

FACT SHEET FOR NPDES PERMIT WA0037087

City of Tacoma

Central Wastewater Treatment Plant

Date of Public Notice: 05/10/2024

Permit Effective Date: 02/01/2025

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the City of Tacoma's Central Treatment Plant #1 (Central WWTP).

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

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for Central WWTP, NPDES permit WA0037087, are available for public review and comment from **May 10, 2024, to June 27, 2024**. For more details on preparing and filing comments about these documents, please see Appendix A - Public Involvement Information.

The Permittee reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving water prior to publishing this draft fact sheet for public notice.

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

Summary

The city of Tacoma operates a high purity oxygen activated sludge wastewater treatment plant that discharges to Commencement Bay in Southern Puget Sound. Ecology issued the previous permit for this facility on November 1, 2010.

The proposed permit includes the same effluent limits for Total Suspended Solids (TSS), Fecal Coliform, and pH as the permit issued in 2010. The proposed permit reduces the average monthly limit for Total Residual Chlorine. The proposed permit

includes using limits for Carbonaceous Biochemical Oxygen Demand (CBOD₅) instead of the previously used BOD₅, as requested by the permittee. The proposed permit includes new monitoring requirements for enterococci and PFAS. The previous permit's requirement for additional sampling during flow blending events has been removed.

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I. Introduction

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

The following regulations in the Washington Administrative Code (WAC) apply to domestic wastewater NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Discharge standards for domestic wastewater facilities (chapter 173 221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

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

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

II. Background information

Table 1 - Facility information

Applicant:	
Facility name and address	Tacoma Central Wastewater Treatment Plant 2201 Portland Avenue, Tacoma, WA 98421
Contact at facility	Name: Kirk Elliott Title: Asst. Division Manager Plant Operations Telephone #: (253)404-6992 Email: KElliott@cityoftacoma.org
Responsible official	Name: Elizabeth Pauli Title: City Manager Address: 747 Market St. #1200, Tacoma 98402 Telephone #: (253)591-5000 Email: citymanager@cityoftacoma.org
Type of treatment	High Purity Oxygen Activated Sludge
Facility location (NAD83/WGS84 reference datum)	Latitude: 47.24389° Longitude: -122.40813°
Discharge waterbody name and location (NAD83/WGS84 reference datum)	Commencement Bay Latitude: 47.27824° Longitude: -122.41915°

Permit status

Issuance date of previous permit: October 6, 2010

Application for permit renewal submittal date: April 29, 2015

Inspection status

Date of last non-sampling inspection: February 5, 2024

Figure 1 - Facility location map



II.A. Facility description

1. History

The City of Tacoma's Central Wastewater Treatment Plant (Central WWTP) was originally constructed in 1951 and provided primary sewage treatment with a capacity of 13.5 million gallons per day (mgd) average dry weather flow (ADWF) and discharged to the Puyallup River. In 1957, the City began a program to separate out stormwater from the sanitary sewer and increased the capacity of the primary treatment plant from 13.5 mgd to 27 mgd ADWF.

Additional improvements to the primary plant occurred between 1979 and 1982. These upgrades increased the capacity of the treatment plant from 27 mgd to 38 mgd. The last major upgrade was constructed in 1989 when the Central WWTP was upgraded to a biological secondary treatment facility with the completion of a high purity oxygen activated sludge treatment system, secondary settling, and

chlorination disinfection of the treated wastewater effluent. This upgrade also relocated the Puyallup River outfall to Commencement Bay via a 15,650-foot overland pipeline to a deep marine outfall and diffuser located between Sitcum and Blair waterways approximately 1,200 feet offshore at a depth of approximately 125 feet.

In 2008, the City of Tacoma completed upgrades and improvements to the Central Treatment Plant, providing capacity for a re-rated design maximum monthly flow of 60 mgd and a design peak flow of 150 mgd. The completed upgrades to the Central WWTP resulted in the influent screens, influent pump station, and grit tanks being upgraded to a peak hourly capacity of 150 mgd, and a new peak wet weather flow process installed to treat wet weather peak flows exceeding 60 mgd. The primary settling tanks and biological treatment process would remain at their current hydraulic capacity of approximately 88 mgd.

The Central WWTP has been designated as requiring a major permit by the United States EPA.

2. Collection system status

Construction of the first community sewers began in 1880. These first sewers discharged to the tidewaters of Commencement Bay. From that time until 1928, collection systems constructed for sanitary sewage and stormwater were separate, interconnected only at the head of ravines or near the point of final disposal. Between 1928 and 1946, most collection system construction combined sanitary and stormwater, conveying it to Commencement Bay. Engineering studies conducted in 1946 prompted the City to maintain separate collection systems for storm and sanitary service. Since 1946, sanitary and storm sewer systems have been constructed separately.

Trunk lines to route sewage from the existing sewers, and a wastewater treatment plant to service central, southern, and eastern Tacoma were approved in 1944. Construction of the trunk sewers and wastewater treatment plant began in 1949 and 1950, respectively. The sewer system was established as a public utility in 1951, just prior to the completion of the Central WWTP in early 1952.

With the completion of the Central WWTP in 1952, excessive hydraulic loadings prompted the City to begin a storm/sanitary separation program in 1957. This effort to eliminate combined sewers and reduce infiltration and inflow was essentially completed in 1966. The Central WWTP also underwent additional construction in 1963 to increase capacity.

Construction of a trunk sewer and associated collection system across the Tacoma Tideflats into Northeast Tacoma was completed in 1975, providing sanitary sewer service to virtually the entire Tideflats area.

Despite the work on the collection system and added capacity, the Central WWTP was still hydraulically overloaded during high flow events. In addition, during large storm events, the collection system would occasionally experience sanitary sewer overflows (SSO) in some locations. In 1992, the city of Tacoma formed the Infiltration and Inflow Reduction Program to identify and remove sources of infiltration and inflow (I/I). In 1995, Tacoma created the Wastewater Collection System Structural Rehabilitation Program to address the aging infrastructure and further eliminate I/I through rehabilitation of the sewer system. While inflow efforts have lowered peak flows somewhat, the I/I reduction benefits of ongoing sewer rehabilitation will only be evident in the long term. As such, SSO incidents still occur during large storm events. As part of its ongoing I/I elimination program, and as required in section S.13 of the permit, Tacoma submits to Ecology an annual progress report that describes its SSO elimination program activities during the previous calendar year.

The Central WWTP service area encompasses approximately 50 square miles (32,000 acres) and the political jurisdictions of Tacoma, Fife, Fircrest, Milton, Pierce County, and a small portion of Federal Way in King County. The flow from Federal Way is planned to be removed from the system and redirected to the Lakehaven Sewer District by 2033. The Central WWTP provides wastewater service to Northeast Tacoma, Port of Tacoma, Central Business District, North Central, Manitou, Fern Hill, and Southeast Tacoma, which are within the city limits of Tacoma. Service is also provided to the three outlying municipality service areas of Fircrest, Fife, and Milton which have their own sanitary collection systems that convey wastewater to the Central WWTP. The Lakehaven service area of King County and Pierce County service the areas of Dash Point, Browns Point, Fife Heights and County Port. South and North Pierce County also have collection systems tributary to the Central WWTP.

3. Treatment process

Raw wastewater enters the Central WWTP through one 30-inch, two 48-inch and one 42-inch diameter lines and passes through three mechanical 1/4-inch bar screens into the influent wet well. Three 45 mgd and two 39 mgd dry-pit centrifugal pumps convey the wastewater to three grit tanks. Plant influent flow is measured on the discharge pipe from the influent wet well with a 48-inch magnetic flow meter. One grit tank is always in operation. Grit that is collected in the tanks is washed and discharged into a dumpster and hauled offsite for disposal. The grit tanks are 35 square feet by 4 feet deep with a maximum hydraulic capacity of 78 mgd each.

Flow from the grit tanks continues to the four primary settling tanks with a total surface settling area of 27,530 square feet. Typically, only two primary settling tanks are in operation, except during peak winter flow conditions.

The Central WWTP biosolids treatment and handling program is a thermophilic dual-digestion aerobic/anaerobic process that produces a Class A Exceptional Quality Biosolids.

The Central WWTP treats mainly domestic sewage. The residential population currently served is estimated to be 291,135 (2020). Flow monitoring by City staff show that industrial and commercial flows to the Central WWTP are equivalent to approximately 35 percent of the residential flow. The industrial and commercial discharges to the wastewater system represent an equivalent population of 53,863 people for a total equivalent population served at the Central WWTP of 346,998.

There are 22 non-categorical significant industrial users and 9 categorical industrial users discharging to the Central WWTP. Additionally, there are 2 non-categorical significant industrial users, and 7 categorical industrial users issued zero-discharge permits. The City of Tacoma Sewer Utility has an industrial pretreatment program which regulates the discharges from these industries. The industrial pretreatment program also regulates the North End WWTP service area as required under NPDES Permit WA0037214, but there are currently no non-categorical significant industrial users or categorical industrial users discharging to Tacoma North End WWTP.

The Central WWTP is a Class IV facility and is staffed 24 hours a day by a Group III operator. The facility has twelve operators that operate on 12-hour shifts.

4. Peak wet weather flow treatment system

All flows up to 150 mgd flow through the influent screens, influent pump station, and grit tanks. Flows up to 75 mgd continue to flow through the existing primary settling tanks and the biological treatment process. Once flows exceed 75 mgd, the ballasted sedimentation tanks are placed in service. As influent flows increase above 80 mgd a constant flow of 75 mgd is treated in the existing secondary treatment process, and the excess flow is treated by the ballasted sedimentation process.

When ballasted sedimentation is in operation, the flow from the existing final clarifiers is pumped via the existing effluent pump station to the new effluent pump station and blended with disinfected flow from the ballasted sedimentation process. This flow is then conveyed through the existing outfall to Commencement Bay.

Since this was a newly commissioned system at that time and a portion of the flow during these peak flow events will only receive enhanced primary treatment with disinfection, the previous permit required additional monitoring while flow blending was occurring to ensure the blended flow was within permit limits and did not cause toxicity problems.

In the previous permit, for each flow blending event a minimum of three grab samples were required for fecal coliforms, pH, total residual chlorine, total ammonia, and dissolved oxygen from the final effluent; and a minimum of three grab samples for BOD₅ and TSS from the effluent of the peak flow treatment system. Twenty-four-hour flow weighted composite samples were also required for BOD₅ and TSS from the plant influent and final effluent during each flow blending event. To ensure that the blended flow was not causing toxicity problems, the final flow blended effluent was also be tested once per year for priority pollutant metals and acute and chronic toxicity in years in which flow blending occurred.

During some years, one or more flow blending events occurred, while in other years there were no flow blending events. Due to the unpredictable nature of the situation, the influent and effluent composite samplers were kept on whenever there was the possibility that a peak flow event could occur. For those days when sample collection would not normally take place and a flow blending event did not occur the composite sample were allowed to be discarded.

The previous permit required the Central WWTP to submit annual reports to Ecology for review. These reports contained information on event dates and durations, flow volumes, and laboratory analyses results. Review of reports submitted for 2015-2022 show that no permit violations occurred during any flow blending events. Comparison of sample results for influent, secondary effluent, and flow blending effluent do not show any significant differences in contaminant removal between secondary and blended effluents. There were no increases in acute or chronic toxicity results when comparing blended effluent to final effluent when flow blend was not occurring.

5. Solid wastes and residual solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained and disposed of as solid waste at the local landfill.

Waste activated sludge is pumped to the dissolved air floatation thickeners for thickening and then heated with solids from the anaerobic digesters through sludge-to-sludge tube type heat exchangers. Primary solids are heated by three sludge-to-water spiral heat exchangers using methane gas produced from the anaerobic digesters.

The mixed solids then enter the top of the high purity oxygen aerobic digesters. Digested solids are withdrawn from the bottom of the aerobic digesters and flow by gravity to the anaerobic digesters. The anaerobic digesters operate in series.

Solids from the anaerobic digesters are pumped to the screw presses for dewatering.

The dewatered biosolids produced by this digestion process meet Class A requirements and are used as the main ingredient in three different TAGRO™ soil blends. TAGRO™ Topsoil, TAGRO™ Potting Soil, and TAGRO™ Mix are natural organic soil conditioners with various mixtures of biosolids, sawdust, and screened sand and/or bark that is produced for residential and commercial use. TAGRO™ liquid, which is 5-8 percent solids, is hauled by tanker and applied to various approved sites including areas such as pastures, cropland, and forestland.

6. Discharge outfall

Treated and disinfected effluent is pumped to Commencement Bay via a 15,650-foot overland pipeline to a deep marine outfall and diffuser located between Sitcum and Blair waterways and ends approximately 1,200 feet offshore at a depth of approximately 125 feet. The diffuser has 30 cylindrical risers spaced 10 feet apart. The risers vary in length from 0 to 9 feet above the diffuser pipe. Each riser has a single discharge port that is oriented perpendicular to the axis of the diffuser line. Ports alternate facing in opposite directions.

II.B. Description of the receiving water

The Central WWTP discharges to inner Commencement Bay. Other nearby point source outfalls include the Tacoma North End Treatment Plant outfall diffuser located approximately 3.1 miles northwest of the Central Treatment Plant outfall diffuser. There are several industrial facilities that discharge into Commencement Bay and the associated waterways as well as facilities located in the Nalley Valley who discharge into the stormwater system that discharges into the head of City Waterway.

The ambient background data used for this permit includes the following from Ecology's monitoring site CBM003, located in Commencement Bay, south-southwest of Brown's Point, near the center of the bay (1999-2017):

Table 2 - Ambient background data

Parameter	Value
Temperature (highest annual 1-DMax)	12.0 °C
pH (Maximum / Minimum)	8.6/7.1 standard units
Dissolved Oxygen	5.8 mg/L
Alkalinity	206 mg/L as CaCO ₃
Salinity	26.6 psu

II.C. Wastewater influent characterization

The Central WWTP reported the concentration of pollutants in the wastewater influent in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater influent from January 2011 through December 2022.

Table 3 - Wastewater Influent Characterization

Parameter	Units	Average value	Maximum value
Biochemical Oxygen Demand (BOD ₅)	mg/L	285	1,119
Biochemical Oxygen Demand (BOD ₅)	lbs/day	45,753	141,879
Total Suspended Solids (TSS)	mg/L	297	628
Total Suspended Solids (TSS)	lbs/day	48,239	80,800
Ammonia	mg/L	30.2	83.7
Kjeldahl Nitrogen	mg/L	38.0	77.4
Nitrate + Nitrite	mg/L	0.93	31.6
Orthophosphate	mg/L	2.27	4.31
Phosphorus	mg/L	4.69	39.4
Flow	MGD	21.2	43.2

II.D. Wastewater effluent characterization.

The Central WWTP reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from January 2011 through December 2022, and priority pollutant annual and quarterly monitoring reports from January 2017 to December 2022.

Table 4 - Wastewater effluent characterization

Parameter	Units	Average value	Maximum value
Biochemical Oxygen Demand (BOD ₅)	mg/L	16.5	25.8
Biochemical Oxygen Demand (BOD ₅)	lbs/day	2845	5426
Total Suspended Solids (TSS)	mg/L	12.2	22
Total Suspended Solids (TSS)	lbs/day	2164	6003
Total Residual Chlorine	mg/L	.044	.089
Ammonia	mg/L	35.3	52.5
Kjeldahl Nitrogen	mg/L	34.5	76
Nitrate + Nitrite	mg/L	1.64	22.6
Orthophosphate	mg/L	2.35	6.18
Phosphorous	mg/L	2.65	7.32
Flow	MGD	21.5	43.8
Dissolved Oxygen	mg/L	6.17	N/A
Temperature	°C	17.3	22.6
Antimony	ug/L	0.64	1.27

Parameter	Units	Average value	Maximum value
Arsenic	ug/L	1.99	2.81
Chromium	ug/L	2.83	7.11
Copper	ug/L	5.98	14.0
Lead	ug/L	0.35	0.48
Molybdenum	ug/L	2.51	7.49
Nickel	ug/L	3.30	5.08
Selenium	ug/L	0.31	2.13
Silver	ug/L	0.004	0.06
Thallium	ug/L	0.04	0.94
Zinc	ug/L	34.12	47.4
Mercury (EPA 1631E)	ng/L	3.70	5.89
Cyanide	mg/L	0.01	0.04
Phenols	mg/L	0.01	0.08
Hexane-Extractable Materials (HEM)	mg/L	3.08	31.00
1,4-Dichlorobenzene	ug/L	0.13	0.4
Chloroform	ug/L	0.77	1.7
Methylene Chloride	ug/L	0.18	1.1
Tetrachloroethene	ug/L	0.53	2.4
2-Nitrophenol	ug/L	0.05	0.3
Aniline	ug/L	0.017	0.1
Bis(2-ethylhexyl) phthalate	ug/L	0.58	1.4
Diethyl phthalate	ug/L	0.05	0.3
Di-n-butyl phthalate	ug/L	0.15	0.5
Fluorene	ug/L	0.03	0.2
Naphthalene	ug/L	0.08	0.3
Phenanthrene	ug/L	0.03	0.2
4,4-DDT	ug/L	0.0075	0.045
alpha-BHC	ug/L	0.0075	0.045
beta-BHC	ug/L	0.0067	0.04
delta-BHC	ug/L	0.009	0.054
Endosulfan I	ug/L	0.006	0.036
Endosulfan II	ug/L	0.0042	0.025
Endosulfan Sulfate	ug/L	0.0033	0.02
gamma-BHC (Lindane)	ug/L	0.0077	0.046
Heptachlor Epoxide	ug/L	0.0065	0.039

Parameter	Units	Maximum Monthly Geometric Mean	Maximum Weekly Geometric Mean
Fecal Coliform	#/100 mL	183	568

Parameter	Units	Minimum value	Maximum value
pH	standard units	6.0	7.5

II.E. Summary of compliance with previous permit issued October 2010

The previous permit placed effluent limits on BOD5, TSS, Fecal Coliform Bacteria, pH and Total Residual Chlorine.

The Central WWTP has complied with the effluent limits and permit conditions throughout the duration of the permit issued on October 6, 2010, with the exceptions listed below. Ecology assessed compliance based on its review of the facility's discharge monitoring reports (DMRs) and on inspections.

The following table summarizes the violations and permit triggers that occurred during the permit term. Permit triggers are not violations but rather when triggered require the permit holder to take an action defined in the permit.

Table 5 - Violations and permit triggers (Jan. 2011 - Dec. 2022)

Violation date	Parameter type	Unit type	Max limit	Measurement value quantity	Statistical base type	Violation
8/1/2011	BOD	lbs/day	127,000	141,879	Average	Design Value Exceedance
3/1/2012	Ammonia	mg/L			Single Sample	Analysis not Conducted
5/1/2018	Fecal Coliform	#/100 mL			Single Sample	Analysis not Conducted
5/1/2018	DO	mg/L			Single Sample	Analysis not Conducted
5/1/2018	pH	Standard Units			Single Sample	Analysis not Conducted
5/1/2018	Temperature				Single Sample	Analysis not Conducted
5/1/2018	Chlorine	mg/L			Single Sample	Analysis not Conducted
1/1/2022	Fecal Coliform	#/100 mL			Single Sample	Results Reported Late
1/1/2022	Fecal Coliform	#/100 mL	400	417	Single Sample	Numeric Effluent Violation
6/1/2022	Fecal Coliform	#/100 mL	400	568	Single Sample	Numeric Effluent Violation

The following table summarizes compliance with report submittal requirements over the permit term.

Table 6 - Permit submittals

Submittal name	Submittal frequency	Received date
Acute Toxicity Compliance Monitoring Report	Quarterly	March 15, June 15, September 15, December 15
Application for Permit Renewal	1/permit cycle	May 1, 2015
Chronic Toxicity Effluent Characterization w/ Permit Renewal Application	2/permit cycle	Conduct Tests July 2014 and January 2015, Submit May 1, 2015
Infiltration & Inflow Report	Annual	March 15
O & M Manual Update/Review Letter	Annual	July 31
Outfall Evaluation	1/permit cycle	December 15, 2014
Peak Wet Weather Flow Treatment System Progress Report	Once	June 30, 2014
Pretreatment Report	Annual	March 15
Sanitary Sewer Overflow Elimination Progress Report	Annual	March 15
Wasteload Assessment	Annual	March 15

II.F. State environmental policy act (SEPA) compliance

State law exempts the issuance, reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions that are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. Proposed permit limits

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

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

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

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

III.A. Design criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this facility's treatment plant in the 1985 Facilities Planning Amendment prepared by Parametrix, Inc., and the design quantities after the upgrades were obtained from the March 2002 Central Treatment Plant comprehensive plan prepared by Parametrix, Inc. The table below includes design criteria from the referenced report.

Table 7 - Design criteria for the Central WWTP

Parameter	Design quantity
Maximum Month Design Flow (MMDF)	60 MGD
Wet Season Peak Daily Design Flow (PDF)	150 MGD
BOD5 Loading for Maximum Month	127,000 lb/day
TSS Loading for Maximum Month	114,000 lb/day

III.B. Technology-based effluent limits

Federal and state regulations define some technology-based effluent limits for domestic wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state).

The table below identifies technology-based limits for pH, fecal coliform, CBOD₅, and TSS, as listed in chapter 173-221 WAC, and chlorine. Section III.F of this fact sheet describes the potential for water quality-based limits.

Table 8 - Technology-based limits

Parameter	Average Monthly	Average Weekly
CBOD ₅	25 mg/L	40 mg/L
CBOD ₅	The CBOD ₅ effluent concentration must not exceed fifteen percent (15%) of the average influent concentration	
TSS	30 mg/L	45 mg/L
TSS	The TSS effluent concentration must not exceed fifteen percent (15%) of the average influent concentration	
Chlorine	0.5 mg/L	0.75 mg/L

Parameter	Monthly Geometric Mean	Weekly Geometric Mean
Fecal coliform bacteria	200 organisms/100 mL	400 organisms/100 mL

Parameter	Daily Minimum	Daily Maximum
pH	6.0 standard units	9.0 standard units

Technology-based mass limits for CBOD₅ and TSS are based on WAC 173-220-130(3)(b) and WAC 173 221-030(11)(b). Ecology calculated the monthly and weekly average mass limits for CBOD₅ and TSS as follows:

Mass limit = CL x DF x CF, where:

CL = Technology-based concentration limit (mg/L)

DF = Maximum monthly average design flow (MGD)

CF = Conversion factor = 8.34

Table 9 - Technology-based mass limits

Parameter	Concentration limit (mg/L)	Mass limit (lbs/day)
CBOD ₅ Monthly Average	25	12,510
CBOD ₅ Weekly Average	40	20,016
TSS Monthly Average	30	15,012
TSS Weekly Average	45	22,518

III.C. Surface water quality-based effluent limits

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

ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

1. Numeric criteria for the protection of aquatic life and recreation

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

2. Numeric criteria for the protection of human health

Numeric criteria for the protection of human health are promulgated in Chapter 173-201A WAC and 40 CFR 131.45. These criteria are designed to protect human health from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

3. Narrative criteria

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

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

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

4. Antidegradation

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

- Restore and maintain the highest possible quality of the surface waters of Washington.

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

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

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

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

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

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

Facility specific requirements – This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.
- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.
- Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

5. Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing

zones, the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.). The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

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

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART). Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution (WAC 173-201A-400 (7)).

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

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

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

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

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

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

- a. Ecology must specify both the allowed size and location in a permit.

The proposed permit specifies the size and location of the allowed mixing zone (as specified below).

- b. The facility must fully apply “all known, available, and reasonable methods of prevention, control and treatment” (AKART) to its discharge.

Ecology has determined that the treatment provided at the Central WWTP meets the requirements of AKART (see “Technology-based Limits”).

- c. Ecology must consider critical discharge conditions.

Surface water quality-based limits are derived for the water body’s critical condition (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated waterbody uses). The critical discharge condition is often pollutant-specific or waterbody-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents, and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when

there is little or no stratification. Ecology uses the water depth at mean lower low water (MLLW) for marine waters. Ecology's Permit Writer's Manual (Ecology, 2018) describes additional guidance on criteria/design conditions for determining dilution factors.

Table 10 - Critical conditions used to model the discharge

Critical condition	Value
Water depth at MLLW	110 feet
10th percentile current speeds for acute mixing zone	0.01 m/s
50th percentile current speeds for chronic and human health mixing zones	0.039 m/s
Maximum average monthly effluent flow for chronic and human health non-carcinogen	60 MGD
Annual average flow for human health carcinogen	45 MGD
Maximum daily flow for acute mixing zone	95 MGD
1-DAD-MAX Effluent temperature (95th percentile)	22.0 °C

Ecology obtained ambient data at critical conditions in the vicinity of the outfall from *Abbreviated Engineering Report for Outfall Diffuser Enhancements*, August 1997, prepared by Parametrix, Inc., and Ecology's monitoring site CMB003 located south-southwest of Browns Point at the center of Commencement Bay

d. Supporting information must clearly indicate the mixing zone would not:

- Have a reasonable potential to cause the loss of sensitive or important habitat.
- Substantially interfere with the existing or characteristic uses.
- Result in damage to the ecosystem.
- Adversely affect public health.

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms and set the criteria to generally protect the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for four days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of discharge.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant

plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than two seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics and the discharge location. Based on this review, Ecology concluded that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem, or adversely affect public health if the permit limits are met.

- e. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant and concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone if permit limits are met.

- f. The size of the mixing zone and the concentrations of the pollutants must be minimized.

At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. Because tidal currents change direction, the plume orientation within the mixing zone changes. The plume mixes as it rises through the water column therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed, the discharge is more completely mixed with the receiving water in a shorter time. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration,

the centerline dilution factor, and the lowest flow occurring once in every ten years to perform the reasonable potential analysis.

Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

g. Maximum size of mixing zone.

The authorized mixing zone does not exceed the maximum size restriction.

h. Acute mixing zone.

- The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.

Ecology determined the acute criteria will be met at 10% of the distance (or volume fraction) of the chronic mixing zone at the ten-year low flow.

- The pollutant concentration, duration, and frequency of exposure to the discharge will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.

As described above, the toxicity of any pollutant depends upon the exposure, the pollutant concentration, and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).

- Comply with size restrictions.

The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

i. Overlap of Mixing Zones.

This mixing zone does not overlap another mixing zone.

III.D. Designated uses and surface water quality criteria

Under WAC 173-201A-612, Commencement Bay has multiple classes of use designation, as provided below in Table 11.

Table 11 – Commencement Bay Marine Water Use Designations

Use Designations for Marine Waters	Aquatic Life Use	Recreational Use	Harvest Use
Commencement Bay, city waterway south and east of south 11th Street.	Fair	Primary Contact	No Harvest Use Supported
Commencement Bay, inner, south and east of a line bearing 225° true through Hylebos waterway light except the city waterway south and east of south 11th Street.	Good	Primary Contact	Excludes Shellfish
Commencement Bay south and east of a line bearing 258° true from "Brown's Point" and north and west of a line bearing 225° true through the Hylebos waterway light.	Excellent	Primary Contact	All

Source: WAC 173-201A-612, Table 612-Use Designations for Marine Waters

The outfall diffuser is located in the area of Commencement Bay that the aquatic life use status has been designated as “**Good**.”

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. The tables included below summarizes the criteria applicable to this facility’s receiving water and its designated uses.

1. Marine water aquatic life uses and associated criteria

The aquatic life uses and the associated criteria for this receiving water are identified below. All indigenous fish and non-fish aquatic species must be protected in waters of the state.

- **Excellent quality**

Aquatic life uses: salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

Table 12 - Excellent quality criteria

Criteria	Value
Temperature – Highest 1D MAX	16°C (60.8°F)
Dissolved oxygen – Lowest 1-Day minimum	6.0 mg/L
Turbidity	5 NTU over background when the background is 50 NTU or less; or A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

- **Good quality**

Aquatic life uses: salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

Table 13 - Good quality criteria

Criteria	Value
Temperature – Highest 1D MAX	19°C (66.2°F)
Dissolved oxygen – Lowest 1-Day minimum	5.0 mg/L
Turbidity	10 NTU over background when the background is 50 NTU or less; or A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

- **Fair quality**

Aquatic life uses: salmonid and other fish migration.

Table 14 - Fair quality criteria

Criteria	Value
Temperature – Highest 1D MAX	22°C (71.6°F)
Dissolved Oxygen – Lowest 1-Day Minimum	4.0 mg/L
Turbidity	10 NTU over background when the background is 50 NTU or less; or A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH	pH must be within the range of 6.5 to 9.0 with a human-caused variation within the above range of less than 0.5 units.

2. Shellfish harvesting use and criteria

To protect shellfish harvesting, fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, and not have more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

3. Recreational use and criteria

The recreational use is primary contact recreation. Enterococci organism levels within an averaging period must not exceed a geometric mean of 30 CFU or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample values exist) obtained within the averaging period exceeding 110 CFU or MPN per 100 mL.

4. Miscellaneous marine water uses

The miscellaneous marine water uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

III.E. Water quality impairments

Commencement Bay is listed on the current 303(d) and is impaired for bacteria (enterococci) along the Ruston Way shoreline, and for fecal coliform, enterococci and low dissolved oxygen in the waters around Brown's Point. Ecology has not conducted a Total Maximum Daily Load (TMDL) Analysis for these parameters in this location. See Section IV--Monitoring Requirements for a discussion of dual monitoring requirements for fecal coliform and enterococci.

The 2014 Water Quality Assessment identified 136 impaired area 303(d) listings for dissolved oxygen in the Salish Sea and 331 Category 2 listings indicating waters of concern. Ecology's extensive ongoing scientific investigations supporting the Puget Sound Nutrient Reduction Project demonstrate that the cumulative impact of point and nonpoint sources of nutrients, specifically nitrogen, contribute to areas of dissolved oxygen depletion in Puget Sound and the Salish Sea. Ecology is developing the Puget Sound Nutrient Reduction Plan (NRP) to address dissolved oxygen impairment listings in Puget Sound in a comprehensive manner. See the [Puget Sound Nutrient Reduction Project webpage](#)¹ for more information about this effort.

The current 303(d) list identifies an area of outer Commencement Bay in Puget Sound in the vicinity of the discharge as "impaired" for dissolved oxygen (Listing #10175). Ecology has not initiated a dissolved oxygen Total Maximum Daily Load

¹ <https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Helping-Puget-Sound/Reducing-Puget-Sound-nutrients/Puget-Sound-Nutrient-Reduction-Project>

(TMDL) analysis for this area. Instead, Ecology elected to address this listing and other dissolved oxygen listings in Puget Sound in a comprehensive manner as part of the Puget Sound Nutrient Reduction Plan (NRP).

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

Ecology must consider the narrative criteria described in WAC 173-201A-260 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

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

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

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

1. Mixing zones and dilution factors

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants; their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality based effluent limits varies with the point at which the pollutant has its maximum effect.

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

The diffuser at Outfall 001 located approximately 1,200 feet offshore. The diffuser is 290 feet long with a diameter of 56 inches. The diffuser has a total of 30 "Tide-Flex Diffuser" 12 inch-diameter ports. The distance between ports is 10

feet. The diffuser depth is 125 feet. The mean lower low water (MLLW) depth is 110 feet. Ecology obtained this information from *Abbreviated Engineering Report for Outfall Diffuser Enhancements*, August 1997, prepared by Parametrix, Inc.

Chronic mixing zone – WAC 173-201A-400(7)(b) specifies that mixing zones must not extend in any horizontal direction from the discharge ports for a distance greater than 200 feet plus the depth of water over the discharge ports and may not occupy more than 25% of the width of the water body as measured during MLLW.

The horizontal distance of the chronic mixing zone is 310 feet. The mixing zone extends from the bottom to the top of the water column.

Acute mixing zone – WAC 173-201A-400(8)(b) specifies that in estuarine waters a zone where acute criteria may be exceeded must not extend beyond 10% of the distance established for the chronic zone. The acute mixing zone extends 31.0 feet in any direction from any discharge port. The mixing zone extends from the bottom to the top of the water column.

Ecology determined the dilution factors that occur within these zones at the critical condition using from *Abbreviated Engineering Report for Outfall Diffuser Enhancements*, August 1997, prepared by Parametrix, Inc. The dilution factors are listed below.

Table 15 - Dilution factors

Criteria	Acute	Chronic
Aquatic Life	22	145
Human Health, Carcinogen		186
Human Health, Non-carcinogen		145

Ecology determined the impacts of dissolved oxygen deficiency, nutrients, pH, fecal coliform, enterococci, chlorine, ammonia, metals, other toxics, and temperature as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

2. Nutrients

Ecology’s Puget Sound Nutrient Reduction Project evaluated the cumulative impact of anthropogenic sources of nutrients using the Salish Sea Model. The model simulations predict that nutrients discharged from wastewater treatment plants have a reasonable potential to contribute to existing low dissolved oxygen levels, below state water quality criteria, in the Salish Sea (which includes Puget Sound). On December 1, 2021, Ecology issued the Puget Sound Nutrient

General Permit² (PSNGP) to regulate the discharge of Total Inorganic Nitrogen from 58 domestic wastewater treatment plants that discharge to marine and estuarine waters in Washington's waters of the Salish Sea. The Central WWTP is covered by the PSNGP, which includes requirements for the control and monitoring of nutrients. This individual permit does not contain limits or other conditions related to the regulation of nutrients.

3. Dissolved Oxygen: BOD₅ and Ammonia Effects

Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The 5-day Biochemical Oxygen Demand (BOD₅) of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand in the receiving water.

With technology-based limits, this discharge results in a small amount of CBOD₅ loading relative to the large amount of dilution in the receiving water at critical conditions. Technology based limits for CBOD₅, in combination with the Puget Sound Nutrient General Permit that addresses other sources of oxygen demand, will ensure that dissolved oxygen criteria are met in the receiving water.

4. pH

Compliance with technology-based limits of 6.0 to 9.0 will assure compliance with the water quality standards of surface waters because of the high buffering capacity of marine water.

5. Bacteria

Ecology modeled the number of fecal coliforms by simple mixing analysis using the technology-based limit of 400 organisms per 100 mL and a dilution factor of 145. Under critical conditions, modeling predicts no violation of the shellfish harvesting criterion for fecal coliform. Therefore, the proposed permit includes the technology-based effluent limit for fecal coliform bacteria. Without effluent data for Enterococci, Ecology cannot determine whether the discharge will violate the recreational use criterion for Enterococci. Given that the characteristics of the receiving water and the discharge have not changed substantially since the analysis conducted in the previous permit cycle, and the transition is a change in bacterial indicator not more or less stringent than the previous criterion, the proposed permit will maintain the technology-based effluent limit for fecal coliform. In addition, the permittee will be required to monitor for both fecal coliform and Enterococci. Ecology will use this data to assess the reasonable

² <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Nutrient-Permit>

potential to exceed the applicable water quality criterion in the next iteration of this permit.

6. Turbidity

Ecology evaluated the impact of turbidity based on the range of turbidity in the effluent and turbidity of the receiving water. Ecology expects no violations of the turbidity criteria outside the designated mixing zone provided the facility meets its technology-based total suspended solids permit limits.

7. Toxic pollutants – aquatic life criteria

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

The following toxic pollutants are present in the discharge: chlorine, ammonia, and various priority pollutant heavy metals, organics, and pesticides detected in quarterly and annual monitoring reports. Ecology conducted a reasonable potential analysis (See Appendix D) on these parameters to determine whether it would require effluent limits in this permit.

Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature, pH, and salinity of the receiving marine water. To evaluate ammonia toxicity, Ecology used all available information and Ecology spreadsheet tools.

No valid ambient background data were available for the identified toxic pollutants. Ecology used zero for background.

Ecology determined that ammonia and the various priority pollutant heavy metals, organics, and pesticides detected in quarterly and annual monitoring pose no reasonable potential to cause or contribute to exceedances of the water quality criteria at the critical conditions using procedures given in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (USEPA, 1991) (Appendix D) and as described above. Ecology's determination assumes that this facility meets the other effluent limits of this permit.

Ecology derived effluent limits for chlorine, which we determined have a reasonable potential to cause or contribute to a violation of the water quality standards. Ecology calculated effluent limits using methods from the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (USEPA, 1991) as shown in Appendix D. The resultant effluent limits for chlorine are as follows:

Table 16 – Chlorine Effluent Limits

Parameter	Average Monthly	Maximum Daily
Total Residual Chlorine	0.091 mg/L	0.286 mg/L

8. Temperature

The state temperature standards for marine waters (WAC 173-201A-210) include multiple elements:

- a. Annual 1-Day maximum criteria
- b. Incremental warming restrictions
- c. Guidelines on preventing acute lethality and barriers to migration of salmonids

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- i. Annual 1-Day maximum criteria

Each marine water body has an annual maximum temperature criterion [WAC 173-201A-210(1)(c)(i)-(ii) and WAC 173-201A-612]. These threshold criteria (e.g., 13, 16, 19, 22°C) protect specific categories of aquatic life by controlling the effect of human actions on water column temperatures. The threshold criteria apply at the edge of the chronic mixing zone. Criteria for marine waters and some fresh waters are expressed at the highest 1-Day annual maximum temperature (1-DMax). Ecology concludes that there is no reasonable potential to exceed the temperature standard when the mixture of ambient water and effluent at the edge of the chronic mixing zone is less than the criteria of 13°C.

- ii. Incremental warming criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone. At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment (T_i), calculated as:

$$T_i = 12 / (T_{amb} - 2)$$

This increment is permitted only to the extent doing so does not cause temperatures to exceed the annual maximum criteria.

- iii. Guidelines to prevent acute mortality or barriers to migration of salmonids. These site-level considerations do not override the temperature criteria listed above.
 - (i) Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C; unless a dilution

analysis indicates ambient temperatures will not exceed 33°C 2-seconds after discharge.

- (ii) General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C. When adjacent downstream temperatures are 3°C or cooler, the 1DMax at the edge of the chronic mixing zone must not exceed 22°C.
- (iii) Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Reasonable potential analysis

Annual summer maximum, supplementary spawning criterion, and incremental warming criteria: Ecology evaluated the reasonable potential for the discharge to exceed the annual summer maximum, the supplementary spawning criterion, and the incremental warming criteria at the edge of the chronic mixing zone during critical condition(s). No reasonable potential exists to exceed the temperature criterion where:

$$(\text{Teffluent}_{95} - \text{Criterion})/\text{DF} < 0.3.$$

Teffluent_{95} = 95th percentile 7-DADMax or 1DMax temperature of the effluent

DF = chronic dilution factor

A temperature difference of less than 0.3°C at the edge of the mixing zone is lower than the definition of a “measurable change” as defined in WAC 173-201A-320(3).

$$(22.0 - 19.0)/145 = 0.02$$

III.H. Evaluation of human health-based water quality criteria

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

Ecology determined the effluent may contain chemicals of concern for human health, based on the facility’s status as an EPA major discharger, and data or information indicating the discharge contains regulated chemicals.

Ecology evaluated the discharge’s potential to violate the water quality standards as required by 40 CFR 122.44(d) by following the procedures published in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (USEPA, 1991) and Ecology’s Permit Writer’s Manual (Ecology, 2018) to make a reasonable potential determination. The evaluation showed that the existing data resulted in an ambiguous determination, so the proposed permit requires the

facility to submit additional data before the next permit reissuance. Specifically, monitoring of pesticides will occur quarterly during the first two years of the permit period. If sampling discloses no problems, monitoring may be reduced to annually. Likewise, if sampling indicates the possibility of problems, a more frequent and/or more comprehensive monitoring schedule would apply. Ecology will reevaluate the need for an effluent limit following the additional two years of data collection.

III.I. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the [Aquatic Lands Cleanup Unit website](#)³.

Ecology determined that this discharge has potential to cause a violation of the sediment quality standards because Whole Effluent Toxicity (WET) tests within the past five years have indicated less than 80 percent survival in 100 percent effluent. Additionally, the Central WWTP has no prior NPDES-related sediment sampling; sediment sampling is recommended every 10 years for treatment plants with discharge flows greater than 10 MGD and less than 100 MGD, per Ecology's Permit Writer's Manual (Ecology, 2018). There have been limited sediment studies collected within a quarter mile of Outfall 001, however, most samples are too outdated to reflect current conditions. The proposed permit includes a Special Condition requiring the Central WWTP to demonstrate either:

- The point of discharge is not an area of deposition, or
- Toxics do not accumulate in the sediments even though the point of discharge is a depositional area.

III.J. Groundwater quality limits

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

The Central WWTP does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

III.K. Whole effluent toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater

³ <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Sediment-cleanups>

and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity, and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.

Chronic toxicity tests measure various sublethal toxic responses, such as reduced growth or reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Laboratories accredited by Ecology for WET testing must use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format according to the procedures in the Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria, Publication 95-80 (Ecology, 2016). Ecology recommends that each regulated facility send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

WET testing conducted during the previous permit term showed the facility's effluent has a reasonable potential to cause acute toxicity in the receiving water. The proposed permit will include an acute toxicity limit. **The effluent limit for acute toxicity is: No acute toxicity detected in a test sample representing the acute critical effluent concentration (ACEC).** The ACEC is the concentration of effluent at the boundary of the acute mixing zone during critical conditions. The ACEC equals 4.5 percent effluent.

Compliance with an acute toxicity limit is measured by an acute toxicity test comparing test organism survival in the ACEC (using a sample of effluent diluted to equal the ACEC) to survival in nontoxic control water. The Central WWTP is in compliance with the acute toxicity limit if there is no statistically significant difference in test organism survival between the ACEC sample and the control sample.

Compliance with a chronic toxicity limit is measured by a chronic toxicity test comparing the test organism response in effluent diluted to the chronic critical effluent concentration (CCEC), to test organism response in nontoxic control water. The Central WWTP is in compliance with the chronic toxicity limit if there is no statistically significant difference in test organism response between the CCEC sample and the control sample.

WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water chronic toxicity. The

proposed permit will not include a chronic WET limit. The Central WWTP must retest the effluent before submitting an application for permit renewal.

If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization.

If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased. The Central WWTP may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing after the process or material changes have been made.

III.L. Comparison of effluent limits with the previous permit

Table 17 - Comparison of previous and proposed effluent limits – Outfall 001

Limit	Basis of Limit	Existing permit limit	Proposed permit limit
Biochemical Oxygen Demand (5-day) – Average Monthly	Technology	30 mg/L; 15012 lbs/day	n/a
Biochemical Oxygen Demand (5-day) – Average Monthly – Average Weekly	Technology	45 mg/L; 22518 lbs/day	n/a
Carbonaceous Biochemical Oxygen Demand (5-day) – Average Monthly	Technology	n/a	25 mg/L; 12510 lbs/day
Carbonaceous Biochemical Oxygen Demand (5-day) – Average Monthly – Average Weekly	Technology	n/a	40 mg/L; 20016 lbs/day
Total Suspended Solids – Average Monthly	Technology	30 mg/L; 15012 lbs/day	30 mg/L; 15012 lbs/day
Total Suspended Solids – Average Weekly	Technology	45 mg/L; 22518 lbs/day	45 mg/L; 22518 lbs/day
Fecal Coliform Bacteria – Monthly Geometric Mean	Technology	200 CFUs/100 mL	200 CFUs/100 mL
Fecal Coliform Bacteria – Weekly Geometric Mean	Technology	400 CFUs/100 mL	400 CFUs/100 mL
pH – Daily Minimum	Technology	6	6
pH – Daily Maximum	Technology	9	9
Chlorine – Average Monthly	Water Quality	0.109 mg/L	0.091 mg/L
Chlorine – Maximum Daily	Water Quality	0.286 mg/L	0.286 mg/L
Acute Toxicity	Water Quality	No acute toxicity detected in a test concentration representing the ACEC	No acute toxicity detected in a test concentration representing the ACEC

III.M. Antibacksliding

There are no limits in the proposed permit that are less stringent than in the previous permit. There are two changes to monitoring requirements, however, neither should be considered as backsliding, since they do not make any limits less stringent than the previous permit.

1. Change from BOD₅ to CBOD₅ test method

The BOD₅ test method determines the carbonaceous biological oxygen demand. Normally, nitrogenous biological oxygen demand does not occur until after the 5-day incubation period of the BOD₅ test. However, the Central WWTP receives waste from septic systems, which contain “older” wastewater and may affect BOD₅ test results due to increased nitrogenous biological oxygen demand. The CBOD₅ test includes the introduction of a nitrogen inhibitor, which allows test results to reflect the carbonaceous biological oxygen demand more correctly. Additionally, the limits of the CBOD₅ test are slightly lower than the limits of the BOD₅ test. This change in test methods was requested by the Permittee.

2. Elimination of sampling during flow blending events

To ensure the newly installed peak flow treatment system was not causing permit violations or toxicity problems, the previous permit required sampling to occur during flow blending events. Review of annual reports submitted for 2015-2022 show that no permit violations or issues with toxicity occurred. Comparison of sample results for influent, secondary effluent, and flow blending effluent do not show any significant differences in contaminant removal between secondary and blended effluents. It can be concluded that the peak flow treatment system performs as designed with no additional threat of contamination or permit violation during blending events, so the requirement for additional sampling during blending events can be removed.

IV. Monitoring requirements

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

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

IV.A. Wastewater monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S.2. Specified monitoring frequencies consider the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent the previous permit and with agency guidance given in the current version of Ecology’s Permit Writer’s Manual, Publication 92-109 (Ecology, 2018) for secondary treatment facility.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Biosolids monitoring is required by the current state and local solid waste management program and by EPA under 40 CFR 503.

Ecology has required monitoring of both fecal coliform and enterococci for the permit reapplication. This dual monitoring will help inform both Ecology and the Central WWTP of the correlation between the two indicators. Dual monitoring requirements consist of routine split sampling as defined in permit section S2.

As a pretreatment publicly owned treatment works (POTW), the city of Tacoma is required to sample influent, primary clarifier effluent, final effluent, and sludge for toxic pollutants in order to characterize the industrial input. Sampling is also done to determine if pollutants interfere with the treatment process or pass-through the plant to the sludge or the receiving water. The city of Tacoma will use the monitoring data to develop local limits which commercial and industrial users must meet.

IV.B. Lab accreditation

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

Table 18 - Accredited parameters

Parameter name	Category	Method name	Matrix description
Solids, Total Suspended	General Chemistry	SM 2540 D-2011	Non-Potable Water
Chlorine (Residual), Total	General Chemistry	SM 4500-Cl G-2011	Non-Potable Water
pH	General Chemistry	SM 4500-H+ B-2011	Non-Potable Water
Dissolved Oxygen	General Chemistry	SM 4500-O G-2011	Non-Potable Water
Biochemical Oxygen Demand (BOD)	General Chemistry	SM 5210 B-2011	Non-Potable Water
Carbonaceous BOD (CBOD)	General Chemistry	SM 5210 B-2011	Non-Potable Water
Fecal coliform-count	Microbiology	SM 9222 D (mFC)-06	Non-Potable Water

Parameter name	Category	Method name	Matrix description
Solids, Total	General Chemistry	SM 2540 G-2011	Solid and Chemical Materials
Solids, Total Volatile	General Chemistry	SM 2540 G-2011	Solid and Chemical Materials

V. Other permit conditions

V.A. Reporting and record keeping

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

V.B. Prevention of facility overloading

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Central WWTP to:

- Take the actions detailed in proposed permit Special Condition S.4.
- Design and construct expansions or modifications before the treatment plant reaches existing capacity.
- Report and correct conditions that could result in new or increased discharges of pollutants.

Special Condition S.4 restricts the amount of flow.

V.C. Operation and maintenance

The proposed permit contains Special Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, chapter 173-230 WAC, and WAC 173-240-080. Ecology included it to ensure proper operation and regular maintenance of equipment, and to ensure that the Central WWTP takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

Special Condition S.5 requires facility name to review and update as needed an operation and maintenance manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-080). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

V.D. Pretreatment

1. Duty to enforce discharge prohibitions

This provision prohibits the publicly owned treatment works (POTW) from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

- The first section of the pretreatment requirements prohibits the POTW from accepting pollutants which causes “pass through” or “interference”. This general prohibition is from 40 CFR §403.5(a). Appendix C of this fact sheet defines these terms.
- The second section reinforces specific state and federal pretreatment prohibitions found in WAC 173-216-060 and 40 CFR §403.5(b). The POTW may not accept certain wastes, which:
 - Are prohibited due to dangerous waste rules.
 - Are explosive or flammable.
 - Have too high or low of a pH (too corrosive, acidic or basic).
 - May cause a blockage such as grease, sand, rocks, or viscous materials.
 - Are hot enough to cause a problem.
 - Are of sufficient strength or volume to interfere with treatment.
 - Contain too much petroleum-based oils, mineral oil, or cutting fluid.
 - Create noxious or toxic gases at any point.

40 CFR Part 403 contains the regulatory basis for these prohibitions, except for the pH provisions which are based on WAC 173-216-060.

- The third section of pretreatment conditions reflects state prohibitions on the POTW accepting certain types of discharges unless the discharge has received prior written authorization from Ecology. These discharges include:
 - Cooling water in significant volumes.
 - Stormwater and other direct inflow sources.
 - Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

2. Delegated pretreatment program

Ecology delegated authority to the City of Tacoma for permitting, monitoring, and enforcement over industrial users discharging to their treatment system to provide more direct and effective control of pollutants. Ecology oversees the delegated Industrial Pretreatment Program to assure compliance with federal pretreatment regulations (40 CFR Part 403) and categorical standards and state regulations (chapter 90.48 RCW and chapter 173-216 WAC).

As sufficient data becomes available, the city of Tacoma must, in consultation with Ecology, reevaluate its local limits in order to prevent pass-through or interference. If any pollutant causes pass-through or interference, or exceeds established sludge standards, City of Tacoma must establish new local limits or revise existing local limits as required by 40 CFR 403.5. In addition, Ecology may require revision or establishment of local limits for any pollutant that causes a violation of water quality standards or established effluent limits, or that causes whole effluent toxicity.

Ecology may modify this permit to incorporate additional requirements relating to the establishment and enforcement of local limits for pollutants of concern.

3. Additional controls for PFAS

Per- and polyfluoroalkyl substances (PFAS) are a class of persistent chemicals known as widespread pollutants that have been found in food, water, people, and the environment. Ecology began work in 2016 in collaboration with the Department of Health to develop a Chemical Action Plan (CAP) to prevent potential exposure to people and the environment from PFAS. Ecology issued an interim CAP in 2018 and a final version in 2021.

In 2022, the state legislature amended the Pollution Prevention for Healthy People and Puget Sound Act (Chapter 70A.350 RCW) to establish a timeline for Ecology to regulate PFAS in consumer products as a class of priority toxic chemicals. In September 2022, Ecology published a revised PFAS CAP that included a recommendation to “understand and manage PFAS in waste”, which included recommendations related to wastewater treatment. In a separate action, the US-EPA issued guidance in December 2022 that recommended strategies permitting authorities should use to control discharges of PFAS at their sources. Consistent with the 2022 revised CAP recommendations, the proposed permit includes the following requirements that are based on EPA’s permitting recommendations:

- Monitor PFAS in the influent to the Central WWTP.
- Identify and locate all possible industrial users with discharges that are expected or suspected to contain PFAS.

- Identify best management practices the Pretreatment Program can require of industrial users for the reduction or elimination of PFAS in their discharges.

V.E. Solid waste

To prevent water quality problems the facility is required in permit Special Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under chapter 70.95J RCW, chapter 173-308 WAC "Biosolids Management," and chapter 173-350 WAC "Solid Waste Handling Standards." The disposal of other solid waste is under the jurisdiction of the Pierce County Health Department.

Requirements for monitoring sewage sludge and record keeping are included in this permit. Ecology will use this information, required under 40 CFR 503, to develop or update local limits.

V.F. Outfall evaluation

The proposed permit requires the Central WWTP to conduct an outfall inspection and submit a report detailing the findings of that inspection (Special Condition S10). The inspection must evaluate the physical condition of the discharge pipe and diffusers and evaluate the extent of sediment accumulations in the vicinity of the outfall.

V.G. General conditions

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

V.H. Sanitary Sewer Overflow Elimination Program

The Permittee has in place a sanitary sewer overflow elimination program to replace and rehabilitate their sewer collection system, which includes the following goals:

- Eliminate raw sewage overflows or bypasses.
- Eliminate all excessive infiltration and inflow by identifying and removing sources.
- Eliminate bottlenecks in the collection system that are preventing the conveyance of flow to the treatment plant.
- Maintain the structural integrity of the collection system.

- Convey all water collected in the collection system to the treatment plant for treatment.

The Permittee is required to continue their sanitary sewer overflow elimination program. The Permittee will submit an annual report to the Ecology describing the work that has been done during the previous year to achieve these goals.

VI. Permit issuance procedures

VI.A. Permit modifications

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

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

VI.B. Proposed permit issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five years.

VII. References for text and appendices

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Water Environment Federation, American Society of Civil Engineers. (2020). *Existing Sewer Evaluation and Rehabilitation: Manual of Practice FD 6*.

Water Pollution Control Federation. (1976). *Chlorination of Wastewater*.

Washington State and Ecology website general reference links:

[Laws and Regulations](#)⁴

[Permit and Wastewater Related Information](#)⁵

⁴ <http://leg.wa.gov/LawsAndAgencyRules/Pages/default.aspx>

⁵ <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance>

Appendix A – Public Involvement Information

Ecology proposes to reissue a permit to Tacoma Central Wastewater Treatment Plant. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 18, 2018, in the Tacoma News Tribune to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology placed a Public Notice of Draft Permit on **May 10, 2024**, in the Tacoma News Tribune.

The notice:

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

You may obtain further information from Ecology by telephone (564) 999-3587 or by writing to the address listed below.

Water Quality Permit Coordinator Department of Ecology

Municipal Permit Administrator
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is **Dainis Kleinbergs**.

Appendix B – Your Right to Appeal

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

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

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours as defined in WAC 371-08-305 and -335. “Notice of appeal” is defined in WAC 371-08-340.
- Serve a copy of your appeal and this permit on Ecology on the Department of Ecology mail, in person, or by email (see addresses below).
- You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.
- Filing with the PCHB
 - For the most current information regarding filing with the PCHB: visit <https://elaho.wa.gov/>⁶ or call 360-664-9160.

Service on Ecology

Street Address:

Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, WA 98503

Mailing Address:

Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, WA 98504-7608

E-Mail Address:

ecologyappeals@ecy.wa.gov

⁶ <https://elaho.wa.gov/>

Appendix C – Glossary

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

7-DADMax or 7-day average of the daily maximum temperatures – The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

ACEC – Acute Critical Effluent Concentration

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

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

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

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

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

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

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

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

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

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

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

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

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

CCEC – Chronic Critical Effluent Concentration

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

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

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

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

Compliance inspection-with sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition, it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

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

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

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

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

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

Days (compliance period interval) – When the compliance period is stated in days: (A) exclude the day of the event that triggers the period; (B) count every day, including intermediate Saturdays, Sundays, and legal holidays; and (C) include the last day of the period, but if the last day is a Saturday, Sunday, or legal holiday, the period continues to run until the end of the next day that is not a Saturday, Sunday, or legal holiday.

Detection level – or method detection limit means the minimum concentration of an analyte (substance) that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results as determined by the procedure given in 40 CFR part 136, Appendix B.

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

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

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

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

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

Enterococci – A subgroup of fecal streptococci that includes *S. faecalis*, *S. faecium*, *S. gallinarum*, and *S. avium*. The enterococci are differentiated from other streptococci by their ability to grow in 6.5% sodium chloride, at pH 9.6, and at 10°C and 45°C.

E. coli – A bacterium in the family Enterobacteriaceae named *Escherichia coli* and is a common inhabitant of the intestinal tract of warm-blooded animals, and its presence in water samples is an indication of fecal pollution and the possible presence of enteric pathogens.

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

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

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

Immediate reporting – Report permit violations immediately without delay of any interval of time from the moment the permittee becomes aware of the violation. Priority should first be given to stopping an active noncompliance.

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

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

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

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

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

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

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

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

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

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

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

Method detection limit (MDL) – See Detection level.

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

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

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

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

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

Peak hour design flow (PHDF) – The largest volume of flow anticipated to occur during a

one-hour period, expressed as a daily or hourly average.

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

Point of compliance – The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the

pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

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

Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

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

Quantitation level (QL) – also known as Minimum level (ML) – The term “minimum level” refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (DL), whichever is higher.

Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the DL in a method, or the DL determined by a laboratory, by a factor of 3. For the purposes of NPDES compliance monitoring, EPA considers the following terms to be synonymous: “quantitation limit,” “reporting limit,” and “minimum level”.

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

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

Sample Maximum – No sample may exceed this value.

Significant industrial user (SIU) – All industrial users subject to Categorical Pretreatment Standards under 40 CFR Chapter I, Subchapter N and 40 CFR 403.6 and;

Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process waste stream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial

user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

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

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

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

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

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

Soluble BOD₅ – Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD₅ test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD₅ test is sufficient to remove the particulate organic fraction.

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

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

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

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

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

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

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

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

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

Appendix D — Technical Calculations

Simple Mixing:

Ecology uses simple mixing calculations to assess the impacts of certain conservative pollutants, such as the expected increase in fecal coliform bacteria at the edge of the chronic mixing zone boundary. Simple mixing uses a mass balance approach to proportionally distribute a pollutant load from a discharge into the authorized mixing zone. The approach assumes no decay or generation of the pollutant of concern within the mixing zone. The predicted concentration at the edge of a mixing zone (C_{mz}) is based on the following calculation:

$$C_{mz} = C_a + [(C_e - C_a)/DF]$$

C_a = ambient concentration

C_e = effluent concentration

DF = dilution factor

Reasonable Potential Analysis:

Ecology uses spreadsheet tools to determine reasonable potential (to cause or contribute to violations of the aquatic life and human health water quality numeric standards) and to calculate effluent limits. The process and formulas for determining reasonable potential and effluent limits in these spreadsheets come from the Technical Support Document for Water Quality-based Toxics Control, (EPA 505/2-90-001) (USEPA, 1991).

Calculation of Water Quality-Based Effluent Limits:

Ecology calculates water quality-based effluent limits by the two-value wasteload allocation process as described on page 100 of the TSD (USEPA, 1991) and shown below.

1. Calculate the acute wasteload allocation WLA_a by multiplying the acute criteria by the acute dilution factor and subtracting the background factor. Calculate the chronic wasteload allocation (WLA_c) by multiplying the chronic criteria by the chronic dilution factor and subtracting the background factor.

$$WLA_a = (\text{acute criterion} \times DF_a) - (\text{background concentration} \times (DF_a - 1))$$

$$WLA_c = (\text{chronic criterion} \times DF_c) - (\text{background concentration} \times (DF_c - 1))$$

Where:

DF_a = acute dilution factor

DF_c = chronic dilution factor

2. Calculate the long-term averages (LTA_a and LTA_c) which will comply with the wasteload allocations WLA_a and WLA_c .

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\sigma)}$$

Where:

$$\sigma^2 = \ln(CV^2 + 1)$$

$$z = 2.326$$

CV = coefficient of variation = standard deviation/mean

$$LTA_c = WLA_c \times e^{(0.5\sigma^2 - z\sigma)}$$

Where:

$$\sigma^2 = \ln(CV^2/4 + 1)$$

$$z = 2.326$$

3. Use the smallest LTA of the LTA_a or LTA_c to calculate the maximum daily effluent limit (MDL) and the monthly average effluent limit (AML).

$$MDL = LTA \times e^{(z\sigma - 0.5\sigma^2)}$$

Where:

$$\sigma^2 = \ln(CV^2 + 1)$$

$$z = 2.326 \text{ (99}^{\text{th}} \text{ percentile)}$$

LTA = limiting long-term average

$$AML = LTA \times e^{(z\sigma - 0.5\sigma^2)}$$

Where:

$$\sigma^2 = \ln(CV^2/n + 1)$$

n = number of samples per month

$$z = 1.645 \text{ (95}^{\text{th}} \text{ percentile)}$$

LTA = limiting long-term average

Marine Un-ionized Ammonia Criteria Calculation

Calculation of seawater fraction of un-ionized ammonia from Hampson (1977). Un-ionized ammonia criteria for salt water are from EPA 440/5-88-004. Revised 19-Oct-93.

INPUT	
1. Receiving Water Temperature, deg C (90th percentile):	12.2
2. Receiving Water pH, (90th percentile):	7.9
3. Receiving Water Salinity, g/kg (10th percentile):	29.0
4. Pressure, atm (EPA criteria assumes 1 atm):	1.0
5. Unionized ammonia criteria (mg un-ionized NH ₃ per liter) from EPA 440/5-88-004:	
Acute:	0.233
Chronic:	0.035
OUTPUT	
Using mixed temp and pH at mixing zone boundaries?	No
1. Molal Ionic Strength (not valid if >0.85):	0.595
2. pKa8 at 25 deg C (Whitfield model "B"):	9.314
3. Percent of Total Ammonia Present as Unionized:	1.5%
4. Total Ammonia Criteria (mg/L as NH ₃):	
Acute:	15.77
Chronic:	2.37
RESULTS	
Total Ammonia Criteria (mg/L as <u>N</u>)	
Acute:	12.97
Chronic:	1.95

Calculation of Fecal Coliform at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	145.0
Receiving Water Fecal Coliform, #/100 ml	0
Effluent Fecal Coliform - worst case, #/100 ml	400
Surface Water Criteria, #/100 ml	14
OUTPUT	
Fecal Coliform at Mixing Zone Boundary, #/100 ml	3
Difference between mixed and ambient, #/100 ml	3

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for fecal coliform.

Calculation of Dissolved Oxygen at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	145.0
Receiving Water DO Concentration, mg/L	5.8
Effluent DO Concentration, mg/L	4.2
Effluent Immediate DO Demand (IDOD), mg/L	0
Surface Water Criteria, mg/L	5
OUTPUT	
DO at Mixing Zone Boundary, mg/L	5.79
DO decrease caused by effluent at chronic boundary, mg/L	0.01

Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for dissolved oxygen.

References: EPA/600/6-85/002b and EPA/430/9-82-011

Appendix E — Response to Comments

The legal notice that informed the public that a draft permit and fact sheet were available for review was published in the Tacoma News Tribune on May 10, 2024. Ecology received comments on the draft documents during the public comment period, which ended on August 20, 2024. Ecology also held a virtual public hearing on June 13, 2024, to provide opportunity for oral testimony; no participants provided oral testimony.

Ecology thanks all commenters for their contributions to this process. Organizations and citizens providing written comments included:

- City of Tacoma Environmental Services Department
- Puget Soundkeepers/Communities for a Health Bay/Waste Action Project
- Washington Conservation Action
- Cythia Cannon
- Marz Chabot
- Karen Dinicola
- Darlene Shanfald
- Steve Williams
- Jesse Witmer

Below are the comments and Ecology's responses. Copies of the original comment documents (letters, emails, etc.) that were received by Ecology during the public comment period are available upon request.

Ecology received the following comments from City of Tacoma Environmental Services:

1. Change from BOD₅ to CBOD

Environmental Services greatly appreciates Ecology considering and moving forward with this requested change.

Ecology Response: *Ecology thanks you for your comment.*

2. Chlorine Effluent Limits, Page 6. Section S1. Discharge limits S1.A. Effluent limits Total Residual Chlorine Effluent Limits

Since the reasonable potential analysis calculations show "No" potential for exceedance of water quality standards, the Table 2 Effluent limits: Outfall 001 Average Monthly limits for Total Residual Chlorine should be restored to the current permit limits of 0.109 mg/L, or the technology based effluent Average Monthly limit of 0.5 mg/L.

Ecology Response: *Per Ecology's Permit Writer Guide, if the number of samples is less than 20, a coefficient of variability (CV) of 0.6 should be*

used to determine permit limits. If the number of samples is 20 or more, the CV should be calculated. The previous permit used a CV of 0.6, which resulted in a chlorine monthly average limit of 0.109 mg/L. Based on actual daily sampling DMR results for effluent chlorine levels over the last ten years, the new permit uses a CV of 0.78 to calculate a chlorine monthly average limit of .091 mg/L. No changes were made to the final permit.

**3. PFAS Pretreatment Program Requirements, Page 31. Section S6.E.
Identification and control of PFAS Discharges**

Tacoma requests that Ecology replace the specific calendar dates in Section S.6E with durations from the issuance date of the final permit as follows:

1. Section S6.E.1. 365 days (1 year).
2. For Section S6.E.2. 730 days (2 years).
3. For Section S6.E.3. 1,095 days (3 years).

Ecology Response: *The deadlines for Sections S6.E.1, S6.E.2, and S6.E.3 will be changed to 1, 2 and 3 years, respectively, after the final permit's issuance date.*

4. PFAS Identification and Control of PFAS Discharges, page 31. Section S6.E.

It is recommended that Ecology provide the initial templates for source controls and best practices for the industrial categories Ecology has identified in the draft permit as known or suspected to discharge PFAs, including organic chemicals, plastics and synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper, and paperboard; leather tanning and finishing; plastics molding and forming; textile mills; paint formulating, and airports. Ecology should maintain a resource bank of pretreatment program materials and updates available to all permittees managing common PFAs control issues for compliance with Section S6.E.

Ecology Response: *Ecology thanks you for your suggestions and will forward them to the appropriate Ecology staff. For more information on Ecology's current PFAs program, please visit [PFAS - Washington State Department of Ecology](#).*

5. Additional Individual Permit Detailed Comments:

Appendix E Table 1: City of Tacoma Environmental Services Fact Sheet Comments

Section	Page	Description	Comment Received	Ecology Response
II.D.	14	Total Kjeldahl Nitrogen (TKN) in Wastewater Influent and Effluent Characterization Tables 3 and 4.	TKN needs to be changed to Total Nitrogen (or a note could be added) – Environmental Services has an existing letter approving our alternative testing procedure (ATP).	<i>Ecology acknowledges this comment within this Response to Comment document and will update the permit accordingly. Fact Sheets provided for public comment documents are typically not modified after close of the comment period.</i>
III.I.	36	"... if sampling indicates the possibility of problems, a more frequent and/or more comprehensive monitoring schedule would apply."	What is the definition of "problem"?	<i>In this context, a problem would be a reasonable potential to violate water quality standards. In the results of the annual 2020 priority pollutants analysis, nine pesticides were detected with two at levels that did not meet human health-based water quality criteria. The results for the annual 2017-19 and 2021-23 pesticide tests were non-detect. Overall, these results may be anomalous or may be due to previously undetected contaminants. Ecology staff will wait until results become available before any decisions are made.</i>

Appendix C	57	"Soluble BOD ₅ – ... filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD ₅ test is sufficient to remove the particulate organic fraction."	Environmental Services has typically been using a 1.5 um filter size for soluble BOD ₅ . This should not be different for CBOD ₅ . Please change this requirement to 1.5 um.	<i>The permit does not require analysis for soluble BOD₅ or COD₅. No change was made to the fact sheet in response to this comment.</i>
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Appendix E Table 2: City of Tacoma Environmental Services Permit Comments

Section	Page	Description	Comment Received	Ecology Response
S2.A. Monitoring Schedule. Table 6	9	TKN Requirement	TKN needs to be changed to Total Nitrogen (or a note could be added) – Environmental Services has an existing letter approving our ATP.	<i>A footnote will be added recognizing use of an alternative test procedure for Total Nitrogen.</i>
Appendix A Table 2	51	TKN Requirement	TKN needs to be changed to Total Nitrogen (or a note could be added) – Environmental Services has an existing letter approving our ATP.	<i>Appendix A recognizes the use of alternative test procedures. No changes were made to Appendix A.</i>
Cover Page	1	Plant Zip Code	Please correct CTP's zip code to 98421.	<i>The zip code will be corrected.</i>

S2	9	<p>BOD/CBOD sampling before or after disinfection Table 5 (Final Wastewater Effluent) text states, "The Permittee may take effluent samples for BOD5 and CBOD5 analysis before or after the disinfection process."</p>	<p>Both instances of BOD/CBOD mention following, at the end of S2.A. there is a footnote stating that "Take effluent samples for BOD5/CBOD5 analysis after the disinfection process," which appears to be inconsistent with that language. Table 5 also contains the text, "If taken after, the Permittee must dechlorinate and reseed the sample." SM5210B (section 4.b2), listed as a list of approved inorganic test procedures in Appendix A Table 1 (page 49) (and 40CFR136) states that, "If residual chlorine is present, dechlorinate sample. Sometimes chlorine will dissipate from sample within 1 to 2 h of standing in light; this often occurs during transport and handling."</p>	<p><i>The footnote is current boiler plate language typically used in all NPDES permits issued by Ecology. Ecology thanks you for your suggestions and will forward them to the appropriate Ecology staff for consideration. No changes were made to the final permit.</i></p>
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			Tacoma suggests a change of language to reflect that dichlorination (<i>sic</i>) may not be required if chlorine residual is undetectable prior to BOD analysis, and to change “reseed,” to “seed.”	
Table 7	10	Sampling Sites	Please add a column for each sampling site Influent/Effluent/sludge with an x for each parameter by matrix. Please clarify biosolids or sludge? S6.B is for the sludge not biosolids.	<i>Monitoring requirements for sludge are discussed in S6.B. Table 7 contains monitoring requirements for both pretreatment and permit reapplication purposes. EPA’s permit application Form 2A defines the terms “biosolids” and “sewage sludge” interchangeably. No changes were made to the final permit.</i>
Table 7	10	Sludge	Sludge has been reported as a solid mg/Kg dry is this okay or are ug/L needed?	<i>Results should be reported in units consistent with test methods and sample matrices. No changes were made to the final permit.</i>
Table 7	10	Dioxin requirements	What is the rational for adding Dioxin? If we must do why is there no sunset clause?	<i>Dioxin is a listed priority pollutant and is required to be tested for annually for dischargers with industrial pretreatment as part of the application process. No</i>

				<i>changes were made to the final permit.</i>
S2	10	Pesticides and PCB's	Footnote s (page 12) for PP-Pesticides/PCBs mentions only pesticides. Will PCBs be on a similar monitoring schedule for only the first two years or are those considered separately (they can be extracted from the same sample, but are run separately)? Environmental Services acknowledges that we had three reportable analytes in the chlorinated pesticides list that prompted this additional monitoring. Please consider modifying the subset, that was included on the quarterly schedule, to only include the pesticides that had reportable detections.	<p><i>The requirement for annual monitoring/reporting of PCBs will remain the same.</i></p> <p><i>The requirement for quarterly monitoring of pesticides is based on the results of the 2020 priority pollutants analysis; nine pesticides were detected, with two at levels that did not meet human health-based water quality criteria. The permit's quarterly monitoring/reporting requirements for priority pollutant pesticides will remain the same.</i></p> <p><i>Pesticides and PCBs monitoring requirements in Table 7 have been amended to better reflect these requirements.</i></p>
S2	11	Sample Type	Sample Type has changed from 24-hour time versus	<i>The sample type description will be amended to 24-hour</i>

			flow weighted. Was that an error?	<i>flow weighted composite.</i>
S2	11	BOD and TSS	BOD and TSS Footnotes - added rotational basis for week except for holidays and weekends. Need clarification.	<i>Rotational sampling requirements for BOD5 and CBOD5 will be removed. This footnote allows the permittee to adjust their rotational sampling schedule to account for non-staffed days, such as holidays or weekends.</i>
S2	11	Footnote J on taking CBOD and BOD samples "after disinfection process".	Footnote J on taking CBOD and BOD samples "after disinfection process". Is this intended to include Contact Time or after dosing?	<i>Contact Time (CT) is a necessary part of the disinfection process, so sampling should occur after CT. No changes were made to the final permit.</i>
S2	12	Footnotes: "Monitoring of pesticides will occur quarterly during the first two years of the permit period. If sampling discloses no problems, monitoring may be reduced to once per year."	What is the definition of a "problem"?	<i>In this context, a problem would be a reasonable potential to violate water quality standards. In the results of the annual 2020 priority pollutants analysis, nine pesticides were detected with two at levels that did not meet human health-based water quality criteria. The results for the annual 2017-19 and 2021-23 pesticide tests were non-detect. Overall, these results may be anomalous or may be due to previously undetected</i>

				<i>contaminants. Ecology staff will wait until results become available before any decisions are made. No changes were made to the final permit.</i>
S2.E.	13	Frequency	Can there be a reduction in frequency after twelve months of monitoring for analytes that are only tested annually or quarterly after a 12-month period or must it be 12 months where the frequency is 1 month or less?	<i>Ecology will review each request and at its discretion grant the request when it reissues the permit or by a permit modification. No changes were made to the final permit.</i>
Table 11	35	Acute Toxicity Testing has second species.	Is it correct to have a second species?	<i>WET tests are required to have two species, a fish and an invertebrate, as per the Whole Effluent Toxicity Testing Guidance and Test Review Criteria (WQ-R-95-80, 2016) and the Permit Writer's Manual. No changes were made to the final permit.</i>
Appendix A	49	CBOD	CBOD is not listed in Appendix A.	<i>SM 5210-B is the approved test for BOD5 and is also used to test for CBOD5 when a nitrogen inhibitor is added. No changes were made to the final permit.</i>

S.2, Table 4, footnote e	8, 11	Table 4 list Influent CBOD5 minimum sample frequency at 3/week with the foot note "e". - Page 8 "e 3/week means (3) times during each calendar week and on a rotational basis throughout the days of the week, except weekends and holidays" - Page 11	Our current lab staffing is not covering weekends, with the nature of a five-day CBOD test this would necessitate adjusting our staffing to create weekend coverage. Environmental Services would like to request removing the requirement of rotational sampling on the CBOD Influent.	<i>Rotational sampling requirements for BOD5 and CBOD5 will be removed.</i>
Appendix A, Table 2	50	Table 2 lists a Quantitation Limit requirement for COD of 10 mg/L	Our current lab Quantitation Limit for COD is 15 mg/L. We would like to request that the Quantitation limits be updated to the lab Quantitation limits for these compounds.	<i>If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection level (MDL) and a quantitation level (QL) to Ecology with appropriate laboratory documentation when the detection levels are too high to provide results near or below criteria (or applicable permit limits). No changes were made to the final permit.</i>
Appendix A, Table 3	52	Table 3 lists Quantitation Limit requirements for	Partly based on the CFR 136 MDL studies, our	<i>If the Permittee is unable to obtain the required DL and QL in</i>

		<p>Cadmium, Hexavalent Chromium, Chromium, Silver, Thallium, Zinc and Phenols of 0.25(Cd), 1.2(Cr6+), 1(Cr), 0.2(Ag), 0.36(Tl), 2.5(Zn) and 100(Phenol) ug/L.</p>	<p>current lab Quantitation limits are 0.5(Cd), 10(Cr6+), 1.5(Cr), 0.5(Ag), 0.5(Tl), 5(Zn) and 100(Phenols) ug/L. We would like to request that the Quantitation limits be updated to the lab Quantitation limits for these compounds.</p>	<p><i>its effluent due to matrix effects, the Permittee must submit a matrix-specific detection level (MDL) and a quantitation level (QL) to Ecology with appropriate laboratory documentation when the detection levels are too high to provide results near or below criteria (or applicable permit limits). No changes will be made to Appendix A.</i></p>
<p>Appendix A, Table 5</p>	<p>53</p>	<p>Table 5 lists Quantitation Limit requirements for Acrylonitrile of 2 ug/L.</p>	<p>Partly based on the CFR 136 MDL studies, our current lab Quantitation limit for Acrylonitrile is 5 ug/L. We would like to request that the Quantitation limits be updated to the lab Quantitation Limit.</p>	<p><i>If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection level (MDL) and a quantitation level (QL) to Ecology with appropriate laboratory documentation when the detection levels are too high to provide results near or below criteria (or applicable permit limits). No changes will be made to Appendix A.</i></p>
<p>Appendix A, Table 8</p>	<p>56, 57</p>	<p>Table 8 lists Quantitation Limit requirements for the following Pesticide compounds at < 50 ng/L; Aldrin,</p>	<p>Based on the CFR 136 MDL studies, our current lab Quantitation limit for all these compounds is 50 ng/L. We would</p>	<p><i>If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection level</i></p>

		alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, Dieldrin, alpha-Endosulfan, bata-Endosulfan, Endosulfan Sulfate, Endrin and Heptachlor.	like to request that the Quantitation limits be updated to the lab Quantitation Limit for Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, Dieldrin, alpha-Endosulfan, bata-Endosulfan, Endosulfan Sulfate, Endrin and Heptachlor.	<i>(MDL) and a quantitation level (QL) to Ecology with appropriate laboratory documentation when the detection levels are too high to provide results near or below criteria (or applicable permit limits). No changes will be made to Appendix A.</i>
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6. Comments Related to Wastewater NPDES permit and Puget Sound Nutrient General Permit Elements (Pages 10-20)

The following comments and questions on the PSGNP were submitted by Tacoma Environmental Services:

- Ecology reliance on the Puget Sound Nutrient General Permit (PSNGP) is misplaced – the PSNGP is currently Stayed and Partially Invalidated
- Solely Relying on an Individual Permit Would Allow Ecology and Tacoma to Develop a Long-Term Approach Nutrient Loading for the Central Treatment Plant
- Modeling concerns for a Better Scientific Foundation
 - What steps has Ecology taken to update the science, model inputs, etc. as well as the use of the Salish Sea Model?
 - Is Ecology using the updated monitoring data with the Salish Sea Model?
- Concerns about the DO standard:
 - What steps has Ecology taken to update this standard?
- Concerns about Natural Conditions Provision Rulemaking
 - EPA disapproved the DO Natural Conditions Provision. What is Ecology’s reasoning to not delay the issuance of the PSNGP considering the Reasonable Potential Analysis and Bounding Scenarios Report relied upon using this Provision?
 - How will the rulemaking process impact the future nutrient removal requirements and next steps?
 - What is the timing of this process to be fully implemented, including approval from the United States Environmental Protection Agency (EPA)?
- Cost Benefit Analysis
- Need for Investigation of other TIN Sources

- What steps has Ecology taken to further identify opportunities to reduce other TIN sources besides domestic wastewater treatment plants?
- What is the status of the Puget Sound Nutrient Reduction Plan? Environmental Services has not seen an update since the PSNGP was issued.
- Need for a Targeted Reasonable Potential Analysis
- Ecology does not have sufficient information to conclude total inorganic nitrogen discharges from the Central Treatment Plant are causing or contributing to a violation of the applicable DO standard
- PSNGP Public Comment Response Concerns
 - PSNGP Ecology Summary of Changes: Removing Bubble Permit Option for Tacoma
 - Why did Ecology remove the bubble permit option for Tacoma in the PSNGP?
 - Best Management Practices (BMPs) for Nutrient Removal
 - Please list the resources available for Nutrient Removal BMPs or Guidance for wastewater treatment plants (that were not designed for nutrient removal) when the PSNGP was issued.
 - Ecology Response Regarding All Known and Available Reasonable Technologies (AKART)

Ecology Response: *Ecology thanks you for your comments. Comments on the PSNGP are outside of the scope of this permit and will be forwarded to the appropriate staff. At this time, the PSNGP is the mechanism being used for controlling nutrients in the Tacoma Central WWTP discharge. In the event the PSNGP does not survive the ongoing legal challenges, this permit will be reopened, and nutrient reduction requirements will be included in the individual permit. No changes were made to the final permit.*

Ecology received the following comments from the Puget Soundkeepers:

- 1) The permit must include nutrient effluent limitations
 - a) Permits must include technology- or water quality-based effluent limits, whichever are more stringent.
 - b) Nutrient effluent limits are required to meet AKART.
 - c) Nutrient effluent limits are required to protect water quality.
 - d) This individual Permit must include nutrient effluent limits.

Ecology Response: *Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for controlling nutrients in the Tacoma Central WWTP discharge. In the event the PSNGP does not survive the ongoing legal challenges, this permit will be reopened, and nutrient reduction requirements will be included in the individual permit. No changes were made to the final permit.*

2) The permit must identify and limit PFAs pollution.

The permit provisions must be strengthened to meaningfully address PFAS pollution. We applaud that the draft permit includes the recognition of PFAS as a concern and requires an industrial user inventory update, and new or updated pretreatment agreements that include requirements for those sources to evaluate pollution prevention and source reduction measures. However, the current draft permit includes ambiguous and weak provisions that the Plant will “evaluate” and “encourage” other best management practices and pollution prevention strategies for dischargers. The permit must include technology-based or water-quality based effluent limits, sampling specific to each industrial user (IU), pretreatment pollution reduction requirements with implementation deadlines, and an adaptive management approach that sets targets for reductions in PFAS discharge and updates strategies and targets as needed. The permit must be strengthened with the following provisions:

a) Establish effluent limits in the permit.

Ecology must evaluate AKART for PFAS. That analysis can, in turn, inform the establishment of technology-based effluent limits. Ecology must also determine whether a more stringent, water quality-based effluent limit is necessary.

Ecology Response: *Thank you for your comment. At this time, Ecology is focusing on source control to manage PFAs contributions to municipal wastewater treatment plants. The influent PFAs monitoring is intended to help the city of Tacoma to characterize discharges into their collection system and track down sources of pollutants within the sewershed. As there are no numeric water quality criteria for PFAs, source control coupled with the influent monitoring constitutes AKART for PFAs. Once Ecology completes rulemaking to include numeric aquatic life criteria for PFAs, effluent monitoring will be required to assess compliance with water quality standards. For more information on the steps Ecology is taking to address PFAs in the environment, please visit:*

<https://ecology.wa.gov/waste-toxics/reducing-toxic-chemicals/addressing-priority-toxic-chemicals/pfas>

No changes were made to the final permit.

b) Clearly define PFAs in the permit.

We support incorporating Washington’s definition at RCW 70A.350.010 to ensure that attention is paid to the broad range of existing and new compounds within this chemical class.

Ecology Response: *Thank you for your comment. No changes were made to the final permit.*

- c) Expand the categories of users “suspected or known” to discharge PFAS to include aerospace and aircraft modification, industrial laundries, industrial gas manufacturing, and inorganic chemical manufacturing.

Ecology Response: *Thank you for your comment. The permit will be amended to include the aforementioned user categories.*

- d) Require source-specific sampling of influent from IUs and sampling of total plant influent and treated effluent.

The permit should require that IUs conduct initial sampling to determine PFAS discharge quantities and concentrations, and then require quarterly sampling for the IUs found to discharge PFAS. The permit should also require that the permittee determine a sampling schedule that enables it to assess relative contributions from IUs and non-regulated sources of wastewater (such as domestic wastewater), as well as to assess whether PFAS volumes or concentrations increase during treatment at the Plant.

Ecology Response: *Thank you for your comment. Ecology delegated authority to the City of Tacoma for permitting, monitoring, and enforcement over IUs discharging to their treatment system to provide more direct and effective control of pollutants. Requirements of the pretreatment program can be found in in section S6 of the permit, including the requirement to issue pretreatment permits, enabling the permittee to set IU monitoring requirements. No changes were made to the final permit.*

- e) Strengthen requirements for industrial users discharging PFAS.
The permit should specify that the permittee and its IUs must not only evaluate potential source reduction (such as product substitution) and operational changes to reduce PFAS, but that they must also consider treatment technologies to remove PFAS from wastewater before it is sent to the facility.

Ecology Response: *Thank you for your comment. Section S6.E of the permit provides a schedule for the permittee to 1) inventory/identify PFAs generating IUs, 2) begin including PFAs sampling/evaluation in the IUs pretreatment permits, and 3) implement of best management practices/pollution prevention strategies in IUs pretreatment permits. No changes were made to the final permit.*

- f) Specify implementation timelines for sampling and pollution prevention or pollution treatment practices.

Ecology Response: *Thank you for your comment. Section S6.E of the permit provides a schedule for the permittee to 1) inventory/identify PFAs*

generating IUs, 2) begin including PFAs sampling/evaluation in the IUs pretreatment permits, and 3) implement of best management practices/pollution prevention strategies in IUs pretreatment permits. No changes were made to the final permit.

- g) Halt the application of sludge/biosolids until sampling and pretreatment measures are in place.

Ecology Response: *Thank you for your comment. Halting the application of biosolids is outside the scope of this permit. Ecology has a program that regulates the treatment, testing and application of biosolids and is separate from the Water Quality Program which oversees NPDES permits. For more information on the biosolids program and permit, please visit: [Biosolids - Washington State Department of Ecology](#)*

No changes were made to the final permit.

- 3) The permit violates Tier I anti-degradation requirements
Ecology fails to regulate nutrients and control PFAs from Tacoma Central and violates Tier I anti-degradation requirements.

Ecology Response: *As discussed in responses to above comments 1) and 2), Ecology believes that the issues of regulating nutrients and controlling PFAs are satisfactorily addressed, and through these actions, Ecology is taking appropriate and definitive steps to improve water quality and meet Tier I requirements. No changes were made to the final permit.*

- 4) The permit must prohibit failed Whole Effluent Toxicity (WET) tests

Ecology Response: *The new permit requires quarterly WET tests for acute toxicity, as did the previous permit. A review of WET test results during the last 5 years shows no violations of acute toxicity limits (i.e. 100% survival rate of the test species) at the acute critical effluent concentration (ACEC) of 4.5% (percent effluent at the boundary of the acute mixing zone). This means that there is no statistically significant difference in test organism survival between the ACEC sample and the control sample (0% effluent). WET testing conducted for effluent characterization required by the NPDES permit application showed that the “no observed effect concentration” (NOEC) and the “lowest observed effect concentration” (LOEC) were greater than the ACEC and the chronic critical effluent concentration (CCEC) of 0.9% (percent effluent at the boundary of the chronic mixing zone). These results show that the Central WWTP is in compliance with ACEC and CCEC requirements, therefore, there is no reasonable potential for effluent discharges to cause receiving water chronic toxicity, and the proposed permit will not include a chronic*

WET limit. The Central WWTP is required to retest the effluent for chronic toxicity as part of the application for permit renewal. No changes were made to the final permit.

5) 6PPD and 6PPD-Quinone

The Permit authorizes discharges containing 6PPD/Q that present a reasonable potential of violating water quality standards, including the prohibition against discharging toxics in toxic amounts. Ecology must include monitoring and treatment for 6PPD/Q to meet AKART and water quality standards.

Ecology Response: *6PPD-q and its major source, tire wear particles, are typically found in surface runoff and stormwater. The city of Tacoma maintains two separate collection systems, one for surface runoff/stormwater and one for sanitary sewage. The Tacoma Central Treatment Plant receives flow from only the sanitary sewer and not from the surface runoff/stormwater collection system.*

At present, 6PPD-q is not part of the priority pollutant list included in routine permit application scans and there is no approved 40 CFR Part 136 method for water quality permit application and compliance use. Ecology is aware that EPA recently published a draft analytical method for measure 6PPD-q using liquid chromatography with tandem mass spectroscopy (EPA Method 1634). This method was developed for use in testing samples from stormwater and surface water sources. While EPA states that using this method on other applications and matrices may be possible, the draft method does not at this time discuss the appropriateness for using this method to test sewage samples.

Ecology is also taking steps to regulate toxic pollutants through source control and/or product substitutions. Please visit Ecology's website for more information on work currently underway:

<https://ecology.wa.gov/waste-toxics/reducing-toxic-chemicals/addressing-priority-toxic-chemicals/6ppd>

No changes were made to the final permit.

Ecology received the follow comments from the Washington Conservation Action (WCA):

- 1) Remove Tacoma from the Puget Sound Nutrient General Permit and reduce nitrogen and related pollution this permit term.
 - a) Ecology must require Tacoma to further reduce nitrogen and carbon loads, establish a nitrogen limit for Tacoma Central, and eliminate Tacoma from general permit coverage now.

- b) If technology-based limits are not being considered, then Ecology should add 90th percentile values of actual existing nitrogen loads as interim nitrogen limits for the Tacoma Central Wastewater Treatment Plant in this individual permit.
- c) Ecology could establish a technology-based nitrogen limit of 2 mg/L based on what the LOTT plant and JBLM plant are currently achieving. This is a known and reasonable technology that needs to be incorporated in this individual permit.
- d) At an absolute minimum, Ecology must add a clear statement that should the Puget Sound Nutrient General Permit be weakened or voided, that Ecology will reopen this individual permit.

Ecology Response: *Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for controlling nutrients in the Tacoma Central WWTP discharge. In the event the PSNGP does not survive the ongoing legal challenges, this permit will be reopened, and nutrient reduction requirements will be included in the individual permit.*

Wastewater utilities may use any treatment technology or combination of technologies that they can demonstrate provides treatment that constitutes “all known, available, and reasonable methods of treatment” and the discharge will comply with applicable water quality standards. The application of an arbitrary 2 mg/L TIN effluent limit does not meet the definition of AKART as it does not qualify as a “reasonable” method of treatment given the current treatment technologies used at the plant. The PSNGP requires Tacoma to conduct an AKART evaluation to address this issue. Ecology is also working on a water quality solution to the DO impairments within the Salish Sea. Modeling results may show that the WWTP must achieve a higher nutrient reduction efficiency than the defined AKART threshold. The next general permit cycle will contain either the AKART based limit, or the numeric water quality-based effluent limit – whichever is more stringent.

No changes were made to the final permit.

- 2) Tacoma is planning for sewage flow increases and is long overdue for future facility designs to avoid degradation.
 - a. Tacoma is currently developing a long-term plan called Home in Tacoma that will substantially increase the number of people within Tacoma’s service area. Tacoma intends to pursue approval of a basic sewer plan that would lock in flow expansions without concomitant treatment technology upgrades that are long overdue. During the next permit cycle, Ecology needs to require Tacoma to submit plans for increases in flow

projected in the coming decades that would also increase nitrogen and carbon loads to Puget Sound with status quo technology.

- b. . . . [t]o achieve anti-degradation, if a facility is planning a new or expanded action, Ecology authorizes the action, and the action has the potential to cause measurable degradation to existing water quality at the edge of the mixing zone, dischargers must conduct a Tier II analysis.
- c. Given that Ecology has determined that Tacoma and 57 other dischargers together have a reasonable potential to violate water quality standards for dissolved oxygen and the population has grown substantially in the past 35 years, the antidegradation provisions are not met by this permit.

Ecology Response: *Thank you for your comment. As indicated in your comments, the city of Tacoma is currently in the process of preparing a General Sewer Plan (GSP). All GSPs submitted to Ecology for review and approval must meet requirements that are found in WAC 173-240-050. GSP requirements include, at a minimum, discussions on population trends and flow projections, adequacy of current infrastructure and treatment capabilities, water quality and other regulatory requirements that affect planning (such as the PSNGP, AKART and compliance with water quality standards), analysis of expansion and/or upgrade alternatives to meet future flow requirements, and service and capital costs for any proposed projects during the planning period. Placing requirements in the permit for submittal of a GSP or what must be included in the GSP is not needed.*

At this time, there are no plans to expand the Central WWTP beyond its current design capacity. Therefore, there is no need for a Tier II analysis. Ecology does not consider population growth or increases in flows or loadings that are still within current facility design parameters as a trigger for Tier II analysis.

No changes were made to the final permit.

- 3) Ecology cannot permit discharges of oxygen-demanding substances to Commencement Bay.
 - a. Parts of Commencement Bay currently fall below the minimum levels of dissolved oxygen in the state water quality numerical criteria. Therefore, Commencement Bay has zero capacity for discharges of biochemical oxygen demanding substances.
 - b. . . . [a]t the moment there is no ability for Ecology to permit discharges of oxygen-demanding substances to waters that fall below the numerical criteria in the standards, and a compliance schedule is needed.

Ecology Response: *Thank you for your comment. Under WAC 173-201A-612, Table 612, Commencement Bay has multiple classes of use designation. Section III.D of the Fact Sheet provides the water quality criteria associated with these classes of use designation, which includes dissolved oxygen requirements. Based on dissolved oxygen levels in the effluent and ambient waters, calculations of dissolved oxygen levels at the chronic mixing zone showed that, at design flow, the discharge has no reasonable potential to violate water quality standards for dissolved oxygen (see Fact Sheet Appendix D—Technical Calculations).*

Fact sheet Section III.E. lists impairments within the vicinity of the discharge and also has detail covering the existing DO impairments throughout the Salish Sea. At this time, Ecology is focusing on reducing nitrogen as it is the primary nutrient impacting DO levels in the greater Puget Sound area. Please see the fact sheet associated with the PSNGP for more detail about how the municipal WWTP discharges contribute to violations of the state water quality standards.

No changes were made to the final permit.

- 4) Accelerate Progress toward Reducing Toxics
 - a. We concur with adding PFAS monitoring in Permit Section S2 Table 8 and described in Fact Sheet Section V.D.3 Pretreatment.
 - b. . . . [q]uarterly frequency for the influent is insufficient to fully characterize the influent levels of PFAS and entirely misses the effluent. We urge Ecology add effluent monitoring, and also to require weekly influent and effluent monitoring for the first two years of the permit, with a provision to decrease to monthly monitoring if Tacoma can demonstrate statistically that monthly monitoring would sufficiently characterize the variability in concentrations received at the plant.
 - c. Ecology must require biosolids PFAS monitoring as well given the widespread dispersal of biosolids, including in the TaGro consumer product.
 - d. Commencement Bay is on the 303(d) list for copper, lead, ammonium, and more, which underscores the likelihood of non-zero background levels for key toxics. Ecology must re-evaluate this analysis using more appropriate background concentrations that are much greater than zero.

Ecology Response: *Thank you for your comment. At this time, Ecology is focusing on source control to manage PFAs contributions to municipal wastewater treatment plants. The influent PFAs monitoring is intended to help the city of Tacoma to characterize discharges into their collection system and track down sources of pollutants within the sewershed. As there are no numeric water quality criteria for PFAs, source control*

coupled with the influent monitoring constitutes AKART for PFAs. Once Ecology completes rulemaking to include numeric aquatic life criteria for PFAs, effluent monitoring will be required to assess compliance with water quality standards.

Ecology has a program that regulates the treatment, testing and application of biosolids and is separate from the Water Quality Program which oversees NPDES permits. For more information on the biosolids program and permit, please visit:

[Biosolids - Washington State Department of Ecology](#)

Review of the Environmental Information Management (EIM) database shows that most of the data collected on toxic contamination in Commencement Bay is for sediment and biotic tissue analyses. Most of the water samples taken did not include toxic contaminants, and were from the 1950s, 1970s, and 1990s; these were ignored. Samples taken along the shoreline were also ignored and not considered representative of ambient conditions due to their proximity to storm drains outfalls. Only one set of results (BRW-COMMENCEBAY), for copper, lead and zinc, was located; six samples were taken and analyzed in 2008-09. 90th percentile results were (dissolved metals):

- *Copper — 1.01 ug/L*
- *Lead — 0.0565 ug/*
- *Zinc — 1.38 ug/*

In one sediment sampling location (UWI-CB-281), 4 water samples were collected from the corer sampler on 4/13/2018. No explanation was given as to why or how the water samples were obtained. The only toxic contaminant reported was ammonium. 90th percentile results were 38.2 ug/L.

The Reasonable Potential (RP) analysis was rerun for copper, lead, zinc and ammonia with the 90th percentile results used for ambient background. Changes in RP results were minor, with no new limits required. Figure 1 provides a comparison of RP results.

No changes were made to the final permit.

- 5) Eliminate Sanitary Sewer Overflows (SSOs) and Reduce Inflow and Infiltration (I/I)
- a. Ecology must add how much I/I contribute to dry weather flow and non-storm wet weather flow. Special Condition S4.E describes the Inflow and Infiltration Evaluation due in March 2025. However, the only trigger for action is to not increase I/I by 15 percent or more. This is insufficient when a system like Tacoma experiences ongoing SSOs. **Not letting SSOs worsen does not protect public health.** Rather than wait for a future trigger, Ecology must include more substantive requirements around reducing I/I in a special study in this individual permit given the persistent SSOs that occur.
 - b. Ecology should require a much more detailed I/I assessment as a permit provision, including metering of jurisdictions and incentives for I/I abatement plus video of pipe condition to support asset management.

Ecology Response: *Thank you for your comment. I/I is typically associated with storm flows entering the sewer system, either directly via inflow due to illicit connections or manhole covers, or indirectly via infiltration due to saturated soils surrounding old or damaged pipes and manholes walls. Comparing low flows during the dry season versus high flows measured during the wet season and storm events is how I/I is calculated. In addition to the I/I monitoring and annual reporting requirements in section S4.E, Tacoma is also required to provide annual reports on actions taken to improve their sewer system, which is discussed in section S9. Actions taken by Tacoma to meet section S9 permit requirements include:*

- *Rehabilitation and replacement of sewer lines*
- *Development of and asset management program to manage risk*
- *Conducting video inspections and smoke testing to identify damage and illicit connections*
- *Annual cleaning and inspection of major sewer lines entering the Central WWTP*
- *Development of a digital model of the sewer collection system to determine hydraulic capacities and identify bottlenecks*
- *Collecting hydrologic data from rain gauges and metered manholes of sewer system basins and subbasin to identify areas with high I/I*
- *Eliminate illicit connections to the sewer system when encountered*
- *Upgrade pump stations to increase reliability*

Appendix E Table 3: Work Completed on Tacoma Central Wastewater Treatment Plant:

Year	Rehabilitation/ Replacement \$M Spent	Rehabilitation/ Replacement Linear Feet	Video Linear Feet	Illicit Connections Corrected
2023	6.9	9,446	413,000	0
2022	9.2	23,700	286,687	0
2021	9.2	22,530	428,857	0
2020	9.2	20,359	356,557	4
2019	8.7	33,396	376,030	5
2018	7.8	11,126	481,413	6
2017	5.2	11,250	692,047	4
2016	4.2	13,653	850,710	12

Source: Overflow/Bypass Elimination Annual Progress Reports, 2016 - 2023

Based on the amount of work Tacoma annually performs to reduce I/I and SSOs, Ecology believes that it is not necessary to place further requirements in section S9.

No changes were made to the final permit.

- 6) Address Tribal Treaty Rights, Environmental Justice, and Affordability
 - a. [t]he description of receiving waters must include the Tribes with treaty-protected resources in the impacted waterways, and we urge Ecology to consult directly with the Puyallup Tribe as well as others such as Squaxin Island Tribe, Nisqually Tribe, and Suquamish Tribe with Usual and Accustomed Areas that are impacted by the discharge based on Ecology’s Salish Sea Modeling and circulation patterns in the Salish Sea. For example, the Fact Sheet could include the following: *“This proposed permit authorizes discharges of treated domestic wastewater to Commencement Bay. Due to Puget Sound circulation patterns, effluent from the Tacoma Central outfall flows throughout South Puget Sound. Collectively, these receiving waters are within the Usual and Accustomed Areas of the Puyallup Tribe, Squaxin Island Tribe, Nisqually Tribe, and Suquamish Tribe. In addition, members of the public recreate within these waters, including for swimming, boating, shellfishing, fishing, and other active and passive uses. “*
 - b. Given the passage of the HEAL Act and the goals outlined in Ecology’s 2023 – 2025 Strategic Plan, this permit cycle must make environmental justice a direct and actionable component of the requirements under individual sewage permits, and in this permit specifically for the Tacoma Central plant. We recommend that Ecology require Tacoma to conduct an

environmental justice assessment of what Black, Indigenous, and other People of Color currently experience impacts from the Tacoma Central discharge.

- c. Ecology should require a summary of how Tacoma will address affordability, which may include programs that focus on low-income households.

Ecology Response: *Thank you for your comment. Ecology agrees that Tribes with treaty protected resources should be recognized in the fact sheet. Fact sheet shell modifications will be discussed with the Permit Writer's Workgroup (the Water Quality Program's permit policy making body). Changes may be made to the permit shells moving forward. Tribes in the South Sound that with impacts to their treaty protected resources include the Puyallup Tribe, the Squaxin Island Tribe, the Nisqually Tribe and the Suquamish Tribe. During the permit comment period, Ecology individually notified Puyallup Tribe, the Squaxin Island Tribe, the Nisqually Tribe and the Suquamish Tribe inviting them to comment and consultation.*

Ecology agrees that environmental justice (EJ) is a priority for the Agency. At this time, the significant agency actions subject to environmental justice assessments include rulemaking, new grant/loan programs, agency requested legislation and capital projects over \$12 million. Individual permits do not qualify for environmental justice assessments. If the city of Tacoma requests funding more than \$12 million from Ecology to fund a capital project, an EJ assessment of how black, indigenous and other people of color experience impacts from the facility's discharge will also be required.

Further, the PSNGP requires the city of Tacoma to conduct an EJ review to identify communities of color, low-income populations, Tribes and indigenous populations within the sewershed and conduct an affordability assessment to identify impacted populations with EJ considerations. Information collected by the city of Tacoma during this review will help the county determine what populations within the sewershed experience impacts resulting from the Tacoma Central WWTP discharge.

No changes were made to the final permit.

- 7) Increase Public Transparency and Accountability
 - a. The permittee must be responsible for the quality of the data in PARIS. Ecology must stipulate that each permittee is solely responsible for the accurate and complete reporting in databases such as PARIS and any errors in reporting are subject to fines. We recommend that Ecology add a new provision to Special Condition S3.A such as "*The permittee is solely responsible for ensuring that electronically-submitted data are accurate*

and reflect the actual conditions of the plant. Any errors are the responsibility of the permittee and subject to fines for inaccurate reporting.”

Ecology Response: *Thank you for your comment. Each facility covered by an individual permit must provide accurate and representative data as required on the Discharge Monitoring Reports (DMRs). Further, permittees must certify that data is “true, accurate and complete” when submitting data into the online portal. Section G1.4 provides the certification language required for all persons signing a document. In addition, permit managers also review DMRs on monthly basis for accuracy and permit compliance. Permittees already have the responsibility to ensure data submitted is accurate and reflects the operating condition of the plant.*

No changes were made to the final permit.

- b. Special Condition S3.B mentions allowing the permittee to submit hard copy reports. Because these would not be available to the public, this option must be removed from the final permit. Further, all PDFs submitted to Ecology must use text recognition so that the information is searchable.

Ecology Response: *Thank you for your comment. Any hard copies of documents and reports required by the permit and received by Ecology are logged into PARIS and are available for in-house review by the public. Interested parties may use public records requests to review hard copy documents.*

No changes were made to the final permit.

- c. Special Condition S3.F needs far more transparency added to the permit provisions around reporting permit violations. We generally agree with the distinct phases of notification, beginning with “immediately” in Special Condition S3.F. However, Ecology needs to define “immediately”.

Ecology Response: *Thank you for your comment. Immediate reporting means reporting of permit violations without delay of any interval of time from the moment the permittee becomes aware of the violation. Priority should first be given to stopping an active noncompliance.*

Permit managers should also log instances of notifications of noncompliance into the communications section in PARIS which makes these instances publicly available. Otherwise, interested parties may use public records requests to find instances of reported noncompliance.

No changes were made to the final permit.

- d. [w]e disagree with S3.F.6, which allows Ecology to waive the requirement for a written report based on an oral report. Oral reports are not available to the public and are insufficient to document sewage spills. Ecology should strike this section entirely, and should also ensure that the oral reports are instead written documents and searchable in a public-facing portal.

Ecology Response: *Thank you for your comment. Our standard permit language requiring oral reports aligns with federal regulations under 40 CFR 122.41(l)(6)(iii). When received, oral reports should be entered into the PARIS communication log which places the notification in a publicly facing database. Waving the written report is part of enforcement discretion which is determined by the permit manager and/or the unit supervisor.*

No changes were made to the final permit.

- 8) We generally agree with the statement in the Fact Sheet page 18 that “the permit does not authorize discharge of the non-reported pollutants.” Ammonia is required under this permit and could be construed by the discharger to create a double-permit situation that the dischargers have consistently claimed. Ecology should remove Tacoma from the Puget Sound Nutrient General Permit and include specific limits for nitrogen in this permit that require decreases in nitrogen load.

Ecology Response: *Thank you for your comment. This individual permit addresses ammonia toxicity, only. It does not address the DO impact from ammonia – that falls under the PSNGP.*

No change was made to the fact sheet.

- 9) Fact sheet page 25 notes that “Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor, and the lowest flow occurring once in every ten years to perform the reasonable potential analysis.” This is why we previously commented that the Puget Sound Nutrient General Permit use of the 99th percentile load estimates is exorbitantly high and to the benefit of dischargers rather than the protection of Puget Sound. As Ecology considers how to evolve this permit, we urge you to consult the action levels from the Puget Sound Nutrient General Permit but adopt the 90th percentile of actual existing loads in lieu of the general permit action limits.

Ecology Response: *Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for*

controlling nutrients in the Tacoma Central WWTP discharge. This comment appears to be on the PSNGP and will be forwarded to the appropriate staff.

No change was made to the fact sheet.

- 10) Fact Sheet page 29, Section III.E. lists the water quality impairments but only at the point of discharge. This section neglects to reflect Ecology's analyses that demonstrate the Tacoma Central discharge contributes to violations of the state water quality standards for dissolved oxygen in various inlets of South Puget Sound. This needs a characterization of the farfield impacts of carbon as well as nitrogen as both contribute to the DO violations.

Ecology Response: *Thank you for your comment. Currently, Ecology is focusing on reducing nitrogen as the primary constituent impacting DO levels in the greater Puget Sound area. The Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used to address this concern from the Tacoma Central WWTP discharge.*

No change was made to the fact sheet.

- 11) Fact Sheet page 29, Section III.E. references the Puget Sound Nutrient Reduction Program, which clearly states that the "... cumulative impact of point and nonpoint sources of nutrients, specifically nitrogen, contribute to areas of dissolved oxygen depletion in Puget Sound and the Salish Sea." Permit sections that conflict with this finding must be edited as out of date.

Ecology Response: *Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for controlling nutrients and address DO depletion in the Tacoma Central WWTP discharge.*

No change was made to the fact sheet.

- 12) Fact Sheet Section III.G.3 Dissolved Oxygen: BOD5 and Ammonia Effects states that "[n]atural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone." This needs to be updated to reflect that impacts to dissolved oxygen also occur through increased primary productivity that results from anthropogenic nutrient inputs, including from the Tacoma Central plant.

Ecology Response: *Thank you for your comment. Ecology agrees that anthropogenic nutrient inputs, which include nitrogen and carbon from the municipal wastewater discharges into the greater Puget Sound area, increase primary productivity rates which exacerbate DO depletions. This*

includes the discharge from the Tacoma Central WWTP which is why this facility is covered by the PSNGP.

No change was made to the fact sheet.

- 13) Fact Sheet Section III.G.4 pH fails to discuss ocean acidification. However, the Ocean Acidification Blue Ribbon Panel, co-chaired by former Ecology Director Jay Manning, clearly states that human nutrient inputs from wastewater treatment plants lead to deleterious impacts to shellfish by decreasing the aragonite saturation state below that which would occur without human nutrient inputs. The report also recommends reducing nutrient inputs where they are contributing to worsening acidification. Ecology's analyses quantify the decreases in aragonite saturation state in portions of Puget Sound that occur due to the discharge of sewage treatment plant nutrients. This section needs to be expanded to include appropriate context related to pH.

Ecology Response: *Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for controlling nutrients in the Tacoma Central WWTP discharge.*

Addressing ocean acidification is outside the scope of this permit; this comment will be forwarded to the appropriate staff. To see what actions Ecology is taking in response to ocean acidification, please visit:

[*Ocean acidification - Washington State Department of Ecology*](#)

No change was made to the fact sheet.

- 14) We concur with adding Enterococci monitoring in Special Condition S2 Table 5; however, this should be analyzed once per day, coincident with the fecal coliform monitoring frequency as they both indicate pathogenic organisms.

Ecology Response: *Thank you for your comment. Currently Ecology is building a data set showing attainment of the primary contact recreation standard through dual bacteria monitoring during this permit cycle.*

Enterococci monitoring does not need to occur at the same frequency as the monitoring for fecal coliform as there is no limit for enterococci in this permit cycle.

No changes were made to the final permit.

- 15) Special Condition S3.A.8.c needs to be updated because Enterococcus does not use a geometric mean for water quality compliance. From the state water quality standards for marine waters Table 210(3)(b) "*Enterococci organism levels within an averaging period must not exceed a geometric mean value of 30 CFU or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample*

when less than ten sample values exist) obtained within the averaging period exceeding 110 CFU or MPN per 100 mL.”

Ecology Response: *Thank you for your comment. The cited WAC section clearly states to use the geometric mean value of the collected data.*

No changes were made to the final permit.

- 16) Special Condition S6.A.1.f requires Tacoma to publish all domestic water users not in compliance with pretreatment requirements in the largest daily newspaper. This is no longer sufficient to reach the Tacoma populace. Ecology should add a requirement that Tacoma publish this information on the front page of the Environmental Services Division web page and leave it visible for the duration of the permit term, adding sequentially each of the five years of the permit term.

Ecology Response: *Thank you for your comment. 40 CFR 403 has specific requirements for how enforcements are published and made available to the public. The previously approved Industrial Pretreatment Program developed by the city of Tacoma contains the procedures for publishing SIU non-compliance used by the delegated pretreatment program.*

No changes were made to the final permit.

- 17) We concur with Special Condition S6.A.1.j that Tacoma “... *must develop a Memorandum of Understanding (or Inter-local Agreement) that outlines the specific roles, responsibilities, and pretreatment activities of each jurisdiction.*”

Ecology Response: *Thank you for your comment. Ecology appreciates WCA’s support in this area.*

- 18) We concur with including PFAS source identification and/or reduction activities included in the pretreatment report described in Special Condition S6.A.5.

Ecology Response: *Thank you for your comment. Ecology appreciates WCA’s support for PFAs requirements in the permit.*

- 19) While Ecology requires reporting on sediment quality under Special Condition S9.B, storing the data in EIM decouples the data from DMRs. Ecology should require Tacoma to summarize sediment data within their DMRs, in addition to adding to EIM. However, Ecology should explicitly include instructions that the PDF must be searchable and available to the public electronically. The sediment reports should also include trend analyses including data from previous permit terms.

Ecology Response: *Thank you for your comment. At this time the facility is required to monitor sediments for characterization as sediment data has not been collected since the 1990s. Our sediment management program requirements include uploading sediment data directly to EIM, which is publicly searchable geographic information system. Any submittal related to this permit requirement will be available for review on request. PARIS and DMRs are focused on monitoring discharge parameters specified by the permit and are not an appropriate place to store environmental data for a sediment data report.*

No changes were made to the final permit.

20) In the Fact Sheet Section II.B summarizing water quality in the receiving waters, temperature, pH, dissolved oxygen, alkalinity, and salinity are averaged over the entire water column. Dissolved oxygen is missing entirely and should be added. Averaging over the water column is not appropriate for stratified marine waters, especially where the water quality standards specifically preclude averaging that would hide an impairment.

Ecology Response: *Thank you for your comment. The fact sheet is intended to provide a general overview of available ambient water quality data. Dissolved oxygen was listed in this section.*

No change was made to the fact sheet.

Ecology received the following comments from members of the public via email or Smart Comments:

- Cynthia Cannon
- Marz Chabot
- Karen Dinicola
- Darlene Schanfald
- Steve Williams
- Jesse Witmer

Cynthia Cannon

Hello Ms. Mckittrick,

I appreciate this opportunity to comment on the regulations related to this critical treatment plant that serves Tacoma, Fife, Fircrest, Milton, Pierce County and King County.

1. Nutrient Effluent Limitations—I support the inclusion of specific limits for nutrients like nitrogen and phosphorus in the permit. These limits are essential to ensure

that the treatment plant complies with both state and federal pollution control laws, as nutrient pollution is a major contributor to water quality problems like low dissolved oxygen levels, in Puget Sound.

2. Inclusion of PFAS Monitoring and Controls—I advocate for stronger measures to monitor and reduce PFAS (per- and polyfluoroalkyl substances) pollution. PFAS are harmful, persistent chemicals commonly discharged by wastewater treatment plants. The permit should require effluent limits, regular monitoring, and targeted pollution prevention measures to effectively manage these toxic substances.
3. Anti-Degradation Requirements—To prevent further deterioration of water quality in already polluted areas like Commencement Bay, the permit must comply with Tier I anti-degradation requirements. I support taking stronger action to reduce pollutants, especially nutrients and PFAS, to meet these regulatory standards.
4. Whole Effluent Toxicity (WET) Testing—I request the inclusion of WET effluent limits in the permit to protect aquatic life. A single failed WET test should be considered a violation of water quality standards, and the permit should be revised to ensure such failures are prohibited.
5. 6PPD-Quinone Pollution—In addition, I call for the monitoring and control of 6PPD-quinone, a toxic substance derived from tire wear particles that poses a significant threat to salmon and other aquatic life. I urge that the permit should include specific measures to address this pollutant, which is not adequately covered.

Again, thank you for this opportunity to comment on these essential regulations.

Cynthia

Cynthia Cannon

Ecology Response: *Thank you for your comments. In response to your comments, please see our responses to Puget Soundkeeper's comments No. 1-5, respectively.*

Marz Chabot

The water deserves to be clean, and we deserve clean water. To protect it, it is imperative that environmental standards are upheld and that important additions to the permit are made. Without monitoring for nutrients like nitrogen and phosphorus, it will be impossible to track compliance with state pollution laws. And nutrient pollution is a major factor in low water quality.

Ecology Response: Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for controlling nutrients in the Tacoma Central WWTP discharge. In the event the PSNGP does not survive the

ongoing legal challenges, this permit will be reopened, and nutrient reduction requirements will be included in the individual permit. No changes were made to the final permit.

It's important to make sure that the water quality does not get any worse and that reductions in harmful pollutants like the ones on car tires are made.

Ecology Response: *Thank you for your comment. Please see our response to Puget Soundkeeper's comment No. 5.*

Karen Dinicola

Dear Vince,

At long last, the Department of Ecology's Southwest Regional Office is on the cusp of reissuing the NPDES permit for one of the City of Tacoma's two wastewater treatment plants.

It is difficult for me to express my disappointment that after more than a decade of back and forth between the City of Tacoma and the Department there is just about nothing in the proposed reissued permit for the City's Central Tacoma Plant that will tangibly improve the quality of the water coming out of the discharge pipe into Commencement Bay and Puget Sound. Numerous "advanced" treatment technologies have been developed and proven effective since the CTP's current permit was issued in 2010, and many were known at that time; yet this proposed draft reissued permit does nothing to get the City closer to implementing any of them at the plant.

I have now been a City of Tacoma Environmental Services Commissioner for ~14 or 15 months. I cannot count the number of times that outgoing Environmental Services Director Mike Slevin has told the Commission that "there will not be a major upgrade of the CTP until the 2050s" (when deterioration of the infrastructure will ultimately necessitate its replacement). Most of my fellow Commissioners are of the opinion that it is the Department's duty as the regulatory agency implementing the Clean Water Act to force the City to invest in major improvements before that time; it is not incumbent on the City to take this initiative – and rest assured, the City of Tacoma will not take steps absent clear regulatory drivers. The Commission has been told that the City's current budget proposals focus on increasing funding for staff and capital projects to maintain current assets; there is no funding included for any action related to the utility's comprehensive plan or PSNGP-required planning beyond that already allocated for external contracting. [Please note that I submit this letter not as a Commissioner but as a concerned and (better than average) informed citizen.]

According to the answers given to questions at Ecology's public information session for the CTP permit, the only requirements for the City to plan for (and thus enable the slow and arduous process of engineering design, construction, and operation of) technological improvements to its sewage treatment systems at the plant lie in the Puget Sound Nutrient General Permit which is under appeal and thus subject to

additional delays. Ecology's permit writer stated at the information session that if the Department were to lose the PSNGP appeal those requirements would be incorporated in a CTP permit modification – which the City would be able to appeal and further delay. A substantial CTP upgrade should begin in the next ten years regardless of the eventual permit discharge limit for total nitrogen.

- Suggested change: to address this risk, please direct the permit writer to add a new Special Condition to the draft NPDES permit for the CTP which begins “This Special Condition is effect if and only if for any reason the PSNGP becomes unenforceable” and is followed *verbatim* by the planning requirements and nutrient monitoring requirements of the PSNGP for which the City is currently responsible. The CTP permit and PSNGP must overlap to drive water quality improvements.

Ecology Response: *Thank you for your comment. At this time, the Puget Sound Nutrient General Permit (PSNGP) is the mechanism being used for controlling nutrients in the Tacoma Central WWTP discharge. In the event the PSNGP does not survive the ongoing legal challenges, this permit will be reopened, and nutrient reduction requirements will be included in the individual permit. No changes were made to the final permit.*

- Suggested change: require the City to begin financial planning during this permit term for a substantial plant upgrade to enable construction and operation of advanced treatment in the 2030s at latest.

Ecology Response: *Thank you for your comment. The city of Tacoma is currently in the process of preparing a General Sewer Plan (GSP). All GSPs submitted to Ecology for review and approval must meet requirements that are found in WAC 173-240-050. GSP requirements include, at a minimum, discussions on population trends and flow projections, adequacy of current infrastructure and treatment capabilities, water quality and other regulatory requirements that affect planning (such as the PSNGP), analysis of expansion and/or upgrade alternatives to meet future flow requirements, and service and capital costs for any proposed projects during the planning period. Placing requirements in the permit for submittal of a GSP or what must be included in the GSP is not needed. No changes were made to the final permit.*

I support the common-sense PFAS source control requirements proposed in the draft permit and encourage the Department to add such requirements to all NPDES permits for all POTWs across the State. More coordination is needed across regulatory programs to successfully address PFAS.

- Suggested change: the plant operator should maintain (or have access to) a continually updated database of industrial and commercial dischargers, similar to that required for the MS4 permit and Toxics Source Control activities. The City's

Source Control professionals may leverage those and other requirements to comply and hold users of these and other toxic chemicals accountable for keeping them out of the sewer systems. If additional authority is needed, a compliance schedule for a new City of Tacoma ordinance should be added to this permit, as well as for the other jurisdictions served by the CTP.

Ecology Response: *Thank you for your comment. Ecology delegated authority to the City of Tacoma for permitting, monitoring, and enforcement over Industrial Users (IUs) discharging to their treatment system to provide more direct and effective control of pollutants. Requirements of the pretreatment program can be found in in section S6 of the permit. No changes were made to the final permit.*

Pesticides are also likely a source control problem and should be addressed as such. Upstream conveyance system monitoring is more likely than discharge monitoring to identify and thus address the source of this problem.

- Suggested change: the pesticide monitoring should be supported by additional targeted source control requirements including upstream conveyance monitoring to identify and remove the sources of DDT and heptachlor epoxide.

Ecology Response: *Thank you for your comment. In the results of the annual 2020 priority pollutants analysis, nine pesticides were detected with two (DDT and heptachlor epoxide) at levels that did not meet human health-based water quality criteria. The results for the annual 2017-19 and 2021-23 pesticide tests were non-detect. Because these results may be anomalous or may be due to previously undetected contaminants, pesticide monitoring requirements were increased from annual to quarterly for the first two years of the permit. Ecology staff will wait until results become available before any decisions are made on additional testing requirements. No changes were made to the final permit.*

Thanks to numerous studies by the Department of Fish, Wildlife and University of Washington, and many others, the Department now has substantial scientific information about other threats to the health of biota in Puget Sound from personal care products and pharmaceuticals which were not well understood in 2010.

- Suggested change: add annual monitoring requirements for a broad range of these chemicals with a wide variety of chemical behaviors to inform future choices among technological improvements to treatment methods at the plant and establish somewhat of a baseline for measuring improvements over (a long period of) time.

Ecology Response: *Thank you for your comment. Ecology is conducting numerous studies on Contaminants of Emerging Concern (CECs), which include personal care products and pharmaceuticals, to develop future*

policies and procedures to reduce and eliminate these chemicals from our environment. To learn more about what Ecology is doing, please visit:

<https://ecology.wa.gov/water-shorelines/water-quality/wastewater/contaminants-of-emerging-concern>

At this time, water quality criteria have not been established for many of these chemicals. However, several constituents are already monitored as they are considered priority pollutants by Ecology and the EPA. In addition, Ecology also relies on WET testing which covers many pollutants for which there are no numeric water quality standards. WET testing implements the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amount. At this time, Ecology is not expanding the list of toxics monitored at the Tacoma Central WWTP. No changes were made to the final permit.

Please accept this communication not only as formal public comment on Draft NPDES permit for City of Tacoma Central Treatment Plant but as input to be taken into consideration in updating other permits issued by the Department's Northwest and Southwest Regional Offices.

I hope you are well and enjoying your summer!

Sincerely,
Karen Dinicola

Darlene Schanfeld

I would like to know how the earlier hold on any permits for sewage solids might also affect allowing for an NPDES permit, since effluent is about as contaminated as the solids, post WWTP "treatment".

The Nisqually Delta Association appealed Ecology's 5-year, biosolid permit decision to the PCHB in 2022. (Decision released on Jan. 29, 2024) The PCHB remanded back to Ecology an action consistent with the decision that it focus on the SEPA deficiencies. It requires Ecology to consider impacts caused by PFAS, PBDEs and microplastics,

"The Board remands for Ecology to comply with SEPA by including in its environmental checklist and resulting determination an explicit and full disclosure and review of information on the environmental impacts of PFAs, PBDEs, and microplastics in biosolids that are stored, transported, and land applied under the General Permit. See, e.g., Conservation NW v. Okanogan Cnty., 194 Wn. App. 1034 (2016).8

"The Board GRANTS IN PART, Nisqually Delta Association and Ed Kenney's (Appellants) Motion for Partial Summary Judgment on Legal Issue No. 8, and DENIES

the State of Washington, Department of Ecology's Motion for Summary Judgment on Legal Issue No. 8. [Earlier in the brief the PCHB said it did not need to rule on the other arguments because of its ruling on Issue No. 8.]

"The Department of Ecology's decision to issue the General Permit is reversed based on noncompliance of the DNS with SEPA requirements. The matter is remanded to Ecology for action consistent with this decision.

SO ORDERED this 29th day of January, 2024."

Ecology Response: *Thank you for your comment. The status of the biosolids permit is outside the scope of this permit. Ecology has a program that regulates the treatment, testing and application of biosolids and is separate from the Water Quality Program which oversees NPDES permits. For more information on the biosolids program and permit, please visit:*

[Biosolids - Washington State Department of Ecology](#)

In addition, we now learn that 6-PPD Quinone is not the only tire problem. The lead weights in some of the tires are also dire problems for waterways:

<https://earthjustice.org/article/lead-wheel-weights-are-the-deadly-car-accessory-we-dont-need-or-want?sourceid=1047022&safelist=y&emci=a82e2cd9-595a-ef11-991a-6045bddbfc4b&emdi=708e13f1-675d-ef11-991a-6045bddbfc4b&ceid=1086123>.

Ecology Response: *Thank you for your comment. Regarding 6-PPD, please see our response to Puget Soundkeeper's comment No. 5. Lead is a priority pollutant monitored under the permit and was analyzed under the reasonable potential analysis.*

WA is supposed to be cleaning up its waterways, yet we seem to keep the pollution pouring in to them. NPDES permits are an avenue for continuing the pollution. Ecology should take a strong position against this continuance.

Ecology Response: *Thank you for your comment. Please see Section I of the Fact Sheet for a discussion on how Ecology uses NPDES permits for the protection of water quality.*

Steve Williams

Good Morning,

I support the comments made by Communities for a Healthy Bay and Puget Soundkeepers.

In addition, I would like to see the Department recognize, in some consistent manner, the probable impact of climate change on permits and other regulatory matters. We

may not know the exact time frame or the exact impact, but we know it is not only coming, it's already here.

In Tacoma, as one example, the Plant is probably going to be subject to higher water levels. Permitting should take this into account somehow. There will be other impacts.

Thanks.

Steve Williams

Ecology Response: *Thank you for your comments. Please see our responses to Puget Soundkeeper's comments No. 1-5 in response to your comment.*

To learn more about how Ecology is responding to and planning for future impacts of climate change in Washington state, visit:

[Responding to climate change - Washington State Department of Ecology](#)

Jesse Witmer

Good day,

I am writing to voice my support for the adoption of the recommendations of Communities for a Healthy Bay and the Puget Soundkeeper with respect to the Tacoma central wastewater treatment plant permit.

As a long-term Tacoma resident, environmentalist, and sailor, I want to make sure we do everything within our power to not mortgage the cleanliness of one of our best and most important natural resources simply because its cheaper, easier, or not legally required. We should not be seeking shortcuts or skimping on keeping our Puget Sound clean; not only is it shortsighted for us in the near future, but our children and future generations will never forgive us for taking away their opportunity to have a clean, habitable environment.

Please let me know if you have any questions, or if there is anything else I can do to help with this.

Very Respectfully,

Jesse Witmer

Ecology Response: *Thank you for your comments. Please see our responses to Puget Soundkeeper's comments No. 1-5 in response to your comment.*