



SUBJECT - Low Impact Hydropower Institute (LIHI) Recertification Review for the Jordanelle Project #29

BACKGROUND

The Central Utah Water Conservancy District (CUWCD) is headquartered in Orem, Utah¹. The Jordanelle Hydroelectric Project (Project) is located on the Provo River at river mile (RM) 49 in Wasatch County, approximately four miles north of Heber City, Utah. The Project's powerhouse is situated at the base of Jordanelle Dam (latitude of 40.59845° N, longitude of -111.42411° W) below Jordanelle Reservoir and drains an area of 252 square miles (sq. mi.).

Lost Lake (40.67423° N. -110.94157° W), Washington Lake (40.67647° N. -110.96368° W) and Trial Lake (40.67989° N. -110.95709° W) are upstream of the Project and drain into the Jordanelle reservoir. The Deer Creek reservoir (40.40649° N -111.52824° W) is downstream of the Project and receives release from the Project. Releases from Deer Creek flow in a southwesterly direction to Utah Lake near Orem, Utah. Finally, releases from Utah Lake flow in a northern direction through Salt Lake City and eventually empty into the Great Salt Lake.

The Project is not licensed by the Federal Energy Regulatory Commission (FERC) but is authorized through a lease of power privilege from the US Department of the Interior (USDOI), Bureau of Reclamation's (BREC) Central Utah Project (CUP). By letter dated August 16, 2000, the USDOI selected the CUWCD and Heber Light and Power (HLP) as the joint lessees for development of the hydropower at Jordanelle Dam under a lease of power privilege².

In 2005, an Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act (NEPA) of 1969. The CUP and CUWCD were Joint Lead Agencies for preparation of the EA. The BREC and the Utah Reclamation, Mitigation, and Conservation Commission (URMCC) served as cooperating agencies for the NEPA analysis.

The EA addressed several purposes of the project, including:

- Allowing a Lease of Power Privilege for the Jordanelle Dam Hydroelectric Project;
- Allowing the construction, operation, and maintenance of facilities and transmission lines associated with the Jordanelle Dam Hydroelectric Project;
- Meeting the objectives of hydroelectric power potential at Jordanelle Dam, as authorized through the Colorado River Storage Project (CRSP) Act of April 11, 1956;
- Avoiding impacts to natural resources in the Jordanelle Reservoir and on the Provo River;

¹ Owner/Operator - CUWCD - 355 West University Parkway, Orem, UT 84058-7303 – LIHI Contact - Daryl Devey, Bonneville O&M Manager – (801- 226-7117), Assistant General Manager - Richard L. Tullis, P.E. – (801- 226-7122)

² A lease of power privilege grants a non-federal entity the right to utilize, consistent with CUP purpose, water power head and storage at and/or operationally in conjunction with the CUP, for non-federal electric power generation and sale. The authority for lease of power privilege under BREC legal statutes includes among others, the Power Development Act of 1906 and the Reclamation Project Act of 1939.



- Avoiding impacts to federal projects and facilities, primarily the Jordanelle Dam and associated features;
- Generating hydroelectric power as an incidental use to the delivery of water for CUP purposes;
- Protecting water quality in Jordanelle Reservoir and the Provo River

The EA found no significant issues associated with implementing the Project, a Finding of No Significant Impact was prepared by the Lead Agencies. The original Project startup occurred in June of 2008 with commercial operation occurring in July of 2008.

A second EA was prepared in April 2012 by the US Bureau of Reclamation (USBR) to assess impacts from implementation of the Jordanelle Reservoir Resource Management Plan (JRRMP) as a water supply project. This EA concluded that implementation of that JRRMP with no changes in operation of the reservoir would have no significant environmental impacts. This Plan was reviewed for updated data applicable to the various LIHI criteria and is presented below as appropriate.

While Jordanelle Dam is a critical component of the Project, it was not built primarily for energy production. The Project generates power as an incidental use to the delivery of downstream water for municipal, industrial, irrigation and water quality purposes in Salt Lake City and the northern Utah County. Additional project purposes include flood control, recreation and fish and wildlife enhancement.

The dam is a rolled earth-fill structure with a fuse plug emergency spillway and outlet works. The reservoir has a storage capacity of 311,000 acre-feet at elevation 6,166.4 feet. The total reservoir storage capacity is 361,500 acre-feet at elevation 6,182.0 feet. The rolled earth embankment section of Jordanelle Dam has a structural height of 300 feet and a crest length of 3820 feet at elevation 6185.0 feet. The emergency fuse plug spillway is located near the left abutment and consists of an unlined inlet channel, a concrete lined trapezoidal channel, an earthen plug section, a concrete chute, and a 9.5-foot by 10-foot concrete double box conduit. The design flow of the spillway is 5,510-cfs at elevation 6182.0 feet.

The outlet works is located within the left abutment and consists of two primary outlet works intake structures, the Low level outlet works (LLOW) and the selective level outlet works (SLOW) merging into a common outlet pipe. The capacities for the outlet works are 3,269-cfs and 2,153-cfs respectively at elevation 6,086.7 feet.

A bypass system taps into both the SLOW and LLOW upstream of the emergency gates with a capacity of 300-cfs at elevation 6,166.0 feet.

The powerhouse is a reinforced concrete structure located partially within the rock berm at the toe of the dam, west of the existing outlet works. The penstock is constructed from the 72-inch-diameter connection in the outlet conduit and then routed to the powerhouse where it bifurcates into two 66-inch-diameter pipes feeding the turbines.

The floor of the powerhouse is set at an elevation above high tailwater elevation. This level allows maintenance to be performed on the turbines without the need to de-water the tailrace. The turbines,



generators, and all mechanical equipment are located at this level. The turbines discharge into a tailrace channel below the turbine floor.

The major equipment located on the turbine floor includes two turbine/generator units; turbine controllers; turbine inlet valves located on the penstock to each turbine; a hydraulic power unit for each unit and valve; and sump pumps. The powerhouse arrangement includes a control room area. A control room is required to house the control panels, switchgear, motor control center, panel boards, batteries, and battery chargers. The control room is isolated from the turbine floor and sound-proofed to provide a quiet space for the operator. It is located above the turbine floor to protect the equipment from potential flooding, and is located near the plant substation to minimize conduit and cable runs.

The powerhouse contains two horizontal Francis turbines, each rated at approximately 300-cfs. The turbines drive synchronous generators with output ratings of about 6 megawatts (MW) each. Each generating unit is equipped with a butterfly inlet valve, manual and automatic controls, and electrical switchgear. Power is produced at 12.47 kV and is then stepped up via a transformer, as necessary, to the transmission voltage at the nearby substation. The project generates 39,000 MWh annually.

On December 13, 2007, the project was originally certified by LIHI as the “Jordanelle Hydroelectric Project. – LIHI Certification No. 29”, effective June 10, 2007 for a term of eight years ending on June 10, 2015. On June 19, 2015 the LIHI certification was extended until December 31, 2015. LIHI received a complete application for a new term of Low Impact Certification for the Project on October 28, 2015. The public comment period ended at 5 pm Eastern time on December 28, 2015. No comments were received.

LIHI RE-CERTIFICATION PROCESS

Recertification review focuses solely on determining the answers to the following two questions:

- 1) Has there been a material change in circumstances since the original certification was issued?

For purposes of recertification review, a “material change in circumstances” will mean one or both of the following:

(a) Non-compliance: Since receiving its last certification from LIHI, the certificate holder/applicant has not implemented, or has delayed implementing, or has done an inadequate job of implementing obligations at or near the facility that are of relevance to LIHI’s criteria. These obligations could be in the form of terms and conditions of license(s), settlement agreements, resource agency recommendations or agreements, LIHI conditions of certification including annual notifications, agreements with local municipalities or other third parties or similar relevant obligations; or

(b) New or renewed issues of concern that are relevant to LIHI’s criteria: Since receiving its last certification from LIHI, either new issues of concern and relevance to LIHI’s criteria have emerged that did not exist or were not made known to LIHI at the time of certification, or there continues to be ongoing problems with previously known issues that appeared to LIHI to be



resolved or on the road to resolution at the time of certification but in fact are not resolved, and are ongoing at the time of the re-certification application.

If a new license, settlement agreement, prescription, biological opinion or other similar regulatory decision has been made since the original recertification, these documents will be evaluated to determine if new or renewed issues have been raised.

- 2) Have any of LIHI's criteria, or the Board's interpretation of one or more criterion, changed in meaningful ways since original certification that are applicable to the circumstances of the facility seeking re-certification?

I reviewed the LIHI application to assess adherence to the LIHI certification criteria with the above in mind. On March 14, 2016, I emailed the agencies listed in the Project's Recertification application (USDOI)³, Utah Reclamation, Mitigation, and Conservation Commission (URMCC)⁴, Salt Lake County Fish and Game Association (SLCFGA)⁵ and the USBR⁶.

In my email I stated, "... I am the LIHI reviewer tasked with determining whether the project should be LIHI recertified. I am emailing you today because you have been identified in the application as resource agency and non-governmental organization contacts familiar with the project. I would appreciate your perspective regarding the project's proposed operation with regard to satisfying its licensed environmental obligations and your views pertaining to the project being "low impact". Without your input my review can only be based on the documents received from the applicant. Thank you for your time in this matter. Please refer to the LIHI website for more details on the application and LIHI low impact criteria. <http://lowimpacthydro.org> ..."

In addition, I left voice messages with the Provo River Water Users Association (PRWUA)⁷ and the Utah Council, Trout Unlimited (UCTU)⁸. At the suggestion of LIHI staff, I also called the applicant and the SLCFGA. Since March 28, 2016 I have called the SLCFGA a number of times and have left voice messages. The SLCFGA has not returned my calls.

My phone conversation with the applicant, Mr. Daryl Devey, centered around a general discussion on project operation. Due to the fact that the Project is regulated by the USBR and not the FERC, I requested any documents or correspondence that may have occurred since submittal of the application to LIHI. Mr. Devey said he would provide additional data.

³ USDOI, Reed Murray, Central Utah PCA Program Director , 302 East 1860 South Provo, UT 84606, 801-379-1237 - rrmurray@usbr.gov

⁴ URMCC, Mark Holden - 230 S. 500 E., Suite 230, Salt Lake City, UT 84102, 801. 524-3146 x 103 - MHolden@usbr.gov

⁵ SLCFGA, Dan Potts - 1177 West Bullion Street Murray, Utah 84123, 801. 539-3517- slcfg@hotmail.com

⁶ USBR, Wayne Pullan, Upper Colorado Region, Provo Area Office, 302 East 1860 South Provo, UT 84606, 801. 379-1000 - WPullan@usbr.gov

⁷ PRWUA, Keith Denos, General Manager, 265 West 1100 North, Pleasant Grove, UT 84062, 801 -796-8770.

⁸ UCTL, Paul Dremann, 2348 Lynwood Drive, Salt Lake City, UT 84109, 801 -467-3862.



I received the following response from Mr. Reed Murray from the USDO:

"...I am the Director of the Central Utah Project Completion Office, Department of the Interior, and I am responsible for the lease arrangement with the Central Utah Water Conservancy District (District) on the Jordanelle Hydroelectric Power Facility (Power Facility).

The Power Facility was constructed in 2008, under a Lease of Power Privilege between the District and the Department of the Interior. The Power Facility is privately owned by the District and is connected to the Jordanelle Dam which is a Federal facility. Under the lease arrangement, the District owns, operates, and benefits from the Power Facility. The District makes a lease payment to the Department of the Interior for the opportunity to utilize Jordanelle Dam.

Prior to construction of the Power Facility, an Environmental Assessment was prepared and a Finding of No Significant Impact was issued on July 6, 2005. The District and the Power Facility are in compliance with the Environmental Assessment and environmental commitments/obligations associated with the Power Facility.

The Power Facility was authorized under Public Law 102-575 which provides for hydroelectric power development on the Central Utah Project, a federal water project. The law is very specific in stating that water used for power development "shall only be incidental to the delivery of water for other authorized project purposes." This means that water is not released specifically for power generation. The result of this mandate is that the Power Facility has no impact to the environment and resources. I believe that the Power Facility meets the definition of "low impact".

On April 8, 2016, I received a phone call from Mr. Wes Johnson with the UCTU⁹ after which I forward my original March 14, 2016 email text to him. On April 11, 2014 I received an email from Mr. Paul Burnett with UCTU¹⁰ stating that Wes Johnson had forwarded him my email. He requested information on the LIHI certification process which I provided on the same day. I also stated that any support or concerns on the Project that UCTU might have should be sent to me.

On April 25, 2016, I received an email from Mr. Jordan Nielson with UCTU¹¹. In his email, he stated, "... While the Jordanelle Hydropower station was certified previously, and operations have remained relatively unchanged, we took some time to review the eight standards that the LIHI certification requires to ensure that Trout Unlimited can remain supportive. As an organization Trout Unlimited is interested in the overall health of the entire watersheds that contribute water to Jordanelle Reservoir. We believe that improvements could be made to flow operations and water deliveries upstream of Jordanelle Reservoir to solve flow challenges in the Weber River and improve the overall watershed health. However, these operations appear to be outside of the control of the Jordanelle Hydropower facility. Based on our assessment, the Jordanelle hydropower station does not adversely affect the

⁹ UCTU – Wes Johnson, 801.479.8846 – jwes3@msn.com

¹⁰ UCTU - Paul Burnett, 801.436.4062 , Project Coordinator, Trout Unlimited, 5279 South 150 East, Ogden, UT 84405 - pburnett@tu.org

¹¹ UTTU - Jordan Nielson, 801.850.1221, Price River Project Manager, Trout Unlimited, 429 West 390 South, Spanish Fork, UT 84660 - jnielson@tu.org



fishery or water quality below its operation. It, in fact, as a part of the operation of Jordanelle Reservoir as a whole has created improved water quality and a more abundant fishery in the middle Provo River.

Prior to the installation of the Jordanelle Dam, and subsequently the Jordanelle hydropower station, the Provo River above Deer Creek Reservoir did not support a strong fishable population of trout. While Trout Unlimited has no water quality data to support a hypothesis regarding the change in the population, it is typical for Utah streams to have high flow events in the spring and low base flows through the remainder of the summer resulting at times in temperatures that are detrimental to fish health. The middle Provo River fishery created by Jordanelle Dam creates more consistent flows and lower water temperature in the river through releases from the bottom of the water column of Jordanelle Reservoir. This operation, in conjunction with valley wide stream restoration efforts, has resulted in a fishery that is considered “Blue Ribbon” in the state of Utah and a fishing destination for anglers far and wide. Trout Unlimited chapters in nearby places such as Park City, Utah Valley, and Salt Lake Valley organize and support events on the middle Provo River.

Trout Unlimited supports the recertification of the Jordanelle Hydropower station as a LIHI facility. Thank you for the opportunity to review the application and make comments.”

On April 21, 2016, I received an email from the applicant that provided two USGS locations (10155200 and 10155500) downstream of the Project. I viewed both locations and found that each location provided recorded historic daily gauge heights and stream flows. I contacted the applicant again to get additional information on a web link mentioned in the LIHI application that would provide more water quality data below the Project, which was provided on April 29, 2016 by Mr. Devey. The link is an independent site that has three water quality sites below Jordanelle. The station (Provo River below Jordanelle) has real time (hourly) data for temperature, dissolved oxygen, pH, and conductivity and is transmitted into the District’s SCADA system. Mr. Devey stated that review of this data would support his statement that no deviations from required water quality standards have been experienced.

No other comments have been received.

RE-CERTIFICATION REVIEW

This section contains my review of the Project with regard to LIHI’s certification criteria focusing solely on determining if there has been a material change in circumstances since the original certification was issued.

It is important to restate that the Project is not licensed by the FERC, but is authorized through a lease of power privilege from the USDOJ, USBR’s Central Utah Project. Therefore, no FERC docket exists to allow for a review of historical documents.



LIHI Criterion-Flows and Pond Fluctuations

As required in the EA and the Lease of Power Privilege of a Non-Federal Hydroelectric Generation Facility, the Project does not change the operation of Jordanelle Dam and Reservoir. All Project operation and power generation is an incidental use to the delivery of water for CUP purposes.

In my phone discussion with the applicant, I asked if any Federal or state agencies or other NGOs have expressed any concerns with the operation of the Project with respect to flow releases during the prior LIHI certification period. Mr. Devey stated that no concerns have been received. My review finds no evidence that deviations have occurred or areas of new concerns have arisen during the prior certification period and therefore this LIHI criterion is satisfied.

LIHI Criterion-Water Quality

The CUWCD has assumed a leading role in the Provo River Watershed Council (PRWC). The PRWC is a coalition of approximately 20 different agencies and interested groups who work cooperatively to protect the watershed. The PRWC meets regularly in a cooperative effort to understand the watershed, identify priorities, and develop and implement long-term strategies to protect water quality.

Each year the PRWC meets to review the watershed protection work plan, develop and establish the annual water quality monitoring programs, determine the program funding requirements and set an annual budget. The annual budget, currently about \$300,000, includes funding for:

- sample collection and laboratory analysis from monitoring locations throughout the watershed,
- streamflow gauges and groundwater monitoring (USGS),
- water quality data management,
- watershed education and community outreach,
- invasive species (quagga mussel) control,
- special projects, and
- watershed development review.

Additionally, as a public water system in the State of Utah, the CUWCD is required to develop, submit and implement a Drinking Water Source Protection Plan (DWSP). The plan requirements include delineation of the watershed protection zones, development of a list of potential contamination sources within the protection zones, and subsequently preparing and implementing management plans to provide protection for surface water sources within the watershed protection zones.

This plan is a living document that is reviewed and updated every six years. The most recent update to the plan was completed in 2013.



The state of Utah classified the Jordanelle Reservoir for beneficial uses 1C, 2A, 3A, and 4¹². Water quality standards are violated if the chronic or acute values are exceeded more than once in three years.

The CUWCD has committed to maintaining dissolved oxygen concentrations above the State of Utah and EPA standards. Temperature, dissolved oxygen, pH, and conductivity profiles are taken monthly on the Jordanelle Reservoir. The CUWCD presently has a water quality monitoring station located at an established gauging location approximately 1,500 feet downstream of the outlet of the dam. The CUWCD operates the facilities to maintain the standard and post water quality information on their website for a reasonable period of time. This station (Provo River below Jordanelle) has real time (hourly) data for temperature, dissolved oxygen, pH, and conductivity and is transmitted into the District's SCADA system¹³. Data from this site have been used to ensure temperature releases downstream. In addition, dissolved oxygen monitoring is maintained in the tailrace of the hydropower plant and incorporated into the SCADA system.

The Jordanelle Reservoir helps improve the water quality in the middle Provo River by retaining phosphorus, and controlling dissolved phosphorus levels in releases through the SLOW which is operated by CUWCD. Operations for managing temperature and/or phosphorus levels have not changed by the presence of the power plant.

The applicant provide me the web link to view water quality metrics below the Project and also stated to me that no concerns pertaining to water quality have been received from any environmental resource agencies. Also on April 25, 2016, the UCTU concluded that no water quality impacts were occurring below the Project. Throughout the prior LIHI certification period, adherence to the above water quality standards has been maintained. No non-compliance issues or areas of new concerns were found.

LIHI Criterion-Fish Passage and Protection

Impounding the Provo River above Jordanelle Dam modified the hydrologic regime of the river below the dam. The waters downstream of a reservoir are influenced by the quantity and timing of reservoir discharge as well as the released water temperatures, dissolved oxygen, and gas pressure. Although little descriptive information is available to provide insight into fish habitat, the success and popularity of the reservoir suggests that, habitat adequately supports the game fish sought by anglers.

The Project is located at the base of Jordanelle dam. The dam was built with the understanding that fish passage would not be provided because of the high velocity water released from the valves. However, water temperature can be adjusted from the selective level inlet structure to provide for water quality and fish and wildlife benefits.

¹² Class 1C - Protected for domestic purposes with prior treatment processes as required by Utah Department of Environmental Quality. Class 2A - Protected for primary contact recreation such as swimming. Class 3A - Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain. Class 4 - Protected for agricultural uses including stock watering and irrigation of crops.

¹³http://iutahepscor.org/data_modeling.shtml and <http://repository.iutahepscor.org/dataset/iutah-gamut-network-raw-data-at-provo-river-below-jordanelle-advanced-aquatic-site-pr-bj-aa>



Water from the dam can be released downstream through the powerhouse or a selective level and low level inlet structure. The low level inlet conveys flow through piping and tunnels to the outlet works. The outlet works consists of two 72 inch fixed cone valves and a bypass jet flow valve. Fish are unable to swim past the fixed cone valves. Under existing operating conditions any entrained fish enter the outlet works conduit via the reservoir intake structures. They are discharged through the outlet works control valves, passing through the valve mechanism into the stilling basin at velocities often exceeding 100 feet per second. Mortality in entrained fish through the outlet works is extremely high.

The hydropower plant does not change the status of the operation of the dam. All power plant water is released through the turbines. The hydropower facility has no additional impact on riverine fish beyond that caused by the operation of the outlet works discussed above. Movement of fish through the outlet works of Jordanelle Dam is infrequent. The discharge of all or part of the release from Jordanelle Dam through hydroelectric turbines does not affect the potential or frequency of fish entrainment, nor is it expected to increase fish passage mortality.

There are no anadromous and/or catadromous fish in the area. Any fish that may have historically moved from Utah Lake up the river to spawn are blocked by multiple diversion structures that serve as fish passage barriers and Deer Creek Reservoir, all of which are downstream of Jordanelle Dam and the hydropower plant.

The 2005 EA for the Project was reviewed by federal, state and local wildlife agencies. No comments were received from any of these agencies concerning fish passage. Throughout the prior LIHI certification period no new concerns have arisen. The 2012 EA identified that fisheries and wildlife benefits are derived as the project is managed for water supply. The reservoir is not operated to enhance fish passage, but instead focuses on fisheries as a recreational resource, in large part due to stocking of the reservoir for game species. It was determined that no changes in fisheries impacts would occur with the implementation of the JRRMP.

The presence of nitrogen supersaturation and associated gas bubble disease (GBD) can negatively affect fish. Nitrogen supersaturation below hydraulic structures is typically associated with spillways where highly aerated flows are plunged deep into stilling basins, followed by deep, slow-moving downstream flow conditions. Part of the entrained air is driven into solution before it has risen to the surface and escaped into the atmosphere. The slow-moving, deep downstream flow conditions allow the condition to persist.

Hydroelectric turbines may induce similar increases of gas saturation in situations where low water levels and vortex-prone intake conditions are present. However, the potential for the Project to create nitrogen supersaturation problems is very small since the existing reservoir intakes are not prone to vortex formation and gates are operated to reduce intake velocities. Also, the powerhouse tailrace bay configuration results in turbine draft tube exits that are only 14 to 16 feet below the tail water surface elevation. The tailrace bay geometry produces consistent levels of turbulence and mixing. At the tailrace outlet, the depth of flow is reduced to only 3 to 4 feet. Shallow depth of flow and turbulence in the stilling basin pool and downstream channel are likewise conducive to the elimination of supersaturation.



In my phone discussion with Mr. Devey, he stated that no concerns pertaining to fish passage at the Project were received since initial startup of operations in July of 2008. As previously noted, Mr. Jordan Neilson with UCTU stated that the operation of Jordanelle Reservoir as a whole has created improved water quality and a more abundant fishery in the middle Provo River. Throughout the prior LIHI certification period, no non-compliance issues or areas of new concerns were found.

LIHI Criterion-Watershed Protection

As part of pre-construction planning of the Jordanelle Reservoir, a Water Quality Management Plan (WQMP) was developed. This plan was developed by a multi-agency (state, local, and federal) committee under the direction of the Utah State Division of Environmental Health (UDEH). The WQMP was certified by the State of Utah in December, 1984. The Environmental Protection Agency (EPA) additionally approved both the plan and the implementation program for the plan.

The WQMP includes components or commitments for each agency involved; one of the components being that the USBR is responsible for establishing and maintaining an appropriate management boundary around the reservoir which includes provisions for water quality protection by establishing a buffer zone around the shoreline. This shoreline management plan is known as the Jordanelle Reservoir Management Boundary Plan (JRMBP). The buffer zone was established with consideration given to: water quality protection, protecting the reservoir from potential development, recreation development, wildlife mitigation, and geology/slope stability. The shoreline management plan's buffer zone qualifies the Project to three extra years of certification.

A review of the Project indicates that during the prior LIHI certification period, the Project is in compliance with concerns pertaining to watershed protection. Additionally, no new areas of concern have occurred.

LIHI Criterion-Threatened and Endangered Species

The Jordanelle Dam 2005 EA included the threatened bald eagle, the endangered black-footed ferret, and the threatened Canada lynx.

Although Jordanelle Reservoir and the Provo River are suitable habitat for bald eagle, there are no known concentrations of bald eagles, no known nesting sites, no known night roost sites, and no critical habitat for bald eagle in the project area. Use of the project area is periodic for foraging activities or over-wintering. It was determined that implementation of the proposed project would not affect these activities and there would be "No Effect" to bald eagle from the construction and operation of the hydropower project.

It was determined that no known individuals exist in the project area and no extensive prairie dog towns required for their presence. There would be "No Effect" to black-footed ferret from the construction and operation of the hydropower project.



Canada lynx have not been reported in the project area. However, a 2004 sighting of a single individual on Heber Mountain has been reported. There have been historical sightings of lynx with the nearest occurrence located approximately 20 miles east of the project location. Canada lynx habitat does not occur in the project area. It was determined there would be “No Effect” to Canada lynx from construction and operation of the Project.

The US Fish & Wildlife Service (USFWS) also listed three sensitive species that have potential to occur in the project area and are managed under Conservation Agreements:

- the Bonneville cutthroat trout,
- the Colorado River cutthroat trout, and
- the Columbia spotted frog.

The Bonneville cutthroat trout and spotted frog are known to occur in or along the Provo River downstream of the project area. The Colorado River cutthroat trout is not known to exist between the Jordanelle Dam and Deer Creek Reservoir.

The USFWS found that the Columbia spotted frog is not warranted for listing under the Endangered Species Act because of successful mitigation efforts, in part by the Utah Reclamation Mitigation and Conservation Commission on the Middle Provo River just below Jordanelle Dam. If new information indicating that the level of threats becomes more severe or the status of the spotted frog or its habitat degenerates in the future, the status of the spotted frog will be reevaluated.

In the 2012 EA, the list of species, updated on February 24, 2011, includes two threatened species, four endangered species, three candidate species, and one petitioned species for Wasatch County. There are two conservation agreement species that are known to occur in proximity to the Project Area. None of these species are known to occur with the boundaries of managed lands around the Jordanelle Project.

A June Sucker recovery program was initiated in 2002. The Recovery Program coordinates and funds ongoing recovery actions in addition to management, monitoring, and research in support of June Sucker recovery.

In a May 2015 letter, the USFWS provide an assessment of sufficient progress under the program. In the letter the USFWS states, “... *Significant accomplishments towards recovery of the June sucker species have occurred since the Recovery Program was initiated in 2002. These accomplishments have resulted from implementing the actions identified in the June sucker recovery plan (USFWS 1999). The recovery actions that have been of particular significance to June sucker recovery include the captive rearing and augmentation of June suckers to Utah Lake, habitat restoration work to restore a delta at the mouth of Hobbie Creek, and acquisition and provision of additional water to the Provo River and Hobbie Creek. These actions have been instrumental in stopping the decline of the adult June sucker population and resulted in measurable increases in the size of the population. The Recovery Program has made sufficient progress towards recovery of the species over the time period (2009 to 2013) ...*”

Due to the CUWCD’s Water Management Improvement Program (WMIP), nearly 250,000 acre-feet of water was acquired by the USDOJ to benefit the June sucker. Under the WMIP, 22,379 acre-feet of water has been acquired by USDOJ as a permanent annual water supply for the June sucker.



Supplemental releases to the Provo River were initiated in 1994, while releases to Hobble Creek have been provided since 2013. Despite these successes in managing instream flows for June sucker, the long-term and continual acquisition and delivery of water presents challenges because of the increasing demand for limited water resources within the Utah Lake Basin.

The Recovery Program has demonstrated the ability to identify and implement necessary recovery actions and its effectiveness in doing so has resulted in significant improvements in the status of the species. Integral to this recovery plan is continued releases of diverted waters, including those of the Jordanelle Reservoir, to ensure maintenance of June Sucker habitat.

During the prior LIHI certification period, the Project is in compliance with both state and federal resource agencies concerns pertaining to threatened and endangered species. Going forward the applicant needs to work proactively with the USFWS in its efforts pertaining to the June Sucker recovery program, as noted below in my recommendations

LIHI Criterion-Cultural Resource Protection

The applicant submitted a report prepared by Sagebrush Archaeological Consultants entitled Jordanelle Dam Hydroelectric Project. The Utah State Historic Preservation Office (SHPO) received the report which states that no cultural resources were located in the project area. The SHPO concurs with the report's conclusion that no historic properties are affected by the project.

The Facility is in compliance with all requirements regarding Cultural Resources. During the prior LIHI certification period, no new concerns pertaining to protection of cultural resources have occurred.

LIHI Criterion-Recreation

The Provo River below Jordanelle Reservoir is a very popular section of river with anglers and is considered a world-class fishery. The Jordanelle Dam provides recreational flow releases for downstream fisheries.

The Utah Division of Wildlife Resources (UDWR) currently stocks the reservoir with rainbow trout and smallmouth bass. The reservoir is most popular for its smallmouth bass and brown trout fishery. Other fishes found within the reservoir include yellow perch, walleye, rainbow trout, cutthroat trout, Utah chub, Utah sucker, black crappie and brook trout.

Several comments were provided by stakeholders regarding the 2012 EA with respect to possible recreational improvements. However as these are not under the control of the Hydropower Project, they have not been addressed in this recertification report.

The CUWCD has designated an area 300 feet upstream and 1000 feet downstream of the Jordanelle Dam as "high security." No unauthorized access is permitted in this area. The Hydropower Project structures are within the high security zone therefore there is no public access.



Jurisdiction of the reservoir upstream of the high security zone has been turned over to the Utah State Parks. Utah State Parks charges fees for access to the reservoir and facilities. The CUWCD has no authority over recreation access to the reservoir.

The river below the high security is controlled by the URMCC. Free recreation access and facilities are provided.

The Facility is in compliance with all requirements regarding Recreation. No new concerns pertaining to protection of cultural resources have occurred.

LIHI Criterion-Facilities Recommended for Removal

A review of the application indicates that during the prior LIHI certification period, the Project does not have any facility that has been recommended for removal by a natural resource agency.

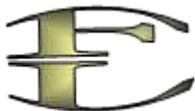
RECOMMENDATION

A review of the recertification application, additional documentation noted herein, public comments submitted in writing or other communications with resource agencies and other entities for the current LIHI certification period has been conducted. I have concluded that the no material changes or violations of required operations have occurred during this period.

I recommend that going forward the applicant needs to work proactively with the USFWS in its efforts pertaining to the June Sucker recovery program. As part of its annual compliance letter to LIHI, the CUWCD's shall provide a statement confirming it has released the committed flows identified in its WMIP from the Jordanelle Project for the recovery of the June Sucker during the prior year. Also, verification that the CUWCD has discussed and reached agreement with the USFWS pertaining to these releases as part of the WMIP shall be included.

I further recommend that CUWCD be issued a LIHI recertification for an additional eight years for the Jordanelle Hydroelectric Project.

Gary M. Franc



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