Fact Sheet for NPDES Permit WA0991031

Wells Hydroelectric Project

(Wells Dam)

January 6, 2022

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for Wells Dam.

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for Wells Dam, NPDES permit WA0991031, are available for public review and comment from **January 6, 2022** until **February 6, 2022**. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement** Information.

Public Utility District No. 1 of Douglas County (Douglas PUD) reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving water prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix E - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

Summary

The Wells Dam is located on the Columbia River at river mile (RM) 515.6, near the town of Pateros, WA. The Project includes a 1,165-foot-long, 160-foot-high hydro combine structure that includes 11 spillway bays, 10 identical vertical-axis Kaplan turbines, upstream and downstream fish passage facilities, and a switchyard.

At elevation 781 feet above mean sea level (msl), the reservoir has a surface area of 9,740 acres, a gross storage capacity of 331,200 acre-feet, and a useable storage of 97,985

acre-feet. Each spillway bay is 46 feet wide. A 66-foot-high gate, divided into top and bottom sections, controls spills.

The project's fish passage facilities include two upstream fish ladders and a downstream juvenile bypass system. One fish ladder is located at each end of the hydro combine, and each ladder includes a pump system for providing attraction flows to the ladder entrance, a counting station, a fish trap and sorting facility, and Passive Integrated Transponder (PIT) tag detection equipment. The downstream juvenile bypass system consists of fabricated steel barriers that are seasonally inserted into spillway bay numbers 2, 4, 6, 8, and 10. The steel barriers are 72 feet high and block all but a 72-foot-high by 16-foot-wide vertical slot through each spillway entrance; they are designed to collapse when the spillway gates are opened more than 6 feet. The project also includes the Wells Hatchery, located on the downstream side of the west abutment of the Wells dam.

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. Added pollutants have potential to discharge to the tailrace. The permit sets effluent limits for flow, oil and grease, pH and temperature (heat load). The permit requires compliance with EPA's Temperature TMDL for the Columbia and Lower Snake Rivers. The permit requires the use of Environmentally Acceptable Lubricants (EALs) unless technically infeasible.

Ecology lists the Columbia River as impaired for high temperatures, as required by the Clean Water Act Section 303(d). On May 18, 2020, the U.S. Environmental Protection Agency (EPA) issued for public review and comment a Total Maximum Daily Load (TMDL) for water temperature in the Columbia and lower Snake Rivers. When water quality is impaired, TMDLs are required by Section 303(d) of the Clean Water Act (CWA) and its implementing regulations at Title 40 of the Code of Federal Regulations (CFR) Section 130.7. The EPA's TMDL proposes Waste Load Allocation (WLA) for the process water discharged from the facility.

The facility meets Best Technology Available (BTA) standards set forth 40 CFR 125.94. The facility will discharge sump water and noncontact cooling water to the Columbia Reach as part of its daily operations.

Some submittals for this permit cycle include:

- O/M Manual
- Oil and Grease Accountability Plan
- Annual Oil and Grease Report
- Monitoring Plan or Update

- Monitoring Equipment Installation Report
- PCB Management Plan

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I. Introduction

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The Legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations apply to industrial NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

These rules require any industrial facility owner/operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See **Appendix A-Public Involvement Information** for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix E**.

II. Background Information

Table 1 - Facility Information

Applicant	Public Utility District No. 1 of Douglas County
Facility Name and Address	Wells Dam 485 Azwell Road Chelan, WA 98816
Contact at Facility	Michael Bruno (509) 881-2490
Responsible Official	Gary Ivory General Manager 1151 Valley Mall Parkway East Wenatchee WA 98802 (509) 884-7191
Industry Type	Hydroelectric Power Generation
Type of Treatment	Oil/Water Separator
SIC Codes	4911
	2211
Facility Location (NAD83/WGS84 reference datum)	Latitude: 47.946663 Longitude: -119.866669
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Columbia River East/West Fish Ladder Unwatering Outfall 1 47.946483, -119.866759 Oil/Water Separator Outfall 2 47.946149, -119.86666667 Cooling Water Outfall 3 47.94655300, -119.86666667 Outfall 4 47.94662100, -119.86638889 Outfall 5 47.94670500, -119.86583333 Outfall 6 47.94677200, -119.86555556 Outfall 7 47.94682200, -119.86527778 Outfall 8 47.94690200, -119.86472222 Outfall 9 47.94697900, -119.86444444

Applicant	Public Utility District No. 1 of Douglas County
	Outfall 10 47.94704900, -119.86388889 Outfall 11 47.94711600, -119.86361111 Outfall 12 47.94718000, -119.86333333 HVAC/Sidewall Discharge Outfall 13 47.94679000, -119.86527778 Outfall 14 47.94655300, -119.86666667 Outfall 15 47.94662100, -119.86638889 Outfall 16 47.94670500, -119.86583333 Outfall 17 47.94677200, -119.86555556 Outfall 18 47.94682200, -119.86527778 Outfall 19 47.94690200, -119.86472222 Outfall 20 47.94697900, -119.86444444 Outfall 21 47.94704900, -119.86388889 Outfall 22 47.94711600, -119.86361111 Outfall 23 47.94718000, -119.86333333 Outfall 24 47.94726100, -119.86305556 Fish Ladder/Pumps Outfall 25 47.94634800, -119.86722222 Outfall 26 47.94713500, -119.86277778
Cooling Water Intake Structures	CWIS 1 47.94700, -119.86681 CWIS 2 47.94716, -119.86597 CWIS 3 47.94729, -119.86521 CWIS 4 47.94743, -119.86444 CWIS 5 47.94757, -119.86370

Table 2 - Permit Status

Date of Ecology Acceptance of Application	10/23/2019

Table 3 - Inspection Status

Date of Last Non-sampling Inspection Date	03/11/2019

Figure 1 - Facility Location Map

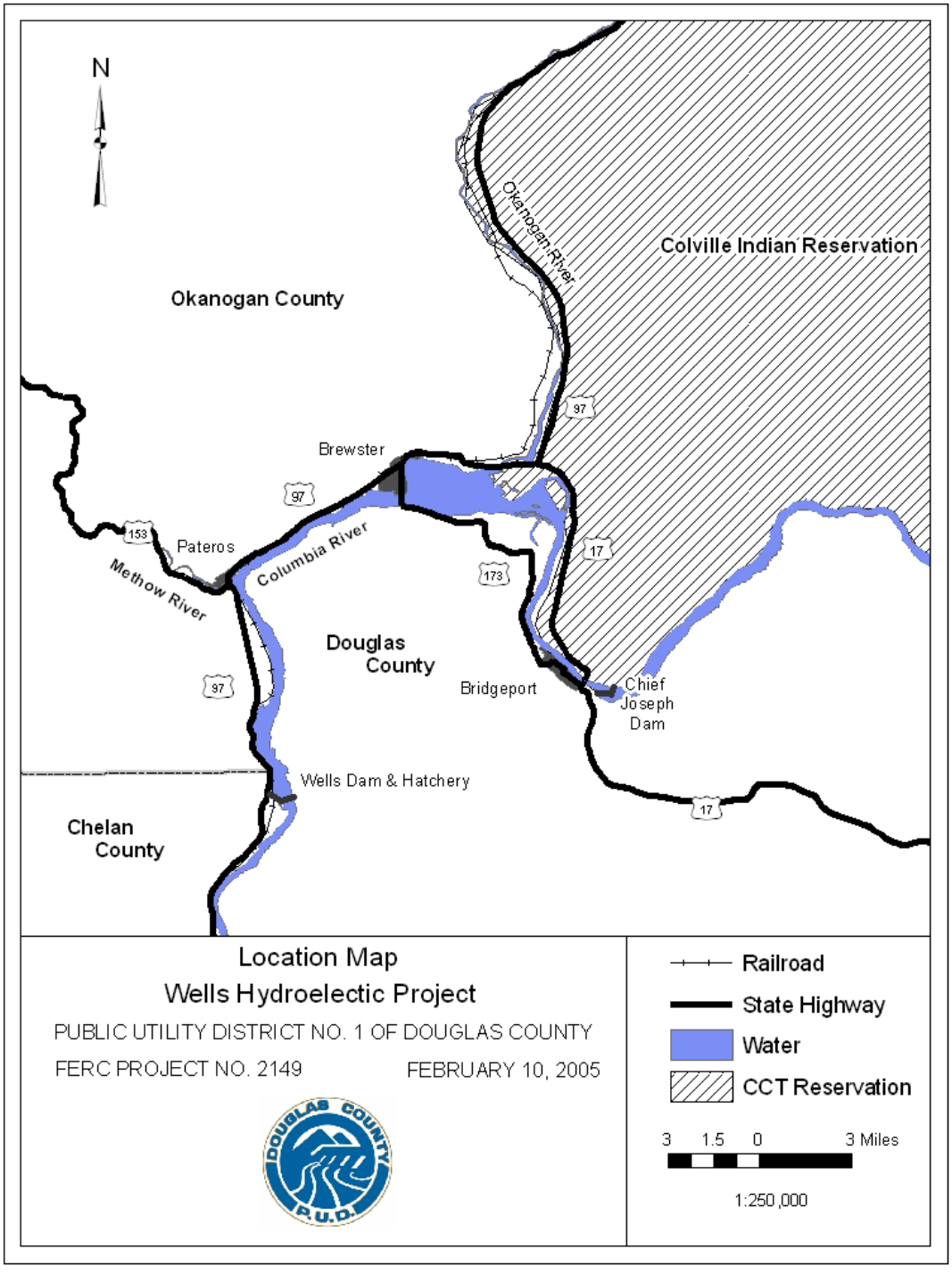


Figure 2 - Wells Dam Aerial

A. Facility description

History

The Wells Hydroelectric Project is the chief generating resource for the Douglas PUD, the Project's owner and operator. Wells produced its first commercial generation on August 22, 1967. It includes ten generating units with a peaking capacity of approximately 840 MW.

The permit sets effluent limits for oil and grease, pH and heat load. The permit requires compliance with EPA's August 13, 2021, Temperature TMDL for the Columbia and Lower Snake Rivers. 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. Added pollutants have potential to discharge to the tailrace. Therefore, the permit requires the use of Environmentally Acceptable Lubricants (EALs) unless technically infeasible.

Ecology lists the Columbia River as impaired for high temperatures, as required by the Clean Water Act Section 303(d). When water quality is impaired, TMDLs are required by Section 303(d) of the Clean Water Act (CWA) and its implementing regulations at Title 40 of the Code of Federal Regulations (CFR) Section 130.7. The EPA's August 13, 2021, Temperature TMDL for the Columbia and Lower Snake Rivers. proposes Waste Load Allocation (WLA) for the process water discharged from the facility.

The Methow and Okanogan rivers are tributaries of the Columbia River within the Wells Reservoir. The Wells Project boundary extends approximately 1.5 miles up the Methow River and approximately 15.5 miles up the Okanogan River. The normal maximum surface area of the reservoir is 9,740 acres with a gross storage capacity of 331,200 acre-feet and usable storage of 97,985 acre-feet at elevation of 781 feet above mean sea level (msl). The normal maximum water surface elevation of the reservoir is 781 feet.

The design of the Wells Dam is unique in that the generating units, spillways, switchyard, and fish passage facilities were combined into a single structure referred to as the hydro combine. Fish passage facilities reside on both sides the hydro combine, which is 1,130 feet long, 168 feet wide, with a crest elevation of 795 feet in height. The juvenile fish bypass (JBS) system was developed by Douglas PUD and uses a barrier system to modify the intake velocities on all even numbered spillways (2, 4, 6, 8 and 10). The Wells Reservoir is approximately 30 miles long.

Cooling Water Intakes

CWA § 316(b) requires the location, design, construction, and capacity of cooling water intake structures (CWIS) to reflect the best technology available for minimizing adverse environmental impact. Since July 2013, Ecology has required all applicants using a CWIS to submit a supplemental application (EPA Form 2-C).

The CWIS's are located approximate to each hydroelectric generator, with each intake located in the forebay and discharges to the tailrace. The cooling water is gravity-fed. Wells Dam was designed and constructed, and is now being operated, in a manner that meets or exceeds the statutory requirement of using "the best technology available for minimizing adverse environmental impact." The design and operation of the CWIS meet the requirement of CWA Section 316(b) to minimize adverse environmental impacts.

Industrial Processes

Douglas PUD is seeking coverage under a NPDES Permit addressing potential discharges of pollutants at Wells Dam. Machinery, drainage sumps, unwatering sumps, drains, turbines, wicket gate bearings, lubricant contact points, and discharges of cooling water systems are potential point sources of pollution.

Wastewater Treatment processes

The facility oil/water separator uses the force of gravity to separate the lower density oils as a layer on top of the oil/water interface and the heavier particulate matter (sludge) as a layer on the bottom of the oil/water separator. Additional sump water is discharged without treatment.

The following figures detail Wastewater handling:

Figure 3 - Service Water System For Temperature Point Source

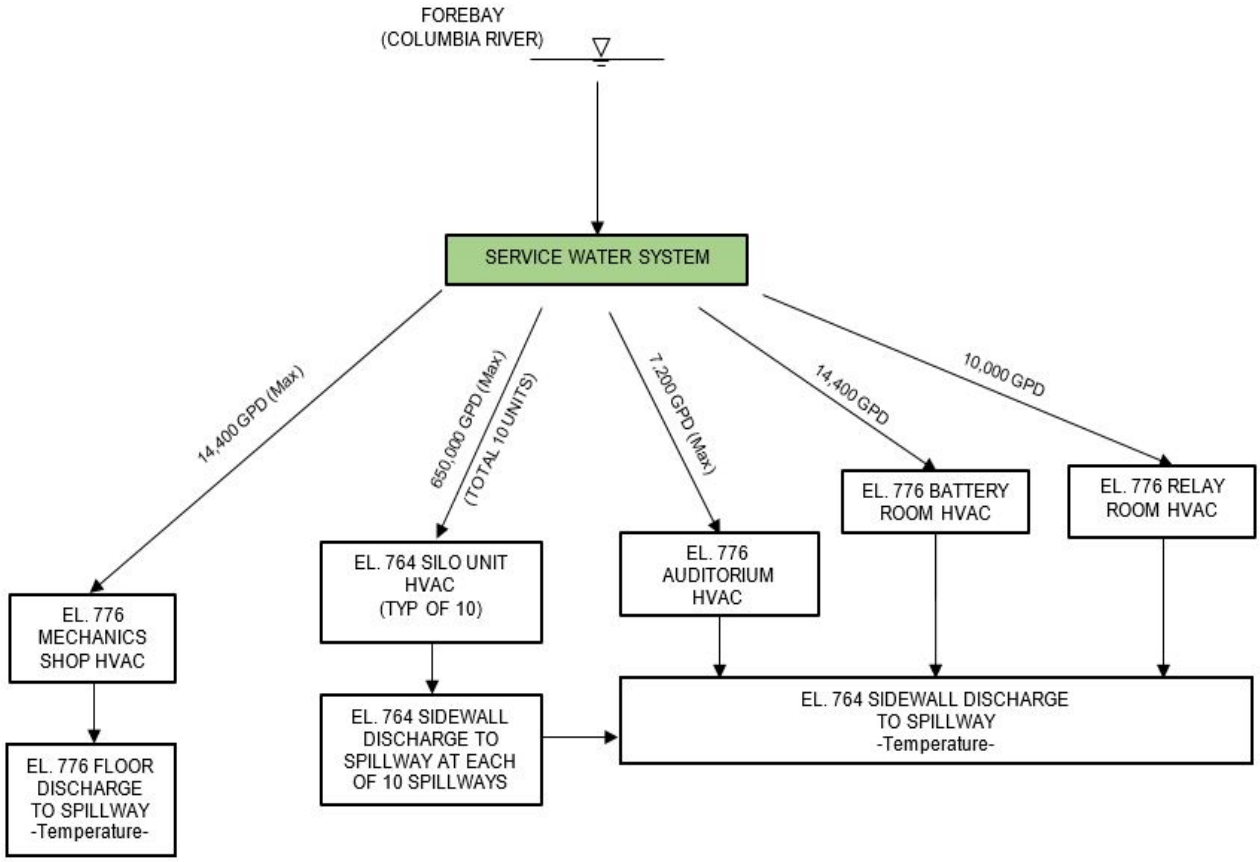


Figure 4 - Raw and Critical Service Water System Schematic-Potential Oily Water and Temperature Point Source Discharges

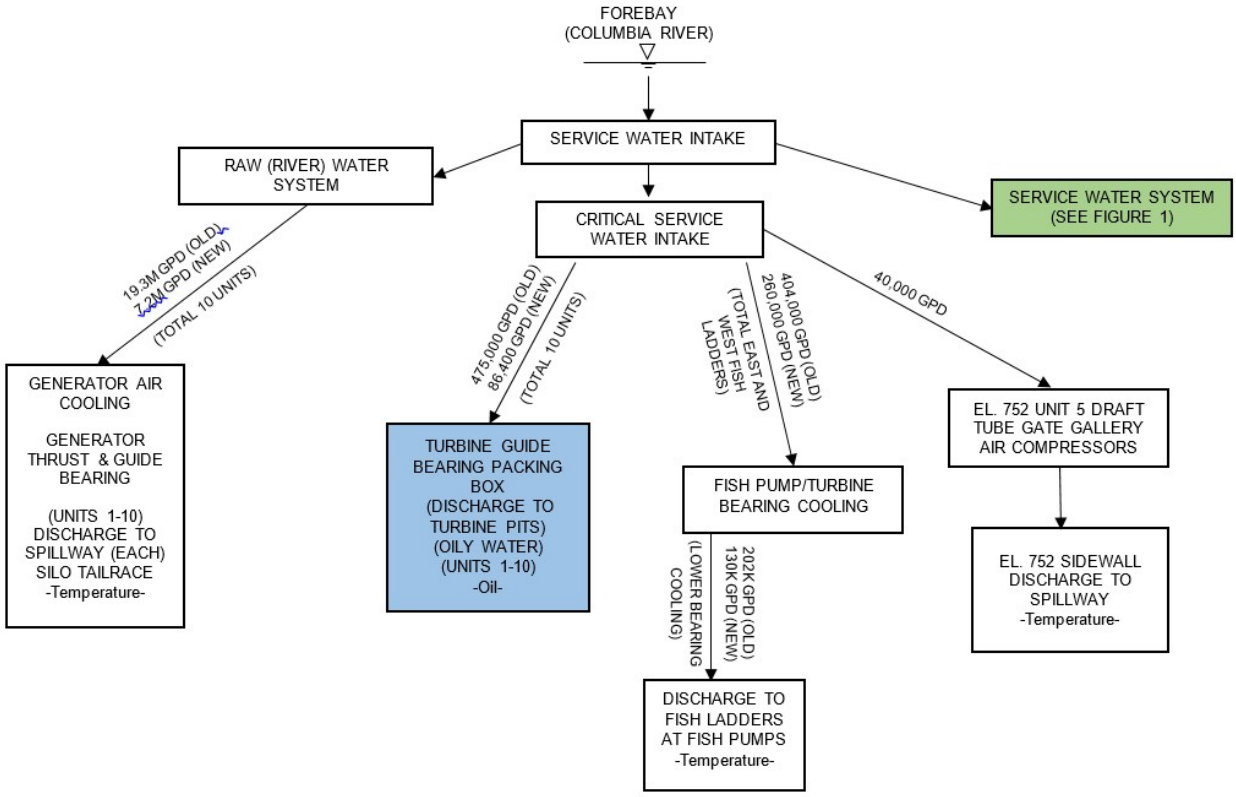
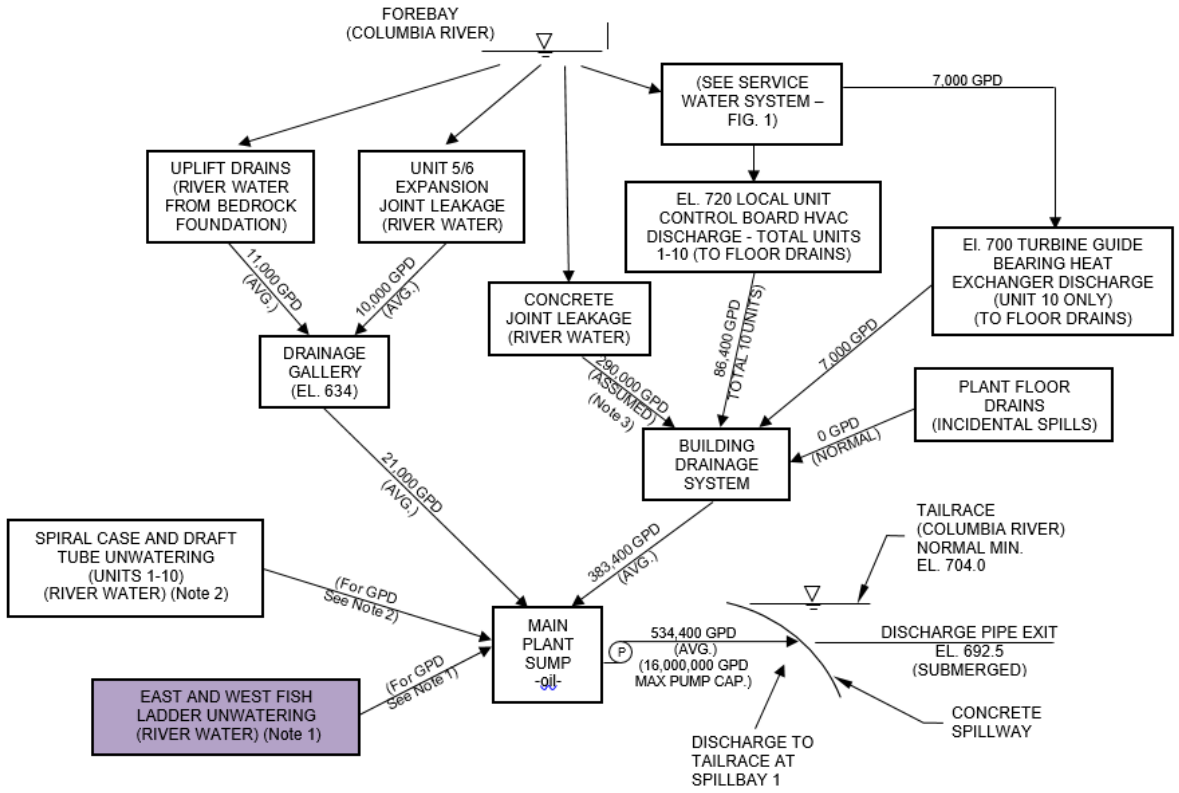


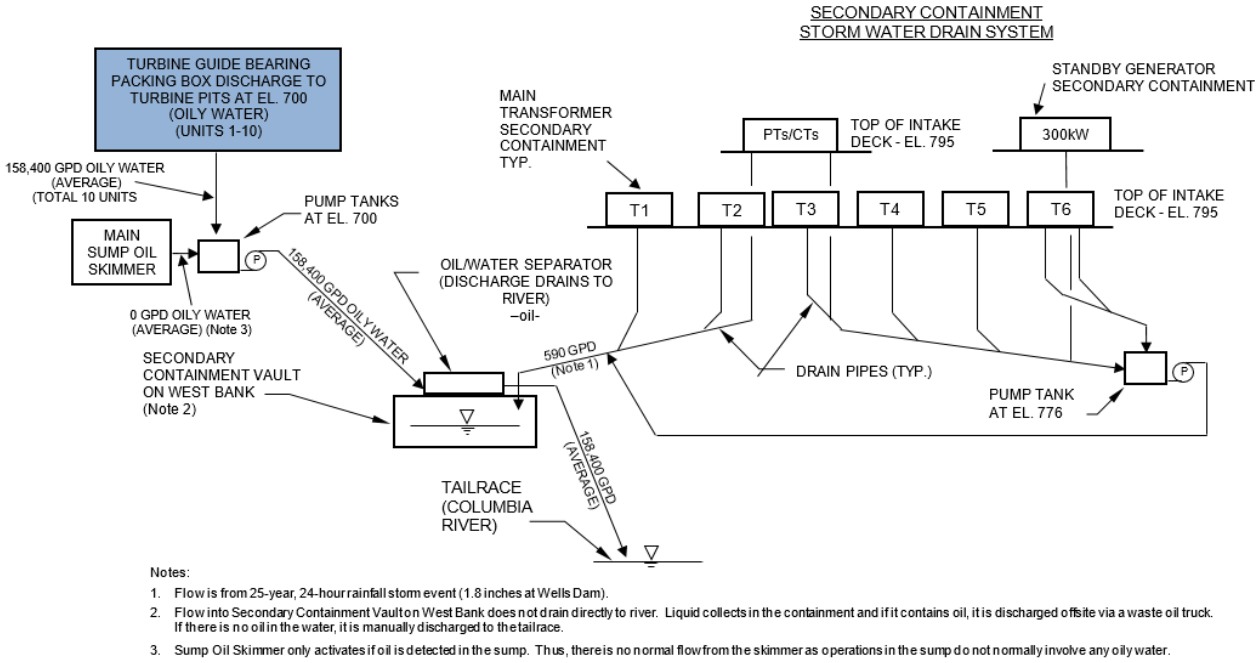
Figure 5 - Plant Drainage System Schematic-Potential Oily Water Point Source Discharge



Notes:

1. The West Ladder is unwatered once per year (approximately 1M gallons). It is located adjacent to the main plant sump and takes about 1.5 hours to drain. The East Ladder (also unwatered once per year and also approximately 1M gallons) is approximately 1000 feet away and takes several (6 to 8) hours to drain due to flow rate being constrained by pipe losses in the 24-inch main cross-plant drain line. Flow rate in these lines is ultimately limited by maximum output of sump pumps (11,000 gpm).
2. The Spiral Cases and Draft Tubes in each of the 10 generating units are unwatered separately and infrequently. They are unwatered either for maintenance or for construction affecting these areas. Flow rate is limited by maximum output of sump pumps (11,000 gpm).
3. Concrete joint and crack leakage flow rates inside the dam, except where monitored (example, El. 634 gallery), are largely unknown and likely vary seasonally. The source of the leakage is river water. For this presentation, a leakage rate of 200 gpm (290,000 GPD) is assumed.

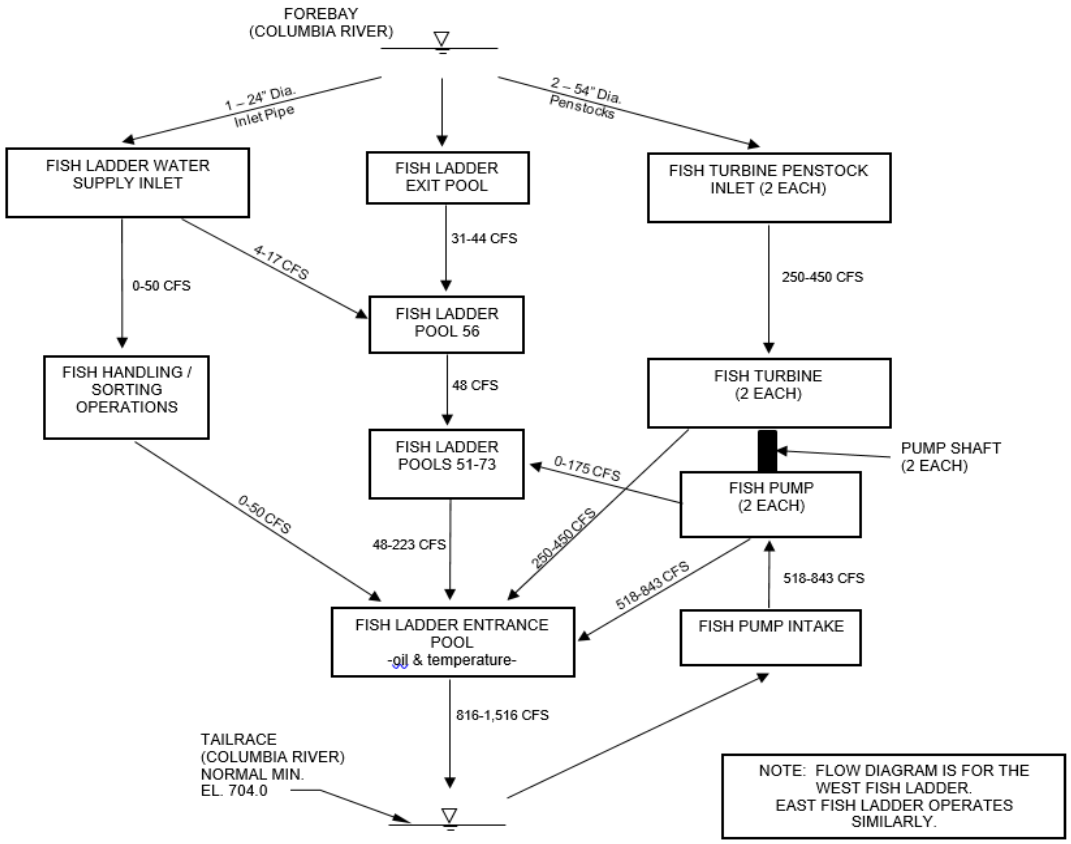
Figure 6 - Oily Water and Intake Deck Secondary Containment Systems Schematic-Potential Oily Water Point Source Discharge



Notes:

1. Flow is from 25-year, 24-hour rainfall storm event (1.8 inches at Wells Dam).
2. Flow into Secondary Containment Vault on West Bank does not drain directly to river. Liquid collects in the containment and if it contains oil, it is discharged offsite via a waste oil truck. If there is no oil in the water, it is manually discharged to the tailrace.
3. Sump Oil Skimmer only activates if oil is detected in the sump. Thus, there is no normal flow from the skimmer as operations in the sump do not normally involve any oily water.

Figure 7 - Fish Ladder Water Flow Schematic

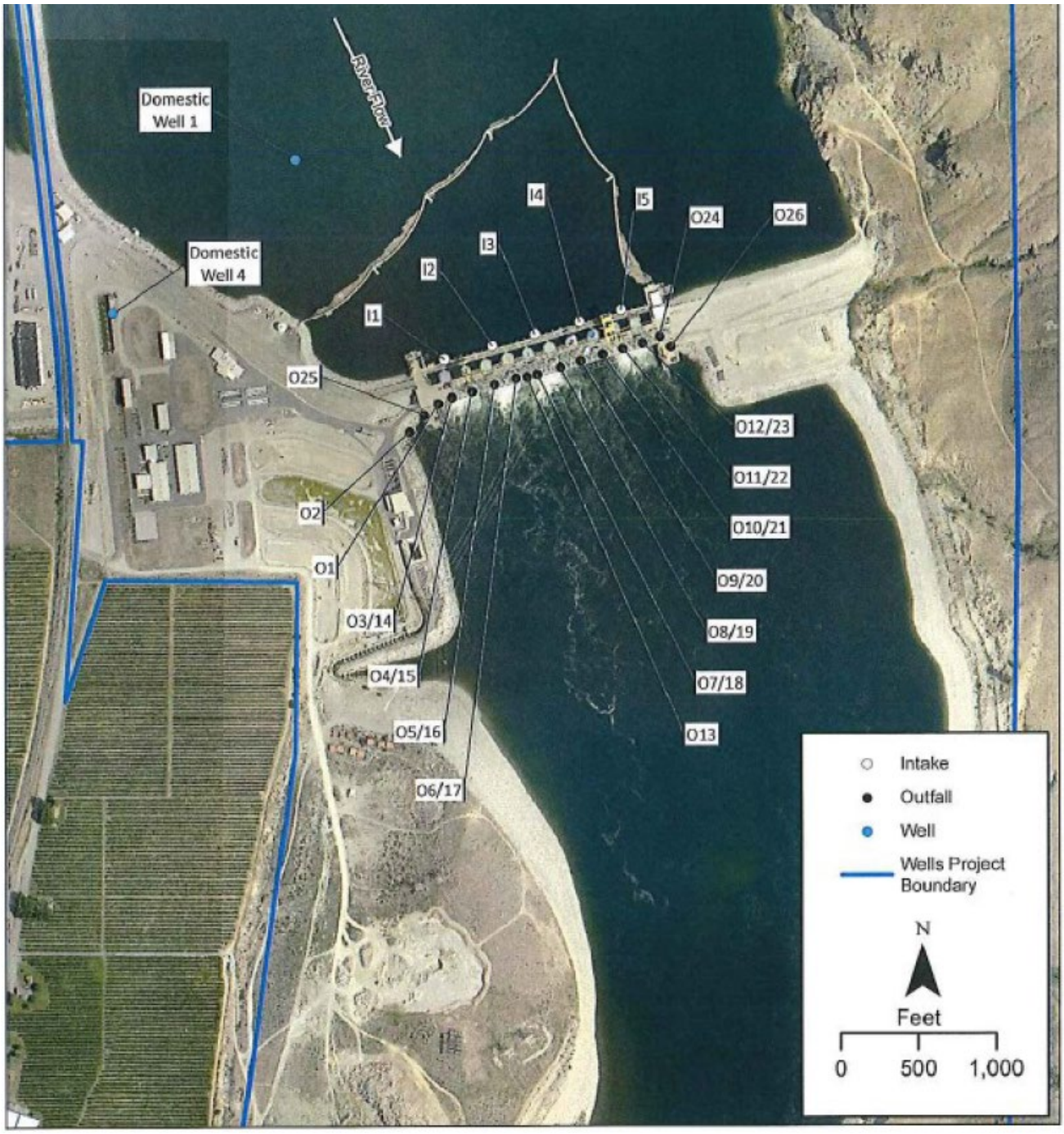


Notes:

1. Flows are dependent on operational and hydraulic conditions at the project. Low tailwater elevations require less flow out of the ladder to attract fish resulting in reduced, ladder, pumping, and turbine flows while higher tailwater elevations require increased. Periods when there is no fish sorting or handling will result in lower flow demand from the

Sump System Discharge: pH, Oil, Temperature
Outfall 1
Oil/Water Separator: pH, Oil, Temperature
Outfall 2
Cooling Water: Temperature
Outfall 3 - 12
HVAC/Sidewall Discharge: pH, Oil, Temperature
Outfall 13 - 24
Fish Pump Turbine Bearing Cooling: Temp, Oil)
Outfall 25 - 26

Figure 8 - Intakes and Outfalls



Solid wastes

This facility generates solid waste from the debris removal in the spillway and forebay, and spill cleanup/recovery materials. The permit will require an accounting of these solid wastes disposed from the site.

B. Description of the receiving water

The ambient background data used for this permit was collected under the existing Quality Assurance Project Plan (QAPP) For Water Temperature And Total Dissolved Gas February 2013 (QAPP 2013).

The Wells Project is located at river mile (RM) 515.8 on the Columbia River in the State of Washington. Wells Dam is located approximately 30 river miles downstream from the Chief Joseph Dam and 42 miles upstream from the Rocky Reach Dam. The nearest town is Pateros, Washington, which is located approximately 8 miles upstream from the Wells Dam.

The 7-DADMax temperature data recorded since 2001 indicate that the portion of the Columbia River upstream of and within the Project generally warms to above numeric criteria in mid-July and drops below the numeric criterion by early October. Temperatures in the Methow River upstream of the Project warm to above in mid-July and drop below the numeric criteria by September, while trends in the Okanogan River upstream of the Project indicate warming above from early June with cooling by late September (QAPP 2013).

Table 4 - Ambient Background Data

Parameter	Value Used
Flow (7Q10 Low Flow)[a]	94, 879 cfs USGS gauge 12450700
pH (Maximum / Minimum)	8.2/ 7.8 standard units
[a] Lowest 7-day average flow that occurs (on average) once every 10 years. https://water-quality.shinyapps.io/D-Flow-Update/ Additional information in Appendix D. USGS gauge 12450700.	

Table 5 – Columbia and Lower Snake River Temperature TMDL 08/13/2021 - Excerpt
Table 3-2 Average and Maximum temperatures (2011-2016, June through October)

June		July		August		September		October	
Mean (°C)	Max (°C)	Mean (°C)	Max (°C)	Mean (°C)	Max (°C)	Mean (°C)	Max (°C)	Mean (°C)	Max (°C)
13.6	17.6	16.5	19.3	18.7	20.2	18.8	20.4	16.5	18.7

C. Wastewater characterization

Characterization of the discharge is limited to data reported in the permit application.

Non-Contact Cooling Water (NCCW) outfalls are observed by Ecology to be substantively similar. Wastewater characterization in the following table is considered representative of all NCCW at this time.

Table 6 - Wastewater Characterization Sump

Parameter	Units	Value
Flow	GPM	< 1000
Flow (Intake)	cfs	59,000
Temperature (Intake)	Degrees C	9.2
Temperature	Degrees C	8.4
pH	standard units	7.75
Biochemical Oxygen Demand (BOD_5) (Intake)	mg/L	<2
Biochemical Oxygen Demand (BOD_5)	mg/L	2.0
Chemical Oxygen Demand (COD)	mg/L	10.9
Total Organic Carbon (TOC) (Intake)	mg/L	1.43
Total Organic Carbon (TOC)	mg/L	15
Total Suspended Solids (TSS)	mg/L	1
Ammonia	mg/L	<.07

Parameter	Units	Value
Oil and Grease (Intake)	mg/L	3.9
Oil and Grease	mg/L	<1.4
Surfactants	mg/L	0.049
Antimony	µg/L	0.116
Arsenic	µg/L	0.629
Beryllium	µg/L	Not detected
Cadmium	µg/L	Not detected
Chromium	µg/L	0.150
Copper (Intake)	µg/L	0.581
Copper	µg/L	4.27
Lead (Intake)	µg/L	0.760
Lead	µg/L	17.0
Mercury	µg/L	0.19
Nickel	µg/L	0.366
Selenium	µg/L	Not detected
Silver	µg/L	Not detected
Thallium	µg/L	0.0230
Zinc (Intake)	µg/L	1.64
Zinc	µg/L	3.06
PCB-1242	µg/L	Not detected
PCB-1254	µg/L	Not detected
PCB-1221	µg/L	Not detected
PCB-1232	µg/L	Not detected
PCB-1248	µg/L	Not detected
PCB-1260	µg/L	Not detected
PCB-1016	µg/L	Not detected

Table 7 - Wastewater Characterization Oil/ Water Separator

Parameter	Units	Value
Flow	GPM	110
Temperature (Intake)	Degrees C	9.2
Temperature	Degrees C	9.4
pH	standard units	7.86
Biochemical Oxygen Demand (BOD_5) (Intake)	mg/L	<2
Chemical Oxygen Demand (COD)	mg/L	10.9
Total Organic Carbon (TOC)	mg/L	2.06
Total Suspended Solids (TSS)	mg/L	1.0
Ammonia	mg/L	<0.07
Oil and Grease(Intake)	mg/L	3.9
Oil and Grease	mg/L	3.5
Surfactants	mg/L	0.044
Antimony	µg/L	0.186
Arsenic	µg/L	0.606
Beryllium	µg/L	Not detected
Cadmium	µg/L	0.0350
Chromium	µg/L	0.647
Copper (Intake)	µg/L	0.581
Copper	µg/L	7.63
Lead	µg/L	0.811
Mercury	µg/L	0.24
Nickel	µg/L	0.832
Selenium	µg/L	Not detected
Silver	µg/L	Not detected
Thallium	µg/L	0.0150

Parameter	Units	Value
Zinc (Intake)	µg/L	1.64
Zinc	µg/L	3.80
PCB-1242	µg/L	<0.48
PCB-1254	µg/L	<0.48
PCB-1221	µg/L	<0.48
PCB-1232	µg/L	<0.48
PCB-1248	µg/L	<0.48
PCB-1260	µg/L	<0.48
PCB-1016	µg/L	<0.48
Dioxin	NA	Not detected

Table 8 – Outfall Characterization Old Design

Parameter	Units	Value
Flow	GPM	1340
Temperature (Intake)	Degrees C	2.90
Temperature	Degrees C	23.60

Table 9 - Outfall Characterization New Design

Parameter	Units	Value
Flow	GPM	600
Temperature (Intake)	Degrees C	3.00
Temperature	Degrees C	35.40

III. Proposed Permit Limits

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the Federal Water Quality Criteria Applicable to Washington (40 CFR 131.45).
- Chapter 90.56 RCW Oil And Hazardous Substance Spill Prevention And Response
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Technology-based effluent limits

Effluent limitation guidelines have not yet been developed by the EPA for hydroelectric generating facility discharges. The facility has an oil/water separator. Oil effluent limits are Water Quality-Based in this permit.

Ecology must ensure that facilities provide all known, available, and reasonable methods of prevention, control, and treatment (AKART) when it issues a permit.

B. Surface water quality-based effluent limits

Water Quality-Based Effluent Limits for Wells Dam include Oil and Grease, pH, heat load.

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510).

Numerical criteria for the protection of aquatic life and recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical criteria for the protection of human health

In 1992, U.S. EPA published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State in its National Toxics Rule 40 CFR 131.36 (EPA, 1992). Ecology submitted a standards revision for 192 new human health criteria for 97 pollutants to EPA on August 1, 2016. In accordance with requirements of CWA section 303(c) (2) (B), EPA finalized 144 new and revised Washington specific human health criteria for priority pollutants, to apply to waters under Washington's jurisdiction. EPA approved 45 human health criteria as submitted by Washington. The EPA took no action on Ecology submitted criteria for arsenic, dioxin, and thallium. The existing criteria for these three pollutants remain in

effect and were included in 40 CFR 131.45, Revision of certain Federal Water quality criteria applicable to Washington.

These newly adopted criteria, located in WAC 173-201A-240, are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2016) and of all marine waters (WAC 173-201A-210, 2016) in the state of Washington.

Antidegradation

Description – The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2016) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I: ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions.

Tier II: ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities.

Tier III: prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

Facility Specific Requirements — This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.

Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones, the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment

(AKART). Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling, Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's Permit Writer's Manual). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 4 means the effluent is 25% and the receiving water is 75% of the total volume of water at the boundary of the mixing zone. Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life *acute* criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life *chronic* criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two and four tenths (2.4) liters/day for drinking water (increased from two liters/day in the 2016 Water Quality Standards update).
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit does not authorize a mixing zone. The Permittee may submit a Mixing Zone Study, for Ecology's consideration, to evaluate whether or not a mixing zone is warranted for the discharge. If considering conducting and submitting a study the Permittee should discuss the applicable requirements with Ecology.

C. Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The table included below summarizes the criteria applicable to this facility's discharge.

Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

IV. Freshwater Aquatic Life Uses and Associated Criteria

Table 10 - Salmonid Spawning, Rearing, and Migration

Criteria	Value
Temperature Criteria – Highest 7-DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	8.0 mg/L
Turbidity Criteria	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection. Higher saturation levels are allowed for dams on the Columbia and Snake rivers when spilling water to aid fish passage.
pH Criteria	The pH must measure 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 *recreational uses* for this receiving water are identified below.

Table 11 - Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	*E. coli* organism levels within an averaging period must not exceed a geometric mean value of 100 CFU or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained within the averaging period exceeding 320 CFU or MPN per 100 mL.

- The water supply uses are domestic, agricultural, industrial, and stock watering.
- The miscellaneous freshwater uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

A. Water quality impairments

The Columbia River is listed on the current 303(d) for impairment. The river is impaired (Category 5) for the following parameters: 4,4'-DDD, 4,4'-DDE, and PCBs. The Columbia River has a TMDL for Total Dissolved Gas, and temperature, which are Category 4a listings. A category 4a listing means an EPA-approved TMDL plan is in place and implemented.

Table 12 - Water Quality Impairments

Listing ID	Parameter	Medium	Category
40945	Temperature	Water	4a
51661	4,4'-DDD	Tissue	5
51722	4,4'-DDE	Tissue	5
52658	Polychlorinated Biphenyls (PCBs)	Tissue	5
36391	Total Dissolved Gas	Water	4a

B. Total Maximum Daily Load (TMDL)

The Columbia River is on the State's current 303(d) list as impaired for temperature.

The Federal Clean Water Act specifies that when a water body is impaired, a Total Maximum Daily Load (TMDL) study must be conducted to restore the waterbody's function. A Total Maximum Daily Load specifies the maximum amount of a pollutant that a waterbody can receive and still meet applicable Water Quality Standards.

On August 13, 2021, the EPA issued the final Columbia and Lower Snake Rivers Temperature Total Maximum Daily Load. The TMDL assigns a WLA (expressed as a heat load in kcal/day) to all point source discharges to the Columbia River, including this facility (3.81E+09 kcal/day). This heat load is included in the permit as a limit, applying facility-wide from the months June to October. The heat load for each outfall is calculated as the product of the monthly average temperature and average monthly flow, times a conversion factor of 3.78E+06 kcals/day/(°C x MGD). The facility-wide monthly average heat load is the summation of the average monthly heat load of all outfalls. Thus, for permit compliance, heat load is calculated as follows:

$$Facility\ Heat\ Load\ (\frac{\text{kcal}}{\text{day}}) = \sum Q_x * T_x * 3.78 * 10^6 \frac{kcals}{MGD * ℃ * day}$$

Where:

- Q_x = The monthly average flow of an outfall in MGD.
- T_x = The monthly average temperature of an outfall in °C.

While the heat load limit will apply at permit issuance, the permittee may initially calculate heat loads with grab temperature samples and their best available flow estimates. However, the proposed permit includes a 2-year compliance schedule, giving Douglas PUD time to install the equipment and controls necessary to sufficiently report their heat load. As detailed in section S11of the permit, Douglas PUD must submit a plan to determine flows and temperatures at each outfall, using continuous monitoring where feasible. This plan must be approved by Ecology, and all necessary monitoring equipment must be installed within two years permit issuance. For temperature, continuous monitoring instruments must measure at least once every half hour, achieve an accuracy of 0.2 degrees C. The permittee must verify accuracy annually. If continuous monitoring is unfeasible at a given outfall, another methodology may be approved by Ecology.

C. Evaluation of surface water quality-based effluent limits for narrative criteria

Ecology must consider the narrative criteria described in WAC 173-201A-160 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

"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)."

Oil discharges are limited by the following State laws: *RCW 90.56.320 Unlawful for oil to enter waters* (formerly RCW 90.48.320) and *RCW 90.48.200 Waste disposal permits*.

RCW 90.56.320

Unlawful for oil to enter waters—Exceptions.

It shall be unlawful, except under the circumstances hereafter described in this section, for oil to enter the waters of the state from any ship or any fixed or mobile facility or installation located offshore or onshore whether publicly or privately operated, regardless of the cause of the entry or fault of the person having control over the oil, or regardless of whether it be the result of intentional or negligent conduct, accident or other cause. This section shall not apply to discharges of oil in the following circumstances:

(1) The person discharging was expressly authorized to do so by the department prior to the entry of the oil into state waters; or

(2) The person discharging was authorized to do so by operation of law as provided in ***RCW 90.48.200****.*

RCW 90.48.200 Waste disposal permits required of counties, municipalities and public corporations — Nonaction upon application — Temporary permit — Duration*.*

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

The proposed permit addresses and limits oil and grease discharges from the dam based on narrative criteria.

Appendix A states EPA Method 1664A is the only approved method for Oil and Grease detection in wastewater. The detection limit is 1.4 mg/L. The quantitation limit is 5

mg/L. A daily maximum effluent limit of 5 mg/L ensures narrative criteria for are met for no visible oil sheen.

In addition, Ecology considers the toxicity of the wastewater discharge by requiring whole effluent toxicity (WET) testing when there is a reasonable potential for the discharge to contain toxics. Ecology's analysis of the need for WET testing for this discharge is described later in the fact sheet.

D. Evaluation of surface water quality-based effluent limits for numeric criteria

Ecology has not authorized a mixing zone in the permit.

The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

Temperature --The state temperature standards (WAC 173-201A, WAC 173-201A-200, WAC 173-201A-600, and WAC 173-201A-602) include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects
- Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.
- Annual summer maximum and supplementary spawning/rearing criteria

  Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1)(c), WAC 173-201A-210(1)(c), and WAC 173-201A-602, Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

  Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

  The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine

waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

  The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), WAC 173-201A-210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

  At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

  At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

  When a TMDL is not completed, Ecology policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25% or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

- Protections for temperature acute effects

  Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

  General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

  Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Toxic Pollutants -- Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

- Reasonable Potential Analysis

  Data Collection Required: Ecology does not have sufficient information on the temperature of the effluent or the receiving water to determine compliance with water quality criteria for temperature. The proposed permit requires Wells Dam to monitor effluent and report the results to Ecology.

  A reasonable potential analysis was conducted using zero dilution and with the limited data provided in the application. Using this data, the facility does not exhibit reasonable potential to pollute.

  The permit includes additional requirements for determining the concentrations of their discharges.

E. Human health

Washington's water quality standards include numeric human health-based criteria for 97 priority pollutants that Ecology must consider when writing NPDES permits.

Ecology evaluated the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d) by following the procedures published in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and Ecology's Permit Writer's Manual to make a reasonable potential determination. The evaluation showed that the discharge has no reasonable potential to cause a violation of water quality standards, and an effluent limit is not needed.

F. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit available at: https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Sediment-cleanups

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the sediment management standards.

G. Groundwater quality limits

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

Wells Dam does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

H. Whole effluent toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Using the screening criteria in chapter 173-205-040 WAC, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. Therefore, this permit does not require WET testing. Ecology may require WET testing in the future if it receives information indicating that toxicity may be present in this effluent.

V. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

A. Wastewater monitoring

Wells Dam will monitor for pH, flow, Oil and Grease, and Temperature to characterize the effluent. These pollutant(s) could have an impact on the quality of the surface water.

Special Condition S2. details the monitoring schedule in the proposed permit. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

B. Lab accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters).

VI. Other Permit Conditions

A. Reporting and record keeping

Ecology based Special Condition S3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

Permit Condition S3.F.b requires reporting several conditions to Ecology including Turbine Runner Hub leakage, failure, or emergency maintenance.

B. Non routine and unanticipated wastewater

Occasionally, this facility may generate wastewater which was not characterized in the permit application because it is not a routine discharge and was not anticipated at the time of application. These wastes typically consist of waters used to pressure-test storage tanks or fire water systems or of leaks from drinking water systems.

The permit authorizes the discharge of non-routine and unanticipated wastewater under certain conditions. The facility must characterize these waste waters for pollutants and examine the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and on any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the wastewater.

- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

C. Spill plan

This facility stores a quantity of chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [Section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

As required by the facility 401 WQC, Wells Dam developed a Spill Prevention, Control, and Countermeasures Plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the facility to follow the SPCC Plan and to submit any revised SPCC Plan to Ecology.

D. Solid waste control plan

Wells Dam could cause pollution of the waters of the state through inappropriate disposal of solid waste or through the release of leachate from solid waste.

This proposed permit requires this facility to develop a solid waste control plan to prevent solid waste from causing pollution of waters of the state. The facility must submit the plan to Ecology for approval (RCW 90.48.080). You can obtain an Ecology guidance document, which describes how to develop a Solid Waste Control Plan, at: https://fortress.wa.gov/ecy/publications/docu2ents/0710024.pdf

E. Operation and maintenance manual

Ecology requires industries to take all reasonable steps to properly operate and maintain their system in accordance with state and federal regulations [40 CFR 122.41(e) and WAC 173-220-150 (1)(g)]. The facility will prepare and submit an operation and maintenance manual as required by state regulation for industrial wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

F. Oil, Grease, and Lubricant Management

Permit Condition S.10 details requirements for Oil, Grease and Lubricant management. It requires submission of an EAL Evaluation Report, Oil and Grease Accountability Plan, and Oil and Grease Annual Report.

Wicket gates, in-line equipment, lubricated wire ropes, and Kaplan runners 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-less turbines. EALs prevent or minimize the generation and potential release of pollutants from the facility to the waters of the United States.

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 are consistent with the definition of EALs in EPA's 2011 Environmentally Acceptable Lubricants report.

G. Monitoring

Continuous Monitoring and Temperature TMDL WLA

A Total Maximum Daily Load (TMDL) specifies the maximum amount of a pollutant that a waterbody can receive and still meet applicable Water Quality Standards. The facility will be required to meet the Wasteload Allocation set by the EPA Columbia River Temperature TMDL.

1. Permit Condition S.11 requires submission of a Monitoring Plan. The facility must adequately sample and analyze effluent for flow, temperature, pH and Oil and Grease. The monitoring plan will include continuous temperature monitoring at cooling water and sump outfalls as well as details for calculating flows and heat loads. The monitoring plan must be presented to Ecology [insert date, 1 year after permit effective date]. The critical season months when the WLA limit will be effective are June 1 – October 31. Monthly temperature monitoring may be applied where a similar discharge requires continuous temperature monitoring. The facility will have to determine if continuous flow monitoring at all appurtenances is feasible.

2. Conduct all sampling and analysis in accordance with the guidelines given in *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies, Ecology Publication 04-03-030* (https://fortress.wa.gov/ecy/publications/documents/0403030.pdf).

A model Quality Assurance Plan specific for temperature is available at (https://fortress.wa.gov/ecy/publications/documents/0503202.pdf).

H. Cooling Water Intake Structure Requirements to Minimize Adverse Impacts from Impingement and Entrainment

Permit Condition S.12 requires the facility maintain Best Technology Available standards to minimize Adverse Impacts from impingement and entrainment. The design, location, construction, and capacity of the permittee's cooling water intake structures (CWISs) shall reflect the best technology available (BTA) for minimizing adverse environmental impacts from the impingement and entrainment of various life stages of fish (e.g., eggs, larvae, juveniles, adults) by the CWISs.

I. PCB Management

The permits do not allow for the addition of toxic materials or chemicals and prohibit the discharge of PCBs. PCBs may be present in transformers and other equipment at hydroelectric generating facilities. The facility is required to submit a PCB Management Plan and PCB Annual Report to Ecology.

J. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

VII. Permit Issuance Procedures

A. Permit modifications

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for groundwaters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed permit Issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human

health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of 5 years.

VIII. References for Text and Appendices

Environmental Protection Agency (EPA)

2020. Total Maximum Daily Load (TMDL) for Temperature in the Columbia and Lower Snake Rivers; Region 10

2011. Environmentally Acceptable Lubricants, EPA 800-R-11-002

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.

1988. *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling*. USEPA Office of Water, Washington, D.C.

1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.

1983. *Water Quality Standards Handbook*. USEPA Office of Water, Washington, D.C. Tsivoglou, E.C., and J.R. Wallace.

1972. *Characterization of Stream Reaeration Capacity*. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology

July 2018. *Permit Writer's Manual*. Publication Number 92-109 (https://fortress.wa.gov/ecy/publications/documents/92109.pdf)

September 2011. *Water Quality Program Guidance Manual – Supplemental Guidance on Implementing Tier II Antidegradation*. Publication Number 11-10-073 (https://fortress.wa.gov/ecy/publications/summarypages/1110073.html)

October 2010 (revised). *Water Quality Program Guidance Manual – Procedures to Implement the State's Temperature Standards through NPDES Permits*. Publication Number 06-10-100 (https://fortress.wa.gov/ecy/publications/summarypages/0610100.html)

February 2007. *Focus Sheet on Solid Waste Control Plan, Developing a Solid Waste Control Plan for Industrial Wastewater Discharge Permittees*, Publication Number 07-

10-024. (https://fortress.wa.gov/ecy/publications/documents/0710024.pdf) Wright, R.M., and A.J. McDonnell.

Laws and Regulations (http://leg.wa.gov/LawsAndAgencyRules/Pages/default.aspx)

Permit and Wastewater Related Information (https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance)

Permit Literature Resources

2011. Clean Water Act_Federal Water Pollution Control Act_Title 33-Navigation_Navigable Waters_Chap. 26-Water Pollution Prevention_Control

February 2018. DRAFT Temperature Water Quality Standards for the Columbia, Lower Columbia, and Lower Snake Rivers.

Alkalinity Budget of the Columbia River. Park, P. Kilho. Webster, George. Yamamoto, Roy.

U.S. Army Corps of Engineers. 2015. Memorandum for Walla Walla District Projects, Subject: Oil Accountability Program. CENWW-OD-T, SOP 200-1-1. April 21, 2015.

Appendix A — Public Involvement Information

Ecology proposes to issue a permit to Douglas PUD – Wells Dam. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on October 25, 2019 in the Columbia Basin Herald to inform the public about the submitted application and to invite comment on the issuance of this permit.

Ecology will place a Public Notice of Draft on **January 6, 2022** in the Wenatchee World to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting* which is available on our website at https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html .

You may obtain further information from Ecology by telephone, 509-457-7105, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903

The primary author of this permit and fact sheet is Keith Primm.

Appendix B — Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

Table 13 - Address and Location Information

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Appendix C — Glossary

1-DMax or 1-day maximum temperature – The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures – The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax 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.

Acute toxicity – The lethal effect of a compound on an organism that occurs in a short time period, usually 48 to 96 hours.

AKART – The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and RCW 90.48.520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate point of compliance – An alternative location in the groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ambient water quality – The existing environmental condition of the water in a receiving water body.

Ammonia – Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual average design flow (AADF) – average of the daily flow volumes anticipated to occur over a calendar year.

Average monthly (intermittent) discharge limit – The average of the measured values obtained over a calendar months' time taking into account zero discharge days.

Average monthly discharge limit – The average of the measured values obtained over a calendar months' time.

Background water quality – The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in

time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

Best management practices (BMPs) – Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD5 – Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD_5 is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass – The intentional diversion of waste streams from any portion of a treatment facility.

Categorical pretreatment standards – National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Chlorine – A chemical used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic toxicity – The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean water act (CWA) – The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance inspection-without sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance inspection-with sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all

parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite sample – A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction activity – Clearing, grading, excavation, and any other activity, which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous monitoring – Uninterrupted, unless otherwise noted in the permit.

Critical condition – The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Date of receipt – This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Detection limit – The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Dilution factor (DF) – A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Distribution uniformity – The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Early warning value – The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

Enforcement limit – The concentration assigned to a contaminant in the groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater criterion will not be exceeded and that background water quality will be protected.

Engineering report – A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or WAC 173-240-130.

Fecal coliform bacteria – Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab sample – A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Groundwater – Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Industrial user – A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater – Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated stormwater and, also, leachate from solid waste facilities.

Interference – A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits – Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Major facility – A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum daily discharge limit – The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum day design flow (MDDF) – The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum month design flow (MMDF) – The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum week design flow (MWDF) – The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method detection level (MDL) – See Detection Limit.

Minor facility – A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing zone – An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

National pollutant discharge elimination system (NPDES) – The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH – The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through – A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Peak hour design flow (PHDF) – The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak instantaneous design flow (PIDF) – The maximum anticipated instantaneous flow.

Point of compliance – The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential significant industrial user (PSIU) – A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) – Also known as **Minimum Level of Quantitation (ML)** – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer. (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

Reasonable potential – A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer – A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sample Maximum – No sample may exceed this value.

Significant industrial user (SIU) –

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

   Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge – Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil scientist – An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5, 3, or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

Solid waste – All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

Soluble BOD_5 – Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD_5 test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD_5 test is sufficient to remove the particulate organic fraction.

State waters – Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater – That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface water body, or a constructed infiltration facility.

Technically Infeasible – 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.

Technology-based effluent limit – A permit limit based on the ability of a treatment method to reduce the pollutant.

Total coliform bacteria – A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total dissolved solids – That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) – A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

Total suspended solids (TSS) – Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset – An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water quality-based effluent limit – A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

Appendix D — Technical Calculations

Appendix E — Response to Comments