:37 AM, Miriam Hugentobler wrote:

Bryan & Wayne,

Glad both of you can come! Added you to tomorrow's lunch order. See you at 1 pm, Cirrus Ecological Solutions, 965 S 100 W #200.

Miriam Hugentobler
(801) 652-8983

From: Wayne Wurtsbaugh <wayne.wurtsbaugh@usu.edu>
Date: Sunday, October 27, 2019 at 10:35 PM
To: Bryan Dixon <bdixon@xmission.com>, "miriam.hugentobler@gmail.com" <miriam.hugentobler@gmail.com>
Subject: Tuesday BAS/Pacificorp meeting - Lunch

Miriam;

I will be working with Bridgerland Audubon on water issues, and consequently I would like to attend the meeting this Tuesday at 1:00. Brian Dixon said that it would be good if I can come for lunch. I assume this is at 1:00 as well. Any sandwich with meat (chicken best) will do--I'm not particular.

Thanks,

Wayne Wurtsbaugh

On 10/25/2019 7:54 PM, Bryan Dixon wrote:

Hilary and Wayne,

PacifiCorp has scheduled a meeting on Tuesday from 1-3 p.m. to discuss BAS' July 29 comments on the relicensing Scoping Document 1 (our comments attached; the letter is only 3-4 pages, but the document we sent includes several attachments). We requested expanding the geographic scope of the project to include PacifiCorp-owned lands upstream and two additional studies: a longitudinal study of avian populations and a cross-sectional study of dissolved oxygen (because for the Cutler Reservoir TMDL, DWQ only measured DO at a couple of bridges where turbulence would artificially increase DO).

I don't know if you received their invitation, so I'll forward my own to you in a minute.

They addressed comments from us and others in a "Scoping Document 2" which was released in September and also attached (17.9 MB). They would like to resolve issues we raised in our July letter before the December 11 deadline for comments on the Scoping Document 2, wherein they offered to do some DO monitoring, but declined to do avian surveys. They are also not interested in expanding the geographic scope of the studies or the boundaries of the Cutler Hydroelectric Project, in part because I think FERC doesn't feel a boundary adjustment is warranted. FERC did suggest having a discussion of how to argue for studies upstream from Cutler that may lead to more management actions; e.g., weed control and bank stabilization projects.

Let me (and cc: Miriam, below) know if you can make it, or if you want others to attend, and if you want a sandwich and if you have any dietary preferences. Meetings are usually more cordial over food, so I'd recommend taking them up on it.

Bryan

Bryan Dixon
10 Heritage Cove
Logan, UT 84321
435-760-0691
bdixon@xmission.com

Begin forwarded message:

From: Miriam Hugentobler
<miriam.hugentobler@gmail.com>
Subject: Tuesday's meeting - Lunch
Date: October 25, 2019 at 2:32:06 PM MDT
To: Bryan Dixon <bdixon@xmission.com>

Bryan,

We are going to have a working lunch during your meeting time on Tuesday and hope you will join us. Probably sandwiches from Even Stevens. Eve said she thought you might want a vegetarian option. Any special requests? Also, will you be bringing anyone else from BAS? I'd be happy to add them to the lunch count.

Miriam

--
Emeritus Faculty, Watershed Sciences Department and the Ecology Center
Utah State University, Logan, UT 84322-5210
435-797-2584;
BLOCKEDqcnr@lusu.edu/directory/wurtsbaugh_wayneBLOCKED
"I'd rather die while I'm living, than live while I'm dead" - Jimmy Buffett

--
Emeritus Faculty, Watershed Sciences Department and the Ecology Center
Utah State University, Logan, UT 84322-5210
435-797-2584; BLOCKEDqcnr@lusu.edu/directory/wurtsbaugh_wayneBLOCKED
"I'd rather die while I'm living, than live while I'm dead" - Jimmy Buffett

Nuria Holmes

Subject: Fishery status below Cutler on the Bear River- Discussion
Location: Skype Meeting
Start: Tue 10/1/2019 9:30 AM
End: Tue 10/1/2019 10:00 AM
Show Time As: Tentative
Recurrence: (none)
Meeting Status: Tentatively accepted
Organizer: Davies, Eve

Hello-

Based on our first call with the Service folks, we scheduled this follow-up call to discuss aquatic issues below Cutler in a bit more detail. Enclosed please find a short discussion points list with a bit of info from our first call (as UDWR folks were not on that call), a list of discussion points that seemed useful (although there may be others also), and just for reference, the complete comment list from USFWS' PAD/Scoping comment letter (excerpted from our recent Proposed Study Plan document, filed with the FERC in early September). Talk to you shortly-
Eve

How does this time work for folks? I think we have a fair amount of flex with the time before 1p that day if this is not a good slot. I will send a couple of discussion points once we have a time 'settled'. Paul T- understood that you may not be able to make it, but it would be great if it works for you-
Eve

.....
[→ Join Skype Meeting](#)

Trouble Joining? [Try Skype Web App](#)

Join by phone

[\(503\) 813-6614](#) (US) English (United States)
[\(503\) 813-5252 \[Portland, OR\]](#) (US) English (United States)
[\(801\) 220-5252 \[Salt Lake City, UT\]](#) (US) English (United States)
[\(855\) 499-5252 \[Toll-Free\]](#) (US) English (United States)
[Find a local number](#)

Conference ID: 9768783

[Forgot your dial-in PIN?](#) | [Help](#)

.....

Main discussion points:

- Previously discussed the proposed evaluation range with USFWS staff and clarified potential future operations (comments 1 and 2, below); also scheduled a meeting with Bear River Refuge staff to discuss current and potential future Cutler operations and cooperation/collaboration opportunities and proposed communication methodologies
- Scheduled this call to discuss specifically potential bluehead sucker habitat downstream of Cutler Dam and potential need for a fish ladder/fish screens (comment 3, below)
- Bluehead and other native fishery habitat below Cutler Dam—current status?
- Aquatic species of concern regarding the need to explore fish ladder and screens? State fishery management goals for this reach of the Bear River?
- Water quality monitoring plan for proposed drawdown and study plan implementation (comment 4 below)

Complete USFWS Comment List (excerpted from the Proposed Study Plan Appendix):

	USFWS Comment	PacifiCorp Response
1.	<p>Study Request: Effects of Cutler Reservoir fluctuations on flows and water levels at Bear River Migratory Bird Refuge facilities downstream of Cutler Dam</p> <p>USFWS is concerned that large swings in the discharge of the Bear River will inhibit water diversions to the refuge, damage refuge infrastructure, or lead to flooding of privately owned property along the Bear River.</p> <p>USFWS recommends that a study be conducted to better characterize the proposed changes in reservoir elevations, Bear River discharge, and what effect it has on downstream facilities (pg. 3 has full details of study request).</p>	<p>PacifiCorp maintains the Hydraulic Modeling Study plan scope is an appropriate level of effort given the direct and indirect effects identified in the FERC's SD1. PacifiCorp is not proposing to change the overall quantity of water flowing downstream. Other large tributaries, multiple constriction points and an unknown number of irrigation withdrawals (potentially a very large number) downstream of Cutler Reservoir could have flow-related impacts on water in the Bird Refuge. However, operation of the Project would not incrementally contribute to these flow-related impacts because there would not be a change in the overall quantity of water flowing downstream as a result of the Project. The Bird Refuge will be addressed as part of the NEPA cumulative effects analysis to the extent that the Bird Refuge is within the geographic scope of effects from operation of the Project. PacifiCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.</p>
2.	<p>Study Request: The refuge occupies portions of the historical Bear River Delta and is the natural location where sediment carried in the Bear River is deposited. Information contained in the PAD notes the potential for two management actions that may release large volumes of sediment (and associated nutrients and contaminants) into the river that may eventually settle onto the refuge: reservoir fluctuations and removal of Wheelon Dam.</p> <p>USFWS recommends a study be</p>	<p>PacifiCorp's 2D hydraulic model will be constructed to explore a number of scenarios on operation water elevations and resultant effects on sediment transport. Data collection for the model will include soil classification as well as phosphorous and other potential pollutant data. The model runs will explore transport through the dam and management decisions to control sediment. These issues will be also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.</p>

	conducted to determine how greater reservoir fluctuations and/or the removal of Wheelon Dam could lead to changes in sediment and nutrient transport (details on pg. 4 of comments).	
3.	<p>USFWS is concerned that fish and other aquatic resources are not able to survive in this portion of the Bear River due to the inability to maintain flows and the inability to pass through the dam.</p> <p>USFWS requests that information on impediments to or opportunities for fish passage be provided and evaluated subject to Section 18 of the Federal Power Act. USFWS also recommends that the Project design consider the installation of fish screens at intake structures for the Project turbines and pumps in order to avoid fish entrainment.</p>	<p>PacifiCorp is interested in furthering the discussion with USFWS on impediments to or opportunities for fish passage to be evaluated as part of this relicensing. The need for this study is not clear; as the comment letter noted, there is currently no native or sport fishery downstream of the Project, nor are there threatened or endangered species or anadromous fish issues in or downstream of Cutler Reservoir. The agency resource goals and objectives (and for which species) that would be addressed by studying entrainment mortality or providing fish passage opportunities is not clear. PacifiCorp has further communicated with USFWS staff to address some of their questions and concerns resulting from SD1 and the PAD.</p>
4.	<p>Study Request: Effects on water quality from fluctuating reservoir levels and Wheelon Dam removal</p> <p>Destabilization of the stream bed or the bed of Cutler Reservoir may entrain and release nutrients and contaminants which would likely be harmful to aquatic wildlife and migratory bird habitat downstream of Cutler Dam. Specific concerns are that excess nutrients could lead to unwanted vegetation and harmful algal blooms, that heavy metals could concentrate in refuge impoundments, that low DO levels could lead to reduced food supply, and that any of these factors may lead to the spread of avian disease.</p> <p>USFWS recommends that a study be conducted to evaluate various water quality parameters that change as a result of greater reservoir level fluctuations and the removal of Wheelon Dam.</p>	<p>PacifiCorp's Water Quality Study proposes to monitor TP, dissolved phosphorus, orthophosphate, and DO during the drawdown to evaluate the potential for mobilization of nutrients. That data will be used to predict the effect of proposed operations on potentially mobilizing nutrients and levels of DO in the reservoir and downstream of the dam; heavy metals and other contaminants will be assessed as part of the Sedimentation Study. These issues will also be assessed through the proposed test fluctuation flows in 2020, which will mimic some of the proposed future operations.</p>

PHONE CONFERENCE WITH PACIFICORP, USFWS, UDWR, AND SWCA

October 1, 2019
10:30-11:00 am MDT

Attendees:

George Weekly - USFWS
Eve Davies – PacificCorp
Chris Penne, Chance Broderius – UDWR
Frank Shrier – SWCA

Eve began with introductions and stated the purpose of the call was to discuss USFWS comments on the Cutler Project PAD. Specifically, in their written comments, FWS brought up fish passage under FPA Section 18 and said upstream and downstream passage would be required to protect bluehead sucker (*Catostomus discobolus*).

Eve asked UDWR to summarize their recent effort to electrofish downstream of Cutler dam. Chance spoke up and detailed that his crew electrofished for 15 miles of the Bear River starting at Cutler tailrace. They found ‘absolutely no native fish’ in the lower Bear.

Eve commented that it is sad that we (collectively PacificCorp and the other users of the river) have caused so much change that there is no suitable habitat for the native fish, however, there is also nothing that relicensing or the company independently can do to mitigate this issue, as we do not control the flow of water below the dam, which is frequently zero during the summer months.

Chris Penne stated that UDWR is not likely to attempt recovery of blueheads or other natives given the state of the habitat and lack of flow. He said there were other higher priority areas within Utah that would preclude the effort downstream of Cutler Dam.

George Weekly explained that the original focus on the Lower Bear for bluehead suckers occurred because of the report that one fish was found in the lower Bear back in 1994 but he understands the state’s position that there isn’t any benefit of providing passage at Cutler. He did request that PacificCorp document the history of Bluehead in the lower Bear since 1994 and write up the gist of this phone call in the Aquatics technical report. He also added that he would like to speak with others in FWS before stating that nothing really needs to be done as it relates to FWS’s comment letter. Eve will contact George prior to the Oct 8, 2019 public meeting to confirm any statements regarding USFWS comment resolution.

Chris also added that every fall a bunch of gizzard shad keg up downstream of the dam and he would not ever want to see them gaining access to the upper Bear, giving an additional reason to not provide any migration ability upstream of the Project.

Eve asked what UDWR would like PacificCorp to provide during the studies. And asked the same of USFWS. Nothing was added to PacificCorp’s proposed plans at the moment.

From: [Frank Shrier](#)
To: [Nuria Holmes](#)
Subject: FW: Discuss Cutler status downstream of the dam
Date: Friday, December 06, 2019 1:01:07 PM

From: Frank Shrier
Sent: Thursday, September 12, 2019 2:53 PM
To: George_Weekley@fws.gov; Abate, Paul <paul_abate@fws.gov>
Cc: Davies, Eve <Eve.Davies@pacificorp.com>
Subject: Discuss Cutler status downstream of the dam

Hi Paul and George

Eve and I would like to meet on a conference call next week to discuss FWS's current position on downstream fish presence and habitat and what the Service wants to see in terms of fish passage at the Cutler project. What is your availability next week? Do you want to have UDWR on the call as well? Please let me know at your earliest convenience.

From: [Frank Shrier](#)
To: [Nuria Holmes](#)
Subject: FW: Conference call with PacifiCorp, SWCA, and UDWR
Date: Friday, December 06, 2019 1:04:18 PM

From: Frank Shrier
Sent: Friday, September 6, 2019 7:54 AM
To: Chance Broderius <cbroderius@utah.gov>
Cc: Davies, Eve <eve.davies@pacificorp.com>; Chante Lundskog <clundskog@utah.gov>; chrispenne@utah.gov; Lindsey Kester <lkester@swca.com>
Subject: RE: Conference call with PacifiCorp, SWCA, and UDWR

Sorry I 'm having trouble with Skype so Lindsey is resending the invite to 10:30 am which was my original set-up and is a good time for Eve to meet with us.

From: Chance Broderius <cbroderius@utah.gov>
Sent: Friday, September 6, 2019 7:00 AM
To: Frank Shrier <Frank.Shrier@swca.com>
Subject: Re: Conference call with PacifiCorp, SWCA, and UDWR

EXTERNAL: This email originated from outside SWCA. Please use caution when replying.

Frank, I am assuming this call is at 1pm today?

On Thu, Sep 5, 2019 at 4:24 PM Frank Shrier <Frank.Shrier@swca.com> wrote:

Please join us to coordinate the Cutler drawdown and mollusk sampling by UDWR in October

.....
[Join Skype Meeting](#)

Trouble Joining? [Try Skype Web App](#)

[Help](#)
.....

--

Chance Broderius
Northern Region Native Aquatics Biologist

APPENDIX D - CONSULTATION RECORD

Utah Division of Wildlife Resources
515 E 5300 S
Ogden, UT 84405
(385) 315-4676