



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550
www.deq.idaho.gov

Governor Brad Little
Director John H. Tippets

May 20, 2019

Kimberly Bose
Office of the Secretary
Federal Energy Regulation Commission
888 First Street, N.E.
Washington, DC 20426

Subject: Comments on Pre-Application Document and Study Requests for the Barber Dam Hydroelectric Relicensing FERC Project No. 4881

Dear Ms. Bose:

Enclosed, please find the Idaho Department of Environmental Quality's (DEQ) comments on the Barber Dam Hydroelectric Relicensing Project (FERC Project No. 4881).

DEQ appreciates the opportunity to comment regarding the Barber Dam Hydroelectric Project. In this letter, we are providing comments on the pre-application document (PAD), as well as submitting study requests.

Please do not hesitate to contact me at 208.373.0434 or Kati.Carberry@deq.idaho.gov with any questions or comments.

Sincerely,

A handwritten signature in black ink that reads "Kati Carberry". The signature is fluid and cursive.

Kati Carberry
Water Quality Analyst
Boise Regional Office

ec: Loren Moore, DEQ State Office
Mark Cecchini-Beaver, Deputy Attorney General
Kristina Fugate, Deputy Attorney General
Kevin Webb, Enel Green Power Hydro Licensing Manager
Lorna Jorgensen, Ada County Deputy Prosecuting Attorney

DEQ Comments and Study Requests for Barber Dam (FERC NO. 4881) Pre-Application Document

The Idaho Department of Environmental Quality (DEQ) appreciates the opportunity to provide comments on the Pre-Application Document (PAD) and study requests for the Barber Dam Hydroelectric Relicensing Project (FERC Project No. 4881).

The DEQ is a duly established executive department of the State of Idaho. Idaho Code §§ 39-104 and 67-2401(1). The statutory policy of the State of Idaho is to provide for the protection of human health and the environment (Idaho Code §§ 39-102 and 39-102A). DEQ is responsible for implementing these state policies. DEQ is the agency responsible for developing and implementing water quality standards (WQS) and evaluating water quality certification requests for federal licenses and permits pursuant to Sections 303 and 401 of the Clean Water Act (CWA) and Idaho Code §§ 39-101 to -130 and 39-3601 to-3639. Consistent with these authorities, DEQ must seek reasonable assurance that project operations will comply with the applicable requirements of sections 1311, 1312, 1313, 1316, and 1317 of Title 33 of the United States Code; the WQS (IDAPA 58.01.02); and other appropriate water quality requirements of Idaho law. While at this time DEQ is providing comments and study requests, DEQ also reserves the right to require other information from the applicant to the extent it is necessary to make a certification decision regarding the project.

Idaho's WQS IDAPA 58.01.02 have three basic components: 1) beneficial use classifications for waters of the state; 2) criteria to protect existing and designated beneficial uses; and 3) an anti-degradation policy. Idaho's anti-degradation policy, IDAPA 58.01.02.051, requires the maintenance and protection of existing uses and the level of water quality necessary to protect those uses. In addition, where the quality of a water body exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that level must be maintained and protected unless DEQ allows a lowering of water quality after completing a Tier II Analysis under IDAPA 58.01.02.052.08. DEQ's review of the PAD focuses on direct, cumulative and potential future effects of operation of the project on water quality and beneficial uses of the Boise River.

Comments on the PAD

The PAD describes WQS in Section 4.3.3 on pages 28-29. The PAD accurately indicates that the Barber Dam Hydroelectric facility is in the lower Boise River Subbasin assessment unit (AU) 17050114SW011a_06 (Diversion Dam to Veterans Memorial Parkway). This AU is designated for salmonid spawning, coldwater aquatic life, primary contact recreation, and domestic water supply. DEQ's 2014 Integrated Report (IR) classifies this AU as not fully supporting the salmonid spawning and coldwater aquatic life uses due to low flow and physical substrate habitat alterations. Studies done by Idaho Fish and Game, Asbridge and Bjornn (1988) and USGS (1997) found that "flow alteration and habitat contribute to impairment of use in all reaches of the Boise River below Lucky Peak Dam"(2014 IR pg. 437). The PAD also accurately states that in addition to the uses designated

for that particular AU, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics. See PAD p. 29. Those protections are described in IDAPA 58.01.02.100.

However, the PAD does not describe the four AUs further downstream on the Boise River. The two AUs immediately downstream in the Boise River are 17050114SW005_06 - Boise River Veterans Memorial Parkway to Star Bridge and 17050114SW005_06a - Boise River Star to Middleton. Both of these AUs are designated for salmonid spawning, coldwater aquatic life, and primary contact recreation in IDAPA 58.01.02.140. These downstream AUs are also not fully supporting their uses due to low flow alterations, physical substrate habitat alterations, temperature, sediment/siltation, and fecal coliform (2014 IR).

The most downstream stretch of the Boise River flows into the Snake River near Parma and includes two AUs: 17050114SW005_06b (Boise River Middleton to Indian Creek) and 17050114SW001_06 (Boise River Indian Creek to mouth). This stretch of the Boise River is impaired for low flow alterations, physical substrate habitat alterations, temperature, total phosphorus, sediment/siltation, and fecal coliform (2014 IR)

As part of its 401 Certification process, DEQ will assess the project's effect on water quality, including but not limited to heat loading, sediment accumulation upstream and substrate embeddedness downstream, decreased dissolved oxygen (DO), increased total dissolved gases, changes in nutrient cycling, and effects on aquatic life due to flow regime changes.

Additionally, Table 4-6 of the PAD includes some but not all of the WQS applicable to the Boise River in the vicinity of the project (2018 PAD pp. 28-29). The PAD states that the table "summarizes the water quality criteria and standards for these designated uses." (2018 PAD p. 28). However, this table is incomplete and potentially misleading because it does not include all of the water quality criteria applicable to the Boise River. The missing criteria include the general criteria in IDAPA 58.01.02.200, metals and toxics criteria for protection of aquatic life and human health in IDAPA 58.01.02.210, and applicable site-specific criteria in IDAPA 58.01.02.278. DEQ analysis of the project under section 401 will consider all applicable WQS.

Study Requests

The Applicants state that they are not proposing any additional resource studies for relicensing (2018 PAD p. 73). While acknowledging that limited water quality data is available in the immediate project vicinity, (2018 PAD p. 30), the Applicants state that continued operations are expected to provide and maintain existing water quality, (2018 PAD p. 30). DEQ believes the following studies are necessary for the reasons articulated below.

Study #1: Water Quality and Productivity Assessment of the Boise River

Objectives: The overall objective of the study described below is to adequately assess the project's effect on beneficial uses in the Boise River. Specifically the objectives of the study are to:

1. Measure flow continuously above and below Barber Dam.
2. Measure temperature, total dissolved gas (TDG), and DO concentration continuously over time, above and below the Barber Dam.
3. Describe temporal variations of DO concentration and temperature.
4. Measure nutrient concentrations above and below the Barber Dam monthly.
5. Evaluate the data to determine the projects effects on water temperature, DO concentrations, TDG, and nutrient cycling in the Boise River above and below the Barber Dam.

DEQ Jurisdiction: In Idaho, DEQ is responsible for reviewing activities subject to section 401 and evaluating whether the proposed activity provides reasonable assurance of compliance with the CWA; Idaho's WQS, including applicable water quality management plans (e.g., total maximum daily loads); and other appropriate water quality requirements of Idaho law.

Existing Information & Need for Additional Information: Currently, limited water quality data exists to provide DEQ with the reasonable assurance that the facility is in compliance with the CWA and Idaho's WQS, including Idaho's anti-degradation policy.

The PAD did not discuss data that has been collected at USGS site 13204760 (Boise River at Eckert RD NR Boise Idaho), Boise River at Eckert Road (1119USBR_WQX-BOI125), and USGS site 13203510 (Boise River below Diversion Dam near Boise ID). Water quality data including flow, temperature, specific conductance, dissolved oxygen, pH, Periphyton, Chlorophyll-a, pheophytin, phosphorus, total nitrogen, ammonia, nitrite, ortho-phosphorus, turbidity, and suspended sediment has been collected intermittently since 1954. Although these sites have not collected the same water quality parameters consistently during the same periods of time, the information should be investigated and summarized.

In addition to data needs for the 401 certification process, the reaches below Barber Dam are impaired for temperature, sediment, bacteria, and phosphorus. Data is needed to determine the extent to which project operations affect these downstream reaches.

Lastly, new water quality data collected in the immediate vicinity of the project will provide a baseline against which potential effects of the project's operation can be assessed in the future, assuming that this same information is collected regularly throughout the project's life.

Information for this study includes five categories: flow, temperature, dissolved oxygen, total dissolved gas, and nutrients. The data needs for each of these parameters are discussed below.

Before DEQ can consider issuing a water quality certification for the relicensing of Barber Dam, additional water quality data is necessary to complete an antidegradation analysis and determine the need for certification conditions.

Temperature: The PAD did not provide any information related to temperature in the Boise River. Temperature data is needed to assess the potential effects to aquatic life uses from the project. Site specific criteria for salmonid spawning uses in the Boise River include a maximum weekly maximum temperature of thirteen degrees Celsius from November 1 through May 30th to protect brown trout, mountain whitefish, and rainbow trout spawning (IDAPA 58.01.02.278.04). In addition, the coldwater aquatic life use criteria require that water temperature be at 22 degrees Celsius or less with a maximum daily average of no greater than 19 degrees Celsius (IDAPA 58.01.02.250.02).

DEQ needs temperature data to complete an antidegradation analysis and reasonable assurance that the project will comply with the WQS and other applicable law. Additionally, the reaches below Barber Dam are currently impaired for temperature. Further analysis is needed to determine whether and to what extent the Barber Dam is affecting downstream temperatures.

Dissolved Oxygen: The PAD did not provide information related to dissolved oxygen. Dissolved oxygen criteria for water discharged from dams, reservoirs and hydroelectric facilities are provided in IDAPA 58.01.02.276. In addition, waters downstream of the point of measurement established under IDAPA 58.01.02.276.05 are subject to the dissolved oxygen criteria in IDAPA 58.01.02.250.02.a and 250.02.f.

DEQ needs dissolved oxygen data to complete an antidegradation analysis and determine whether conditions are necessary to provide DEQ reasonable assurance that the project will comply with the WQS and other applicable law.

Total Dissolved Gas: The PAD did not include data for total dissolved gas. The general aquatic life use criteria require the total concentration of dissolved gas to not exceed 110 percent of saturation at atmospheric pressure at the point of sample collection (IDAPA 58.01.02.250.01.b). IDAPA 58.01.02.300 provides additional standards related to gas supersaturation.

DEQ needs total dissolved gas data to complete an antidegradation analysis and determine whether conditions are necessary to provide DEQ reasonable assurance that the project will comply with the WQS and other applicable law.

Nutrients: The PAD did not include a discussion of nutrients in the Boise River. The Barber Pool has the potential to alter water quality and productivity. In 2015 EPA approved DEQ's Lower Boise River Total Phosphorus TMDL. The DEQ has summarized most of the available water quality data in the Boise River as part of this TMDL development.

The levels of past and ongoing efforts to develop the Lower Boise TP TMDL should be used in addition to Barber Dam monitoring to characterize the current water quality conditions within and directly below the Barber Pool and model how the proposed project operations may change those conditions. DEQ needs nutrient data to complete an antidegradation analysis and determine whether conditions are necessary to provide DEQ reasonable assurance that the project will comply with the WQS and other applicable law.

Nexus Between Project Operations and Effects on Resource & How Study Results Would Inform Development of License Requirements: Although operating the project has the potential to affect water quality and aquatic habitat, the PAD did not assess any of these potential effects. The Barber Dam and its associated operation has the potential to degrade water quality above and below the Dam, thus affecting the salmonid spawning and cold water aquatic life beneficial uses that DEQ is required to protect.

Study Methodology: DEQ is requesting that continuous data be collected at monitoring stations approved by DEQ. Stations should be located above and below the Dam within close enough proximity to the project that the data is representative of the conditions at the site. The information collected should include continuous flow, temperature, dissolved oxygen, and total dissolved gas, and monthly nutrient data.

Level of Effort and Cost Estimate: \$43,100: Typical annual cost for installation and maintenance of a USGS Gage is \$20,000. However, flow calculations from existing gages may be more appropriate. If flow is calculated from existing gages, temperature, DO, and TDG should be measured using deployable probes for continuous measurements. Lab analysis for nutrients collected at two locations 12 times a year is approximately \$3,100 per year. The cost for the gages includes man hours for monitoring.

Study #2: Assessment of Flow and Habitat Alterations and Effects on Cold Water Aquatic Life and Salmonid Spawning Beneficial Uses within the Affected Reach of the Boise River

Objective: The overall objective of the study described below is to adequately assess the facility's effect on beneficial uses in the Boise River. Specifically the objective of the study is to assess the extent to which the Barber Dam has impacted cold water aquatic life and salmonid spawning beneficial uses due to flow, substrate, and habitat alterations.

DEQ Jurisdiction: In Idaho, DEQ is responsible for reviewing activities subject to section 401 and evaluating whether the proposed activity provides reasonable assurance of compliance with the CWA; Idaho's WQS, including applicable water quality management plans (e.g., total maximum daily loads); and other appropriate water quality requirements of Idaho law.

Existing Information & Need for Additional Information: The Barber Dam creates a barrier that prohibits sediment transport downstream due to natural seasonal flows. Sand that is trapped behind the dam along with sand that washes downstream during high flows contributes to high levels of embeddedness, limiting the spawning of trout and whitefish (1999 Lower Boise River TMDL, Appendix C p. 10). Further analysis of sediment entrapment and flushing is needed to assess the potential impacts to downstream habitats.

As mentioned above and documented in the 2014 Integrated Report, the entire lower Boise River is impaired for low flow alterations and physical substrate habitat alterations. The 1999 Lower Boise River TMDL describes the Boise River below Barber Dam as composed of mostly cobble-sized material embedded in sand. Flow regulation has caused a narrowing of the river channel, and braiding and sinuosity are largely absent because the sediment supply and peak flows have been reduced. Sediments typically remain on the stream bed until flows increase enough to flush them out of the substrate. If flows are controlled, sediments can become cemented in the substrate which leads to embeddedness. Lastly, DEQ is concerned with the Dam's ability to restrict flow in the Boise River during power outages. DEQ requires reasonable assurance that if the power is shut off due to unforeseen circumstances, the Boise River's beneficial uses will not be impacted.

Before DEQ can consider issuing a water quality certification, which includes an antidegradation analysis, an assessment needs to be completed that documents the effect Barber Dam has on the flow and substrate habitat for aquatic life in the Boise River above and below the project.

Nexus Between Project Operations and Effects on Resource & How Study Results Would Inform Development of License Requirements: The 1999 Lower Boise River TMDL (pp. 6, 16) states that the Barber Dam has altered the flow regime and the physical and biological characteristics of the lower Boise River and describes the river below Barber Dam as being sediment starved.

Additionally, Appendix C to the 1999 Lower Boise River TMDL states that Idaho Fish and Game identified a lack of spawning gravels as a significant cause of impairment to cold water biota in the Boise River. It also states that the presence of dams in the upper part of the river has severely limited the recruitment of new gravels and the potential spawning gravels that are in place are both embedded and are frequently dry during low flow conditions (1999 Lower Boise River TMDL, Appendix C p. 12).

Study Methodology: The study should incorporate representative transects throughout the project area upstream and downstream of Barber Dam. Each transect should characterize the channels substrate composition and geomorphology. DEQ's Beneficial Use Reconnaissance Program or equivalent protocols should be used in collection of macroinvertebrates, algae, fish, and aquatic habitat. USGS methods should be used for characterizing the river's geomorphology.

Level of Effort and Cost Estimate: A typical beneficial-use-reconnaissance-program (BURP) site requires approximately 40 person hours, electrofishing apparatus, two boats and the associated sampling instruments. Analytical costs run approximately \$2,500.

Study #3: Assessment of the Sediment behind Barber Dam.

Objective: Characterize the sediment and any contaminants accumulated behind Barber Dam.

DEQ Jurisdiction: In Idaho, DEQ is responsible for reviewing activities subject to section 401 and evaluating whether the proposed activity provides reasonable assurance of compliance with the CWA; Idaho's WQS, including applicable water quality management plans (e.g., total maximum daily loads); and other appropriate water quality requirements of Idaho law.

Existing Information & Need for Additional Information: The PAD did not include information about contaminants in the sediment behind the dam, including those related to historical mining in the Boise River Basin. This AU that includes Barber Dam is designated for salmonid spawning, coldwater aquatic life, primary contact recreation, and domestic water supply. There is potential for contaminants to be present in the sediment behind the Dam, which if found, could threaten all of these beneficial uses downstream of Barber Dam in the event they are mobilized.

Before DEQ can consider issuing a water quality certification, which includes an antidegradation analysis, a characterization of the sediments behind the dam needs to be completed documenting the possible contaminants that could be released and what impact that would have on the beneficial uses in the Boise River above and below the project.

Nexus Between Project Operations and Effects on Resource & How Study Results Would Inform Development of License Requirements: The PAD describes on page 28 that Barber Lumber Company had difficulty transporting logs due to high water and silt from upstream mining operations that clogged the pond. The PAD also states that the project vicinity is characterized by low to moderate seismic activity (2018 PAD pg.22). Thus, the potential impacts to the Boise River's water quality due to a compromise in the Dam's structure should be assessed, including the characterization and assessment of possible contamination from the release of these fine silts and sediments that have built up behind the Barber Dam.

Study Methodology A representative number of core samples from behind Barber Dam should be collected at depths reasonably expected to mobilize streambed sedimentation in the event of a dam breach. Sampling should extend a minimum of 100 feet upstream of the dam and samples should be analyzed for total recoverable metals using DEQ-approved methods.

Minimum reporting requirements should include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver, and meet DEQ-approved methods.

Level of Effort and Cost Estimate: Sample analysis is approximately \$70 per sample. Each core sample collection would be approximately \$1,000 to collect.

Depending on the results of these initial studies, DEQ may request follow-up studies to assess mitigation options.