Oregon
Tina Kotek, Governor

Department of Environmental Quality
Northwest Region Portland Office/Water Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5696
FAX (503) 229-6124
TTY 711

March 12, 2024

Greg Geist
Water Environment Services
150 Beavercreek Road Ste 430
Oregon City, OR 97045-4302

Re: NPDES Permit Public Notice Period
Comments Due: April 22, 2024, 5 p.m.
File no. 89700
Permit no. 101168
EPA no. OR0031259
Facility: WES (Tri-city WRRF), 15941 S. Agnes Ave., Oregon City
Clackamas County

Enclosed please find the Public Notice drafts for your proposed National Pollutant Discharge Elimination System Permit including a copy of the public notice, permit, and fact sheet. Please be aware that Water Environment Services may provide additional comment on the permit during this time and submit to:

Trinh Hansen, Water Quality Permit Coordinator
DEQ Western Region
4026 Fairview Industrial Way Dr. SE, Salem, OR 97302
trinh.hansen@deq.oregon.gov

DEQ will hold a virtual public hearing to accept verbal comments on this draft permit at 4 p.m. on April 11, 2024. Register in advance for the hearing. After registering, you will receive a confirmation email containing information about joining the webinar.

Your comments **must be received by 5 p.m. on April 22, 2024**. DEQ gives equal weight to written and oral comments. When the public participation period has ended, DEQ will take final action on your application.

Please contact me at 503-378-5055 with any questions about permitting processing.

Sincerely,

Trinh Hansen

Trinh Hansen
Water Quality Permit Coordinator
Western Region, Salem Office

ec: Source File, Portland Office, DEQ
Mike Pinney, Portland, DEQ
ORMS

PUBLIC NOTICE

Date posted: 3/12/24

Virtual Public Hearing About Water Environment Services Tri-City Water Resources Recovery Facility's Proposed Water Quality Permit Renewal

HOW TO PROVIDE PUBLIC COMMENT

Facility name: Tri-City Water Resources Recovery Facility

Permit type: Water Quality

Hearing details: Thurs., April 11, 2024 at 4 p.m. See "How do I participate" below.

Send written comments to:

By mail: Trinh Hansen, Oregon DEQ
4026 Fairview Industrial Driver SE
Salem, OR 97302

By email: WQPermit.NWR@deq.oregon.gov

Comments due by: Monday, April 22, 2024 at 5 p.m.

The Oregon Department of Environmental Quality invites the public to provide written comments and attend a public hearing to provide verbal comments on the conditions of Clackamas County Water Environment Services Tri-City Water Resources Recovery Facility's proposed water quality permit, known officially as a National Pollutant Discharge Elimination System permit.

Summary

Subject to public review and comment, DEQ intends to renew the proposed water quality permit, which allows the Tri-City Water Resources Recovery Facility to discharge wastewater to the Willamette River.

How do I participate?

You may submit your comments by mail, fax, or email at the information above.

DEQ will hold a public hearing on this draft permit online at **4 p.m. on April 11, 2024.**

Register in advance for the hearing.

After registering, you will receive a confirmation email containing information about joining the webinar.

This is the meeting link to join the meeting: https://deq-oregon-gov.zoom.us/j/83567135855

All comments are due by 5 p.m., Monday, April 22, 2024. All submitted comments will become part of the public record.

About the facility

Clackamas County Water Environment Services, also called WES, has applied for a water quality permit renewal for the Tri-City Water Resources Recovery Facility located at 15941 S. Agnes Avenue in Oregon City. DEQ last renewed this permit on April 29, 2011.

Translation or other formats

Español | 한국어 | 繁體中文 | Русский | Tiếng Việt | العربية
800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

State of Oregon
DEQ Department of Environmental Quality

The facility treats wastewater collected by WES's sanitary sewer system from the cities of Oregon City, West Linn, Gladstone, and several unincorporated areas in Clackamas County. In addition, the facility also receives and treats transfer flows from the Kellogg Creek Water Resources Recovery Facility which is also owned and operated by WES. The wastewater originates primarily from domestic sources with a small percentage originating from commercial and light industrial sources. The treated wastewater contains several regulated pollutants such as biochemical oxygen demand, total suspended solids, temperature, bacteria, ammonia and chlorine.

The facility discharges to the Willamette River at River Mile 25.0 above the Clackamas River confluence. The Willamette River is listed as impaired (Category 4 or 5) for several pollutants according to the most recent U.S. Environmental Protection Agency-approved integrated report for Oregon. The proposed permit reflects effluent limits established through reasonable potential analysis, best available technology or the Willamette River Total Maximum Daily Load, or TMDL, for temperature, bacteria, and mercury.

The most recent DEQ inspection of the Tri-City facility was on Sept. 9, 2022. DEQ did not identify violations during this inspection. The facility has had several water quality violations in the past permit term. The issues related to these past compliance issues were the result of temporary upsets in the facility treatment processes due to heavy rain events or short-term operational issues. These compliance issues have been resolved and the facility is currently operating in full compliance.

The facility holds no other permits from DEQ.

What types of pollutants does the permit regulate?

This permit sets conditions for how the facility deals with the following pollutants: carbonaceous oxygen demand ($CBOD_5$), Total Suspended Solids (TSS), bacteria, pH, chlorine, ammonia, temperature, and $CBOD_5$ and TSS removal efficiency.

DEQ also requires the permittee to maintain a biosolids management/land application plan. The facility treats wastewater solids to produce biosolids for beneficial reuse on agricultural lands located in Sherman County. The biosolids program including the beneficial use sites are described in the biosolids management/land application plan. Although the Tri-City facility does not currently operate a recycled water program, the permit allows the facility to develop such a program. The permit requires the facility to develop an approved recycled water use plan before distributing recycled water.

Would the draft permit change the amount of pollution the facility is allowed to release?

Yes. The draft permit would increase the amount of allowable mass loads for $CBOD_5$ and TSS. This increase is the result of facility improvements which increased the amount of wastewater the facility is able to receive and treat. The permit also sets new limits for ammonia and temperature. The proposed changes are summarized below:

Pollutant	Change
$CBOD_5$ Mass Load	Increase
TSS Mass Load	Increase
Ammonia	New Limit
Temperature	New Limit

How did DEQ determine permit requirements?

DEQ evaluates types and amounts of pollutants and the water quality of the surface water or groundwater where the pollutants are proposed to be discharged and determines permit requirements to ensure the proposed discharges will meet applicable statutes, rules, regulations and effluent guidelines of Oregon and the Clean Water Act.

For this proposed permit action, DEQ evaluated WES's water quality permit renewal application, TMDLs, discharge monitoring reports, materials supporting the permittee's request for a mass load increase and facility design reports. In addition, DEQ evaluated water quality data provided by WES and from several DEQ monitoring stations located along the Willamette River. These materials may be viewed in person at the DEQ Northwest Region Offices located at: 700 NE Multnomah Street, Suite 600 in Portland.

DEQ relied solely on these documents and made no other discretionary decisions for the permit action.

How does DEQ monitor compliance with the permit requirements?

This permit will require the facility to monitor pollutants discharged using approved monitoring practices and standards. DEQ reviews the facility's discharge monitoring reports to check for compliance with permit limits.

What happens next?

Submit comments by sending an email or using mail service addressed to the permit coordinator listed in the "how to provide public comment" box above.

DEQ will consider and respond to all comments received and may modify the proposed permit based on comments. DEQ gives equal weight to written and verbal comments.

For more information

Find more information by reviewing draft permit documents attached to this notice, or contact Trinh Hansen at WQPermit.NWR@deq.oregon.gov with questions or to view documents in person at a DEQ office.

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's Civil Rights and Environmental Justice page.

State of Oregon Department of Environmental Quality

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WASTE DISCHARGE PERMIT

Oregon Department of Environmental Quality
Northwest Region – Portland Office
700 NE Multnomah St., Suite 600
Portland, OR 97232
Telephone: 503-229-5263

Issued pursuant to ORS 468B.050 and the federal Clean Water Act.

ISSUED TO:

Water Environment Services
150 Beavercreek Road
Suite 430
Oregon City, OR 97045

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	45.3704/-122.6050
	002	45.3659/-122.6036 (approx.)
Recycled Water Reuse	003	Specified in Recycled Water Use Plan (when prepared)
Biosolids	N/A	Specified in Biosolids Management/Land Application Plan

FACILITY LOCATION:

Tri-City Water Resources Recovery Facility
15941 S Agnes Avenue
Oregon City, OR 97045
County: Clackamas
EPA Permit Type: Major

RECEIVING STREAM INFORMATION:

Receiving Stream/NHD name: Willamette
USGS 12-Digit HUC: 170900070405
ORWD Administrative Basin: Willamette
NHD Reach Code & % along reach: 17090007000034-37% and 95.5%
ODEQ LLID & RM: 1227618456580-RM 25.0 and 25.3
Integrated Report Assessment Unit ID: OR_SR_170900704_88_104020

Issued in response to Application No. 957864 received October 19, 2015. This permit is issued based on the land use findings in the permit record.

Draft	Draft	Draft
Tiffany Yelton-Bram, WQ Manager Northwest Region	Issuance Date	Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to: 1) operate a wastewater collection, treatment, control and disposal system; and 2) discharge treated wastewater to waters of the state only from the authorized discharge point or points in Schedule A in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES or Water Pollution Control Facility permit, or by Oregon statute or administrative rule, any other direct or indirect discharge of pollutants to waters of the state is prohibited.

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SCHEDULE A: WASTE DISCHARGE LIMITS

1. Outfalls 001 and 002 – Combined Permit Limits

During the term of this permit, the combined discharges from Outfalls 001 and 002 must comply with the limits in the following table:

Table A1: Outfalls 001 and 002 Combined Permit Limits

Parameter	Units	Average Monthly (See note a.)	Average Weekly (See note a.)	Daily Maximum (See note a.)
$CBOD_5$ (May 1 – October 31)	mg/L	10	15	-
	lb/day	1500	2300	3000
	% removal	85	-	-
TSS (May 1 – October 31)	mg/L	10	15	-
	lb/day	1500	2300	3000
	% removal	85	-	-
$CBOD_5$ (November 1 – April 30)	mg/L	25	40	-
	lb/day	5600	8400	11,000
	% removal	85	-	-
TSS (November 1 – April 30)	mg/L	30	45	-
	lb/day	5600	8400	11,000
	% removal	85	-	-
pH	SU	Instantaneous limit between a daily minimum of 6.0 and a daily maximum of 9.0		
E. coli (See note b.)	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		
Excess Thermal Load Limit (ETLL) (June 1 – September 30) (See note c.)	Mkcal/day	Option A: 156 as a 7-day rolling average		
		Option B: (0.00611 x Q_r) + 111 as a 7-day rolling average		

Notes:

a. Maximum loadings and concentrations allowed when one or both outfalls are discharging.

b. If a single sample exceeds 406 organisms/100 mL, the permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning within 28 hours after the original sample was taken. A geometric mean of the 5 re-samples that is less than or equal to 126 *E. coli* organisms/100 mL demonstrates compliance with the limit.

c. The permittee must select either Option A or Option B as the applicable 7-day rolling average Excess Thermal Load Limit (ETLL). If the permittee selects Option B, the permittee must calculate the daily ETLL using the above equation. The permittee must then calculate the 7-day rolling average ETLL using the appropriate equation for each day the Option B limit is selected. Q_r = Daily average Willamette River flow (cfs). The permittee must use river flow data from the USGS stream flow gage number 14211720 (Willamette River at Portland) or another DEQ-approved data source. The minimum river flow value to be used is 5440 cfs, the 7Q10 low flow used in the TMDL.

2. Outfall 001 – Permit Limits

During the term of this permit, the discharge from Outfall 001 must comply with the limits in the following table:

Table A2: Outfall 001 Permit Limits

Parameter (See note a.)	Units	Average Monthly	Average Weekly	Daily Maximum
Chlorine, Total Residual (Year-round) (See note b.)	mg/L	0.02	-	0.04
Ammonia (Final) (May 1 – October 31) (See note c.)	mg/L	10.3	-	17.5

Notes:

a. Limits for listed parameter apply only to Outfall 001 when discharging within the time frames listed for each parameter. These limits do not apply to discharges through Outfall 002.

b. DEQ has established a Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. Any analysis done for Total Residual Chlorine must have a quantitation limit that is either equal to or less than 0.05 mg/L. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.

c. Limits for ammonia become effective after completion of the compliance schedule in Schedule C.

3. Regulatory Mixing Zone

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone for Outfall 001 as described below:

The regulatory mixing zone is that portion of the Willamette River which extends 300 feet downstream of the point of discharge. The zone of initial dilution shall include that portion of the Willamette River which extends 30 feet downstream of the point of discharge.

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone for Outfall 002 as described below:

The regulatory mixing zone is that portion of the Willamette River which extends 300 feet downstream and 100 feet upstream of the diffuser section of the outfall. The zone of initial dilution is that portion of the Willamette River which extends 30 feet in all directions from the diffuser section of the outfall.

4. Use of Recycled Water

The permittee is authorized to distribute recycled water if it is:

a. Treated and used according to the criteria listed in Table A3.

b. Managed in accordance with its DEQ-approved Recycled Water Use Plan unless exempt as provided in Schedule D.

c. Used in a manner and applied at a rate that does not adversely affect groundwater quality.

d. Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.

e. Irrigated using sound irrigation practices to prevent:

i. Offsite surface runoff or subsurface drainage through drainage tile;

ii. Creation of odors, fly and mosquito breeding, or other nuisance conditions; and

iii. Overloading of land with nutrients, organics, or other pollutants.

Table A3: Recycled Water Limits

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
A	Class A recycled water must be oxidized, filtered, and disinfected. Before disinfection, turbidity may not exceed: • An average of 2 NTUs within a 24-hour period. • 5 NTUs more than five percent of the time within a 24-hour period. • 10 NTUs at any time. After disinfection, total coliform may not exceed: • A median of 2.2 organisms per 100 mL based on daily sampling over the last 7 days that analyses have been completed. • 23 organisms per 100 mL in any single sample.	Class A recycled water may be used for: • Class B, Class C, Class D, and non-disinfected uses. • Irrigation for any agricultural or horticultural use. • Landscape irrigation of parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public. • Commercial car washing or fountains when the water is not intended for human consumption. • Water supply source for non-restricted recreational impoundments.
B	Class B recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 2.2 organisms per 100 mL, based on the last 7 days that analyses have been completed. • 23 total coliform organisms per 100 mL in any single sample.	Class B recycled water may be used for: • Class C, Class D, and non-disinfected uses. • Stand-alone fire suppression systems in commercial and residential building, non-residential toilet or urinal flushing, or floor drain trap priming. • Water supply source for restricted recreational impoundments.

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
C	Class C recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 23 total coliform organisms per 100 mL, based on results of the last 7 days that analyses have been completed. • 240 total coliform organisms per 100 mL in any two consecutive samples.	Class C recycled water may be used for: • Class D and non-disinfected uses. • Irrigation of processed food crops; irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil. • Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses. • Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural firefighting using aircraft, street sweeping, or sanitary sewer flushing.
D	Class D recycled water must be oxidized and disinfected. *E. coli* may not exceed: • A 30-day geometric mean of 126 organisms per 100 mL. • 406 organisms per 100 mL in any single sample.	Class D recycled water may be used for: • Non-disinfected uses. • Irrigation of firewood, ornamental nursery stock, Christmas trees, sod, or pasture for animals.
Non-disinfected	Non-disinfected recycled water must be oxidized.	Non-disinfected water may be used for: • Irrigation for growing commercial timber, fodder, fiber, or seed crops not intended for human ingestion.

5. Biosolids

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

a. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.

b. The permittee must apply biosolids at or below the agronomic rates approved by DEQ in order to minimize potential groundwater degradation.

c. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D) and follow the site-specific management conditions in DEQ-issued site authorization letter.

d. Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32 and one of the vector attraction reduction standards under 40 CFR 503.33.

e. The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations shown in the table below. The permittee may apply biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, however, the total quantity of biosolids applied cannot exceed the cumulative pollutant loading rates in the following table.

Table A4: Biosolids Limits

Pollutant (See note a.)	**Ceiling concentrations (mg/kg)**	**Pollutant concentrations (mg/kg)**	**Cumulative pollutant loading rates (kg/ha)**
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	–	–
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

Note:

a. Biosolids pollutant limits are described in 40 CFR 503.13, which uses the terms *ceiling concentrations*, *pollutant concentrations*, and *cumulative pollutant loading rates*.

6. Mercury Minimization Plan

a. By the date listed in Table B1, the permittee must submit an MMP (Mercury Minimization Plan) to DEQ for review and approval.

b. The permittee must use DEQ MMP template or other approved template for final plans and modifications unless authorized in writing by DEQ to use an alternative.

c. If DEQ comments on the MMP, the permittee must respond to DEQ's comments in writing within 30 calendar days by submitting an updated MMP.

d. After resolving comments (if any) on the plan, DEQ will post the MMP to solicit public comment for a minimum of 35 days.

e. The permittee must begin implementation of the plan within 90 calendar days after being notified in writing that the public comment period has ended and DEQ has approved the plan.

f. The MMP must include:

i. Facility name and permit number

ii. Name and signature of party responsible for developing or reviewing the plan.

iii. Plan submittal date

iv. Identification and evaluation of current and potential mercury sources, including industrial, commercial, and residential sources.

v. An implementation plan that includes specific methods for reducing mercury.

g. If DEQ determines that the MMP is not effective at reducing mercury concentrations, DEQ may require further changes to the MMP and may reopen the permit to modify the permit conditions.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Reporting Requirements

The permittee must submit to DEQ monitoring results and reports as listed below.

Table B1: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date (See note a.)	Report Form (See note b.)	Submit To:
Mercury Minimization Plan (See Schedule A6)	One time	Submit by XX/15/20XX The 15th day 24 months after permit effective date.	One electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Tables B2 and B3 Influent Monitoring and Effluent Monitoring	Monthly	By the 15th of the following month	Specified in Schedule B. Section 2 of this permit	Electronic reporting as directed by DEQ
Table B4: Copper Biotic Ligand Model and Aluminum Sampling Requirements	Monthly for 6 months starting January 2027.	By the 15th of the following month	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Tables B5 – B8: Effluent Toxics Characterization	Quarterly for three years starting with the second quarter of 2026 (See note c.)	By the 15th of the month following each quarter	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Table B9: WET Test Monitoring	Minimum of four times during permit cycle starting in second quarter of 2026 (See notes c and d.)	Submit test results with the first DMR following 30 days after receipt of test results	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Inflow and Infiltration Report (See Schedule D1)	Annually	By February 15 of the following year	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Recycled Water Annual Report (see Schedule D3) – only required if the permittee distributes recycled water under a recycled water use plan	Annually	By January 15 of the following year	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ Electronic copy to DEQ Water Reuse Program Coordinator

Reporting Requirement	Frequency	Due Date (See note a.)	Report Form (See note b.)	Submit To:
Biosolids Annual Report (see Schedule D5)	Annually	By February 19 of the following year	Electronic copy in a DEQ-approved form Class I facilities only: EPA NeT CDX web-based reporting tool	Attached via electronic reporting as directed by DEQ DEQ Biosolids Program Coordinator For Class I facilities only: Via electronic reporting as directed by DEQ
Outfall Inspection Report for Outfall 001 & Outfall 002 As-Builts (see Schedule D9)	Once per permit cycle	Submit by XX/15/2028 In the 4th year of the permit.	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Local Limits Review (see Schedule E5)	Once per permit cycle	Submit within 18 months of permit effective date.	Electronic copy and 1 hard copy in a DEQ-approved format	1 hard copy to DEQ Pretreatment Coordinator
Pretreatment Report (see Schedule E13)	Annually	March 31	1 electronic copy and 1 hard copy in a DEQ-approved format	• 1 hard copy to DEQ Pretreatment Coordinator • 1 electronic copy to Compliance Officer

Notes:

a. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date.

b. All reporting requirements are to be submitted in a DEQ-approved format, unless otherwise specified in writing.

c. Quarters are defined as: Q1: Jan – Mar; Q2: Apr – June; Q3: July – Sept; Q4: Oct – Dec. Sampling must begin in the second full quarter of 2026 until 12 sets of samples have been collected for toxics. Sampling is expected to begin in second quarter of 2026 when Outfall 002 is operational.

d. Conduct WET testing concurrent with Effluent Toxics Characterization Monitoring beginning in the second quarter of 2026 after Outfall 002 begins discharging in February 2026 until at least 4 sets of samples have been collected. WET tests and toxics characterization testing must be collected on the same day. WET tests must include samples from wet and dry season discharges.

2. Monitoring and Reporting Protocols

a. **Electronic Submissions**

The permittee must submit to DEQ the results of monitoring indicated in Schedule B in an electronic format as specified below.

i. The permittee must submit monitoring results required by this permit via DEQ-approved web-based Discharge Monitoring Report (DMR) forms to DEQ via electronic reporting. Any data used to calculate summary statistics must be submitted as a separate attachment approved by DEQ via electronic reporting.

ii. The reporting period is the calendar month.

iii. The permittee must submit monitoring data and other information required by this permit for all compliance points by the 15th day of the month following the reporting period unless specified otherwise in this permit or as specified in writing by DEQ.

b. **Test Methods**

The permittee must conduct monitoring according to test procedures in 40 CFR part 136 and 40 CFR part 503 for biosolids or other approved procedures as per Schedule F.

c. **Detection and Quantitation Limits**

i. Detection Level (DL) – The DL is defined as the minimum measured concentration of a substance that can be distinguished from method blank results with 99% confidence. The DL is derived using the procedure in 40 CFR part 136 Appendix B and evaluated for reasonableness relative to method blank concentrations to ensure results reported above the DL are not a result of routine background contamination. The DL is also known as the Method Detection Limit (MDL) or Limit of Detection (LOD).

ii. Quantitation Limits (QLs) – The QL is the minimum level, concentration or quantity of a target analyte that can be reported with a specified degree of confidence. It is the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration for the analyte. It is normally equivalent to the concentration of the lowest calibration standard adjusted for sample weights, volumes, preparation, and cleanup procedures employed. The QL as reported by a laboratory is also sometimes referred to as the Method Reporting Limit (MRL) or Limit of Quantitation (LOQ).

d. **Sufficient Sensitivity of Quantitation Limits**

i. The laboratory QLs (adjusted for any dilutions) for analyses performed to demonstrate compliance with permit limits or as part of effluent characterization, must meet at least one of the requirements below:

(A) The QL is at or below the level of the water quality criterion for the measured parameter.

(B) The QL is above the water quality criterion but the amount of the pollutant in a facility's discharge is high enough that the method detects and quantifies the level of the parameter in the discharge.

(C) The QL has the lowest sensitivity of the analytical methods procedure specified in 40 CFR 136.

(D) The QL is at or below those defined in Oregon DEQ list of quantitation limits posted online at DEQ permitting website.

e. **Quality Assurance and Quality Control**

i. Quality Assurance Plan – The permittee must develop and implement a written Quality Assurance Plan that details the facility sampling procedures, equipment calibration and maintenance, analytical methods, quality control activities and laboratory data handling and reporting. The QA/QC program must conform to the requirements of 40 CFR 136.7.

ii. If QA/QC requirements are not met for any analysis, the permittee must re-analyze the sample. If the sample cannot be re-analyzed, the permittee must re-sample and analyze at the earliest opportunity. If the permittee is unable to collect a sample that meets QA/QC requirements, then the permittee must include the result in the discharge monitoring report (DMR) along with a notation (data qualifier). In addition, the permittee must explain how the sample does not meet QA/QC requirements. The permittee may not use the result that failed the QA/QC requirements in any calculation required by the permit unless authorized in writing by DEQ.

iii. Flow measurement, field measurement, and continuous monitoring devices - The permittee must:

(A) Establish verification and calibration frequency for each device or instrument in the quality assurance plan that conforms to the frequencies recommended by the manufacturer.

(B) Verify at least once per year that flow-monitoring devices are functioning properly according to manufacturer's recommendation. Calibrate as needed according to manufacturer's recommendations.

(C) Verify at least weekly that the continuous monitoring instruments are functioning properly according to manufacturer's recommendation unless the permittee demonstrates a longer period is sufficient and such longer period is approved by DEQ in writing.

iv. The permittee must develop a receiving water sampling and analysis plan that incorporates QA/QC prior to sampling. This plan must be kept at the facility and made available to DEQ upon request.

f. **Reporting Sample Results**

i. The permittee must report the laboratory DL and QL as defined above for each analyte, with the following exceptions: pH, temperature, BOD, CBOD, TSS, Oil & Grease, hardness, alkalinity, bacteria, and nitrate-nitrite. For temperature and pH, neither the QL nor the DL need to be reported. For the other parameters listed above, the permittee is only required to report the QL and only when the result is ND.

ii. The permittee must report the same number of significant digits as the permit limit for a given parameter.

iii. Chemical Abstracts Service (CAS) Numbers. CAS numbers (where available) must be reported along with monitoring results.

iv. (For Discharge Monitoring Reports) If a sample result is above the DL but below the QL, the permittee must report the result as the DL preceded by DEQ's data code "E". For example, if the DL is 1.0 µg/l, the QL is 3.0 µg/L and the result is estimated to be between the DL and QL, the permittee must report "E1.0 µg/L" on the DMR. This requirement does not apply in the case of parameters for which the DL does not have to be reported.

v. (For Discharge Monitoring Reports) If the sample result is below the DL, the permittee must report the result as less than the specified DL. For example, if the DL is 1.0 µg/L and the result is ND, report "<1.0" on the discharge monitoring report (DMR). This requirement does not apply in the case of parameters for which the DL does not have to be reported.

g. **Calculating and Reporting Mass Loads**

The permittee must calculate mass loads on each day the parameter is monitored using the following equation:

Example calculation: Flow (in MGD) X Concentration (in mg/L) X 8.34 = Pounds per day

i. Mass load limits all have two significant figures unless otherwise noted.

ii. When concentration data are below the DL: To calculate the mass load from this result, use the DL. Report the mass load as less than the calculated mass load. For example, if flow is 2 MGD and the reported sample result is <1.0 µg/L, report "<0.017 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day).

iii. When concentration data are above the DL, but below the QL: To calculate the mass load from this result, use the DL. Report the mass load as the calculated mass load preceded by "e". For example, if flow is 2 MGD, the DL is 1.0 µg/L, the QL is 5 µg/L and the reported sample result is e3.5 µg/L, report "e0.17 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day).

3. Monitoring and Reporting Requirements

a. The permittee must monitor influent at the headworks and report results in accordance with the table below:

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
$CBOD_5$ (80082)	mg/L	Year-round	3/week	24-hour composite	Monthly Average
TSS (00530)	mg/L	Year-round	3/week	24-hour composite	Monthly Average
pH (00400)	SU	Year-round	Daily	Grab	1. Monthly Maximum 2. Monthly Minimum

Notes:

a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements.

b. When submitting DMRs electronically, the permittee must submit all data used to determine summary statistics in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

b. The permittee must monitor effluent after disinfection and prior to discharge from Outfalls 001 and 002. The permittee must report results in accordance with Table B1 and the table below:

Table B3: Effluent Monitoring Requirements for Outfalls 001 and 002

Item or Parameter	**Units**	**Time Period** (See note a.)	**Minimum Frequency**	**Sample Type/ Required Action** (See note b.)	**Report Statistic** (See note c.)
Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
Duration of Discharge (50037) (Outfall 001 Only after February 1, 2026) (See note d.)	Hours per day	Nov 1 – April 30	Daily	Measurement	Monthly Maximum
$CBOD_5$ (80082) (See note e.)	mg/L	Year-round	3/week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
$CBOD_5$ (80082) (See note e.)	lb/day	Year-round	3/week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
$CBOD_5$ Percent Removal (81383) (See notes e and f.)	%	Year-round	Monthly	Calculation based on monthly average $CBOD_5$ concentration values	Monthly Average

Item or Parameter	Units	Time Period (See note a.)	Minimum Frequency	Sample Type/ Required Action (See note b.)	Report Statistic (See note c.)
TSS (00530) (See note e.)	mg/L	Year-round	3/week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
TSS (00530) (See note e.)	lb/day	Year-round	3/week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
TSS Percent Removal (81011) (See notes e and f.)	%	Year-round	Monthly	Calculation based on monthly average TSS concentration values	Monthly Average
pH (00400)	SU	Year-round	Daily	Grab	1. Daily Maximum 2. Daily Minimum
Chlorine, Total Residual (50060)	mg/L	Year-round	Daily	Grab	1. Daily Maximum 2. Monthly Average
Temperature (00010)	ºC	Year round	Daily	Continuous (See note g.)	1. Daily Maximum 2. Monthly Average 3. 7-day Rolling Average of Daily Maximum
Excess Thermal Load (51405)	Mkcal/day	June 7 - Sept. 30	Daily	Calculation (See note h.)	Maximum 7-day Rolling Average (See note h.)
Excess Thermal Load Limit	Mkcal/day	June 7 - Sept. 30	Daily	Calculation (See note i.)	Maximum 7-day Rolling Average

Item or Parameter	Units	Time Period (See note a.)	Minimum Frequency	Sample Type/ Required Action (See note b.)	Report Statistic (See note c.)
E. coli (51040)	#/100 mL	Year-round	3/week	Grab	1. Daily Maximum 2. Monthly Geometric Mean
Total Ammonia (as N) (00610) (Outfall 001 Only)	mg/L	May 1-Oct 31 (when discharging)	2/week	24-hour composite	Monthly Maximum
Total Ammonia (as N) (00610) (Outfall 001 Only)	mg/L	Nov 1-Apr 30 (when discharging)	Monthly	24-hour composite	Monthly Maximum
Total Ammonia (as N) (00610) (Outfall 002 Only)	mg/L	Year-round	Monthly	24-hour composite	Monthly Maximum
UV dose	mJ/cm^2	Year-round	Daily	Daily Average Calculation	Maintain records on-site
Dissolved Oxygen (00300)	mg/L	Third year of permit cycle [2027]	Quarterly	24-hour composite (See note j.)	Quarterly Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Third year of permit cycle [2027]	Quarterly	Grab	Quarterly Maximum
Nitrite Plus Nitrate Nitrogen (NO_2+NO_3) (00630)	mg/L	Third year of permit cycle [2027]	Quarterly	Grab	Quarterly Maximum
Oil and Grease (00556)	mg/L	Third year of permit cycle [2027]	Quarterly	Grab	Quarterly Maximum
Total Phosphorus (00665)	mg/L	Third year of permit cycle [2027]	Quarterly	Grab	Quarterly Maximum
Total Dissolved Solids (70295)	mg/L	Third year of permit cycle [2027]	Quarterly	Grab	Quarterly Maximum

Notes:

a. Monitoring is required when one or both outfalls are discharging. When both outfalls are discharging, the permittee must report the duration of discharge from Outfall 001.

b. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 12 PM and 5 PM until continuous monitoring equipment is redeployed.

c. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

d. Report duration of discharges through Outfall 001 only after Outfall 002 becomes operational and becomes the primary outfall for the facility.

e. Once Outfall 002 becomes operational, Outfall 001 would be used only during peak flow condition or in an emergency. When both outfalls are used, effluent monitoring at the Tri-City WRRF would be indicative of the combined discharge from both outfalls. Flow weighted averaging is not necessary to define effluent quality and compliance with permit limits. As specified in Table B3, WES will report the duration that Outfall 001 is used during these conditions.

f. Percent Removal must be calculated on a monthly basis using the following formula:

$$Percent\ Removal = \frac{[Influent\ Concentration] - [Effluent\ Concentration]}{[Influent\ Concentration]} \times 100$$

Where:

Influent Concentration = Corresponding monthly average influent concentration based on the analytical results of the reporting period.

Effluent Concentration = Corresponding monthly average effluent concentration based on the analytical results of the reporting period.

g. The permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.

h. The daily excess thermal load (ETL) discharged must be calculated using the daily maximum effluent temperature and the corresponding daily average effluent flow using the formula below. The 7-day rolling average is then calculated from the daily ETLs.

The daily ETL is calculated as follows: ETL= 3.785 * Qe *ΔT

Where:

ETL = Excess Thermal Load (Mkcal/day)

Q_e = Daily Average Effluent flow (MGD)

ΔT = Daily Maximum Effluent temperature (°C) minus ambient criterion (20°C)

i. If the permittee selects Excess Thermal Load Limit (ETLL) Option B from Table A1, then the permittee must calculate the ETLL (Mkcal/day) each day the permittee uses this option. The permittee must use the equation and procedure noted in Table A1.

j. For Dissolved Oxygen, the permittee must collect and analyze at least four discrete grab samples over the operating day with samples collected no less than one hour apart. The analytical results for all samples in a day must be averaged for reporting purposes.

4. Copper Biotic Ligand Model and Aluminum Parameters

The permittee must monitor the Willamette River upstream of Outfall 002 and the effluent for Outfall 002 for copper biotic ligand model and aluminum parameters per Table B4 below. Samples must be collected monthly for a period of 6 months beginning in January 2027. Effluent and ambient monitoring must be conducted concurrently.

Ambient samples must be taken upstream of Outfall 002 in a location outside of the influence of the effluent using appropriate sampling techniques and procedures. It is the responsibility of the permittee to ensure safe and practical sampling techniques and procedures are used. DEQ recommends that these procedures be included in a sample and analysis plan that can be reviewed by DEQ when necessary or by request.

Table B4: Copper Biotic Ligand Model and Aluminum Sampling Requirements

Parameter (See note a.)	**CAS** (See note b.)	**Units**	**Sampling Frequency** (See note c.)	**Sampling Location** (See note d.)
Copper, Total and Dissolved	7440508	µg/L	1/month	Upstream and Effluent
Aluminum, Total	7429905	µg/L	1/month	Upstream and Effluent
Hardness (as $CaCO_3$)	N/A	mg/L	1/month	Upstream and Effluent
Dissolved Organic Carbon	N/A	mg/L	1/month	Upstream and Effluent
pH	N/A	S.U.	1/month	Upstream and Effluent
Temperature	N/A	°C	1/month	Upstream and Effluent
Calcium, dissolved	7440702	mg/L	1/month	Upstream and Effluent
Magnesium, dissolved	7439954	mg/L	1/month	Upstream and Effluent
Sodium, dissolved	7440235	mg/L	1/month	Upstream and Effluent
Potassium, dissolved	7440097	mg/L	1/month	Upstream and Effluent
Sulfate, dissolved	14808798	mg/L	1/month	Upstream and Effluent
Chloride, dissolved	16887006	mg/L	1/month	Upstream and Effluent
Alkalinity, dissolved	N/A	mg/L	1/month	Upstream and Effluent

Notes:

a. All effluent samples must be 24-hr composite samples except grab samples must be collected for pH, alkalinity, and temperature. All receiving stream samples must be grab samples.

b. Chemical Abstract Service

c. Samples must be collected monthly for a period of 6 months beginning in January 2027.

d. Samples must be collected upstream (outside the influence of the effluent) and from the effluent on the same day.

5. Effluent Toxics Characterization Monitoring (Tier 1 Monitoring)

The permittee must collect and analyze effluent samples for the parameters listed in the tables below. The permittee must collect effluent samples after disinfection and prior to discharge on the dates in Table B1.

Samples must be 24-hour composites, except as noted in the table below for volatile organic compounds. Sample results must be reported in µg/L unless otherwise specified and submitted to DEQ using approved electronic format.

Table B5: Metals and Hardness

Pollutant (See note a.)	**CAS** (See note b.)	**Pollutant** (See note a.)	**CAS** (See note b.)
Antimony, total	7440360	Nickel, dissolved	7440020
Arsenic, total inorganic	7440382	Selenium, dissolved	7782492
Arsenic, total inorganic dissolved	7440382	Silver, dissolved	7440224
Beryllium, total	7440417	Thallium, total	7440280
Cadmium, dissolved	7440439	Zinc, dissolved	7440666
Chromium III, total and dissolved (See note c.)	16065831	Hardness (Total as CaCO3)	
Chromium VI, dissolved	18540299	Iron, total	7439896
Lead, dissolved	7439921		

Notes:

a. The term "total" used in reference to metals is intended to cover all EPA-accepted standard digestion methods and is considered to be equivalent to the term "total recoverable."

b. Chemical Abstract Service

c. There is not analytical method to test for Chromium III, results are obtained by subtracting Chromium VI from Chromium.

Table B6: Volatile Organic Compounds

Pollutant (See note a.)	CAS	Pollutant (See note a.)	CAS
Acrolein (See note b.)	107028	1,2-trans-dichloroethylene (See note e.)	156605
Acrylonitrile (See note b.)	107131	1,1-dichloroethylene (See note f.)	75354
Benzene	71432	1,2-dichloropropane	78875
Bromoform	75252	1,3-dichloropropylene (See note g.)	542756
Carbon Tetrachloride	56235	Ethylbenzene	100414
Chlorobenzene	108907	Methyl Bromide (See note h.)	74839
Chlorodibromomethane (See note c.)	124481	Methyl Chloride (See note i.)	74873
Chloroethane	75003	Methylene Chloride	75092
2-Chloroethylvinyl Ether (See note b.)	110758	1,1,2,2-tetrachloroethane	79345
Chloroform	67663	Tetrachloroethylene (See note j.)	127184
Dichlorobromomethane (See note d.)	75274	Toluene	108883
1,2-Dichlorobenzene (o)	95501	1,1,1-trichloroethane	71556
1,3-Dichlorobenzene (m)	541731	1,1,2-trichloroethane	79005
1,4-Dichlorobenzene (p)	106467	Trichloroethylene (See note k.)	79016
1,1-dichloroethane	75343	Vinyl Chloride	75014
1,2-dichloroethane	107062		

Notes:

a. VOC's must be collected as a grab sample according to 40 CFR 122. Twenty-four hour composite samples are not required for these analytes.

b. Acrolein, Acrylonitrile, and 2-Chloroethylvinyl ether must be tested from an unacidified sample.

c. Chlorodibromomethane is identified as Dibromochloromethane in 40 CFR § 136.3, Table 1C.

d. Dichlorobromomethane is identified as Bromodichloromethane in 40 CFR § 136.3, Table 1C.

e. 1,2-trans-dichloroethylene is identified as Trans-1,2-dichloroethene in 40 CFR § 136.3, Table 1C.

f. 1,1-dichloroethylene is identified as 1,1-dichloroethene in 40 CFR§ 136.3, Table 1C.

g. 1,3-dichloropropylene consists of both cis-1,3-dichloropropene and Trans-1,3-dichloropropene. Both must be reported individually.

h. Methyl bromide is identified as Bromomethane in 40 CFR § 136.3, Table 1C.

i. Methyl chloride is identified as Chloromethane in 40 CFR 136.§ 3, Table 1C.

j. Tetrachloroethylene is identified as Tetrachloroethene in 40 CFR § 136.3, Table 1C.

k. Trichloroethylene is identified as Trichloroethene in 40 CFR § 136.3, Table 1C.

Table B7: Acid-Extractable Compounds

Pollutant	CAS	Pollutant	CAS
p-chloro-m-cresol (See note a.)	59507	2-nitrophenol	88755
2-chlorophenol	95578	4-nitrophenol	100027
2,4-dichlorophenol	120832	Pentachlorophenol	87865
2,4-dimethylphenol	105679	Phenol	108952
4,6-dinitro-o-cresol (See note b.)	534521	2,4,5-trichlorophenol (See note c.)	95954
2,4-dinitrophenol	51285	2,4,6-trichlorophenol	88062

Notes:
a. p-chloro-m-cresol is identified as 4-Chloro-3-methylphenol in 40 CFR 136.3, Table 1C.
b. 4,6-dinitro-o-cresol is identified as 2-Methyl-4,6-dinitrophenol in 40 CFR 136.3, Table 1C.
c. To monitor for 2,4,5-trichlorophenol, use EPA Method 625.1.

Table B8: Base-Neutral Compounds

Pollutant	CAS	Pollutant	CAS
Acenaphthene	83329	Dimethyl phthalate	131113
Acenaphthylene	208968	2,4-dinitrotoluene	121142
Anthracene	120127	2,6-dinitrotoluene	606202
Benzidine	92875	1,2-diphenylhydrazine (See note c.)	122667
Benzo(a)anthracene	56553	Fluoranthene	206440
Benzo(a)pyrene	50328	Fluorene	86737
3,4-benzofluoranthene (See note a.)	205992	Hexachlorobenzene	118741
Benzo(ghi)perylene	191242	Hexachlorobutadiene	87683
Benzo(k)fluoranthene	207089	Hexachlorocyclopentadiene	77474
Bis(2-chloroethoxy)methane	111911	Hexachloroethane	67721
Bis(2-chloroethyl)ether	111444	Indeno(1,2,3-cd)pyrene	193395
Bis(2-chloroisopropyl)ether (See note b.)	108601	Isophorone	78591
Bis (2-ethylhexyl)phthalate	117817	Napthalene	91203
4-bromophenyl phenyl ether	101553	Nitrobenzene	98953
Butylbenzyl phthalate	85687	N-nitrosodi-n-propylamine	621647
2-chloronaphthalene	91587	N-nitrosodimethylamine	62759
4-chlorophenyl phenyl ether	7005723	N-nitrosodiphenylamine	86306
Chrysene	218019	Pentachlorobenzene (See note d.)	608935
Di-n-butyl phthalate	84742	Phenanthrene	85018
Di-n-octyl phthalate	117840	Pyrene	129000
Dibenzo(a,h)anthracene	53703	1,2,4-trichlorobenzene	120821
3,3-Dichlorobenzidine	91941	Tetrachlorobenzene,1,2,4,5 (See note d.)	95943
Diethyl phthalate	84662		

Notes:

a. 3,4-benzofluoranthene is listed as Benzo(b)fluoranthene in 40 CFR part 136.

b. Also known as Chloroisopropyl Ether bis 2, and 2,2'-oxybis(2-chloro-propane). Bis(2-chloroisopropyl)ether is listed as 2,2'-oxybis(1-chloropropane) in 40 CFR 136.

c. 1,2-diphenylhydrazine is difficult to analyze given its rapid decomposition rate in water. Azobenzene (a decomposition product of 1,2-diphenylhydrazine) must be analyzed as an estimate of this chemical.

d. To analyze for Pentachlorobenzene and Tetrachlorobenzene 1,2,4,5, use EPA 625.1.

6. Additional Receiving Stream and Effluent Characterization Monitoring (Tier 2 Monitoring)

If additional ambient or effluent monitoring is needed, DEQ will notify the permittee through a request for supplemental information/data. The need for additional monitoring will be determined after DEQ's evaluation of the effluent toxics characterization (Tier 1 monitoring in Schedule B5) results.

7. Whole Effluent Toxicity (WET) Requirements

The permittee must monitor final effluent for whole effluent toxicity as described in the table below using the testing protocols specified in Schedule D, Whole Effluent Toxicity Testing for Freshwater. Permittee is to initiate sampling for whole effluent toxicity beginning in the second quarter of 2026 after Outfall 002 begins discharging in early 2026. Samples must be collected at the location specified below.

Table B9: WET Test Monitoring

Parameter	Sample Type/Location	Minimum Frequency	Report
Acute toxicity	For acute toxicity: 24-hour composite samples taken after disinfection and before outfall discharge.	See Table B1	Report must include test results and backup information such as bench sheets sufficient to demonstrate compliance with permit requirements. Report must include a statement certifying that the results do or do not show toxicity.
Chronic toxicity	For chronic toxicity: 24-hr composite, taken after disinfection and before outfall discharge.		

8. Biosolids Monitoring Requirements

The permittee must monitor biosolids land applied or produced for sale or distribution as listed below. The samples must be representative of the quality and quantity of biosolids generated and undergo the same treatment process used to prepare the biosolids. Results must be reported as required in the biosolids management plan described in Schedule D.

Table B10: Biosolids Monitoring

Item or Parameter	Minimum Frequency	Sample Type
Nutrient and conventional parameters (% dry weight unless otherwise specified): Total Kjeldahl Nitrogen (TKN) Nitrate-Nitrogen (NO_3-N) Total Ammoniacal Nitrogen (NH_3-N) Total Phosphorus (P) Potassium (K) pH (S.U.) Total Solids Volatile Solids	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B11.	As described in DEQ-approved Biosolids Management Plan

Item or Parameter	Minimum Frequency	Sample Type
Pollutants: As, Cd, Cu, Hg, Pb, Mo, Ni, Se, Zn, mg/kg dry weight	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B11.	As described in DEQ-approved Biosolids Management Plan
Pathogen reduction	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B11.	As described in DEQ-approved Biosolids Management Plan
Vector attraction reduction	As described in DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B11.	As described in DEQ-approved Biosolids Management Plan
Record of biosolids land application: date, quantity, location.	Each event	Record the date, quantity, and location of biosolids land applied on site location map or equivalent electronic system, such as GIS.

Table B11: Biosolids Minimum Monitoring Frequency

Quantity of biosolids land applied or produced for sale or distribution per calendar year		Minimum Sampling Frequency
(dry metric tons)	(dry U.S. tons)	
Less than 290	Less than 320	Once per year
290 to 1,500	320 to 1,653	Once per quarter (4x/year)
1500 to 15,000	1,653 to 16,535	Once per 60 days (6x/year)
15,000 or more	16,535 or more	Once per month (12x/year)

9. Recycled Water Monitoring Requirements: Outfall 003

Upon commencement of the distribution of recycled water beyond that used for facility irrigation, the permittee must monitor recycled water for Outfall 003 as listed below. The samples must be representative of the recycled water delivered for beneficial reuse at a location identified in the Recycled Water Use Plan. Monitoring results must be reported in accordance with Table B1.

Table B12: Recycled Water Monitoring

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	Report (See note a.)
Total flow (50050)	MGD	Year-round	Daily	Measure	Monthly Total
pH (00400)	SU	Year-round	2/Week	Grab	1. Monthly Minimum 2. Monthly Maximum
Turbidity (00070)	NTU	Year-round	Hourly (Class A)	Measure	1. Daily Average 2. Daily Maximum
Turbidity, time above limit (61736)	%	Year-round	Daily (Class A)	Calculate	Daily Maximum
Total coliform (74056)	#/100 mL	Year-round	Daily (Class A) 3/Week (Class B) Weekly (Class C)	Grab (See note b.)	1. 7-Day Median 2. Maximum Single Sample
E. coli (51040)	#/100 mL	Year-round	Weekly (Class D)	Grab	1. Monthly Geometric Mean 2. Maximum Single Sample
Total Kjeldahl, Nitrogen (00625)	mg/L	Year-round	Quarterly	Grab	Value
Nitrite + Nitrate (NO_2+NO_3) (00630)	mg/L	Year-round	Quarterly	Grab	Value
Total Ammonia [as N] (00610)	mg/L	Year-round	Quarterly	Grab	Value
Total Phosphorus (00665)	mg/L	Year-round	Quarterly	Grab	Value
Nitrogen Loading Rate (See notes c and d.)	lb/acre-year	Year-round	Annually	Calculate	Value for each field

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action	Report (See note a.)

Notes:

a. All data collected should be included in the Recycled Water Annual Report in addition to monthly and quarterly reporting as indicated.

b. Calculations of the median total coliform levels in Classes A–C are based on the results of the last seven days that analyses have been completed.

c. Nitrogen Loading Rate (lb/acre-year) = Total Gallons Applied (million gallons [MG]/year) x 8.34 lbs./gal x Recycle Water Total-Nitrogen (mg/L) divided by Size of Each Field (acres).

d. Recycle Water Total-Nitrogen = Total Kjeldahl Nitrogen (mg/L) + Nitrite-Nitrogen (mg/L) + Nitrate-Nitrogen (mg/L)

10. Pretreatment Monitoring

The permittee must monitor influent, effluent, and biosolids according to the table below and report the results as specified in Schedules E-8.a and 14.

Table B13: Pretreatment Monitoring

Pollutant (See notes a and b.)	CAS (See note c.)	Minimum Frequency	Sample Type	Report
Arsenic	7440382	Quarterly, on 3 consecutive days between Monday and Friday, inclusive.	24-hour composite for influent and effluent samples (See note d.)	Daily values
Cadmium	7440439			
Chromium	7440473			
Copper	7440508			
Lead	7439921			
Mercury	7439976			
Molybdenum	7439987			
Nickel	7440020			
Selenium	7782492			
Silver	7440224			
Zinc	7440666			
Cyanide (Total and Free)	57125			
Biosolids (See notes d and e.)	N/A	Quarterly	Grab	Daily Values

Notes:

a. The permittee must analyze all metals for total concentration unless otherwise specified by DEQ in writing.

b. Cyanide (total and free) must be collected as a grab sample according to 40 CFR 122. Twenty-four composite samples are not required for this analyte.

c. Chemical Abstract Service.

d. Permittee must sample effluent after disinfection and dechlorination, and prior to discharge to receiving waters. Biosolids sampling must occur after dewatering and be representative of the facility's biosolids that are delivered to customers.

e. Biosolids sampling and analysis must be performed per 40 CFR part 503.

SCHEDULE C: COMPLIANCE SCHEDULE

1. Compliance Schedule to Meet Final Effluent Limits

The permittee must comply with the following schedule:

Table C1: Compliance Schedule for Ammonia

Compliance Date:	Requirement:
Optimization Study	
By XX/XX/2024 Within 1 month of permit effective date	The permittee must submit to DEQ a draft Optimization Study that outlines feasible operation changes that can be made to the facility's current treatment processes to minimize effluent ammonia concentrations during dry season discharges (May 1 through October 31) through Outfall 001.
By XX/XX/2024 Within 3 months of permit effective date	The permittee must submit a revised Optimization Study that addresses DEQ comments provided on the draft Optimization Study. If DEQ does not comment on the draft Optimization Study within 30 days of DEQ receipt, submittal of a revised Optimization Study is not necessary, and the draft Optimization Study is deemed approved.
By XX/XX/2024 Within 4 months of permit effective date	The permittee must implement the operational changes and strategies identified in the approved Optimization Study until proposed Outfall 002 is operational. This is expected to include the 2024 and 2025 dry seasons (May 1 through October 31).
By XX/XX/2025 Within 16 months of permit effective date	The permittee must submit an Optimization Progress Report describing the operational changes that were implemented for the 2024 dry season discharges as part of the approved Optimization Study. The Progress Report must also document how effective the operational changes were at reducing effluent ammonia concentrations during the 2024 dry season and provide monitoring results. The Progress Report must also describe any further operational changes that may be employed during the 2025 dry season to reduce ammonia concentrations based upon the results of the 2024 dry season monitoring and lessons learned.
By 1/15/2026 Within 20 months of permit effective date	The permittee must submit a final Optimization Progress Report describing the operational changes that were implemented for the 2025 dry season discharges as part of the 2024 Optimization Progress Report or approved Optimization Study. The Progress Report must document how effective the operational changes were at reducing effluent ammonia concentrations during the 2025 dry season and provide monitoring results.
Outfall 002 Construction	
By XX/XX/2024 Within 2 months of permit effective date	The permittee must submit to DEQ the final construction plans, specifications, and Engineer's report (if appropriate) for the proposed construction of Outfall 002. Permittee must revise construction documents in accordance with DEQ comments within 60 days of receiving DEQ comments.
By XX/XX/2024 Within 4 months of permit effective date	The permittee must begin construction of Outfall 002 and its supporting infrastructure in order to be operational by the end of 2025.

By XX/XX/XX25 Within 16 months of permit effective date	The permittee must submit to DEQ a Construction Progress Report summarizing the progress made in the construction of Outfall 002 and achieving operational status by the end of 2025.
By October 31, 2025	The permittee must submit to DEQ a brief letter report documenting that in-water construction of Outfall 002 is complete. The letter must provide a brief summary schedule regarding the start-up and testing of the outfall discharges and the expected date of full operation for the outfall.
February 1, 2026	The permittee must initiate full operation of Outfall 002 and provide notification to DEQ.
February 1, 2026	The permittee must achieve compliance with ammonia limits listed in Table A2 for all future dry season discharges through Outfall 001.

2. Responsibility to Meet Compliance Dates

No later than 14 days following each compliance date listed in the table above, the permittee must notify DEQ in writing of its compliance or noncompliance with the requirements. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and a discussion of the likelihood of meeting the next scheduled requirement(s).

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

The permittee must submit to DEQ an annual inflow and infiltration report on a DEQ-approved form as directed in Table B1. The report must include the following:

a. An assessment of the facility's I/I issues based on a comparison of summer and winter flows to the plant.

b. Details of activities performed in the previous year to identify and reduce inflow and infiltration.

c. Details of activities planned for the following year to identify and reduce inflow and infiltration.

d. A summary of sanitary sewer overflows that occurred during the previous year. This should include the following: date of the SSO, location, estimated volume, cause, follow-up actions, and if performed, the results of receiving stream monitoring.

2. Emergency Response and Public Notification Plan

The permittee must develop an Emergency Response and Public Notification Plan ("plan"), or ensure the facility's existing plan is current and accurate, per Schedule F, Section B, and Condition 8 within 6 months of permit effective date. The permittee must update the plan annually to ensure all information contained in the plan, including telephone and email contact information for applicable public agencies, is current and accurate. An updated copy of the plan must be kept on file at the facility for DEQ review. The latest plan revision date must be listed on the plan cover along with the reviewer's initials or signature.

3. Recycled Water Use Plan

In order to distribute recycled water, the permittee must develop and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. The permittee must submit this plan or any significant modifications to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to distribution of recycled water. The permittee is prohibited from distributing recycled water prior to receipt of written approval of its Recycled Water Use Plan from DEQ. The permittee must keep the plan updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plan are enforceable requirements under this permit. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications, changes to utilization dates or changes in use within the recycled water class.

a. Recycled Water Annual Report – If the permittee distributes recycled water under a recycled water use plan, the permittee must submit a recycled water annual report by the date specified in Table B1: Reporting Requirements and Due Dates. The permittee must use DEQ-approved recycled water annual report form. This report must include the monitoring data and analytical laboratory reports for the previous year's monitoring required under Schedule B.

4. Exempt Wastewater Reuse at the Treatment System

Recycled water used for landscape irrigation within the property boundary or in-plant processes at the wastewater treatment system is exempt from the requirements of OAR 340-055 if all of the following conditions are met:

a. The recycled water is an oxidized and disinfected wastewater.

b. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system.

c. Spray and/or drift from the use does not migrate off the site.

d. Public access to the site is restricted.

5. Biosolids Management Plan

The permittee must maintain a Biosolids Management Plan and Land Application Plan meeting the requirements in OAR 340-050-0031. The permittee must submit any significant modification of these plans to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to implementing any significant changes to the biosolids program. The permittee must keep the plans updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plans are enforceable requirements under this permit.

a. Annual Report

The permittee must submit a Biosolids Annual Report by February 19 of each year documenting biosolids management activities of the previous calendar year as described in OAR 340-050-0035(6). The permittee must use DEQ-approved Biosolids Annual report form. This report must include the monitoring data and analytical laboratory reports for the previous year's monitoring specified under Schedule B.

b. Site Authorization

The permittee must obtain written authorization from DEQ for each land application site prior to its use. Conditions in site authorizations are enforceable requirements under this permit. The permittee is prohibited from land applying biosolids to a DEQ-approved site except in accordance with the site authorization, while this permit is effective and with the written approval of the property owner. DEQ may modify or revoke a site authorization following the procedures for a permit modification described in OAR 340-045-0055.

c. Public Participation

i. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications or changes to utilization dates.

ii. No DEQ-initiated public notice is required for continued use of sites identified in DEQ-approved Biosolids Management Plan.

iii. For new sites that fail to meet the site selection criteria in the Biosolids Management Plan or that are deemed by DEQ to be sensitive with respect to residential housing, runoff potential, or threat to groundwater, DEQ will provide an opportunity for public comment as directed by OAR 340-050-0030(2).

iv. For all other new sites, the permittee must provide for public participation following procedures in its DEQ-approved land application plan.

6. Wastewater Solids Transfers

a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must satisfy the requirements of the receiving facility. The permittee must report the name of the receiving facility and the quantity of material transferred in the wastewater solids annual report identified in Schedule B.

b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

7. Whole Effluent Toxicity Testing for Freshwater

a. The permittee must conduct whole effluent toxicity (WET) tests as specified here and in Schedule B of this permit.

b. Acute Toxicity Testing - Organisms and Protocols

i. The permittee must conduct 48-hour static renewal tests with *Ceriodaphnia dubia* (water flea) and 96-hour static renewal tests with *Pimephales promelas* (fathead minnow).

ii. All test methods and procedures must be in accordance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002*, or the most recent version of this publication if such edition is available. If the permittee wants to deviate from the bioassay procedures outlined in this method, the permittee must submit a written request to DEQ for review and approval prior to use.

iii. Treatments to the final effluent samples (for example, dechlorination, ammonia removal), except those included as part of the methodology, may not be performed by the laboratory unless approved by DEQ in writing prior to analysis.

iv. WET acute testing must be conducted using a dilution series based upon the effluent percentage at the ZID (EPZID) in the following manner: 100%; 53.1%; 6.25; 3.1% and a control (0% effluent).

v. An acute WET test shows toxicity if there is a statistically significant difference in survival between the control and 6.25% effluent reported as the NOEC < 6.25% effluent.

c. Chronic Toxicity Testing - Organisms and Protocols

i. The permittee must conduct tests with *Ceriodaphnia dubia* (water flea) for reproduction and survival test endpoint, *Pimephales promelas* (fathead minnow) for growth and survival test endpoint, and *Raphidocelis subcapitata* (green alga formerly known as *Selanastrum capricornutum*) for growth test endpoint.

ii. All test methods and procedures must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002*, or the most recent version of this publication if such edition is available. If the permittee wants to deviate from the bioassay procedures outlined in the applicable method, the permittee must submit a written request to DEQ for review and approval prior to use.

iii. Treatments to the final effluent samples (for example, dechlorination, ammonia removal), except those included as part of the methodology, may not be performed by the laboratory unless approved by DEQ in writing prior to analysis.

iv. WET chronic testing must be conducted using a dilution series based upon the effluent percentage at the RMZ (EPRMZ) in the following manner: 100% effluent; 50.6%; 1.2%; 0.6%; and 0.3% and a control (0% effluent).

v. A chronic WET test shows toxicity if the IC25 (25% inhibition concentration) occurs at dilutions equal to or less than the dilution that is known to occur at the edge of the mixing zone, that is, IC25 $\leq$ 1.2%.

d. Dual End-Point Tests

i. WET tests may be dual end-point tests in which both acute and chronic end-points can be determined from the results of a single chronic test. The acute end-point will be based on 48-hours for the *Ceriodaphnia dubia* (water flea) and 96-hours for the *Pimephales promelas* (fathead minnow).

ii. All test methods and procedures must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002*, or the most recent version of this publication if such edition is available. If the permittee wants to deviate from the bioassay procedures outlined in this method, the permittee must submit a written request to DEQ for review and approval prior to use.

iii. Tests run as dual end-point tests must be conducted on a control (0%) and the following dilution series: 0.6%, 1.2%, 6.25%, 53.1%, and 100% effluent.

iv. Toxicity determinations for dual end-point tests must correspond to the acute and chronic tests described in conditions 7.b.v and 7.c.v above.

e. Sampling Requirements

At the time of WET sampling, the permittee must collect and analyze effluent samples for the toxics sampling outlined in Schedule B, Condition 5 of this permit.

f. Evaluation of Causes and Exceedances

i. If any test exhibits toxicity as described in conditions 7.b.v. and 7.c.v. above, the permittee must conduct another toxicity test using the same species and DEQ-approved methodology within two weeks unless an extension is granted by DEQ in writing.

ii. If two consecutive WET test results indicate acute or chronic toxicity as described in conditions 7.b.v. and 7.c.v. above, the permittee must immediately notify DEQ of the results. DEQ will work with the permittee to determine the appropriate course of action to evaluate and address the toxicity.

g. Quality Assurance and Reporting

i. Quality assurance criteria, statistical analyses, and data reporting for the WET tests must be in accordance with the EPA documents stated in this condition.

ii. For each test, the permittee must provide a bioassay laboratory report according to the EPA method documents referenced in this Schedule. The report must include all QA/QC documentation, statistical analysis for each test performed, standard reference toxicant test (SRT) conducted on each species required for the toxicity tests and completed Chain of Custody forms for the samples including time of sample collection and receipt. The permittee must submit reports to DEQ within 60 days of test completion.

iii. The report must include all endpoints measured in the test: NOEC (No Observed Effects Concentration), LOEC (Lowest Observed Effects Concentration), and IC_{25} (chronic effect 25% inhibition concentration).

iv. The permittee must make available to DEQ upon request the written standard operating procedures they, or the laboratory performing the WET tests, use for all toxicity tests required by DEQ.

h. Reopener

DEQ may reopen and modify this permit to include new limits, monitoring requirements, and/or conditions as determined by DEQ to be appropriate, and in accordance with procedures outlined in OAR Chapter 340, Division 45 if:

i. WET testing data indicate acute and/or chronic toxicity.

ii. The facility undergoes any process changes.

iii. Discharge monitoring data indicate a change in the reasonable potential to cause or contribute to an exceedance of a water quality standard.

i. Circumstances not addressed in this section, or that require deviation from the requirements of this section, must be approved in writing by DEQ before changes are implemented.

8. Operator Certification

a. Definitions

i. “Supervise” means to have full and active responsibility for the daily on site technical operation of a wastewater treatment system or wastewater collection system.

ii. “Supervisor” or “designated operator”, means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.

iii. “Shift Supervisor” means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.

iv. "System" includes both the collection system and the treatment systems.

b. The permittee must comply with OAR Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel" and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified in the DEQ Supervisory Wastewater Operator Status Report. DEQ may revise the permittee's classification in writing at any time to reflect changes in the collection or treatment system. This reclassification is not considered a permit modification and may be made after the permit expiration date provided the permit has been administratively extended by DEQ. If a facility is re-classified, a certified letter will be mailed to the system owner from DEQ Operator Certification Program. Current system classifications are publicized on DEQ Supervisory Wastewater Operator Status Report found on DEQ Wastewater Operator Certification Homepage.

c. The permittee must have its system supervised full-time by one or more operators who hold a valid certificate for the type of wastewater treatment or wastewater collection system, and at a grade equal to or greater than the wastewater system's classification.

d. The permittee's wastewater system may be without the designated supervisor for up to 30 consecutive days if another person supervises the system, who is certified at no more than one grade lower than the classification of the wastewater system. The permittee must delegate authority to this operator to supervise the operation of the system.

When compliance with this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

e. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor must be certified at no more than one grade lower than the system classification.

f. The permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.

g. The permittee must notify DEQ in writing of the name of the system supervisor by completing and submitting the Supervisory Wastewater System Operator Designation Form. The most recent version of this form may be found on DEQ Wastewater Operator Certification homepage *NOTE: This form is different from the Delegated Authority form. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of the operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 700 NE Multnomah St, Suite 600, Portland, OR 97232-4100. This address may be updated in writing by DEQ during the term of this permit.

9. Outfall Inspection for Outfall 001 and Outfall 002 As-Builts

By the date shown in Table B1, the permittee must inspect Outfall 001 including the submerged portion of the outfall line and diffuser to document its integrity and to determine whether it is functioning as designed. The inspection must determine whether diffuser ports (if constructed) are intact, clear, and fully functional. The inspection must verify the latitude and longitude of the diffuser. The permittee must submit a written report to DEQ regarding the results of the outfall inspection by the date in Table B1. The report must include a description of the outfall as originally constructed, the condition of the current outfall and identify any repairs needed to return the outfall to satisfactory condition.

Additionally, by the date shown in Table B1, the permittee must submit As-Built drawings of Outfall 002, which documents any changes made to the design of the outfall during construction.

SCHEDULE E: PRETREATMENT ACTIVITIES

1. Program Administration

The permittee must conduct and enforce its Pretreatment Program, as approved by DEQ, and comply with the most current General Pretreatment Regulations (40 CFR part 403). The permittee must secure and maintain sufficient resources and qualified personnel to carry out the program implementation procedures described in this permit as required by 40 CFR 403.8(f)(3).

2. Legal Authorities

The permittee must adopt all legal authority necessary to fully implement its approved pretreatment program and to comply with all applicable state and federal pretreatment regulations. The permittee must also establish, where necessary, contracts or agreements with contributing jurisdictions to ensure compliance with pretreatment requirements by industrial users within these jurisdictions. These contracts or agreements must identify the agency responsible for all implementation and enforcement activities to be performed in the contributing jurisdictions. Regardless of jurisdictional situation, the permittee is responsible for ensuring that all aspects of the pretreatment program are fully implemented and enforced.

3. Industrial User Survey

The permittee must regularly update its inventory of industrial users at a frequency and diligence adequate to ensure proper identification of industrial users subject to the POTW pretreatment program, but no less than once per calendar year. The permittee must notify these industrial users of applicable pretreatment standards in accordance with 40 CFR 403.8(f)(2)(iii). Survey update procedures must ensure that Industrial Users potentially subject to pretreatment are identified and issued a control mechanism, if required, on a timely basis but no later than 6 months after receipt of information indicating the IU is subject to pretreatment.

4. National Pretreatment Standards

The permittee must enforce categorical pretreatment standards promulgated pursuant to section 307(b) and (c) of the federal Clean Water Act, prohibited discharge standards as set forth in 40 CFR 403.5(a) and (b), or local limits developed by the permittee in accordance with 40 CFR 403.5(c), whichever are more stringent, or are applicable to any non-domestic source regulated under section 307(b), (c), or (d) of the Act.

5. Local Limits

The permittee, in consultation with DEQ, must perform a technical evaluation of the local limits and update these local limits if necessary. The permittee must submit those findings as a report to DEQ within 18 months after the permit effective date unless DEQ authorizes or requires, in writing, an alternate time frame. Locally derived discharge limits must be defined as pretreatment standards under section 307(d) of the Act and must conform to 40 CFR 403.5(c) and 403.8(f)(4). Technically based local limits must be developed in accordance with the procedures established by DEQ and the EPA's Local Limits Guidance.

6. Control Mechanisms

The permittee must issue an individual control mechanism to all Significant Industrial Users except where the permittee may, at its discretion, issue a general control mechanism as defined by 40 CFR 403.8(f)(1)(iii); or certification in lieu of a control mechanism for Non-Significant Categorical Industrial

Users (NSCIUs) as defined by 40 CFR 403.3(v)(2), and Non-Discharging Categorical Industrial Users (NDCIUs). All individual and general control mechanisms must be enforceable and contain, at a minimum, the requirements identified in 40 CFR 403.8(f)(1)(iii)(B); and, may contain equivalent concentration and mass based effluent limits where appropriate under 40 CFR 403.6(c)(5) and (6). Unless a more stringent definition has been adopted by the permittee, the definition of Significant Industrial User must be as stated in 40 CFR 403.3(v).

7. Hauled Waste Control Plan

The permittee may accept hauled wastes at discharge points designated by the POTW after receiving written DEQ approval of a Hauled Waste Control Plan. Hauled wastes may include wastewater solids from another wastewater treatment facility, septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewaters and commercial/industrial wastewaters.

8. Pretreatment Monitoring

a. **POTW's Treatment Plant Monitoring**

POTW Monitoring requirements (Schedule B - Table B13): The permittee must monitor its influent, effluent, and biosolids for pollutants expected from non-domestic sources. Influent, effluent, and sludge samples must be tested for the priority pollutant metals on quarterly basis throughout the term of this permit as specified in Schedule B of the permit.

The permittee must sample POTW influent and effluent on a day when industrial discharges are occurring at normal to maximum levels. All reported test data for metals must represent the total amount of the constituent present. The permittee must include a summary of monitoring results in the Annual Pretreatment Report. The monitoring data collected in this manner must be used for re-evaluation of the POTWs local limits when sufficient data becomes available.

b. **Industrial User Sampling and Inspection**

The permittee must randomly sample and analyze the effluent from Industrial Users at a frequency commensurate with the character, consistency, and volume of the discharge and conduct surveillance activities in order to identify, independent of information supplied by Industrial Users, occasional and continuing noncompliance with Pretreatment Standards. The permittee must conduct a complete facility inspection; and sample the effluent from each Significant Industrial User at least once a year at a minimum, unless otherwise specified below:

i. Where the permittee has authorized the Industrial User subject to a categorical Pretreatment Standard to forego sampling of a pollutant regulated by a categorical Pretreatment Standard in accordance with 40 CFR 403.12(e)(2), the permittee must sample for the waived pollutant(s) at least once during the term of the Categorical Industrial User's control mechanism. In the event that the permittee subsequently determines that a waived pollutant is present or is expected to be present in the Industrial User's wastewater based on changes that occur in the User's operations, the permittee must immediately begin at least annual effluent monitoring of the User's Discharge and inspection.

ii. Where the permittee has determined that an Industrial User meets the criteria for classification as a Non-Significant Categorical Industrial User, the permittee must evaluate, at least once per year, whether an Industrial User continues to meet the criteria in 40 CFR 403.3(v)(2).

iii. In the case of Industrial Users subject to reduced reporting requirements under 40 CFR 403.12(e)(3), the permittee must randomly sample and analyze the effluent from Industrial Users and conduct inspections at least once every two years. If the Industrial User no longer meets the conditions for reduced reporting in 40 CFR 403.12(e)(3), the permittee must immediately begin sampling and inspecting the Industrial User at least once a year.

c. **Industrial User Self Monitoring and Other Reports**

The permittee must receive and analyze self-monitoring and other reports submitted by industrial users as required by 40 CFR 403.8(f)(2)(iv) and 403.12(b),(d),(e),(g) and (h). Significant Industrial User reports must include Best Management Practice (BMP) compliance information per 40 CFR 403.12(b), (e), (h), where appropriate.

d. **Industrial User Monitoring in Lieu of Self-Monitoring**

Where the permittee elects to conduct monitoring of an industrial user in lieu of requiring self-monitoring, the permittee must gather all information which would otherwise have been submitted by the user. The permittee must also perform the sampling and analyses in accordance with the protocols established for the user and must follow the requirements in 40 CFR 403.12(g)(2) if repeat sampling is required as the result of any sampling violation(s).

e. **Sample Collection and Analysis**

Sample collection and analysis, and the gathering of other compliance data, must be performed with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions. Unless specified otherwise by the Director in writing, all sampling and analyses must be performed in accordance with 40 CFR part 136 or 40 CFR part 503 for biosolids analytes.

9. Slug Control Plans

The permittee must evaluate whether each Significant Industrial User needs a slug control plan or other action to control slug discharges. Industrial Users identified as significant after October 14, 2005, must be evaluated within 1 year of being designated a Significant Industrial User. A slug discharge is any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge that has a reasonable potential to cause interference or pass through or in any other way violate the permittee's regulations, local limits, or conditions of this permit. Per 40 CFR 403:8(f)(2)(vi), the permittee is required to track and document any slug discharge by Significant Industrial Users and make it available to DEQ upon request. The permittee must require Significant Industrial Users to immediately notify the permittee of any changes at its facility affecting potential for a slug discharge. If the permittee determines that a slug control plan is needed, the requirements to control slug discharges must be incorporated into the Significant Industrial User's control mechanism and the slug plan must contain, at a minimum, the following elements:

a. Description of discharge practices, including non-routine batch discharges;

b. Description of stored chemicals;

c. Procedures for immediately notifying the permittee of slug discharges, including any discharge that would violate a prohibition under 40 CFR 403.5(b) with procedures for follow-up written notification within five days; and

d. If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling, and transfer of materials, loading, and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

10. Enforcement

The permittee must identify all violations of the industrial user's permit or local ordinance. The permittee must investigate all such instances of industrial user noncompliance and take all necessary steps to return users to compliance. The permittee's enforcement actions must follow its approved legal authorities (for example, ordinances) and Enforcement Response Plan developed in accordance with 40 CFR 403.8(f)(5).

11. Public Notice of Significant Noncompliance

The permittee must publish annual notification in a newspaper(s) of general circulation or by other means that provides meaningful public notice within the jurisdiction(s) served by the permittee of industrial users which, at any time during the previous 12 months, were in significant noncompliance with applicable pretreatment requirements. For the purposes of this requirement, an industrial user is in significant noncompliance if it meets one or more of the criteria listed in 40 CFR 403.8(f)(2)(viii).

12. Data and Information Management

The permittee must develop and maintain a data management system designed to track the status of the industrial user inventory, discharge characteristics, and compliance. In accordance with 40 CFR 403.12(o), the permittee must retain all records relating to pretreatment program activities for a minimum of 3 years and make such records available to DEQ and EPA upon request. The permittee must also provide public access to information considered effluent data under 40 CFR part 2.

13. Annual Pretreatment Program Report

The permittee must submit a complete report to DEQ on or before March 31 that describes the pretreatment program activities during the previous calendar year pursuant to 40 CFR 403.12(i) . For guidance on the content and format of this report, contact DEQ's pretreatment coordinator. Reports submitted to DEQ regarding pretreatment must be signed by a principal executive officer, ranking elected official or other duly authorized employee if such employee is responsible for overall operation of the POTW.

14. Pretreatment Program Modifications

The permittee must submit in writing to DEQ a statement of the basis for any proposed modification of its approved program and a description of the proposed modification in accordance with 40 CFR 403.18. No substantial program modifications may be implemented by the delegated program prior to receiving written authorization from DEQ.

SCHEDULE F: NPDES GENERAL CONDITIONS

DOMESTIC FACILITIES
October 1, 2015 Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to $25,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to $25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to $250,000, imprisonment for not more than 10 years, or both.

The Clean Water Act provides that any person who violates permit condition, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation.

The Clean Water Act provides that any person who negligently violates any condition, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both.

In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both.

In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

Any person who knowingly violates section any permit condition, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both.

In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both.

An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

Any person may be assessed an administrative penalty by the Administrator for violating any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act.

Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000.

Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
e. New information or regulations.
f. Modification of compliance schedules.
g. Requirements of permit reopener conditions
h. Correction of technical mistakes made in determining permit conditions.
i. Determination that the permitted activity endangers human health or the environment.
j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
k. For communities with combined sewer overflows (CSOs):
   (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.

(2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
(3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants
The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements
The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References
Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees
The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance
The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense
For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions
   (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.
   (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.
   (1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:
      i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and
      iii. The permittee submitted notices and requests as required under General Condition B3.c.
   (2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).

c. Notice and request for bypass.
   (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.
   (2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
   (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
   (2) The permitted facility was at the time being properly operated;
   (3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
   (4) The permittee complied with any remedial measures required under General Condition A3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definition. "Overflow" means any spill, release or diversion of sewage including:
   (1) An overflow that results in a discharge to waters of the United States; and
   (2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the United States.

b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
e. Provide emergency operations; and
f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than $10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

a. The date, exact place, time, and methods of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.
   (1) Oral Reporting within 24 hours.
      i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
         (a) The location of the overflow;
         (b) The receiving water (if there is one);
         (c) An estimate of the volume of the overflow;
         (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
         (e) The estimated date and time when the overflow began and stopped or will be stopped.
      ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
         (a) The OERS incident number (if applicable); and
         (b) A brief description of the event.
   (2) Written reporting postmarked within 5 days.
      i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
         (a) The OERS incident number (if applicable);
         (b) The cause or suspected cause of the overflow;
         (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
         (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
         (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

      DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.
   (1) The following instances of noncompliance must be reported:
      i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
      ii. Any upset that exceeds any effluent limitation in this permit;
      iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
      iv. Any noncompliance that may endanger human health or the environment.
   (2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).
   (3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
      i. A description of the noncompliance and its cause;
      ii. The period of noncompliance, including exact dates and times;
      iii. The estimated time noncompliance is expected to continue if it has not been corrected;
      iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
      v. Public notification steps taken, pursuant to General Condition B**7.**
   (4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance
The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports must contain:
a. A description of the noncompliance and its cause;
b. The period of noncompliance, including exact dates and times;
c. The estimated time noncompliance is expected to continue if it has not been corrected; and
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information
The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements
All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information
Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed $125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be

punished by a federal civil penalty not to exceed $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;
b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

E1. *BOD* or BOD_5 means five-day biochemical oxygen demand.
E2. *CBOD* or $CBOD_5$ means five-day carbonaceous biochemical oxygen demand.
E3. *TSS* means total suspended solids.
E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
E5. *FC* means fecal coliform bacteria.
E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
E8. *mg/l* means milligrams per liter.
E9. *µg/l* means microgram per liter.
E10. *kg* means kilograms.
E11. m^3/d means cubic meters per day.
E12. *MGD* means million gallons per day.
E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
E18. *Quarter* means January through March, April through June, July through September, or October through December.
E19. *Month* means calendar month.
E20. *Week* means a calendar week of Sunday through Saturday.
E21. *POTW* means a publicly-owned treatment works.

State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Renewal Fact Sheet
Water Environment Services
Tri-City Water Resources Recovery Facility

Permittee	Water Environment Services 150 Beavercreek Road; Suite 430 Oregon City, OR 97045
Existing Permit Information	File Number: 89700 Permit Number: 101168 EPA Reference Number: OR0031259 Category: Domestic Major Expiration Date: April 15, 2016
Permittee Contact	Ron Wierenga Deputy Director 503-742-4581 150 Beavercreek Road Oregon City, Oregon 97045
Receiving Water Information	Receiving Stream/NHD Name: Willamette River USGS 12-Digit HUC: 170900070405 NHD Reach Code & % along reach: 17090007000034 - 37% (Outfall 001) and 95.5% (Outfall 002) QDEQ LLID & RM: 1227618456580 – RM 25.0 (Outfall 001) and 25.3 (Outfall 002) Integrated Report Assessment Unit ID: OR_SR_170900704_88_104020
Proposed Action	Permit Renewal Application Number: 957864 Date Application Received: October 19, 2015
Permit Writer	Mark W. Hynson 503-229-5295 Date Prepared: March 7, 2024

NPDES Permit Renewal Fact Sheet
Water Environment Services

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NPDES Permit Renewal Fact Sheet
Water Environment Services (WES)

1. Introduction

The Department of Environmental Quality proposes to renew the National Pollutant Discharge Elimination System wastewater permit for Clackamas County's Water Environment Services (WES) Tri-City Water Resources Recovery Facility (WRRF) located at 15941 S Agnes Avenue, Oregon City, Oregon. This permit allows and regulates the discharge of treated municipal wastewater to the main stem of the Willamette River, located in the Lower Willamette Sub-Basin of the Willamette Basin.

As required by Oregon Administrative Rule 340-045-0035, this fact sheet describes the basis and methodology used in developing the permit. The permit is divided into several sections:

Schedule A – Waste Discharge Limits
Schedule B – Minimum Monitoring and Reporting Requirements
Schedule C – Compliance Conditions and Schedules
Schedule D – Special Conditions
Schedule E – Pretreatment Activities
Schedule F – General Conditions

The existing permit was last renewed in 2011 and expired on April 15, 2016. DEQ issued Modification No. 1 for the permit on June 18, 2014. Modification No. 1 was initiated by DEQ to remove conflicts that existed between the facility permit and the facility's approved Biosolids Management Plan, and to make the permit more consistent with the DEQ's standard permit language. Permit Modification No. 2 was initiated by the permittee and issued on April 14, 2016 to allow the permittee to conduct a pilot test at the Tri-City WRRF for the use of peracetic acid (PAA) as a disinfectant.

The proposed permit contains a number of substantive changes from the 2011 permit as a result of the adoption of new water quality standards, regulations, and Total Maximum Daily Load for the Willamette River. A summary of the major changes is presented below:

- Schedule A:
  - Change of $CBOD_5$ and TSS mass load limits to reflect changes in the basin standards and facility improvements.
  - Addition of an excess thermal load limit based upon the Willamette River Temperature TMDL and water quality standards.
  - Addition of a summer Ammonia limit for Outfall 001.
  - Addition of ceiling concentration limits for biosolids.
  - Addition of a requirement to develop and implement a Mercury Minimization Plan.

- Schedule B:
    - Updated monitoring and reporting to current format, standards, and frequency.
    - Expanded effluent characterization monitoring for toxics, mercury, copper and aluminum.
- Schedule C:
    - Addition of compliance schedule to meet new ammonia limit.
- Schedule D:

Addition of requirements for:

    - Inflow and Infiltration reporting.
    - Recycled water use plan development and reporting.
    - Wastewater solids transfer conditions.
- Schedule E (Pretreatment Activities)
    - Updated to current permit requirements related to pretreatment program implementation.
- Schedule F (General Conditions)
    - Updated to latest version of the NPDES General Conditions.

2. Facility Description

2.1 Wastewater Facility

Water Environment Services owns and operates the Tri-City WRRF located at 15941 S Agnes Avenue in the City of Oregon City, Oregon. The facility began operations in 1986 and is an activated sludge secondary treatment plant that treats the wastewater from the Cities of Oregon City, West Linn, Gladstone and several unincorporated areas of Clackamas County. An aerial view of the facility is presented in Figure 2-1.

In addition to the wastewater received by the Tri-City WRRF from its own service area, the facility also receives transfer flows from the Kellogg Creek WRRF which is also owned and operated by WES. The Kellogg Creek WRRF has a treatment capacity cap of 25 million gallons per day (MGD) and excess flows are diverted to the Tri-City WRRF through the Intertie 2 and Clackamas Pump Stations. Population growth and wastewater flows in the Kellogg Creek service area are projected to increase through 2040 which will require the Tri-City WRRF to accept more transfer flows in the future.[1]

[1] *Sanitary Sewer System Master Plan for Water Environment Services.* Clackamas County Water Environment Services with Jacobs, Murray Smith and Century West Engineers. Final – January 2019.

The Tri-City WRRF currently has a maximum monthly dry weather design flow capacity of 17.1 million gallons per day (MGD) and a peak flow treatment capacity of 68.6 MGD. The plant facilities include an influent pump station, headworks with screening, grit removal and primary treatment. Influent flow is split between two secondary treatment systems: a conventional activated sludge (CAS) secondary treatment system with chlorine disinfection and a parallel Membrane Bio-Reactor (MBR) system with ultra-violet (UV) disinfection. The MBR system became active in early 2011 and increased the maximum monthly dry weather design flow capacity for the facility from 13.1 to 17.1 MGD. The two treatment systems function independently. Effluent from the two treatments is mixed before discharge to the receiving stream.

The facility produces class B biosolids which are then transported to DEQ authorized land application sites for beneficial use or are placed in temporary storage at the Tri-City WRRF.

With the exception of the MBR treatment system, there have been no other major treatment process or facility changes since the last permit renewal. Since commissioning the MBR facility, the Tri-City WRRF has provided the following capital improvements:

- Added a redundant lime storage tank,
- Improved grit removal process,
- Rehabilitated its primary sedimentation tank,
- Replaced an aeration blower,
- Improved chlorine contact chamber,
- Improved W3 water conveyance system, and
- Changed its disinfection chemical to sodium hypochlorite from chlorine.

Larger capital improvement projects that stand out include anaerobic digestion and solids handling improvements, a third anaerobic digester, flare replacement, and security improvements.

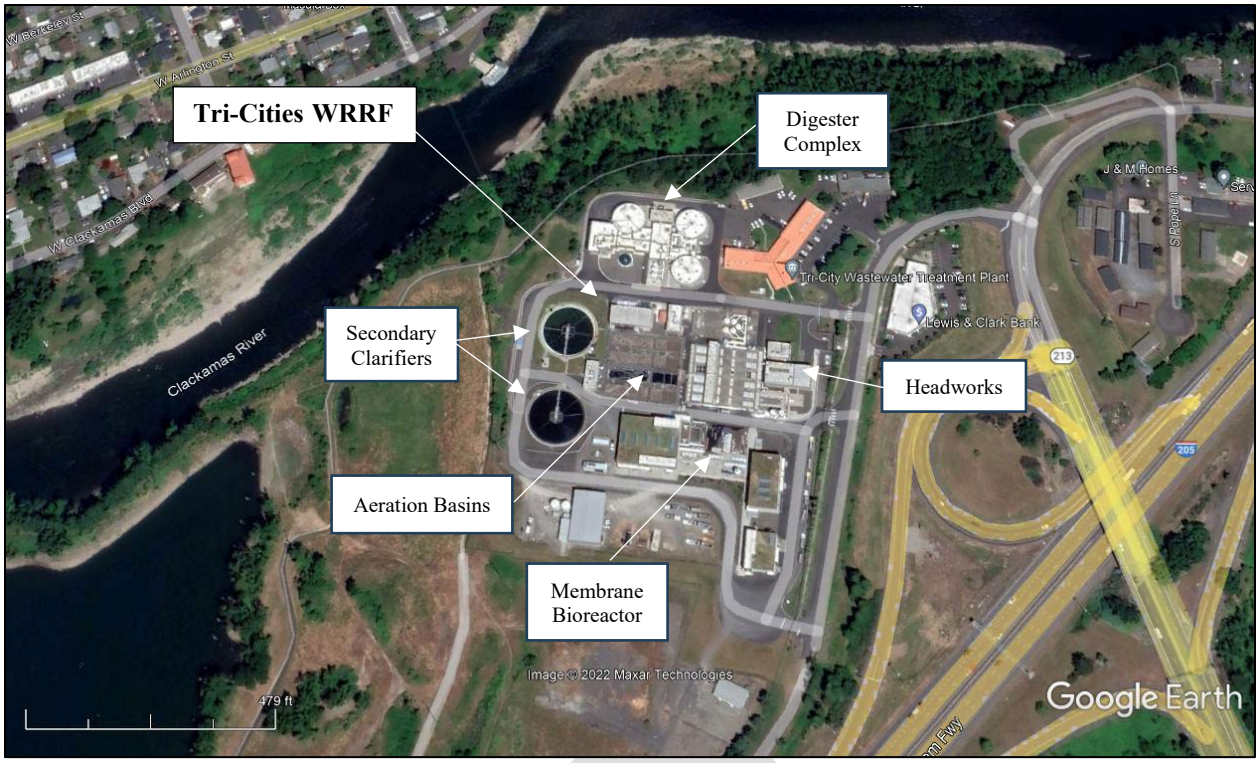


Image Source: Google Earth, 2023

Figure 2-1: Facility Location

Conventional Activated Sludge (CAS) Treatment System

The CAS treatment process provides secondary treatment to plant flows up to approximately 25 MGD. The CAS system is comprised of a series of unit processes that each perform a specific function to aid in the treatment of the wastewater. These unit processes are described below.

Influent Pump Station and Headworks

Wastewater that enters the facility by gravity is pumped through the influent pump station, which contains five variable frequency speed pumps with a total capacity of 68.4 MGD. The headworks provide influent screening and grit removal. Effluent screening is achieved with a series of bar screens designed to prevent rags, plastic and medium-to-large debris from entering the treatment process. The bar screens are cleaned both mechanically and manually. The screened material is conveyed to a hopper where it is collected for disposal to a solid waste landfill. The screening headworks building is completely enclosed and ducted to odor control equipment.

Once the influent passes the bar screens it is directed through Parshall flumes which measure the volume of influent flow. From the Parshall flumes, the influent is directed through aerated grit basins that remove inert particulate matter from the screened raw sewage. Grit is removed in two aerated grit chambers where it settles to the bottom of the grit chambers. The settled grit is pumped as slurry to hydrocyclone de-gritters and classifiers for separation from the water. The grit is then washed in the grit washers and removed for disposal to a solid waste landfill.

A septage receiving station is also located in the headworks screening building. Septage haulers discharge septage from off-site septic systems and chemical toilets into a receiving vault equipped with a bar rack. Septage is contained in a 10,000-gallon septage storage tank located next to the grit chambers building complex. Septage tank waste enters the treatment system after the influent pump station prior to screening in the screening approach channel.

Primary Clarifiers
After screenings and grit removal, the influent flows are directed to six primary clarifiers which allow solids in the wastewater either to settle or to float. Settled solids, also called "sludge", is collected in sludge collection hoppers, which is then pumped to the anaerobic digesters for further processing. The scum that floats on the top is collected with a skimmer and removed to the anaerobic digesters as well.

Secondary Treatment
The activated sludge process provides a secondary treatment capacity of 25 MGD. The activated sludge process removes suspended and dissolved organics that were not removed in the primary treatment process by creating an environment for micro-organisms to metabolize the food in the wastewater. The secondary treatment system consists of four aeration basins with fine pore diffusers and an anoxic zone at the front end of each basin.

The aeration basins create an environment for biological treatment of the wastewater. The result is sludge that settles out for separation and removal in two secondary clarifiers. Floating scum from the secondary clarifiers is collected with a skimmer and removed to the screening approach channel.

Disinfection
The disinfection process for the CAS system uses liquid hypochlorite, followed by two parallel contact basins and de-chlorination using sodium bisulfite at the "mixing box." The liquid hypochlorite dosage is controlled by the effluent flow meter prior to the chlorine contact basin.

Biosolids
Solids generated in the primary and secondary clarifiers are processed and then stabilized in three anerobic digesters. The initial processes thicken the solids. The primary solids are thickened in deep hoppers in the primary clarifiers and the secondary solids are thickened using gravity belt thickeners prior to pumping to the digesters. Thickening reduces the volume of the sludge added to the digesters.

Following digestion, the biosolids are dewatered in centrifuges to a 20-23 percent solids content. The biosolids are then held in a live bottom storage hopper before being loaded into haul truck which transport the biosolids to DEQ authorized land application sites for beneficial use or are placed in temporary storage at the Tri-City WRRF.

Membrane Bio-Reactor (MBR) Treatment System:
The MBR treatment facility is designed to provide treatment of the flows entering the treatment plant in conjunction with the CAS system. All flow from the MBR system is combined with the CAS system prior to discharge. This combined flow is required to meet the discharge criteria of the NPDES permit. In addition, the MBR treatment system treats to a level that will allow the distribution of reclaimed water.

The MBR treatment system includes the Intermediate Pump Station, Fine Screenings Building, Aeration Basins, Blower Building, Membrane Filtration Building and Ultraviolet (UV) Disinfection Building. Primary effluent pumped to the Fine Screens Building is then conveyed by gravity to the aeration basin Mixed liquor from the aeration basin is then transferred into the submerged MBR basins. Waste Activated Sludge (WAS) from the MBR system is conveyed to a gravity belt thickener for thickening and the solids are processed as described above. Treated effluent from the MBR is conveyed to the UV disinfection area before discharge.

Treated effluent from both the CAS and MBR treatment processes is conveyed through 1.1 miles of 42-inch diameter piping to the Willamette River and is discharged into the river at River Mile (RM) 25.5 through Outfall 001. Additional details regarding this outfall are presented below.

A schematic flow chart of the facility is presented in Appendix A.

2.2 Outfalls

The WRRF currently discharges into the Willamette River at RM 25.0[2] through Outfall 001 (Figure 2-2). This outfall is located approximately 800 feet upstream of the Willamette River's confluence with the Clackamas River. Outfall 001 is comprised of a multi-port diffuser with three (3) 42-inch diameter discharge ports that discharge below the river surface during dry weather (low river flow) conditions at a depth of approximately seven feet. The diffuser axis is aligned parallel to the river flow, with the diffuser ports discharging at 45 degrees relative to the direction of the river flow. A duckbill valve was placed on the upstream port in 2012. This single outfall port is used during the low flow summer season with all three ports used during the winter season. The addition of this duckbill valve provides additional dilution in the summer season.

[2] This is based upon DEQ's Geographic Information System (GIS) database and is more accurate than the previous RM of 25.5 which was based upon United States Geological Survey (USGS) mapping. The proposed permit will use the DEQ GIS river mile data to be consistent with river mile data being used in other DEQ compliance programs.

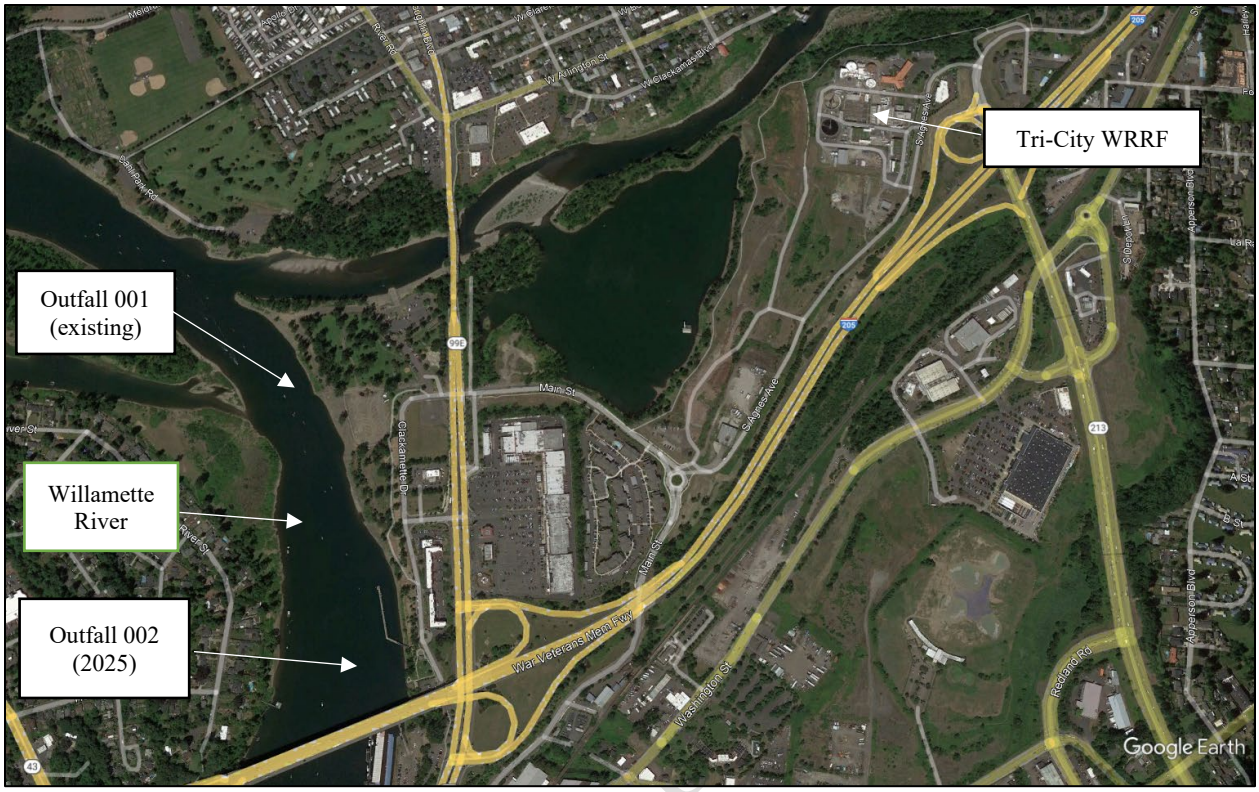


Image Source: Google Earth, 2023

Figure 2-2: Approximate Outfall Locations

During the proposed permit term, the permittee will be constructing a new outfall to address the expected hydraulic and dilution limitations with existing Outfall 001 as future discharges from the WRRF increase. The new outfall is designated as Outfall 002 in the proposed permit and will be constructed approximately 1,700 feet upstream of existing Outfall 001 (at RM 25.3) (Figure 2-2). Construction of Outfall 002 is expected during the 2025 in-water season (July-October) and is expected to be actively discharging by early 2026.

Outfall 002 is intended to provide enhanced dilution performance and will have a discharge design flow of 106.2 MGD at a Willamette River 25-year flood stage elevation. The combined hydraulic capacity from both proposed Outfall 002 and existing Outfall 001 will be 167.7 MGD.[3]

Once discharges through proposed Outfall 002 begin, it will become the WRRF's primary point of continuous discharge. As such, Outfall 001 will only discharge infrequently during peak wet weather flow events or when maintenance activities on Outfall 002 preclude discharges through that outfall.

[3] *Predesign Engineering Report for Tri-City Water Resource Recovery Facility Willamette River Outfall Project.* Executive Summary. Jacobs. October 5, 2021

Although the permittee is not currently producing recycled water for external use outside the limits of the WRRF, the proposed permit provides WES with the option for producing recycled water through an internal outfall when a recycled water use plan is developed and approved by DEQ. In the existing 2011 version of the permit, the internal outfall designated for the off-site distribution of recycled water is identified as Outfalls 097-099. The proposed permit changes the designation of the recycled water outfall as Outfall 003. This is an internal outfall within the treatment system downstream of UV disinfection and prior to effluent pumping. The facility will not be allowed to distribute recycled water to off-site properties until a recycled water use plan is prepared in accordance with Schedule D of the permit. When recycled water is produced by the facility, the permittee will be required to monitor the recycled water per Schedule B of the permit. The permittee is allowed to use recycled water for irrigation purposes within the facility boundary.

A summary listing of the outfalls included in the proposed permit is included in Table 2-1. The WRRF has a maximum monthly dry weather design flow of 17.1 MGD.

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long	Design Flow (mgd)	Existing Flow (mgd)
001	Treated Municipal Wastewater	45.3704/-122.6050	75 (See note a.)	6.9 (See note b.)
002 (See note c.)	Treated Municipal Wastewater	45.3659/-122.6036 (See note d.)	106.2 (See note e.)	N/A (See notes c. and f.)
003	Recycled Water	To be determined (See note g.)	N/A	N/A

Notes:

a. Discharge capacity under 25-year river flood stage. Dry and wet weather flows will be discharged through Outfall 001 until Outfall 002 becomes operational.

b. Existing average monthly dry weather flow from 2016-2020 facility effluent data.

c. Outfall 002 to be constructed and operational by early 2026.

d. Approximate location of proposed outfall based upon pre-design construction drawing. Final location to be determined following construction of outfall.

e. Proposed peak wet weather design flow for Outfall 002.

f. Outfall 002 will become primary outfall for facility following construction and testing. Average monthly dry weather flows are initially expected to be similar to the existing dry weather discharges through Outfall 001.

g. Location of Outfall 003 for recycled water distribution to be determined by permittee during preparation of recycled water use plan.

2.3 Permit Modifications and Compliance History

2.3.1 Permit Modifications

The 2011 permit has been modified twice since it was issued on April 29, 2011. The following summarizes the two modifications:

- Permit Modification No. 1 was initiated by DEQ and issued on June 18, 2014 to update permit language on biosolids limits, biosolids monitoring and remove conflicting language between the permit and permittee's approved Biosolids Management Plan. In general, the permit was updated to be more consistent with DEQ's standard permit language that was being used at that time.

- Permit Modification No. 2 was initiated by the permittee and issued on April 14, 2016 to allow the permittee to conduct a pilot test at the Tri-City WRRF for the use of peracetic acid (PAA) as a disinfectant. The PAA was being considered as a replacement disinfectant for the gaseous chlorine disinfection system that was being employed at the facility at that time. The permit was modified to incorporate new effluent limits and monitoring requirements for PAA during the pilot testing. In addition, the permit modification also removed weekly monitoring requirements for nutrients. This frequency of nutrient monitoring was no longer considered necessary for effluent characterization. The permittee terminated the PAA pilot test in December 2016 due to unreliable results of the PAA pilot test and returned to using chlorine as a disinfectant.

2.3.2 Compliance History

Since the permit was last renewed in 2011, several violations and compliance issues have occurred that required enforcement action by DEQ. From 2011 through 2015, the majority of these enforcement actions were related to temporary exceedances of permit limits due to operational issues at the facility. Many of these exceedances were symptomatic of the MBR treatment system becoming operational in 2011 and periodic high rainfall events which placed large temporary demands on the facility. Once the initial operational issues with the MBR system were addressed, the frequency and duration of exceedances in permit limits were reduced.

In recent years, violations and compliance issues are largely related to temporary imbalances in the biological processes of the facility due to heavy rain events, short-term operational issues with disinfection and inadequate evaluation of industrial users in the facility's pre-treatment program. In addition, there were several violations related to sanitary sewer overflows due to temporary operational issues with pump stations within the sanitary collection system. All of these violations resulted in the issuance of Warning Letters to the permittee and were symptomatic of temporary and infrequent events. The permittee employed corrective actions in response to many of the Warning Letters and no additional enforcement action was necessary.

The following Mutual Agreement and Order was effective during the existing permit term:

Mutual Agreement and Orders

- A Mutual Agreement and Order (MAO No. WQ/M-NWR-11-046) was signed by WES and DEQ on April 29, 2011. This was the same date that the existing 2011 permit was issued by DEQ. This MAO established interim limits for ammonia until the permittee completed facility improvements to address ammonia toxicity. In addition, the permittee had to complete the facility improvements by December 1, 2012 or the final ammonia limits in Schedule A of the 2011 permit would become effective. The permittee completed the necessary facility improvements by the MAO deadline and DEQ issued a letter on December 3, 2012 acknowledging the permittee's compliance with their MAO obligations. As such, the interim and final ammonia limits described in the 2011 permit no longer apply with the issuance of DEQ's compliance letter.

The facility was last inspected by DEQ on September 9, 2022. Other inspections of the facility were conducted on October 17, 2017 and August 20, 2015. No compliance issues were noted during these inspections.

2.4 Stormwater

The facility was covered under the 1200-Z industrial stormwater general NPDES permit until that permit was terminated on September 15, 2021. All industrial stormwater at this facility is collected, treated, and discharged as part of its treated wastewater.

2.5 Industrial Pretreatment

Clackamas County Water Environment Services implements an industrial pretreatment program originally approved and incorporated into the permit on December 21, 1983. Federal and state pretreatment requirements were included in the NPDES permit for this facility when the existing 2011 permit was issued.

The Oregon Department of Environmental Quality (DEQ) last conducted an audit of the pretreatment program administered by Water Environment Services on December 10-14, 2018. During the 2018 audit, DEQ conducted a comprehensive evaluation of the permittee's pretreatment program and concluded that the permittee has a well-developed and administered pre-treatment program, sufficient legal authorities, excellent record keeping and documentation of pre-treatment program. However, the audit identified several deficiencies in the pre-treatment program that needed to be addressed. WES continues to make progress in addressing deficiencies identified during the report.

Until recently, the permittee maintained two sets of pretreatment program documents that are nearly identical, with the exception of specific industrial users and rule references.

In May 2023, WES revised its pretreatment legal authority by adopting Ordinance 02-2023 referred as "Rules and Regulations", provisions related to sanitary sewers applying to all areas within the Districts Service area including Tri-City and CCSD#1. WES initially submitted draft modifications of the legal authority document to DEQ in December of 2022. DEQ reviewed the document and provided comments. In August 2023, WES submitted the final Rules and

Regulations which was approved by DEQ. The proposed permit requires no further updates to the Rules and Regulations in the next permit term.

In the past, WES had two independent industrial pretreatment programs for Clackamas County Service District # 1, and Tri-City Service Districts. Two annual reports were submitted to DEQ, one for each District in WES, CCSD # 1, and Tri-City Service Districts. Beginning with 2019 annual report, WES began submitting one report for the two service districts. Through the updated ordinance, WES oversees one pretreatment program within its service area, therefore one pretreatment annual report will be submitted to DEQ.

The permittee is currently in the process of updating its local limits as required in the new NPDES permit. The local limits evaluation will include an evaluation of the headworks loading criteria and possible sources of the various pollutants being evaluated.

2.6 Biosolids

The Tri-Cities WRRF currently produces Class B biosolids for land application and anticipates continuing to do so. At the facility, solids are anaerobically digested to fully meet 40 CFR Part 503 Class B biosolids requirements. The biosolids are then dewatered by centrifuges and then loaded onto trucks for transport to land application sites in Sherman County. The WRRF currently has DEQ authorization for land application in Sherman County and may pursue additional land sites in Yamhill, Clackamas, Marion, Wasco, Gilliam, Morrow, Washington, Polk, and Linn counties during the term of this permit.

The permittee recently updated the facility's Biosolids Management Plan in 2022, which DEQ has reviewed and approved.[4] The conditions in the Biosolids Management Plan are enforceable under the proposed permit.

2.7 Recycled Water

Although the District does not currently operate a recycled water program, it may develop one during the term of this permit. If the permittee chooses to develop a recycled water program, a Outfall comprehensive recycled water use plan meeting the requirements in OAR 340-055 will be submitted to DEQ for review and approval; appropriate actions must also be made to the Oregon Health Authority (OHA) and the Oregon Water Resources Department (OWRD). The recycled water use plan, including the locations of any proposed irrigation projects, will be made available for public comment. The proposed permit identifies 003 as a distribution point for recycled water once a recycled water use plan is developed and approved.

2.8 Wastewater Classification

OAR 340-049 requires all permitted municipal wastewater collection and treatment facilities receive a classification based on the size and complexity of the systems. DEQ evaluated the

[4] *Clackamas Water Environment Services Biosolids Management Plan.* Clackamas Water Environment Services. September 2022. Approved by DEQ on November 8, 2022.

classifications for the treatment and collection system, which are publicly available at: https://www.deq.state.or.us/wq/opcert/Docs/OpcertReport.pdf.

3. Schedule A: Effluent Limit Development

Effluent limits serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. Effluent limitations can be based on either the technology available to control the pollutants or limits that are protective of the water quality standards for the receiving water. DEQ refers to these two types of permit limits as technology-based effluent limitations (TBELs) and water quality-based effluent limitations (WQBELs), respectively. When a TBEL is not restrictive enough to protect the receiving stream, DEQ must include a WQBEL in the permit.

3.1 Existing Effluent Limits

The following table summarize the $CBOD_5$, TSS, bacteria, pH, chlorine, and ammonia limits contained in the existing permit. A complete listing of Schedule A limits in the existing permit, which include temperature limits and the limits modified by Permit Modification Nos. 1 and 2, are presented in Appendix B.

Table 3-1: Existing Effluent Limits

Treated Effluent Outfall 001

(1) May 1 - October 31:

Parameter	Average Effluent Concentrations		Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lb/day
	Monthly	Weekly			
$CBOD_5$ (See note 1.)	10 mg/L	15 mg/L	1050	1750	2100
TSS	10 mg/L	15 mg/L	1400	2100	2800

*Average Dry Weather Design Flow for the facility after the expansion is 11.9 MGD. Summer mass load limits remain the same as the pervious permit.

Other parameters	Limitations
BOD_5 and TSS Removal Efficiency	Shall not be less than 85% based on a monthly average for BOD_5 and shall not be less than 85% based on a monthly average for TSS.

(2) November 1 - April 30:

Parameter	Average Effluent Concentrations		Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lb/day
	Monthly	Weekly			
$CBOD_5$ (See note 1.)	25 mg/L	40 mg/L	2800	4500	5600
TSS	30 mg/L	45 mg/L	3400	5100	6800

*The winter mass load limits are based upon average wet weather design flow prior to expansion (13.5 MGD). The daily mass load limit is suspended on any day in which the flow into the treatment facility exceeds 23.8 MGD (twice the design average dry weather flow).

(3) Other parameters (year-round)

Parameters	Limitations
E. coli Bacteria	Shall not exceed 126 organisms per 100 mL monthly geometric mean. No single sample shall exceed 406 organisms per 100 mL. (See Note 2)
pH	Shall be within the range of 6.0 – 9.0
BOD_5 and TSS Removal Efficiency	Shall not be less than 85% based on a monthly average for BOD_5, and shall not be less than 85% based on a monthly average for TSS.
Total Chlorine Residual	Shall not exceed an average monthly concentration of 0.02 mg/L and maximum daily concentration of 0.04 mg/L.
Ammonia (Interim limit, See note 3.)	Shall not exceed a monthly average of 15 mg/L

Notes:

1. The $CBOD_5$ concentration limits are considered equivalent to the minimum design criteria for BOD_5 specified in OAR 340-041. These limits and $CBOD_5$ mass limits may be adjusted (up or down) by permit action if more accurate information regarding $CBOD_5/BOD_5$ becomes available.
2. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.
3. Ammonia interim limit of 15 mg/L has been set until requirements in MAO #WQ/M-NWR-11-046 are completed. This limit shall no longer apply once the permittee meets the MAO requirements.

   If the permittee fails to complete the anticipated capital improvement requirements in the MAO by December 1, 2012, then the permittee's Total Ammonia discharge rate during the dry weather flow shall not exceed a monthly average of 9.4 mg/L, and a daily maximum of 20.1 mg/L. During wet weather, ammonia shall not exceed a monthly average of 16.0 mg/L and a daily maximum of 37.8 mg/L as determined by the Reasonable Potential Analysis.

3.2 Technology-Based Effluent Limit Development

40 CFR 122.(a)(1) requires publicly owned treatment works (POTW) to meet technology-based effluent limits, for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS) and pH (i.e., federal secondary treatment standards). Substitution of 5-day carbonaceous oxygen demand ($CBOD_5$) for BOD_5 is allowed. The numeric standards for these pollutants are contained

in 40 CFR 133.102. DEQ also uses best professional judgement, as allowed under federal rule (40 CFR 125.3), to apply the secondary treatment standards as TBELS for domestic wastewater treatment facilities that are not publicly-owned.

In addition, DEQ has developed minimum design criteria for BOD_5 and TSS that apply to specific watershed basins in Oregon. These are listed in the basin-specific criteria sections under OAR 340-041-0101 to 0350. During the summer low flow months as defined by OAR, these design criteria are more stringent than the federal secondary treatment standards. The basin-specific criteria are not effluent limits, but are implemented as design criteria for new or expanded wastewater treatment plants. The table below shows a comparison of the federal secondary treatment standards and the basin-specific design criteria for the Willamette basin.

Table 3-2: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria

<table>
<tr><th rowspan="2">Parameter</th><th colspan="2">Federal Secondary Treatment Standards</th><th>Willamette Basin-Specific Design Criteria (OAR 340-041-0345)</th></tr>
<tr><th>30-Day Average</th><th>7-Day Average</th><th>Monthly Average</th></tr>
<tr><td>BOD_5 (mg/L)</td><td>30</td><td>45</td><td rowspan="3">Low Stream Flow (approximately May 1 – October 31): 10 mg/L – BOD_5 and TSS, or equivalent control

High Stream Flow (approximately November 1 – April 30): Minimum of secondary treatment or equivalent control</td></tr>
<tr><td>$CBOD_5$ (mg/L) (See note 1.)</td><td>25</td><td>40</td></tr>
<tr><td>TSS (mg/L)</td><td>30</td><td>45</td></tr>
<tr><td>pH (S.U.)</td><td colspan="2">6.0 – 9.0. (instantaneous)</td><td>Not applicable</td></tr>
<tr><td>BOD_5, $CBOD_5$ and TSS % Removal</td><td>85%</td><td>Not applicable</td><td>Not applicable</td></tr>
<tr><td colspan="4">Note:
1. Federal regulations allow the replacement of the federal secondary treatment standard BOD_5 limits with $CBOD_5$ (Carbonaceous BOD) limits. EPA sets these $CBOD_5$ concentration limits 5 mg/L less than BOD_5.</td></tr>
</table>

Previous versions of the permit established $CBOD_5$ as an alternative measure of biochemical oxygen demand, and the proposed permit retains $CBOD_5$ limits. The winter limits are the federal secondary standards for $CBOD_5$.

During the low flow period (May 1 – October 31), the concentration limits for $CBOD_5$ of 10 mg/L as a monthly average and 15 mg/L as a 7-day average are considered to be equivalent to the state design criteria for this facility. In addition, the low stream flow basin standards also required more stringent concentration limits for TSS when compared to federal standards. The following table lists the concentration limits for $CBOD_5$ and TSS that will be placed into the proposed permit to address the basin design criteria and the secondary treatment standards:

Table 3-3: Proposed $CBOD_5$ and TSS Concentrations Limit

Season	Monthly/Weekly $CBOD_5$ Concentration Limits (mg/L)		Monthly/Weekly TSS Concentration Limit (mg/L)	
Dry Weather	10	15	10	15
Wet Weather	25	40	30	45

Mass Load Calculations

The limits for $CBOD_5$ and TSS shown in the table above are concentration-based limits. Mass-based limits are required in addition to the concentration-based limits per OAR 340-041-0061(9). For any new facility or any facility that has expanded its dry weather treatment capacity after June 30, 1992, OAR 340-041-0061(9)(b) requires that the mass load limits be calculated based on the proposed treatment facility capabilities and the highest and best practicable treatment to minimize the discharge of pollutants. The permittee's facility has been engineered to achieve $CBOD_5$ and TSS monthly average concentrations of 10.5 mg/L during the dry weather season and 21 mg/L during the wet weather season. DEQ uses the maximum monthly design flow to calculate the mass load limits as shown below for the dry and wet weather seasons.

Monthly Avg Mass Load = Design Flow* x Monthly Concentration Limit x Unit Conversion factor

Weekly Average Mass Load = 1.5 x Monthly Average Mass Load Limit
Daily Maximum Mass Load = 2.0 x Monthly Average Mass Load Limit

* Design flow is the design maximum monthly dry weather flow (DMMDWF) or design maximum monthly wet weather flow (DMMWWF)

The following table lists the effluent flows and concentration limits used for the calculations.

Table 3-4: Facility Design Flows and Performance-Based Concentrations

Seasonal Flow Condition	Maximum Monthly Design Flow (MGD)	Monthly Effluent $CBOD_5$ Concentration (mg/L)	Monthly Effluent TSS Concentration (mg/L)
Dry Weather (May 1 – Oct. 31)	17.1	10.5	10.5
Wet Weather (Nov. 1 – April 30)	31.7	21	21
Design flow comments: Design flow is the design maximum monthly dry weather flow (DMMDWF) or design maximum monthly wet weather flow (DMMWWF).			

Accordingly, DEQ calculated the proposed mass load limits based on the proposed treatment facility capabilities and the highest and best practicable treatment using the performance-based effluent concentrations presented above. The following equations were used to calculate the performance-based mass-based limits:

$CBOD_5$ and TSS Dry Weather Calculations:

Monthly Average Mass Load: 17.1 MGD x 10.5 mg/L x 8.34 = 1497 lbs/day (1500 lbs – round to two significant figures)

Weekly Average: 1500 lbs/day x 1.5 = 2250 lbs/day (2300 lbs/day)

Daily Maximum: 1500 lbs/day x 2.0 = 3000 lbs/day

$CBOD_5$ and TSS Wet Weather Calculations:

Monthly Average Mass Load: 31.7 MGD x 21 mg/L x 8.34 = 5552 lbs/day (5600 lbs – round to two significant figures)

Weekly Average: 5600 lbs/day x 1.5 = 8400 lbs/day

Daily Maximum: 5600 lbs/day x 2.0 = 11,200 lbs/day (11,000 lbs/day)

Table 3-5: Proposed $CBOD_5$ and TSS Mass Load Limits Compared with Existing Limits

Seasonal Flow Condition	Limit	$CBOD_5$ (lbs/day)		TSS (lbs/day)	
		Existing	Proposed	Existing	Proposed
Dry Weather (May 1 – Oct. 31)	Average Monthly	1050	1500	1400	1500
	Average Weekly	1750	2300	2100	2300
	Daily Maximum	2100	3000	2800	3000
Wet Weather (Nov.1 – April 30)	Average Monthly	2800	5600	3400	5600
	Average Weekly	4500	8400	5100	8400
	Daily Maximum	5600	11,000	6800	11,000

As indicated above, the proposed mass load limits for $CBOD_5$ and TSS are higher than the limits in the existing permit. The proposed increases in these mass loads are considered a relaxation of permit limits and must be consistent with anti-backsliding and anti-degradation provisions within the regulations. Discussion regarding the proposed mass load increase relative to anti-backsliding and anti-degradation is presented in Sections 3.4 and 3.5, respectively.

The proposed $CBOD_5$ and TSS limits are listed in the following table. These limits will function as combined limits for discharges from both Outfalls 001 and 002.

Table 3-6: Proposed $CBOD_5$ and TSS Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
$CBOD_5$ (May 1 – October 31)	mg/L	10	15	NA
	lbs/day	1500	2300	3000
	% removal	85	NA	NA
TSS (May 1 – October 31)	mg/L	10	15	NA
	lbs/day	1500	2300	3000
	% removal	85	NA	NA
$CBOD_5$ (November 1 – April 1)	mg/L	25	40	NA
	lbs/day	5600	8400	11,000
	% removal	85	NA	NA
TSS (November 1 – April 1)	mg/L	30	45	NA
	lbs/day	5600	8400	11,000
	% removal	85	NA	NA

3.3 Water Quality-Based Effluent Limit Development

40 CFR 122.44(d) requires that permits include limitations more stringent than technology-based requirements where necessary to meet water quality standards. Water quality-based effluent limits may be in the form of a wasteload allocation required as part of a Total Maximum Daily Load (TMDL). They may also be required if a site-specific analysis indicates the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion. DEQ establishes effluent limits for pollutants that have a reasonable potential to exceed a criterion. The analyses are discussed below.

3.3.1 Designated Beneficial Uses

NPDES permits issued by DEQ must protect the following designated beneficial uses of the Willamette River. These uses are listed in OAR-340-041-340 for the Willamette River basin.

- Public and private domestic water supply*
- Industrial water supply
- Irrigation and livestock watering
- Fish and aquatic life (including salmonid rearing, migration and spawning)
- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation

- Aesthetic quality
- Hydro power, and
- Commercial navigation and transportation

* with adequate pretreatment and natural quality that meets drinking water standards

OAR 340-041-0340 (Figure 340A) designates the Lower Willamette River as a salmon and steelhead migration corridor. No salmon or steelhead spawning use is designated for this portion of the river.

The applicable numeric water quality criteria are also found in OAR 340-041-0345. These include general criteria and Willamette Basin-specific criteria intended to be protective of the beneficial uses for the basin, as listed above.

3.3.2 303d Listed Parameters and Total Maximum Daily Loads

The following table lists the parameters in the 2022 303(d) list for which the receiving stream is water quality-limited (Category 5) within the discharge's stream reach. The table also lists any parameters with a TMDL wasteload allocation assigned to the facility (Category 4A).

Table 3-7: 303d and TMDL Parameters

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_SR_170900704_88_104020
AU Name:	Willamette River
AU Status:	Impaired
Year Listed	1998
Year Last Assessed	2022
303d Parameters	Bio-criteria; Temperature – year-round; Aldrin-Human Health Toxics; DDE 4,4'- Human Health Toxics; DDT 4,4'-Human Health Toxics; Dieldrin – Human Health Toxics; Polychlorinated Biphenyls (PCBs) – Human Health Toxics; and Aquatic Weeds
TMDL Parameters	
Temperature (2006), Bacteria (2006), Mercury (2019)	

For temperature and bacteria, DEQ has developed Total Maximum Daily Loads (TMDLs) in the Willamette Basin to address these pollutants of concern. These TMDLs were approved by EPA in September 2006. Category 5 pollutants include aldrin, DDE, DDT, dieldrin, Polychlorinated biphenyls (PCBs) and aquatic weeds. The existing permit required periodic monitoring for several of these toxics in the effluent. These pollutants of concern are addressed in Section 3.3.8.

The Aquatic Weeds or Algae parameter is used to implement the statewide narrative criterion that prohibits deleterious or injurious effects on aquatic and human beneficial uses from biological growths (OAR 340-041-0007(9)). The growth of aquatic weeds or algae does not identify whether a pollutant or which pollutant is causing the impairment, nor does it identify which pollutant should be addressed by point source controls. Until there is specific evidence

that a pollutant produced by the facility is causing the impairment it is assumed that the limits contained within the NPDES permit are protective of the narrative criterion[5].

A discussion of the temperature issues associated with the discharge and the relationship to the TMDL is presented in Section 3.3.6.

The bacteria TMDL also provided wasteload allocations for bacteria that set the permitted effluent limits at the water quality standard. Bacteria limitations continue to require that the facility meet the water quality criteria at the end of pipe (see Section 3.3.7).

The EPA also issued a TMDL and Water Quality Management Plan (WQMP) for mercury on December 30, 2019. This TMDL requires that DEQ establish a wasteload allocation in the form of mercury reduction plans for major municipal wastewater treatment plants like the Tri-City WRRF. The development of a Mercury Monitoring Plan and monitoring for mercury to measure the effectiveness of mercury reduction efforts will be included in the renewed permit. Additional details are provided in Section 3.3.8.6.

3.3.3 Pollutants of Concern

To ensure that a permit is protective of water quality, DEQ must identify pollutants of concern. These are pollutants that are expected to be present in the effluent at concentrations that could adversely impact water quality. DEQ uses the following information to identify pollutants of concern:

- Effluent monitoring data.
- Knowledge about the permittee's processes.
- Knowledge about the receiving stream water quality.
- Pollutants identified by applicable federal effluent limitation guidelines.

Based on EPA's NPDES permit application requirements, toxic pollutants of concern for domestic facilities are listed in the following table:

Table 3-8: Domestic Toxic Pollutants of Concern

Flow Rate	Pollutants
< 0.1 mgd	Total Residual Chlorine
> 0.1 mgd and < 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen
> 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen, Metals, Volatile Organic Compounds, Acid Extractable Compounds, Base Neutral Compounds

DEQ identified the following pollutants of concern for this facility as shown in the table below:

[5] *Oregon Integrated Report: Frequently Asked Questions*. Water Quality Assessment, Oregon DEQ. September 1, 2022

Table 3-9: Pollutants of Concern

Pollutant	How was pollutant identified?
pH	Effluent Monitoring
Temperature	Effluent Monitoring
E. coli	Effluent Monitoring
Total Ammonia Nitrogen	Application Requirement
Metals	Application Requirement
Volatile Organic Compounds	Application Requirement
Acid Extractable Compounds	Application Requirement
Base-Neutral Compounds	Application Requirement
Base-Neutral Compounds	Application Requirement

The sections below discuss the RPA analyses that were conducted for the pollutants of concern to determine if water quality based effluent limits are needed to meet water quality standards. The RPAs examined three different scenarios: 1) impacts of discharges from Outfall 001 alone, 2) impacts of discharges from Outfall 002 alone, and 3) the impacts of the discharges from the upstream Outfall 002 on the simultaneous discharge of Outfall 001 in meeting water quality standards at the downstream edge of the mixing zone for Outfall 001.

DEQ conducted RPAs for the discharges from both outfalls using effluent monitoring results collected from July 2017 to December 2022. Since Outfall 001 has the more restrictive dilutions and will be the primary outfall for the first part of the next permit term, only the results of the RPA analysis for Outfall 001 are discussed in detail in the following sections. Due to the significant improvement in dilutions anticipated for Outfall 002, the results of the RPA analysis for Outfall 002 show that the future discharges through this outfall will not have a reasonable potential to exceed water quality criteria for all pollutants of concern.

3.3.4 Regulatory Mixing Zone

The proposed permit contains mixing zones for existing Outfall 001 and proposed Outfall 002 as allowed per OAR 340-041-0053.

Outfall 001

The proposed mixing zone for Outfall 001 remains unchanged from the exiting permit and is described as follows:

> The regulatory mixing zone is that portion of the Willamette River which extends 300 feet downstream of the point of discharge. The zone of initial dilution shall include that portion of the Willamette River which extends 30 feet downstream of the point of discharge.

The dilutions at the edge of the ZID and RMZ for Outfall 001 are presented in the tables below. These dilutions are based upon 2011[6], 2012[7] and 2021[8] mixing zones studies reviewed by DEQ. DEQ's analysis of these mixing zone studies are contained in a January 2023 internal memorandum.[9]

Table 3-10: Outfall 001 Mixing Zone Dilution Summary

Dilution Summary- Dry Weather						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow** (See note a.)		
Aquatic Life, Acute	1Q10	5,809	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	29.2	3.2	ZID
Aquatic Life, Chronic	7Q10	5,902	☐ ADWDF ☒ Max Monthly Avg ☐ Other	17.2	27	MZ
Human Health, Non-Carcinogen	30Q5	7,130 (See note b.)	☐ ADWDF ☒ Max Monthly Avg ☒ Other	17.2	27 (See note c.)	MZ
Human Health, Carcinogen	Harmonic Mean	17,100 (See note b.)	☐ ADWDF ☐ Max Monthly Avg ☒ Other	17.2	27 (See note c.)	MZ
Dilution Summary - Wet Weather						
Aquatic Life, Acute	1Q10	7,445	☐ ADWDF ☒ Max Monthly Avg ☐ Other	42.2	2.9	ZID
Aquatic Life, Chronic	7Q10	7,827	☐ ADWDF ☒ Max Monthly Avg ☐ Other	32	23	MZ

[6] *Mixing Zone Field Monitoring and Modeling Study for Tri-City Water Pollution Control Plant.* MixZon, Inc. January 12, 2011.
[7] *Tri-City Water Pollution Control Plant Compliance with MAO WQ/M-NWR-11-046 Report.* CH2MHill. February 2012.
[8] *Pre-Design Engineering Report for Tri-City Water Resource Recovery Facility Willamette River Outfall Project.* Jacobs. October 5, 2021.
[9] *Mixing Zone Study Review*. Oregon Department of Environmental Quality. January 2023.

Human Health, Non-Carcinogen	30Q5	13,488	☐ ADWDF ☒ Max Monthly Avg ☐ Other	32	16	MZ
Human Health, Carcinogen	Harmonic Mean	17,100 (See note d.)	☐ ADWDF ☒ Max Monthly Avg ☐ Other	32	16 (See note e.)	MZ
Dilution Summary – Peak Wet Season Effluent Flow at 25-yr Flood						
Aquatic Life, Acute	25-yr flood	280,000	☐ ADWDF ☐ Max Monthly Avg ☒ Other	84 (See note f.)	231 (See note g.)	ZID
Aquatic Life, Acute	25-yr flood	280,000	☐ ADWDF ☐ Max Monthly Avg ☒ Other	68	804	MZ

ADWDF = Average dry weather design flow *PF = Peaking factor*
ZID = Zone of Initial Dilution *MZ = Mixing Zone*

Notes:

a. Effluent flow values are from the February 2012 Tri-City Water Pollution Control Plant Compliance with MAO WQ/M-NWR-11-046 Report – these are similar to existing effluent flows. The stream flow statistics and dilution values are taken from Table 3-5 of the same report.

b. No 30Q5 or harmonic stream flow values were included with the updated dilution modeling. This value is from the 2011 MixZon study.

c. No 30Q5 or harmonic mean dilution values were presented in the February 2012 Tri-City Water Pollution Control Plant Compliance with MAO WQ/M-NWR-11-046 Report. The 7Q10 dilution was used.

d. No harmonic stream flow value was included in the updated dilution modeling. This value is from the 2011 MixZon study.

e. No harmonic mean dilution was presented in the February 2012 Tri-Cit Water Pollution Control Plant Compliance with MAO WQ/M-NWR-11-046 Report. The 30Q5 dilution was used.

f. Effluent flow values show only the portion expected to flow through Outfall 001 during the 25-year flood event.

g. Dilution values obtained from Table 3-10 in October 2021 Pre-Design Engineering Report for Tri-City WRRF Willamette River Outfall Project.

Outfall 002

The proposed mixing zone for the Outfall 002 is:

> The regulatory mixing zone is that portion of the Willamette River which extends 300 feet downstream and 100 feet upstream of the diffuser section of the outfall. The zone of initial dilution is that portion of the Willamette River which extends 30 feet in all directions from the diffuser section of the outfall.

The dilutions at the edge of the ZID and RMZ are presented in the table below. These dilutions are based upon a 2021 Pre-Design Engineering Report for Tri-City WRRF Willamette River Outfall Project (Outfall 002) which was reviewed by DEQ. DEQ's review of this report is contained in a January 2023 internal memorandum within the permit files.

Table 3-11: Outfall 002 Mixing Zone Dilution Summary

Dilution Summary- Dry Weather						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution** (See note a.)	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	5,904	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	40.7	16	ZID
Aquatic Life, Chronic	7Q10	5,989	☐ ADWDF ☒ Max Monthly Avg ☐ Other	17.8	81	MZ
Human Health, Non-Carcinogen	30Q5	6,576	☐ ADWDF ☒ Max Monthly Avg ☐ Other	17.8	85	MZ
Human Health, Carcinogen	Harmonic Mean	15, 100	☐ Annual Avg Design ☒ Annual Avg ☐ Other	13.0	247	MZ
Dilution Summary – Peak Wet Season Effluent Flow at 25-yr Flood						
Aquatic Life, Acute	25-yr flood	280,000	☐ ADWDF x PF ☐ Max Daily Avg ☒ Other	54	11 (See note b.)	ZID
Aquatic Life, Acute	25-yr flood	280,000	☐ ADWDF ☐ Max Monthly Avg ☒ Other	18	25 (See note b.)	MZ

ADWDF = Average dry weather design flow	*PF = Peaking factor*
ZID = Zone of Initial Dilution	*MZ = Mixing Zone*

Notes:

a. Dilution information obtained from Table 3-7 (Page 3-17) in 2021 Pre-Design Engineering Report for Tri-City WRRF Willamette River Outfall Project. Outfall dilutions for 18-port diffuser with projected 2040 effluent flows. These dilutions are more conservative than 18-port diffuser with 2022 effluent flows (Table 3-6 of 2021 Pre-Design Engineering Report). However, even more conservative dilutions were modeled for 18-port diffuser under projected buildout effluent flows (Table 3-8 of 2021 Pre-Design Engineering Report for Tri-City WRRF Willamette River Outfall Project).

b. Dilution information obtained from Table 3-7 (Page 3-17) in 2021 Pre-Design Engineering Report for Tri-City WRRF Willamette River Outfall Project. Outfall dilutions for 18-port diffuser with projected 2040 effluent flows.

3.3.5 pH

The pH criterion for this basin is 6.5 – 8.5 per OAR 340-041-0345(1)(a). The federal secondary treatment standards allow the permittee to discharge effluent with a pH between 6.0 and 9.0 provided the basin standard is met at the edge of the mixing zone. The pH range of 6.0 to 9.0 was utilized in a reasonable potential analysis for both Outfalls 001 and 002 along with other effluent data collected from July 2017 through October 2022, and ambient river data from several monitoring stations within the river located upstream of the outfalls. DEQ determined there is no reasonable potential for the discharge from either Outfall 001or Outfall 002 to exceed the pH criterion at the edge of the mixing zone. Further, there is no reasonable potential to exceed pH criteria when both outfalls are discharging during extreme weather events.

The proposed limits for pH for both outfalls are 6.0 to 9.0 and are considered TBELS. These limits will apply separately for each outfall and when both outfalls are discharging simultaneously. The following table provides a summary of the data used for the analysis for the primary Outfall 001. With the exception of the dilutions, the effluent and ambient data used for the analysis for Outfall 002 was similar. The results for Outfall 002 were also similar indicating that there is no reasonable potential for the discharge from this outfall to exceed pH water quality criteria.

Table 3-12: pH Reasonable Potential Analysis- Outfall 001

INPUT	Lower pH Criteria	Upper pH Criteria
1. Dilution at mixing zone boundary	27	27
2. Upstream characteristics		
a. Temperature (deg C)	23.7	7.9
b. pH	7.3	7.9
c. Alkalinity (mg CaCO3/L)	22	22
3. Effluent characteristics		
a. Temperature (° C)	23.5	15.8
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg CaCO3/L)	156	156
4. Applicable pH criteria	6.5	8.5
pH at mixing zone boundary	**6.6**	**8.0**
Is there reasonable potential?	**No**	**No**
Proposed effluent limits	**6.0**	**9.0**
Effluent data source: ICIS data January July 2017-October 2022. Alkalinity data from January 2021 through May 2022. Temp 10th %ile = minimum of monthly average, 90th %ile = maximum of monthly average		
Ambient data source: AWQMS Feb 2016-March 2022. Stations 10339-ORDEQ, 26102-ORDEQ, 31545-ORDEQ, 38903-ORDEQ. All stations upstream of Outfall 001.		

3.3.6 Temperature

3.3.6.1 Temperature Criteria OAR 340-041-0028

The following table summarizes the temperature criteria that apply at Outfalls 001 and 002 for the Tri-City WRRF. This information indicates whether the receiving stream is water quality-limited for temperature and whether a TMDL wasteload allocation has been assigned. Using this information, DEQ performed several analyses to determine if effluent limits were needed to comply with the temperature criteria.

Table 3-13: Temperature Criteria Information

Applicable Temperature Criterion	Migration Corridor 20 C (OAR 340-041-0028(4)(d)
Applicable dates: Year-round	
Salmon/Steelhead Spawning 13 °C? *OAR 340-041-0028(4)(a)*	☐Yes ☒No
Applicable dates: N/A	
WQ-limited?	☒Yes ☐No
TMDL wasteload allocation assigned?	☒Yes ☐No
Applicable dates: June 1 – September 30	
Cold water summer protection criterion applies?	☐Yes ☒No
Cold water spawning protection applies?	☐Yes ☒No

Applicable Temperature Criteria and TMDL Waste Load Allocation

As noted in the table above, the Lower Willamette River is listed as impaired for temperature. In 2006, DEQ issued the Willamette River Basin Total Maximum Daily Load (TMDL) to address this impairment. According to the TMDL, the critical period for temperature in this segment of the river is June 1 through September 30. The TMDL contains Waste Load Allocations (WLAs) for point sources throughout the Willamette River, including the Tri-City WRRF, that apply during this period (TMDL, p. 4-69). The static WLA for the Tri-City WRRF is 156 million kilocalories per day (Mkcals/day) as a rolling 7-day average.[10] The Tri-City WRRF was not provided a temporary use of the reserve capacity described in the TMDL which can be added to the WLA.[11]

Overall, the WLA applies from June 1 through September 30. For the remainder of the year (October 1 – May 31), the TMDL determined that no WLA, and no associated limit, was necessary for the facility. The TMDL also includes flow-based WLAs for the facility, which are discussed below.

ETL limits based on the TMDL's static and flow-based WLAs are included in the proposed permit for the June 1 – September 31 period. As noted above, the TMDL determined that no WLA or limit was necessary for the October 1 – May 31 period to meet the Biologically-Based Numeric Criteria (BBNC). The ETL limits included in the proposed permit are discussed in more detail in Section 3.3.6.3, below.

[10] *Chapter 4: Temperature-Mainstem TMDL and Subbasin Summary for the 2006 Willamette Basin TMDL: Temperature.* Table 4.15: Individual Wasteload Allocations for Low Streamflow Conditions. Page 4-69. Willamette Basin TMDL: Temperature. DEQ. September 2006.

[11] *Mainstem Willamette River Reserve Capacity Analysis*. Table 5: Temporary Reserve Capacity Multipliers Which May Be Applied to Wasteload Allocations. Page 8. Oregon Department of Environmental Quality. April 2010.

Cold Water Refugia

As listed in OAR 340-041-0028(4)(d), streams identified as having a migration corridor use (such as the Lower Willamette River) must have cold water refugia that are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Per OAR 340-041-002 (10), "Cold Water Refugia" means those portions of the water body where, or times during the day when, the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well-mixed flow of the water body. Cold water refugia are frequently concentrated in confluence zones between tributaries and large receiving waters. DEQ's regulations restrict point source thermal discharges in locations where they will degrade cold water refugia.

In the vicinity of the Tri-City facility, two cold water refugia have been identified on the Willamette River. One cold water refuge is associated with the immediate confluence of the Clackamas River with the Willamette River where colder water from the Clackamas River initially settles into a deep section of the Willamette River channel. This refugia is located approximately 625 and 2500 feet downstream from the edges of the regulatory mixing zone for existing Outfall 001 and proposed Outfall 002, respectively. The second cold water refuge is associated with the confluence of Abernathy Creek with the Willamette River just under the Interstate 205 bridge. This refuge is located approximately 300 feet upstream from regulatory mixing zone for proposed Outfall 002 and is confined to a narrow band along the immediate eastern bank of the Willamette River next to Abernathy Creek.[12]

Given the distance to the Clackamas River confluence refuge, discharges from both Outfalls 001 and 002 will be fully mixed with the Willamette River and will have very limited impact on river temperature by the time it reaches this refuge. No degradation to this cold water refuge is anticipated. Similarly, the Abernathy Creek confluence refuge is located upstream of the regulatory mixing zone and discharge plume for proposed Outfall 002. This refuge will not be degraded by discharges through this outfall.

3.3.6.2 Thermal Plume OAR 340-041-0053(2)(d)

In addition to compliance with the temperature criteria, OAR 340-041-0053(2)(d) contains thermal plume limitation provisions designed to prevent or minimize adverse effects to salmonids that may result from thermal plumes. The discharge was evaluated for compliance with these provisions as follows:

- OAR 340-041-0053(2)(d)(A): Impairment of an active salmonid spawning area where spawning redds are located or likely to be located.

[12] *Lower Willamette River Cold-Water Refuge Narrative Criterion Interpretation Study*. Chapter 3: Existing Cold-Water Refuge for Adult Chinook and Steelhead in the Lower Willamette River. Oregon Department of Environmental Quality – Division of Water Quality Standards and Assessment. March 2020.

Tri-City WRRF Discharge: Based on the Willamette Basin fish use and salmonid spawning use maps contained in OAR 340-041 (Figures 340A and 340B, respectively), the designated fish uses for this segment of the Willamette River are salmon and steelhead migration (year-round) and no spawning use. Therefore, the discharge will not cause impairment of an active salmonid spawning area.

- OAR 340-041-0053(2)(d)(B): Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32 ºC or more to less than 2 seconds.

  Tri-City WRRF Discharge: Based on a review of July 2017 – December 2022 effluent data, the maximum effluent temperature recorded at Outfall 001 during this time period was 24.6 ºC. Thus, anticipated peak temperatures through both Outfalls 001 and 002 are expected to be well below 32 ºC and are not expected to cause an acute impairment or instantaneous lethality due to the thermal plume.

- OAR 340-041-0053(2)(d)(C): Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25 ºC or more to less than 5% of the cross-section of 100% of the 7Q10 flow of the water body.

  Tri-City WRRF Discharge: Based on a review of July 2017 – December 2022 effluent data, the maximum effluent temperature recorded at Outfall 001 during this time period was 24.6 ºC. Since anticipated peak temperatures through both Outfalls 001 and 002 are expected to be below 25 ºC, thermal shock caused by the discharge is prevented or minimized.

- OAR 340-041-0053(2)(d)(D): Unless ambient temperature is 21 ºC or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21 ºC or more to less than 25% of the cross-section of 100% of the 7Q10 flow of the water body.

  Tri-City Discharge: The migration rule is based primarily on the USEPA guidance document, *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* (April 2003) [13]. Section V.3 of the document gives guidance on protecting salmonids from thermal plume impacts and provides this discussion on migration blockage:

[13] U.S. Environmental Protection Agency. 2003. EPA *Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*. EPA 910-B-03-002. Region 10 Office of Water, Seattle. WA. Pages 33 -34.

Adult migration blockage conditions can occur at 21 °C. Therefore, EPA suggests that the cross-sectional area of a river at or above 21 °C be limited to less than 25% or, if upstream temperature exceeds 21 °C, the thermal plume be limited such that 75% of the cross-sectional area of the river has less than a de minimis (e.g., 0.25 °C) temperature increase.

The maximum recorded receiving water temperature upstream of the discharge location is 26.1 °C. An analysis for both Outfalls 001 and 002 related to migration blockage indicates that when the receiving water temperature is 21 °C and effluent temperature is at the maximum recorded value (24.6 ºC from 2017-2022 effluent data), the effluent plume, when it reaches 25% of the receiving stream's cross-sectional area, will be 21.1 ºC (See Appendix C: Attachments C-1 and C-2). This 0.1 ºC over the upstream temperature is considered a de minimis increase that prevents or minimizes migration blockage.

In summary, the analysis indicates that the discharge from the Tri-City WRRF meets the temperature thermal plume limits in OAR 340-041-0053(2)(d).

3.3.6.3 Temperature Effluent Limits

The temperature analyses summarized above indicate the need for temperature effluent limits during the June 1 – September 30 period. As discussed above, limits based on the Willamette Basin TMDL's WLA are included in the permit. These limits are expressed as Excess Thermal Load limits. The TMDL included three implementation options for determining the applicable ETL limit.[14] The first option is a static limit based on critical river and effluent flows. The second option is based on the critical effluent flow and the actual (measured) river flow, and the third option is based on the critical effluent flow, the actual (measured) river flow and the measured river temperature. The first two options are included in the proposed permit. The third option, while not included in the proposed permit, may be incorporated into the permit at a later date.

The two options included in the proposed permit are listed below:

Table 3-14: Temperature Effluent Limits

Effluent limit needed? ☒Yes ☐No
TMDL Static WLA Limit (Option A): 156 Mkcal/day as a seven-day rolling average. (See note a.)
Applicable time period: June 1 – September 30
TMDL Flow-Based WLA Limit (Option B): ETL Limit (ETLL) = (0.00611 x Q_R) + 111 (See notes b, c and d.)
Applicable time period: June 1 – September 30

[14] Chapter 4: Temperature-Mainstem TMDL and Subbasin Summary for the 2006 Willamette Basin TMDL: Temperature. Page 4-69. Willamette Basin TMDL: Temperature. DEQ. September 2006.

Notes:

a) The seven-day rolling average for any specific day is the average of the daily values for that day and the preceding six days.

b) Q_R = Rolling seven-day average ambient river flow as recorded at USGS Gauge #14211720 (Willamette River at Portland).

c) This ETL Equation is presented as Equation No. 6 in Appendix 4.5 of the Willamette Basin TMDL. The raw equation and the inputs to the equation are discussed in more detail in Appendix D.

d) This option is also applied as a seven-day rolling average ETL limit for each day that Option B limit is selected by the permittee.

For both options presented above, the permittee will be required to use the following formula for calculating the facility's daily excess thermal load to determine compliance with the ETL limit:

$$ETL = 3.785 * Qe * \Delta T$$

Where:

Qe = Daily Average Effluent Flow (MGD)
ΔT = Daily Maximum Effluent Temperature (°C) minus ambient criterion (20°C)

Since the limit is expressed as a 7-day rolling average, the facility will be required to report starting on the 7th day of each reporting season (June 7).

Schedule A of the proposed permit provides the permittee with the options and formulas for calculating the ETL and ETL limit. Schedule B provides the permittee with instructions for reporting compliance with the ETL limit under the options. The facility may use either option on a daily basis.

3.3.7 Bacteria

The 2006 Willamette Basin TMDL provides a wasteload allocation for a bacteria effluent limit that is set at the statewide water quality standard. OAR 340-041-0009(6)(b) requires discharges of bacteria into freshwaters meet a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four-hour intervals beginning within 28 hours after the original sample was taken. The following table includes the proposed permit limits that apply year-round for both Outfalls 001 and 002.

Table 3-15: Proposed *E. coli* Limits

E. coli **(#/100 ml)**	**Geomean**	**Maximum**
Existing Limit	126	406
Proposed Limit	126	406

3.3.8 Toxic Pollutants

DEQ typically performs the reasonable potential analysis for toxics according to EPA guidance provided in the Technical Support Document for Water Quality-Based Toxics Control (TSD) (Office of Water Enforcement and Permits, U.S. EPA, March 1991). The factors incorporated into this analysis include:

- Effluent concentrations and variability
- Water quality criteria for aquatic life and human health
- Receiving water concentrations
- Receiving water dilution (if applicable)

DEQ performs these analyses using spreadsheets that incorporate EPA's statistical methodology. The following sections describe the analyses for various toxic pollutants below.

3.3.8.1 Total Ammonia Nitrogen

DEQ's ammonia criteria vary with changes in pH and temperature. DEQ performed a reasonable potential analysis that accounts for changes in the effluent and receiving water pH and temperature to determine the appropriate ammonia criteria. An RPA for ammonia was conducted using ambient river data collected by the permittee and by several DEQ monitoring stations on the Willamette River upstream of Outfall 001 from February 2016 through June 2023. Effluent data from January 2019 to June 2023 was also used. Effluent ammonia data is collected by the Tri-City WRRF several times per week throughout the year, which gives a robust data set of more than 800 effluent samples for ammonia.

Using the maximum effluent concentration of 40.7 mg/l recorded for ammonia between January 2019 and July 2023, the results of the RPA indicate that there is reasonable potential for the discharge through Outfall 001 to cause or contribute to exceedances of the water quality criteria for ammonia in the summer dry season discharges. The analysis did not indicate any reasonable potential to exceed ammonia water quality criteria during the wet season discharges from Outfall 001 from November 1 through April 30. As such, new limits for ammonia expressed as an average monthly limit (AML) and maximum daily limit (MDL) will be placed into the permit for Outfall 001only. These limits will be applicable from May 1 through October 31. The RPA for Outfall 001 is shown in Appendix E. The following tables provides a summary of the data used for the ammonia analysis for Outfall 001, the results of the analysis for summer and winter discharges and the proposed ammonia limits for Outfall 001.

Table 3-16: Ammonia Analysis Information – Outfall 001 (Summer)

	Acute	Chronic	
		4-day	30-day
Dilution	3.2	27	27
Ammonia Criteria	5.5	1.9	0.7
Effluent Data Used			
Ammonia (mg/L)	40.7	40.7	
pH (SU)	7.5	7.5	
Temperature (ºC)	23.7	23.7	
Alkalinity (mg/L CaCO3)	94.0	94.0	
Receiving Stream Date Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	7.9	7.9	
Temperature (ºC)	24.2	24.2	
Alkalinity (mg/L CaCO3)	28.0	28.0	
Ammonia Limit Needed?	**Yes**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	10.3	17.5	
Effluent data source			
Effluent data from Discharge Monitoring Reports from January 2019 through June 2023. Ammonia data from January 2019 to July 2023. Temperature data from May through October 2019 – 2021; and November 2021 through June 2023. pH data from January 2019 through June 2023. Alkalinity data from January 2021 through June 2023.			
Ambient data source			
Oregon DEQ Water Quality Monitoring Stations (accessed through AWQMS) from February 2016 through March 2022. Stations 10339-ORDEQ, 26102-ORDEQ, 31545-ORDEQ, 38903-ORDEQ. Water Environment Services river monitoring at public dock at Jon Storm Park in Oregon City from February 2017 through June 2023. All stations located upstream of Outfall 001.			

Table 3-17: Ammonia Analysis Information – Outfall 001 (Winter)

	Acute	Chronic	
		4-day	30-day
Dilution	2.9	23	16
Ammonia Criteria	13.4	5.3	2.1
Effluent Data Used			
Ammonia (mg/L)	31.5	31.5	
pH (SU)	7.4	7.4	
Temperature (ºC)	16.9	16.9	
Alkalinity (mg/L CaCO3)	64.3	64.3	
Receiving Stream Date Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	7.6	7.6	
Temperature (ºC)	12.1	12.1	
Alkalinity (mg/L CaCO3)	30.1	30.1	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	N/A	N/A	
Effluent data source			
Effluent data from Discharge Monitoring Reports from January 2019 through June 2023. Ammonia data from January 2019 to July 2023. Temperature data from May through October 2019 – 2021; and November 2021 through June 2023. pH data from January 2019 through June 2023. Alkalinity data from January 2021 through June 2023.			
Ambient data source			
Oregon DEQ Water Quality Monitoring Stations (accessed through AWQMS) from February 2016 through March 2022. Stations 10339-ORDEQ, 26102-ORDEQ, 31545-ORDEQ, 38903-ORDEQ. Water Environment Services river monitoring at public dock at Jon Storm Park in Oregon City from February 2017 through June 2023. All stations located upstream of Outfall 001.			

An analysis of the potential discharges through Outfall 002 indicated that that there is no reasonable potential to exceed water quality criteria when discharges begin in early 2026. This includes both dry and wet season discharge periods. In general, the improved dilutions expected at Outfall 002 support a determination that no reasonable potential to exceed ammonia water quality criteria. Based on the results, the permit will not contain a permit limit for ammonia for Outfall 002. The following tables provides a summary of the data used for the ammonia analysis

for Outfall 002 during the critical dry (summer) discharge period and wet (winter) discharge period.

Table 3-18: Ammonia Analysis Information – Outfall 002 (Summer)

	Acute	Chronic	
		4-day	30-day
Dilution	16	81	85
Ammonia Criteria	4.8	1.8	0.7
Effluent Data Used			
Ammonia (mg/L)	40.7	40.7	
pH (SU)	7.5	7.5	
Temperature (ºC)	23.7	23.7	
Alkalinity (mg/L CaCO3)	94	94	
Receiving Stream Date Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	7.9	7.9	
Temperature (ºC)	24.2	24.2	
Alkalinity (mg/L CaCO3)	28.0	28.0	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	N/A	N/A	
Effluent data source			
Effluent data from Discharge Monitoring Reports from January 2019 through June 2023. Ammonia data from January 2019 through July 2023. Temperature data from May through October 2019 – 2021; and November 2021 through June 2023. pH data from January 2019 to June 2023. Alkalinity data from January 2021 through June 2023.			
Ambient data source			
Oregon DEQ Water Quality Monitoring Stations (accessed through AWQMS) from February 2016 through March 2022 at Stations 10339-ORDEQ, 26102-ORDEQ, 31545-ORDEQ, 38903-ORDEQ. Water Environment Services river monitoring at public dock at Jon Storm Park in Oregon City from February 2017 through June 2023. All stations located upstream of proposed location of Outfall 002.			

Table 3-19: Ammonia Analysis Information – Outfall 002 (Winter)

	Acute	Chronic	
		4-day	30-day
Dilution	16	81	85
Ammonia Criteria	11.9	5.3	2.1
Effluent Data Used			
Ammonia (mg/L)	31.5	31.5	
pH (SU)	7.4	7.4	
Temperature (ºC)	16.9	16.9	
Alkalinity (mg/L CaCO3)	64.3	64.3	
Receiving Stream Date Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	7.6	7.6	
Temperature (ºC)	12.1	12.1	
Alkalinity (mg/L CaCO3)	30.1	30.1	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	N/A	N/A	
Effluent data source			
Effluent data from Discharge Monitoring Reports from January 2019 through June 2023. Ammonia data from January 2019 through July 2023. Temperature data from May through October 2019 – 2021; and November 2021 through June 2023. pH data from January 2019 to June 2023. Alkalinity data from January 2021 through June 2023.			
Ambient data source			
Oregon DEQ Water Quality Monitoring Stations (accessed through AWQMS) from February 2016 through March 2022 at Stations 10339-ORDEQ, 26102-ORDEQ, 31545-ORDEQ, 38903-ORDEQ. Water Environment Services river monitoring at public dock at Jon Storm Park in Oregon City from February 2017 through June 2023. All stations located upstream of proposed location of Outfall 002.			

DEQ also conducted an analysis when both Outfalls 001 and 002 would be discharging. During the next permit term, Outfall 002 will become the facility's primary outfall and Outfall 001 will function as the secondary wet weather outfall. In these situations, the dilutions at Outfalls 001 and 002 are very high (see Tables 3-10 and 3-11) and there is no reasonable potential to exceed water quality criteria for ammonia.

Based upon the analysis summarized in the tables above, the proposed permit will include new limits for Outfall 001. These limits will only apply during dry season discharges from May 1 through October 31 and will become effective after Outfall 002 becomes fully operational in early 2026. A compliance schedule for meeting this new permit limit is discussed in Section 6.

The limits will not apply when both Outfalls 001 and 002 are discharging because this situation is only expected to occur in winter during high river flow events. No reasonable potential to exceed water quality standards for ammonia is expected during high flow wet season discharges.

3.3.8.2 Total Residual Chlorine

The existing permit contains chlorine limits for Outfall 001. The chlorine limits were re-evaluated using updated information to ensure that they are still protective of water quality. For Outfall 001, the analysis indicated that there was no reasonable potential for the water quality criteria to be exceeded under the current limits. As such, the existing limits for Outfall 001 are being retained in the proposed permit.

An analysis was also conducted to determine if discharges from proposed Outfall 002 had a reasonable potential to exceed the chlorine criteria. The maximum daily chlorine concentration reported between January 2017 through December 2022 (0.04 mg/L) was used for the analysis. The reasonable potential analysis indicates the discharge does not have the potential to exceed the chlorine criteria; therefore, no chlorine limits for Outfall 002 are included in the proposed permit.

Because the current chlorine effluent limit for Outfall 001 applies year-round, antibacksliding is a concern when both Outfalls 001 and 002 are discharging. The proposed chlorine limits for Outfall 001 will apply for all discharges through Outfall 001. Proposed limits for Outfall 001, and Outfall 001 and 002 combined are listed in the following table:

Table 3-20: Proposed Chlorine Limits – Outfall 001

	Chronic (mg/L)	**Acute (mg/L)**
Chlorine Criteria	0.011	0.019
	Average Monthly Limit (mg/L)	**Maximum Daily Limit (mg/L)**
Existing Limit	0.02	0.04
Calculated Limit	0.02	0.04
Proposed Limit (See note a.)	**0.02**	**0.04**
Effluent data source: Current Outfall 001 chlorine limits		
Receiving water data source: Assumed to be zero		
Note: a) Limits apply only to discharges through Outfall 001.		

3.3.8.3 Priority Pollutant Toxics

DEQ conducted a reasonable potential analysis for both Outfalls 001 and 002 for the group of toxics listed in the following table.

Table 3-21: Toxics Pollutants Analyzed

Toxic Group
Metals
Volatile Organic Compounds
Acid Extractable Compounds
Base-Neutral Compounds
Pesticides

The RPA used the results of effluent monitoring for toxic substances that was conducted by the permittee from February 2018 through July 2022. The effluent monitoring data was obtained from the permittee's laboratory in an electronic data delivery format and supported by a review of the analytical lab reports summarizing the results of the effluent monitoring. The monitoring for toxic substances included both wet and dry discharge seasons. The flows and dilutions used in the analysis are presented on Table 3-10. A summary discussion on the results of the RPA relative to toxic metals and organics is presented below:

Metals - The RPA analysis was conducted for priority pollutant metals for both the aquatic life and human health criteria. A separate RPA was conducted for the discharges from Outfalls 001 and 002. A separate RPA for copper and aluminum was conducted and the results are presented in Sections 3.3.8.4 and 3.3.8.5, respectively. In accordance with the mercury TMDL, the Tri-City WRRF will be required to prepare a Mercury Minimization Plan (MMP) as detailed in Section 3.3.8.6.

The aquatic toxicity freshwater RPA analysis for both Outfalls 001 and 002 identified mercury and cyanide as potential pollutants of concern at the end-of-pipe discharge (with no consideration for in-stream dilution).

When the ambient concentrations for pollutants of concern and dilution values were entered into the analysis, the completed RPAs indicated that there was "no reasonable potential" for the identified pollutants of concern to cause aquatic toxicity or exceed human health criteria at the edge of mixing zones or zones of initial dilution.

Priority Pollutant Organics – The Tri-City WRRF conducts monitoring for volatile organic, acid extractable and base neutral compounds. The facility also monitors for several pesticides and polychlorinated biphenyls for which the Willamette River is currently listed as water quality limited, such as dieldrin.

Overall, the results of the RPAs for Outfalls 001 and 002 did not result in any priority pollutant organics exceeding water quality standards either at the end of pipe or regulatory mixing zones. As such, the permit will not require limits for these parameters. The facility is required to continue monitoring for priority pollutant organics on an on-going basis in the NPDES Permit Renewal.

3.3.8.4 Copper Biotic Ligand Model

Eighteen monthly paired sets of effluent and ambient copper BLM input data was collected by WES Tri-City staff and analyzed by various labs from October 2021 through March 2023. For the RPAs, the mixed concentration of each input parameter were then entered into the BLM model to calculate the instantaneous water quality criteria (IWQC) for each paired data set. Each IWQC was compared to the corresponding copper concentration of the effluent or the calculated value at complete mix. Table 3-22 below shows the sample date, calculated criterion, calculated copper value, and toxic unit (copper concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a potential for the discharge to exceed the criterion. There is no reasonable potential to exceed the copper criterion because there were not any toxic units that exceed 1.0.

These results were achieved using the Outfall 001 dilutions. Because the expected dilutions from proposed Outfall 002 are even greater than the Outfall 001 dilutions, there is also no reasonable potential for Outfall 002 to exceed the copper criterion. As such, no limit for copper is required in the proposed permit.

Additional monitoring for copper in both the facility's effluent and the Willamette River is specified in Schedule B of the permit. This monitoring will be used to facilitate additional reasonable potential analysis for copper at the next permit renewal.

Table 3-22: Copper BLM Results

Date	Effluent	Ambient	ZID	BLM CMC	Toxic Units	RMZ	BLM CCC	Toxic Units	100% mix	BLM CCC	Toxic Units
	Cu (ug/L)	Cu (ug/L)	Cu (ug/L)	(ug/L)		Cu (ug/L)	(ug/L)		Cu (ug/L)	Cu (ug/L)	
10/14/2021	2.8	0.35	1.12	11.91	0.09	0.44	4.47	0.10	0.36	4.12	0.09
11/2/2021	1.92	0.58	1.00	13.51	0.074	0.63	6.05	0.104	0.59	5.62	0.104
12/1/2021	1.92	0.52	0.96	17.14	0.056	0.57	9.40	0.061	0.53	10.05	0.052
1/5/2022	1.44	1.22	1.29	6.89	0.187	1.23	3.60	0.341	1.22	3.48	0.351
2/7/2022	1.59	0.37	0.75	11.50	0.065	0.42	3.68	0.113	0.38	3.19	0.118
3/7/2022	1.63	0.91	1.14	5.37	0.211	0.94	2.87	0.326	0.91	2.59	0.352
4/4/2022	2.22	0.4	0.97	11.10	0.087	0.47	3.51	0.133	0.41	3.03	0.135
5/4/2022	0.41	1.85	1.40	12.79	0.109	1.80	10.36	0.173	1.84	10.69	0.172
6/6/2022	1.98	0.41	0.90	10.97	0.082	0.47	4.96	0.094	0.42	5.03	0.083
7/11/2022	2.57	0.42	1.09	15.41	0.071	0.50	4.11	0.122	0.43	3.25	0.132
8/8/2022	2.52	0.4	1.06	13.00	0.082	0.48	3.68	0.130	0.41	3.10	0.132
9/12/2022	2.85	0.36	1.14	17.29	0.066	0.45	5.77	0.078	0.37	5.14	0.072
10/3/2022	3.07	0.38	1.22	10.46	0.117	0.48	2.07	0.231	0.39	1.71	0.230
11/7/2022	1.59	0.99	1.18	7.98	0.148	1.01	4.55	0.222	0.99	4.42	0.225

12/6/2022	3.02	0.68	1.41	14.59	0.097	0.77	4.97	0.154	0.69	4.65	0.148
1/17/2023	1.6	0.74	1.01	9.37	0.108	0.77	5.14	0.150	0.74	5.60	0.133
2/7/2023	1.91	0.42	0.89	8.80	0.101	0.48	2.58	0.184	0.43	2.26	0.189
3/8/2023	1.25	0.5	0.73	6.20	0.119	0.53	3.03	0.174	0.50	2.70	0.186

3.3.8.5 Aluminum

Eighteen monthly paired sets of effluent and ambient aluminum criteria input data was collected by WES Tri-City staff and analyzed by various labs from October 2021 through March 2023. For the RPAs, the mixed concentration of each input parameter were then entered into the aluminum criteria model to calculate the instantaneous water quality criteria (IWQC) for each paired data set. Each IWQC was compared to the corresponding total recoverable aluminum concentration of the effluent or the calculated value at the ZID boundary, the MZ boundary, and at complete mix. Table 3-23 below shows the sample date, calculated criterion, calculated aluminum value, and toxic unit (aluminum concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a concern that the discharge may have the potential to cause or contribute to an exceedance of the criterion. There were four dates on which the toxic units exceeded one (highlighted in the table below). On all of these dates, the ambient total recoverable aluminum greatly exceeded the effluent aluminum and the potential to exceed the criterion is not due to the facility effluent. In these cases, the ambient aluminum exceeded the criterion while the effluent aluminum did not exceed the criterion, indicating that there is no reasonable potential for the facility effluent aluminum concentrations to exceed the criterion. Furthermore, aluminum toxicity is best determined by bioavailability. Using total or dissolved fractions for limit development could result in an over or under conservative limit. Until a bioavailable aluminum method is approved for use, toxic units greater than 1.0 will result in additional monitoring.

These results were achieved using the Outfall 001 dilutions. Because the expected dilutions from proposed Outfall 002 are even greater than the Outfall 001, there is also no reasonable potential for Outfall 002 to exceed the copper criterion. As such, no limit for aluminum is required in the proposed permit.

Additional monitoring for aluminum in both the facility's effluent and the Willamette River is specified in Schedule B of the permit. This monitoring will be used to facilitate additional reasonable potential analysis for aluminum at the next permit renewal.

Table 3-23: Aluminum RPA Results

Date	Effluent	Ambient	ZID	BLM CMC	Toxic Units	RMZ	BLM CCC	Toxic Units	100% mix	BLM CCC	Toxic Units
	Al (ug/L)	Al (ug/L)	Al (ug/L)	ug/L		Al (ug/L)	(ug/L)		Al (ug/L)	Al (ug/L)	
10/14/2021	18.40	52.50	41.84	1700.00	0.0200	51.24	550.00	0.09	52.35	550.00	0.10
11/2/2021	16.10	290.00	204.41	1800.00	0.1100	279.86	610.00	0.46	288.78	630.00	0.46
12/1/2021	15.30	297.00	208.97	2000.00	0.1000	286.57	750.00	0.38	295.74	810.00	0.37
1/5/2022	75.00	1980.00	1384.69	1200.00	1.1500	1909.44	440.00	4.34	1971.50	440.00	4.48

Date	Effluent	Ambient	ZID	BLM CMC	Toxic Units	RMZ	BLM CCC	Toxic Units	100% mix	BLM CCC	Toxic Units
	Al (ug/L)	Al (ug/L)	Al (ug/L)	ug/L		Al (ug/L)	(ug/L)		Al (ug/L)	Al (ug/L)	
2/7/2022	12.40	141.00	100.81	1800.00	0.0600	136.24	510.00	0.27	140.43	500.00	0.28
3/7/2022	21.70	791.00	550.59	1200.00	0.4600	762.51	440.00	1.73	787.57	450.00	1.75
4/4/2022	23.30	138.00	102.16	1700.00	0.0600	133.75	500.00	0.27	137.49	490.00	0.28
5/4/2022	17.40	341.00	239.88	1500.00	0.1600	329.01	570.00	0.58	339.56	610.00	0.56
6/6/2022	16.10	202.00	143.91	2400.00	0.0600	195.11	610.00	0.32	201.17	630.00	0.32
7/11/2022	16.30	100.00	73.84	2400.00	0.0300	96.90	620.00	0.16	99.63	610.00	0.16
8/8/2022	16.40	89.40	66.59	2000.00	0.0300	86.70	540.00	0.16	89.07	520.00	0.17
9/12/2022	13.60	76.00	56.50	2300.00	0.0200	73.69	640.00	0.12	75.72	630.00	0.12
10/3/2022	13.50	65.80	49.46	1700.00	0.0300	63.86	390.00	0.16	65.57	350.00	0.19
11/7/2022	22.60	1400.00	969.56	1300.00	0.7500	1348.99	460.00	2.93	1393.85	470.00	2.97
12/6/2022	49.80	433.00	313.25	1900.00	0.1600	418.81	510.00	0.82	431.29	490.00	0.88
1/17/2023	37.80	700.00	493.06	1500.00	0.3300	675.47	630.00	1.07	697.05	680.00	1.03
2/7/2023	20.40	127.00	93.69	1500.00	0.0600	123.05	460.00	0.27	126.52	450.00	0.28
3/8/2023	16.30	412.00	288.34	1300.00	0.2200	397.34	460.00	0.86	410.23	470.00	0.87

3.3.8.6 Mercury – Human Health Criterion

Oregon's human health water quality criterion for mercury is expressed in terms of a fish tissue concentration rather than a water column concentration. A Willamette Basin Mercury TMDL was established by EPA on December 30, 2019. According to the EPA TMDL and the State of Oregon Water Quality Management Plan, this facility must conduct mercury monitoring and develop and implement a mercury minimization plan tailored to the facility's potential to discharge mercury.

The proposed permit includes a requirement for the permittee to develop and submit a mercury minimization plan (in Schedule A) and to conduct associated effluent monitoring (in Schedule B). Once the plan is submitted to DEQ for review, it must go on public notice for public review before being incorporated into the permit by reference.

3.4 Antibacksliding

As indicted in Section 3.2, the proposed permit includes an increase in dry and wet weather mass load limits for $CBOD_5$ and TSS. Although antibacksliding provisions generally do not allow relaxation of effluent limits in permit renewals, Section 402(o)(2)(A) of the Clean Water Act allow relaxation when "material and substantial alterations or additions to the permitted facility" justify less stringent effluent limitations.

Since the issuance of the existing permit in 2011, a substantial modification and upgrade was completed at the Tri-City WRRF with construction of the MBR treatment system with UV

disinfection in 2011 (see Section 2.1). The installation of the MBR treatment system dramatically improved the WRRF's overall treatment capacity and capabilities. Collectively, these upgrades are considered a "material and substantial alteration or addition to the permitted facility" for the exception to antibacksliding listed under Section 402(o)(2)(A). The new MBR treatment system not only increased treatment capacity (which allows for higher dry and wet weather mass loads), but new system also improved the overall quality of the effluent being discharged by the WRF. Overall, the higher dry and wet weather mass loads will not impact water quality, will meet water quality standards and are consistent with antidegradation requirements (See following Section 3.5). As such, the higher dry and wet weather mass loads may be incorporated into the proposed permit.

3.5 Antidegradation

DEQ must ensure the permit complies with Oregon's antidegradation policy found in OAR 340-041-0004. This policy is designed to protect water quality by limiting unnecessary degradation from new or increased sources of pollution.

In comparison to the existing 2011 permit, the proposed permit contains higher dry and wet weather $CBOD_5$ and TSS mass load limits (see Section 3.2). This is due to the installation of the MBR treatment system which improved the WRRF's overall treatment capacity and capabilities. All other permit limits are either the same or more restrictive.

Since the proposed permit contains higher mass load limits compared to the existing permit, DEQ performed an antidegradation review. The first step in this review was to determine if the increased loads would likely result in any measurable change in water quality. If a measurable change in water quality is likely to occur, then an in-depth antidegradation analysis is required. If it is determined that no measurable change is likely to occur, then no further anti-degradation review is required.

For the increase in the $CBOD_5$ mass load limit, the potential impact on water quality is a reduction of the dissolved oxygen levels in the receiving water. Per OAR 340-041-0004(3)(d), up to a 0.1 mg/L decrease in dissolved oxygen within a stream reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species.

The permittee conducted water quality modeling to assess the impacts of the $CBOD_5$ mass load increase on dissolved oxygen levels in the Willamette River. CE-QUAL-W2 modeling was employed using $CBOD_5$ mass loads that were much higher than those being proposed in the permit. This conservative modeling, which was reviewed by DEQ, indicated that a dissolved oxygen reduction of 0.1 mg/L or greater due to the $CBOD_5$ mass load increase will not occur.[15] Based on this analysis, DEQ determined that no reduction in water quality due to the $CBOD_5$ mass load is expected to occur and no further anti-degradation review is required.

[15] *Tri-City WRRF Mass Load Calculation Methodology.* West Yost and Carollo Engineers for Water Environment Services. Final – May 2023.

For the TSS mass load increase and the potential to reduce water quality by a measurable amount, DEQ compares the impact of the discharge on water quality against a *de minimis* threshold. For most pollutants that have water quality criteria, DEQ policy[16] is to consider a reduction in assimilative capacity of 2.5 % or less to be a *de minimis* impact to water quality. There is no water quality criterion for TSS, so a parallel approach was used where a 2.5 % or less increase over the baseline receiving stream TSS concentration is considered *de minimis*. An analysis of the proposed increase to the TSS mass load limits estimates that there will be a maximum increase of 1.0 % over the baseline receiving stream TSS concentrations. This represents a de minimis, or non-measurable, impact on water quality.

Since it was found that there will be no measurable reduction in water quality due to the proposed mass load increases, no further anti-degradation analysis is required.

Except for the $CBOD_5$ and TSS mass load limits as discussed above, the proposed permit contains the same or slightly lower discharge loadings as the existing permit. Permit renewals with the same or slightly lower discharge loadings as the previous permit are not considered to lower water quality from the existing condition. DEQ is not aware of any information that existing limits are not protective of the receiving stream's designated beneficial uses. DEQ is also not aware of any existing uses present within the water body that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ's antidegradation policy. DEQ's antidegradation worksheet for this permit renewal is available upon request.

3.6 Whole Effluent Toxicity

Whole effluent toxicity (WET) tests are used to determine the treated wastewater's aggregate toxic effect on aquatic organisms. Wastewater samples are collected, and aquatic organisms are subjected to a range of concentrations in controlled laboratory experiments. EPA recommends that WET tests be used in NPDES permits together with requirements based on chemical-specific water quality criteria.

WET tests are used to determine the percentage of effluent that produces an adverse effect on a group of test organisms. The measured effect may be fertilization, growth, reproduction, or survival. EPA's methodology includes both an acute test and a chronic test. An acute WET test is considered to show toxicity if adverse effects occur at effluent concentrations less than what is found at the edge of the zone of immediate dilution (ZID). A chronic WET test is considered to show toxicity if adverse effects occur at effluent concentration less than what is known to occur at the edge of the mixing zone.

WET tests will be conducted during the next permit term in accordance with Schedules B and D of the permit. The dilution series to be used for the WET testing is indicated in testing methodology described in Schedule D of the permit.

[16] DEQ Memorandum from Jennifer Wigal: *Procedures to determine if a new or increased load would be a de minimis lowering of water quality*, May 2, 2018.

3.7 Groundwater

The treatment facility does not have any basins, ponds or lagoons that have the potential to leach into the groundwater. No groundwater monitoring or limits are required.

4. Schedule A: Other Limitations

4.1 Mixing Zone

Schedule A describes the regulatory mixing zone as discussed above in Section 3.

4.2 Biosolids

Schedule A of the permit requires the facility to apply biosolids according to their Biosolids Management Plan. In addition, Schedule A requires the following:

- Apply at or below agronomic rates,
- The permittee must have written site authorization for each location from DEQ before land applying and abide by the restrictions for each site,
- Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32 and one of the vector attraction reduction standards under 40 CFR 503.33, and
- The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations for the nine metals shown in Schedule A of the permit.

4.3 Recycled Water

The permittee does not currently operate a recycled water program but may develop one during the term of this permit. If the permittee chooses to develop a recycled water program, a comprehensive recycled water use plan meeting the requirements in OAR 340-055 will be submitted to DEQ for review and approval; appropriate actions must also be made to OHA and WRD. The recycled water use plan, including the locations of any proposed irrigation projects, will be made available for public comment.

Schedule A of the permit requires the permittee to apply recycled water according to their recycled water use plan. Schedule A also restricts the application of recycled water to prevent the following:

- Irrigating above agronomic rates,
- Adverse impact to groundwater,
- Offsite surface runoff or subsurface drainage through drainage tile, and
- Creation of odors, fly and mosquito breeding, or other nuisance conditions.

5. Schedule B: Monitoring and Reporting Requirements

Schedule B of the permit describes the minimum monitoring and reporting necessary to demonstrate compliance with the proposed effluent limits. In addition, monitoring for other parameters is required to better characterize the effluent quality and the receiving stream. This data will be used during the next permit renewal. Detailed monitoring frequency and reporting requirements are in Schedule B of the proposed permit. The permit also includes monitoring requirements for the Industrial Pretreatment program. The required monitoring, reporting and frequency for many of the parameters are based on DEQ's monitoring and reporting matrix guidelines, permit writer judgment, and to ensure the needed data is available for the next permit renewal.

6. Schedule C: Compliance Schedules and Conditions

The proposed permit contains new water quality-based effluent limits for ammonia for Outfall 001. These limits will go into effect after Outfall 002 becomes fully operational in early 2026 and will apply only to dry season discharges from Outfall 001 from May 1 through October 31. The facility is unable to meet this limit for Outfall 001 upon permit issuance. The proposed permit contains a compliance schedule that allows time for the WRRF to make facility modifications in order to meet the new limits. The facility modifications include the construction of Outfall 002 and the development of an Optimization Study to determine feasible operation changes that can be made to the WRRF's existing treatment processes to minimize effluent ammonia concentrations. These operation changes will be employed while Outfall 002 is being constructed. The compliance schedule lays out a series of milestones for the Optimization Study and outfall construction which, upon completion, will enable the permittee to meet the permit's water quality-based effluent limits (see 40 CFR 122.47 and OAR 340-041-0061(12)). DEQ has reviewed the facility's proposed schedule for the Optimization Study and construction of Outfall 002, and has determined that the proposed compliance schedule is efficient and timely, requiring the permittee to meet the final limits as soon as possible.

7. Schedule D: Special Conditions

The proposed permit contains the following special conditions. The conditions include the following:

7.1 Inflow and Infiltration

A requirement to submit an updated inflow and infiltration plan in order to reduce groundwater and stormwater from entering the collection system.

7.2 Emergency Response and Public Notification Plan

A requirement to develop and submit an emergency and spill response plan or ensure the existing one is current per General Condition B.8 in Schedule F.

7.3 Recycled Water Use Plan

The permittee does not currently operate a recycled water use program. Should the permittee pursue a recycled water program over the next permit term, this condition requires the permittee to develop and maintain a recycled water use plan that meet the requirements in OAR 340-055-0025. The plan must also include location-specific information describing where and how recycled water is managed to protect public health and the environment.

7.4 Exempt Wastewater Reuse at the Treatment System

A condition that exempts the permittee from the recycled water requirements in OAR 340-055, when recycled water is used for landscape irrigation at the treatment facility or for in-plant processes, such as in plant maintenance activities.

7.5 Biosolids Management Plan

A requirement to manage all biosolids in accordance with a DEQ-approved biosolids management plan and land application plan. The biosolids management plan and the land application plan must meet the requirements in OAR 340-050-0031 and describe where and how the land application of biosolids is managed to protect public health and the environment.

The permittee's biosolids management plan and land application plan were updated in September 2022 and received DEQ approval on November 1, 2022. The plan includes all sites authorized by DEQ for land application of biosolids.

7.6 Wastewater Solids Transfers

A condition that allows the facility to transfer treated or untreated wastewater solids to other in-state or out-of-state facilities that are permitted to accept the wastewater solids.

7.7 Whole Effluent Toxicity Testing

The permittee is required to perform WET testing to ensure the aggregate of toxics is not negatively impacting aquatic life. This condition describes the test procedures and requirement for the WET testing. The WET testing will begin after Outfall 002 becomes operational in late 2025. A dilution series has been specified on the basis of the mixing zone analysis for Outfall 002.

7.8 Operator Certification

The permittee is required to have a certified operator consistent with the size and type of treatment plant covered by the permit per OAR 340-049-0005. This special condition describes the requirements relating to operator certification.

7.9 Outfall Inspection for Outfall 001 and Outfall 002 As-Builts

This condition requires the permittee to inspect Outfall 001 and submit a report to DEQ regarding its condition by the date listed in Table B1 of the permit. This condition also requires the permittee to submit As-Built drawings of Outfall 002 by the same date listed in Table B1 of the permit.

8. Schedule E: Pretreatment Activities

As described in Section 2.5, the permittee implements an industrial pretreatment program that was initially approved by DEQ in December 1983 and was subjected to a DEQ compliance audit in December 2018. Schedule E includes specific requirements on how WES is expected to administer and implement its formal pretreatment program. Schedule E also identifies specific document submittal due dates related to some of the pretreatment program components.

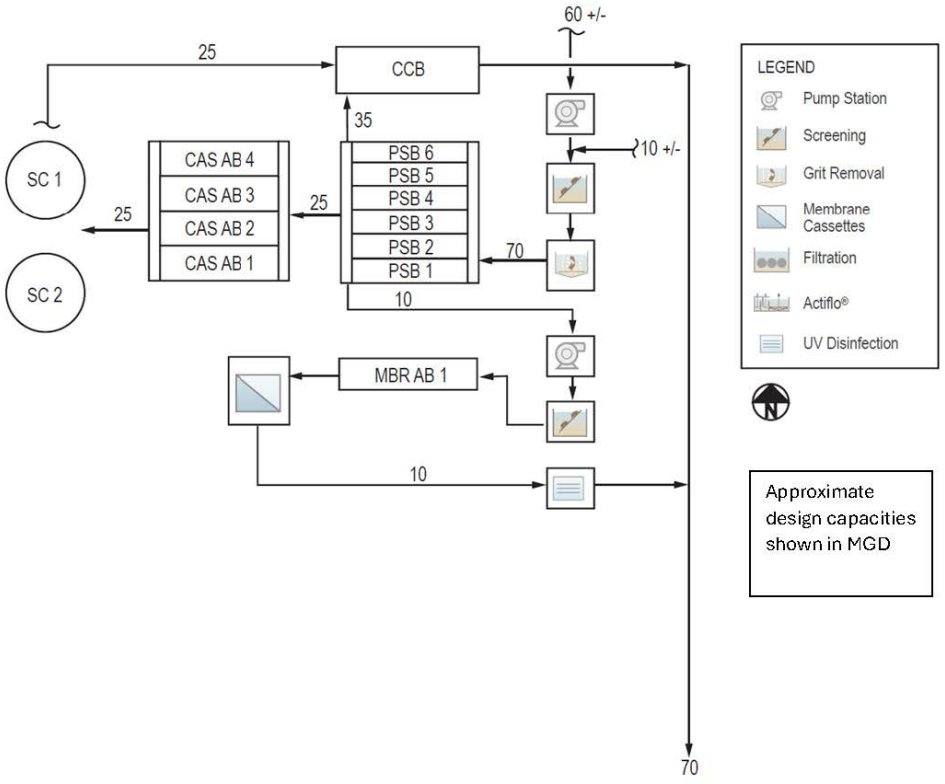
Schedule E, Condition 13 requires that WES submit a complete report on or before March 31 that describes the pretreatment activities conducted during the previous calendar year. In addition, Schedule E, Condition 14 requires WES to submit substantial and non-substantial pretreatment program modification requests to DEQ for approval.

9. Schedule F: NPDES General Conditions

Schedule F contains the following general conditions that apply to all NPDES permittees. These conditions are reviewed by EPA on a regular basis.

- Section A. Standard Conditions
- Section B. Operation and Maintenance of Pollution Controls
- Section C. Monitoring and Records
- Section D. Reporting Requirements
- Section E. Definitions

Appendix A: Process Flow Chart



Existing Tri-City WRRF Process Flow Schematic

Appendix B: Existing Permit Limits

SCHEDULE A

1. Waste Discharge Limitations not to be exceeded after permit effective date.

a. Treated Effluent Outfall 001

(1) May 1 - October 31:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
$CBOD_5$ (See Note 1)	10 mg/L	15 mg/L	1050	1750	2100
TSS	10 mg/L	15 mg/L	1400	2100	2800

* Average Dry Weather Design Flow for the Facility after the expansion is 11.9 MGD. Summer mass load limits remain the same as the pervious permit.

Other parameters	Limitations
BOD and TSS Removal Efficiency	Shall not be less than 85% based on a monthly average for BOD_5 and shall not be less than 85% based on a monthly average for TSS.

(2) November 1 - April 30:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
$CBOD_5$ (See Note 1)	25 mg/L	40 mg/L	2800	4500	5600
TSS	30 mg/L	45 mg/L	3400	5100	6800

*The winter mass load limits are based upon average wet weather design flow prior to expansion (13.5 MGD). The daily mass load limit is suspended on any day in which the flow into the treatment facility exceeds 23.8 MGD (twice the design average dry weather flow).

(3) Other Parameters (year-round)

Parameter	Limitations
E. coli Bacteria	Shall not exceed 126 organisms per 100 mL monthly geometric mean. No single sample shall exceed 406 organisms per 100 mL. (See Note 2)
pH	Shall be within the range of 6.0 - 9.0
BOD_5 and TSS Removal Efficiency	Shall not be less than 85% based on a monthly average for BOD_5, and shall not be less than 85% based on a monthly average for TSS.
Total Chlorine Residual	Shall not exceed an average monthly concentration of 0.02 mg/L and a maximum daily concentration of 0.04 mg/L
Ammonia (Interim limit, See note 3)	Shall not exceed a monthly average of 15 mg/L

(4) No wastes may be discharged or activities conducted that violate water quality standards adopted in OAR 340-041 for the Willamette basin except in the regulatory mixing zone and as provided for in OAR 340-045-0080.

The regulatory mixing zone is that portion of the Willamette River which extends 300 feet downstream of the point of discharge. The zone of initial dilution shall include that portion of the Willamette River which extends 30 feet downstream of the point of discharge.

(5) One of the three temperature thermal load limit options below apply as follows:

(A). When the permittee measures effluent temperature and effluent flow for use in determining compliance with the temperature thermal load, the temperature thermal load limits shall not exceed a rolling 7 day average of 144 million Kcals/Day.

(B). When the permittee measures effluent flow, effluent temperature and receiving stream flow for use in determining compliance with the temperature thermal load from the table below or the resultant value of 'a' is greater than zero, the temperature thermal load limits will be based on the range of receiving stream flow shown below and shall not exceed the corresponding ETL in million Kcals/day.

Stream Flow	ETL
When the River flow (cfs) is greater than,	the temperature thermal load shall not exceed a rolling 7 day average of (million Kcals/Day)
0	144
6429	150
6873	153
7362	155
8323	161
9962	171
17294	216

(C). When the permittee measures effluent flow, effluent temperature, receiving stream flow, and receiving stream temperature for use in determining compliance with the temperature thermal load from the table below and the resultant value of 'a' is equal to zero, the temperature thermal load limits will be based on the range of receiving stream flow shown below and shall not exceed the corresponding thermal load in million Kcals/day.

Stream Flow	ETL
When the River flow (cfs) is greater than,	the TTL shall not exceed a rolling 7 day average of (million Kcals/Day)
0	156
6429	162
6873	165
7362	168
8323	173
9962	183
17294	229

(D). When the permittee measures, effluent flow, effluent temperature and receiving stream flow and uses the receiving stream flow for calculating the waste load allocation expressed as excess thermal load, the following equation will be used to determine the permit limits.

$$ETL = (((m \times Q_R)+b) - a) \times Q_{PS} \times 2.447 \times (T_{PS}-T_{RC})$$
$$= ((0.00004872 \times Q_R + 0.985) - 0.1) \times 10.67 \times 2.447 \times (24.8 - 20)$$

(c) The creation of odors, fly and mosquito breeding or other nuisance conditions;
(d) The overloading of land with nutrients, organics, or other pollutant parameters;
(e) Impairment of existing or potential beneficial uses of groundwater.

2. Prior to use, the recycled water must receive treatment to the appropriate Class as defined in OAR 340-055:

Class C

Oxidized and must reduce Total Coliform to 240 organisms per 100 mL in two consecutivesamples, and a seven-day median of 23 organisms per 100 mL.

Class B

Oxidized and must reduce Total Coliform to a 7-day median of 2.2 organisms per 100 mL and a maximum of 23 organisms per 100 mL.

Class A

Oxidized, filtered, and

Prior to disinfection, turbidity must not exceed an average of 2 nephelometric turbidity units (NTUs) within a 24-hour period, 5 NTUs more than five percent of the time within a 24-hour period and 10 NTUs at any time.

After disinfection, Total Coliform must not exceed a median of 2.2 organisms per 100 mL based on results of the last seven days that analyses have been completed, and 23 total coliform organisms per 100 mL in any single sample.

3. All use of recycled water must conform to the Recycled Water Use Plan approved by the Department. Upon approval of the Recycle Water Use Plan, the Plan will become enforceable through this permit.

4. Groundwater

No activities will be conducted that could cause an adverse impact on existing or potential beneficial uses of groundwater.

c. Biosolids
All activities pertaining to the management, treatment and disposal of the biosolids and maintenance of the land application sites shall be conducted in accordance with the approved Biosolids Management Plan as required in Schedule D, item 1 of this permit, and any approved amendments. No changes or amendments may be made in the approved plan without written approval by the Department.

d. Groundwater
No activities shall be conducted that could cause an adverse impact on existing or potential beneficial uses of groundwater.

NOTES:

1. The $CBOD_5$ concentration limits are considered equivalent to the minimum design criteria for BOD_5 specified in OAR 340-041. These limits and $CBOD_5$ mass limits may be adjusted (up or down) by permit action if more accurate information regarding $CBOD_5/BOD_5$ becomes available.

2. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.

3. Ammonia interim limit of 15 mg/L has been set until requirements in MAO #WQ/M-NWR-11-046 are completed. This limit shall no longer apply once the permittee meets the MAO requirements.

   If the permittee fails to complete the anticipated capital improvement requirements in the MAO by December 1, 2012, then the permittee's Total Ammonia discharge rate during the dry weather flow shall not exceed a monthly average of 9.4 mg/L, and a daily maximum of 20.1 mg/L. During wet weather, ammonia shall not exceed a monthly average of 16.0 mg/L and a daily maximum of 37.8 mg/L as determined by the Reasonable Potential Analysis.

MODIFICATION NO.1

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Department of Environmental Quality
Northwest Region – Portland Office
2020 SW 4th Ave., Suite 400, Portland, OR 97201
Telephone: (503) 229-5263

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

ISSUED TO:

Tri-City Service District
150 Beavercreek Rd, Suite 430
Oregon City, OR 97045

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	R.M. 25.5
Recycled Water	097-099	Irrigation

FACILITY TYPE AND LOCATION:

Activated Sludge and Membrane Bio-Reactor
15941 S Agnes Avenue
Oregon City, OR 97045

RECEIVING STREAM INFORMATION:

Basin: Willamette
Sub-Basin: Lower Willamette
Receiving Stream: Willamette River
LLID: 1227618456580 25.5 D
County: Clackamas

Treatment System Class: Level IV
Collection System Class: Level IV

EPA REFERENCE NO: OR-003125-9

This modification was initiated by the DEQ.

This permit modification is issued based on the land use findings in the permit record.

Tiffany Yelton-Bram, Water Quality Manager
Northwest Region

Date signed: 6/18/2014

Changes to Schedule A

1. **DELETE Condition 1.c:**

~~c. *Biosolids*~~
~~*All activities pertaining to the management, treatment and disposal of the biosolids and maintenance of the land application sites shall be conducted in accordance with the approved Biosolids Management Plan as required in Schedule D, item 1 of this permit, and any approved amendments. No changes or amendments may be made in the approved plan without written approval by the Department.*~~

2. **SUBSTITUTE new Condition 1.c:**

c. Biosolids
The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

1. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.
2. Except when used for land reclamation and approved by DEQ, biosolids must be applied at or below the agronomic rate required for maximum crop yield.
3. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D, Condition 2) and follow the site-specific management conditions in the DEQ-issued site authorization letter.
4. Biosolids must meet one of the pathogen reduction standards under 40 CFR §503.32 and one of the vector attraction reduction standards under 40 CFR §503.33.
5. Pollutants in biosolids may not exceed the ceiling concentrations shown in the Table (A.1.c) below. Biosolids exceeding the pollutant concentrations in the Table (A.1.c.) below must be applied at a rate that does not exceed the corresponding cumulative pollutant loading rates.

Table A.1.c: Biosolids Limits

Pollutant	Ceiling concentrations[1] (mg/kg)	Pollutant concentrations[1] (mg/kg)	Cumulative pollutant loading rates[1] (kg/ha)
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	N/A	N/A
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

Note: [1] Biosolids pollutant limits are described in 40 CFR Part 503.13, which uses the terms *ceiling concentrations*, *pollutant concentrations*, and *cumulative pollutant loading rates*. Biosolids containing pollutants in excess of the ceiling concentrations may not be applied to the land. Biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, may be applied to the land; however, the total quantity of biosolids applied may not exceed the cumulative pollutant loading rates.

MODIFICATION NO.2

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Department of Environmental Quality
Northwest Region – Portland Office
2020 SW 4th Ave., Suite 400, Portland, OR 97201
Telephone: (503) 229-5263

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

ISSUED TO:

Tri-City Service District
150 Beavercreek Rd, Suite 430
Oregon City, OR 97045

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	R.M. 25.5
Recycled Water	097-099	Irrigation

FACILITY TYPE AND LOCATION:

Activated Sludge and Membrane Bio-Reactor
15941 S Agnes Avenue
Oregon City, OR 97045

RECEIVING STREAM INFORMATION:

Basin: Willamette
Sub-Basin: Lower Willamette
Receiving Stream: Willamette River
LLID: 1227618456580 25.5 D
County: Clackamas

Treatment System Class: Level IV
Collection System Class: Level IV

EPA REFERENCE NO: OR-003125-9

This modification was initiated by the Tri-City Service District.

This permit modification is issued based on the land use findings in the permit record.

Tiffany Yelton-Bram, Water Quality Manager
Northwest Region

Date signed: 4/14/2016

Changes to Schedule A

1. **ADD TO Condition 1.a (3) – Proposed additions shown in red. Deletions shown in strikeouts**

(3) Other Parameters (year-round)

Parameter	Limitations
Total Chlorine Residual (applicable when Chlorine is in use)	Must ~~Shall~~ not exceed an average monthly concentration of 0.02 mg/L and a maximum daily concentration of 0.04 mg/L. (See Note 4)
Peracetic acid residual	Must not exceed a maximum daily concentration of 1.00 mg/L Must not exceed a monthly average concentration of 0.70 mg/L (See Note 5)

2. **ADD New Notes 4 and 5**

4. The permittee is authorized to transition from using gaseous chlorine to peracetic acid as the primary disinfectant during the pilot test period described in Schedule C. The permittee will not be required to meet the permit's existing chlorine residual limitation while peracetic acid is in use. However, the chlorine residual limitation will remain in effect when chlorine is utilized as the CAS wastewater disinfectant.

5. Upon meeting the requirements of Schedule C, the permittee is authorized to permanently transition from using gaseous chlorine to peracetic acid as the primary disinfectant.

Appendix C: Temperature RPA for Thermal Plume Migration Blockage

Attachment C-1: Thermal Plume Migration Blockage for Outfall 001

Temperature Thermal Plume Limitations within the Mixing Zone Rule (OAR 340-041-0053(2)(d))

Sections 5.6 and 6.5 of Temperature IMD

This rule only applies to receiving streams with salmonid uses. For migration blockage, applies to upstream migration of anadromous salmonits (See associated notes in the "Thermal Plumes Instructions".) This spreadsheet assesses compliance with OAR 340-042-0053(2)(d) subparts C and D. Subparts A and B need to be assessed separately (see Thermal Plumes Instructions).

Facility Name: Tri-City WRRF - Outfall 001 **Date: November 16, 2023**

OAR 340-041-0053(2)(d)(C): Thermal Shock 25 deg C at 5% of the stream cross section			OAR 340-041-0053(2)(d)(D): Migration Blockage 21 deg C at 25% of the stream cross section		
Enter data into white cells below:		Data Metric/Source	Enter data into white cells below:		Data Metric/Source
7Q10 =	cfs		7Q10 =	5902 cfs	Mixing Zone Memorandum
Ambient Temperature=	°C		Ambient Temperature =	21 °C	AQWMS River Data - above 21C
Effluent Flow =	mgd		Effluent Flow =	17.2 mgd	Mixing Zone Study - Maximum Monthly Avg
Max Daily Effluent Temperature =	°C		Max 7dAM Effluent Temperature =	24.6 °C	Maximum effluent temperature 2017-2021
5% of 7Q10 =	0.0 cfs		25% of 7Q10 =	1475.5 cfs	
5% dilution =	#DIV/0! dilution = (Qr*0.05)/Qe + 1		25% dilution =	56 dilution = (Qr*0.25)/Qe + 1	
Temperature at 5% cross section =	#DIV/0! °C		Temperature at 25% cross section =	21.1 °C	
		#DIV/0!	ΔT at 25% Stream Flow=	0.1 °C	No Reasonable Potential
Notes:					

Attachment C-2: Thermal Plume Migration Blockage for Outfall 002

Temperature Thermal Plume Limitations within the Mixing Zone Rule (OAR 340-041-0053(2)(d))

Sections 5.6 and 6.5 of Temperature IMD

This rule only applies to receiving streams with salmonid uses. For migration blockage, applies to upstream migration of anadromous salmonits (See associated notes in the "Thermal Plumes Instructions".) This spreadsheet assesses compliance with OAR 340-042-0053(2)(d) subparts C and D. Subparts A and B need to be assessed separately (see Thermal Plumes Instructions).

Facility Name: Tri-City WRRF - Outfall 002 **Date: November 16, 2023**

OAR 340-041-0053(2)(d)(C): Thermal Shock 25 deg C at 5% of the stream cross section			OAR 340-041-0053(2)(d)(D): Migration Blockage 21 deg C at 25% of the stream cross section		
Enter data into white cells below:		Data Metric/Source	Enter data into white cells below:		Data Metric/Source
7Q10 =	cfs		7Q10 =	5989 cfs	Mixing Zone Memorandum
Ambient Temperature=	°C		Ambient Temperature =	21 °C	AQWMS River Data - above 21C
Effluent Flow =	mgd		Effluent Flow =	17.8 mgd	Mixing Zone Study - Maximum Monthly Average
Max Daily Effluent Temperature =	°C		Max 7dAM Effluent Temperature =	24.6 °C	Maximum effluent temperature 2017-2021
5% of 7Q10 =	0.0 cfs		25% of 7Q10 =	1497.3 cfs	
5% dilution =	#DIV/0! dilution = (Qr*0.05)/Qe + 1		25% dilution =	55 dilution = (Qr*0.25)/Qe + 1	
Temperature at 5% cross section =	#DIV/0! °C		Temperature at 25% cross section =	21.1 °C	
		#DIV/0!	ΔT at 25% Stream Flow=	0.1 °C	No Reasonable Potential
Notes:					

Appendix D: Supporting Information for Flow-Based Temperature WLA and Limit

The flow-based WLA formula is derived from equation 6 of Chapter 4 (Appendix 4.5) of the Willamette River TMDL. The April 2010 DEQ document *Mainstem Willamette Reserve Capacity Analysis* allocated some of the reserve capacity to specific sources, but none to the Tri-City facility (see Table 5 of that document).

TMDL Eqn. 6 $WLA = d \cdot Q_{PS} \cdot k \cdot (T_{PS} - T_{RC})$ (See TMDL p. 4-132.)

The inputs to the equation, including certain values specific to this facility, are as follows:

- $d = ((m \cdot Q_R) + b) - a$ (TMDL Eqn. 7, p. 4-133. This calculates the variable "d" for Eqn. 6.)
  - Within the above equation, $a = 1 - \left(\frac{T_{RA_N}}{T_{RC}}\right)$ (from TMDL p. 4-133)
- m = 0.00004872 (a dimensionless value from page 4-117 of TMDL)
- Q_R = Rolling seven-day average ambient river flow (in cfs) (Variable within equation)
- b = 0.9850 (a dimensionless value from page 4-117 of TMDL)
- T_{RA_N} = 18.0°C (7-day average natural thermal potential river temperature (°C) from TMDL Table 4.37)
- T_{RC} = 20.0°C (Applicable biologically based numeric temperature criterion (°C) from TMDL p.117)
- Q_{PS} = 10.67 (Max observed effluent flow (cfs) from TMDL p.117)
- T_{ps} = 24.8°C (Rolling seven-day average maximum effluent temperatures (°C) from TMDL p.117)
- k = 2.447 (conversion factor from TMDL p.132)

Solution

1) Solve for *a*

   $a = 1 - (T_{RA\_N}/T_{RC})$

   $a = 1 - (18.0/20.0)$

   $\boldsymbol{a = 0.1}$

2) Solve for *d*

   $d = m \cdot Q_R + b - a$

   $d = 0.00004872 \cdot Q_R + 0.9850 - 0.1$

   $d = 0.00004872 \cdot Q_R + 0.8850$

3) Solve for $(T_{PS} - T_{RC})$

   $(T_{PS} - T_{RC}) = 24.8 - 20.0$

   $(T_{PS} - T_{RC}) = 4.8$

4) Plug (1) (2) (3) and the remaining input values into WLA equation:
$WLA = d \cdot Q_{PS} \cdot k \cdot (T_{PS} - T_{RC})$

$WLA = (0.00004872 \cdot Q_R + 0.8850) \cdot 10.67 \cdot 2.447 \cdot 4.8$

$WLA = (0.00004872 \cdot Q_R + 0.8850) \cdot 125.3$

$WLA = (0.00004872 \cdot Q_R \cdot 125.3) + (0.8850 \cdot 125.3)$

$WLA = 0.006105 \cdot Q_R + 110.9$

$$\boldsymbol{WLA = 0.00611 \cdot Q_R + 111\ million\ kilocalories/day}$$

The above equation is the final flow-based TMDL WLA equation for the facility, rounded to three significant figures (to be consistent with the static limit value).

Appendix E: Ammonia RPA for Outfall 001

Reasonable Potential Analysis - Fresh and Saltwater Ammonia Criteria

Ammonia RPA Calculation (2013 Criteria) Revision 3.1

RPA Run Information

Facility Name:	Tri-City WRRF
Outfall Number:	1
Permit Writer Name:	Mark W. Hynson
Date of RPA Run:	1-Nov-23
RPA Run Notes: Discharges through Outfall 001 only. No concurrent discharges from Outfall 002 located upstream. Outfall 001 expected to discharge as primary outfall until February 1, 2026.	
KEY:	-- Intermediate calc.s
* Enter data here	-- Calculated results

Enter Information Below

Enter Dilution Values			
Dilution @ ZID (from study)			3.2
Dilution @ MZ 7Q10 (from study)			27
Dilution @ MZ 30Q5 (from study)			27
Is waterbody fresh or salt water? (Fresh/Salt)			Fresh
If Saltwater, then enter salinity (ppt)			
Ambient Salinity		ppt	*
Effluent Salinity		ppt	*
Are Salmonid a designated use (OAR 340-041-0101 through 0340? (Yes/No)			Yes
Confidence Level and Probability Basis			
Confidence Level		%'ile	99%
Probability Basis		%'ile	95%

Dilution Calculations

Inputs

		ZID	MZ (7Q10)	MZ (30Q5)
Dilution Factors		3.2	27.0	27.0
Upstream Characterization			Acute	Chronic
Temperature	deg. C		24.2	24.2
pH			7.9	7.9
Alkalinity	mg/L $CaCO_3$		28.0	28.0
Effluent Characterization				
Temperature	deg. C		23.7	23.7
pH			7.5	7.5
Alkalinity	mg/L $CaCO_3$		94.0	94.0

*Calculation of pH of a mixture of two flows based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

** Selection of acute alkalinity %ile is based on pH of effluent vs ambient.

Outputs

		ZID	MZ (7Q10)	MZ (30Q5)
Upstream				
pKa		6.4	6.4	6.4
Ionization Fraction		1.0	1.0	1.0
Total Inorganic Carbon	mg/L $CaCO_3$	28.8	28.8	28.8
Effluent				
pKa		6.4	6.4	6.4
Ionization Fraction		0.9	0.9	0.9
Total Inorganic Carbon	mg/L $CaCO_3$	100.8	100.8	100.8
Mixing Zone				
Temperature	deg. C	24.0	24.2	24.2
Alkalinity	mg/L $CaCO_3$	48.6	30.4	30.4
Total Inorganic Carbon	mg/L $CaCO_3$	51.3	31.5	31.5
pKa		6.4	6.4	6.4
pH		7.6	7.8	7.8
Salinity	ppt	--	--	

Reasonable Potential Analysis

Pollutant Parameter	End of Pipe Analysis: # of Samples	Highest Effluent Conc.	Coefficent of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Determine In-Stream Conc.: Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ (7Q10)	Max Total Conc. at RMZ (30Q5)	WQ Criteria: Acute CMC	Chronic Calc. (4-day avg.)	Chronic Calc. (7Q10)	Chronic Calc. (30 day avg.)
		mg/l		mg/l	(Yes/No)	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/l	mg/l
Ammonia (Freshwater Salmonids)	388	40.7	0.3	40.7	Yes	0.1	12.8	1.6	1.6	5.5	1.9		0.7
Ammonia (Freshwater, Salmonids absent)	--	--	--	--	--	--	--	--	--	--	--		--
Ammonia (Salt Water)	--	--	--	--	--	--	--	--	--	--		--	

ZID and MZ Analysis

Pollutant Parameter	Is there Reasonable Potential to Exceed? (Yes/No) Acute	Chronic (4 day avg.)	Chronic (7Q10)	Chronic (30 day avg.)
Ammonia (Freshwater Salmonids)	YES	NO		YES
Ammonia (Freshwater, Salmonids absent)	--	--		--
Ammonia (Salt Water)	--		--	

Effluent Limits

Pollutant Parameter	# of Req's Samples	Waste Load Allocations: Acute WLA	Chronic WLA (4 day avg.)	Chronic WLA (7Q10)	Chronic WLA (30Q5)	Long Term Average: Acute LTA	Chronic LTA (4 day avg.)	Chronic LTA (7Q10)	Chronic LTA (30Q5)	Min. LTA	Effluent Limits: Max Daily (MDL)	Monthly (AML)
	#/month	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	99%	95%
Ammonia (Freshwater Salmonids)	8	17.5	48.7		18.4	8.5	33.2		15.9	8.5	17.5	10.3
Ammonia (Freshwater, Salmonids absent)	--	--	--		--	--	--		--	--	--	--
Ammonia (Salt Water)	--	--		--		--		--		--	--	--

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