

# **AVISTA CORPORATION**

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## **SPOKANE RIVER WATER TEMPERATURE AND DISCHARGE FLOW MONITORING PLAN**

**IDAHO 401 CERTIFICATION, SECTION I (B) (1)**

**Spokane River Hydroelectric Project  
FERC Project No. 2545**

Prepared by:  
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and  
Avista Corporation

*In consultation with  
Idaho Department of Environmental Quality and  
Washington Department of Fish and Wildlife*

*May 11, 2010*

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## **1.0 Purpose**

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new license (license) for the Spokane River Project, FERC Project No. 2545-091. Ordering Paragraph D of the FERC license incorporated the conditions set by the Idaho Department of Environmental Quality (IDEQ) under its Federal Clean Water Act Section 401 water quality certification (Idaho WQC) for Avista Corporation's Post Falls Hydroelectric Development, which was issued on June 5, 2008. These conditions can be found in Appendix A of the license. The purpose of this monitoring plan is to comply with conditions I.B and I.C of the Idaho WQC.

The monitoring objective is to determine the relationship between discharge flow and water temperatures in the Spokane River downstream from Post Falls as they relate to fish and fish habitat, and specifically, to determine whether discharges from Post Falls Dam at 500/600 cfs, and higher discharge flows up to 700 cfs increase temperatures at selected locations in the Spokane River. The Spokane River Water Temperature and Discharge Flow Monitoring Plan (Monitoring Plan) has been prepared to establish procedures for the collection, evaluation and reporting of discharge flow and water temperature data to help assess the relationship on which the lake level and discharge flows in the Idaho WQC (with the exception of the alternative discharge flows which are set for this monitoring program, condition I.B.2) were developed. The basis for the required discharge flows is addressed by the State of Idaho that identifies "data and assumptions" as:

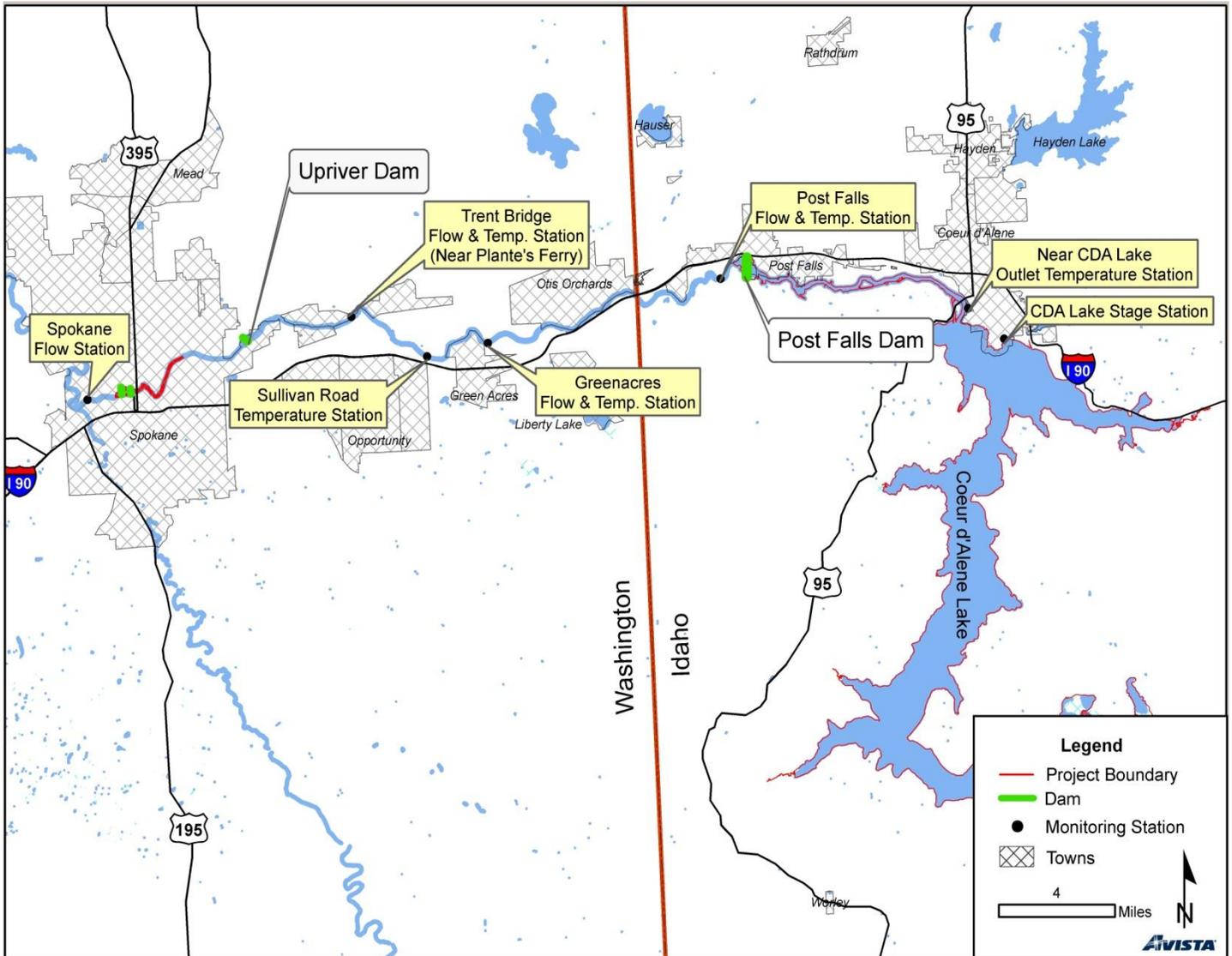
1. Graphs of Instream Flow Scenario Results, Presentation and Handouts, Robert Anderson, Golder and Associates, August 2004
2. Avista Environmental Affairs Memorandum, Spokane River Temperatures, August 24, 2004
3. Fish Flow Proposal-Draft Spokane River Instream Flow PM&E Language developed by Ned Horner, Idaho Department of Fish and Game, November 3, 2004.

This Monitoring Plan and associated Quality Assurance Protection Plan (QAPP) were prepared in consultation with the Idaho Department of Environmental Quality and the Washington Department of Fish and Wildlife (WDFW) to satisfy Article 401(a)(No. 1) of the FERC license (See Appendix 1).

## **2.0 Introduction and Background**

The Post Falls HED is located on the Spokane River 9 miles downstream of the Coeur d'Alene Lake outlet which is the headwaters of the Spokane River (Figure 1).

**FIGURE 1.** Map of the Upper Spokane River with Flow and Temperature Monitoring Stations

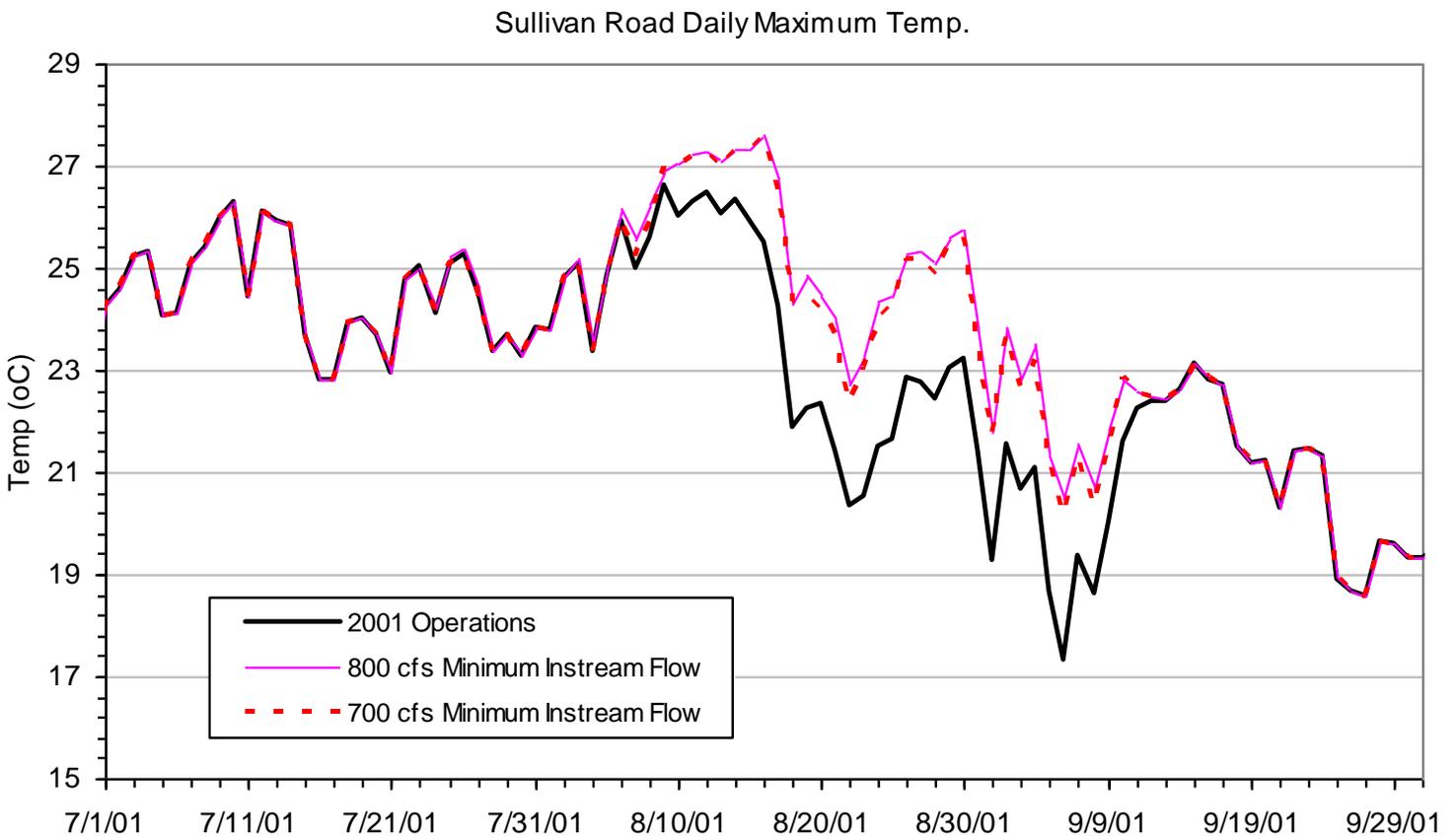


During about half of any year, a natural channel restriction controls the Coeur d'Alene Lake's water elevation and Spokane River flows. The Post Falls HED typically controls water elevations in Coeur d'Alene Lake and flow in the Spokane River after spring run-off, and through the summer and fall.

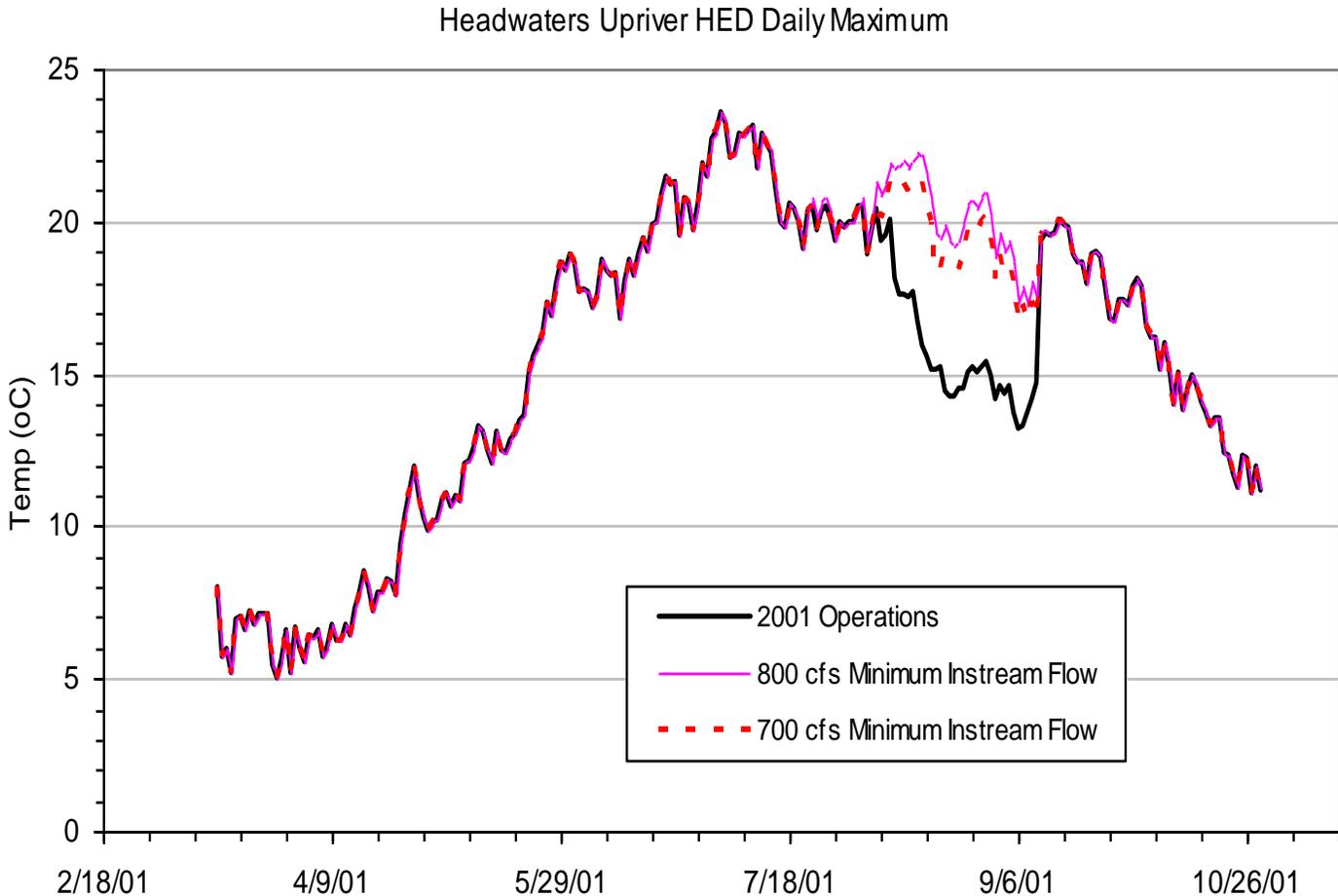
During summer, warm surface water from Coeur d'Alene Lake flows into the Spokane River. Warm water temperatures of 20°C and greater, which are common in Coeur d'Alene Lake during summer, are unsuitable for cold-water aquatic species like rainbow trout (Horner 2004). Downstream, near Sullivan Road in Washington, substantial cold-water inflow from the aquifer begins to enter and cool the Spokane River. This cooling provides cold-water refuge for wild rainbow trout in the Spokane River, and trout are known to migrate to this area during the summer months (Parametrix 2004; nhc and HDI 2004; Koreny 2004; Horner 2004).

The possible effects of increased discharge from the HED and associated changes in water temperature in the Spokane River were modeled and assessed during project relicensing using a calibrated CE-QUAL-W2 model (Koreny 2004). Modeling results for varied flow regimes show that upstream from Sullivan Road summer water temperatures in the Spokane River are warm and little affected by discharge from the Post Falls HED. In contrast, model results show that increasing summer discharges from the HED, thereby drafting more warm water out of Coeur d'Alene Lake, increases Spokane River temperatures downstream of Sullivan Road (Figure 2 and 3; Horner 2004).

**Figure 2.** Modeled Daily Maximum Temperature near Sullivan Road  
(Source: Koreny 2004)



**Figure 3.** Modeled Daily Maximum Temperature near Plantes Ferry Park  
(Source: Koreny 2004)



In August of 2004, Avista monitored temperatures in the main channel of the Spokane River to further assess discharge from the Post Falls HED. Thermographs were placed in the main channel during a test discharge in which Post Falls HED releases were decreased from 700 cfs to 500 cfs. Maximum daily water temperatures at McGuire Road (RM 100), Stateline (RM 96), and Barker Road (RM 90) were between 25°C and 27.5°C and did not vary significantly between flow regimes. However, the magnitude of Post Falls HED discharges influenced river temperature further downstream. At Sullivan Road (RM 87), the maximum river temperature was 22.5°C at 700 cfs and 19.5-20°C at 500 cfs. Near Plantes Ferry Park (RM 85) (referred to as Plantes Ferry or Trent Street Bridge), the maximum river temperature was 16.4°C at 700 cfs and 13.5°C at 500 cfs.

On June 5, 2008, the Idaho Department of Environmental Quality (IDEQ) issued a final WQC for Avista Corporation’s Post Falls HED. The conditions imposed by the Idaho WQC address water quality effects that the Post Falls HED has within waters subject to the State of Idaho’s jurisdiction.

To ensure compliance with Idaho water quality standards, Section I.B. and C of the Idaho WQC address monitoring and data review for discharge flows from the Post Falls HED. Section I.B and I.C read as follows:

*B. Monitoring Plan Regarding Discharge Flows*

- 1) Avista shall, after issuance of a New License, develop, in consultation with IDEQ, a Monitoring Plan that includes the elements described below. The Monitoring Plan shall be submitted to IDEQ for approval within six months after issuance of a New License. The purpose of the Monitoring Plan is to evaluate data and assumptions upon which the required discharge flows are based. The Monitoring Plan shall address the relationship between discharge flows and water temperature in the Spokane River. The Monitoring Plan shall provide for five (5) years of monitoring. The Monitoring Plan shall include a Quality Assurance Control Project Plan (“QAPP”). The QAPP shall include (a) appropriate protocols for flow and temperature measurements, (b) flow monitoring conducted continually from July 1<sup>st</sup> through September 30<sup>th</sup> at the following locations, or at alternative locations agreed to by IDEQ and Avista: Spokane River at Post Falls (USGS 12419000), Spokane River at Greenacres (USGS 12420500) and Spokane River at Spokane, WA (USGS 12422500), and (c) a description of the manner in which Avista shall, in accordance with the requirements set forth in Section B.2., incrementally increase and monitor discharges during low flow conditions. The QAPP shall be consistent with applicable Idaho water quality law. Upon approval, the Monitoring Plan shall be implemented in accordance with the QAPP for a period of five (5) years, unless IDEQ determines that five (5) full years of monitoring are not necessary.*
- 2) In order to monitor the effects of alternative discharge flows during low flow conditions when the reduction to 500 cfs would otherwise be required by Section I.A.4. of this certification, Avista shall, in accordance with the approved Monitoring Plan, incrementally increase and monitor flows up to 700 cfs during low flow conditions. Avista shall not, however, increase discharge flows above 600 cfs except upon prior notification to, and approval by, IDEQ.*

*C. Data Review Decision Making.*

- 1) Avista shall provide all raw temperature and flow data collected to IDEQ as soon as practicable after September 30 each year. At the end of the five (5) years, or earlier, if monitoring is terminated by IDEQ, Avista shall submit a report of findings to IDEQ.*
- 2) IDEQ intends to review the annual data and report of findings in coordination and consultation with the Idaho Department of Fish and Game, Washington Department of Ecology, Washington Department of Fish and Wildlife and the Coeur d'Alene Tribe. In addition, prior to making a final decision regarding whether discharge operations require modification, IDEQ shall provide for public notice and an opportunity for comment. After such coordination and consultation, IDEQ shall proceed as follows:
  - a. Should IDEQ determine the data supports the discharge operations required by Section I.A., Avista shall continue to operate the Project in accordance with Section I.A., except that**

*Avista will no longer be required to implement the alternative discharge flows in Section I.B.2. of this certification. Avista shall notify FERC of IDEQ's decision.*

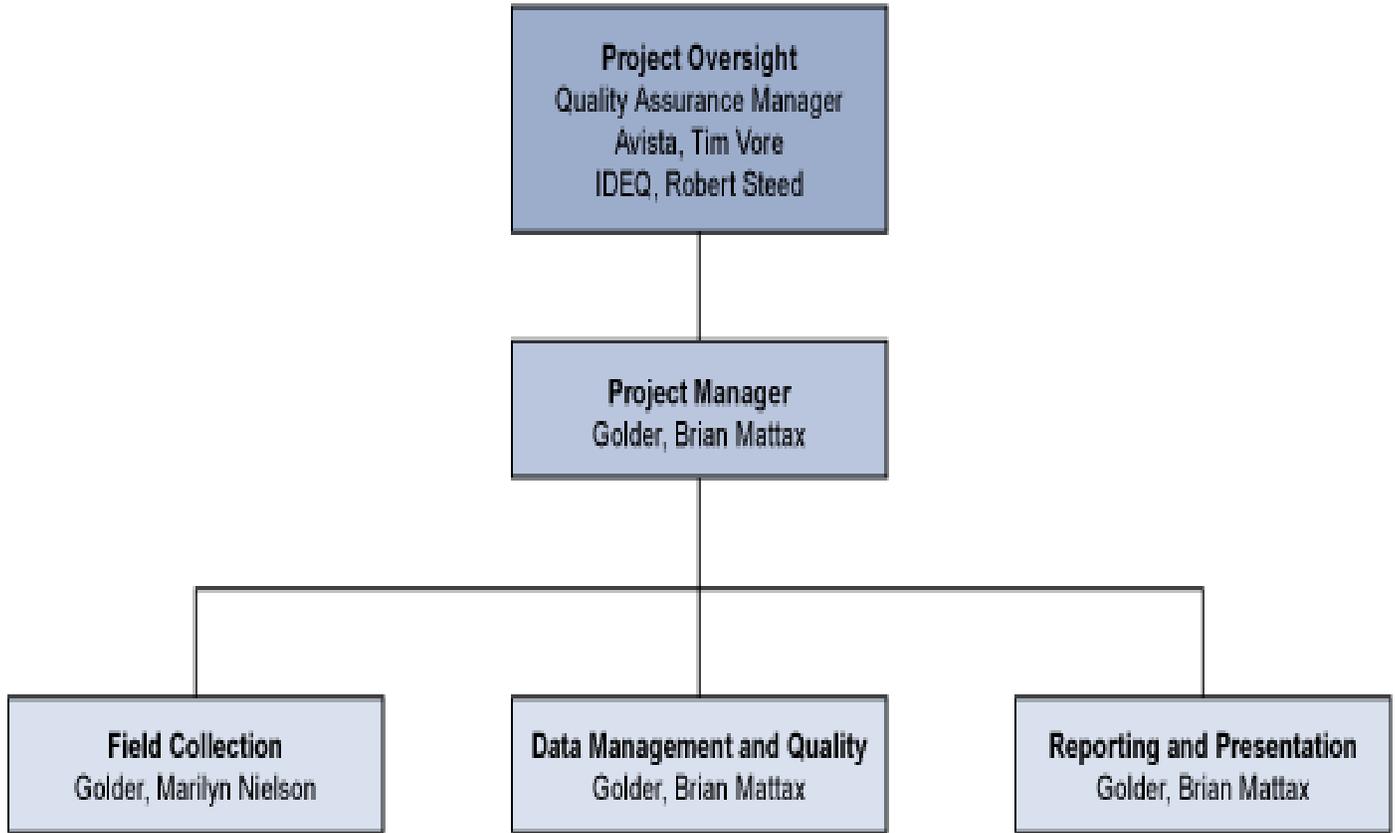
- b. Should IDEQ determine that the discharge operations set forth in Section I.A. require modification; IDEQ shall notify Avista of the required modification and Avista shall thereafter operate the Post Falls facility in compliance with the required modified discharge operations. Avista shall notify FERC of the modification in operations.*
- c. Should IDEQ determine that data are insufficient to make a determination regarding the discharge operations, Avista shall extend the period of data collection until at least two (2) years of data under "low-flow" conditions (when the reduced flow of 500 cfs is implemented) have been collected. Any additional data will be submitted to IDEQ as soon as practicable after September 30 each year. Within ninety (90) days of acquiring the two (2) years of such data, Avista shall submit a supplemental report to IDEQ. IDEQ shall review the supplemental report and data as provided in Section C.2. above and make a determination regarding discharge operations. Avista shall notify FERC of IDEQ's decision.*

This Monitoring Plan satisfies Section I.B.1 and establishes methods to fulfill Sections I.B.2 and I.C.1 of the Idaho WQC requirement and will be implemented by Avista upon its approval by IDEQ. The companion document, Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan (QAPP), will ensure the quality of all data collected under the Monitoring Plan. Both of these documents (i.e., the Monitoring Plan and QAPP) have been developed in consultation with IDEQ. The approach described in these documents is for analysis of discharge flow and water temperature data collected for this study by Avista and its contractors. As part of this process, Avista will consult with IDEQ to oversee all aspects of water quality monitoring for a rigorous, cost-effective program that provides consistent, high quality data. Water quality monitoring will be conducted following the guidance of this Monitoring Plan and the associated QAPP.

### **3.0 Project Management**

This Monitoring Plan outlines a consistent approach to data collection and management. Golder Associates has been selected to direct all project activities and will be responsible for scheduling and coordinating the sampling performed by the personnel conducting the field effort, data management, and analysis/reporting. Project organization is shown in Figure 4.

**Figure 4.** Project Personnel Organization



## 4.0 Methods and Materials

These methods will be implemented in consultation with WDFW and IDEQ and/or following review of the annual reports.

### Monitoring Period

Seasonal monitoring will be conducted for the period of July 1<sup>st</sup> through September 30<sup>th</sup> for five consecutive years with monitoring beginning in 2010.

### Seasonal Water Temperature Monitoring

Temperature monitoring will follow water temperature sampling protocols developed by the Washington State Department of Ecology (Ward 2003). Temperature monitoring protocols for large river systems are not available for the state of Idaho (pers comm. Tyson Clyne, Watershed Coordinator, IDEQ, June 30, 2009). However, protocols similar to those described here have been developed by IDEQ for wadeable streams (Zaroban 2000).

Temperatures of the free-flowing river will be sampled and recorded at 15-minute intervals at each of the five selected monitoring stations (table 1, figure 1). Water temperature data will be obtained annually from the USGS for the Spokane River near Coeur d'Alene Lake outlet gage. For the other temperature stations, thermographs will be deployed before July 1<sup>st</sup> and will be retrieved as soon as practicable after September 30<sup>th</sup> of each year of monitoring.

**Table 1.** Spokane River Monitoring Locations for Water Temperature and Flow

Station Name	USGS Gage Number and Status <sup>a</sup>	Latitude	Longitude	River Mile	Parameters Monitored
Coeur d'Alene Lake at Coeur d'Alene, ID	12415500, active real-time	47° 39'58"	116° 46'14"	NA	lake stage
Spokane River near Coeur d'Alene Lake Outlet	12417610, active real-time	47° 40'55"	116° 47'51"	111.1	temperature
Spokane River near Post Falls, ID	12419000, active real-time	47° 42'11"	116° 58'40"	100.7	flow; temperature
Spokane River at Greenacres, WA	12420500, active not real-time	47° 40'39"	117° 09'04"	90.5	flow; temperature
Spokane River at Sullivan Road Bridge <sup>b</sup>	12420800, inactive	47° 40'21"	117° 11'47"	87	temperature
Spokane River below Trent Bridge (at Plantes Ferry) <sup>c</sup>	12421500, inactive	47° 41'32"	117° 14'09"	85.4	flow; temperature
Spokane River at Spokane, WA	12422500, active real-time	47° 39'34"	117° 26'53"	72.9	flow

<sup>a</sup> Status is reported for December 2009; Spokane River below Trent Bridge will be activated for this monitoring plan.

<sup>b</sup> Approximately 300 feet upstream of Sullivan Road bridge near left bank looking downstream.

<sup>c</sup> At Plantes Ferry, approximately 300 feet downstream of Trent Road Bridge near mid-channel, slightly to left bank looking downstream.

Sealed, water-tight thermographs with internal sensors (Onset Hobo Water Temp Pro v2 or equivalent) will be deployed to collect temperature data. Thermograph time and date settings will be synchronized with a host computer and set to collect and record temperatures at 15-minute intervals. Onset (2009) reports that the specified thermographs have an accuracy of 0.2°C for the temperature ranges found in the Spokane River, and drift less than 0.1°C per year. Their real-time clock remains within ±1 minute per month, and they have a typical battery life of greater than 6 years.

Thermographs will be deployed in free-flowing portions of Spokane River's main channel before July 1<sup>st</sup> and retrieved shortly after September 30<sup>th</sup> during each of the five monitoring years. Golder Associates visited the monitoring locations in July of 2009 to determine specific sampling locations. Thermographs will be placed near the USGS gage near Post Falls, just upstream of the bridge at Sullivan Road in order to minimize the effect of groundwater, near the gage location at Green Acres, and just downstream of the Trent Street Bridge near Plantes Ferry Park. Temperature monitoring stations for Sullivan Road and near Plantes Ferry will be virtually

the same as monitored in 2004. If accessing a monitoring station requires use of private property, access permission will be obtained from the appropriate party. In addition, a thermograph will be deployed at the Post Falls HED to monitor air temperature.

Unique identifiers, which are based on the station numbers provided in Table 1, will be used to identify both a primary and secondary temperature monitoring location for each monitoring station for the duration of this study. The same locations will be used each year for primary and secondary thermographs. Specific locations for thermograph deployments will be selected to be representative, as described in section 4.1.4 of the QAPP, of the river's main flow, while minimizing the direct influence of groundwater, sunlight and local features such as eddies that may influence water temperature. Potential for vandalism also will be considered during selection of specific thermograph locations and depths.

During the initial deployment, the following actions will be taken for each monitoring station:

- 1) Record the latitude, longitude and datum for each deployment position with a Global Positioning System (GPS) receiver;
- 2) Record the location on a map. Include the site's location relative to local identifiable landmarks and the nearby river temperature monitoring site;
- 3) Photograph the deployment location;
- 4) Record the estimated depth, distance above the streambed, and distance from the river's bank;
- 5) Designate one monitoring site as primary and the other as secondary; and
- 6) Provide IDEQ and Avista with a record of the deployment location, which will include the above information.

In order to provide redundancy in case of vandalism, two thermographs will be located in the river at each of the monitoring stations identified in Table 1. The paired (primary/secondary) thermographs will be placed in the same reach of the river yet far enough from one another to minimize the risk of vandalism to both instruments. As a further precautionary measure, the primary thermographs will not be visited until they are recovered in early October unless there is evidence that they have been vandalized or are out of the water. One of the eight thermograph locations will be randomly selected and a thermograph will be deployed alongside the selected thermograph to evaluate precision of water temperature measurements.

The thermographs will be appropriately shielded from sunlight and suspended in the water column to minimize any localized effects of groundwater. Following the initial deployment for each monitoring season, each of the four temperature monitoring stations will be visited approximately every two weeks throughout the monitoring period to evaluate whether the thermographs are still at an appropriate depth in the river, and to download the temperature data and confirm proper functioning of the secondary thermograph. The relationship between depths of the primary and secondary thermographs will be used along with observations of the general area of the primary thermograph as indicators of the likelihood that primary thermographs have been vandalized or out of the water. If the need arises, the thermographs will be moved during

the scheduled station visits discussed above to ensure that they are collecting temperature data that are representative of the river's main flow. If a thermograph is moved, IDEQ and WDFW will be notified within five working days. At the end of each year's seasonal monitoring period, all thermographs will be retrieved and downloaded. As discussed above, the primary thermographs will be downloaded once each monitoring season maximizing the possibility of obtaining a complete dataset for each monitoring station.

After each station visit, the temperature data downloaded from the secondary thermographs will be scanned to determine the likelihood that the units were vandalized, out of water, or not operating correctly. If necessary, thermograph(s) will be replaced or relocated. The downloaded water temperature data will be transferred to a computer and the electronic files will be backed up.

Following retrieval and downloading the thermographs at the end of the monitoring season, the primary thermograph data will be evaluated for completeness, and potential gaps in quality data. A single set of temperature data will be processed and used to evaluate the relationships between discharge and water temperature. Priority will be given to data from the primary thermograph sites, hence secondary thermograph data will only be processed if the data from the corresponding primary site is categorized as having less than acceptable completeness and has better ratings for the other data quality objectives identified in the QAPP. In such a case, the temperature data from the secondary thermograph and not the primary thermograph will be processed.

### **Water Temperature Cross-Section Monitoring**

During the anticipated low flow period of the first monitoring season, temperature measurements will be made at one river cross-section in the vicinity of each of the four temperature monitoring stations. Depth and temperature will be recorded for at least ten locations across the river at multiple depths. These data will then be compared to temperatures recorded for each thermograph location in order to confirm that the thermograph locations are representative of the main river flow. If a thermograph location does not pass the representativeness test identified in the QAPP, the thermograph will be relocated to a location that is representative of the main river flow. IDEQ will be informed of any relocation that occurs and Avista will work with IDEQ to ensure that the new location is acceptable to IDEQ.

### **Discharge Flow and Stage Monitoring**

Discharge flow and stage data will be obtained from the three local operating USGS stations within the study area (Table 1). The USGS gage station at Greenacres (12420500) is not a real-time station, but instead station visits occur at approximately 8-week intervals. IDEQ and Avista recognize that this will result in more than 8 weeks to obtain information for this station. The USGS assess the accuracy of its measurements based on data values recorded before any shifts or corrections are made along with considering the amount of publishable record and to the amount of data that have been corrected or shifted (Kimbrough et al. 2006). Each year, the USGS data for that year will be downloaded as soon as practicable into a computer database and spreadsheets will be developed for each monitoring station. Discharge flow and stage information will be collected following standard USGS protocols and be obtained in 15-minute

increments from the USGS. Discharge flow and stage data for the period of July 1<sup>st</sup> through September 30<sup>th</sup> will be summarized by month for each year.

Graphs of discharge flow and water temperature will be produced for each of the water temperature monitoring stations. These graphs will be compared to one another to evaluate the effects of discharge on temperature and any differences in temperature response between the monitoring stations. Dates and times of any pertinent Post Falls HED operational changes or tests of discharge flow will be recorded and identified on the graphs.

For each year's seasonal monitoring period, graphs of Coeur d'Alene Lake stage will be produced for each month. Each day Coeur d'Alene Lake elevation decreases to below 2,127.75 feet (i.e., three inches below full pool) during July, August or September prior to the Tuesday following Labor Day will be identified.

Daily weather conditions and air temperature will be obtained for the Felts Field weather station, which is in the Spokane Valley, for the seasonal sampling period. These data will include daily maximum and daily minimum air temperature, cloud cover, and precipitation. Air temperature also will be obtained with a thermograph deployed at the Post Falls HED.

### **Test of Discharge Flow and Water Temperature**

Testing of discharge that requires increasing Post Falls discharge along with monitoring associated water temperature response is necessary to understand the discharge/temperature relationships. However, increasing discharge during a period when Coeur d'Alene Lake elevation is declining deviates from the intent of the FERC license, Appendix A. I.1. Therefore, tests will be fashioned to capture the necessary data while maintaining the intent of the license conditions as closely as possible. If data results indicate that beneficial uses or fish resources are being negatively impacted by the tests, IDEQ may propose to modify test parameters. An example of a negative impact is increasing discharge increases recorded water temperatures from temperatures below 21°C to temperatures 23°C or above at a monitoring location. Another example of a negative impact is observed fish mortality within the study area. WDFW input on matters affecting modification of test parameters will be sought. Avista will notify FERC of any modifications made to test parameters.

Discharge flows and water temperature will be monitored for when the Post Falls HED is reduced to near 500 cfs (Section I.A. of Idaho WQC) as measured at the USGS gage Spokane River near Post Falls, ID (12419000). Avista will notify IDEQ of the impending condition. Tests of Post Falls HED discharge and water temperature will be conducted as follows:

- Test 1) The Coeur d'Alene Lake USGS gage (12415500) will be monitored to determine when the Lake elevation is near 2,127.75 feet as a result of the 600 cfs discharge flow requirements. The first year operational conditions result in reaching the trigger lake elevation of 2,127.75 feet (2,127 feet and 9 inches) the first time in a year, Avista will increase discharge to 700 cfs for seven consecutive days (168 hours). After at least 168 hours of near 700-cfs discharges, Avista will reduce discharge to the required 500 cfs to end the test. Reductions in discharge will be required to adhere to the downramping rate requirement of the FERC license,

## Appendix A. VI.

- Test 2) In addition to the test described above, two additional flow manipulation test(s) will occur during the five-year evaluation period. The commitment to perform the test(s) will be contingent on flow and weather conditions. The additional test(s) will begin seven days after the initial reduction to near 500 cfs (as required by condition I.A. of the Idaho WQC). During this test, discharge will be increased from 500 cfs to near 700 cfs for three to seven days (i.e., 72 to 168 hours) followed by a reduction in discharge to the required 500 cfs.

Resulting flow and water temperature data for the Spokane River downstream of the Post Falls HED will be assessed for each of the stations. All flow changes will be correlated with subsequent effects on water temperature downstream. Information on discharge flow and water temperature will be downloaded into a spreadsheet and the 15-minute values will be assessed for the test period(s). Graphs of flow changes and resulting water temperatures will be produced for each test.

### **5.0 Quality Assurance and Quality Control**

A companion document, the QAPP, has been developed to ensure quality control as the project is implemented. The QAPP describes measures to ensure data quality and objectives, accuracy, completeness, oversight and validation. Discharge flow will meet official USGS data quality standards. Water temperature data quality will meet completeness, accuracy and validation standards as described in the approved QAPP.

### **6.0 Results**

Annual results will be summarized following the monitoring period. To satisfy condition I.C.1 of the Idaho WQC, water temperature and flow data will be provided to IDEQ as soon as practicable after September 30<sup>th</sup> each year.

Specific results will also be assessed from each station to include:

- 1) Discharge flows and Spokane River water temperatures for at least 7 days before and 7 days after implementing any initial reduction to near 500 cfs as described in Section I.A. of the Idaho WQC.
- 2) Discharge flows and Spokane River water temperature will be assessed for 7 days prior to and 7 days after the initiation of the annual fall draft of Coeur d'Alene Lake as described in Section I.A of the Idaho WQC.
- 3) Discharge flows, water temperature and atmospheric conditions will be assessed for all tests described in the previous section of this Monitoring Plan.
- 4) Approximate time between flow changes at Spokane River near Post Falls, ID (USGS 12419000) and changes in flow and water temperature at the downstream stations will be identified.

## **7.0 Data Presentation**

### **Cross-section Technical Memorandum**

In the first monitoring season (2010), a technical memorandum will be developed for the water temperature cross-sections, which will address whether the sites where thermographs are initially deployed have temperatures that are representative of the main flow in the channel. This memorandum will include a depiction of the temperatures measured in each cross-section, and compare temperatures measured at the thermograph locations to the 25 and 75 percent exceedances values for the corresponding cross-section. It also will describe relocation of thermographs that result from this evaluation.

### **Annual Summaries**

The 15-minute water temperature and discharge flow data from each monitoring station will be downloaded into a tabular spreadsheet and presented monthly for each monitoring year. Graphs will be produced to display the relationship between water temperature and discharge flow for each station, by month. In addition, graphs will be produced for the water temperature and discharge flow data for each of the periods associated with flow changes or tests identified in the results section. The annual summaries also will include an assessment of the season's data compared to the Data Quality Objectives identified in the QAPP.

### **Five-Year Report**

Following the five-year monitoring period, a report including the data and summaries of the monitoring effort will be developed. A draft final report that details each year of the monitoring program and summarizes the results will be prepared and provided for review and comment. Comments and suggestions will be addressed in a final report to IDEQ after the final year of monitoring. The intent of the five-year monitoring report is to address the appropriate conditions of the Idaho WQC.

## **8.0 Plan Review and Revision**

This Monitoring Plan has been produced in consultation with IDEQ and WDFW. Annual summaries of the water quality data, flow tests, and other pertinent information will be available for review by Avista and IDEQ by November 10<sup>th</sup> annually.

It is possible that natural conditions, equipment malfunction or other factors may prevent the objectives of this monitoring plan from being met. Upon review of the five-year monitoring report, Avista will consult with IDEQ to assess the completeness of implementing the Monitoring Plan. Appendix A, Section I.C.2.c of the License states:

*Should IDEQ determine that the data are insufficient to make a determination regarding the discharge operations, Avista shall extend the period of data collection until at least two (2) years of data under "low flow" conditions (when the reduced flow of 500 cfs is implemented) have been collected...*

Avista and IDEQ will provide rationale supporting the determination that the objectives of the

Monitoring Plan are not complete within the 5-year period. If the objectives of the Plan are not achieved, Avista will extend the period of data collection as stated above.

## **9.0 Consultation Record**

Avista has consulted IDEQ and WDFW in development of this Monitoring Plan and has incorporated their recommendations as appropriate. Documentation of the consultation process for this purpose is provided in Appendix 1. As the Monitoring Plan and associated QAPP are implemented, the record of consultation will be maintained and reported, as appropriate.

## **10.0 Literature Cited**

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## Appendix A

### Consultation during development of the Plan and QAPP

- March 12, 2009: Tim Vore (Avista) and Bob Steed (IDEQ) had an informal meeting to discuss an outline for the Monitoring Plan and QAPP;
- July 13, 2009: Tim Vore (Avista) invited Bob Steed (IDEQ) for site visit to determine monitoring locations.
- August 28, 2009: Tim Vore (Avista) telephoned Doug Robison (WDFW) that Avista is developing the Monitoring Plan and associated QAPP.
- September 11, 2009: Tim Vore (Avista) met with Bob Steed (IDEQ) to discuss Review and Comment drafts of the Monitoring Plan and QAPP.
- September 25, 2009: Bob Steed (IDEQ) reviewed Review and Comment draft Monitoring Plan and QAPP; then emailed these documents to WDFW, WDOE, Coeur d'Alene Tribe, and Idaho Department of Fish and Game (IDFG) for their review and input; and scheduled meeting with them to discuss comments.
- November 2, 2009: IDEQ held meeting with WDFW, WDOE, Coeur d'Alene Tribe, IDFG, and Avista to discuss comments on the Review and Comment draft documents.
- November 4, 2009: Tim Vore (Avista) and Bob Steed (IDEQ) met to revise the Review and Comment draft documents.
- November 9, 2009: Teleconference between Bob Steed (IDEQ), Tim Vore (Avista), and Brian Mattax (Golder) to discuss appropriate document revisions.
- November 10, 2009: Bob Steed (IDEQ) emailed Brian Mattax (Golder) additional information.
- November 11, 2009: Brian Mattax (Golder) emailed Tim Vore (Avista) a final draft of the Monitoring Plan and associated QAPP, and Tim Vore (Avista) emailed Bob Steed (IDEQ) the final draft documents.
- November 12, 2009: IDEQ held meeting with WDFW and WDOE and Avista to discuss comments on the final draft documents.
- November 13, 2009: Bob Steed (IDEQ) emailed Tim Vore (Avista) and Brian Mattax (Golder) comments on the final draft Monitoring Plan including conceptual figures for Test 1 and Test 2.
- November 16, 2009: Tim Vore (Avista) emailed Bob Steed (IDEQ) and Brian Mattax (Golder) information about current and planned USGS operation of their Spokane River near Coeur d'Alene Lake Outlet monitoring station.
- March 26, 2010: Speed Fitzhugh (Avista) provided IDEQ (Dan Redline) the December 2009 Monitoring Plan and QAPP and requested their comments and recommendations.
- March 26, 2010: Speed Fitzhugh (Avista) provided WDFW (Doug Robison) the December 2009 Monitoring Plan and QAPP and requested their comments and recommendations.
- April 12, 2010: Dan Redline (IDEQ) informed Speed Fitzhugh (Avista) of continued support and approval for the December 2009 Monitoring Plan and QAPP.
- April 26, 2010: Doug Robison (WDFW) provided Speed Fitzhugh (Avista) comments on the December 2009 Monitoring Plan and QAPP.
- April 29, 2010: Meeting between Tim Vore (Avista) and Bob Steed (IDEQ) to address responses and potential changes to the Plan and QAPP to address WDFW's comments.

**Appendix B**  
**Consultation Record**  
**Idaho Department of Environmental Quality**

Consultation associated with development and approval of the Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan and associated Quality Assurance Control Project Plan (QAPP):



March 26, 2010

Dan Redline  
Idaho Department of Environmental Quality  
2110 Ironwood Parkway  
Coeur d'Alene, ID 83814

**RE: Spokane River Project, FERC Project No. 2545  
Request for Comments and Recommendations on the Spokane River Water  
Temperature and Discharge Flow Validation Plan and the Spokane River Water  
Temperature and Discharge Flow Quality Assurance Control Project Plan, as  
Required by Article 401 (a) of FERC's June 18, 2009 Spokane River Project License**

Dear Dan:

On June 18, 2009 the Federal Energy Regulatory Commission (FERC) issued a new License for the Spokane River Project, FERC Project No. 2545 (License). The License became effective on June 1, 2009. Ordering Paragraph D of the License incorporated the *Idaho Department of Environmental Quality Certification Under Section 401 of the Federal Clean Water Act*. The conditions established in the Idaho Certification can be found in Appendix A of the License.

Article 401 of the License required Avista to submit a discharge flow monitoring plan, as identified in Appendix A, Section I.B, to FERC for approval within six months of the issuance date of the License. The deadline for this submittal was December of 2009. Prior to this date, Avista submitted the enclosed Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan (Monitoring Plan) and the Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan (QAPP) to FERC for approval.

On March 22, 2010, FERC notified Avista that it should not have relied solely on the consultation that was conducted during the development of the Monitoring Plan and QAPP, which was required per a Memorandum of Understanding between the Idaho Department of Environmental Quality (IDEQ), Idaho Department of Fish and Game, Coeur d'Alene Tribe, Washington Department of Fish and Wildlife (WDFW), and the Washington Department of

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Ecology. Avista should have also conducted independent consultation with IDEQ and WDFW, in accordance with License Article 401 (a).

To correct this consultation deficiency Avista is requesting IDEQ provide comments and recommendations on the enclosed Monitoring Plan and QAPP to Avista by April 28, 2010. We will incorporate your comments and recommendations as appropriate. We will also provide FERC with our reasons, based on project-specific information, for not including any comments and/or recommendations that you provide into the Monitoring Plan and QAPP.

Please feel free to contact me if you have any questions, or if you wish to discuss the Monitoring Plan, QAPP, or this request for comments and recommendations. I can be reached at (509) 495-4998.

Sincerely,



Elvin "Speed" Fitzhugh  
Spokane River License Manager

Enclosures

c: Rachael Price, FERC - DHAC  
Doug Robison, WDFW



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814 • (208) 769-1422

C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

April 12, 2010

Mr. Elvin "Speed" Fitzhugh  
Spokane River License Manager  
Avista Utilities  
PO Box 3727  
Spokane WA 9920-3727

RE: Spokane River Project, FERC Project No. 2545. Idaho Department of Environmental Quality Comments and Recommendations on Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan and the Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan as Required by Article 401(a) of FERC's June 18, 2009 Spokane River Project License

Dear Mr. Fitzhugh:

Idaho Department of Environmental Quality (IDEQ) received Avista's March 26 request for comments and recommendations on the December 2009, Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan and the December 2009, Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan. IDEQ approved these plans in a letter from me to you, dated December 4, 2009.

IDEQ continues to support approval, and has no additional comments or recommendations.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Redline".

Dan Redline  
Regional Administrator

RS:dh

c: Rachael Price, FERC - DHAC  
Doug Robison, WDFW



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814 • (208) 769-1422

C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

May 12, 2010

Elvin "Speed" Fitzhugh  
Avista Utilities  
PO Box 3727  
Spokane WA 9920-3727

**RE: Spokane River Project, FERC Project No. 2545. Idaho Department of Environmental Quality Approval of Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan and the Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan as Required by Article 401(a) of FERC's June 18, 2009 Spokane River Project License**

Dear Mr. Fitzhugh:

On March 26, 2010, Avista requested comments from Idaho Department of Environmental Quality (DEQ) and Washington Department of Fish and Wildlife (WDFW) on the Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan (Monitoring Plan) and the accompanying Quality Assurance Project Plan (QAPP). DEQ provided comment to Avista on April 12 and WDFW provided their comments on April 26, 2010.

In response to the comments from WDFW, Avista made some changes to the Monitoring Plan and QAPP. Avista has discussed these changes with DEQ and the department agrees with Avista's responses to Washington Department of Fish and Wildlife's comments and recommendations.

The May 11, 2010 versions of both the Monitoring Plan and QAPP meet Idaho's Water Quality Certification requirements (I.B.1. and I.B.2.) pursuant to the provisions of Section 401 (a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 U.S.C. § 1341. DEQ approves the revised Monitoring Plan and QAPP prepared by Avista.

Please contact me if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Dan Redline".

Dan Redline  
Regional Administrator  
Idaho Department of Environmental Quality

c: David T. Knight, Ecology  
Doug Robison, WDFW  
Jim Fredricks, IDFG  
Phil Cerner, Coeur d' Alene Tribe  
Rachael Price, FERC – DHAC  
Thomas Herron, DEQ

**Appendix C**  
**Consultation Record**  
**Washington Department of Fish and Wildlife Consultation**



March 26, 2010

Doug Robison  
Washington Department of Fish and Wildlife  
2315 N Discovery Place  
Spokane, WA 99206

**RE: Spokane River Project, FERC Project No. 2545  
Request for Comments and Recommendations on the Spokane River Water  
Temperature and Discharge Flow Validation Plan and the Spokane River Water  
Temperature and Discharge Flow Quality Assurance Control Project Plan, as  
Required by Article 401 (a) of FERC's June 18, 2009 Spokane River Project License**

Dear Doug:

On June 18, 2009 the Federal Energy Regulatory Commission (FERC) issued a new License for the Spokane River Project, FERC Project No. 2545 (License). The License became effective on June 1, 2009. Ordering Paragraph D of the License incorporated the *Idaho Department of Environmental Quality Certification Under Section 401 of the Federal Clean Water Act*. The conditions established in the Idaho Certification can be found in Appendix A of the License.

Article 401 of the License required Avista to submit a discharge flow monitoring plan, as identified in Appendix A, Section I.B, to FERC for approval within six months of the issuance date of the License. The deadline for this submittal was December of 2009. Prior to this date, Avista submitted the enclosed Spokane River Water Temperature and Discharge Flow Validation Monitoring Plan (Monitoring Plan) and the Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan (QAPP) to FERC for approval.

On March 22, 2010, FERC notified Avista that it should not have relied solely on the consultation that was conducted during the development of the Monitoring Plan and QAPP, which was required per a Memorandum of Understanding between the Idaho Department of Environmental Quality (IDEQ), Idaho Department of Fish and Game, Coeur d'Alene Tribe, Washington Department of Fish and Wildlife (WDFW), and the Washington Department of

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To correct this consultation deficiency Avista is requesting WDFW provide comments and recommendations on the enclosed Monitoring Plan and QAPP to Avista by April 28, 2010. We will incorporate your comments and recommendations as appropriate. We will also provide FERC with our reasons, based on project-specific information, for not including any comments and/or recommendations that you provide into the Monitoring Plan and QAPP.

Please feel free to contact me if you have any questions, or if you wish to discuss the Monitoring Plan, QAPP, or this request for comments and recommendations. I can be reached at (509) 495-4998.

Sincerely,



Elvin "Speed" Fitzhugh  
Spokane River License Manager

Enclosures

c: Rachael Price, FERC - DHAC  
Dan Redline, IDEQ



State of Washington  
DEPARTMENT OF FISH AND WILDLIFE  
Region 1 Office: 2315 North Discovery Place, Spokane Valley, WA 99216-1566 - (509) 892-1001  
HABITAT PROGRAM  
Major Projects Division

April 26, 2010

Mr. Elvin "Speed" Fitzhugh  
Spokane River License Manager  
Avista Corporation  
1411 E. Mission Ave  
Spokane, WA 99220-3727

**RE: Request for Comments and Recommendations on the Spokane River Water Temperature and Discharge Flow Validation Plan and the Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan, as Required by Article 401 (a) of the Spokane River Hydroelectric Project License (FERC no. 2545).**

Dear Mr. Fitzhugh,

The Washington Department of Fish and Wildlife (WDFW) received your March 26, 2010 letter requesting WDFW comments and recommendations on the *Spokane River Water Temperature and Discharge Flow Validation Plan* and the *Spokane River Water Temperature and Discharge Flow Quality Assurance Control Project Plan*. We have reviewed the above Plans and offer the following comments.

The Federal Energy Regulatory Commission (FERC), Spokane River Project License Article 401, requires Avista to submit a Discharge Flow Monitoring Plan, as identified in Appendix A, Section I. B and C, that includes consultation with WDFW. This article requires Avista to submit to FERC documentation of its consultation, copies of comments and recommendations made in connection with the plan, and a description of how the plan accommodates the comments and recommendations. If Avista does not adopt a recommendation, the filing shall include Avista's reason's based on project-specific information.

**General Comments:**

The WDFW has had some consultation with Idaho Department of Environmental Quality (IDEQ) and Avista in the development of the Spokane River Water Temperature and Discharge Flow Validation Plan (Monitoring Plan); however, several of our expressed concerns are not addressed in this Monitoring Plan. We believe the Monitoring Plan does not fulfill the requirements of Appendix A, Section I. B and C of the FERC License.

In the Memorandum of Understanding (MOU) developed between IDEQ, WDFW, WA Department of Ecology, ID Fish and Game, and the Coeur d'Alene Tribe; the mutual intent is to provide for coordination and cooperation to ensure that appropriate monitoring is conducted. Contrary to our best efforts during consultation, certain aspects of the Monitoring Plan lack the appropriate monitoring requirements necessary to provide sufficient quality data in which important decisions can be based.

Our specific comments below call for clarifying the purposes of the Monitoring Plan, increasing the duration and frequency of monitoring alternative discharge flows, removing an inappropriate monitoring location, consultation with WDFW on any changes in the Monitoring Plan, and clear criteria and justification for altering sampling protocols, revising test parameters, or terminating monitoring. WDFW requests these changes be made to the Monitoring Plan to address our concerns. We believe the requested changes will provide for a better Monitoring Plan and the necessary information to adequately address the relationship between discharge flows and water temperature in the Spokane River as it relates to beneficial uses in the Spokane River.

**Specific Comments:**

1. According to Appendix A, Section I. B, the purpose of the Monitoring Plan is to evaluate the data and assumptions upon which the required discharge flows are based. It also states that the plan shall address the relationship between discharge flows and water temperature in the Spokane River.

The MOU regarding the Post Falls Project Discharge Monitoring Plan Development and Data Review provides for in its purpose, review and interpretation of data and regarding the appropriateness of the 500/600 cfs discharge flows required by the Idaho Water Quality Certification (WQC) or alternative discharge flows to support water quality and beneficial uses in both Lake Coeur d'Alene and the Spokane River.

According to Appendix A, Section I. C of the License, discharge operations may be modified, and if so, any operational changes will be based on the data collected.

The plan submitted for review is titled a *validation* Monitoring Plan and states in the purpose that this is to “help validate” information in the Idaho WQC. In the Quality Assurance Control Plan (QAPP), it states that the primary goal for this monitoring study is to help validate the basis on which the Post Falls HED lake level and discharge flow requirements were set in the Idaho WQC.

This effort to validate or confirm a pre-determined position is not consistent with the requirements in Article 401, Appendix A or the MOU. The effort to validate current operations seems to be biased and not accommodating of language in Appendix A Section I.C that outlines a decision path in the event analysis supports an alternative discharge operation.

WDFW requests that all language in the Monitoring Plan and QAPP, implying that this Plan is a “validation” effort, be removed from the document, including the title. The only relevant use of validation is in section 7.2 of the QAPP where data validation refers to the confirmation by examination and provision of objective evidence that the particular requirements for the intended use of data have been met. The purpose and goals of the Monitoring Plan and QAPP should objectively reflect the intent of Article 401, Appendix A.

2. Article 401 referencing Appendix A, Section I. A of the License requires Avista to address the relationship between discharge flows and water temperature in the Spokane River. It's stated on page one of the Monitoring Plan that the monitoring objective is to determine the relationship between discharge flow and water temperatures in the Spokane River downstream from Post Falls as they relate to fish and fish habitat, and specifically, to determine whether discharges from Post Falls Dam at 500/600 cfs and higher discharge flows up to 700 cfs increase temperatures at selected locations in the Spokane River.

Article 417 of the License requires Avista to release flows for whitewater boating ranging from a minimum of 3,300 cfs to a maximum of 5,500 cfs from Post Falls Dam into the Spokane River. Article 401 referencing Appendix A, Section I. A of the License requires a fall draw down operation in September, normally resulting in discharge flows around 1,500 cfs. Both of these operations will significantly increase the flows in the Spokane River, and potentially affect water temperatures.

The objective clearly seems to be focused on whether discharges increase water temperatures. However, the objective in the Monitoring Plan only focuses on flow increases of up to 700 cfs and not more significant discharge flows. The Results Section of the Monitoring Plan states that data collected during flow releases for whitewater boating and Coeur d'Alene Lake drawdown will be included in the final report. WDFW requests that the objective for the Monitoring Plan include monitoring flows and temperatures resulting from other discharge operations, such as flows for whitewater boating and flows resulting from the fall drawdown of Coeur d'Alene Lake.

3. Appendix A of the License requests Avista to address the relationship between discharge flows and water temperature in the Spokane River and requires flow monitoring at the following locations: Spokane River at Post Falls, Spokane River at Greenacres, and Spokane River at Spokane. On page 8 of the Monitoring Plan, the table lists the location of monitoring sites and the parameters monitored. The location Spokane River at Sullivan Road Bridge approximately 300 feet upstream of the bridge does not have flow as a monitored parameter. The location Spokane River at Spokane does not have temperature

monitored. The Monitoring Plan states that specific locations for thermograph deployments will be selected to be representative of the river's main flow, while minimizing the direct influence of groundwater that may influence temperature.

On page 7 of the QAPP, it states that the sampling locations will be chosen to best represent the main Spokane River temperature and flow conditions and to minimize specific bias.

WDFW opposes the choice to monitor flow at a location 300 feet upstream of the Sullivan Road Bridge. This specific location is a transition point in the river where the aquifer input to the river begins which results in flow increases and declining water temperature. At any point above this location or below this location, the temperature and flow characteristics of the river can dramatically change. In a USGS report (Hsieh et al., 2007), seepage runs conducted in 2005 indicated the Spokane River loses water to the aquifer from Post Falls Dam to Flora Road, and that the river gains water downstream of Flora Road. Flora Road is located 1.3 miles upstream of Sullivan Road. Gregory and Covert (2005) measured stream-water temperatures to detect ground-water discharge to the river and found the river gains water below Sullivan Road causing river temperatures to rapidly decrease (see figure below from Gregory and Covert, 2005). Depending on the year and season, locations of ground-water inputs to the river and temperature influences vary at the Sullivan Road location (Hsieh et al., 2007).

Due to the variability of significant ground-water influence around Sullivan Road and because flow data is not going to be collected at this location, WDFW requests that the Sullivan Road monitoring location be omitted from the Monitoring Plan. The value of data from this monitoring location is not indicative of overall habitat characteristics in the Spokane River immediately above or below this location, and therefore this data should not be factored into decision making. We request that the Monitoring Plan focus on collecting flow *and* temperature data in the Spokane River at the other locations included in the Monitoring Plan. The locations near Post Falls Dam, Greenacres, Trent Bridge, and Spokane should provide data representative of river conditions generally found in those reaches. We request temperature data be collected at the Spokane monitoring location and believe the data collected here would be of value.

4. On page 8 of the Monitoring Plan, Table 1 indicates that the USGS gage near Trent Bridge will be activated for this Monitoring Plan. The QAPP states, on page one, that it includes appropriate protocols for flow measurements. On page 4 of the QAPP, it states that more specific monitoring objectives include: define appropriate protocols for flow measurements.

Please include specifics on the type of gage that will be reactivated near Trent Bridge and how the data will be collected. No place in the QAPP is there a discussion of protocols for flow measurements, but it is mentioned that the USGS has them. Please include appropriate protocols for flow measurements, data collection and reporting to fulfill the objectives in the QAPP.

5. On page 10 of the Monitoring Plan, it states in the first paragraph that any changes in the sampling locations or protocol will be confirmed with IDEQ through a signed notification and plan amendment.

We request that WDFW be consulted with regarding any changes in the sampling locations or protocol and any Monitoring Plan (or QAPP) amendment. Any plan or QAPP amendments should receive FERC approval.

6. On page 11 of the Monitoring Plan, it states that “...previous data indicates that increasing discharge during the summer can produce deleterious effects on downstream beneficial uses.”

This claim is unsupported and inappropriate for the Monitoring Plan. There are many downstream beneficial uses that are supported by additional summer discharge (nbc, 2003). Please remove this statement from the Monitoring Plan.

7. Appendix A, Section I.B.2 of the License calls for monitoring alternative discharges during low flow conditions. It states that “*In order to monitor the effects of alternative discharge flows during low flow conditions when the reduction to 500 cfs would otherwise be required by Section I.A.4 of this certification, Avista shall, in accordance with the approved Monitoring Plan, incrementally increase and monitor flows up to 700 cfs during low flow conditions.*”

The Monitoring Plan (and QAPP) commits to one, 3-day test of alternative discharges during the five-year monitoring period. The language in Appendix A calls for monitoring flows up to 700 cfs during low flow conditions. We interpret this to mean that when any low flow condition (500 cfs) occurs during the five years of monitoring, flows will be increased to 700 cfs and monitored. We believe that the one-time, 3-day test proposal is inconsistent with the intent of Appendix A Section I.B.2. and is wholly inadequate.

This short monitoring period does not account for the variability in flow attenuation and aquifer interaction through the monitoring area under various weather and hydrologic conditions. In addition, shoreline habitat that may be inundated during the test period will have been heated by the sun. Inundation of these heated shoreline areas could influence conditions and data quality during this short test period. A longer test period would allow flow and river conditions to stabilize throughout the monitoring area and duration. In addition, it is important that this type of test flow happen whenever low flow conditions occur to account for the variability in weather, hydrologic conditions, and aquifer dynamics that may influence data results over the five year monitoring term. WDFW proposes that the test monitoring be at least seven consecutive days and that the test monitoring occur every time low flow conditions occur during the five year monitoring period.

8. On page 12 of the Monitoring Plan, it states that IDEQ may terminate or revise test parameters depending on data results.

Referring to our comment #1 above, we are concerned with the lack of rationale and clear criteria behind the possibility that IDEQ may terminate or revise test parameters. It is important that sufficient quality data are collected and that data is representative of various hydrologic and weather conditions. We request that WDFW be consulted with regarding any changes in the sampling locations or protocol and any Monitoring Plan (or QAPP) amendment. Any Plan or QAPP amendments should receive FERC approval.

9. On page 12 of the Monitoring Plan, there is a proposal for an optional test. However, this optional test is contingent upon flow and water conditions that are agreed upon by Avista and IDEQ.

This test condition is ambiguous, and we believe it is subject to potential biases. There are no criteria for when or how this test will be conducted, or if it will be conducted at all. The test conditions should occur as intended in Appendix A Section I.B.2. Please see our comment #7 above. WDFW requests that the test monitoring be at least seven consecutive days and that the test monitoring occur every time low flow conditions occur during the five year monitoring period.

10. Appendix A, Section I.C.2.c of the License states that “*Should IDEQ determine that data are insufficient to make a determination regarding the discharge operations, Avista shall extend the period of data collection until at least two (2) years of data under low-flow conditions (when the reduced flow of 500 cfs is implemented) have been collected.*”

This section implies that it is expected that more than one year of data will be necessary for analysis and decision making, and that if this data is insufficient, then *at least* two additional years of data will be required. If the Idaho WQC requires at least two years of adequate data for decision making, why is only 3-day period of monitoring alternative discharge flows proposed in the Monitoring Plan? WDFW requests that the test monitoring be at least seven consecutive days and that the test monitoring happen every time low flow conditions occur during the five year monitoring period.

11. On page 14, Section 6.0 Results, it states that specific results will be assessed from each station for at least 2 days before and 3 days after implementing discharge changes for test conditions, whitewater boating, and fall drafting of Coeur d’Alene Lake.

Data collection will be continuous from July 1 through September 30 for the five year monitoring term. Prior to, during, and after changes in discharge, it is important that river and weather conditions be assessed and reported on for a term long enough to adequately characterize conditions that are influencing data results regarding the change in discharge. WDFW requests that specific results be assessed from each station for at least one week before, during the change, and one week after implementing discharge changes for test conditions, whitewater boating, and fall drafting of Coeur d’Alene Lake.

12. On page 15, it is stated that the intent of the five-year monitoring report is to address the appropriate conditions of the Idaho WQC.

Spokane River Project P-2545 – Temperature and Flow Monitoring Plan

According to Appendix A, the intent of the five-year monitoring report should be to evaluate the data and assumptions upon which the required discharge flows are based and address the relationship between discharge flows and water temperature in the Spokane River. Please see our comments under #1 above. We request that the intent of the Monitoring Plan be made consistent with language in the Idaho WQC, Appendix A, Section I.B.

13. On page 16 of the Monitoring Plan, it states that “*Annual review of the summaries (of the water quality data) may alter the sampling protocols if mutually agreed to by IDEQ and Avista.*”

No criteria or rationale is given for why or how annual reviews of the data warrant altering of the sampling protocols. Given the stated purpose and objective to “validate” current operations, WDFW strongly objects to potential manipulation of the study protocol by IDEQ and Avista. See comments #1 and #8.

Thank you for the opportunity to provide comments and recommendations on the Monitoring Plan. If you have any questions or want to discuss any of our comments, I can be reached at (509) 892-1001 x322.

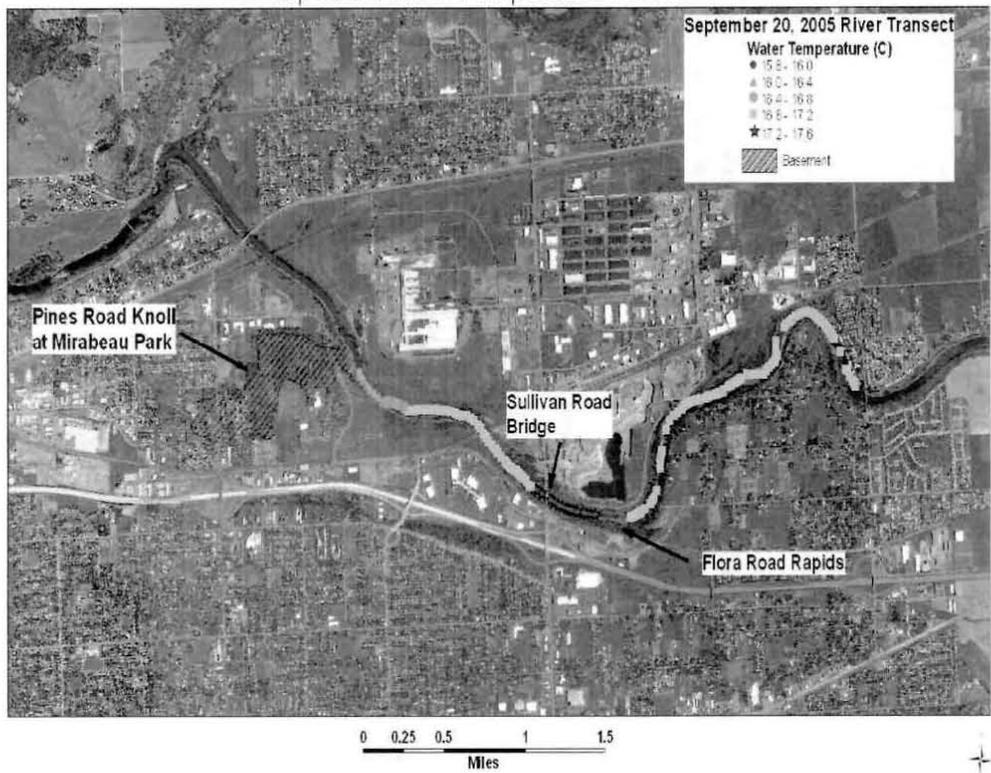
Best Regards,



Doug Robison  
Hydropower Mitigation Coordinator

cc: Rachael Price, FERC – DHAC  
WA Dept. of Ecology – Jim Bellatty, Marcie Mangold, Guy Gregory

Figure 2  
Temperature Readings Every 30 Seconds  
Spokane River Temperature Profile



### References

- Gregory, J.G., and Covert, J.J., 2005, Spokane River temperature profile, Barker Road to Planters Ferry Park, September, 2005: Washington State Department of Ecology Publication No. 06-11-005, 15p.
- Hsieh, P.A., Barber, M.E., Contor, B.A., Hossain, Md. A., Johnson, G.s., Jones, J.L, and Wylie, A.H., 2007, Ground-water flow model for the Spokane Valley-Rathdrum Prairie Aquifer, Spokane County, Washington, and Bonner and Kootenai Counties, Idaho: U.S. Geological Survey Scientific Investigations Report 2007-5044, 78p.
- NHC, 2003. Spokane River Project - Water Budget and Identification of Beneficial Uses. Prepared for Avista Corporation by Northwest Hydraulics, Seattle, WA. 2003.

## **WDFW comments and Avista responses:**

### **WDFW comment number 1:**

WDFW requests that all language in the Monitoring Plan and QAPP, implying that this Plan is a “validation” effort, be removed from the document, including the title.

#### ***Response:***

*The word validation is removed from the title and other areas of the documents.*

### **WDFW comment number 2:**

WDFW requests that the objective for the Monitoring Plan include monitoring flows and temperatures resulting from other discharge options, such as flow for whitewater boating and flows resulting from the fall drawdown of Coeur d’Alene Lake.

#### ***Response:***

*Avista will not be providing whitewater boating flows during the period of July 1 to September 30. The condition to provide provisions for this event has been removed from section 6 of the document.*

*As directed by the Idaho 401 certification and FERC license Appendix A, Section I, B.1, the sampling period for this study is from July 1 through September 30 for 5 years unless IDEQ determines 5 years of monitoring is not necessary. We have revised section 6.0, item 2 in the Plan to record data for 7 days before and after the fall drawdown. Flows resulting from fall drawdown of Coeur d’Alene Lake during this period will be assessed.*

### **WDFW comment number 3a:**

WDFW opposes the choice to monitor flow at a location 300 feet upstream of the Sullivan Road Bridge. WDFW requests that the Sullivan Road monitoring location be omitted from the Monitoring Plan.

#### ***Response:***

*Flow will not be monitored at a location 300 feet upstream of the Sullivan Road Bridge. However, monitoring of water temperature at the Sullivan Road location will remain in the Plan. The Sullivan station is at the same location where water temperature data was previously collected and reported in Avista Environmental Affairs Memorandum, Spokane River Temperatures, August 24, 2004, and the Graphs of Instream Flow Scenario Results, Presentation and Handouts, Robert Anderson, Golder and Associates, August 2004. In order to “evaluate the data assumptions upon which the required discharge flows are based” it is critical that we collect data from the same location that our data and assumptions were originally gathered. This area of the Spokane River is the furthest upstream site where changes in flow are known to affect water temperatures and is necessary to understand the relationship between flow and temperature. WDFW concerns regarding groundwater inputs and temperature variability at the Sullivan Road location is addressed in the QAPP section 4.1.4 under representativeness.*

### **WDFW comment number 3b:**

WDFW requests that the Monitoring Plan focus on collecting flow and temperature data in the Spokane River at the other locations included in the Monitoring Plan. The location near Post Falls Dam, Greenacres, Trent Street Bridge, and Spokane should provide data representative of

river conditions generally found in those reaches. WDFW requests temperature data be collected at the Spokane monitoring location and believes that data collected there would be of value.

**Response:**

*Water temperature information at the Spokane station is not relevant to “evaluate the data and assumptions upon which the required discharge flows are based”. Water temperature at the Spokane station (approximately 10 miles downstream of the Trent Street Bridge) is affected by the Upriver Hydroelectric Project operated by the City of Spokane, and Avista’s Upper Falls and Monroe Street HEDs, all three of which are located downstream of the relevant free-flowing stretch of river. Water temperature and flow will be monitored at the Spokane River near Post Falls, at Greenacres, and below Trent Street Bridge. Flow and water temperature data collected near the Trent Street Bridge, at Plantes Ferry just upstream of the City of Spokane’s Upriver Project’s impoundment, makes water temperature information at the Spokane station, which is three HED’s downstream unnecessary for the purpose of this study.*

**WDFW comment number 4:**

Please include the specifics on the type of gage that will be reactivated near Trent Bridge and how the data will be collected. No place in the QAPP is there a discussion of protocols for flow measurements, but it is mentioned that the USGS has them. Please include appropriate protocols for flow measurements, data collection and reporting to fulfill the objectives in the QAPP.

**Response:**

*Standard and approved USGS methods will be used to collect flow measurements at the Trent Street Bridge and the other USGS gauging stations. Trent Street Bridge will be re-established and operated by USGS to measure continuous stage and discharge consistent with standard USGS protocols. USGS current methods include making 6 discharge measurements to create a stage discharge rating curve to be checked with an outside staff gage.*

*The following sentence in section 4.1 of the QAPP confirms that flow will meet USGS standards: “The USGS maintains standard procedures to ensure its DQOs for flow and lake level data are met.”*

**WDFW comment number 5:**

WDFW requests to be consulted with regarding any changes in the sampling locations or protocols and any Monitoring Plan (or QAPP) amendment. Any plan or QAPP amendments should receive FERC approval.

**Response:**

*The following sentences have been added to Section 4: If a thermograph is moved, IDEQ and WDFW will be notified within five working days. And, WDFW input on matters affecting modification of test parameters will be sought. The following sentence has been added to Section 8 of the QAPP, “WDFW input on matters affecting modifications to the QAPP will be sought.” Avista will notify FERC of any changes to the Monitoring Plan or QAPP.*

**Supplemental IDEQ Response:** *On April 29, 2010, IDEQ recommended removing the first quote in Section 8 because it is redundant. IDEQ also recommended removing the approval sheet from*

*both the Monitoring Plan and QAPP and to revise the first paragraph in Section 4 of the Plan to read: “These methods will be implemented in consultation with WDFW and IDEQ and/or following review of the annual reports.” Recommendations have been accepted.*

**WDFW comment number 6:**

On page 11 of the Monitoring Plan, it states that “...previous data indicates that increasing discharge during summer can produce deleterious effects on downstream beneficial uses.” This claim is unsupported and inappropriate for the Monitoring Plan. There are many downstream beneficial uses that are supported by additional summer discharge (nhc, 2003). Please remove this statement from the Monitoring Plan.

**Response:**

*As requested, the aforementioned statement has been removed from the Monitoring Plan.*

**Supplemental IDEQ Response:** *On April 29, 2010 IDEQ recommended the following language instead be included in the first paragraph of Section 4, under Test of Discharge Flow and Water Temperature, “If data results indicate that beneficial uses or fish resources are being negatively impacted by the tests, IDEQ may propose to modify test parameters. An example of a negative impact is increasing discharge increases recorded water temperatures from temperatures below 21°C to temperatures 23°C or above at a monitoring location. Another example of a negative impact is observed fish mortality within the study area. WDFW input on matters affecting modification of test parameters will be sought. Avista will notify FERC of any modifications made to test parameters.”*

**WDFW comment number 7:**

It is important that this type of test flow happen whenever low flow conditions occur to account for the variability in weather, hydrologic conditions, and aquifer dynamics that may influence data results over the five year monitoring term. WDFW proposes that the test monitoring be at least seven consecutive days and that the test monitoring occur every time low flow conditions occur during the five year monitoring period.

**Response:**

*The text for Test 1 in section 5.2 of the QAPP has been revised to include: “The first year operational conditions result in reaching the trigger lake elevation of 2,127.75 feet (2,127 feet and 9 inches) the first time in a year, Avista will increase discharge to 700 cfs for **seven** consecutive days (**168** hours).”*

*The text for Test 2 has been revised to include: “In addition to the test described above, **two additional** flow manipulation test(s) **will** occur during the five-year evaluation period.”*

**Supplemental IDEQ Response:** *On April 29, 2010, IDEQ recommended Test 2 be changed to read: “In addition to the test described above, two additional flow manipulation test(s) will occur during the five-year evaluation period. The commitment to perform the test(s) will be contingent on flow and weather conditions. The additional test(s) will begin seven days after the initial reduction to near 500 cfs (as required by condition I.A. of the Idaho WQC). During this test, discharge will be increased from 500 cfs to near 700 cfs for three to seven days (i.e., 72 to*

168 hours) followed by a reduction in discharge to the required 500 cfs.” IDEQ also suggested removing figure 5, which has been done.

**WDFW comment number 8:**

WDFW requests to be consulted with regarding any changes in the sampling locations or protocol and any Monitoring Plan (or QAPP) amendment. Any Plan or QAPP amendments should receive FERC approval.

**Response:**

*Avista will consult with IDEQ and WDFW before implementing any changes to the Monitoring Plan or QAPP. Avista will also notify FERC of any changes to the Plan or QAPP. See response to comment number 5.*

**WDFW comment number 9:**

WDFW requests that the test monitoring be at least seven consecutive days and that the test monitoring occur every time low flow conditions occur during the five year monitoring period.

**Response:**

*Please see response to comment number 7.*

**WDFW comment number 10:**

WDFW requests that the test monitoring be at least seven consecutive days and that the test monitoring happen every time low flow conditions occur during the five year monitoring period.

**Response:**

*Please see response to comment number 7.*

**WDFW comment number 11:**

WDFW requests that specific results be assessed from each station for at least one week before, during the change, and one week after implementing discharge changes for the test conditions, whitewater boating, and fall drafting of Coeur d’Alene Lake.

**Response:**

*Comment is accepted. Specific results will be assessed for at least one week before, during the change, and one week after conditions. Section 6, item 1 of the Plan has been revised to state: “Discharge flows and Spokane River water temperatures for 7 days before and 7 days after implementing any initial reduction to near 500 cfs as described in Section I.A. of the Idaho WQC.” Avista will not be conducting whitewater boating flows during the sampling period so no results will be assessed.*

*Section 6, item 2 has been modified to state (in **bold**): Discharge flows and Spokane River water temperature will be assessed for 7 days prior to and 7 days after the initiation of the annual fall draft of Coeur d’Alene Lake as described in Section I.A of the Idaho WQC and limited to the September 30 monitoring period.*

**WDFW comment number 12:**

We request that the intent of the Monitoring Plan be made consistent with language in the Idaho

WQC, Appendix A, Section I.B.

**Response:**

*The Monitoring Plan is consistent with the language of the Idaho WQC. The purpose of the Monitoring Plan is to comply with conditions I.B and I.C of the Idaho WQC.*

**Supplemental IDEQ Response:** *On April 29, 2010 IDEQ recommended adding the following language to Section 1 of the Plan to further clarify the intent and basis for the discharge flow: “The basis for the required discharge flows is addressed by the State of Idaho that identifies “data and assumptions” as:*

- 1. Graphs of Instream Flow Scenario Results, Presentation and Handouts, Robert Anderson, Golder and Associates, August 2004*
- 2. Avista Environmental Affairs Memorandum, Spokane River Temperatures, August 24, 2004*
- 3. Fish Flow Proposal-Draft Spokane River Instream Flow PM&E Language developed by Ned Horner, Idaho Department of Fish and Game, November 3, 2004.*

*This Monitoring Plan and associated Quality Assurance Protection Plan (QAPP) were prepared in consultation with the Idaho Department of Environmental Quality and the Washington Department of Fish and Wildlife (WDFW) to satisfy Article 401(a)(No. 1) of the FERC license (See Appendix 1)”. This text has been added to the Monitoring Plan.*

**WDFW comment number 13:**

WDFW strongly objects to potential manipulation of the study protocol by IDEQ and Avista.

**Response:**

*It was never the intent of Avista or IDEQ (pers. communication Robert Steed (IDEQ) April 29, 2010) to manipulate the study protocols. The intent of building flexibility into the Monitoring Plan was to facilitate adaption of new information and to address concerns that the flow tests or flow changes could degrade beneficial uses. WDFW will be consulted on potential changes in protocols.*