STATEMENT OF WORK

Priest River Cold Water Bypass Alternatives Assessment

1. Project Overview

The purpose of the cold water bypass alternatives assessment ("Assessment" or "Services") applicable under this Statement of Work ("SOW") is to develop and evaluate conceptual design alternatives ("Alternatives") for a cold-water gravity intake pipe ("Bypass") at the outlet of Priest Lake in Bonner County, Idaho (the "Lake"), to cool Lower Priest River (the "River") for the benefit of fish and aquatic biota using cold water from the lower portion of the Lake (the "***hypolimnion***"). All alternatives developed under this SOW need to maintain statutory lake levels and minimum flow requirements, aquatic species protection, and existing public uses of the Lake and the River.

2. Background

Streamflow in the River is regulated by the Outlet Dam operated by the Idaho Water Resource Board ("IWRB") to maintain a Lake level of 3.0 feet at the outlet during the summer recreation season in accordance with Idaho Code §70-507. Dam operations target a discharge of at least 60 cubic feet per second ("cfs") into the River during the recreation season, although, typically, flows are much higher. These statutory constraints, along with area hydrology, will require Bypass designs capable of adjusting for variable hydraulic head and discharge, keeping in mind that the Priest Lake Dam is currently slated for renovation work in the near future.

Stream temperature modeling led by the Kalispel Tribe of Indians, confirmed the thermodynamic feasibility of reducing late summer stream temperatures in the River by using the ***hypolimnion*** of the Lake (see the attached Priest River Temperature Model ("Model"). The Model considered input flow rates between 30-400 cfs. The Model predicted that if 75% of stream inflow came from the ***hypolimnion***, the upper 30 miles of stream would cool 2 – 10 °C, enough to improve native trout habitat conditions and meet the Department of Environmental Quality criteria for cold water aquatic life during August and September.

Because both the Lake and the River are federally designated critical habitat for bull trout, intake screening and approach velocity limits may be required. The U.S. Fish and Wildlife Service recommends 3/32 in (2.38 mm) mesh and 0.5 feet per second water velocity at water diversions to avoid impingement or entrainment of juvenile bull trout, the most sensitive species and life stage in the Lake.

3. Purpose

The Assessment is part of a phased approach to improve habitat conditions for native, coldwater fish and meet state water quality standards for temperature. There are numerous examples of tail-water fisheries and hatchery operations that use a bypass concept to provide water to temperature-sensitive aquatic systems. The purpose of the Assessment is to address the structural and economic considerations for a Bypass, namely to determine: (i) the feasibility of a Bypass, (ii) public opinion, (if accepted) (iii) estimated cost of a final design, and (iv) estimated construction cost.

4. Scope of Work

Consultant shall provide the labor, materials and/or equipment necessary to perform the following Tasks:

Task 1 **Basis of Analysis:** Consultant shall compile existing information needed to conceptualize a Bypass from the Lake to the River including, without limitation:

- Lake level statutory requirements;
- Historic River discharge at outlet, minimum flow requirements;
- Outlet Dam engineering, operation, and IWRB proposed improvements;
- Lake bathymetry south of Fourmile Island;
- River longitudinal profile within the expected construction area; and
- Land ownership adjacent to the expected construction area.

***Deliverable*:** Technical memo to be provided to Avista and the Idaho Department of Fish and Game ("IDFG") for review and approval.

Note: Consultant will be required to attend at least one (1) meeting to finalize the Basis of Analysis prior to initiating the Alternatives Assessment described below.

Task 2 **Alternatives Assessment:** Consultant shall develop conceptual design and evaluation of engineering alternatives, taking into account:

- Public safety
- Cost
- Operations, monitoring, automation
- Maintenance
- Sizing
- Staging and construction needs
- Screening and intake velocity
- Navigability
- Compatibility with proposed Outlet Dam improvements
- Adjacent property owners
- Potential year-round temperature manipulation
- Aesthetics

***Deliverables**:* An Alternatives analysis presentation and a report ("Report") that includes conceptual designs and an evaluation matrix comparing the Consultant's top three (3) Alternatives. Consultant shall provide a draft of the Report to Avista and IDFG for review one (1) month prior to final Report deadline. Conceptual designs must include 11x17 drawings. The evaluation matrix must include all pros and cons, estimated construction cost (including final design costs), and the feasibility of each alternative.

Task 3 **Public Scoping**: Consultant shall provide a presentation of its findings from the Alternatives Assessment ("Presentation") at three (3) public scoping meetings ("Public Meetings"), which will be hosted by IDFG in the Priest Lake/Sandpoint area (with specific locations and dates determined in consultation with the Consultant). Consultant's Presentation should provide technical information related to the Alternatives to enable stakeholders to understand the analysis process and the results of the Assessment.

Deliverable: Presentation at three (3) Public Meetings

5. Schedule:

July 1, 2018	Initiate Basis of Analysis (Task 1)
TBD (prior to August 1, 2018)	Meeting to finalize Task 1
TBD (early August 2018)	Initiate Alternative Assessments (Task 2)
November 1, 2018	Provide draft Report for Review and Comment
December 1, 2018	Provide final Report
TBD (1st quarter 2019)	Public Meetings

6. Information/Material/Other Requirements for the Assessment

- Consultant shall base conceptual design work on the hydraulic parameters identified in the Model, Outlet Dam design, site hydrology and geography. (The proposed Bypass may, but is not required to pass through the Outlet Dam.)
- Consultant may obtain information regarding dam engineering and operations from the Idaho Department of Water Resources. While the IDFG can provide a conduit to IDWR resources, Consultant is responsible for obtaining all pertinent information to complete the Assessment. (Some information related to the Priest Lake Water Management Study may be proprietary.)
- Consultant shall coordinate with, and obtain approval of a site visit to the Outlet Dam from the IWRB.
- The IWRB is in the process of finalizing an Outlet Dam and spillway improvement plan ("Improvement Plan"). These structural improvements may present an opportunity for the Consultant to integrate a Bypass with the Improvement Plan, minimizing construction costs and overall disturbance. (As the owner, IWRB is the decision-maker on any final design that includes the Outlet Dam.)

7. Attachment: Attachment A – Priest Lake Temperature Model, Berger et al. 2014

End of Statement of Work