

Hydropower Project License Summary

CALLIGAN CREEK, WA

CALLIGAN CREEK HYDROELECTRIC PROJECT (P-13948)



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Hydropower Reform Coalition

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DESCRIPTION:

The Calligan Creek Hydroelectric Project is located on Calligan Creek near the city of North Bend, WA. A newly licensed project, the August 1, 2013 order allows for the construction, operation, and maintenance of the 6-megawatt run-of-the-river hydropower operation. The project is located entirely on privately-owned timber land and flows for approximately 2.2 miles from the outlet at Calligan Lake to its confluence with the North Fork of the Snoqualmie River.

A relatively small development, the project involves the construction of a dam across Calligan Creek, an intake, a penstock, a powerhouse, a tailrace, a transmission line, and several access roads. The project's construction is expected to start during fall 2016, with operation beginning in winter 2017.

A. SUMMARY

1. License application filed: August 1, 2013
2. License Issued: June 23, 2015
3. License expiration: May 31, 2065
4. Capacity: 6- megawatts (MW)
5. Waterway: Calligan Creek
6. Counties: King County
7. Licensee: Public Utility District No. 1 of Snohomish County (Snohomish PUD)
8. Licensee Contact: Snohomish County PUD
PO Box 1107
2320 California Street
Everett, WA 98201
9. Project Website:
<http://www.snopud.com/PowerSupply/hydro/calliganhancock.ashx?p=1913>
10. Project area: The Calligan Creek Project is located approximately 9 miles northeast of the city of North Bend, WA and 30 miles east of Seattle. The headwaters of Calligan Creek originate in the foothills of the Cascade Mountains and drain an estimated 9.2 square miles. From the outlet at Calligan Lake, Calligan Creek flows for 2.2 miles its confluence with the North Fork Snoqualmie River.

The project does not occupy any federally owned land, and is located entirely within 89,500 acres of privately-owned timber land.

11. Project Facilities: The Calligan Creek Project involves the construction of: (1) a new dam across Calligan Creek; (2) a small reservoir; (3) an intake; (4) a penstock; (5) a powerhouse; (6) a tailrace; (7) a transmission line; (8) and access roads.

a. Hydro-generation and stream flow facilities

- A 102-foot-long dam will impound a reservoir with a surface area of 0.26 acres with no active water storage. The dam will consist of a 10-foot-long cutoff wall, a 45-foot-long spillway sections, and a 47-foot-long wingwall section with a 6.5-foot-high orifice that directs flow into a sluiceway. A pool-and-weir fishway and an adjustable minimum instream flow weir will be constructed adjacent to the sluiceway
- Water entering the sluiceway will be divided between the penstock intake, sluiceway, a pool-and-weir fishway, and the minimum instream flow weir. The majority of the flow will be directed into the penstock for power generation, but 2 cfs will pass through the fishway and discharge into an entrance pool at the base of the diversion dam. Any additional flows to maintain the seasonally adjusted minimum flows (variable from 6 - 15 cfs), in the bypassed reach will be directed from the sluiceway through an adjustable weir into the fishway entrance pool. Once a year, during a high flow event (defined in the license as greater than 80 cfs), sediment will be discharged from the sluiceway.
- Flows directed into the penstock will pass through a fish screen, then flow through the 1.2 mile-long penstock to the powerhouse.
- Once flows pass through the turbine, they will be returned to Calligan Creek through an approximately 125-foot-long tailrace channel with a two-foot-high concrete drop structure to prevent fish from entering the tailrace.
- The project's transmission facilities include a switchyard located adjacent to the powerhouse, and a 2.5-mile-long buried transmission line.

b. Recreation facilities

- Because the project area offers little to no potential for recreation facilities, Snohomish PUD is exempt from building, modifying, or otherwise collecting any data regarding recreational facilities, as typically required by the FERC Form 80 Recreation Report.

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

The project is located upstream of Snoqualmie Falls, which represents an impassable natural barrier to anadromous fish found in the lower Snoqualmie River basin. Additionally, because the stream and project area offer little to no opportunity for recreation opportunities, the license is devoid of any requirements of that nature. As such, the most important requirements found within the license and its related exhibits, center around these three topics:

- 1) The project’s streamflow regime;
- 2) Resident trout protection; and
- 3) The project’s construction and operation.

1. Instream Flows [Reference: Washington Department of Ecology (Appendix A, Specific Condition 1)]

The flows in the bypassed reach shall be met or exceeded in accordance with the following table:

Release at Diversion Weir

Day of Year	Minimum Instream Flow	Measurement Location
Year around	2 cfs or inflow, whichever is less	Immediately downstream at the calibrated weir
May 15 through September 14	15 cfs or natural flow, whichever is less	Downstream of spring-fed inflow as measured at USGS gage No. 12142200
September 15 through May 14	6 cfs or natural flow, whichever is less	Downstream of spring-fed inflow as measured at USGS gage No. 12142200

If the project’s operation results in a deviation from any of the requirements listed above, Snohomish PUD shall notify the Washington Department of Fish and Wildlife (WDFW) and the Washington Department of Ecology (DOE) within 10 business days after the incident.

2. Down Ramping and Flow Continuation [Reference: Washington Department of Ecology (Appendix A, Specific Condition 2)]

For situations that require the shutdown and startup of operations, the following down ramping rates shall be implemented:

Day of Year	Daylight* Rate (inches/hour)	Nighttime Rate (inches/hour)
November 1 through June 15	2	2
June 16 through October 31	2 (when instream flow is greater than or equal to critical flow); 1 (when instream flow is less than critical flow - critical flow set at 30 cfs)	1
* Daylight is defined as 1 hour before sunrise to 1 hour after sunset.		

3. Adaptive Flow Management [Reference: Washington Department of Ecology (Appendix A, Specific Condition 3)]

Per the license, Snohomish PUD must implement the Instream Flow Adaptive Management Plan (IFAMP) that was filed with FERC on April 25, 2014. The IFAMP specifies how Snohomish PUD will manage instream flows based on the results of licensed-mandated trout monitoring. If the monitoring reveals a decline in the resident trout populations in Calligan Creek (based on criteria defined in the IFAMP), the following increases to the project’s flow regime (see *instream flows* above) shall be triggered.

Instream Flow Adaptive Schedule

Years of Project Operation	1-5 Years	6-10 Years	11-15 Years	16+ Years
Month	Start Flows in cfs*	Flow Adjustment Schedule in cfs		
		1st	2nd	3rd
October	2	3	4	5
November	2	3	4	5
December	2	3	4	5
January	2	3	4	5
February	2	3	4	5
March	2	3	4	5
April	2	3	4	5

May 1-14	2	3	4	5
May 15-31	2	2	2	2
June	2	2	2	2
July	2	2	2	2
August	2	2	2	2
September 1-14	2	3	4	5
September 15-30	2	3	4	5
* Stated flow level or natural flows, whichever are less.				
** Flow increases to be adjusted only if approved monitoring plan determines a decrease in the resident trout population index occurred. The first adjustment could occur as early as Year 3 if there are two sequential catastrophic declines in the population index defined as winter rearing season based on water temperature monitoring.				

Snohomish PUD must conduct surveys of trout abundance annually it is determined that the prescribed flow regime adequately protects the resident trout population. Baseline snorkel surveys of eight selected pools in the project reach were conducted during August and September 1992, 2001, 2010, 2011, 2012, 2013, and 2014. Snohomish PUD shall repeat these surveys between August and September each year until the project is constructed and continue these surveys for at least five years following power generation. Construction is expected to begin in fall 2016 with projected operation expected in winter 2017.

Snohomish PUD must follow the guidelines below as they relate to trout monitoring:

Trout monitoring guidelines

Activities	Frequency	Timing
Conduct Pre-Operation Surveys	Annually, until commencement of operation	August 15-September 15, as conditions allow
Provide Pre-Operation Survey Report (Annual Report) to WDFW for Review	Annually, after conducting pre-operation survey	October 31
Conduct Post-Operation Surveys	Annually for 5 years after commencement of operation	August 15-September 15, as conditions allow

Provide Post-Operation Survey Report (Annual Report) to WDFW for Review	Annually for years 1-4 after commencement of operation	October 31
Provide Final Post-Operation Survey Report to WDFW for Review	5 year after commencement of operation	December 31
File Final Post-Operation Survey Report with FERC	Once	60 days (by March 1st) after providing Final Post-Operation Survey Report to WDFW for review

4. Operation Compliance Monitoring Plan [Reference: License Article 405]

Within one year of the license being issued, Snohomish PUD must file an Operation Compliance Monitoring Plan that describes how it will document compliance with the operational aspects of the license. The plan must include, but not be limited to, detailed descriptions of how Snohomish PUD will:

- a) Document compliance with the project’s run-of-river operation;
- b) Minimum instream flows;
- c) Ramping rates;
- d) Flow continuation; and
- e) Sluice gate operation

The plan must also include a provision to file an updated operation compliance monitoring report by March 31 for the following five years post-operation startup.

The plan must be developed in consultation with the WDFW, DOE, and the U.S. Fish and Wildlife Service. The plan must include documentation of all comments and recommendations submitted by the agencies listed above, and provide descriptions of how those comments and recommendations were addressed by the plan.

5. Visual Resources [Reference: License Article 409]

In order to minimize the visual effects of the project, Snohomish PUD must:

- a) Use exterior colors for the powerhouse and fencing materials that minimize

- contrast with the surrounding environment;
- b) Install lighting at the powerhouse that will be time phased to operate only when required, directed downward and discretely located to light the facility only, and where possible, will be energy efficient, shielded, recessed into the ground, or attached to the sides of structures;
- c) Maintain vegetative screening at the powerhouse and intake for the term of the license; and
- d) File with the Commission a report, including photographic evidence, demonstrating compliance with the requirements of this article within six months of completing project construction.

6. Tailrace Fish Exclusion [Reference: Washington Department of Ecology (Appendix A, Specific Condition 5)]

Snohomish PUD must build a tailrace exclusion barrier to prevent upstream migration of fish into the tailrace. The design of the barrier must be approved by WDFW.

7. Fish Screen [Reference: Washington Department of Ecology (Appendix A, Specific Condition 6)]

Snohomish PUD must install self-cleaning fish screens in the intake chamber upstream of the penstock inlet.

8. Upstream Fish Passage [Reference: Washington Department of Ecology (Appendix A, Specific Condition 7)]

Snohomish PUD shall install a passage for resident fish at the project intake facilities consistent with that provided under existing channel conditions. Passage will be provided using flows no greater than the release of previously licensed minimum instream flow rate of 2 cfs at the Calligan intake.

9. Construction Activities [Reference: Washington Department of Ecology (Appendix A, Specific Condition 9)]

The license requires Snohomish PUD to develop and implement a Water Quality Protection Plan (WQPP) for all project-related construction, maintenance, and repair work that is in- or near-water that has the potential to impact surface and/or groundwater quality. The WQPP must include the following:

- **Stormwater Pollution Prevention Plan for Upland Construction Work.**
Among other requirements, the plan must specify the best management practices to prevent pollutants from entering the state's surface and groundwater from upland construction activities.
 - **In-Water-Work Protection Plan for In-Water Construction work.**
This plan must specifically address the best management practices and other control measures to prevent contaminants from entering surface water and groundwater during work within the project's surface waters. The plan must address water quality monitoring provisions for all in-water work, including monitoring outside the area that could be influenced by the work.
 - **Best Management Practices for Construction Work**
The WQPP requires that the best management practices used for upland construction activities must be consistent with the *Stormwater Management Manual for Western Washington*.
10. **Water Quality Monitoring, Reporting and Adaptive Management** [Reference: Washington Department of Ecology (Appendix A, Specific Condition 10)]

While the license goes into more detail, Snohomish PUD generally shall, on a consistent basis, sample and monitor the streams water quality during and after the project's construction. Suspension or modification of water quality monitoring may be requested if, after a minimum of five years of data collection following the completion of the project construction, demonstrates that there are no violations of water quality standards.

C. MAP

There are two convenient ways to become familiar with this project on the Hydropower Reform Coalition website, www.hydroreform.org.

- Go directly to the project page <http://www.hydroreform.org/projects/calligan-creek-p-8864>
- To understand the geographical context of the project, visit the *On Your River* section of the site. This link (<http://www.hydroreform.org/on-your-river/Northwest>) will take you to the section for rivers in the Northwest. Zoom in until you can see the Seattle area. Mouse over five markers east of Seattle. P-13948 is the first marker from the left near the town of Snoqualmie.