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August 5, 2015

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Secretary Bose:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new 50-year License (License) for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington.

In accordance with Appendix B, Section 5.4.D of the License, Avista is implementing the Long Lake Dam Spillway Modification Project as a mitigation measure to abate or eliminate the effect of the dam on total dissolved gas (TDG) levels downstream of the dam. The TDG project includes constructing a road and staging areas, installing spillway deflectors, filling the plunge pool and removing a portion of the rock outcrop below spillway bays 7 and 8 to allow water to skim across the surface of the plunge pool after passing over the deflectors. Following the above, the disturbed areas will be restored. The TDG project is currently scheduled to be completed in 2016 and 2017, with the goal of completing everything except the restoration component of the project in 2016.

As part of the TDG project, Avista prepared the enclosed July 2015 Long Lake Dam Spillway Modification Project Environmental Report (Environmental Report) which discusses the proposed improvements, spillway modification design, and potential environmental impacts associated with the TDG project. Avista submitted the Environmental Report to the Spokane Tribe, Washington Department of Ecology, Washington Department of Fish and Wildlife, the Washington State Historic Preservation Office, Washington State Parks, and the U.S. Fish and Wildlife Service for their review and comment. The consultation record is included in Appendix C of the Environmental Report.

With this, Avista is submitting the Environmental Report to FERC for review and approval. Avista is also working through the required local, state, and federal permitting processes to allow the project to move forward in a timely manner. If you have any questions regarding the Environmental Report or the TDG project, please feel free to contact me at (509) 495-4998.

Sincerely,

A handwritten signature in blue ink, which appears to read "Speed Fitzhugh". The signature is written in a cursive, flowing style.

Elvin "Speed" Fitzhugh
Spokane River License Manager

Ms. Kimberly D. Bose

August 5, 2015

Page 2

Enclosure

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AVISTA CORPORATION

Long Lake Dam Spillway Modification Project

ENVIRONMENTAL REPORT

Spokane River Hydroelectric
Development Project
FERC Project No. 2545

Prepared By:



July 2015

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Total Dissolved Gas License Requirement	3
2.0	PROJECT DESCRIPTION/PROPOSED ACTION.....	5
2.1	Temporary Access Road	5
2.2	Staging/Stockpiling	9
2.3	Temporary Cofferdam Construction	9
2.4	Dewatering	9
2.5	Deflectors and Spillway Toe Repair.....	10
2.6	Rock Excavation	10
2.7	Voids and Plunge Pool	13
2.8	Demobilization/Restoration.....	14
2.9	Permitting and Construction Schedule	15
3.0	WATER QUALITY	16
3.1	Existing Conditions	16
3.2	Potential Impacts	16
3.3	Proposed Mitigation	16
4.0	BALD EAGLES	19
4.1	Existing Conditions	19
4.2	Potential Impacts	19
4.3	Proposed Mitigation	19
5.0	THREATENED AND ENDANGERED SPECIES	21
5.1	Existing Conditions	21
5.2	Potential Impacts	21
5.3	Proposed Mitigation	21
6.0	FISHERIES	22
6.1	Existing Conditions	22
6.2	Potential Impacts	23
6.3	Proposed Mitigation	23
7.0	TERRESTRIAL RESOURCES.....	24
7.1	Existing Conditions	24
7.2	Potential Impacts	24
7.3	Proposed Mitigation	24
8.0	RECREATION / LAND USE.....	27
8.1	Existing Conditions	27
8.2	Potential Impacts	27

8.3	Proposed Mitigation	27
9.0	CULTURAL	29
9.1	Existing Conditions	29
9.2	Potential Impacts	29
9.3	Proposed Mitigation	29
10.0	REFERENCES	30

TABLES

Table 1. Fish Species Occurring in Lake Spokane

FIGURES

- Figure 1. Long Lake Dam
- Figure 2. Long Lake Dam Location, Vicinity and Site Map
- Figure 3. Site Plan with Temporary Access Road and Construction Staging Areas
- Figure 4. Temporary Access Road Cross-Section within the Spokane River
- Figure 5. Spillway Deflector
- Figure 6. Left Abutment Excavation
- Figure 7. Rock Outcrop Removal
- Figure 8. Plunge Pool Backfill Diagram
- Figure 9. Eagle Nests in Project Vicinity
- Figure 10. Wetland Location Map
- Figure 11. Recreation and Land Use Impacts

APPENDIX

- Appendix A. Proposed Construction Site Photographs
- Appendix B. Consultation Record on the Project
- Appendix C. Consultation Record on the Environmental Report

1.0 INTRODUCTION

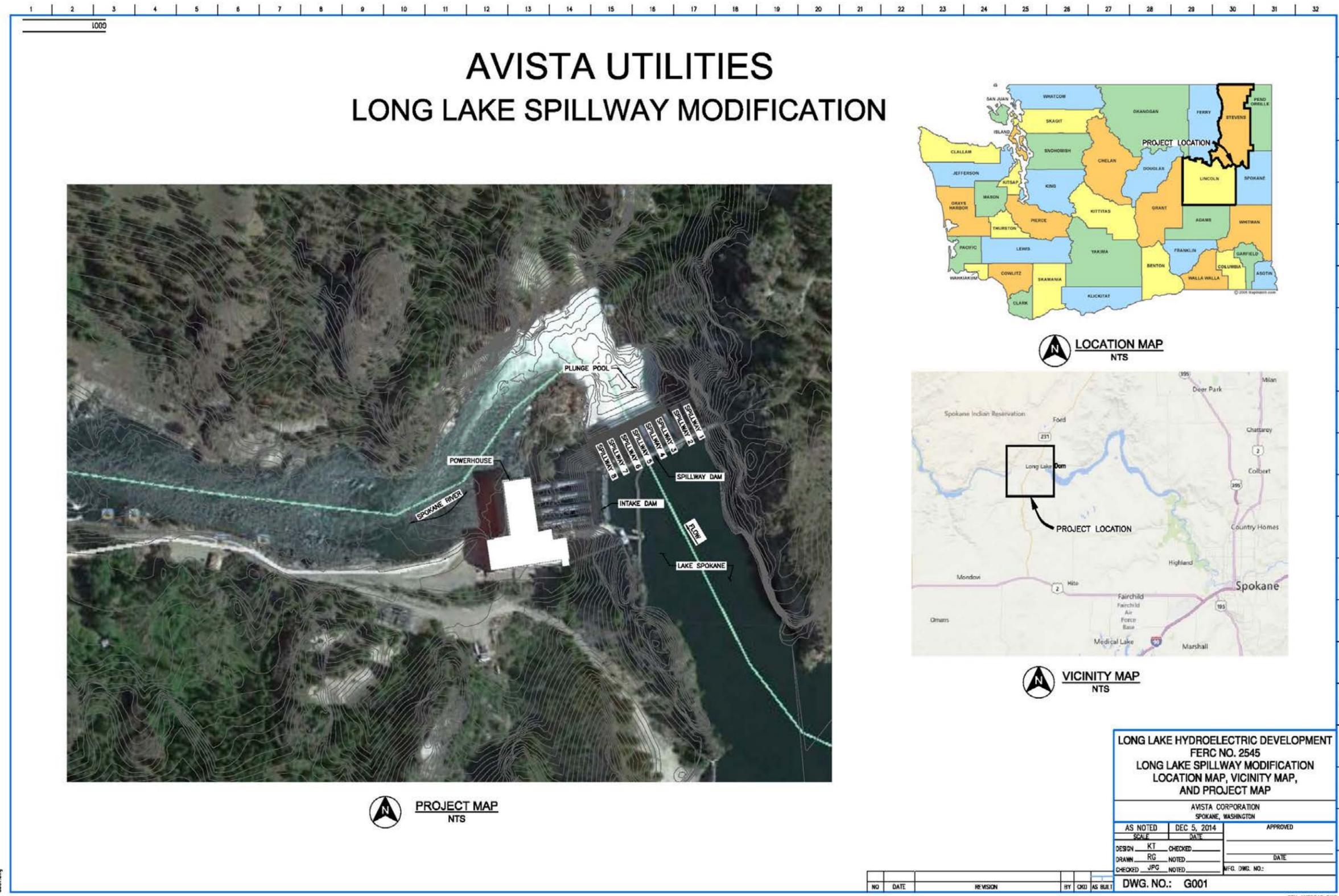
On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new 50-year license for Avista Corporation's Spokane River Project (Project), FERC Project No. 2545-091. The FERC License (License) became effective on June 1, 2009 and includes operation of the Long Lake Hydroelectric Development (HED) in Washington.

Long Lake Dam is located at river mile 34, approximately five miles upstream of Little Falls HED, in both Stevens and Lincoln Counties, and is the most downstream of Avista's Spokane River HEDs (Figure 1 and Figure 2).

Figure 1. Long Lake Dam



Figure 2. Long Lake Dam Location, Vicinity and Site Map



The Long Lake HED consists of the following constructed facilities:

- A 593-foot (ft) long, 213-ft high main dam;
- A crescent-shaped 247-ft long, 108-ft high cutoff dam located about 900 ft upstream of the main dam;
- A 23.5-mile long, 105,080-acre ft reservoir with a surface area of 5,060 acres at a normal full-pool elevation of 1,536 ft;
- Four intake structures;
- Four 236-ft long, 16-ft diameter penstocks;
- A powerhouse with four double-Francis-type, horizontal shaft turbine-generator units with a nameplate capacity of 71.7 MW;
- A 207-ft-long, 56-ft-wide switch room inside the powerhouse;
- Two 115-kV transmission lines, one 0.81 mile long and the other 1.03 miles long, running approximately parallel to each other between the powerhouse and the Devil's Gap substation;
- Eight spillway bays; and
- Appurtenant facilities.

The eight spillway bays are numbered sequentially from spillway bay 1 at the east (right) end of the spillway to spillway bay 8 at the west (left) end of the spillway (adjacent to the powerhouse intakes). Each spillway bay is controlled by a 29-ft high by 25-ft wide vertical lift gate.

Spillway bays 3 through 6 discharge into a deep plunge pool, while spillway bays 1, 2, 7 and 8 discharge onto rock outcrops adjacent to the plunge pool area. The hydraulic capacity of the spillway is approximately 115,000 cubic feet per second (cfs) at the normal pool elevation of 1,536-ft. The tailrace water level below the dam varies with flow, ranging between 1,361-ft and 1,378-ft above sea level. Approximately 300-ft downstream from the spillway plunge pool, flow from the spillway passes through a sharp bend before meeting with powerhouse flows in the downstream river channel. The cut-off dam is located in a saddle along the left bank of the reservoir, approximately 900-ft upstream of the intake dam. The crest of the cut-off dam is at 1,537-ft above sea level and the total crest length is approximately 247-ft with a constant radius of 170-ft.

1.1 Total Dissolved Gas License Requirement

The Long Lake Dam spillway is operated during periods when inflows exceed the 6,800 cfs hydraulic capacity of the Long Lake Powerhouse. This typically occurs during the April through July (sometimes earlier) spring runoff season (Golder 2010). During these periods, high concentrations of dissolved gas (ranging as high as 120 to 140 percent of saturation) have been measured in the river downstream of the dam (NHC and McMillen, 2013). Dissolved gas at supersaturated concentrations has been identified as a water quality issue that may affect aquatic

organisms.

Section 5.4.B, Appendix B of the License references the numeric water quality standard for total dissolved gas (TDG) levels downstream of the project [110 percent of saturation for flows up to the 7Q10¹ discharged at the dam (total river flow of 32,000 cfs)]. With the powerhouse operating at 6,800 cfs, the resulting 7Q10 discharge for the Long Lake Dam spillway is 25,200 cfs (NHC 2010). Note: Avista's goal is to improve TDG levels caused by Long Lake Dam.

As part of the FERC relicensing, Avista conducted an initial TDG study for Long Lake HED (EES Consulting 2006), which resulted in a recommendation of five TDG abatement alternatives. This was followed up by a Phase II Feasibility Study (NHC 2010), where these five alternatives (along with a sixth, stepped spillway structure) were further analyzed and narrowed to three alternatives.

The subsequent Phase III Feasibility Study (NHC and McMillen 2013) documented the process of building a physical model and hydraulic testing on the modeled Long Lake Dam spillway. This testing examined potential reductions in TDG from the three alternatives recommended in the Phase II Study. It was also used to estimate TDG performance, construction costs, and included a preliminary geotechnical analysis of the various alternatives that were tested.

Based upon results of the Phase III analysis, Avista determined that the preferred TDG abatement alternative would consist of adding deflectors to the downstream face of the dam, reducing the plunge pool depth, and removing a portion of the rock outcrop below spillway bays 7 and 8. These measures would redirect the discharge horizontally over the water as a skimming flow. Changing the flow pattern from a plunging jet to a skimming flow reduces the depth of plunge and introduction of atmospheric gases into solution within the water column. Further detail is provided in Section 2.

The physical hydraulic model of the preferred deflector design estimated TDG performance to be in the 119 to 122 percent of saturation range (NHC and McMillen 2013). Ecology and FERC concurred with the selection of the preferred alternative on March 19, 2013 and July 25, 2013, respectively. The Spokane Tribe also concurred that the deflector design would provide operational flexibility to reduce TDG on April 9, 2013. Copies of this correspondence are included as Appendix B.

This report describes the TDG spillway modification activities, the existing conditions and the potential impacts that could result from constructing the selected TDG abatement alternative.

¹ *The 7Q10 is the highest average seven consecutive day discharge with an average recurrence probability of 10 percent in any given year, commonly referred to as a 10 year frequency.*

2.0 PROJECT DESCRIPTION/PROPOSED ACTION

The purpose of this spillway modification project is to reduce downstream TDG levels to the approximate TDG levels immediately upstream of the dam. This should minimize and possibly eliminate any negative effects of TDG caused by the dam to downstream aquatic populations and help achieve water quality compliance.

This spillway modification project will require the following:

- Two deflectors will be added to the toe of the spillway; one continuous deflector across the base of spillway bays 7 and 8 and one deflector across the base of spillway bays 3 through 6. The elevations of the two deflectors must be stepped vertically to allow for skimming flow to develop at varying spill flow rates. The deflectors are configured for maximum effectiveness at a spillway design flow of 25,200 cfs.
- A portion of the rock outcrop will be removed to an elevation of 1353-ft downstream of spillway bays 7 and 8 to allow unobstructed flow off the new toe deflector. The material (estimated to be approximately 1,000 cubic feet) will be placed in the plunge pool at the base of spillway bays 3 through 6 to help reduce the depth of the spillway discharges.
- Upon completion of the project, the plunge pool will be capped with concrete to prevent it from being washed into the powerhouse tailrace.

The project has several distinct components and/or phases which are summarized below.

2.1 Temporary Access Road

Several access road locations were evaluated for this project. The preferred location includes disturbed ground with the existing access road that was created during the original dam construction (Figure 3). This would include the previously developed roads and staging areas on the north side of the Spokane River, branching off Highway 291. The existing access road would also be used to stage materials and equipment. Access on the north side of the river was selected as it allows all construction activity to be centralized on property fully owned and controlled by Avista; has no impact to powerhouse access or public access to the Long Lake Dam Picnic Recreation Area; has minimal impacts to existing overhead infrastructure; and provides the greatest flexibility for construction staging, laydown, and preparation. Construction of the temporary access road from Highway 291 would include:

- Improving approximately 3/4 mile of the existing access road to reach the former construction/waste rock disposal site that will be used as a contractor staging area. The rock borrow site is approximately 100,000 square feet in area.

- Constructing a new temporary 3,000-ft long side slope access road from the construction/waste rock disposal site along the north bank of the river and to the temporary cofferdam. The final 680 ft section of this road will be located within or immediately adjacent to the river.
- Constructing the final portion of the temporary access road approximately 450-ft from the temporary cofferdam to the base of the spillway (Figure 4).

Sections of the temporary access road would be constructed using native material (such as rock borrowed from the construction/waste rock disposal site, slope debris, and river alluvium in the immediate area). Rock will be removed as needed, with controlled blasting or other measures and will be utilized for road and staging areas. Photographs showing the location of the temporary access road are included in Appendix A.

Figure 3. Site Plan with Temporary Access Road and Construction Staging Areas

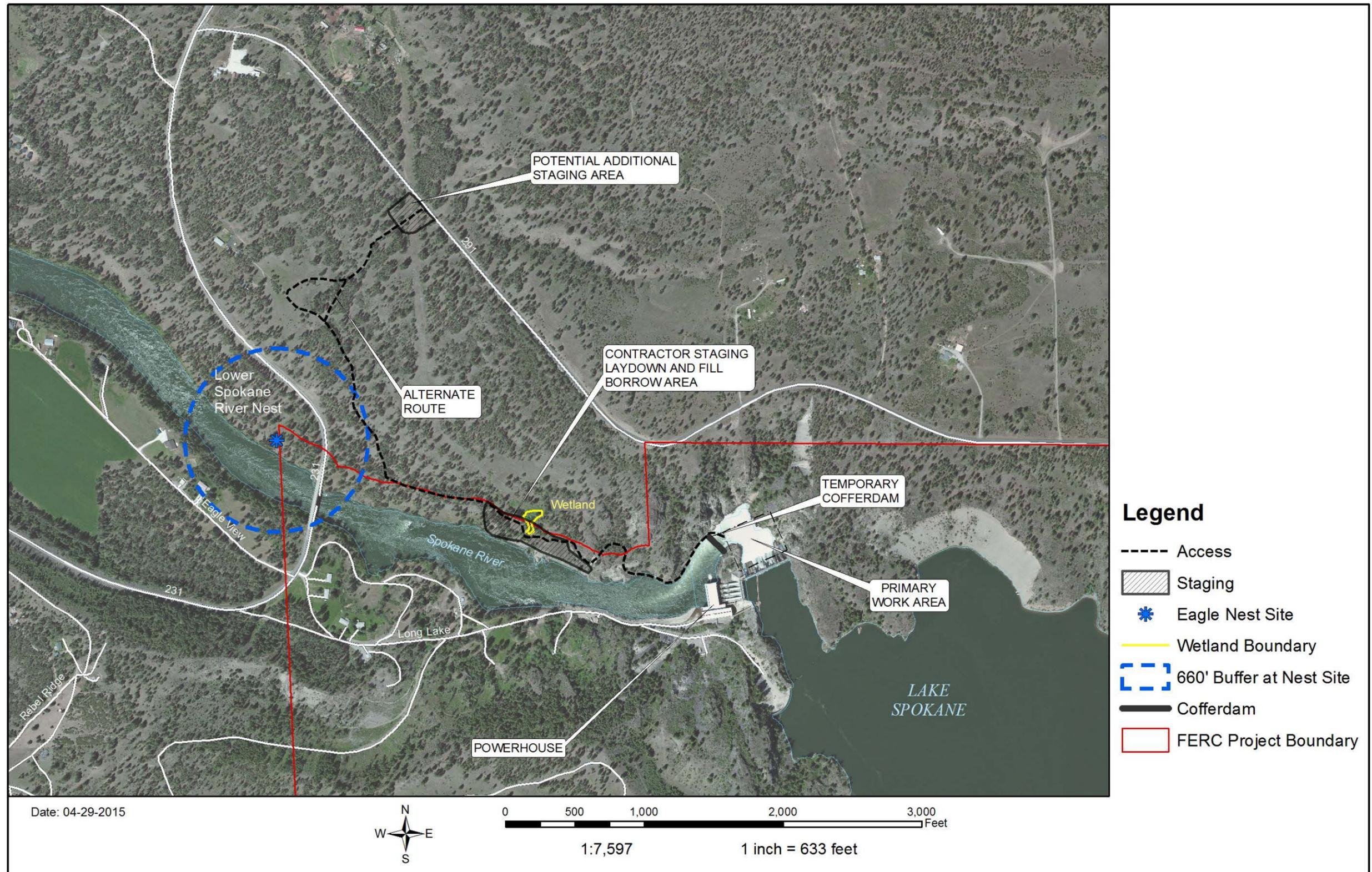
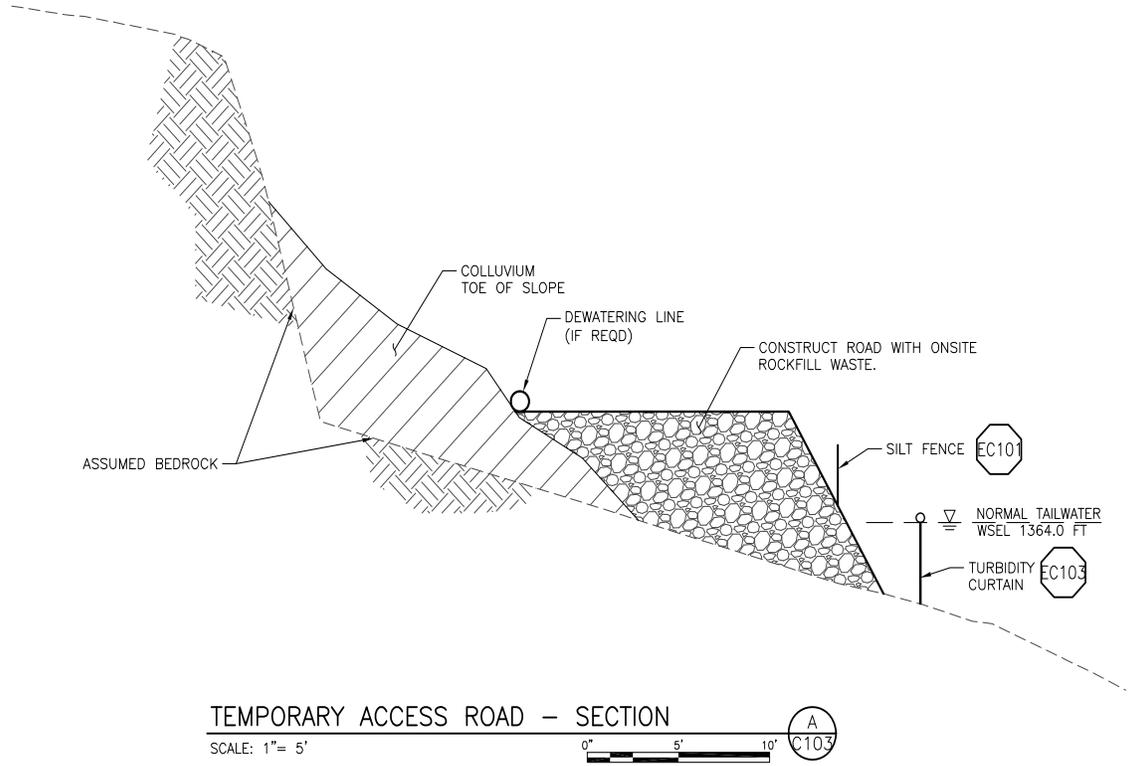


Figure 4. Temporary Access Road Cross-Section within the Spokane River



2.2 Staging/Stockpiling

Staging and stockpile locations will be along the access road and along the shoreline as shown in Figure 3, and will require the following:

- Trees will be removed as described in Section 6.
- The former construction/waste rock disposal site, which is approximately 100,000 square feet in area, will be used as a staging and stockpile site.
- The area near the temporary access road approach to Highway 291 will be used for staging and stockpiling.

2.3 Temporary Cofferdam Construction

Avista plans to construct a temporary stop log structure cofferdam (cofferdam), similar to the one that was constructed in 1993 (Appendix A), during low flow conditions to accommodate dewatering the plunge pool area. The cofferdam will be located approximately 360 ft downstream of the plunge pool and will be constructed as follows:

- Vertical H-beam piers will be installed in the existing concrete keyway slab. Any existing concrete keyways will be repaired as needed to install the H-beams.
- Stop logs or timbers will be installed between the H-beams.
- An impervious lining will be installed on the cofferdam structure to isolate the river from the plunge pool during low flow conditions.

In the instance the existing cofferdam concrete sill is not conducive to re-use for the temporary cofferdam installation, Avista will construct a different type cofferdam in the same general area to allow dewatering of the plunge pool area prior to construction. This may include constructing a cofferdam of rock and gravel similar to the access road, or by using HESCO Baskets as a temporary cofferdam. The HESCO baskets, for example, consist of wire-frame structures lined with geotextile bags that can be filled with locally available earth or rock material. The baskets are generally stacked in a pyramidal fashion and include an upstream impervious liner (usually 40-60 mil plastic) to mitigate through-seepage. In some cases, additional unconsolidated fill is placed on the downstream side of the bags for additional lateral support, if required. If baskets are used a flat, level surface of alluvium must be prepared to keep them level and stable.

2.4 Dewatering

After the cofferdam is installed, the area between the spillway and the cofferdam will be dewatered using a sump pump(s) placed in the plunge pool. Clean leakage will be discharged directly into the river downstream. Turbid water will be pumped into temporary settling ponds, baker tanks, etc. for treatment prior to discharging it back into the river below the cofferdam. Any wastewater (from drilling, concrete cuttings, etc.), if generated, will be contained and either disposed of at an appropriate off-site location or treated on-site to meet water quality standards

prior to being released back into the river.

2.5 Deflectors and Spillway Toe Repair

Two sets of deflectors will be installed along spillway bays 3 through 8 to create skimming flow across the plunge pool (Figures 5 and 6). Constructing the deflectors and repairing the toe of the spillway will include:

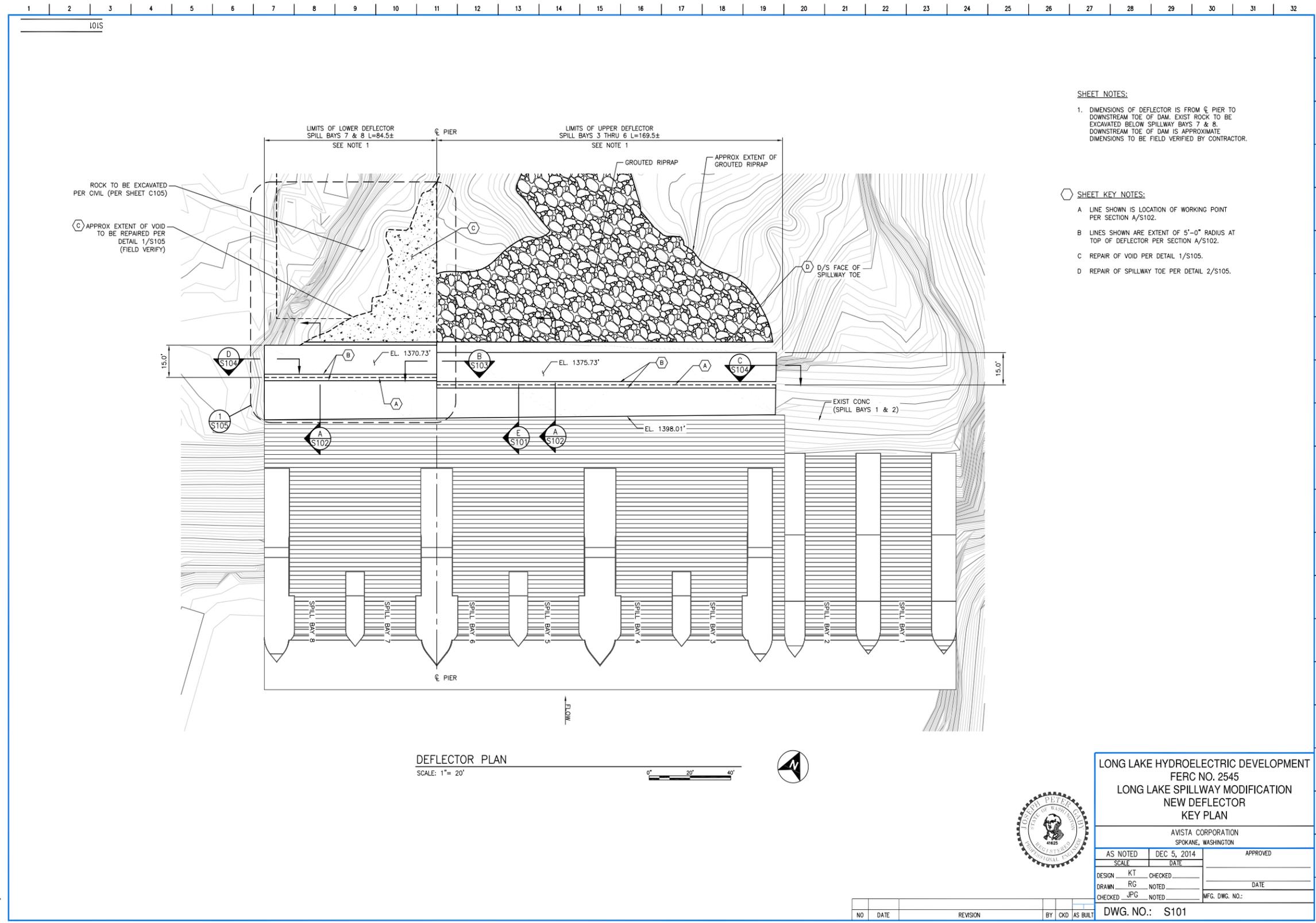
- Excavating a key trench along the face of the spillway to accommodate the deflectors.
- Anchoring the deflectors to the spillway within the key trench.
- Removing portions of the spillway below spillway bays 7 and 8 to form an effective sealing/mating surface with the new deflector concrete and downstream slab.
- Anchoring the concrete to the bedrock below using rock dowels.
- Evaluating the concrete patches between the existing rock at the left abutment and the extent of spillway bay 3.
- Repairing any concrete patches or eroded areas found to be structurally inadequate upon dewatering. The concrete that is removed will be disposed upland, away from the river.

2.6 Rock Excavation

Rock will be excavated to allow water released from spillway bays 7 and 8 to have an unobstructed trajectory from the newly installed deflectors (Figures 7 and 8). This will include:

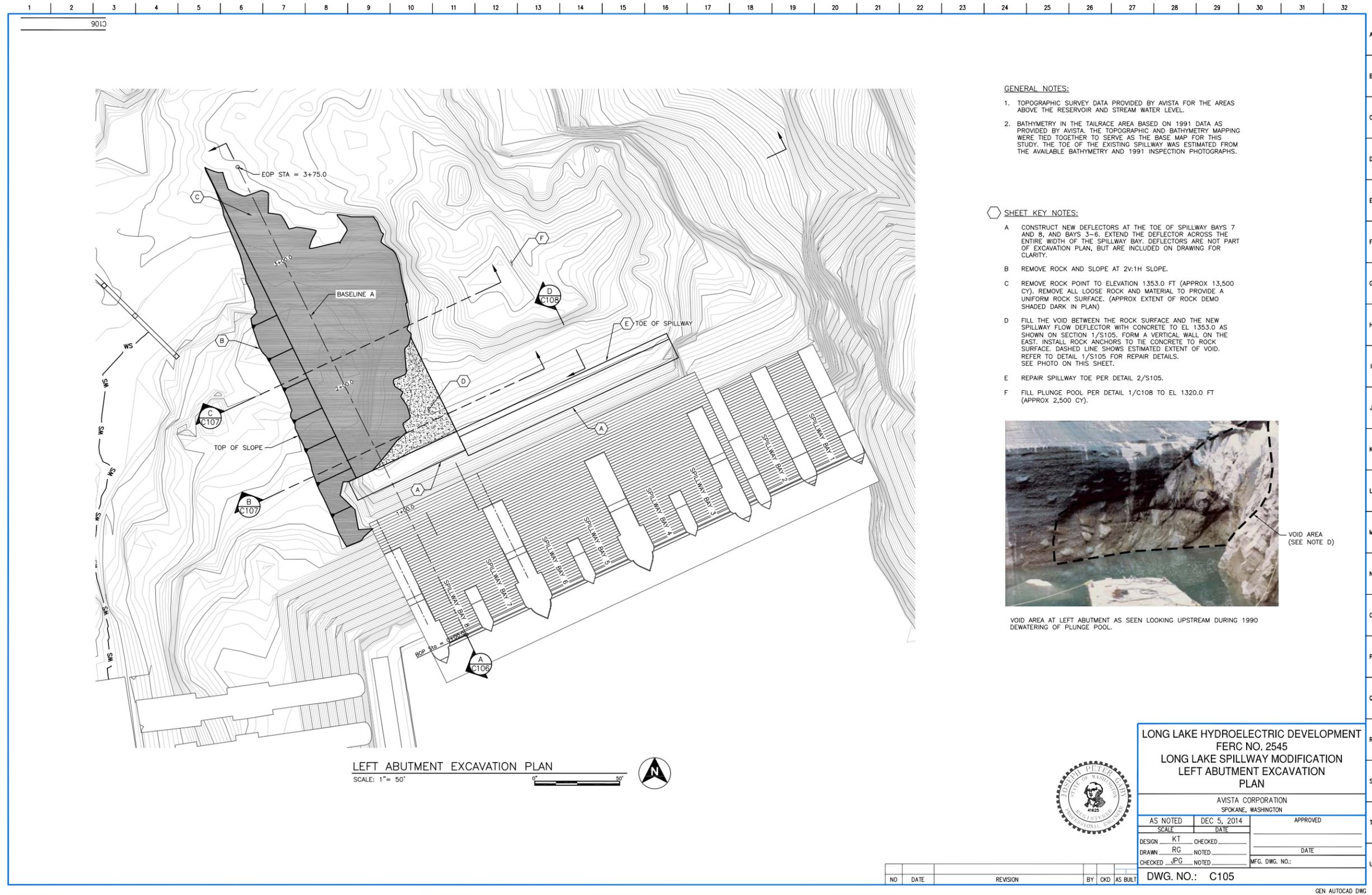
- Removing a portion of the existing rock outcrop directly below spillway bays 7 and 8 to an elevation of 1,353-ft using conventional drilling and blasting programs and in compliance with an Avista approved blasting plan.
- Monitoring vibrations to help prevent potentially damaging vibrations from impacting the existing structure.
- Removing a portion of the rock outcrop and utilizing it to reduce the plunge pool depth.

Figure 5. Spillway Deflectors



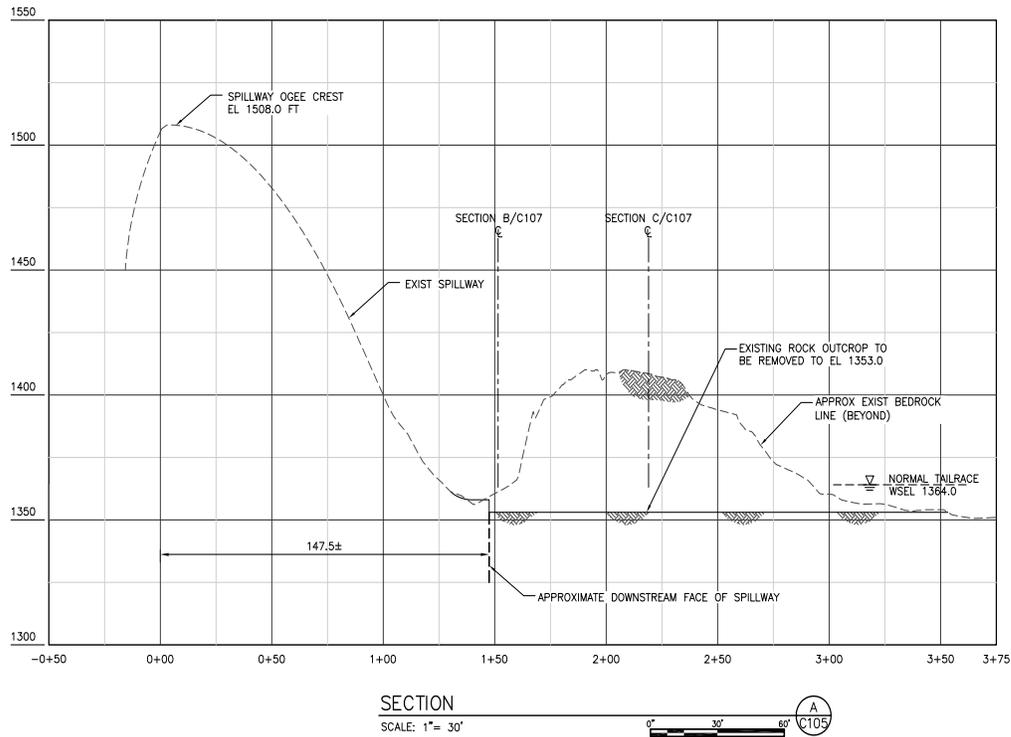
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Figure 6. Left Abutment Excavation



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Figure 7. Rock Outcrop Removal

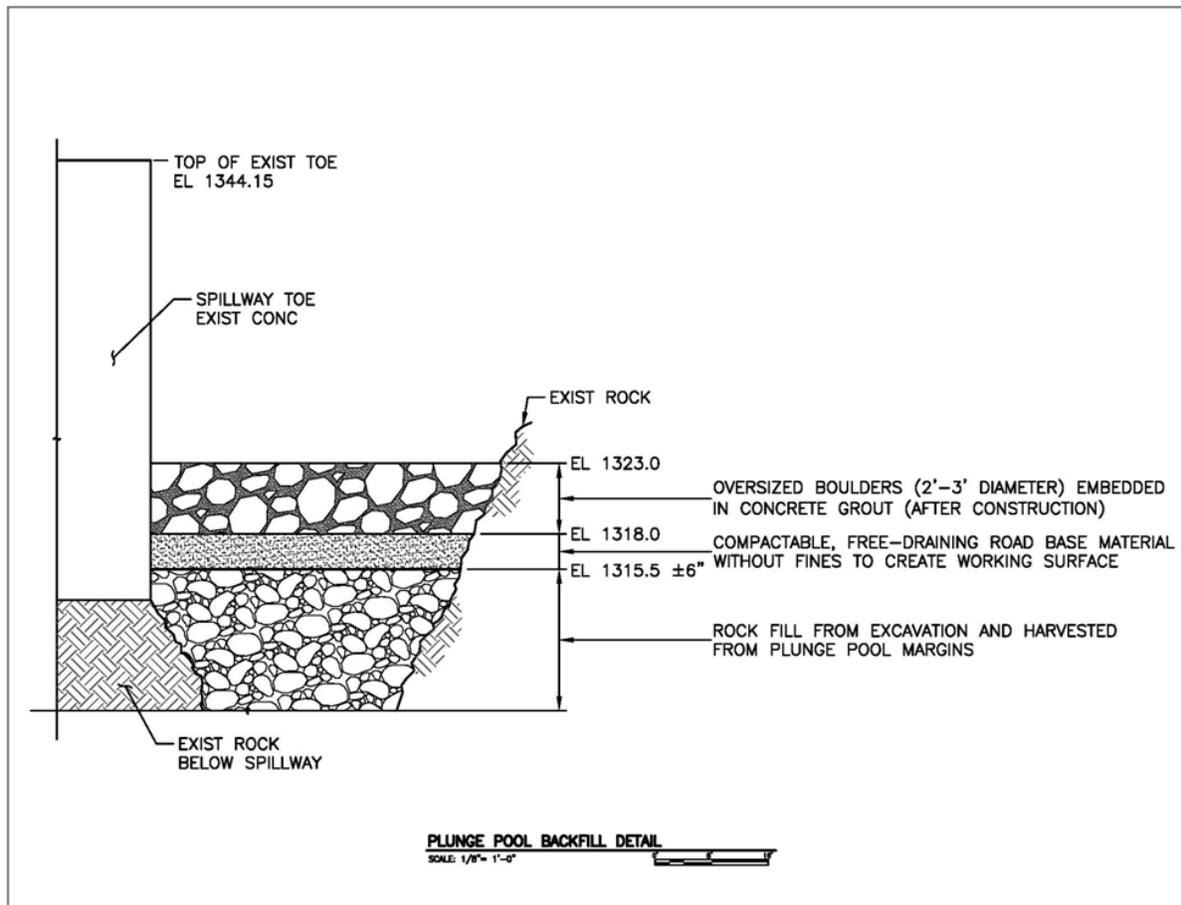


2.7 Voids and Plunge Pool

The voids and the plunge pool will be filled as described below:

- The void space between the toe of the dam and the newly excavated rock surface below spillway bay 8 will be filled with excavated rock material.
- The plunge pool subgrade below spillway bays 3 through 6 will be filled with the excavated rock material and or riprap removed from the old rock spoils near the staging area (Figure 10).
- The plunge pool area will be capped with concrete and grouted riprap for stability.

Figure 8. Plunge Pool Backfill Diagram



2.8 Demobilization/Restoration

After the construction activities are completed, demobilization and restoration will occur as follows:

- Material for the temporary access road, cofferdam and excess construction material will be removed and may be placed in existing spoils area and contoured to appear natural.
- Stream banks along the north shore will be recontoured to simulate more natural conditions and restored according to permit requirements.
- Disturbed soils will be restored and re-vegetated to simulate more natural conditions.

TDG monitoring will be completed during 2018 and 2019 to test the TDG performance of the deflectors.

2.9 Permitting and Construction Schedule

The estimated permitting and construction schedule is as follows:

April 2015 – February 2016	Permitting and consultation with agencies.
March 2016 – June 2016	Install best management practices, begin access road construction above the ordinary high water mark, clear and grub the laydown and staging areas, begin equipment and material deliveries.
July 2016	Construct access road along river channel, install cofferdam and dewater plunge pool.
August 2016	Spillway knob rock excavation and backfill plunge pool to create working surface.
Late August – Mid October 2016	Construct deflectors and downstream toe repair.
Late October 2016	Cofferdam removal and access road fill excavation from river bank.
November 2016 – May 2017	Remove above-water access road back to original condition or better. Remove best management practices and complete site restoration.

3.0 WATER QUALITY

3.1 Existing Conditions

Long Lake HED is a high head facility, with TDG levels ranging as high as 120 to 140 percent of saturation during spill periods. Section 5.4.B, Appendix B of the License references the numeric water quality standard for TDG levels downstream of the Spokane River Project [110 percent of saturation for flows up to the 7Q10² discharged at the dam (total river flow of 32,000 cfs)]. This project is being implemented as a mitigation measure, required under Section 5.4.D, Appendix B of the License, to abate or eliminate the effect of the dam on TDG levels (downstream compared to upstream). After implementation, it is estimated that the modified spillway will reduce TDG levels to the 119 to 122 percent of saturation range (NHC and McMillen 2013). The effectiveness of the spillway modification project on reducing TDG levels can only be determined through water quality monitoring after it is constructed.

3.2 Potential Impacts

The spillway modification project is a mitigation measure designed to lower TDG levels in the Spokane River downstream of the HED by installing deflectors, filling the plunge pool and removing a portion of the rock outcrop to allow water to skim across the surface after passing over the deflectors. This is expected to result in an overall decrease in TDG, thereby improving water quality in the Spokane River. However, there is potential to temporarily increase sedimentation and turbidity during construction due to the following activities:

- Staging and stockpiling materials along the shoreline.
- Construction of the temporary access road immediately adjacent to, and within, the river channel.
- Initial installation and removal of the cofferdam, as well as dewatering the area between the cofferdam and the spillway.

Additional potential impacts to water quality are unlikely once the cofferdam has been installed, as aside from potential leakage from the spill gates, the majority of the work will be done in the dry. This includes blasting and removing a portion of the rock outcrop and concrete, as well as, construction of the deflectors and spillway toe repair. It is possible some water will remain in the plunge pool during work, however best management practices will be implemented throughout the project activities to ensure water quality in the river is not impaired.

3.3 Proposed Mitigation

The spillway modification project will abate or eliminate the effect of the dam on TDG levels (downstream compared to upstream) and will result in an overall water quality improvement. We anticipate that the majority of the construction activities except installation of the access road

² “7Q10” is the highest average seven consecutive day discharge with an average recurrence probability of 10 percent in any given year, commonly referred to as a 10 year frequency.

that leads to the staging area near the river, will be completed during the summer and fall during low-flow conditions to minimize potential for water quality impacts. The following measures will be implemented to minimize potential water quality impacts during construction:

- As part of the installation (and removal) of the temporary access road, erosion control measures (such as a turbidity curtain, silt fences, etc.) will be placed along the shoreline to prevent any sediment or debris from entering the river. Additionally, disturbance of the existing slope talus and alluvium along the river will be minimized.
- A cofferdam with an impervious lining will be installed and the construction area will be dewatered so as much of the work as possible (i.e. rock outcrop removal, filling in the plunge pool, spillway work, etc.) can be completed in the dry.
- Clean leakage water from the dam and bedrock will be discharged immediately downstream of the temporary cofferdam. If turbid, water will be routed through temporary settling ponds, baker tanks, or similar methods for treatment prior to discharging it back to the river below the cofferdam. Any wastewater (from drilling, concrete cuttings, etc.), if generated, will be collected and contained, and either disposed of at an appropriate off-site location or treated on-site to meet water quality standards prior to being released back into the river.
- Turbidity will be monitored during construction activities.
- This project includes a large amount of concrete work (excavation, patching, anchoring, etc.). To minimize impacts, concrete trucks will be cleaned and the residual from the pump hose will be completed upland, away from the river.
- Once construction is complete, all temporary material will be removed from the river channel.

The following Best Management Practices (BMPs) will be implemented during construction to minimize the risk of water quality impacts:

- Erosion control measures (such as temporary containment barriers, silt fences, gravel bags, wattles, filter fabric or plastic, etc.) shall be appropriately utilized to ensure sediment and sediment laden water, does not discharge into the river from ground disturbing and other construction activities.
- All equipment will be checked daily to help ensure there are no leaks or spills and that all machinery is in good operating condition.
- No defective equipment shall be operated in or near the river.
- A qualified contract construction inspector shall be on site during project activities to ensure that design requirements, environmental procedures, and specifications are met.
- The clean out for the concrete trucks and the residual from the pump hose will be completed upland, away from the river, and the washout will be disposed of in a contained area and then transported to an appropriate facility.

- All cuttings, waste concrete, wastewater from drilling or cutting, etc., generated in or entering into the work areas shall be controlled, contained, and/or pumped into a holding tank or other sediment collection system, and legally disposed of off-site. All adjacent areas shall be kept clean of excess material, powder, grout, and/or droppings. Cleaning materials shall be non-hazardous and non-flammable.
- Spill kits and materials (including oil containment booms) will be available and on hand at all times during the project activities to immediately clean up any spills. Availability and condition of these supplies will be monitored on a regular basis.
- Petroleum fuel for project equipment shall not be stored on the construction site, but shall be delivered as needed and transported to the machinery in a designated refueling area, within proper containment.
- Fuel transfer tanks, hoses, oil drums, etc., shall be checked regularly for drips or leaks, and shall be maintained to prevent discharges.
- In the event of a discharge of any petroleum product into state waters, or onto land with a potential for entry into state waters, containment and clean-up efforts shall begin immediately and be completed as soon as possible. Avista will contact the Washington State Department of Ecology in the event of a spill.
- Visible floating oils, if released during the project, shall be contained and removed from the water immediately.
- Should a land-based crane be used, a visqueen lining shall be placed, when possible, under it with absorbent material lined around the edges to contain any spills or leaks, should they occur.
- All construction debris and any other waste materials shall be collected and stored in a secure container. All trash and construction debris from the site will be deposited in the container and emptied as necessary.
- The trash will be disposed of appropriately.

4.0 BALD EAGLES

4.1 Existing Conditions

Bald Eagles (*Haliaeetus leucocephalus*) are protected under the Bald Eagle and Golden Eagle Protection Act of 1940 (USFWS 1940) and the Migratory Bird Treaty Act (USFWS 1918).

Avista is also required by its FERC License to monitor Bald Eagles that nest in the vicinity of the Spokane River Project Boundary.

The Lower Spokane River Nest, located approximately 3,400-ft west of the primary work area, along the north bank of the Spokane River is the nearest eagle nest (Figure 9). It is an active nest, however it did not yield any fledglings in 2014. One additional nest site, the North Shore Nest is located more than one mile upstream of the primary work area. As shown in Figure 9, the North Shore nest is approximately 7,570 ft (1.43 miles) from the primary work area.

4.2 Potential Impacts

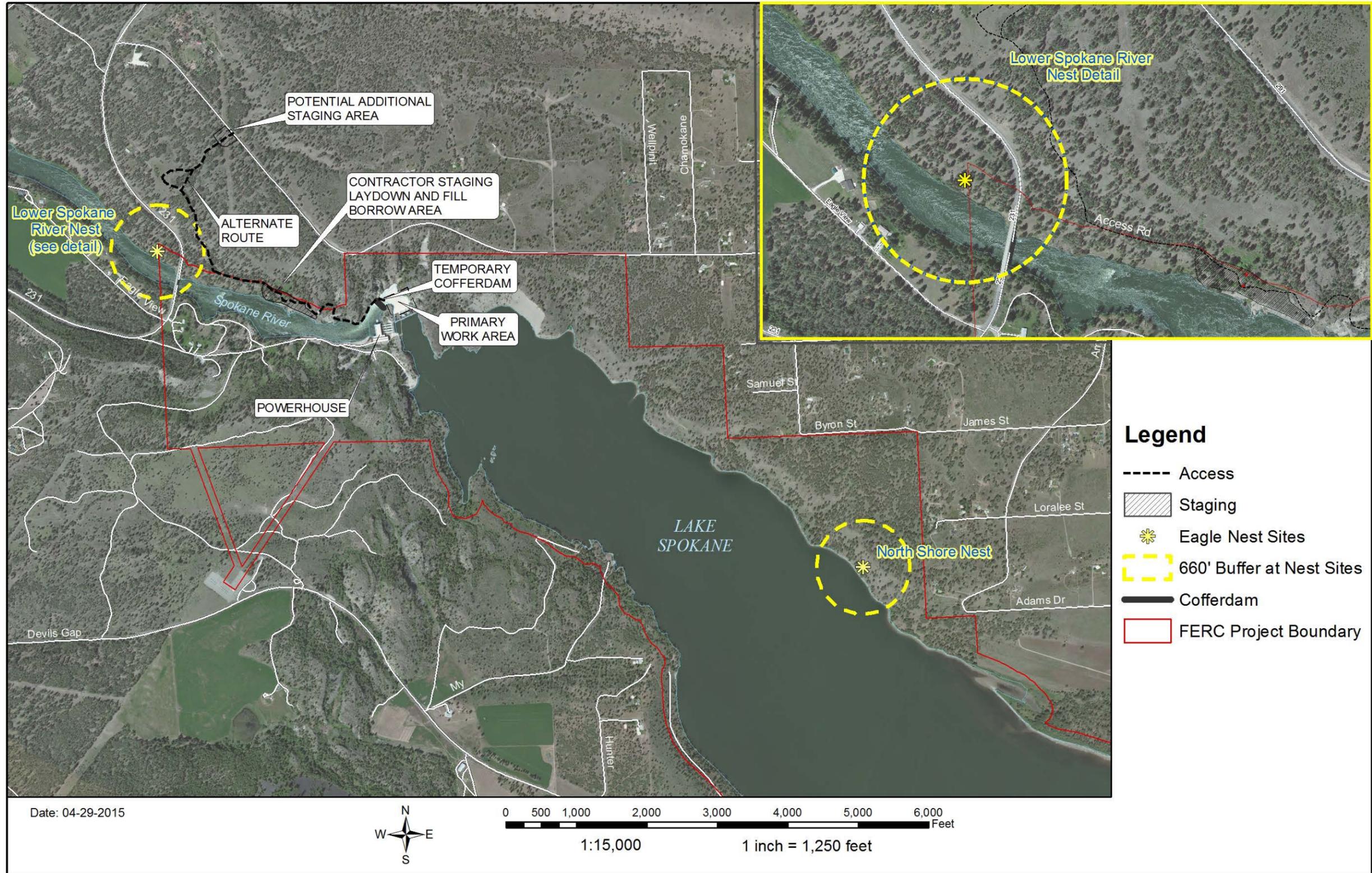
The National Bald Eagle Management Guidelines (USFWS 2007) recommend that no construction activities that could disturb eagles occur within 660-ft of an eagle nest, especially during nesting activities.

The nearest construction activities would be the improvement and temporary use of the existing access road and a temporary increase in traffic noise along Highway 231. Highway 231 is located between the nest and the temporary access road and the eagles are likely accustomed to traffic and the noise associated with it. A portion of the temporary access road is located approximately 620-ft from the Lower Spokane River Nest and will require removing trees, placing gravel, equipment operation and truck traffic. However, the nest is buffered from construction activities by substantial topographical differences in elevation, and dense vegetation. Noise from the nearby highways, residential homesites, and dam operations currently exists. Any blasting or high decibel noise generating activities associated with the construction activities would be located near the primary work area, which is more than 3,400ft (0.64 miles) from the nest.

4.3 Proposed Mitigation

Prior to and throughout the construction project, Avista's Terrestrial Resource Specialist will monitor the Lower Spokane River Nest to determine if the construction activities interfere with nesting eagles. Avista does not anticipate any impacts to the eagles during this project; however, it will pursue obtaining an Eagle Non-Purposeful Take Permit from the U.S. Fish and Wildlife Service (USFWS) as a precautionary measure.

Figure 9. Eagle Nests in Project Vicinity



5.0 THREATENED AND ENDANGERED SPECIES

5.1 Existing Conditions

The USFWS listed species are classified as threatened and endangered under the Endangered Species Act (ESA) and were evaluated in the original Biological Assessment (BA) for the Spokane River Project (FERC 2007). The USFWS issued a concurrence with a “Not Likely to Adversely Affect” determination for bull trout (*Salvelinus confluentus*) and for bull trout critical habitat on July 31, 2008, which concluded the ESA Section 7 consultation for the Spokane River Project.

The USFWS subsequently issued a revised final critical habitat rule for bull trout in 2010 (USFWS 2010). The Spokane River (including the project area) in Washington is not identified as critical habitat for bull trout and a population of bull trout is not known to exist in this reach. The bald eagle, which was included in the original BA, was delisted by USFWS in August 2007, and is addressed in Section 4, Bald Eagles.

The current listed and proposed species and designated critical habitat in the project area were reviewed in 2015 by using the USFWS Information Planning, and Conservation (IPaC) on-line tool (USFWS 2015). This review identified the yellow-billed cuckoo (*Coccyzus americanus*) listed as threatened; however, it prefers large stands of cottonwood (50 acres or greater) that do not exist in the project area. The IPaC review also showed Canada lynx (*Lynx Canadensis*), grizzly bear (*Ursus arctos*) and pygmy rabbit (*Brachylagus idahoensis*) that were not evaluated in the original BA because no occurrences of these species or suitable habitat exist in the project area. Because no listed, proposed species or designated critical habitat occur within the project area, the original effect determinations in the Spokane River Project BA remain valid.

5.2 Potential Impacts

There will be no effect to threatened and endangered species or designated critical habitat as a result of this project.

5.3 Proposed Mitigation

There is no proposed mitigation for threatened and endangered species as a result of this project.

6.0 FISHERIES

6.1 Existing Conditions

Limited information is available on the existing fish species that exist in Little Falls Reservoir, which is located immediately downstream of the Long Lake Dam. McLellan and O'Connor (2005) conducted an assessment of the fish species present in the first reach of Chamokane Creek, a tributary to the Little Falls Reservoir, in which 56 fish were collected, including 37 salmonids. Little Falls Reservoir is managed by the Washington Department of Fish and Wildlife (WDFW) for year-round fishing with standard regulations for trout and other game fish.

Table 1 identifies the fish species that are known to occur in Lake Spokane and Chamokane Creek, and could be present in Little Falls Reservoir, which includes the project area. The fish species include cool and warm water native and non-native fish (Parametrix 2004; McLellan and O'Connor 2005; Osborne et. al. 2004; Wydoski and Whitney 2003).

Table 1. Fish Species Occurring in Lake Spokane and Chamokane Creek

Common Name	Scientific Name
Yellow perch	<i>Perca flavescens</i>
Largemouth bass	<i>Micropterus salmoides</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Pumpkin seed	<i>Lepomis gibbosus</i>
Rainbow trout (Hatchery)	<i>Oncorhynchus mykiss</i>
Chiselmouth	<i>Acrocheilus alutaceus</i>
Suckers	<i>Catostomus spp.</i>
Brown trout	<i>Salmo trutta</i>
Northern Pike Minnow	<i>Ptchocheilus oregonensis</i>
Wild rainbow trout	<i>Oncorhynchus mykiss</i>
Mountain whitefish	<i>Prosopium williamsoni</i>
Tench	<i>Tinca tinca</i>

Wild rainbow trout and mountain whitefish are expected to be present near the project area during construction. During the construction timeframe, no spawning of wild rainbow trout or mountain whitefish is expected to occur, as they spawn in April in the Spokane River (Cardno Entrix 2011) and late fall to early winter in Chamokane Creek (Wydoski and Whitney 2003), respectively. Additionally, this specific river reach consists of larger substrate and is not suitable spawning habitat for rainbow trout. Rearing of wild rainbow trout and mountain whitefish may still occur in the tailrace below Long Lake Dam.

6.2 Potential Impacts

There may be short-term impacts to fish, which will be displaced during construction of the temporary access road (placement of rock below the ordinary high water mark) and cofferdam. There may be other short-term impacts to fish habitat, resulting from temporary increases in turbidity, sedimentation and construction related noise. However during construction of the temporary access road and cofferdam, it is expected that most fish present in the immediate area will relocate downstream of the project area.

6.3 Proposed Mitigation

The purpose of the spillway modification is to improve water quality downstream of Long Lake Dam by reducing TDG in the lower Spokane River. Specific mitigation measures related to the spillway modification project include the following:

- A Water Quality Protection Plan which will prescribe BMPs to minimize impacts to water quality during the construction period.
- Slowly dewatering the area between the cofferdam and the spillway, once the cofferdam is installed.
- Collecting any fish in the dewatered area between the cofferdam and the spillway using electrofishing or seine netting techniques and relocating the fish downstream into the Little Falls Reservoir.

7.0 TERRESTRIAL RESOURCES

7.1 Existing Conditions

The habitat found in the vicinity of Long Lake Dam consists primarily of mature ponderosa pine (*Pinus ponderosa*) forest. This habitat is common and abundant within the project area, which is sparsely populated and undeveloped. Mammals that occur in riparian areas downstream of the Long Lake HED include chipmunks (*Eutamias sp.*), beavers (*Castor Canadensis*), muskrats (*Ondatra zibethica*), coyotes (*Canis latrans*), raccoons (*Procyon lotor*), minks (*Mustela vison*), porcupines (*Erethizon dorsatum*), and striped skunks (*Mephitis mephitis*). Big game species, primarily white-tailed and mule deer are common along the Spokane River (FERC 2009).

In 2014, a small Category II, Palustrine scrub-shrub wetland was identified on the north side of the temporary access road (Figure 10). The wetland is approximately one quarter acre and dominated by cattail (*Typha latifolia*), willow (*Salix sp.*), red osier dogwood (*Cornus sericea*) and cottonwood (*Populus balsamifera*). The hydrology for the wetland originates from the hillside seeps and slopes. The soils have a dark upper layer with redoximorphic features and gley. Category II, under the Stevens County Critical Areas Ordinance Section 13.10.024, requires a 100-ft to 200-ft buffer. This wetland is considered jurisdictional under Section 404 of the Clean Water Act.

7.2 Potential Impacts

The existing access road will be graded and graveled in order to serve as the temporary construction access route. Rock will be removed, where necessary, with controlled blasting and will be relocated with heavy equipment. Approximately 50 ponderosa pine trees that have grown in the existing road bed and staging area, will be removed. In addition, grasses and shrubs along the road and staging areas will be disturbed. There may be temporary disturbance of wildlife utilization and movement through the project area due to vehicles, construction activities, blasting, and heavy equipment operation.

The temporary access road will be constructed within the Steven's County wetland buffer for the small Category II, Palustrine scrub-shrub wetland.

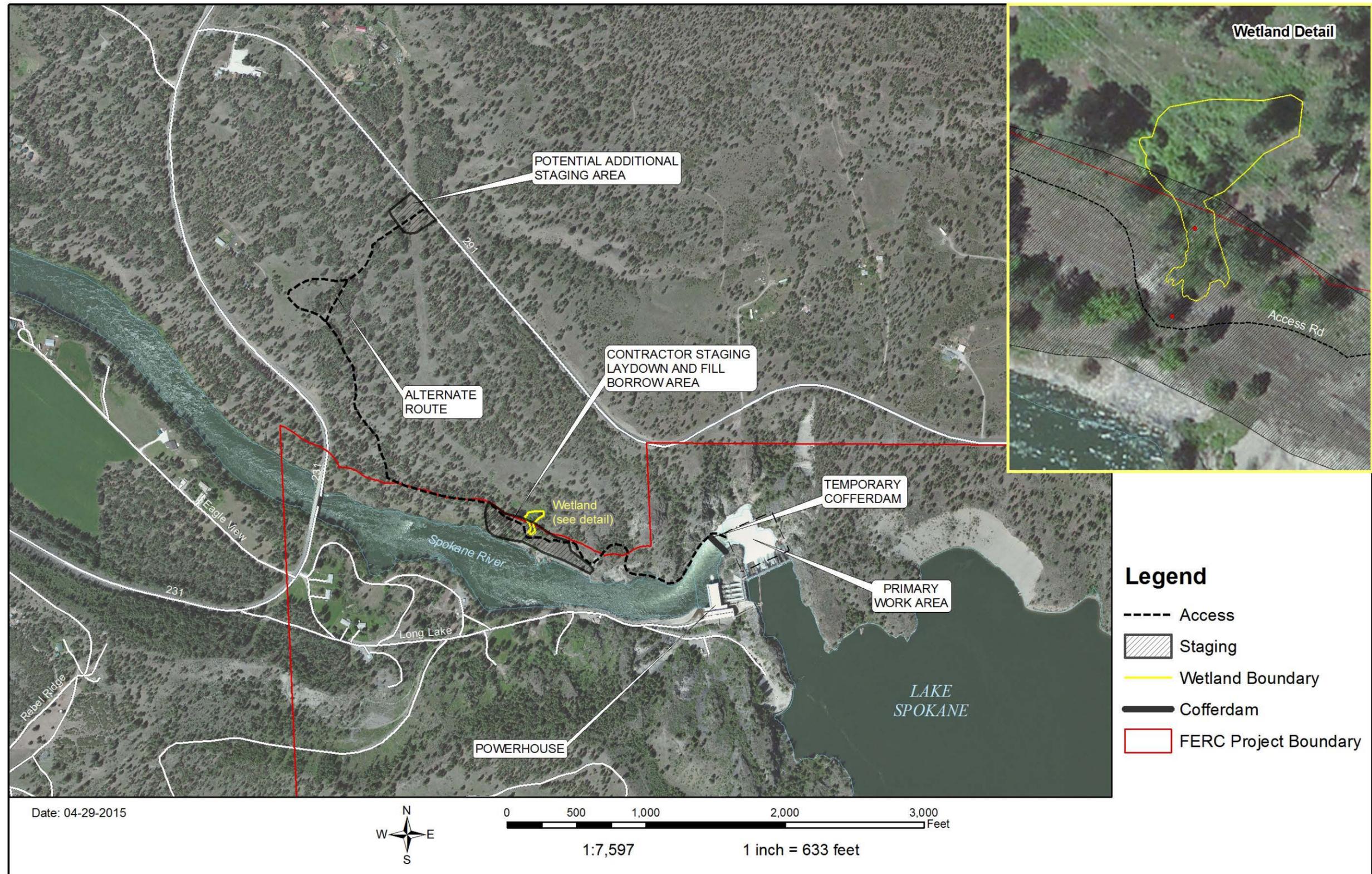
7.3 Proposed Mitigation

All disturbed areas will be reseeded with native grasses in accordance with the USDA Natural Resource Conservation Service. Upon completion of the spillway modification project, the shoreline will be re-contoured and replanted with native species, which will improve wildlife habitat.

The wetland area on the north side of the temporary access road will be delineated and fenced off during construction to prevent impacts to it. Additionally, the portion of the wetland buffer,

located in the construction/waste rock disposal site that will be used for the temporary access road and staging, will be restored and re-vegetated to more natural conditions upon project completion.

Figure 10. Wetland Location Map



8.0 RECREATION / LAND USE

8.1 Existing Conditions

Immediately downstream of, and adjacent to Long Lake Dam and within the FERC Spokane River Project boundary, Avista operates the Long Lake Dam Picnic Area and the Long Lake Dam Overlook. These two recreation sites provide a variety of opportunities and access to the Spokane River (Figure 11).

The Long Lake Dam Picnic Area is a three-acre park located on the south shore of the Spokane River and includes a carry-in-only boat launch, picnic tables, barbeque grills, fire ring, restrooms, playground and interpretive signs. The Long Lake Dam Overlook is located on a bluff on the north side of the river, overlooking Long Lake Dam. It provides a trail to two scenic viewing decks, interpretive signs, and a parking lot. Both recreation areas are ADA accessible and are managed by the Washington State Parks and Recreation Commission through a management agreement.

8.2 Potential Impacts

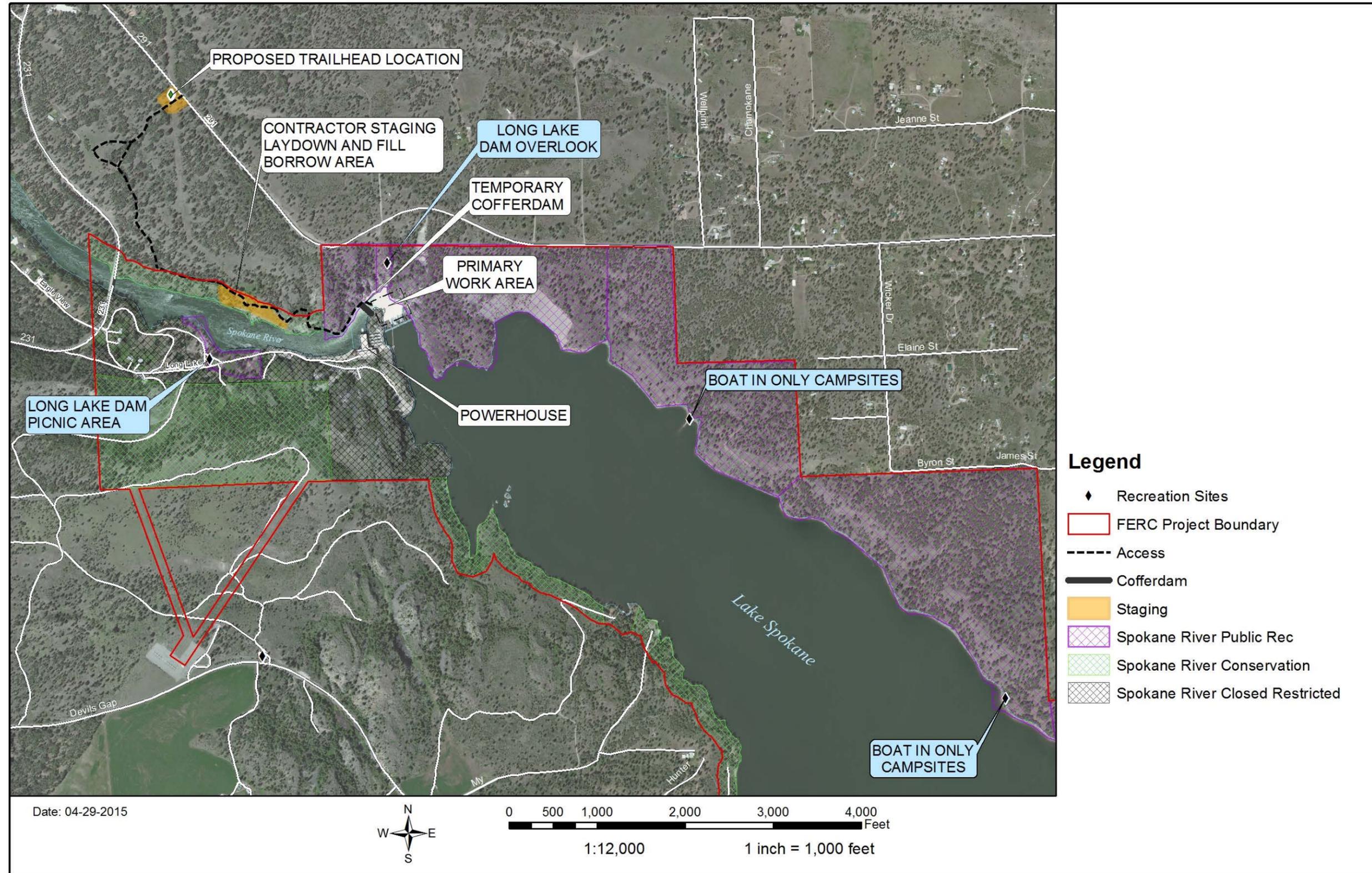
There will be no permanent impacts to either of the recreation sites. However, there may be temporary visual and construction impacts such as noise, dust and construction traffic near the parks.

8.3 Proposed Mitigation

The temporary construction impacts will be mitigated by notifying the public of the construction project. Relevant information will be posted on the Company's website and at the two recreation sites.

Additional mitigation will include installing a formal trailhead with parking and placing signage at the entrance of the construction access road near Highway 291 following completion of the project. This will allow future pedestrian use of the area.

Figure 11. Recreation and Land Use Impacts



9.0 CULTURAL

9.1 Existing Conditions

The Long Lake Hydroelectric Power Plant Historic District (45DT168) is listed in the National Register of Historic Places (NRHP) under both Criteria A and C, as a reflection of advanced hydroelectric technology and an architecturally distinctive example of industrial design (Soderberg 1986). The historic district is managed under Avista's 2010 Historic Properties Management Plan (HPMP) for the Spokane River Project FERC No. 2545 for Upper Falls, Monroe Street, Nine Mile and Long Lake Hydroelectric Developments.

At the request of the Spokane Tribal Historic Preservation Officer (THPO), Historical Research Associates, Inc. (HRA) and the Spokane Tribe's Cultural Resource Department conducted a cultural resources assessment of the proposed construction access road and staging area that may be impacted by the spillway modification project. This included a visual assessment and architectural survey of the Long Lake Dam and adjacent NRHP properties.

9.2 Potential Impacts

Based on the results of the above assessment, Avista made a preliminary determination that the spillway modification project has the potential to *adversely affect* the character-defining features of the Long Lake HED historic district, by adding toe deflectors and resurfacing portions of the ogee spillway dam, and by removing a portion of the rock outcrop at the foot of the dam. The addition of toe deflectors will diminish the integrity of the dam's design and materials, and the removal of a portion of the rock outcrop will diminish the integrity of the dam's setting.

Additionally, seven archaeological resources were identified during the survey, five of which are potentially eligible for listing in the NRHP. Avista, HRA and the Tribe identified a construction road access that will avoid all recorded sites. Since the sites will be avoided during construction, no effects will occur, and no further study is needed.

9.3 Proposed Mitigation

Avista has recorded the Long Lake HED through Historic American Engineering Record (HAER) documentation and has provided interpretive signage at the adjacent picnic area and overlook to educate the public about the historic resource. Avista is also consulting with the THPO and State Historic Preservation Officer (SHPO) on the findings of the cultural resource assessment protection measures which will include temporarily fencing the construction access road and staging area with high visibility construction fences, and avoiding areas where cultural resources are present. Avista anticipates that a Memorandum of Agreement (MOA) with the THPO and SHPO will not be necessary, as the Programmatic Agreement and Historic Properties Management Plan (HRA 2010) establish a process for mitigating this type of undertaking.

10.0 REFERENCES

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- EES Consulting. 2006. Long Lake Hydroelectric Development Total Dissolved Gas Abatement Initial Feasibility Study Report. Avista Utilities. September 2006.
- Federal Energy Regulatory Commission (FERC). 2009. Order Issuing New License and Approving Annual Charges for use of Reservation Lands. Issued June 18.
- FERC. 2007. Spokane River Developments and Post Falls Hydroelectric Project. FERC Project Numbers P-2545 and P-12606. Biological Assessment. January.
- Golder. 2010. Long Lake Dam Total Dissolved Gas Water Quality Attainment Plan. Washington 401 Certification, Section 5.4(D). Spokane River Hydroelectric Project, FERC Project No. 2545.
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- McLellan and O'Connor. 2005. 2003 WDFW Annual Report for the Project Resident Fish Stock Status Above Chief Joseph and Grand Coulee Dams. Washington Department of Fish and Wildlife. Spokane, WA.
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- USFWS. 2010. Endangered and Threatened Wildlife and Plant; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule. Department of Interior, Fish and Wildlife Service, Vol. 75 63899.
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USFWS. 1940. Bald and Golden Eagle Protection Act of 1940. Department of Interior, Fish and Wildlife Service. Code of Federal Register 50 Part 22.

USFWS. 1918. Migratory Bird Treaty Act of 1918. Department of Interior, Fish and Wildlife Service. 16 U.S.C 703-712

Wydoski and Whitney. 2003. Inland Fishes of Washington. Second Addition. University of Washington Press.

APPENDIX A
Proposed Construction Site Photographs

Photo Location Key.

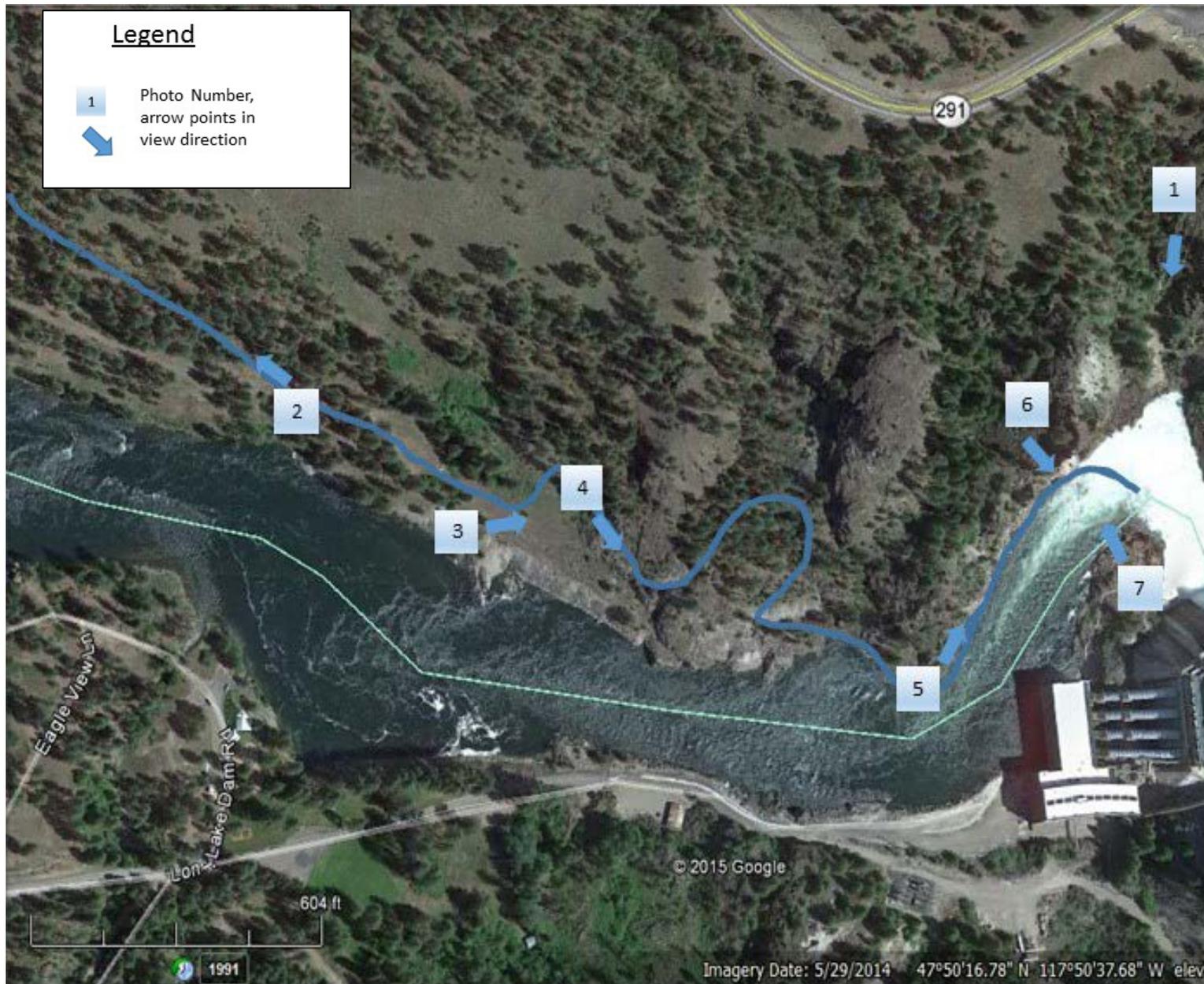




Photo 1 - View from north bank hilltop above dam, plunge pool and north bank (right side of photo) where the temporary access road will be constructed.



Photo 2 - View uphill along temporary access road from staging area. Existing road to be improved to the intersection with Highway 291.

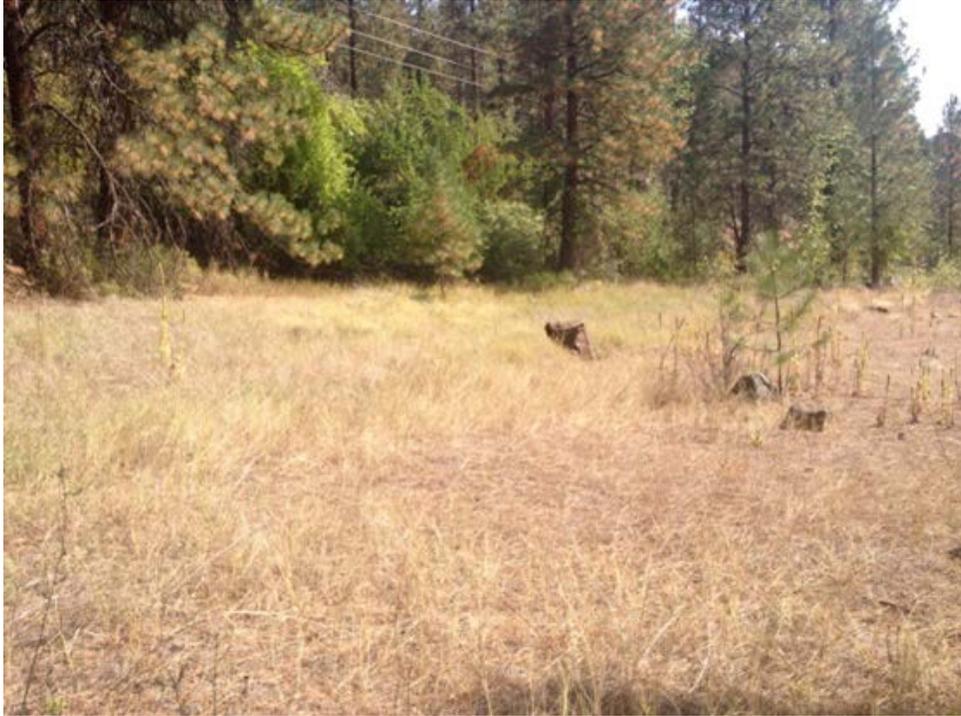


Photo 3 - View across former waste rock fill to be used as project staging area.



Photo 4 - View along hillslope above staging area, where temporary access road will traverse existing construction bench road.



Photo 5 - View upstream along north bank (left side of photo) at water line. Temporary access road will be constructed as combined cut and fill upstream to plunge pool in background.

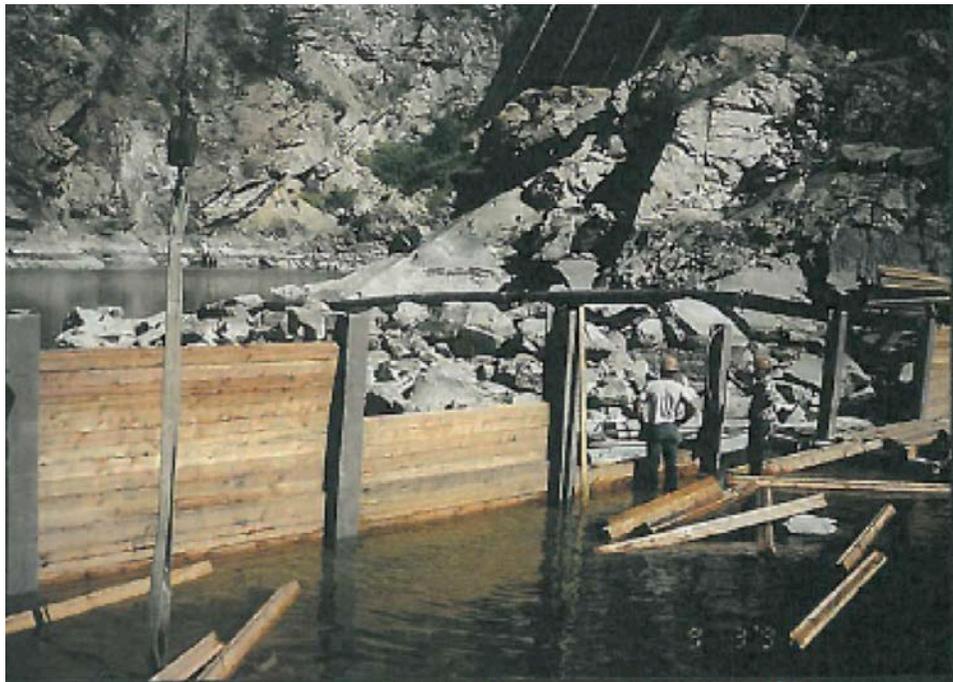


Photo 6 - View from north bank of the temporary cofferdam construction. Note steel H-piles set in existing concrete keyway with timber lagging to form primary cofferdam structure.



Photo 7 - View from south bank as impervious membrane is draped over the primary cofferdam structure.

APPENDIX B
CONSULTATION RECORD ON THE PROJECT

Washington State Department of Ecology's March 19, 2013 Letter



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

March 19, 2013

Mr. Elvin "Speed" Fitzhugh
Spokane River License Manager
Avista Corporation
1411 East Mission Ave., MSC-1
Spokane, WA 99220-3727

RE: Request for Comments – Spokane River Hydroelectric Project No. 2545
2012 Long Lake Dam Total Dissolved Gas Monitoring Report,
Long Lake Hydroelectric Development TDG Abatement Phase III Feasibility Study,
Revised Long Lake HED TDG Compliance Schedule, and 2012 Long Lake HED Tailrace
Dissolved Oxygen Monitoring Report – Washington 401 Certification, Section 5.4(D) and 5.6(B)

Dear Mr. Fitzhugh:

The Department of Ecology (Ecology) has reviewed the following documents emailed to us on February 28, 2013 and would like to provide the comments detailed below:

1. 2012 Long Lake Total Dissolved Gas Monitoring Report, Golder Associates, February 2013

We recognize that monitoring difficulties often occur due to power failure and approve the standard operating procedure that has been developed to maintain backup AC power supply to the monitoring station. If difficulties continue to occur due to power loss, another alternative may need to be considered.

Although the data showed that total dissolved gas (TDG) exceeded the 110% water quality standard in the tailrace for all data 4,159 data pairs, Ecology acknowledges that while you are actively working on your compliance schedule identified in your TDG abatement plan, you are in compliance with your 401 water quality certification.

2. Long Lake Hydroelectric Development (HED) Total Dissolved Gas Abatement Phase III Feasibility Study, Draft Report, NHC, November 19, 2012

In reviewing the feasibility study, the construction costs, geotechnical analysis and estimated TDG performance using Alternative 1, appear to be the best choice. Ecology agrees with Avista's determination that Alternative 1 is the best alternative to mitigate for TDG produced by Long Lake HED.

3. Revised Long Lake HED TDG Compliance Schedule

Prior to completion of the physical model, Ecology was aware that the eight year compliance schedule that was developed in the TDG water quality attainment plan (WQAP) would need to be adjusted to accommodate for the physical model testing and monitoring. The 401 Certification did allow for a 10 year compliance schedule to achieve water quality standards for TDG at Long Lake HED.



Mr. Elvin "Speed" Fitzhugh
March 19, 2013
Page 2

Ecology supports the extension of the eight year compliance schedule in the original TDG WQAP to a 10 year compliance schedule. The additional two years will allow for adequate monitoring and adaptive management of the newly engineered deflectors. We fully understand that this lapse in schedule is due to the complex challenges, including but not limited to physical constraints associated with the tailrace, of reducing TDG at Long Lake HED and agree that the additional modeling and/or assessment efforts are appropriate.

We request that the new compliance schedule be added to the future TDG annual reports with a section discussing progress towards meeting the dates within the compliance schedule.

4. *2012 Long Lake HED Tailrace Dissolved Oxygen Monitoring Report*

The data presented in the report were very helpful in portraying the entire picture, especially Table 2-5, *Summary of Exceedances of DO Criterion at LLTR During Generation*. We recommend that you continue to use this reporting format in future annual reports.

We recognize that it is a delicate balancing act maintaining water quality compliance with DO and TDG concentrations with the effects of temperature. Ecology approves the methods used for maximizing your efficiency in maintaining higher DO concentrations and lower TDG concentrations in the Long Lake HED tailrace and look forward to the continued success in refining these methods.

We thank you for the opportunity to comment. Please contact me by phone at (509) 329-3450 or by email at dman461@ecy.wa.gov if you have any further questions.

Sincerely,



D. Marcie Mangold
Water Quality Program

DMM:dw

cc: Brian Crossley, Spokane Tribe of Indians
Meghan Lunney, Avista
David Knight, Ecology/WQP

Spokane Tribe's April 9, 2013 Approval of the TDG Alternatives

Lunney, Meghan

From: Fitzhugh, Speed (Elvin)
Sent: Tuesday, April 09, 2013 12:37 PM
To: Brian Crossley
Cc: Billy Joe Kieffer; Ted Knight; Lunney, Meghan
Subject: RE: Long Lake TDG abatement

Brian,
Thank you your review and comment that Modified Alternative 1, the one with the two lips that you are referring to, will provide us with operational flexibility to reduce TDG produced by the dam.
Thanks again for your help, we greatly appreciate it.
Speed

From: Brian Crossley [<mailto:crossley@SpokaneTribe.com>]
Sent: Tuesday, April 09, 2013 12:30 PM
To: Fitzhugh, Speed (Elvin)
Cc: Billy Joe Kieffer; Ted Knight
Subject: Long Lake TDG abatement

Speed, I appreciate Avista including the Tribe in its review of the alternatives and modeling of TDG abatement at Long Lake Dam. I feel that Avista has included numerous alternatives in its modeling to the extent that an extended modeling duration was needed. This increased effort to look at various alternatives not in the original plans necessitates moving the construction and completion timeline as well. After reviewing the various alternatives and viewing the physical model I feel that constructing 2 lips on the spillway will give Avista operational flexibility in reducing TDG production.

Brian Crossley
Water & Fish Program Manager
STI Dept of Natural Resources

FERC's July 25, 2013 Letter Regarding Water Quality Monitoring and Study Reports

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D. C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 2545-113, 118, 125, 134 –WA
Spokane River Project
Avista Corporation

July 25, 2013

Mr. Steven A. Fry
Avista Corporation
1411 East Mission Avenue
P.O. Box 3727
Spokane, WA 99220-3727

Re: Water quality monitoring and study reports

Dear Mr. Fry:

This is reference to the submittal of your 2012 Long Lake total dissolved gas (TDG) monitoring report, 2012 Long Lake tailrace dissolved oxygen (DO) monitoring report, Long Lake TDG abatement phase III feasibility study, and your revised Long Lake TDG compliance schedule, filed with the Commission on April 11, 2013 for the Spokane River Project No. 2545. The individual elements of your filing are addressed below.

2012 Long Lake TDG and DO monitoring reports

Ordering paragraph (B) of the Commission's December 14, 2010 Order Modifying and Approving Total Dissolved Gas Attainment and Monitoring Plans for the Long Lake Development-Article 401¹ requires that you file annual Long Lake TDG attainment and monitoring reports with the Commission by April 15 of each year. In addition, ordering paragraph (B) of the Commission's December 9, 2010 Order Modifying and Approving Dissolved Oxygen Feasibility and Implementation Plan for the Long Lake Development-Article 401² requires that you file annual and five-year Long Lake tailrace DO monitoring reports with the Commission by April 15 of the each year. TDG and DO monitoring and reporting is also required under the Commission's September 17, 2009 Order Modifying and Approving Water Quality Monitoring and

¹ See 133 FERC ¶ 62,252.

² See 133 FERC ¶ 62,228.

Assurance Project Plan Pursuant to Article 401(A)(12)³ and Section 5.10(a) of your water quality certification (WQC).

Your reports included the results of TDG and DO monitoring conducted at Long Lake during 2012. Review of your Long Lake TDG and DO monitoring reports indicate that they satisfy the reporting requirements of the above orders. However, in reviewing your reports, we noted numerous deviations above the 110% TDG requirement of your water quality certification, and below the 8.0 mg/L requirement for DO. However, it is our understanding that section 5.4(d) and 5.6(c) of your water quality certification and the Washington Administrative Code (WAC) Chapter 173-201A-510(5) provides you with a compliance period of ten years to modify the project to bring the project into compliance with water quality standards. Therefore, the TDG and DO deviations noted in your report will not be considered violations of your project license.

Nine Mile TDG Monitoring

The Commission's December 14, 2010 Order Modifying and Approving Total Dissolved Gas Monitoring Plan for the Nine Mile Development-Article 401⁴ requires that you conduct TDG monitoring at the Nine Mile development for two years when flows occur during the 7Q10 median flow of 25,400 cfs or higher, and for two years after any modification to the Nine Mile Dam. You are also required to file annual monitoring reports by April 15 following each of the two monitoring years. In your filing, you stated that you did not conduct TDG monitoring at the Nine Mile development during 2012. You stated that based on a February 17, 2012 letter from the Washington Department of Ecology (Ecology), you need not conduct TDG monitoring at the development until the first season following removal of sediment in front of the sediment bypass intake and replacement of turbine units 1 and 2. You further stated that the purpose of foregoing monitoring was to ensure the project was operating under normal conditions prior to the continuation of monitoring.

Review of Commission files indicates that you filed a copy of Ecology's February 17, 2012 approval letter and a subsequent March 21, 2012 letter regarding the temporary cessation of TDG monitoring at the Nine Mile development. These letters were submitted with your Nine Mile TDG monitoring report, filed with the Commission on April 10, 2012. In the February 17, 2012 letter, Ecology requested an update on the progress of turbine removal and replacement by September 1, 2014, and that you resume TDG monitoring at the Nine Mile Development during the first full season following the

³ See 128 FERC ¶ 62,211.

⁴ See 133 FERC ¶ 62,248.

turbine/generator replacement project. In conjunction with Ecology's request, we ask that you please provide an update to the Commission Secretary on the status of the replacement project by September 1, 2014, along with your anticipated date to resume TDG monitoring at the Nine Mile development. If you do not anticipate resuming TDG monitoring in 2015, please continue to provide annual updates to the Commission each subsequent year by September 1. Provided you keep the Commission apprised of these timelines, we also concur with your plan to temporarily forego TDG monitoring at the Nine Mile Development.

Long Lake TDG Abatement Phase III Feasibility Study Report

The Commission's aforementioned December 14, 2010 order approving the TDG attainment and monitoring plans for the Long Lake development require that you complete phased feasibility studies for decreasing TDG levels at the development. The order acknowledges that during the phase III analysis, you would select a preferred alternative and conduct physical modeling of the selected alternative. The order also acknowledges that during phase IV, you would formulate the design, plans, and specifications for the selected alternative. Your April 11, 2013 filing included the results of your phase III feasibility study, in which you conducted physical modeling of various alternatives. Based on your analysis, you concluded that the best alternative to mitigate TDG levels is a modified alternative no. 1, which involves: the construction of deflectors in spill bays 7 and 8; rock removal from the outcropping below the two spill bays; and additional deflectors on spill bays 3-6. Review of your proposal indicates that it is acceptable, and follows the development protocol established in the December 14, 2010 order.

As noted in paragraph 11 of the December 14, 2010 order, please be reminded that any operational and structural modifications may require an amendment of the project license. Therefore, following completion of your phase IV design, and depending on the scope of your proposal, you may be required to file an amendment request with the Commission Secretary to proceed with the modifications developed in your phase IV feasibility study. In addition to any potential Commission environmental and license compliance review, you should coordinate the development of your phase IV design in regular consultation with the Commission's Division of Dam Safety and Inspections-Portland Regional Office (PRO). Please also note that 18 CFR 12.11(b)(2) requires that any request to modify project works also be filed with the Regional Engineer of the PRO at least 60 days prior to the start of construction. Should you have any questions regarding the dam safety and construction review of your proposal, please contact Mr. Eric Kennedy in our PRO at 503-552-2722.

Finally, in your filing, you stated that you need additional time to the develop alternatives to reduce TDG production at Long Lake. Therefore, you stated that you require a two-year extension of time to the compliance schedule of your TDG Water Quality Attainment Plan. Your April 11, 2013 filing also included a revised compliance schedule, as found in the updated table 7-1. Because the revised compliance schedule involves a material change to the TDG attainment plan, it will be addressed in a separate Commission correspondence.

Thank you for your cooperation. If you have any other questions regarding these matters, please contact me at (415) 369-3335.

Sincerely,

A handwritten signature in black ink that reads "John Aedo". The signature is written in a cursive style with a long, sweeping horizontal line extending to the right.

John Aedo
Fishery Biologist
Division of Hydropower Administration and
Compliance

APPENDIX C
CONSULTATION RECORD ON THE ENVIRONMENTAL REPORT

Avista's Letter to the Washington Department of Ecology



May 6, 2015

Mr. Patrick McGuire, Water Quality Program
Washington Department of Ecology
4601 N Monroe Street
Spokane, WA 99205-1295

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Mr. McGuire:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a 50-year License for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington. The Long Lake HED is a high head facility, with the spillway operated when inflows exceed 6,800 cubic feet per second, the hydraulic capacity of the powerhouse. During these periods, high concentrations of dissolved gas have been measured in the river downstream of the dam that exceed Washington's water quality standards.

As you are aware, Avista has been working on the Long Lake Dam Spillway Modification Project, which is a mitigation measure, under Section 5.4.D, Appendix B of the License. The Spillway Modification Project is designed to lower total dissolved gas (TDG) levels in the Spokane River downstream of Long Lake Dam by installing deflectors, filling the plunge pool, and removing a portion of the rock outcrop below spillway bays 7 and 8. The combination of these measures will allow water to skim across the surface after passing over the deflectors instead of plunging into the pool at the toe of the dam. This is expected to result in an overall decrease in TDG, thereby improving water quality in the Spokane River.

The FERC requested Avista prepare the enclosed Long Lake Dam Spillway Modification Project Environmental Report (Report) to summarize existing conditions, potential impacts, and proposed mitigation related to the project. Avista is also required to consult with the relevant natural resource agencies. This consultation process is being conducted simultaneously with the permitting process in order to allow construction to begin in early 2016. With this, please provide me with any comments or recommendations that you may have on the Report by June 5, 2015. Upon receipt of your comments we will submit the Report to FERC.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-4998.

Sincerely,

A handwritten signature in blue ink that reads "Speed Fitzhugh". The signature is written in a cursive style.

Speed Fitzhugh
Spokane River License Manager

Enclosure

cc: Brian Crossley, Spokane Tribe
Karin Divens, WDFW
Chris Guidotti, Riverside Park Manager
Rob Whitlam, DAHP
Erin Britton Kuttel, USFWS

Washington Department of Ecology's Letter to Avista



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

June 5, 2015

Mr. Speed Fitzhugh
Spokane River License Manager
Avista Corporation
1411 East Mission Avenue, MSC-1
Spokane, WA 99220-3727

RE: Request for Ecology Review and Comments – *Long Lake Dam Spillway Modification Project, Environmental Report*; Spokane River Hydroelectric Project, No. P-2545

Dear Mr. Fitzhugh:

The Department of Ecology (Ecology) has reviewed the *Long Lake Dam Spillway Modification Project, Environmental Report (Report)*. FERC requested that Avista prepare the report to address environmental impacts and permitting requirements of the Long Lake Dam spillway modification project. The spillway modification project is a TDG abatement requirement in Section 5.4.D, Appendix B of the License.

Avista has adequately described the existing conditions and potential impacts of the spillway modification project in Sections 3.1 and 3.2. The proposed mitigation measures and Best Management Practices (BMPs) for the project in Section 3.3 are appropriate and sufficient. If there is any need to modify the project or the water quality protection measures, please notify Ecology.

Ecology has no comments and APPROVES the *Long Lake Dam Spillway Modification Project, Environmental Report*.

Please contact me at (509) 329-3567 or pmcg461@ecy.wa.gov if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Patrick McGuire".

Patrick McGuire
Eastern Region FERC License Coordinator
Water Quality Program

PDM:jab

cc: Meghan Lunney, Avista



Avista's Letter to the Department of Archaeology and Historic Preservation



May 6, 2015

Rob Whitlam, PhD
Department of Archaeology and Historic Preservation
1110 Capitol Way S, Suite 30
Olympia, WA 98501

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Mr. Whitlam:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a 50-year License for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington. The Long Lake HED is a high head facility, with the spillway operated when inflows exceed 6,800 cubic feet per second, the hydraulic capacity of the powerhouse. During these periods, high concentrations of dissolved gas have been measured in the river downstream of the dam that exceed Washington's water quality standards.

As you are aware, Avista has been working on the Long Lake Dam Spillway Modification Project, which is a mitigation measure, under Section 5.4.D, Appendix B of the License. The Spillway Modification Project is designed to lower total dissolved gas (TDG) levels in the Spokane River downstream of Long Lake Dam by installing deflectors, filling the plunge pool, and removing a portion of the rock outcrop below spillway bays 7 and 8. The combination of these measures will allow water to skim across the surface after passing over the deflectors instead of plunging into the pool at the toe of the dam. This is expected to result in an overall decrease in TDG, thereby improving water quality in the Spokane River.

The FERC requested Avista prepare the enclosed Long Lake Dam Spillway Modification Project Environmental Report (Report) to summarize existing conditions, potential impacts, and proposed mitigation related to the project. Avista is also required to consult with the relevant natural resource agencies. This consultation process is being conducted simultaneously with the permitting process in order to allow construction to begin in early 2016. With this, please provide me with any comments or recommendations that you may have on the Report by June 5, 2015. Upon receipt of your comments we will submit the Report to FERC.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-4998.

Sincerely,

A handwritten signature in blue ink that reads "Speed Fitzhugh".

Speed Fitzhugh
Spokane River License Manager

Enclosure

cc: Erin Britton Kuttel, USFWS
Brian Crossley, Spokane Tribe
Karin Divens, WDFW
Chris Guidotti, Riverside Park Manager
Patrick McGuire, Ecology

Department of Archaeology and Historic Preservation's Letter to Avista



Allyson Brooks Ph.D., Director
State Historic Preservation Officer

June 16, 2015

Ms. Rene' Wiley
Avista
1411 East Mission Avenue
Spokane, Washington 99220-3727

Re: Long Lake Dam TDG Abatement Spillway Project
FERC Project 2545
Log No: 050715-01-FERC

Dear Ms. Wiley:

Thank you for contacting our department. We have reviewed the professional archaeological survey report you provided for the proposed Long Lake Dam TDG Abatement Spillway Modification Project, in Stevens and Lincoln Counties, Washington.

We concur with your determination of Adverse Effect. We look forward to further consultations to develop a Memorandum of Agreement to memorialize the agreed upon mitigation elements.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on the behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800.

Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', with a long horizontal flourish extending to the right.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov



Avista and DAHP discussed preparing an agreement to memorialize the agreed upon mitigation elements.

Avista's Letter to the Spokane Tribe



May 6, 2015

Brian Crossley
Spokane Tribe Natural Resources
P.O. Box 480
Wellpinit, WA 99040

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Mr. Crossley:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a 50-year License for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington. The Long Lake HED is a high head facility, with the spillway operated when inflows exceed 6,800 cubic feet per second, the hydraulic capacity of the powerhouse. During these periods, high concentrations of dissolved gas have been measured in the river downstream of the dam that exceed Washington's water quality standards.

As you are aware, Avista has been working on the Long Lake Dam Spillway Modification Project, which is a mitigation measure, under Section 5.4.D, Appendix B of the License. The Spillway Modification Project is designed to lower total dissolved gas (TDG) levels in the Spokane River downstream of Long Lake Dam by installing deflectors, filling the plunge pool, and removing a portion of the rock outcrop below spillway bays 7 and 8. The combination of these measures will allow water to skim across the surface after passing over the deflectors instead of plunging into the pool at the toe of the dam. This is expected to result in an overall decrease in TDG, thereby improving water quality in the Spokane River.

The FERC requested Avista prepare the enclosed Long Lake Dam Spillway Modification Project Environmental Report (Report) to summarize existing conditions, potential impacts, and proposed mitigation related to the project. Avista is also required to consult with the relevant natural resource agencies. This consultation process is being conducted simultaneously with the permitting process in order to allow construction to begin in early 2016. With this, please provide me with any comments or recommendations that you may have on the Report by June 5, 2015. Upon receipt of your comments we will submit the Report to FERC.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-4998.

Sincerely,

A handwritten signature in blue ink that reads "Speed Fitzhugh".

Speed Fitzhugh
Spokane River License Manager

Enclosure

cc: Erin Britton Kuttel, USFWS
Karin Divens, WDFW
Chris Guidotti, Riverside Park Manager
Rob Whitlam, DAHP
Patrick McGuire, Ecology

Spokane Tribe's Letter to Avista



Spokane Tribal Natural Resources

P.O. Box 480 • Wellpinit, WA 99040 • (509) 626 - 4400 • fax 258 - 9600

6/30/2015

Dear Mr. Fitzhugh

We appreciate the correspondence and the field tours of the Long Lake Dam Spillway Modification Project. After recently attending the pre-permitting meeting and discussion with staff we do not have any specific comments on the Environmental Report. We look forward to working with Avista as the project moves forward and are excited to see the outcome.

A handwritten signature in black ink, appearing to read "Brian Crossley".

Brian Crossley
Water & Fish Program Manager
Dept. of Natural Resources

Avista's Letter to the State Parks



May 6, 2015

Chris Guidotti
Riverside Park Manager
9711 W Charles Road
Nine Mile Falls, WA 99026

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Mr. Guidotti:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a 50-year License for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington. The Long Lake HED is a high head facility, with the spillway operated when inflows exceed 6,800 cubic feet per second, the hydraulic capacity of the powerhouse. During these periods, high concentrations of dissolved gas have been measured in the river downstream of the dam that exceed Washington's water quality standards.

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The FERC requested Avista prepare the enclosed Long Lake Dam Spillway Modification Project Environmental Report (Report) to summarize existing conditions, potential impacts, and proposed mitigation related to the project. Avista is also required to consult with the relevant natural resource agencies. This consultation process is being conducted simultaneously with the permitting process in order to allow construction to begin in early 2016. With this, please provide me with any comments or recommendations that you may have on the Report by June 5, 2015. Upon receipt of your comments we will submit the Report to FERC.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-4998.

Sincerely,


Speed Fitzhugh
Spokane River License Manager

Enclosure

cc: Erin Britton Kuttel, USFWS
Brian Crossley, Spokane Tribe
Karin Divens, WDFW
Rob Whitlam, DAHP
Patrick McGuire, Ecology

State Parks' Response to Avista

Subject: FW: Environmental Report for the Long Lake Dam Spillway Modification Project

From: Guidotti, Chris (PARKS) [<mailto:Chris.Guidotti@PARKS.WA.GOV>]
Sent: Thursday, May 14, 2015 2:21 PM
To: Fitzhugh, Speed (Elvin)
Cc: Wiley, Rene; Lunney, Meghan
Subject: RE: Environmental Report for the Long Lake Dam Spillway Modification Project

After reviewing the plans for the Long Lake Dam Spillway Modification Project I feel confident that Avista has adequately mitigated the potential impacts and that this project will not adversely impact any of the recreational opportunities that we manage in the Lake Spokane Area.

Chris Guidotti
Riverside Area Manager
9711 W Charles Rd.
Nine Mile Falls WA 99026
(509) 465-5064

From: Fitzhugh, Speed (Elvin) [<mailto:SpeedElvin.Fitzhugh@avistacorp.com>]
Sent: Wednesday, May 06, 2015 4:51 PM
To: Guidotti, Chris (PARKS)
Cc: Wiley, Rene; Lunney, Meghan
Subject: Environmental Report for the Long Lake Dam Spillway Modification Project
Importance: High

Chris,

The Federal Energy Regulatory Commission (FERC) requested we prepare an environmental report to demonstrate that we have assessed potential environmental impacts due to the Long Lake Dam Spillway Modification Project that will take place in 2016 and 2017. The spillway modification project is a requirement of our Spokane River Project License and is intended to improve total dissolved gas levels in the river downstream of Long Lake Dam. I have attached a copy of the Environmental Report for the Long Lake Dam Spillway Modification Project, which provides a summary of the project, as well as potential impacts and proposed mitigation to address them.

We request your review and comments by June 5th. Please feel free to call contact me if you have any questions about the project or Report while reviewing it.

Thank you,

Speed

Elvin "Speed" Fitzhugh
Spokane River License Manager



1411 E. Mission Avenue MSC-1
Spokane, WA 99202
P 509.495.4998
C 509.714.6350

file:///C:/Users/ygg3473/Desktop/email%20State%20Park%20LL%20Environmental%20Report.htm[7/7/2015 8:50:36 AM]

Avista's Letter to U.S. Fish and Wildlife Service



May 6, 2015

Erin Britton Kuttel
U.S. Fish and Wildlife Service
11103 E. Montgomery Drive
Spokane Valley, WA 99206

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Mrs. Britton Kuttel:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a 50-year License for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington. The Long Lake HED is a high head facility, with the spillway operated when inflows exceed 6,800 cubic feet per second, the hydraulic capacity of the powerhouse. During these periods, high concentrations of dissolved gas have been measured in the river downstream of the dam that exceed Washington's water quality standards.

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If you have any questions regarding the Report, please feel free to contact me at (509) 495-4998.

Sincerely,

A handwritten signature in blue ink that reads "Speed Fitzhugh".

Speed Fitzhugh
Spokane River License Manager

Enclosure

cc: Brian Crossley, Spokane Tribe
Karin Divens, WDFW
Chris Guidotti, Riverside Park Manager
Rob Whitlam, DAHP
Patrick McGuire, Ecology

Avista did not receive any comments from the U.S. Fish and Wildlife Service.

Avista's Letter to the Washington Department of Fish and Wildlife



May 6, 2015

Karin Divens
Washington Department of Fish and Wildlife
2315 North Discovery Place
Spokane Valley, WA 99216-1566

**Subject: Spokane River Project License, FERC Project No. 2545
Long Lake Dam Spillway Modification Project Environmental Report**

Dear Ms. Divens:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a 50-year License for the Spokane River Project, FERC Project No. 2545. The License includes operation of the Long Lake Hydroelectric Development (HED) in Washington. The Long Lake HED is a high head facility, with the spillway operated when inflows exceed 6,800 cubic feet per second, the hydraulic capacity of the powerhouse. During these periods, high concentrations of dissolved gas have been measured in the river downstream of the dam that exceed Washington's water quality standards.

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If you have any questions regarding the Report, please feel free to contact me at (509) 495-4998.

Sincerely,

Speed Fitzhugh
Spokane River License Manager

Enclosure

cc: Erin Britton Kuttel, USFWS
Brian Crossley, Spokane Tribe
Chris Guidotti, Riverside Park Manager
Rob Whitlam, DAHP
Patrick McGuire, Ecology

Avista did not receive any comments from the Washington Department of Fish and Wildlife.