FACT SHEET

The United States Environmental Protection Agency (EPA) proposes to issue an National Pollutant Discharge Elimination System (NPDES) Permit to discharge pollutants pursuant to the provisions of the Clean Water Act:

Grand Coulee Dam

Public Comment Start Date: January 13, 2022
Public Comment Expiration Date: February 28, 2022

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1-800-424-4372 ext 6328 (within Alaska, Idaho, Oregon and Washington)

EPA Proposes to Issue a NPDES Permit
EPA proposes to issue a NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the facility to waters of the United States. To ensure the protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge locations
- technical material supporting the conditions in the permit

Clean Water Act §401 Certification
EPA requested final Clean Water Act (CWA) 401 certification from the Confederated Tribes of the Colville Reservation (Colville Tribes) and Washington Department of Ecology (Ecology) on January 13, 2022. Comments regarding Ecology's intent to certify the permit should be directed to Angela Zeigenfuse at azei461@ECY.WA.GOV. Comments regarding the Colville Tribes' intent to certify the permit should be directed to Douglas Marconi at Douglas.Marconi@colvilletribes.com.

CWA §401(a)(2) Review
CWA Section 401(a)(2) requires that, upon receipt of an application and 401 certification, EPA as the permitting authority notify a neighboring State or Tribe with TAS when EPA determines that the discharge may affect the quality of the neighboring State/Tribe's waters. 33 U.S.C. § 1341(a)(2). Upon receipt of the CWA Section 401 certifications from the Colville Tribes and Ecology, EPA will make a determination whether the discharges may affect the waters of the Colville Tribes and Ecology.

Public Comment
Because of the COVID-19 virus, access to the Region 10 EPA building is limited. Therefore, we request that all comments on EPA's draft permit or requests for a public hearing be submitted via email to Jenny Wu (Wu.Jennifer@epa.gov). If you are unable to submit comments via email, please call 206-553-6328.

Persons wishing to comment on, or request a Public Hearing for, the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described above.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Water Division will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19

Documents are Available for Review
The draft permit, fact sheet, and other information can be found by visiting the Region 10 NPDES website at: https://www.epa.gov/npdes-permits/about-region-10s-npdes-permit-program and at https://www.epa.gov/npdes-permits/draft-npdes-permit-grand-coulee-dam-washington. Because of the COVID-19 virus and limited building access, EPA cannot make hard copies available for viewing at EPA offices.

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ACRONYMS

BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
BOR	United States Bureau of Reclamation
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CWA	Clean Water Act
CWIS	Cooling Water Intake Structure
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
gpm	Gallons per minute
mg/L	Milligrams per liter
MGD	Million gallons per day
ML	Minimum Level
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
QAP	Quality Assurance Plan
SPCC	Spill Prevention and Control and Countermeasure
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids

USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WD	Water Division
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards

I. Background Information

A. General Information

This fact sheet provides information on the draft National Pollutant Discharge Elimination System (NPDES) permit for the Grand Coulee Dam. Table 1 includes general facility information:

Table 1. General Facility Information for Grand Coulee Dam

NPDES Permit #:	**WA0026876**
Applicant:	Grand Coulee Dam
Type of Ownership	Federal – United States Bureau of Reclamation (BOR)
Physical Address:	Highway 155, Industrial Road Warehouse Grand Coulee, Washington 99133
Mailing Address:	P.O. Box 620 Grand Coulee, Washington 99133
Facility Contact:	Jeffery DeWinkler Environmental Protection Specialist (509) 633-9321
Facility Location:	Latitude: 47° 57’ 22” N Longitude: 118° 59’ 17” W
Receiving Water	Columbia River, Washington
Facility Outfalls	001 Latitude: 47° 57’ 22” N Longitude: 118° 59’ 17” W 002 Latitude: 47° 57’ 22” N Longitude: 118° 59’ 17” W 003a Latitude: 47° 57’ 22” N Longitude: 118° 59’ 17” W 003b Latitude: 47° 57’ 22” N Longitude: 118° 59’ 17” W 004a Latitude: 47° 57’ 24” N Longitude: 118° 59’ 9” W 004b Latitude: 47° 57’ 24” N Longitude: 118° 59’ 10” W 004c Latitude: 47° 57’ 24” N Longitude: 118° 59’ 11” W 004d Latitude: 47° 57’ 23” N Longitude: 118° 59’ 12” W 004e Latitude: 47° 57’ 23” N Longitude: 118° 59’ 13” W 004f Latitude: 47° 57’ 23” N Longitude: 118° 59’ 14” W 004g Latitude: 47° 57’ 23” N Longitude: 118° 59’ 14” W 004h Latitude: 47° 57’ 23” N Longitude: 118° 59’ 14” W 004i Latitude: 47° 57’ 23” N Longitude: 118° 59’ 14” W 005 Latitude: 47° 57’ 26” N Longitude: 118° 58’ 43” W 006 Latitude: 47° 57’ 28” N Longitude: 118° 58’ 35” W 007a Latitude: 47° 57’ 28” N Longitude: 118° 58’ 35” W 007b Latitude: 47° 57’ 28” N Longitude: 118° 58’ 35” W 008a Latitude: 47° 57’ 28” N Longitude: 118° 58’ 37” W 008b Latitude: 47° 57’ 28” N Longitude: 118° 58’ 37” W 008c Latitude: 47° 57’ 28” N Longitude: 118° 58’ 37” W 008d Latitude: 47° 57’ 28” N Longitude: 118° 58’ 38” W 008e Latitude: 47° 57’ 28” N Longitude: 118° 58’ 38” W 008f Latitude: 47° 57’ 28” N Longitude: 118° 58’ 38” W 008g Latitude: 47° 57’ 28” N Longitude: 118° 58’ 38” W 008h Latitude: 47° 57’ 28” N Longitude: 118° 58’ 38” W 008i Latitude: 47° 57’ 28” N Longitude: 118° 58’ 38” W 009a Latitude: 47° 57’ 30” N Longitude: 118° 58’ 35” W 009b Latitude: 47° 57’ 30” N Longitude: 118° 58’ 35” W 010a Latitude: 47° 57’ 39” N Longitude: 118° 58’ 32” W

	010b	Latitude: 47° 57’ 39” N	Longitude: 118° 58’ 32” W
	011a	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	011b	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	011c	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	011d	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	011e	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	011f	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	012a	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	012b	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W
	012c	Latitude: 47° 57’ 35” N	Longitude: 118° 58’ 33” W

B. Permit History

This will be the first NPDES permit issued for point source discharges from Grand Coulee Dam. On June 29, 2016, Columbia Riverkeeper filed a complaint against the BOR for discharges of oil and grease from Grand Coulee Dam without a NPDES permit in violation of the CWA. On January 19, 2017, the BOR and Columbia Riverkeeper reached a Settlement Agreement where the BOR agreed to submit a NPDES permit application for the discharge of pollutants from Grand Coulee Dam by November 19, 2017.

The BOR submitted a NPDES permit application to the U.S. Environmental Protection Agency Region 10 (EPA) for Grand Coulee Dam on September 26, 2017. EPA determined that the application was complete. The BOR provided additional information in October and November 2018 for the permit application.

C. Tribal Consultation

EPA contacted tribal staff of the Colville Tribes, Spokane Tribe of Indians, and Kalispel Tribe of Indians by electronic mail on August 8, 2018. On September 19, 2018, EPA presented information on the permit to the tribes, the Columbia River Inter-Tribal Fish Commission, Upper Columbia United Tribes, and the Upper Snake River Tribes Foundation. EPA mailed letters to each tribe on October 9, 2018 to inform them of the status of the NPDES permit for Grand Coulee Dam and invite them to initiate tribal consultation.

Because of the lapse of time since EPA contacted the tribes and invited them to tribal consultation, EPA is reinitiating coordination and consultation on this permit. EPA contacted tribal staff from the Confederated Tribes of the Colville Reservation, the Spokane Tribe of Indians, Nez Perce Tribe, Coeur d’Alene Tribe, Kootenai Tribe, Shoshone-Bannock Tribes, Kalispel Tribe of Indians, Cowlitz Indian Tribe, Confederated Tribes of Warm Springs, Confederated Tribes of Grand Ronde, Yakama Nation, and the Confederated Tribes of the Umatilla Reservation by electronic mail on September 1, 2021 to provide a status update on the permit. EPA electronically mailed letters to each of these tribes on November 5, 2021 to invite them to initiate government-to-government tribal consultation and to request review of a pre-public notice draft of the permit and technical fact sheet. As of the publication of this fact sheet on January 13, 2022, no Tribes have requested informal or formal consultation regarding this permitting action. EPA will continue to engage with Tribes throughout the remainder of the permitting process.

II. Facility Information

A. Geographic Area

The Grand Coulee Dam (GCD) is a large concrete dam located on the Columbia River Gorge, 90 miles west of Spokane in Okanogan County, Washington State. The BOR owns and operates Grand

Coulee Dam. The facility discharges into river mile 596 of the Columbia River near Grand Coulee, Washington. The jurisdictional line between the Colville Tribes and Washington is in the middle of the Columbia River, and thus, the facility discharges to both Washington state waters and Colville tribal waters. EPA is the permitting authority for Indian Country and for federal facilities in Washington[1].

Appendix A includes a map of the facility with the jurisdictional boundary of Colville Tribes' waters on the eastern side and Washington state waters on the western side of the Columbia River.

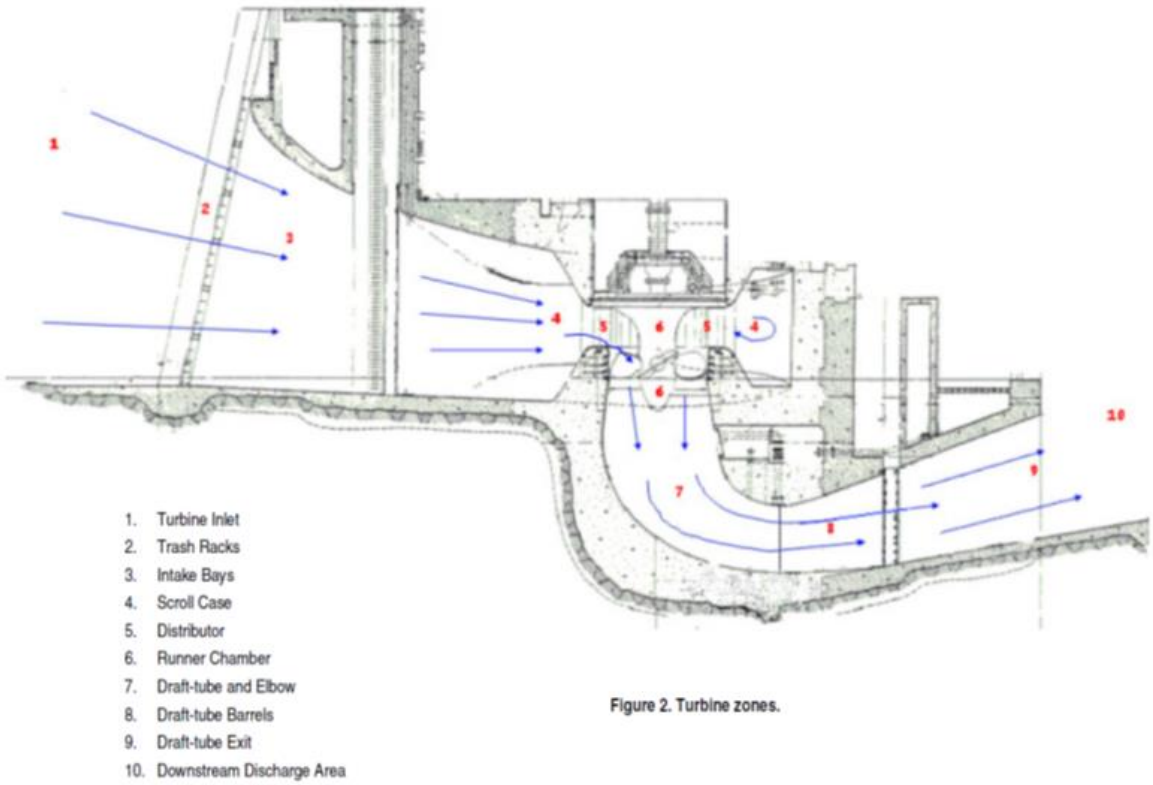
B. Facility Operations and Types of Discharges

Grand Coulee Dam was constructed from 1933 to 1941 and modified from 1967 to 1975. It is 550 feet high and 5,223 feet long. Grand Coulee Dam is the largest hydropower producer in the United States with a generating capacity of more than 6,809 megawatts supplying up to 21 billion kilowatt-hours of energy. In addition to hydropower, the facility is also used for irrigation and to reduce flood risk. Operations at the facility include three powerplants, a pump generating plant, and a small wastewater treatment plant (WWTP) for sanitary waste. Sanitary sewage from Grand Coulee Dam flows to two separate sanitary sewer systems. Sanitary waste from the west side of the facility discharges to the Town of Coulee Dam WWTP. Sanitary waste from the east side of the facility is treated onsite at the Grand Coulee Dam WWTP and discharged to the Columbia River. The sanitary waste is covered under a separate EPA-issued NPDES Permit (WA0024163, https://www.epa.gov/npdes-permits/npdes-permit-grand-coulee-dam-wastewater-treatment-plant-washington).

The facility includes the Pump Generator Plant, Main Dam, Left and Right Powerhouses, and the Third Power Plant (TPP). These comprise the generating stations, dam, reservoir, tunnel system, and associated equipment and structures used in the generation of hydroelectric power. Grand Coulee Dam generates electricity using falling or flowing water from the Columbia River to drive turbines and generators. Most of the water is routed through turbines to generate electricity (See Figure 2.) However, some water is diverted internally and re-routed to cool equipment before being discharged through discrete outfalls ("cooling water"). Drainage sumps at Grand Coulee Dam also collect water inside the facilities that include Columbia River water leaking into the dam, turbine oil, and other water from equipment and floor drains, before being discharged through discrete outfalls ("equipment and floor drain-related water"). Unwatering sumps collect water when equipment submersed in water are being maintained or repaired and need to be dewatered ("equipment and facility maintenance-related water"). This water is also discharged through a discrete outfall. Hydroelectric generating water may be exposed to turbine oil and other oil and grease used to operate and lubricate turbines, wicket gates, lubricated wire rope, and other related equipment that can add pollutants when lubricants come into contact with water ("lubricants"). These are discharged in the tailrace. Lastly, cooling water intake structures (CWIS) may impinge or entrain fish that may be harmed.

[1] NPDES Memorandum of Agreement Between the State of Washington and United States Environmental Protection Agency Region 10, July 2018.

Figure 1. Cross-section of turbine zones of hydroelectric generating facility process



Grand Coulee Dam includes the Pump Generator Plant (Outfall 001), Left Powerhouse west of the spillway with nine generator units (G-1 through G-9; Outfalls 002, 003a, 003b, 004a through 004i), the Right Powerhouse east of the spillway with nine generator units (G-10 through G-18; Outfalls 006, 007a, 007b, 008a through 008i), and the Third Power Plant northeast of the right powerhouse with six generator units (G-19 through G-24; Outfalls 009a, 009b, 010a, 010b, 011a through 011f). Three line service units are located west of G-1 in the Left Powerhouse (Outfalls 12a through 12c). Line service units are identical to the main generator units, but smaller and only operate one at a time. The Main Dam galleries also collect leakage water, and water from equipment and floor drains, which are discharged (Outfall 005).

The Pump Generator Plant (Outfall 001) was completed in 1973 and is used both for irrigation and to generate hydroelectric power. It contains 12 pumps (P1-PG12) that remove water from the Columbia River to a canal that flows into Banks Lake for irrigation. Six of the pumps can be reversed to generate hydroelectricity. Discharges to Outfall 001 include transformer deluge water, cooling water from the 12 pumps, emergency cooling water, HVAC cooling water, unwatering drains, and fire protection water.

The Left and Right Powerhouses include 9 generating units each. Rainwater and fire protection water are used to cool the transformers into a sump, which is discharged though Outfall 002 (Left Powerhouse) and Outfall 006 (Right Powerhouse). Outfall 003a (Left Powerhouse) and Outfall 007a (Right Powerhouse) discharge water from the unwatering sump, water from the penstock and draft tube drains. Outfall 003b (Left Powerhouse) and Outfall 007b (Right Powerhouse) discharge drainage sumps with water from the powerhouses and turbine pits. Cooling water from the Columbia River is used for generator and turbine bearings and is discharged through Outfalls 4a through 4i (Left Powerhouse) and Outfalls 8a through 8i (Right Powerhouse). Three line service units discharge

cooling water for turbine oil coolers and housing, thrust, and generator bearing coolers (Outfalls 12a through 12c).

The TPP includes 6 generating units. Transformers are air cooled, but periodically fire protection water is used to cool the transformer decks into a sump, which is discharged through Outfalls 009a and 009b. The drainage sump (Outfall 010a) discharges from the TPP drains and turbine waters, which includes G19-G21 oil cooling water, and G19-G24 penstock water used to cool G19-G24 air housing coolers. The unwatering sump (Outfall 10b) receives water from the G19-24 penstock and draft tube drains.

The main dam also has reservoir leakage water and a basin for overflow that collects in the gallery drains and are collected at drainage pumps, which discharge from Outfall 005.

All the above except for the main dam gallery drains use equipment to generate hydroelectric power that require cooling. Equipment is also exposed to oil and grease.

The permits authorize the discharges described above: cooling water, equipment and floor drain-related water, equipment and facility maintenance-related water, and lubricants. Hydroelectric generating water may also be exposed to lubricants on hydroelectric generating equipment, such as wicket gates and lubricated wire rope, and other in-water equipment. Appendix A includes a map of Grand Coulee Dam, outfall locations, and process diagrams for each outfall.

Cooling Water Discharges

Grand Coulee Dam uses river water to cool equipment resulting in discharges of non-contact cooling water to the river. Non-contact cooling water is defined as "water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product or finished product" (40 CFR 401.11(n)). Each power-generating unit in the powerhouses and line service units uses non-contact cooling water to cool housing and generator bearings, and turbine bearings (Outfalls 004a through 004i in the Left Powerhouse, Outfalls 008a through 008i in the Right Powerhouse). The Left and Right Powerhouses and Third Power Plant each have a transformer cooling water deck which collects cooling water that is sent to a transformer pump then discharged (Outfalls 002, 006, and 009).

In the Left Powerhouse transformer cooling water deck, transformer cooling water flows are regulated to 200 gallons per minute (gpm) per transformer bank. Flow is constant except for maintenance outages. Deluge fire water has only been used during commissioning if required by fire flow and would be approximately 750 gpm.

Grand Coulee Dam may divert certain equipment-related cooling waters to the equipment and floor drain water drainage system. Hydroelectric generating facilities may transfer heat from the equipment to cooling water. If there are holes in the pipes of the equipment being cooled, oil may enter the cooling water and be discharged. Thus, cooling water may include heat and oil and grease discharges. Some transformers may have legacy polychlorinated biphenyls (PCBs), which can be released with cooling water. A separate equipment operation is the strainer operation on the cooling water intake line. These strainers remove debris and silt which are manually removed and cleaned.

Related to cooling water discharges are the CWIS. CWIS are the structure where water is extracted to be used to cool equipment in a facility. The facility extracts water from the Columbia River for hydroelectric generating purposes, which are then routed internally for cooling water. The CWIS may have screens to remove debris, which fish can become impinged on. CWIS can harm organisms that are entrained into the facility and unable to pass through.

The permits do not address waters that flow over the spillway or pass through the turbines. *See National Wildlife Federation v. Consumers Power Company*, 862 F.2d 580 (6th Cir. 1988); *National Wildlife Federation v. Gorsuch,* 693 F.2d 156 (D.C. Cir. 1982). However, at the point that water is extracted for cooling water, its status moves from pass through water to cooling water, which is addressed in these permits. The CWIS in these hydroelectric generating facilities is the point where water is diverted from the scroll case to be used for cooling.

Equipment Drainage and Floor Drain Discharges
Grand Coulee Dam has a series of canal systems and tunnels within the dam, and like many hydroelectric generating facilities, there is a tendency for water to leak into and through the dam. Drainage water is collected by floor drains, trench drains, station sumps and spillway sumps and sump pumps are used to discharge this water – along with oil, grease and other water from equipment and floor drains – through discrete outfalls ("equipment and floor drain-related water"). These discharges can be intermittent and seasonal, and the outfalls in certain stations can be inaccessible for sampling purposes. Drainage sumps and dewatering sumps are the primary sources of potential oil and grease discharges at Grand Coulee Dam. Cooling water discharges may enter into equipment and floor drains, resulting in a commingled discharge, which could increase outfall water temperatures. Heat increases from commingled discharges are likely to be small or immeasurable, however, since most drainage water is leakage water or other water with temperature the same as leakage water.

Equipment and Facility Maintenance-Related Water Discharges
The equipment and facility maintenance-related water discharges include river water pumped from the facility during periods of equipment, station, and facility maintenance. For Grand Coulee Dam, maintenance operations are generally continuous, and maintenance-related waters from unwatering sumps are discharged on a regular basis. During equipment maintenance operation, discharges occur from the dewatering of equipment containing river water such as the turbine, penstock, navigation locks, and dewatering sumps, which may contain residual oil and grease, detritus, or silt.

Equipment using Lubricants
Various equipment in the hydroelectric generating facilities is lubricated with grease. These include greased brushings, where grease is used to lubricate bushings on wicket gates that control the flow of water from the penstock to the turbine and other in-water equipment. The system automatically greases the bushings when the unit is operating per manufacturer's specifications. Through the greasing process, water may enter into the river. Lubricated wire rope is used throughout the facility over water and in direct contact with water and greased, based upon the facility's preventative maintenance schedule. In-water equipment, such as bearings, blocks, trucks, and guides, in or above the water, may also come into contact with water during rainfall. The facility has Francis turbines, which are used at dams with a large hydraulic head and use fewer lubricants than the Kaplan turbines at many other Columbia and Snake River Dams. Francis turbines are less likely to involve oil and grease discharges to hydroelectric generation water, but leaks are still possible.

C. Types of Pollutants Associated with Facility Discharges

The proposed permit addresses wastewater discharged from outfalls at Grand Coulee Dam (*i.e.*, discharges that result in an addition of pollutants from the dam to the Columbia River). The permit does not address waters that flow over the spillway or pass through the turbines *See National Wildlife Federation v. Consumers Power Company*, 862 F.2d 580 (6th Cir. 1988); *National Wildlife*

Federation v. Gorsuch, 693 F.2d 156 (D.C. Cir. 1982). The pollutants associated with wastewaters from the above discharges are oil; grease; excess heat (temperature); pH; polychlorinated biphenyls (PCBs); and debris and silt from the strainer's screens.

Most discharges from Grand Coulee Dam with the potential to affect water quality are ancillary to the direct process of generating electricity and would result mostly from oil spills, equipment leaks, and improper waste storage. The NPDES permit proposes permit limits for oil and grease, pH, and temperature. It also requires the development and implementation of a Best Management Practices (BMP) Plan and Annual Reports, Environmentally Acceptable Lubricants (EAL) Annual Reports, PCB Management Plan and Annual Reports, and CWIS Annual Reports.

The BMP Plan establishes practices and procedures to prevent, minimize or eliminate the discharge of oil and grease. The BMP Annual Report requires an update of BMPs installed, an evaluation of their effectiveness, and a description of how BMPs will be optimized to address oil and grease discharges. If the BOR has developed oil spill prevention plans, oil tracking accountability plans, analysis, and evaluation reports to comply with other environmental regulations, these plans may be used to comply with part or all of the BMP Plan, so long as the conditions required in the BMP Plan are met, and BOR provides documentation and references to how other reports meet the permit conditions.

EALs are biodegradable lubricants. For equipment that use non-EAL lubricants, have an oil-water interface, or have a high likelihood that lubricants would enter water, the permit requires the use of EALs, unless technically infeasible. The draft permit also requires an EAL Annual Report, which is an inventory of equipment that must be considered for EALs, a technical feasibility evaluation of the equipment, and annual updates of EAL implementation on equipment. If the BOR has conducted numerous EAL analyses as part of its internal efforts to move towards EALs and as part of its settlement agreement with Columbia Riverkeeper, these reports may be used to meet part or all of the EAL Annual Report requirements as long as the permit conditions are met, and BOR provides documentation and references to how other reports meet the permit conditions.

Section 316(b) of the CWA seeks to minimize adverse environmental effects from CWIS. The permit requires best technology available (BTA) to be used to ensure that these effects are minimized. The permit also requires a CWIS Annual Certification, a status report of the BTA and any studies and optimization related to the use and effectiveness of the BTA on fish mortality. This will be accomplished by certifying that CWIS BTA has been properly operated and maintained. If the facility's CWIS BTA has been properly operated and maintained, the facility meets the BTA requirement under Section 316(b) of the CWA.

D. Outfall Description

Below is a brief description of outfalls that discharge to the Columbia River.

Table 2. Grand Coulee Dam Outfall Description

Outfall	Outfall Description	Type of Discharge	Maximum Daily Discharge	Average Daily Discharge and Frequency	Receiving Water Jurisdiction
001	Pump/Generating Plant Sump	Equipment and floor drain discharges, cooling water	17 MGD	8.7 MGD; operates half the time with more discharges in the summer irrigation season	Washington
002	Left Power House Transformer Deck Sump	Cooling water	7.8 MGD	5.18 MGD; constant except for maintenance outages	Washington
003a	Left Power House Drainage Sump	Equipment and floor drain discharges, cooling water	2.8 MGD	0.83 MGD; 7.5 hours per day	Washington
003b	Left Power House Unwatering Sump	Equipment and floor drain discharges, cooling water	2.8 MGD	0.83 MGD; 6.4 hours per day	Washington
004a	Left Power House Generator Three (G-1)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004b	Left Power House Generator Three (G-2)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004c	Left Power House Generator Three (G-3)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004d	Left Power House Generator Three (G-4)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004e	Left Power House Generator Three (G-5)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004f	Left Power House Generator Three (G-6)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004g	Left Power House Generator Three (G-7)	Cooling water	3.6 MGD	3.6 MGD;	Washington

				Operates 63% of the time	
004h	Left Power House Generator Three (G-8)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
004i	Left Power House Generator Three (G-9)	Cooling water	3.6 MGD	3.6 MGD; Operates 63% of the time	Washington
005	Main Dam Galleries	Equipment and floor drain discharges, cooling water	0.4 MGD	0.08 MGD; Fluctuates depending on activity and time of the year	Colville Tribes
006	Right Power House Transformer Deck Sump	Equipment and floor drain discharges, cooling water	0.9 MGD	0.9 MGD; constant	Colville Tribes
007a	Right Power House Drainage Sump	Equipment and floor drain discharges, cooling water	2.9 MGD	0.3 MGD; 5 hours per day	Colville Tribes
007b	Right Power House Unwatering Sump	Equipment and floor drain discharges, cooling water	2.9 MGD	0.3 MGD; 5 hours per day	Colville Tribes
008a	Right Power House Generator Three (G-10)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008b	Right Power House Generator Three (G-11)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008c	Right Power House Generator Three (G-12)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008d	Right Power House Generator Three (G-13)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008e	Right Power House Generator Three (G-14)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008f	Right Power House Generator Three (G-15)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008g	Right Power House Generator Three (G-16)	Cooling water	3.6 MGD	3.6 MGD;	Colville Tribes

				Operates 75% of the time	
008h	Right Power House Generator Three (G-17)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
008i	Right Power House Generator Three (G-18)	Cooling water	3.6 MGD	3.6 MGD; Operates 75% of the time	Colville Tribes
009a	Third Power Plant Transformer Deck Sump	Equipment and floor drain discharges, cooling water	9.4 MGD	2.6 MGD; Used during commissioning if required for approximately 20 minutes.	Colville Tribes
009b	Third Power Plant Transformer Deck Sump	Equipment and floor drain discharges, cooling water	9.4 MGD	2.6 MGD; Used during commissioning if required for approximately 20 minutes.	Colville Tribes
010a	Third Power Plant Drainage Sump	Equipment and floor drain discharges, cooling water	0.1 MGD	No information; Runs approximately 8.8. hours/day.	Colville Tribes
010b	Third Power Plant Unwatering Sump	Equipment and floor drain discharges, cooling water	0.1 MGD	No information; Runs approximately 8.8. hours/day.	Colville Tribes
011a	Third Power House Generator Three (G-19)	Cooling water	10 MGD	No information; Runs approximately 57% of time.	Colville Tribes
011b	Third Power House Generator Three (G-20)	Cooling water	10 MGD	No information; Runs approximately 57% of time.	Colville Tribes
011c	Third Power House Generator Three (G-21)	Cooling water	10 MGD	No information; Runs approximately 57% of time.	Colville Tribes

011d	Third Power House Generator Three (G-22)	Cooling water	10 MGD	No information; Runs approximately 57% of time.	Colville Tribes
011e	Third Power House Generator Three (G-23)	Cooling water	10 MGD	No information; Runs approximately 57% of time.	Colville Tribes
011f	Third Power House Generator Three (G-24)	Cooling water	10 MGD	No information; Runs approximately 57% of time.	Colville Tribes
012a	Line Service Unit 1	Equipment and floor drain discharges, cooling water	1 MGD	No information; Only one unit operates at a time	Colville Tribes
012b	Line Service Unit 2	Equipment and floor drain discharges, cooling water	1 MGD	No information; Only one unit operates at a time	Colville Tribes
12c	Line Service Unit 3	Equipment and floor drain discharges, cooling water	1 MGD	No information; Only one unit operates at a time	Colville Tribes

E. Effluent Characterization

To characterize the effluent, EPA evaluated the facility's application form. Table 3 summarizes information from the permit application. Data are limited, and in all but a few outfalls, there is one sample point per outfall. At locations where outfall water could not be sampled, composite samples were taken just above the outfall location. In lieu of sampling each identical outfall, certain outfalls used representative sampling from a subset of outfalls. The facility also conducted influent temperature monitoring. All data are provided in Appendix B.

Table 3. Summary of Pollutants Detected in Outfalls

Grand Coulee Dam	
Pollutant	**Concentration range**
Oil and grease	531 mg/L
Fecal coliform	0.1 mg/L - 51 mg/L
Total organic carbon (TOC)	0.1 mg/L – 9.4 mg/L
Chemical oxygen demand	149 mg/L

Biochemical oxygen demand	31 mg/L
Temperature (summer)	11-18ºC
pH	6.5 – 7.7 s.u.
Source: Grand Coulee Dam Permit Application, Submitted October 2-3, 2017	

F. Compliance History

The proposed permit is new so there are no past permit violations.

III. Receiving Water

In drafting permit conditions, EPA must analyze the effect of the facility's discharge on the receiving water. The details of that analyses are provided in this Fact Sheet. This section summarizes characteristics of the receiving water that impact that analysis.

A. Receiving Water

Grand Coulee Dam discharges near river mile 596.6 of the Columbia River in Grand Coulee, Washington.

The outflow at the facility varies during the year. The 2011-2016 average hydrograph at the tailrace of the dam peaks at over 290 kilo cubic feet per second (kcfs) in July and on average drops to less than 50 kcfs in winter months. In addition to flow variation within a given year, there is variation in outflow between years, as seen in Figure 2.

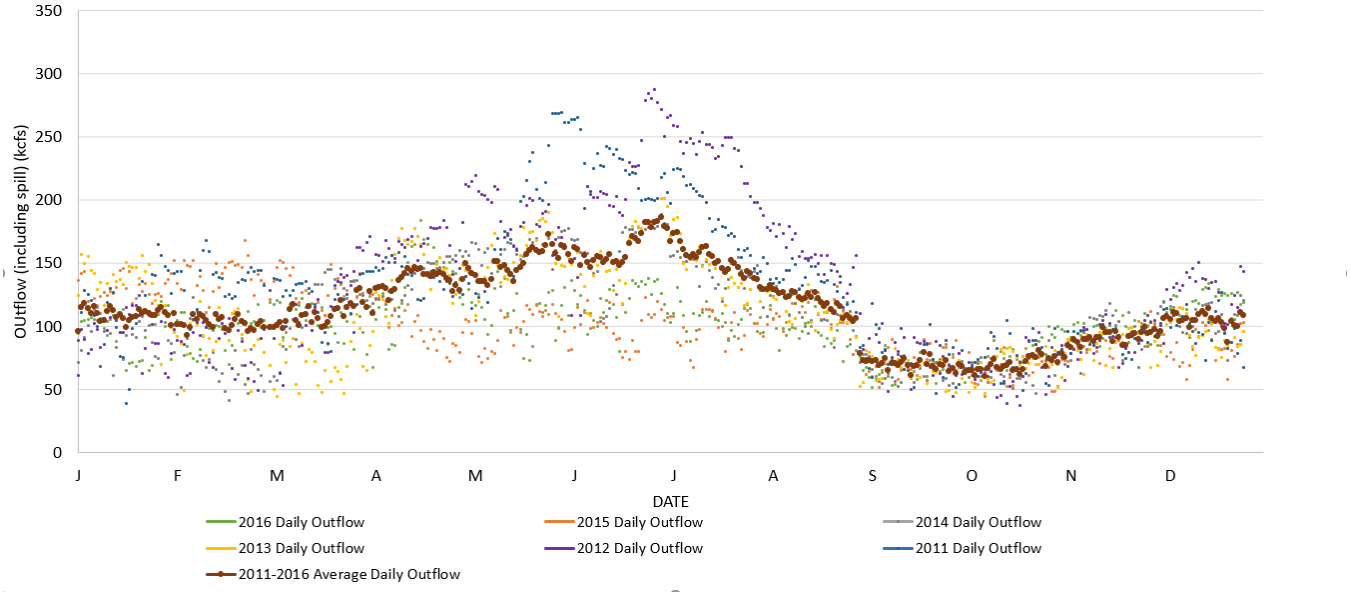


Figure 2. Average Daily Outflow at Grand Coulee Dam 2011-2016

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. 40 CFR 122.4(d) requires that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States and Tribes. Grand Coulee Dam has outfalls that discharge to Colville waters and has outfalls that discharge to Washington waters. A State's or Tribe's water quality standards are composed of use classifications, numeric and/or

narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

EPA promulgated water quality standards for the Colville Tribes on July 6, 1989 (40 CFR 131.35). The water quality standards at 40 CFR 131.35 are in effect for Clean Water Act purposes for waters of the Colville Tribes, including the northern side of the Columbia River, where Grand Coulee Dam discharges. On May 2, 2018, EPA approved the Colville Tribes' application for treatment in a similar manner as a state (TAS) which allows the Tribe to administer the water quality standards and water quality certification programs under CWA Sections 303(c) and 401. The Colville Tribes adopted tribally promulgated water quality standards on August 6, 1984 and amended them on January 18, 1985 (Colville Tribal Law and Order Code, Section 4-8), but these are not in effect for CWA purposes. The federally promulgated WQS for the Tribe are similar to the tribally adopted WQS, thus, the designated uses identified in the tribally adopted WQS are also protected through the application of the federally promulgated WQS.

Washington also has numeric and narrative criteria applicable to all fresh waters of the State, found in WAC 173-201A-200 (Fresh water designated uses and criteria) and WAC 173-201A-260 (Natural conditions and other water quality criteria and applications). Criteria for toxics can be found at WAC 173-201A-240.

Designated Beneficial Uses

The Columbia River is protected for the following designated uses in Washington (WAC 173-201A-602, Table 602): spawning and rearing, primary contact, domestic water, industrial water, agricultural water, stock water, wildlife habitat, harvesting, commerce/navigation, and aesthetics.

The Columbia River where Grand Coulee Dam discharges into waters of the Colville Tribes is undesignated under 40 CFR 131.35, and therefore, the default is a Class II designation. Under this designation, the Columbia River is protected for the following designated uses in the Colville Tribes waters: water supply: domestic, industrial, agricultural; stock watering; fish and shellfish: salmonid migration, rearing, spawning, and harvesting; other fish migration: rearing, spawning, and harvesting; crayfish rearing, spawning, and harvesting; wildlife habitat; ceremonial and religious water use; recreation: primary contact recreation, sport fishing, boating, and aesthetic enjoyment; and commerce and navigation.

The Colville Tribes' tribally promulgated water quality standards designate the Columbia River where Grand Coulee Dam discharges as Class I waters (Colville Tribal Law and Order Code, Section 4-8-8). Though not in effect for CWA purposes, the Colville Tribes' tribally promulgated water quality standards have similar designated uses for the Columbia River. Therefore, application of the federally promulgated WQS will ensure that the tribally promulgated WQS are met.

EPA has established effluent limitations and other requirements in the permit to maintain the most stringent possible water quality criteria. Given that the facility discharges into Washington and Colville Tribes' waters, EPA has established effluent limitations and other requirements in the permits to ensure that both the Washington and federally promulgated Colville Tribes' water quality standards are met. In this manner, the permit will be protective of all receiving water uses in the waters of the Colville Tribes and Washington.

C. Surface Water Quality Criteria

The criteria are found in the following sections of the Washington water quality standards and Colville Tribes' federally promulgated water quality standards:

- The numeric and narrative criteria applicable to all fresh waters of the State are found in WAC 173-201A-200 (Fresh water designated uses and criteria) and WAC 173-201A-260 (Natural conditions and other water quality criteria and applications). The federally promulgated water quality standards for the Colville Tribes where Grand Coulee Dam discharges can be found at 40 CFR 131.35(2).
- The numeric and narrative criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at WAC 173-201A-240 and 40 CFR 131.35(e)(ii)(G)
- Water quality criteria for agricultural water supply can be found in EPA's Water Quality Criteria 1972, also referred to as the "Blue Book" (EPA R3-73-033)

The permit contains language for the following narrative criteria:

Toxic Substances. Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department (WAC 173-201A-240).

Toxic, radioactive, nonconventional or deleterious material concentrations shall be less than those of public health significance, or which may cause acute or chronic conditions to the aquatic biota, or which may adversely affect designated uses (40 CFR 131.35(e)(ii)(G))

Deleterious, floating, suspended, submerged matter, aesthetics, visible oil sheen. Toxic, radioactive, or deleterious material concentrations must be below those which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health (WAC 173-201A-260(2)(a)).

All waters within the Reservation, including those within mixing zones shall be free from substances, attributable to wastewater discharges or other pollutant sources, that:

(i) Settle to form objectionable deposits;

(ii) Float as debris, scum, oil, or other matter forming nuisances;

(iii) Produce objectionable color, odor, taste, or turbidity;

(iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals, or plants; or

(v) Produce undesirable or nuisance aquatic life.

(40 CFR 131.35(e)(3))

Though not in effect for CWA purposes, the Colville Tribes' tribally promulgated water quality standards have similar designated uses for the Columbia River to the federally promulgated WQS. Therefore, application of the federally promulgated WQS will ensure that the tribally promulgated WQS are met.

D. Impaired Waters/TMDLs

Section 303(d) of the CWA requires states and eligible Indian Tribes to identify specific water bodies where water quality standards are not met. For all 303(d)-listed water bodies and pollutants,

the State or Tribe, where applicable, must develop total maximum daily loads (TMDLs) that will specify wasteload allocations (WLAs) for point sources and load allocations (LAs) for non-point sources of pollutants, as appropriate. WLAs for point sources are implemented through limitations incorporated into NPDES permits that are consistent with the assumptions of the WLAs in the TMDL (40 CFR 122.44(d)(1)(vii)(B)).

Dioxins

In 1991, EPA issued a TMDL for dioxins that applied to the Columbia River in Washington. The TMDL identified the major sources of dioxin as pulp mills that were operating during the development of the TMDL. Dioxins are usually a result of chemical processes at high temperatures. Since no chemical processes at high temperatures occur at hydroelectric generating facilities, dioxins are not expected to be present in the discharges from Grand Coulee Dam. In 2009, EPA issued a report on toxics in the Columbia River Basin. The report states that in 1991, there were 13 paper mills that were sources of dioxin. These facilities changed their leaching processes to reduce dioxin releases, and there have been significant reductions of dioxin in fish. There are assessment units upstream from Grand Coulee Dam in Lake Roosevelt that are still listed as impaired for dioxin, but there are no dioxin impairments immediately downstream of the dam. Since the facility does not discharge to waters impaired for dioxin and because dioxin is not expected in the discharge from hydroelectric generating facilities, EPA has not included specific limitations or monitoring requirements for dioxin, aside from the general prohibition of discharging toxic substances in concentrations that impair beneficial uses, found in Part I.B.2 of the permit.

Total Dissolved Gas

In 2004, Ecology and EPA issued a TMDL for total dissolved gas in the Mid-Columbia River and Lake Roosevelt. Elevated total dissolved gas is caused by spill events, when quickly flowing water entrains total dissolved gas at high levels. In the case of hydroelectric generating facilities, these spill events are "pass through" water, which are not regulated by NPDES permits (*See National Wildlife Federation v. Consumers Power Company*, 862 F.2d 580 (6th Cir. 1988); *National Wildlife Federation v. Gorsuch,* 693 F.2d 156 (D.C. Cir. 1982). Total dissolved gas is not a pollutant found in the discharges covered under the permit. Therefore, total dissolved gas is not a pollutant of concern for the discharges authorized by the permit.

PCBs

The Columbia River is listed as impaired for PCBs on Ecology's CWA Section 303(d) list at a number of locations along the Columbia and Snake Rivers in Washington. It is not listed as impaired at the points of discharge for Grand Coulee Dam.

When equipment or oils potentially containing PCBs come into contact with water, it is possible to have discharges of PCBs into the Columbia River. To address the unlikely but potential discharge of PCBs, the permit requires a PCB Management Plan (PMP) and PCB Annual Report. The PMP must describe PCB monitoring that has been completed and the PCB sources that could come into contact with water and be discharged. The PMP must also identify the actions BOR is taking to prevent, track, and address PCB releases. The PCB Annual Report must describe how the permittee is implementing the PMP, evaluate the effectiveness of actions, and propose any new steps that must be taken to optimize effectiveness.

EPA has also taken a conservative approach and included provisions in the permits that prohibit the discharge of PCBs and the discharge of toxic substances in concentrations that impair the beneficial uses of the receiving water (see Part I.B.2). The permit also requires the permittee to use lubricants, paint and caulk that do not contain PCBs, unless technically infeasible.

Dissolved Oxygen

The Columbia River below Grand Coulee Dam at Rufus Woods Lake is 303(d)-listed for dissolved oxygen. Ecology has not completed a TMDL for dissolved oxygen.

Temperature

The Columbia River is listed as impaired for temperature on Ecology's CWA Section 303(d) list at various locations, including at the point of discharge for Grand Coulee Dam. On August 13, 2021, EPA issued a TMDL for temperature in the Columbia River and lower Snake River (Columbia River Temperature TMDL). The TMDL details the changing environmental dynamics across the Pacific Northwest, including weather patterns, air temperatures, river flow timing, flow source (snowpack or rainfed) and magnitude, wildfire prevalence and river temperature. Temperatures in the Columbia River have increased from climate change and are projected to continue to increase if no actions are taken to decrease or mitigate these effects (Columbia and Lower Snake Rivers Temperature Total Maximum Daily Load, Appendix G, 2021). The Columbia River Temperature TMDL determined that if all point sources discharged at their current heat load (design flow and maximum temperature), the TMDL target for point sources would be attained. The Columbia River Temperature TMDL established facility-wide heat load wasteload allocations for all point sources, including for point source discharges for Grand Coulee Dam. The heat wasteload allocation from the TMDL, shown below in Table 4, is applied to Grand Coulee Dam in this proposed permit, expressed as a facility-wide monthly average heat limit. Page 53 of the TMDL states that a monthly average is an appropriate timeframe for heat load limits because of TMDL modeling assumptions. The permit also requires continuous temperature monitoring at representative outfalls discharging cooling water and monthly grab samples for other cooling water outfalls.

Table 4. Proposed Heat Load Effluent Limit for Grand Coulee Dam

Facility	Facility-wide heat load effluent limit (kcals/day)
Grand Coulee Dam	1.13E+10

IV. Effluent Limitations and Monitoring

The tables below show the proposed effluent limits and monitoring requirements for Grand Coulee Dam.

Table 5. Effluent Limitations and Monitoring Requirements for Outfalls 001, 002, 003a-003b, 004a-004i, 005, 006, 007a-007b, 008a-008i, 009a-009b, 010a-010b, 011a-011f, 012a-012c

Parameter	Units	Effluent Limitations	Monitoring Requirements		
			Sample Location	Sample Frequency	Sample Type
Parameters With Effluent Limits					
Oil and grease	mg/L	5 (daily maximum[1])	Effluent	1/week or 1/month[2]	Grab
pH	std units	Between 6.5 – 8.5	Effluent	1/week or 1/month[2]	Grab
Heat (June 1 – October 31)	Kcals/day	See Paragraph I.B.12.	See Paragraph I.B.10.	See Paragraph I.B.12.	Measurement/ Calculation
Report Parameters					
Flow	mgd	Report	Effluent	1/month	Measurement/ Calculation
Temperature	°C	Report 7DADM[3], daily maximum, and daily average.	See Paragraph I.B.10.	Continuous or 1/month[4]	Measurement/ Calculation
Chemical Oxygen Demand[5]	mg/L	Report	Influent and Effluent	1/quarter	Grab
Visible Oil Sheen, Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.4 and III.G. of this permit.			Visual Observation

Notes
1. Maximum daily effluent limit is the highest allowable daily discharge. The daily discharge is the average discharge of a pollutant measured during a calendar day.
2. In the first year of the permit, if there are no exceedances of the pH limit or detection of oil and grease in an outfall, the required monitoring frequency for that pollutant is reduced to 1/month for that outfall. If there are exceedances/detections in the first year of the permit in an outfall, the frequency will remain 1/week for the remainder of the permit term for that outfall.
3. 7-day average daily maximum. This is a rolling 7-day average calculated by taking the average of the daily maximum temperatures. The 7-day average daily maximum for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.
4. See Paragraphs I.B.10 and I.B.11. In the first six months of the effective date of the permit, monthly sampling is required, Continuous monitoring is required after the first six months of the effective date of the permit.
5. This monitoring is only required for Outfall 010a.

A. Statutory Requirements for Determining Effluent Limitations

Section 301(a) of the CWA prohibits the discharge of pollutants to waters of the United States unless the discharge is authorized pursuant to an NPDES permit. Section 402 of the CWA authorizes EPA, or an approved state NPDES program, to issue NPDES permits that authorize discharges subject to limitations and requirements imposed pursuant to CWA Sections 301, 304, 306, 401 and 403. Accordingly, NPDES permits typically include effluent limits and requirements that require the permittee to (1) meet national standards that reflect levels of currently available treatment technologies; (2) comply with EPA-approved state water quality standards in state waters; and (3) prevent unreasonable degradation of the surface water quality.

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based effluent limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

EPA first determines which technology-based effluent limits apply to a discharge in accordance with applicable national effluent limitation guidelines and standards (ELGs). Where ELGs have not been promulgated for a specific category of discharge, case-by-case technology-based effluent limits based on best professional judgment (BPJ) are developed. EPA further determines which water quality-based effluent limits apply to a discharge based upon an assessment of the pollutants discharged and a review of state water quality standards. Monitoring requirements must also be included in the permit to determine compliance with effluent limitations. Effluent and ambient monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

B. Pollutants of Concern

Pollutants of concern are those that either have technology-based effluent limits or may need water quality-based limits. EPA identifies pollutants of concern for the discharge based on those which:

- Have a technology-based limit
- Have an assigned WLA from a TMDL
- Had an effluent limit in the previous permit
- Are present in the effluent monitoring. Monitoring data are reported in the application and DMR and any special studies
- Are expected to be in the discharge based on the nature of the discharge

A review of the discharges of hydroelectric generating facilities permitted by other states and information gathered from the permit application, facilities, and other sources reveal that the pollutants of concern are as follows:

- pH
- oxygen demanding pollutants (BOD and COD)
- oil and grease
- toxics
- total suspended solids (TSS)
- temperature

C. Technology-based Effluent Limitations

Section 301(b) of the CWA requires technology-based controls on effluents. All NPDES permits must contain effluent limitations which: (a) control toxic pollutants and nonconventional pollutants using “best available technology economically achievable” (BAT), and (b) control conventional pollutants through the use of “best conventional pollutant control technology” (BCT). In no case may BAT or BCT be less stringent than the “best practical control technology currently achievable” (BPT), which is the minimum level of control required by Section 301(b)(1)(A) of the CWA.

ELGs have not yet been developed by EPA for hydroelectric generating facility discharges.

D. Water Quality-based Effluent Limitations

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet WQSs. Discharges to State or Tribal waters must also comply with conditions imposed by the State or Tribe as part of its certification of NPDES permits under CWA Section 401. 40 CFR 122.44(d)(1) requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal WQS, including narrative criteria for water quality. Effluent limits must also meet the applicable water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (40 CFR 122.4(d), 122.44(d)(4), see also CWA § 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available WLA for the discharge in an approved TMDL. If there are no approved TMDLs that specify WLAs for this discharge, all the water quality-based effluent limits are calculated directly from the applicable water quality standards.

Reasonable Potential Analysis and Need for Water Quality-Based Effluent Limits

EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit.

In some cases, a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and within which certain water quality criteria may be exceeded (EPA, 2014). While the criteria may be exceeded within the mixing zone, the use and size of the mixing zone must be limited such that the waterbody as a whole will not be impaired, all designated uses are maintained and acutely toxic conditions are prevented.

The Washington Water Quality Standards at WAC 173-201A-400 and federally promulgated water quality standards for the Colville Tribes at 40 CFR 131.35(c)(2) provide mixing zone policies for point source discharges. This permit does not authorize a mixing zone.

pH

The effluent limitation for Hydrogen Ion (pH) proposed in the draft permit for cooling water, sumps, drainage, and dewatering discharges is established to meet the federally promulgated Colville Tribe water quality standards and State of Washington's water quality standards for the protection of aquatic life. The water quality criterion for pH is found in WAC 173-201A-200 1(g) and states that for salmonid spawning, rearing and migration, pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units. The federally promulgated water quality standards for the Colville Tribes is also that pH shall be within the range of 6.5 to 8.5 with a human-caused variation of less than 0.5 units (40 CFR 131.35(f)(2)(ii)(E)).

Effluent pH data were compared to the water quality criteria. The measured range of pH from the facility's outfalls is 6.5 – 7.7, which falls within the range of Washington and the federally promulgated Colville Tribal WQS.

The draft permit proposes pH limits not less than 6.5 and not more than 8.5 standard units to ensure that surface waters do not fall outside of this range due to discharges from Grand Coulee Dam. This limit meets Washington and Colville Tribe pH water quality criteria.

Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)

BOD and COD are measures of the amount of degradable material that may deplete oxygen. The federally promulgated water quality standards for Colville Tribes, and the Washington water quality standard for dissolved oxygen for salmon spawning, rearing and migration is 8.0 mg/L (40 CFR 131.35(f)(2)(ii)(B), WAC 173-201A-200 1(d)). There are no water quality standards for BOD or COD for waters of Washington or the Colville Tribes. Oil and grease are oxygen-demanding substances. Sumps may also concentrate oxygen-demanding substances that may be present in pass through water. Therefore, BOD and COD could be present in sump discharges, and to a lesser degree, dewatering and cooling water discharges. BOD and COD is also present in influent water, so may be part of the pass through and leakage water. There are dissolved oxygen impairments downstream of the Grand Coulee Dam based on 3 excursions of the water quality standard out of 32 samples taken 2007-2009. The permit does not address the pass through water. (See II.C.)

BOD and COD concentrations at Grand Coulee Dam are relatively low. Grand Coulee Dam had one detection of BOD of 31 mg/L at Outfall 010 (Third Power Plant Sump). The other outfalls had no detections or concentrations that were nearly zero. There were two detections of COD, one of 20 mg/L at Outfall 001 (Pump/Generating Plant Sump) and one of 149 mg/L at Outfall 010a (Third Power Plant Sump).

Concentrations of BOD and COD are relatively low, except for Outfall 010a, where the oil and grease concentration was also high. The permit requires the permittee to monitor COD discharges quarterly at Outfall 010a to inform the next permit cycle. For the remining outfalls, operations from the facility are not expected to add significant amounts of oxygen-demanding substances that would require permit effluent limitations. The Columbia River receiving water has significantly higher flows compared to discharges from outfalls. Oxygen-demanding substances from the operations may arise from oil and grease, for which the permit has effluent limitations, monitoring, tracking, and minimization requirements. The permit also requires total suspended solids or detritus, to be minimized.

As a result, EPA has determined there is no reasonable potential for oxygen-demanding substances in the Grand Coulee Dam discharges to impact dissolved oxygen in the Columbia River and is not proposing limits for oxygen-demanding substances.

Oil and Grease

The oil and grease limits are derived from the narrative water quality criteria in the state and tribal water quality standards, which states that "toxic, radioactive or deleterious material concentrations must be below those which have the potential either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent on the waters, or adversely affect public health" (WAC 173-201A-260-2(a)); "Aesthetic values must not be impaired by the presence of materials of their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste" (WAC 173-201A-260-2(b); "All waters within the

Reservation, including those within mixing zones, shall be free from substances, attributable to wastewater discharges or other pollutant sources that: (i) Settle to form objectionable deposits; (ii) Float as debris, scum, oil, or other matter forming nuisances; (iii) Produce objectionable color, odor, taste, or turbidity; (iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals or plants; or (v) produce undesirable or nuisance aquatic life" (40 CFR 131.35(e)(3).

EPA interprets these narrative criteria as prohibiting a discharge to these waters that would cause an oil sheen. Although effluent concentrations are low for oil and grease, these are the primary pollutants introduced by facility operations and could be present in discharges from sumps, dewatering, and cooling water. The one exception is Outfall 010 (Third Power Plant Sump) that had an oil and grease concentration of 531 mg/L. It was unclear why the oil and grease concentration was so high. EPA has established daily maximum oil and grease limitations of 5 mg/L to represent the concentration at which there is an oil sheen on surface waters. This limit is consistent with several NPDES permits for federal dams on the Snake River in Washington that EPA issued. (See https://www.epa.gov/npdes-permits/discharge-permits-federal-hydroelectric-projects-lower-snake-river.) In addition, the State of Washington has included this limit in permits issued to shipyards where a 5 mg/L limit was established to control for no visible oil sheen.[2] This concentration was based on best professional judgment and on the detection limit for oil and grease, which is 5 mg/L. A daily maximum effluent limit of 5 mg/L will ensure the narrative WQS for deleterious, aesthetic, and no visible oil sheen are met. EPA believes that this limit is a reasonable standard for facilities that have a reasonable potential for oil and grease discharges.

In addition, the permit requires the permittee to develop and implement a BMP Plan and BMP Annual Reports, which includes tracking and accountability of oil use in the facility, minimization of any oil spills, proper operation and maintenance of all equipment that may release oil, and identification of and contingency planning for site-specific vulnerabilities for oil spills such as lack of secondary containment. The permit also requires a 24-hour notification of any oil spills or visible oil sheen that require emergency action or notification under the facility's Spill Prevention Control and Countermeasure (SPCC) plan. For lubricants such as oil and grease, the permit requires the use of EALs to replace oil and grease, unless technically infeasible, to reduce the potential of oil and grease entering the river. The draft permit also requires an EAL Annual Report to track the progress of implementation.

Toxics

Washington and Colville Tribes have narrative criteria in their water quality standards at WAC 173-201A-240 and 40 CFR 131.35(f)(ii)(G) that prohibit toxic discharges in concentrations that impair designated beneficial uses. Noncontact cooling water discharges do not contain or come into contact with raw materials, intermediate products, finished products, or process wastes. There is no information on whether discharges from the hydroelectric projects contain toxic or hazardous pollutants other than oil and grease.

To ensure that discharges do not occur, the permit establishes narrative effluent limitations for toxic pollutants in Part I.B.2 of the permit. The permit does not allow for the addition of toxic materials or chemicals and prohibits the discharge of PCBs. They also require the use of paints, caulk, and

[2] Barnacle Point Shipyards WA-003099-6, Dakota Creek Industries WA-003141-1, Vigor Shipyards, Incorporated WA-000261-5, Everett Shipyard, Piers 1, 3 and Adjacent Areas WA-003200-0.

lubricants free of PCBs, unless technically infeasible. Further, additives used to control biological growth in such cooling systems are prohibited due to their inherent toxicity to aquatic life. The permit requires a PCB Management Plan and PCB Annual Reports to prevent, track and address PCB discharges.

Total Suspended Solids (TSS)

Water quality standards for waters of the Colville Tribes and Washington have narrative criteria that apply to TSS and are the same as those described above in the oil and grease section. These can be found at WAC 173-201A-260 and 40 CFR 131.35(e)(3).

Suspended solids in water can cause turbidity and interfere with salmonid migration and growth. At Grand Coulee Dam, water originates from the upstream river which may contain solids that pass through the operation. TSS is most likely present in sumps and floor drains, where they may accumulate. Cooling water intakes have strainers which help to remove most sediment. TSS was not detected in any effluent samples at Grand Coulee Dam.

The BMP Plan requires facilities to clean intake screens and racks to reduce sediment in the influent. EPA has determined that TSS limits and monitoring are not needed because TSS was not detected and because of the BMP Plan permit requirement that will minimize sediment intake from influent to maintain low TSS.

Temperature

The Washington water quality standards for temperature where Grand Coulee Dam discharges in the Columbia River is 17.5^{o}C (WAC 183-201A-602.) The federally promulgated water quality standards for Colville Tribes is 18^{o}C (40 CFR 131.35(f)(ii)(2)(D)). Cooling water receives heat from equipment that is being cooled, and through this exchange, heat is added to cooling water from hydroelectric generating facilities. Heat from cooling water may also be present in drainage sumps that receive cooling water, though temperature effects are likely to be minimal given the amount of cooling water compared to drainage water.

Temperatures ranged from 11-18^{o}C at Grand Coulee Dam. As previously explained, the Columbia River is impaired for temperature, and EPA issued the Columbia River temperature TMDL on August 13, 2021. The TMDL established facility-wide heat load WLAs for all point sources, including for point source discharges from Grand Coulee Dam. The draft permit proposes a facility-wide heat limit of 1.13E+10 kcals/day identical to the WLA in Table 6-12 of the TMDL as a monthly average. Page 62 and Appendix J of the TMDL state that a monthly average is an appropriate timeframe for heat limits because of TMDL modeling assumptions.

The permittee must calculate the sum of heat loads from all outfalls by multiplying the flow and temperature from each outfall on a monthly average basis and reporting these on DMRs. The permittee shall use the following equation to calculate the facility-wide monthly average heat load:

$$\text{Facility-wide monthly average heat load (kcals/day)} = \sum_{\text{outfalls}} [(\text{monthly average temperature } (^{o}\text{C}))_{\text{outfall}} \times (\text{monthly average flow (MGD)})_{\text{outfall}} \times 3.78\text{E+}06 \text{ kcals/day}/(^{o}\text{C} \times \text{MGD})]$$

In cases where the permittee uses representative continuous temperature monitoring, the permittee must calculate the monthly average temperature using only continuous monitoring data from the representative outfalls. For a set of similar outfalls where representative sampling is allowed, the average of the monthly average temperatures from outfalls with continuous monitoring data must be applied to represented outfalls. For instance, where representative continuous monitoring is allowed for Outfalls 004a to 004e, the average monthly temperature must first be calculated for the two

representative outfalls with continuous temperature data. This average of the average monthly temperatures must be applied to represented outfalls. For representative sampling allowed at Outfalls 008a to 008e, the permittee must calculate a different average of the monthly average temperatures from the two representative outfalls and apply this to the represented outfalls.

The permit also includes grab samples for monitoring purposes and not for compliance reporting for the heat limit. The permittee must report grab sample results in a separate field in the DMR.

The facility is also required to submit a Temperature Data Report with the next permit application that includes temperature data from each outfall expressed as 7DADM, monthly average, and daily maximum. EPA believes this additional information is necessary to inform the next permit renewal cycle to better assess the impacts from the permitted discharges on temperature in the Columbia River.

Water Quality Based Effluent Limitations Summary

In summary, the following WQBELs in Table 6 will be applied in this permit.

Table 6. Proposed Water Quality Based Effluent Limitations

Parameter	Units	Effluent Limits	Designated Uses in Washington WQS and Colville Tribes WQS Linked to Specific Water Quality Criteria Used as Basis for Limits
pH	standard units	Not less than 6.5 or greater than 8.5 standard units (s.u.)	Aquatic Life
Oil and Grease	mg/L	5 (daily maximum)	Aquatic Life, Aesthetic Enjoyment, Primary Contact Recreation
Heat	Kcals/day	1.13E+10 (facility-wide monthly average)	Aquatic Life

E. Minimum Levels

All water samples must be analyzed using EPA approved analytical methods, and must be analyzed using a sufficiently sensitive method that can achieve a minimum level listed in Table 8.

Table 7. Minimum Levels Applicable in Grand Coulee Dam

Parameter	ML/Interim ML
COD	10 mg/L
pH	N/A
Temperature	0.2°C
Oil and Grease	5 mg/L

F. Anti-degradation

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Washington (WAC 173-201A-300).

Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing and designated uses of a water body must be maintained and protected (WAC 173-201A-310).

Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (WAC 173-201A-320).

Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters (ORWs) and requires that activities not cause a lowering of water quality (WAC 173-201A-330).

The federally promulgated standards for the Colville Tribes at 40 CFR 131.35(e)(2) also establishes three tiers of waters, similar to Washington's, which must be protected.

- Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

- Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation … that quality shall be maintained and protected unless the Regional Administrator finds, after full satisfaction of the inter-governmental coordination and public participation provisions of the Tribes' continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the Regional Administrator shall assure water quality adequate to protect existing uses fully. Further, the Regional Administrator shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

- Where high quality waters are identified as constituting an outstanding national or reservation resource, such as waters within areas designated as unique water quality management areas and waters otherwise of exceptional recreational or ecological significance, and are designated as special resource waters, that water quality shall be maintained and protected.

- Where water quality impairment associated with thermal discharge is involved, the antidegradation policy's method shall be consistent with section 316 of the Clean Water Act.

Though not in effect for CWA purposes, the tribally adopted WQS contains an antidegradation policy similar to the State and federally promulgated water quality standards (Colville Tribal Law and Order Code at 4-8-5(g).

EPA is required under Section 301(b)(1)(C) of the CWA and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with state and tribal water quality standards. A facility must meet antidegradation requirements to ensure that all existing and designated uses are maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in Chapter 173-201A WAC and at 40 CFR 131.35(e)(2).

The proposed draft permit contains effluent limits for oil and grease, pH, and heat. The draft permit also prohibits discharges of toxic substances, including PCBs, in toxic amounts that may cause or contribute to an impairment of designated uses in violation of the State of Washington water quality standards and federally promulgated Colville Tribe water quality standards.

The effluent limits and monitoring requirements contained in the draft permit ensure compliance with the narrative and numeric criteria in the water quality standards. Therefore, it was determined that the permit will protect and maintain existing and designated beneficial uses in compliance with the Tier I provisions for all pollutants.

G. Anti-backsliding

Section 402(o)(2) of the Clean Water Act and federal regulations at 40 CFR 122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. This is a new permit; therefore, backsliding is not an issue.

V. Monitoring and Reporting Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to EPA. The permittee must analyze water samples using sufficiently sensitive EPA-approved analytical methods.

B. Monitoring Locations

Discharges authorized by this permit must be monitored at each outfall identified in the permit. The facility is required to monitor for applicable parameters and pollutants after the last point in the treatment train prior to discharge into the receiving waters for compliance with the permit limitations.

C. Monitoring Frequencies

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee has the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

The monitoring frequency is established for flow at once per month, and for oil and grease, and pH at once per week in the first year for all outfalls. If there are no detections in an outfall in the first year, the monitoring frequency is reduced to once per month for pH and for oil and grease. This frequency for these discharges is to provide representative data on the monthly variability of each parameter. The permit requires flow to be reported by measurement or calculation at each outfall. The permittee may report the outfall design flow or measure flows collected by a meter. The permittee may also calculate flow particularly for those outfalls that operate intermittently, such as by multiplying pump rates and operating time.

The monitoring frequency for temperature is once per month during the first six months from the effective date of the permit. Continuous monitoring is required after the first six months from the effective date of the permit. The monitoring frequency for temperature for cooling water influent and effluent is every half hour. The monitoring frequency for temperature for cooling water influent and effluent is hourly using a continuous monitoring probe or once per month for discharges that are similar to other discharges with continuous monitoring. For example, a subset of cooling water

discharges from main units require continuous temperature monitoring, while the remaining discharges require a monthly grab sample for temperature. EPA has determined this to be an appropriate way for representative samples for temperature to be collected where the influent and operations are the same. Where waste streams are different, the permit requires continuous temperature monitoring. Continuous monitoring captures variability of water temperature.

The monitoring frequency for PCBs is twice a year for two consecutive years for outfalls that have the potential for a PCB discharge as determined by the permittee in the PCB Management Plan, described in Section II.D. of the draft permit. This sampling is intended to verify that the facility is not discharging PCBs above detectable levels.

The monitoring frequency for chemical oxygen demand in Outfall 10a is quarterly in influent and effluent. This monitoring will help to evaluate the amount of COD added by the facility that is discharged.

D. Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application.

EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: https://netdmr.epa.gov. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

Part III.B of the Permit requires that the Permittee submit a copy of the DMRs to Ecology and Colville Tribes. Currently, the permittee may submit a copy to Ecology and Colville Tribes by one of three ways: (1) a paper copy may be mailed, (2) the email address for Ecology and Colville Tribes may be added to the electronic submittal through NetDMR, or (3) the permittee may provide Ecology and Colville Tribes viewing rights through NetDMR.

VI. Special Conditions

A. Quality Assurance Plan (QAP)

40 CFR 122.41(e) requires the permittee to develop a QAP to ensure that the monitoring data submitted are accurate and to explain data anomalies if they occur. The draft permit proposes that the facility complete and implement a QAP within 180 days of their authorization to discharge from EPA.

The permittee is required to follow specific sampling procedures [i.e., EPA-approved quality assurance, quality control, and chain-of-custody procedures described in Requirements for Quality Assurance Project Plans (EPA/QA/R-5)]; and Guidance for Quality Assurance Project Plans (EPA/QA/G-5) throughout all sample collection and analysis activities to ensure that quality data are collected.

The QAP must consist of standard operating procedures that the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. It must be available on-site for inspection at the request of EPA.

40 CFR §122.41(e) requires the permittee to properly operate and maintain the facility, including "adequate laboratory controls and appropriate quality assurance procedures." To implement this requirement, the draft permit requires that the permittee develop or update a QAP that ensures that

the monitoring data submitted to EPA is complete, accurate, and representative of the environmental or effluent conditions.

B. Best Management Practices (BMP) Plan and BMP Annual Reports

Pursuant to Section 402(a)(1) of the Clean Water Act, development and implementation of a BMP Plan may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements in permits on a case-by-case basis, which are deemed necessary to carry out the provisions of the Act. BMPs, in addition to effluent limitations, are required to control or abate the discharge of pollutants in accordance with 40 CFR 122.44(k). The BMP Plan requirement has also been incorporated into the permit in accordance with EPA BMP guidance (EPA, 1993).

The permit requires the development and implementation of a site-specific BMP Plan, which prevents or minimizes the generation and potential release of pollutants from the facility to the waters of the United States through BMPs. This includes, but is not limited to, oil accountability tracking; site-specific measures to prevent the escape of grease and heavy oils used for lubrication and hydraulics; identification of site-specific vulnerabilities, ways to address these vulnerabilities, and contingency planning for potential oil releases from these vulnerabilities; and measures to reduce the need for lubricants for all facility equipment that come in contact with river water.

The BMP Plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of discharges associated with day-to-day work activity at the facility from equipment and floor drain-related water, maintenance-related water (collectively referred to as the "internal facility drainage water"), and any other facility-related water. The BMP Plan shall describe and ensure the implementation of practices which are to be used to eliminate or reduce the pollutants in internal facility drainage water discharges and facility-related water associated with operations at the facility and to assure compliance with the terms and conditions of this permit. The BMP Plan shall incorporate elements of pollution prevention as set forth in the Pollution Prevention Act of 1990 (42 U.S.C. § 13101).

Grand Coulee Dam is also subject to the Oil Pollution Prevention Act and must develop a SPCC plan as described at 40 CFR Part 112. EPA and Ecology administer this through a separate regulation outside of NPDES. However, similar to the SPCC plan, the BMP Plan is intended to prevent oil spills from the facility. An SPCC plan requires a facility to list locations of oil containers, types of oil and storage capacity, preventive measures to ensure safe handling of oils, secondary containment of oil storage, methods of disposal, contacts at the National Response Center, and emergency measures that will be taken if an oil spill occurs. The BMP Plan reinforces and complements requirements from the SPCC plan. To the extent that requirements from the SPCC plan fulfill BMP Plan requirements, the BMP Plan may cite to portions of the SPCC plan where appropriate.

The permittee must develop a BMP Plan within 180 days from the effective date of the permit and certify to EPA, Colville Tribes, and Ecology in writing, that the BMP Plan has been developed and is being implemented. The certification must be signed in accordance with the Signatory Requirements in the permit. The purpose of the report is to evaluate the effectiveness of the implementation of BMPs, identify which BMPs have been effective, evaluate BMPs which have been ineffective, and use the information to inform adaptive management of the BMPs. The BMP Annual Report must describe any changes in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants. The BMP Annual Report must be submitted to EPA, Colville Tribes, and Ecology by February 28 following the first calendar year of permit coverage and annually thereafter. The BMP Plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for

an increased discharge of pollutants. The BMP Annual Report may serve as an addendum to update the BMP Plan.

C. Environmentally Acceptable Lubricants (EAL) Plan and EAL Annual Reports

Pursuant to Section 402(a)(1) of the CWA, development and implementation of an EAL Annual Report may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements in permits on a case-by-case basis, which are deemed necessary to carry out the provisions of the Act. EALs, in addition to effluent limitations, are required to control or abate the discharge of pollutants in accordance with 40 CFR 122.44(k).

The permit requires the use of EALs for all equipment with oil to water grease interfaces, unless technically infeasible. EPA's 2011 Environmentally Acceptable Lubricants report defines EALs as "lubricants that have been demonstrated to meet standards for biodegradability, toxicity, and bioaccumulation potential that minimize their likely adverse consequences in the aquatic environment, compared to conventional lubricants." The permit requires that EALs used in hydroelectric generating facilities are consistent with the definition of EALs in EPA's 2011 Environmentally Acceptable Lubricants report. The permit defines technically infeasible for EALs as follows: no EAL products are approved for use in a given application that meet manufacturer specifications for that equipment; products which come pre-lubricated (e.g., wire ropes) and have no available alternatives manufactured with EALs; or products meeting a manufacturer's specifications are not available.

The permittee must also develop an EAL Annual Report, which will require an evaluation of equipment that are candidates for EAL use, whether EALs are technically feasible, and a timeline for which EALs will be implemented. It also requires the report to be updated annually.

Wicket gates, in-line equipment, lubricated wire ropes, and Francis turbines all use lubricants which may come into contact with water. This may result in release of lubricants into water. Currently, oil and grease are the primary lubricants used for equipment. However, EALs are an alternative lubricant that are biodegradable and less harmful to aquatic life species. EALs also offer a reasonable alternative to longer-term, but costly solutions such as oil-free turbines. EALs prevent or minimize the generation and potential release of pollutants from the facility to the waters of the United States.

The U.S. Army Corps of Engineers has completed several reports evaluating EALs, comparing cost and feasibility with oil and grease lubricants, or mineral oils. An August 2015 study conducted by the USACE by Medina found that while EALs may be more costly in the short-term compared to mineral oils, EALs may last longer and need to be applied less. In addition, some EALs may be more effective than conventional mineral oil-based lubricants. Therefore, EALs in the long-term may be more cost effective. However, there are still some cases where EALs or other equivalent alternatives may be technically infeasible or are unknown. The information from the EAL Annual Report will help to inform the next permit cycle on the feasibility of using EALs to address potential releases from oil and grease lubricants.

D. PCB Management Plan and PCB Annual Reports

Section 402(a)(2) of the Clean Water Act allows EPA to include requirements in permits on a case-by-case basis, which are deemed necessary to carry out the cited provisions of the CWA. 40 CFR §122.44(k) allows the permitting authority to include requirements to implement BMPs in NPDES permits to control or abate the discharge of pollutants whenever necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. BMPs are important tools for waste minimization and pollution prevention.

There are a range of potential sources of PCBs at dams, including transformers, transformer oil, other equipment oil, bushings, paints and caulks. In accordance with 40 CFR §122.44(k) the permits require BMPs to control or abate the discharge of PCBs from the facilities through the development and implementation of a PCB Management Plan (PMP).

The permittee must develop a PMP during the first year of the five-year permit cycle. The purpose of the PMP is to:

- Identify potential sources of PCBs and potential pathways for PCB discharges.
- Document actions that have been and will be established to limit the likelihood of PCB discharges through removal, containment or other mechanisms.
- Identify outfalls associated with potential PCB discharges.

Following the development of the PMP, the permittee must conduct two consecutive years of characterization monitoring for outfalls associated with potential PCB discharges. The permit requires monitoring once in the winter and once in the summer during the two consecutive years of the permit cycle. Monitoring in the winter and in the summer is required because the weathering of PCBs can be a function of river temperature, so monitoring results from both of these temperature conditions provide a more comprehensive characterization of annual PCB discharges. Monitoring during warm and cool river conditions during two consecutive years should be sufficient to capture any PCB discharges.

The permit requires characterization monitoring using EPA Method 608.3 (https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100LVIY.txt) on the effluent for outfalls identified in the PMP as having potential PCB discharges. EPA Method 608.3 is appropriate for sampling dam discharge water because it is an EPA-approved method for PCBs and analyzes for PCB Aroclors. The range of potential sources of PCBs at dams are likely to exhibit Aroclor patterns if present in discharge water, in contrast to PCB congeners which may indicate background PCBs present in the Columbia River or sources of inadvertently produced PCBs within the dam. Since the PCB requirements in this permit are focused on sources of PCBs from the dams, sampling methods for Aroclors are more appropriate. The reporting limit for this method and matrix is expected to be 0.1 µg/L, which is sufficient to capture PCB discharges associated with PCB sources in the dam.

The permit requires a PCB Annual Report following the development of the PMP (years 2-5 of the permit cycle). For the two-year sampling window only, the annual report will include the results of the characterization monitoring conducted during these two years of the permit cycle, including sampling date, analysis method, analysis date and lab. In addition, the PCB Annual Report must report the progress on source identification investigations, BMP implementation, and current and future actions to adapt and refine BMP approaches during the five-year permit cycle.

E. CWIS Plan, Evaluation Report, and BTA Annual Certification

Section 316(b) of the CWA requires that facilities with CWIS ensure that the location, design, construction, and capacity of the structure reflect the best technology available (BTA) to minimize adverse impacts on the environment from impingement and entrainment of fish and other aquatic organisms.

The 2014 Section 316(b) regulations for cooling water intake structures at existing facilities establish, among other things, substantive requirements for cooling water intake structures to meet

certain thresholds.[1] The Agency has determined that, in light of the text, structure, history and purpose of the regulation, in the case of hydroelectric facilities, the rule is ambiguous as to application of the substantive requirements and that EPA never intended that the rule's substantive provisions would apply to them. Rather, pursuant to 40 CFR 125.90(b), all cooling water intake structures at hydroelectric facilities are subject to best professional judgment (BPJ) Section 316(b) cooling water intake structure conditions (EPA, 2021). This provision provides that a cooling water intake structure not subject to substantive provisions under the existing facility rule (40 CFR 125.94-99) or another 316(b) requirements rule must meet requirements established on a case-by-case, BPJ basis. Consequently, EPA is today proposing to establish case-by-case, BPJ 316(b) conditions for Grand Coulee Dam.

To determine if BTA requirements are satisfied, EPA used the framework outlined in EPA's 2021 memo, "Transmittal of Framework for Best Professional Judgment for Cooling Water Intake Structure at Hydroelectric Facilities." The memo states that four factors can be considered "technologies" that could minimize adverse environmental impacts from the use of a CWIS at hydroelectric facilities. EPA may use any of the four factors below, or other facility-specific factors, in its BPJ analysis to determine whether BTA requirements have been satisfied. Any combination of one or more of the factors below may be used to address entrainment and impingement. As described in EPA's 2021 memo, EPA generally expects that a hydroelectric facilities' existing controls are technologies that can be determined to satisfy the BTA requirement to minimize entrainment and impingement mortality.

Factors applicable to all facilities:

1) Efficiency of power generation
2) Cooling water withdrawn relative to waterbody volume or flow
3) Location of the intake structure
4) Technologies at the facility

For Grand Coulee Dam, EPA relied on factors 3 and 4, in its BPJ evaluation for BTA. EPA's 2021 memo describes guidelines to evaluate these four factors. For factor 3, water is extracted at Grand Coulee Dam for cooling from the scroll case of the turbine located inside the dam. Organisms typically could be entrained or impinged where water enters the dam for hydroelectric purposes. At Grand Coulee Dam, this point is located at a depth on the dam face where organisms are not believed to be present. However, information is limited. To confirm this information and to better understand CWIS BTA at Grand Coulee Dam to inform the next permit cycle, the draft permit requires a CWIS Evaluation Report. By one year from the effective date of the final permit, the permittee must provide EPA, Ecology and the Colville Tribes with a CWIS Evaluation Report. The report must include the locations of the cooling water intake structures, an evaluation of strainers and fish presence, information on current fish impingement and entrainment, and an evaluation of additional operations or technologies to minimize fish impingement and entrainment.

For factor 4, existing technologies at Grand Coulee Dam include measures to deter fish from intakes. These technologies include well maintained physical screening and exclusion technology on the intakes, and keeping vertical bar screens and other physical screens at the gravity intake for hydropower generation free of debris or other material through regular and preventive maintenance

[1] The final section 316(b) existing facilities rule states that the substantive provisions of the rule apply to any facility that is 1) a point source 2) with a cooling water intake structure with a design intake flow greater than 2 MGD, 3) using 25 percent of the withdrawn water for cooling. 40 C.F.R. § 125.91(a).

and inspections. The draft permit also requires a CWIS Annual Certification of maintenance of BTA, which must include a visual inspection of the measures above to ensure that they are properly maintained and operated. This includes a record of the number of organisms impinged on the technologies listed above, a description of the integrity of their function and structure, and problems that may be occurring with their maintenance and operation.

VII. Environmental Justice Considerations

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including the NPDES permit. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities. For more information, please visit https://www.epa.gov/environmentaljustice.

As a part of the permit development process, EPA Region 10 conducted screening analyses to determine whether the permit actions could affect overburdened communities. EPA used a nationally consistent geospatial tool that contains demographic and environmental data for which enhanced outreach may be warranted. As part of the screening process, it was determined that Grand Coulee Dam is near an overburdened community.

Regardless of whether a facility is located near a potentially overburdened community, EPA encourages permittees to review (and to consider adopting, where appropriate) "Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways to Engage Neighboring Communities" (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the- permit-application-process#p-104. Examples of promising practices include thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, and other activities.

VIII. Other Legal Requirements

A. CWA § 401 Certification

Section 401 of the CWA, 33 USC §1341, requires EPA to seek a certification from a State or Tribe that the conditions of the permit are stringent enough to comply with water quality standards, including the State or Tribe's antidegradation policy, before issuing the final permit. Federal regulations at 40 CFR 124.53 allows for the State or Tribe to stipulate more stringent conditions in the permit, if the certification cites the CWA or state law upon which that condition is based. See also CWA Section 401(d). The regulations also require a certification to include statements of the extent to which each condition of the permit can be made less stringent without violating the requirements of state law. See 40 CFR 124.53(c).

Grand Coulee Dam discharges to Colville tribal waters as well as State waters. Therefore, EPA requested final CWA § 401 Certifications from Ecology and from the Colville Tribes on January 13, 2022.

B. Endangered Species Act [16 USC § 1531 et al.]

The Endangered Species Act (ESA) requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. Bull trout are the only threatened or endangered species in the area of discharge. EPA is developing a Biological Evaluation (BE) to evaluate potential impacts to ESA species.

C. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH).

The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. EPA is in the process of working with the NOAA Fisheries on the EFH assessment. EPA has provided NOAA Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from NOAA Fisheries regarding EFH will be considered prior to issuance of this permit.

D. National Environmental Policy Act (NEPA) [42 USC § 4321 et.seq.]

Regulations at 40 CFR 122.49, list the federal laws that may apply to the issuance of permits i.e., ESA, National Historic Preservation Act, the Coastal Zone Act Reauthorization Amendments (CZARA), NEPA, and Executive Orders, among others. The NEPA compliance program requires analysis of information regarding potential impacts, development and analysis of options to avoid or minimize impacts; and development and analysis of measures to mitigate adverse impacts.

Since Grand Coulee Dam is not a new source (i.e., they do not have any EPA-promulgated ELGs or new source performance standards (NSPS) specific to their operation), EPA determined that no Environmental Assessments (EAs) or Environmental Impact Statements (EISs) are required under NEPA.

E. Historic Preservation Act

This permit will not authorize the construction of any water resources facility or the impoundment of any water body or have any effect on historical property.

F. Paperwork Reduction Act [44 USC § 3501 et seq.]

The information collection required by this permit has been approved by OMB under the provisions of the Paperwork Reduction Act, 44 U.S.C.3501 et seq., in submission made for the NPDES permit program and assigned OMB control numbers 2040-0086 (NPDES permit application) and 2040-0004 (discharge monitoring reports). Additionally, this proposed permit requires electronic reporting for discharge monitoring reports to reduce reporting time and paper mailing costs.

G. Standard Permit Provisions

Specific regulatory management requirements for NPDES permits are contained in 40 CFR 122.41. These conditions are included in the permit as standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

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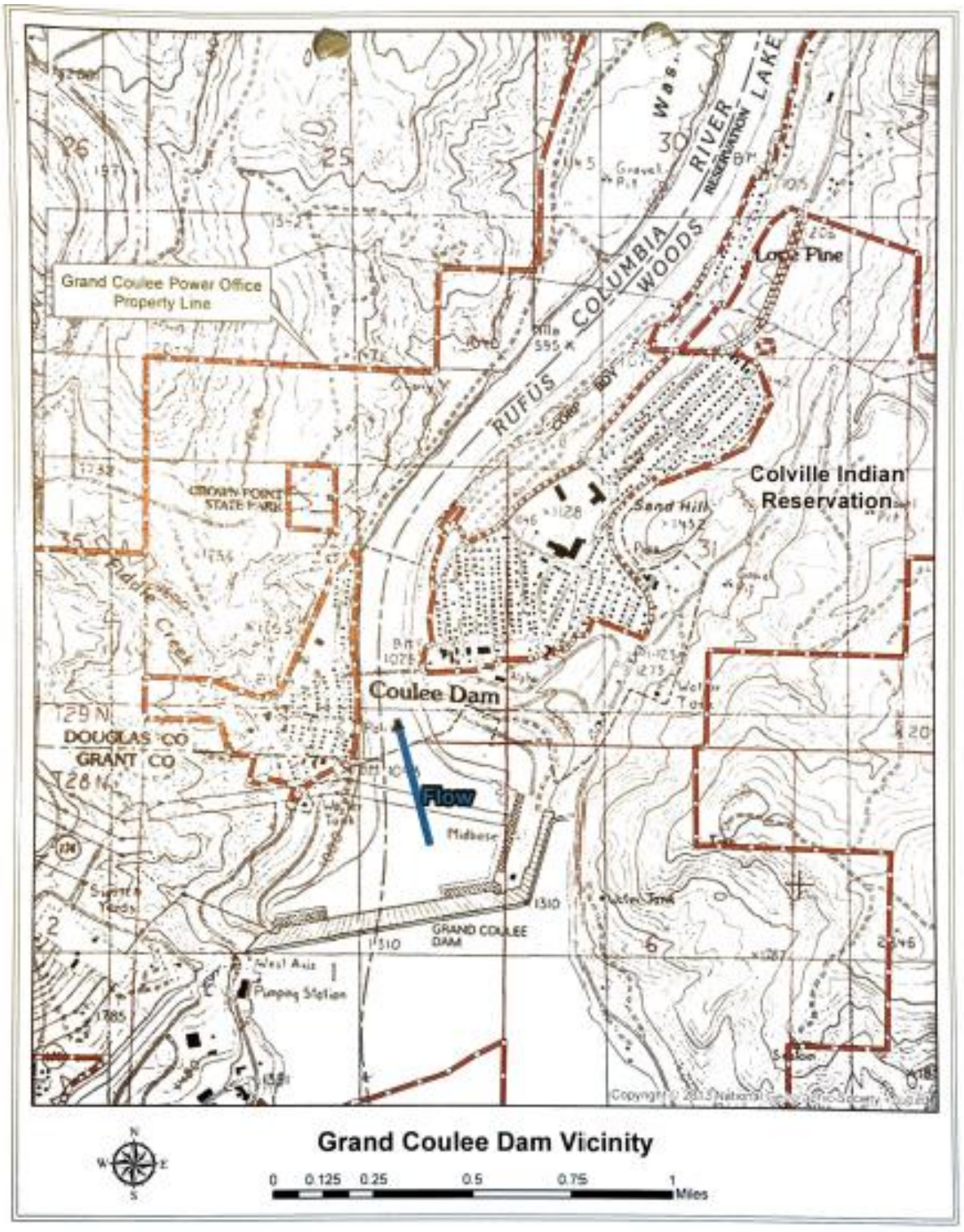
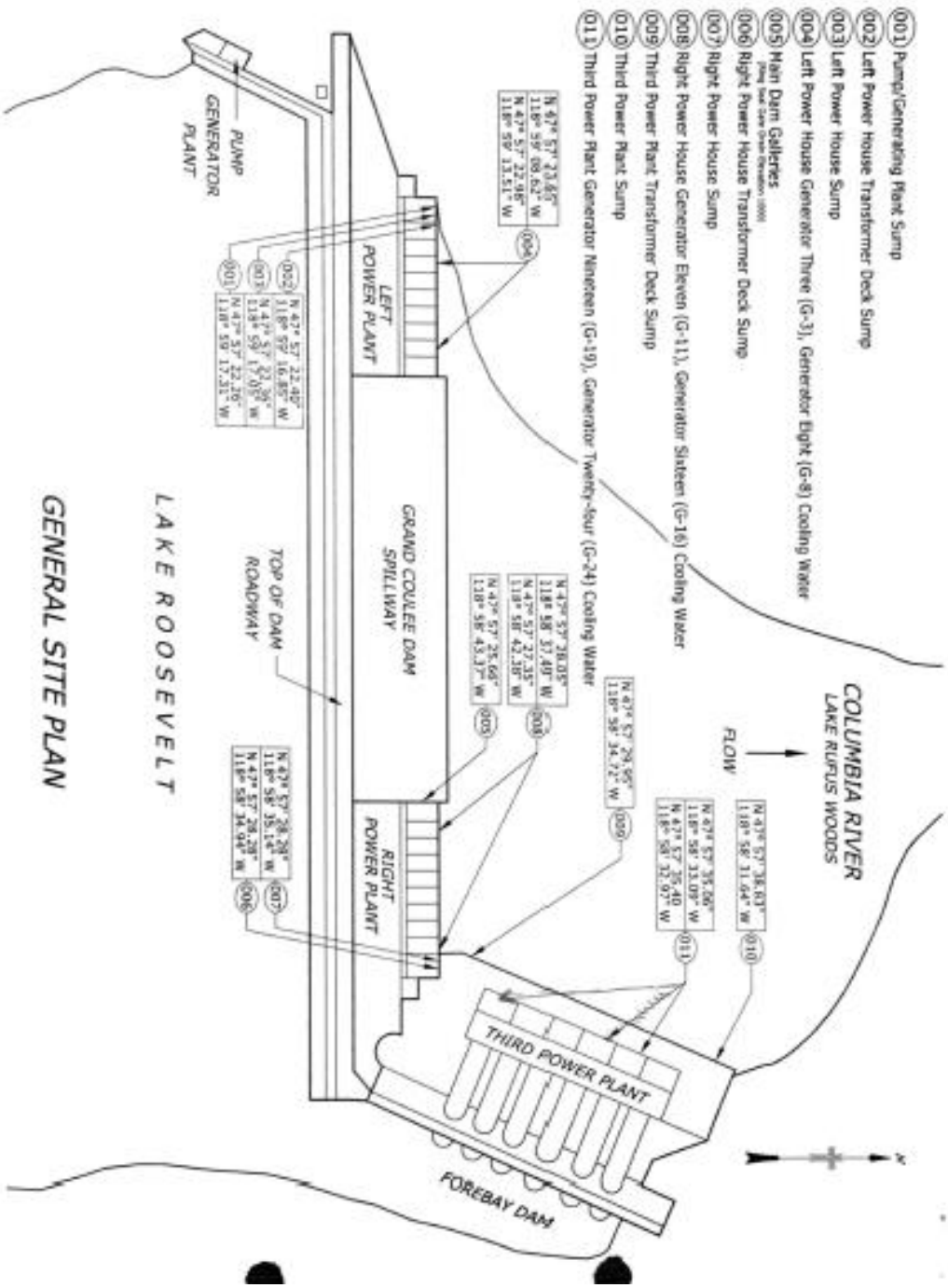
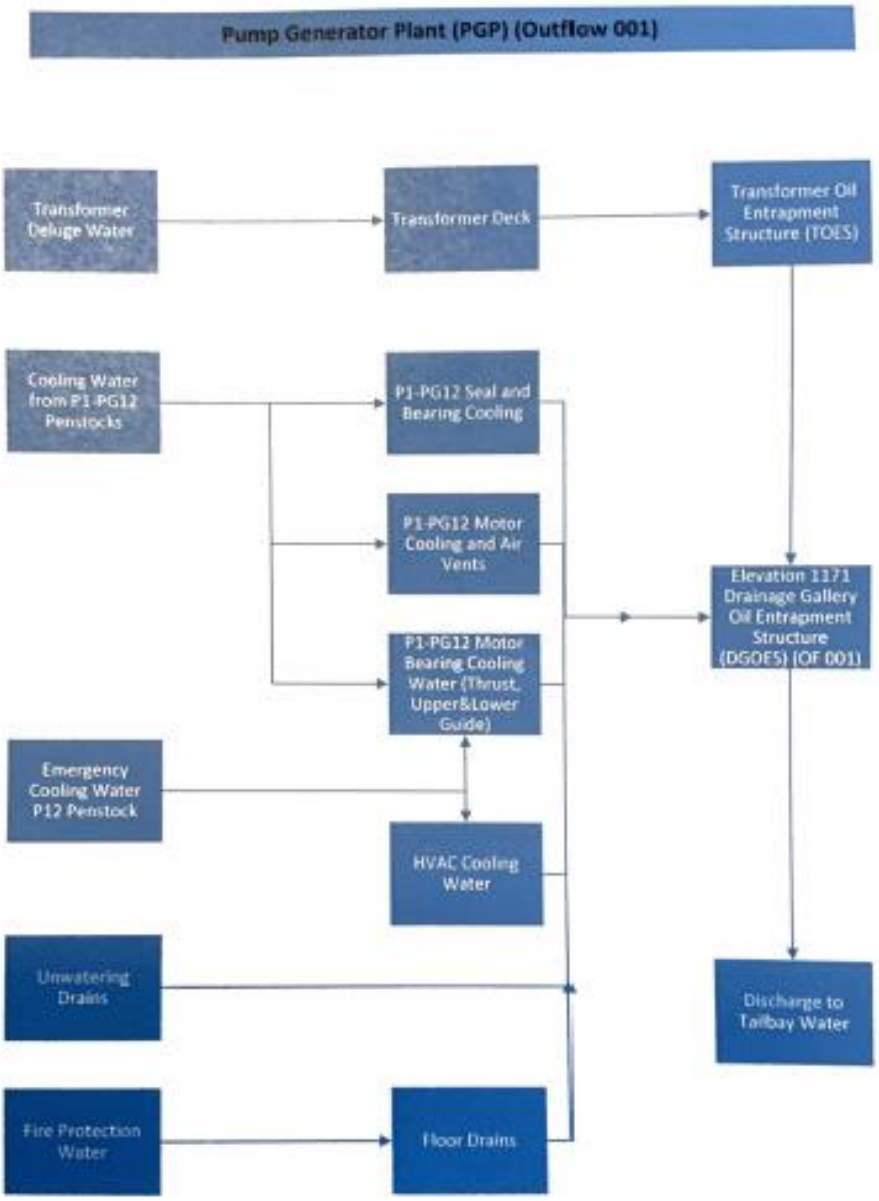
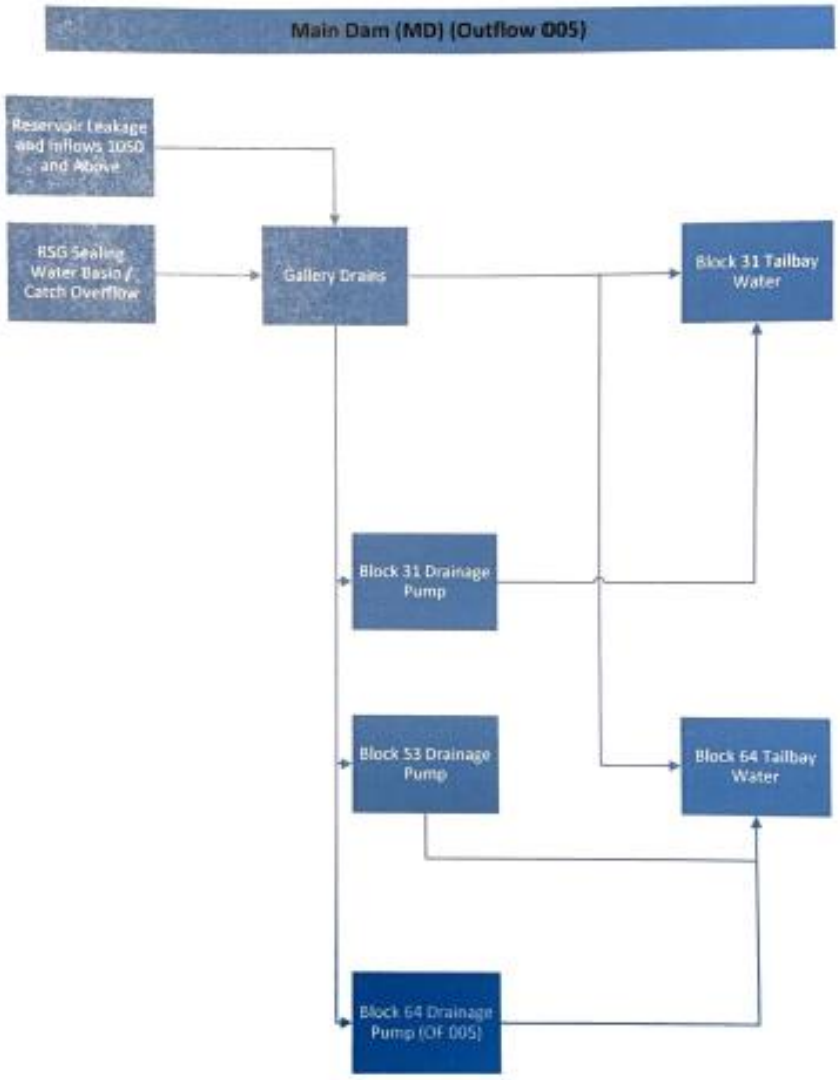
APPENDIX A

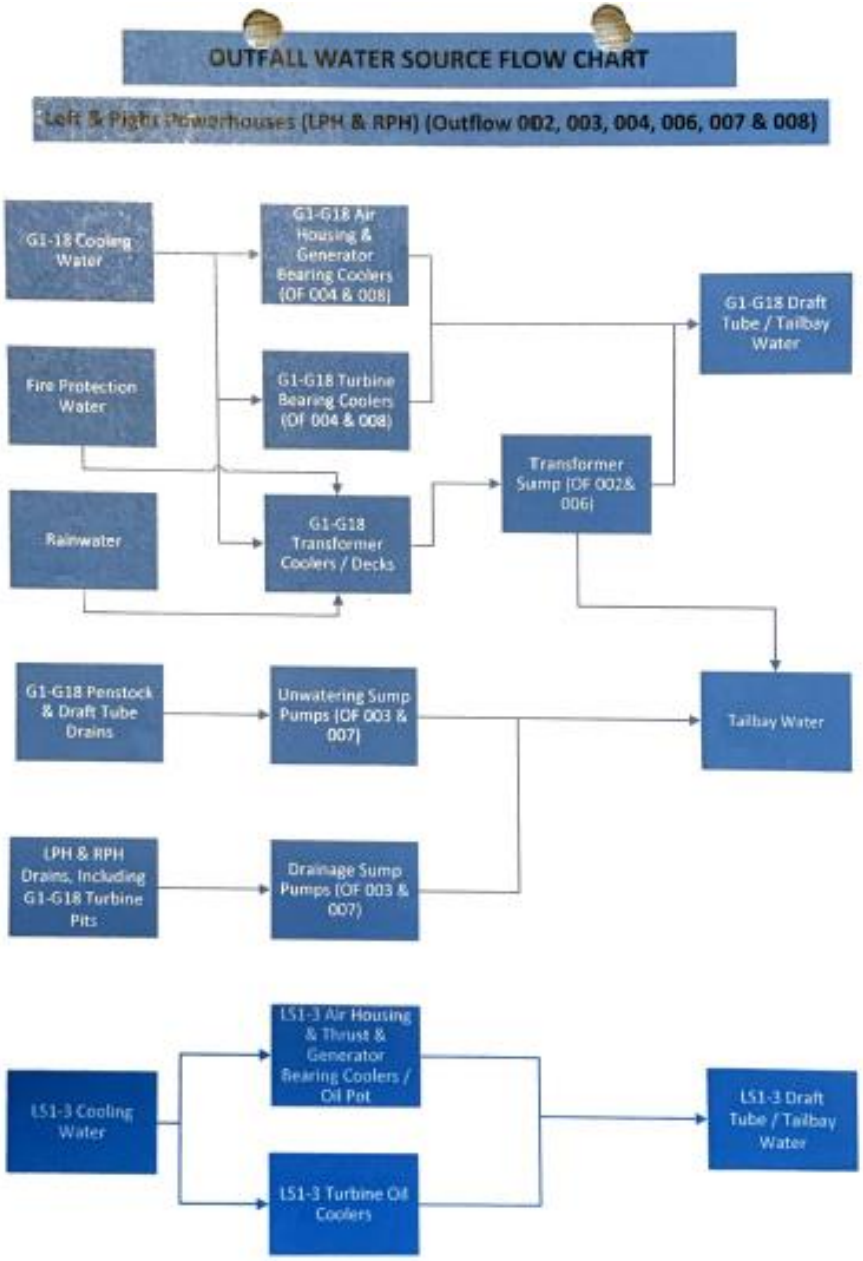
Grand Coulee Dam Location and Process Diagram

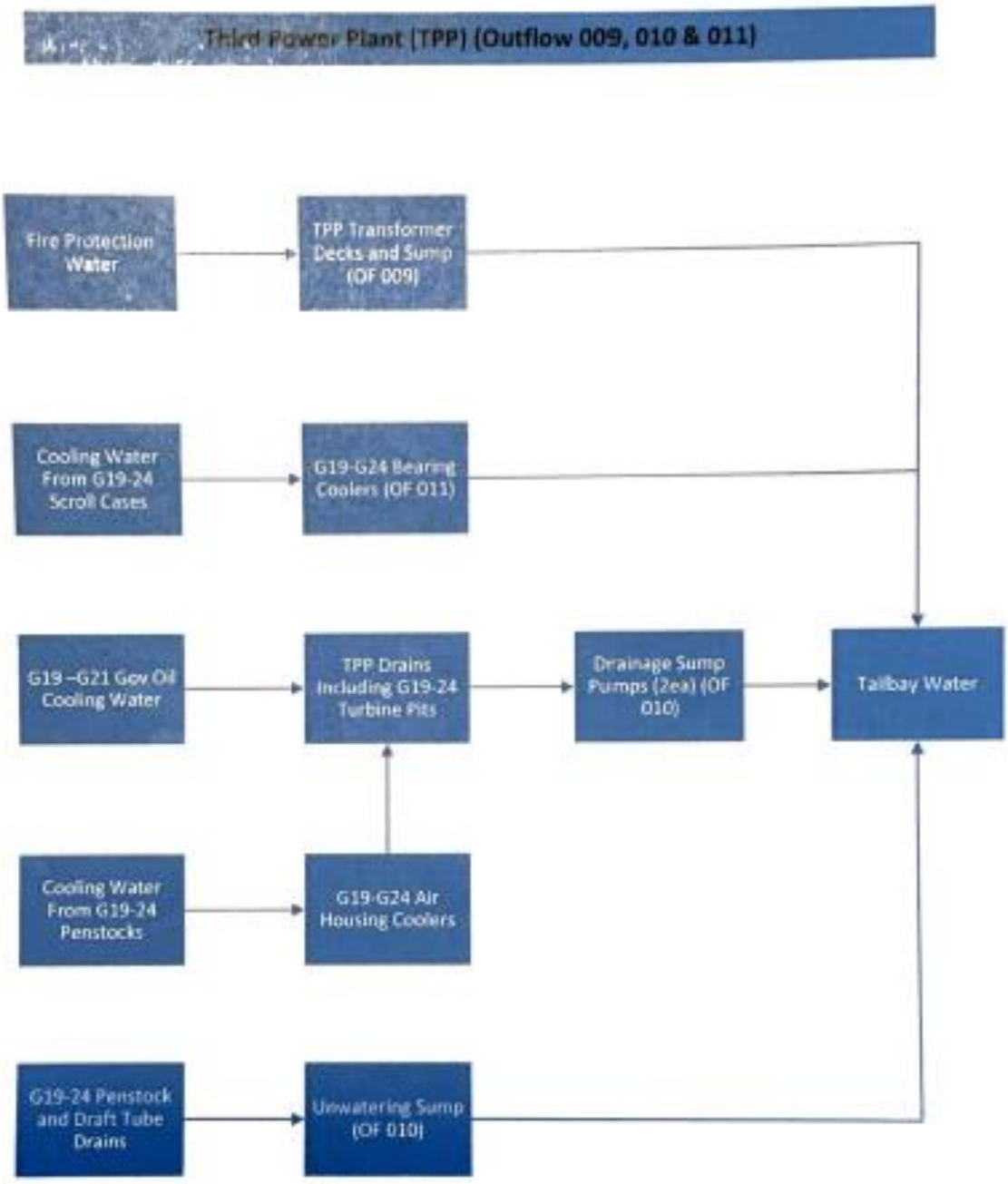



001 Pump/Generating Plant Sump
002 Left Power House Transformer Deck Sump
003 Left Power House Sump
004 Left Power House Generator Three (G-3), Generator Eight (G-8) Cooling Water
005 Main Dam Galleries
006 Right Power House Transformer Deck Sump
007 Right Power House Sump
008 Right Power House Generator Eleven (G-11), Generator Sixteen (G-16) Cooling Water
009 Third Power Plant Transformer Deck Sump
010 Third Power Plant Sump
011 Third Power Plant Generator Nineteen (G-19), Generator Twenty-four (G-24) Cooling Water
COLUMBIA RIVER
LAKE RUFUS WOODS
FLOW
PUMP GENERATOR PLANT
LEFT POWER PLANT
GRAND COULEE DAM SPILLWAY
RIGHT POWER PLANT
THIRD POWER PLANT
TOP OF DAM ROADWAY
FOREBAY DAM
LAKE ROOSEVELT
GENERAL SITE PLAN
N
September 6, 2017


Pump Generator Plant (PGP) (Outflow 001)
Transformer Deluge Water
Transformer Deck
Transformer Oil Entrapment Structure (TOES)
Cooling Water from P1-PG12 Penstocks
P1-PG12 Seal and Bearing Cooling
P1-PG12 Motor Cooling and Air Vents
P1-PG12 Motor Bearing Cooling Water (Thrust, Upper&Lower Guide)
Elevation 1171 Drainage Gallery Oil Entrapment Structure (DGOES) (OF 001)
Emergency Cooling Water P12 Penstock
HVAC Cooling Water
Unwatering Drains
Discharge to Tailbay Water
Fire Protection Water
Floor Drains


Main Dam (MD) (Outflow 005)
Reservoir Leakage and Inflows 1050 and Above
RSG Sealing Water Basin / Catch Overflow
Gallery Drains
Block 31 Tailbay Water
Block 31 Drainage Pump
Block 53 Drainage Pump
Block 64 Tailbay Water
Block 64 Drainage Pump (OF 005)


OUTFALL WATER SOURCE FLOW CHART
Left & Right Powerhouses (LPH & RPH) (Outflow 002, 003, 004, 006, 007 & 008)
G1-18 Cooling Water
G1-G18 Air Housing & Generator Bearing Coolers (OF 004 & 008)
G1-G18 Draft Tube / Tailbay Water
Fire Protection Water
G1-G18 Turbine Bearing Coolers (Of 004 & 008)
Transformer Sump (OF 002& 006)
Rainwater
G1-G18 Transformer Coolers / Decks
G1-G18 Penstock & Draft Tube Drains
Unwatering Sump Pumps (OF 003 & 007)
Tailbay Water
LPH & RPH Drains, Including G1-G18 Turbine Pits
Drainage Sump Pumps (OF 003 & 007)
L51-3 Air Housing & Thrust & Generator Bearing Coolers / Oil Pot
L51-3 Cooling Water
L51-3 Draft Tube / Tailbay Water
L51-3 Turbine Oil Coolers


Third Power Plant (TPP) (Outflow 009, 010 & 011)
Fire Protection Water
TPP Transformer Decks and Sump (OF 009)
Cooling Water From G19-24 Scroll Cases
G19-G24 Bearing Coolers (OF 011)
G19 –G21 Gov Oil Cooling Water
TPP Drains Including G19-24 Turbine Pits
Drainage Sump Pumps (2ea) (OF 010)
Tailbay Water
Cooling Water From G19-24 Penstocks
G19-G24 Air Housing Coolers
G19-24 Penstock and Draft Tube Drains
Unwatering Sump (OF 010)

APPENDIX B

Summary of Water Quality Data

Outfall Number	Outfall Description	Max Daily Value Flow Rate (MGD)	BOD (lbs)	BOD (mg/L)	TSS (lbs)	TSS (mg/L)	Fecal (lbs)	Fecal (mg/L)	TRC (lbs)	TRC (mg/L)	Oil and Grease (lbs)	Oil and Grease (mg/L)	COD (lbs)	COD (mg/L)	TOC (lbs)	TOC (mg/L)	Ammonia (lbs)	Ammonia (mg/L)	pH	Winter Temp (C)	Summer Temp (C)
1	Pump/Generating Plant Sump	17	4.7	0.0	0.0	<10	0.0	<1	0.1	<0	0.0	<4.3	0.0	20	2.4	0.0	0.1	0.0	7.3	-	17
2	Left Powerhouse Transformer Desk Sump	7.8	0.0	<2.4	0.0	<10	2.0	0.0	0.0	0.0	0.0	**<4.1**	0.0	<20	1.2	0.0	0.2	0.0	7.5	-	16
3a	Left Powerhouse Drainage Sump	2.8	0.0	<2.4	0.0	<10	6.0	0.3	0.1	0.0	0.0	<4.3	0.0	<21	1.3	0.1	0.0	<0.1	7.7	-	16
3b	Left Powerhouse Unwatering Sump	**2.8**																			**16**
4a	Left Powerhouse Generator G-1 cooling water	**3.6**																			**18**
4b	Left Powerhouse Generator G-2 cooling water	**3.6**																			**18**
4c	Left Powerhouse Generator G-3 cooling water	3.6	0.0	<2.4	0.0	<10	1.0	0.0	0.0	0.0	0.0	**<4.3**	0.0	<20	1.3	0.0	0.1	0.0	7.7	-	18
4d	Left Powerhouse Generator G-4 cooling water	**3.6**																			**18**
4e	Left Powerhouse Generator G-5 cooling water	**3.6**																			**18**
4f	Left Powerhouse Generator G-6 cooling water	**3.6**																			**18**
4g	Left Powerhouse Generator G-7 cooling water	**3.6**																			**18**
4h	Left Powerhouse Generator G-8 cooling water	3.6	0.0	<2.4	0.0	<10	4.0	0.1	0.0	0.0	0.0	**<4.3**	0.0	<20	3.4	0.1	0.0	<0.1	7.7	-	18
4i	Left Powerhouse Generator G-9 cooling water	**3.6**																			**18**
5	Main Dam Galleries	0.4	0.0	<2.4	0.0	<10	1.0	0.3	0.0	0.0	0.0	**<4.3**	0.0	<20	2.2	0.8	0.0	<0.1	7.4	-	11
6	Right Powerhouse Transformer Deck Sump	0.9	0.0	<2.4	0.0	<10	4.0	0.6	0.0	0.0	0.0	**<4.3**	0.0	<20	1.6	0.2	0.0	<0.1	7.6	-	16
7a	Right Power House Drainage Sump	2.9	4.6	0.2	0.0	<10	4.0	0.2	0.1	0.0	0.0	**<4.3**	0.0	<20	4.0	0.2	0.0	<0.1	7.7	-	17
7b	Right Power House Unwatering Sump	**2.9**																			**17**
8a	Right Power House G-10 cooling water	**3.6**																			**17**
8b	**Right Power House G-11 cooling water**	3.6	0.0	<2.4	0.0	<10	3.0	0.1	0.0	0.0	0.0	**<4.3**	0.0	<20	3.5	0.1	0.0	<0.1	7.7	-	17
8c	Right Power House G-12 cooling water	**3.6**																			**17**
8d	Right Power House G-13 cooling water	**3.6**																			**17**
8e	Right Power House G-14 cooling water	**3.6**																			**16.5**
8f	Right Power House G-15 cooling water	**3.6**																			**16**
8g	**Right Power House G-16 cooling water**	3.6	0.0	<2.4	0.0	<10	1.0	0.0	0.1	0.0	0.0	**<4.3**	0.0	<20	0.0	<1	0.2	0.0	7.7	-	16
8h	Right Power House G-17 cooling water	**3.6**																			16
8i	Right Power House G-18 cooling water	**3.6**																			16
9	Third Power plant transformer deck sump	9.4	0.0	<2.4	0.0	<10	3.0	0.0	0.0	0.0	0.0	**<4.3**	0.0	<20	3.3	0.0	0.0	<0.1	7.6	-	13
10	Third Power Plant Sump	0.1	18	31	0.0	<10	30	51	0.0	<0.1	310	531	87	149	5.5	9.4	0.0	<0.1	6.5	-	13
10b	Third Power Plant Unwatering Sump																				
11a	**Third Power Plant G-19 cooling water**	10	0.0	<2.4	0.0	<10	7.0	0.1	0.1	0.0	0.0	**<4.3**	0.0	<20	0.0	<1	0.0	<0.1	7.4	-	18
11b	Third Power Plant G-20 cooling water	**10**																			**18**
11c	Third Power Plant G-21 cooling water	**10**																			**18**
11d	Third Power Plant G-22 cooling water	**10**																			**18**
11e	Third Power Plant G-23 cooling water	**10**																			**18**
11f	Third Power Plant G-24 cooling water	**10**																			**18**
12a	Service Line Unit 1																				
12b	Service Line Unit 2																				
12c	Service Line Unit 3																				
		Minimum	0.0	0.0	0.0	<10	0.0	0.0	0.0	0.0	0.0	**<4.3**	0.0	<20	0.0	0.0	0.0	0.0	6.5	0.0	11.0
		Maximum	18	31	0	<10	30	51	0	0	310	531	87	149	6	9	0	0	8	0	18

*The facility did not collect information for outfalls highlighted in yellow. Information from nearest, representative outfall with data were used for flow rates and temperatures. BOR provided flows for service line units.