

Fact Sheet for NPDES Permit WA0021938

City of Cle Elum

Upper Kittitas County Regional Wastewater Treatment Facility

August 22, 2019

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 Cle Elum – Upper Kittitas County Regional Wastewater Treatment Facility (Cle Elum WWTF).

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 the City of Cle Elum, NPDES permit WA0021938, are available for public review and comment from July 11, 2019 until August 11, 2019. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

The City of Cle Elum reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, wastewater 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 Cle Elum operates a sequential batch reactor wastewater treatment plant that discharges to the upper Yakima River. The regional plant provides wastewater treatment to City of Cle Elum, the Town of South Cle Elum, the City of Roslyn, the City of Ronald (and nearby unincorporated areas), and the Suncadia Resort. The proposed permit contains the same effluent limits for BOD₅, TSS, Fecal Coliform Bacteria, pH and Total Residual Chlorine as the permit issued in 2011. The WWTF has been operated by Veolia Water North America (Veolia Water) through a public/private partnership operational contact since 2003.

Table of Contents

	Purpose of this fact sheet	1
	Summary	1
I.	<i>Introduction</i>	5
II.	<i>Background Information</i>	6
	Facility description	8
	History	8
	Collection system status	9
	Treatment processes	9
	Discharge outfall	10
	Contract operations.....	10
	Solid wastes/Residual Solids	11
B.	Description of the receiving water	11
C.	Wastewater influent characterization	12
D.	Wastewater effluent characterization	12
E.	Summary of compliance with previous permit issued	14
F.	State environmental policy act (SEPA) compliance	14
III.	<i>Proposed Permit Limits</i>	15
A.	Design criteria	15
B.	Technology-based effluent limits	16
C.	Surface water quality-based effluent limits	18
	Numerical criteria for the protection of aquatic life and recreation	18
	Numerical criteria for the protection of human health	18
	Narrative criteria.....	19
	Antidegradation.....	19
	Mixing zones	20
D.	Designated uses and surface water quality criteria	26
E.	Water quality impairments	27
F.	Evaluation of surface water quality-based effluent limits for narrative criteria	27
G.	Evaluation of surface water quality-based effluent limits for numeric criteria	28
	Reasonable Potential Analysis.....	32

H.	Human health	34
I.	Sediment quality	34
J.	Whole effluent toxicity.....	34
K.	Groundwater quality limits	35
L.	Comparison of effluent limits with the previous permit.....	35
IV.	Monitoring Requirements	35
A.	Wastewater monitoring	35
B.	Lab accreditation	36
V.	Other Permit Conditions	36
A.	Reporting and record keeping.....	36
B.	Prevention of facility overloading	36
C.	Operation and maintenance.....	37
D.	Pretreatment.....	37
	Duty to enforce discharge prohibitions	37
	Federal and state pretreatment program requirements	38
	Routine identification and reporting of industrial users	38
E.	Solid wastes	39
F.	Spill plan	39
K.	General conditions	39
VI.	Permit Issuance Procedures.....	40
A.	Permit modifications	40
B.	Proposed permit issuance	40
VII.	References for Text and Appendices.....	40
	Appendix A—Public Involvement Information.....	42
	Appendix B—Your Right to Appeal	45
	Appendix C—Glossary	46
	Appendix D—Technical Calculations.....	54
	Appendix E—Response to Comments.....	60

List of Tables

Table 1 General Facility Information.....	6
Table 2 Population Served	8
Table 3 Yakima River Ambient Background Data	11
Table 4 Influent Characterization	12
Table 5 Effluent Characterization	12
Table 6 Permit Submittals	14
Table 7 Design Criteria for Cle Elum.....	16
Table 8 Technology-based Limits	16
Table 9 Technology-based Mass Limits.....	17
Table 10 Technology-based Mass Limits.....	18
Table 11 Critical Conditions Used to Model the Discharge	23
Table 12 Freshwater Aquatic Life Uses and Associated Criteria.....	26
Table 13 Recreational Uses and Associated Criteria	27
Table 14 Dilution Factors (DF)	29
Table 15 Lab Analysis.....	36

List of Figures

Figure 1 Facility Location Map	7
Figure 2 Dilution Necessary to Meet Criteria at Edge of Mixing Zone	33

I. Introduction

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

The following regulations apply to domestic wastewater NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for groundwaters (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 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 General Facility Information

Facility Information	
Applicant	City of Cle Elum – Upper Kittitas County Regional Wastewater Treatment Facility (City of Cle Elum)
Facility Name and Address	Cle Elum WWTF 500 Owens Rd Cle Elum WA 98922-1312
Contact at Facility	Mike Engelhart (509) 674-2262
Responsible Official	Mike Engelhart City of Cle Elum, Public Works Director 119 West First Street Cle Elum, Washington 98922 (509) 674-2262
Type of Treatment	Sequential Batch Reactor (SBR)
Facility Location	Latitude: 47.18883 Longitude: -120.91229
Discharge Waterbody Name and Location	Yakima River Latitude: 47.18521 Longitude: -120.91822

Permit Status	
Reauthorization Date of Previous Permit	October 31, 2011
Application for Permit Renewal Submittal Date	November 30, 2015
Date of Ecology Acceptance of Application	December 15, 2015

Inspection Status	
Date of Last Non-sampling Inspection:	10/04/2018

Fact Sheet for NPDES Permit WA0021938
October 1, 2019
City of Cle Elum
Upper Kittitas County Regional Wastewater Treatment Facility
Page 7 of 65



Figure 1 Facility Location Map

Facility description

The City of Cle Elum completed major construction of a new Sequential Batch Reactor (SBR) wastewater treatment plant in the spring of 2005 within part of the existing facultative lagoon #1. The facility provides wastewater treatment for the City of Cle Elum, Town of South Cle Elum, City of Roslyn, City of Ronald and unincorporated areas in the vicinity of Ronald and the Suncadia Resort. Therefore, the facility is designated the Upper Kittitas County Regional Wastewater Treatment Facility (WWTF). The WWTF serves a population of approximately 5,200 people.

Table 2 Population Served

Community	Population
Cle Elum	1,872
Suncadia	1,622
South Cle Elum	535
Roslyn/Ronald	1,174

History

The City constructed its original POTW in 1948 as a single-cell stabilization pond, primary treatment facility. The POTW was upgraded in 1980 with the replacement of the single-cell pond with three bentonite-lined facultative stabilization ponds. Sewerage was treated in the three-cell lagoon system before discharge to the Yakima River. This upgrade also included a new outfall and an extensive sanitary sewer rehabilitation program.

In February 1995, the Cle Elum wastewater treatment lagoons began functioning as a regional system. The lagoon system had a history of violating NPDES Permit requirements. Interim improvements to the City's lagoon system were completed in 2001. They improved the compliance record through interim construction upgrade limits, although at times the loading exceeded the design criteria.

In order to improve and expand the WWTF to meet future needs, the City decided to implement improvements using a development agreement with Trendwest Resorts (the builder of the Suncadia Master Plan Resort). The development agreement includes provisions whereby Trendwest Resorts is reimbursed over time for financing the facilities.

On May 20, 2002 Ecology received a Draft Cle Elum Regional Sewerage Facilities Plan prepared by Earth Tech of Bellevue, Washington. The Facility Plan along with addenda received April 2003 was approved as a facilities plan in May of 2003. In October 2003 the City submitted Amendment #1 to the Facilities Plan that lists new design criteria. The treatment facilities were designed to handle a planned 30-year build out with an expected service population equivalency of 18,956. The new upgraded facility has been in operation since the spring of 2005.

Collection system status

The facility submitted an Inflow and Infiltration (I&I) Report, dated April 28, 2015, as required by permit. EPA guidance determines that any flow greater than 120 gallons per capita-per day is excessive ($120 \text{ gpd} * 5,203 \text{ pop.} = 624,360 \text{ gpd}$). According to the 2015 report, I&I accounted for about 66% of the March 2014 flow (typical spring peak). The WWTF will continue to budget for improvements to the collection system and will submit an additional report during the new permit cycle.

Treatment processes

Cle Elum utilizes sequential batch reactors (SBR). An SBR is a biological treatment system in which all the major steps, flow equalization, aeration and clarification occur in the same tank in sequential order. Wastewater enters the facility through a 36 inch sanitary sewer line and flows into the inflow wet well. Lagoon supernatant and recycle water is also routed to the influent wet well. The wastewater then flows through the influent pump station to the screenings and grit removal equipment located in the upper and lower headworks facility.

The de-gritted sewage then flows to the SBRs. From the SBRs the treated wastewater flows into the reaeration zone and equalization tank. The treated wastewater flows by gravity or is pumped through the ultra-violet (UV) disinfection units, depending on flow and river elevations, and exits the facility through the final effluent line to the Yakima River.

UV disinfected, treated wastewater from the plant effluent is used in the reuse water system. The reuse water is used throughout the plant as non-potable cleaning water. Some of this reuse water is collected in drains and rerouted to the influent wet well. Waste sludge is pumped to the solids stabilization pond located southeast of the SBR tanks. Supernatant from the solids stabilization pond is allowed to flow back to the influent wet well.

There are no significant industrial users or categorical industrial users discharging to the Cle Elum WWTF, although within the communities served there are numerous commercial users.

The Plant is classified as a Grade III plant. The facility is manned eight hours per day five days per week. A Class III operator works under the direction of a Project Manager. There is an operator on-call 24 hours per day. When not manned facility operations are monitored remotely.

Basic information describing wastewater treatment processes is included in a booklet at the Water Environment Federation website at: <https://www.wef.org/>.

Discharge outfall

The treated and disinfected effluent flows into the Yakima River through a 24-inch pipe leading from the effluent pump station to the west end of Hanson Pond #2. The discharge pipe crosses beneath I-90, to near the northeast corner of Hanson Pond #2 and then parallels Hanson Pond #2 to the west end of the pond and then to the Yakima River. The 24 inch pipe reduces to a 16 inch pipe and is aimed at a 11° angle in a plunge pool behind a rock drop in the Yakima River.

Contract operations

The City of Cle Elum contracts Veolia North America (Veolia), an environmental services company, to operate and maintain the wastewater plant. The terms and conditions of the contract between the City & Veolia are contained in a service agreement signed 03/24/2015. Ecology reviewed the service agreement to ensure it is consistent with chapters 90.46 and 90.48 RCW, and as required by RCW 70.150.040(9). The agreement identifies the responsibilities of both the contractor and the owner.

It is the Water Quality Program's standard procedure to identify contract operators as co-permittees on individual municipal NPDES permits, to address both state and federal requirements for permittees. However, it is not required in every case. Ecology may consider issuing the permit only to the owner;

Ecology staff and managers should:

1. Consider the extent of the operator's control over the treatment system, as described in the service agreement.
2. Consider the experience and record of the operator at other facilities.

3. Consider the performance and enforcement provisions in the service agreement between the owner and the operator.
4. Review the recommendations or comments from the Attorney General's office.
5. Make a reasoned decision based on the facts, Ecology guidance, and the manner in which the entities' service agreement defines the responsibilities each will have.

For this permit reissuance, Ecology decided not to include the contract operator Veolia as co-permittee after review of a well-reasoned joint response (City of Cle Elum and Veolia) to the DRAFT Fact Sheet, submitted to Ecology 06/14/2019. When a domestic wastewater facility does not comply with permit conditions, Ecology will consider the roles identified in the reviewed contract between the owner and operator when it develops both formal and informal enforcement actions. The above mentioned joint response letter is inserted into the Appendix E, Response to Comments

Solid wastes/Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), the SBRs and the equalization basin, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. The City drains grit, rags, scum, and screenings and disposes this solid waste at the local landfill. Solids generated in the treatment process are routed to an aerobic lagoon. The sludge is treated in the aerobic lagoon and land applied under a permit from the Kittitas County Health District. This facility has met the solid waste requirements for screening, as required by WAC 173-308-205.

B. Description of the receiving water

The discharge from the City of Cle Elum WWTF is located approximately four miles below the confluence of the Cle Elum and Yakima Rivers. The ambient background data used for this permit includes the following:

Table 3 Yakima River Ambient Background Data

Parameter	Value	Gauge / Monitoring Station
Temperature (90 th Percentile 7DayMaxAvg)	19.5 C	USBR-YRWW-Yakima River Near Horlick
Flow (7Q10)	427 CFS	USBR-YUMW-Yakima River At Cle Elum
pH (Maximum / Minimum) standard units	9.6 -- 6.6	USBR-YUMW-Yakima River At Cle Elum

Parameter	Value	Gauge / Monitoring Station
Dissolved Oxygen 10 th Percentile	9.2 mg/L	WQMS -- 39A090
Total Ammonia-N 95 th Percentile	0.01 mg/L	WQMS -- 39A090
Fecal Coliform 95 th Percentile	29.6 /100 ml	WQMS -- 39A090
Turbidity 95 th Percentile	6.6 NTU	WQMS -- 39A090
Conductivity 95 th Percentile	84 umhos/cm	WQMS -- 39A090

Significant nearby non-point sources of pollutants include municipal stormwater. Section III.E of this fact sheet describes applicable and existing receiving waterbody impairments.

C. Wastewater influent characterization

The City of Cle Elum reported the concentration of influent pollutants in discharge monitoring reports. The influent wastewater characterization follows:

Table 4 Influent Characterization

Parameter	Units	Average	Maximum
Biochemical Oxygen Demand (BOD ₅)	mg/L	171	850
Biochemical Oxygen Demand (BOD ₅)	lbs/day	972	5,690
Total Suspended Solids (TSS)	mg/L	226	4,600
Total Suspended Solids (TSS)	lbs/day	1,262	18,530

D. Wastewater effluent characterization

The City of Cle Elum reported the concentration of pollutants in their monthly discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from 2014 – May 2018. The wastewater effluent is characterized as follows:

Table 5 Effluent Characterization

Parameter	Units	Average	Max / Min
Flow (daily sampling)	MGD	0.886	4.01
Flow (max month avg)	MGD	0.9	2.0

Parameter	Units	Average	Max / Min
Biochemical Oxygen Demand (BOD ₅)	mg/L	4.4	13.0
Biochemical Oxygen Demand	lbs/day	32	168
Biochemical Oxygen Demand	% removal	96	81 [Min]
Total Suspended Solids (TSS)	mg/L	5.2	22
Total Suspended Solids	lbs/day	36	298
Total Suspended Solids	% removal	96.0	60 [Min]
Temperature	°C	12.8	20.0 [19 °C 95 th %tile]
Fecal Coliform (monthly geometric mean)	#/100 ml	3.5	18
Fecal Coliform (weekly geometric mean)	#/100 ml	10.1	94
Total Ammonia	mg/L	1.4	11.0 [7.5mg/L 95 th %tile]
Total Ammonia	lbs/day	12.4	98.4 [69 lbs/D 95 th %tile]
Oil & Grease	mg/L	below detection	below detection
Phosphorus	mg/L	2.7	7.8
Hardness	mg/L	77.1	95
Parameter	Units	Minimum Value	Maximum Value
pH	standard units	6.2	7.3

Ecology tested and analyzed samples for additional parameters in the effluent as part of TMDL development for the Yakima River. Specifically, PCB's were detected in the effluent from the plant and results indicate concentrations measured at Yakima Basin Facilities are typical of other Eastern Washington facility effluent. Currently, none of these facilities have effluent limits for PCB's.

E. Summary of compliance with previous permit issued

On February 1, 2017 a permit violation for exceeding the design criteria for Total Suspended Solids occurred. The City of Clem Elum explained that they did not believe the sample taken was a representative sample as the location for the sample event was in a position where non-representative samples could have been collected. This is the only instance of non-compliance in the past year.

The previous permit placed effluent limits on BOD, TSS, Fecal Coliform, pH, Residual Chlorine.

With the exception of the 2017 TSS exceedance the City has complied with the effluent limits and permit conditions throughout the duration of the permit issued on October 31, 2011. Ecology assessed compliance based on its review of the facility’s information in the Ecology Permitting and Reporting Information System (PARIS), discharge monitoring reports (DMRs) and on inspections.

The following table summarizes compliance with report submittal requirements over the 2011-2016 permit term.

Table 6 Permit Submittals

Submittal	Due Date	Date Received	Submittal Status
Spill Prevention Plan	07/30/2012	07/26/2012	Received
Operation and Maintenance Manual	11/01/2012	10/22/2012	Received
Infiltration and Inflow Evaluation	04/30/2015	04/29/2015	Received
Wasteload Assessment	04/30/2015	04/29/2015	Received
Outfall Evaluation and GPS Coordinates	10/01/2015	09/23/2015	Received
Application for Permit Renewal	11/30/2015	11/30/2015	Accepted

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 National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

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

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

A. Design criteria

Under WAC 173-220-150(1)(g), flows and waste loadings must not exceed approved design criteria. The table below includes Ecology approved design criteria for this facility's treatment plant.

Table 7 Design Criteria for Cle Elum

Parameter	Design Quantity
Monthly Average Flow (max. month)	3.6 MGD
Peak Instantaneous Design Flow (PIF)	10.5 MGD
BOD ₅ Influent Loading	4,850 lbs/day
TSS Influent Loading	3,750 lbs/day

B. Technology-based effluent limits

Federal and state regulations define 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). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for domestic wastewater.

The table below identifies technology-based limits for pH, fecal coliform, BOD₅, and TSS, as listed in chapter 173-221 WAC. 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
BOD ₅ (concentration)	30 mg/L	45 mg/L
BOD ₅ (concentration)	In addition, the BOD ₅ effluent concentration must not exceed fifteen percent (15%) of the average influent concentration.	
TSS (concentration)	30 mg/L	45 mg/L
TSS (concentration)	In addition, 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 are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b). Ecology calculated the monthly and weekly average mass limits for BOD₅ and Total Suspended Solids as follows:

$$\text{Mass Limit} = \text{CL} \times \text{DF} \times \text{CF}$$

where:

CL = Technology-based concentration limits listed in the above table

DF = Maximum Monthly Average Design flow (MGD)

CF = Conversion factor of 8.34

$$\text{BOD } 30 \times 3.6 \text{ MGD} \times 8.34 = 900.7$$

$$\text{BOD } 45 \times 3.6 \text{ MGD} \times 8.34 = 1,351$$

$$\text{TSS } 30 \times 3.6 \text{ MGD} \times 8.34 = 900.7$$

$$\text{TSS } 45 \times 3.6 \text{ MGD} \times 8.34 = 1,351$$

Table 9 Technology-based Mass Limits

Parameter	Concentration Limit (mg/L)	Mass Limit (lbs/day)
BOD ₅ Monthly Average	30	901
BOD ₅ Weekly Average	45	1,351
TSS Monthly Average	30	901
TSS Weekly Average	45	1,351

Technology-based mass limits are based on WAC 173-220-130(3)(b), WAC 173-221-030(11)(b), WAC 173-220-130(1)(a) and (g), and WAC 173-221-040(1). Ecology calculated the monthly and weekly average mass limits for BOD₅ and Total Suspended Solids as follows:

$$\text{Average Monthly Mass Effluent Limit} = \text{Influent Mass Design Loading Criteria (lbs/day)} \times 0.15$$

$$\text{Average Weekly Mass Effluent Limit} = 1.5 \times \text{Average Monthly Mass Effluent TSS Limit}$$

$$\text{BOD } 4850 \text{ lbs/day} \times 0.15 = 727.5$$

$$\text{TSS } 3750 \text{ lbs/day} \times 0.15 = 562.5$$

$$\text{BOD } 1.5 \times 727 = 1090.5$$

$$\text{TSS } 1.5 \times 562.5 = 843.8$$

Table 10 Technology-based Mass Limits

Parameter	Influent Loading (lbs/day)	Mass Limit (lbs/day)
BOD ₅ Monthly Average	4,850	728
BOD ₅ Weekly Average	4,850	1091
TSS Monthly Average	3,750	563
TSS Weekly Average	3,750	844

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).

Numerical criteria for the protection of aquatic life and recreation

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

Numerical criteria for the protection of human health

In 1992, U.S. EPA published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State in its National Toxics Rule (40 CFR (EPA, 1992). Ecology submitted a standards revision for 192 new human health criteria for 97 pollutants to EPA on August 1, 2016. In accordance with requirements of CWA section 303(c)(2)(B), EPA finalized 143 new and revised Washington specific human health criteria for priority pollutants, to apply to waters under Washington's jurisdiction. EPA approved 45 human health criteria as submitted by Washington. The EPA took no action on Ecology submitted criteria

for arsenic, dioxin, and thallium. The existing criteria for these three pollutants as adopted in the National Toxics Rule (40 CFR 131.36) remain in effect.

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

Narrative criteria

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

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

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

Description--The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) 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.

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.

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

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

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

Most aquatic life *acute* criteria are 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. Most aquatic life *chronic* criteria are 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.

1. 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).

2. 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 City of Cle Elum Wastewater Treatment facility meets the requirements of AKART (see “Technology-based Limits”).

3. 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’s *Permit Writer’s Manual* describes additional guidance on criteria/design conditions for determining dilution factors. The manual can be

obtained from Ecology's website at:
<https://fortress.wa.gov/ecy/publications/documents/92109.pdf>.

Table 11 Critical Conditions Used to Model the Discharge

Critical Condition	Value
7Q10 Low Flow	427 ft ³ /sec
River depth	4.15 feet
River velocity	0.69 ft/sec
Manning roughness coefficient	n=0.2
Slope	1
Channel width	150 feet
Maximum effluent flow for chronic and human health non-carcinogen	2.0 MGD
Maximum daily flow for acute mixing zone	2.0 MGD
Effluent temperature Max	20 degrees C

Ecology obtained ambient data at critical conditions in the vicinity of the outfall from an Ecology study conducted in the Yakima River, from the City of Cle Elum and from the 2006 fact sheet.

4. 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.

Because this is a domestic wastewater discharge, the effluent contains fecal coliform bacteria. Ecology developed the water quality criteria for fecal coliforms (discussed below) to assure that people swimming (primary contact recreation) in water meeting the criteria would not develop gastro enteric illnesses. Ecology has authorized a mixing zone for this discharge; however, the discharge is subject to a performance-based effluent limit of 100 colony forming units/100mL. This means the effluent meets the water quality criteria at the point of discharge and doesn't need dilution to meet the water quality criteria. The City of Cle Elum discharge for fecal coliform is 47.45 colony forming units/100ml (95th Percentile.)

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.

5. 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.

6. 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. 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.

7. Maximum size of mixing zone.

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

8. 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 of the chronic mixing zone.

- **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.

9. Overlap of mixing zones.

This mixing zone does not overlap another mixing zone.

D. Designated uses and surface water quality criteria

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

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

Table 12 Freshwater Aquatic Life Uses and Associated Criteria

Salmonid Spawning, Rearing, and Migration	
Temperature Criteria – Highest 7-DAD MAX	21°C (69.8°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	8.0 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or

Salmonid Spawning, Rearing, and Migration	
	<ul style="list-style-type: none"> A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

- The *recreational uses* for this receiving water are identified below.

Table 13 Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not 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 200 colonies /100 mL.

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

E. Water quality impairments

Ecology has not documented any water quality impairments in the receiving water in the vicinity of the outfall.

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

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

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.

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

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 biochemical oxygen demand (BOD₅) 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 extends approximately 60 feet into the river with a diameter of 16 inches. The diffuser has a single port. The diffuser depth is 4 feet. Ecology obtained this information from the City of Cle Elum.

Chronic Mixing Zone -- WAC 173-201A-400(7)(a) specifies that mixing zones must not extend in a downstream direction from the discharge ports for a distance greater than 300 feet plus the depth of water over the discharge ports or extend upstream for a distance of over 100 feet, not utilize greater than 25% of the flow, and not occupy greater than 25% of the width of the water body.

The horizontal distance of the chronic mixing zone is 300 feet. The mixing zone extends from the bottom to the top of the water column.

Acute Mixing Zone -- WAC 173-201A-400(8)(a) specifies that in rivers and streams a zone where acute toxics criteria may be exceeded must not extend beyond 10% of the distance towards the upstream and downstream boundaries of the chronic zone,

not use greater than 2.5% of the flow and not occupy greater than 25% of the width of the water body.

The horizontal distance of the acute mixing zone is 30 feet. The mixing zone extends from the bottom to the top of the water column. The dilution factor is based on this distance.

Ecology determined the dilution factors that occur within these zones at the critical condition using Cormix (Appendix D Technical Calculations). The dilution factors are listed below.

Table 14 Dilution Factors (DF)

Criteria	Acute	Chronic
Aquatic Life	2.8	38.4

Ecology determined the impacts of dissolved oxygen deficiency, pH, fecal coliform, ammonia, 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

Nutrients -- Ecology has completed a TMDL, referenced above, and established effluent limits for the following nutrients: insert applicable nutrients. The proposed permit includes effluent limits for insert applicable nutrients derived from the completed TMDL.

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 potential in the receiving water.

With technology-based limits, this discharge results in a small amount of biochemical oxygen demand (BOD₅) relative to the large amount of dilution in the receiving water at critical conditions. Technology-based limits will ensure that dissolved oxygen criteria are met in the receiving water.

pH -- Ecology modeled the impact of the effluent pH on the receiving water using the calculations from EPA, 1988, and the chronic dilution factor tabulated above.

Appendix D includes the model results.

Ecology predicts no violation of the pH criteria under critical conditions. Therefore, the proposed permit includes technology-based effluent limits for pH.

Fecal Coliform -- Ecology modeled the numbers of fecal coliform by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor from Table 14.

Under critical conditions, modeling predicts possible violations of the fecal coliform criterion for the receiving water. Therefore, the proposed permit includes a water quality-based effluent limit of 200 colony forming units/100 ml.

Turbidity -- Ecology evaluated the impact of turbidity based on the range of total suspended solids 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.

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

The following toxic pollutants are present in the discharge: chlorine as a contingency for when/if the UV system goes off line and ammonia. 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 and pH in the receiving freshwater. To evaluate ammonia toxicity, Ecology used the available receiving water information for ambient station 39A090 and Ecology spreadsheet tools.

Ecology determined that toxic pollutants pose no reasonable potential to exceed the water quality criteria at the critical condition using procedures given in EPA, 1991 (Appendix D) and as described above. Ecology's determination assumes that this facility meets the other effluent limits of this permit.

Temperature -- The state temperature standards [WAC 173-201A-200-210 and 600-612] include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

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

- Annual summer maximum and supplementary spawning/rearing criteria

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

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

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

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

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent

doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

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

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

- Protections for temperature acute effects

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

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

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

Reasonable Potential Analysis

Annual summer maximum and incremental warming criteria: Ecology calculated the reasonable potential for the discharge to exceed the annual summer maximum and the incremental warming criteria at the edge of the chronic mixing zone during critical condition.

No reasonable potential exists to exceed the temperature criterion where:

$$(\text{Criterion} + 0.3) > [\text{Criterion} + (\text{Teffluent95} - \text{Criterion})/\text{DF}].$$

The figure below graphically portrays the above equation and shows the conditions when a permit limit will apply.

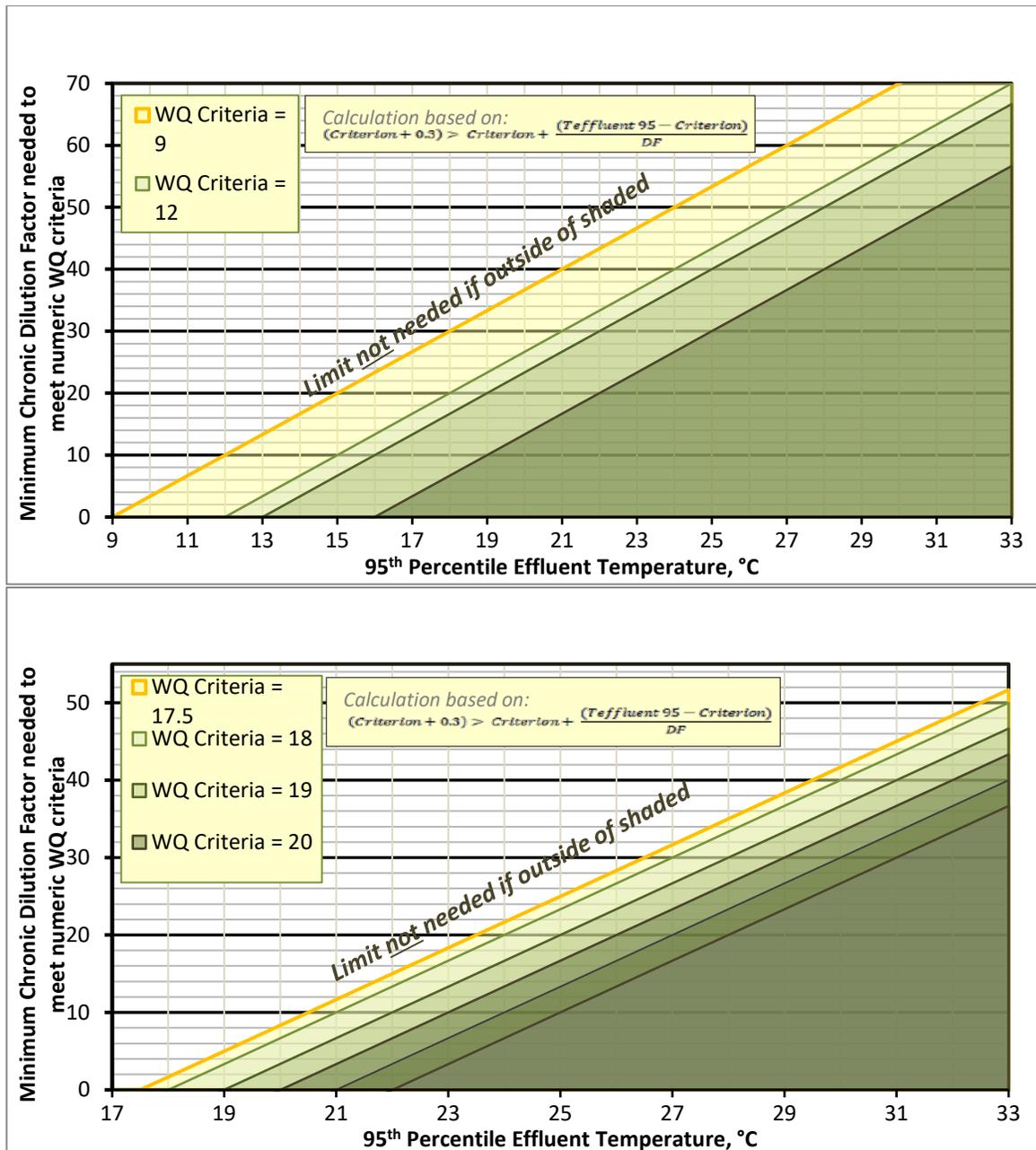


Figure 2 Dilution Necessary to Meet Criteria at Edge of Mixing Zone

$$(21 + 0.3) > (21 + (19 - 21)/38.4).$$

$$21.3 > 21 + -2/38.4$$

$$21.3 > 21 + - 0.052$$

$$21.3 > 20.95$$

Therefore, the proposed permit does not include a temperature limit. Ecology will reevaluate the reasonable potential during the next permit renewal.

H. Human health

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

Ecology determined the applicant's discharge is unlikely to contain chemicals regulated to protect human health, or does not contain chemicals of concern based on existing effluent data or knowledge of discharges to the wastewater treatment system. Ecology will reevaluate this discharge for impacts to human health at the next permit reissuance.

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

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

J. Whole effluent toxicity

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

testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

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

K. 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 City of Cle Elum wastewater facility does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

L. Comparison of effluent limits with the previous permit

The technology or water-quality based permit limits in the draft permit have not changed since the permit issued in 2011.

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.

A. Wastewater monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants,

and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (Publication Number 92-109) for Sequencing Batch Reactors (SBRs).

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 also by EPA under 40 CFR 503.

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:

Table 15 Lab Analysis

Company Name	Matrix Description	Matrix	Category	MethodName	AnalyteName
Cle Elum WWTP - Veolia Water North America	Non-Potable Water	N	General Chemistry	SM 4500-H+ B-2011	pH
Cle Elum WWTP - Veolia Water North America	Non-Potable Water	N	Microbiology	SM 9222 D (mFC)-06	Fecal coliform-count

V. Other Permit Conditions

A. Reporting and record keeping

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

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 City of Cle Elum to:

- Take the actions detailed in proposed permit Special Condition S4.

- 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.

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 City of Cle Elum takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

The City of Cle Elum has documented or suspects inflow, infiltration, overflows, failures in its collection system and it needs to further characterize the problem. The proposed permit requires submission of an updated operation and maintenance manual for the entire sewage system.

D. Pretreatment

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 a number of specific state and federal pretreatment prohibitions found in WAC 173-216-060 and 40 CFR §403.5(b). These reinforce that the POTW may not accept certain wastes, which:
 - a. Are prohibited due to dangerous waste rules.
 - b. Are explosive or flammable.
 - c. Have too high or low of a pH (too corrosive, acidic or basic).

- d. May cause a blockage such as grease, sand, rocks, or viscous materials.
- e. Are hot enough to cause a problem.
- f. Are of sufficient strength or volume to interfere with treatment.
- g. Contain too much petroleum-based oils, mineral oil, or cutting fluid.
- h. Create noxious or toxic gases at any point.

40 CFR Part 403 contains the regulatory basis for these prohibitions, with the exception of 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:
 - a. Cooling water in significant volumes.
 - b. Stormwater and other direct inflow sources.
 - c. Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Federal and state pretreatment program requirements

Ecology administers the Pretreatment Program under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986) and 40 CFR, part 403. Under this delegation of authority, Ecology issues wastewater discharge permits for significant industrial users (SIUs) discharging to POTWs which have not been delegated authority to issue wastewater discharge permits. Ecology must approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i) and(iii)].

Industrial dischargers must obtain a permit from Ecology before discharging waste to the City of Cle Elum wastewater treatment facility [WAC 173-216-110(5)]. Industries discharging wastewater that is similar in character to domestic wastewater do not require a permit.

Routine identification and reporting of industrial users

The permit requires non-delegated POTWs to take "continuous, routine measures to identify all existing, new, and proposed significant industrial users (SIUs) and potential significant industrial users (PSIUs)" discharging to their sewer system. Examples of such routine measures include regular review of water and sewer billing

records, business license and building permit applications, advertisements, and personal reconnaissance. System maintenance personnel should be trained on what to look for so they can identify and report new industrial dischargers in the course of performing their jobs. The POTW may not allow SIUs to discharge prior to receiving a permit, and must notify all industrial dischargers (significant or not) in writing of their responsibility to apply for a State Waste Discharge Permit. The POTW must send a copy of this notification to Ecology.

E. Solid wastes

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 Kittitas 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.

F. Spill plan

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

The City of Cle Elum developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the facility to update this plan and submit it to Ecology.

K. 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.

VI. Permit Issuance Procedures

A. Permit modifications

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

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

B. Proposed permit issuance

This proposed permit meets all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of 5 years.

VII. References for Text and Appendices

Environmental Protection Agency (EPA)

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

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

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

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

1983. *Water Quality Standards Handbook*. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

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

Fact Sheet for NPDES Permit WA0021938
October 1, 2019
City of Cle Elum
Upper Kittitas County Regional Wastewater Treatment Facility
Page 41 of 65

Washington State Department of Ecology.

January 2015. *Permit Writer's Manual*. Publication Number 92-109

(<https://fortress.wa.gov/ecy/publications/summarypages/92109.html>)

September 2011. *Water Quality Program Guidance Manual – Supplemental Guidance on Implementing Tier II Antidegradation*. Publication Number 11-10-

073 (<https://fortress.wa.gov/ecy/publications/summarypages/1110073.html>)

October 2010 (revised). *Water Quality Program Guidance Manual – Procedures to Implement the State's Temperature Standards through NPDES Permits*.

Publication Number 06-10-100

(<https://fortress.wa.gov/ecy/publications/summarypages/0610100.html>)

Laws and Regulations (<http://www.ecy.wa.gov/laws-rules/index.html>)

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

Water Pollution Control Federation.

1976. *Chlorination of Wastewater*.

Wright, R.M., and A.J. McDonnell.

1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

Appendix A—Public Involvement Information

Ecology proposes to reissue a permit to the City of Cle Elum WWTF. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on July 11, 2019 in the Northern Kittitas County Tribune to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

- Tells where copies of the draft permit and fact sheet are available for public evaluation (a local public library, the closest regional or field office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period.
- Tells how to request a public hearing about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

NOTICE: ANNOUNCEMENT OF AVAILABILITY OF DRAFT PERMIT

PERMIT NO.: WA0021938

APPLICANT: City of Cle Elum

FACILITY: Upper Kittitas County Regional Wastewater Treatment Facility

The City of Cle Elum has applied for renewal of National Pollutant Discharge Elimination System (NPDES) Permit No. WA0021938 in accordance with the provisions of Chapter 90.48 Revised Code of Washington (RCW) and Chapter 173-220 Washington Administrative Code (WAC), and the Federal Clean Water Act.

The City of Cle Elum presently owns a wastewater treatment facility which is designed to handle a maximum monthly design flow of 3.6 million gallons per day. The wastewater, following treatment, must meet the requirements of the Washington State Water Pollution Control Act and applicable regulations for a permit to be issued.

Following evaluation of the application and other available information, a draft permit has been developed which would allow the discharge of treated domestic wastewater from the Upper Kittitas County Regional Wastewater Treatment Facility located at 500 Owens Road, Cle Elum, Washington to the Yakima River. All discharges to be in compliance with the Department of Ecology's Water Quality Standards for a permit to be issued.

A tentative determination has been made on the effluent limitations and special permit conditions that will prevent and control pollution. A final determination will not be made until all timely comments received in response to this notice have been evaluated.

PUBLIC COMMENT AND INFORMATION

The draft permit and fact sheet may be viewed at the Department of Ecology (Department) website:

<https://apps.ecology.wa.gov/paris/DocumentSearch.aspx?PermitNumber=WA0021938&FacilityName=&City=&County=&Region=0&PermitType=0&DocumentType=0> . The application, fact sheet, proposed permit, and other related documents are also available at the Department's Central Regional Office for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m., weekdays. To obtain a copy or to arrange to view copies at the Central Regional Office, please call Jackie Cameron at (509) 575-2027, e-mail jackie.cameron@ecy.wa.gov , or write to the address below.

Interested persons are invited to submit written comments regarding the proposed permit. All comments must be submitted by August 11, 2019 to be considered for the final determination.

Submit comments online at: <http://ws.ecology.commentinput.com/?id=dSEWf>. Written comments should be sent to: Cynthia Huwe, WQ Permit Coordinator, Department of Ecology, Central Regional Office, 1250 West Alder Street, Union Gap, WA 98903-0009.

Any interested party may request a public hearing on the proposed permit within 30 days of the publication date of this notice. The request for a hearing shall state the interest of the party and the reasons why a hearing is necessary. The request should be sent to the above address. The Department will hold a hearing if it determines that there is significant public interest. If a hearing is to be held, public notice will be published at least 30 days in advance of the hearing date. Any party responding to this notice with comments will be mailed a copy of a hearing public notice.

Please bring this public notice to the attention of persons who you know would be interested in this matter. The Department is an equal opportunity agency. If you need this publication in an alternate format, please contact us at (509) 575-2490 or TTY (for the speech and hearing impaired) at 711 or 1-800-833-6388.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting*, which is available on our website at <https://ecology.wa.gov/About-us/How-we-operate/Laws-rules-rulemaking/Rulemaking-FAQ>.

Fact Sheet for NPDES Permit WA0021938
October 1, 2019
City of Cle Elum
Upper Kittitas County Regional Wastewater Treatment Facility
Page 44 of 65

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

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

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

Appendix B—Your Right to Appeal

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

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

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

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

ADDRESS AND LOCATION INFORMATION

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

Appendix C—Glossary

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

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

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

AKART -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 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.

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

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

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

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

Compliance inspection-with sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable

statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

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

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

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

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

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

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

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

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

Early warning value -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment

process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

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

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

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

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

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

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

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

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

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

Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

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

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

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

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

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

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

Method detection level (MDL) -- See Detection Limit.

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

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

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

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

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

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

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

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

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

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

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

Quantitation level (QL) -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1,2,or 5) x 10ⁿ, where n is an integer. (64 FR 30417).

ALSO GIVEN AS:

The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

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

Responsible corporate officer -- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing

more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sample Maximum -- No sample may exceed this value.

Significant industrial user (SIU) --

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

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

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

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

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

Solid waste -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge,

demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

Soluble 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

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found in the PermitCalc workbook on Ecology's webpage at: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance>.

Reasonable Potential Analysis:

The spreadsheets Input 2 – Reasonable Potential, and LimitCalc in Ecology's PermitCalc Workbook determine reasonable potential (to violate the aquatic life and human health water quality standards) and calculate effluent limits. The process and formulas for determining reasonable potential and effluent limits in these spreadsheets are taken directly from the *Technical Support Document for Water Quality-based Toxics Control*, (EPA 505/2-90-001). The adjustment for autocorrelation is from EPA (1996a), and EPA (1996b).

Fact Sheet for NPDES Permit WA0021938
 October 1, 2019
 City of Cle Elum
 Upper Kittitas County Regional Wastewater Treatment Facility
 Page 55 of 65

Dilution Factor Calculations and Receiving Water Critical Conditions

Step 1: Enter Waterbody Type

Water Body Type	Freshwater
-----------------	------------

Facility Name	CleElum POTW
Receiving Water	Yakima River

Step 2: Enter Dilution Factors -OR- Calculate DFs by entering Facility/Receiving Water Flow Data

Do you want to enter dilution factors -or- flow data?	Flow Data
---	-----------

	Annual Average	Max Monthly Average	Daily Max
Facility Flow, MGD	0.9	2.001	4.013
Facility Flow, cfs (calculated)	1.39	3.10	6.21

	Condition	Receiving Water Flow, cfs	Allowable % of river flow	Max Dilution Factor Allowed
Aquatic Life - Acute	7Q10	427	0.025	2.7
Aquatic Life - Chronic	7Q10	427	0.25	35.5
HH-Non-Carcinogen	30Q5	1418.9	0.25	115.6
HH-Carcinogen	Harmonic Mean	3040.5	0.25	546.9
Whole river at 7Q10	7Q10	427	1	138.9

Step 3: Enter Critical Data

	Effluent	Receiving Water	
Temp, °C	19	11.035	
pH, s.u.	6.8	7.4	Mean
Alkalinity, mg/L as CaCO3	119.62	25.67	Mean
Hardness, mg/L CaCO3	77.06	25.4	Mean
Salinity, psu			
Receiving water TSS, mg/L (leave blank if unknown)		3.59	mean
If TSS is annual data, enter 'A'; if from critical period, enter 'S'; If no TSS, leave blank		A	

Step 4: Specify if using 'Mixed' values for hardness, temperature, and pH

	Use 'Mixed Hardness' (Y/N)	Use 'Mixed Max Temp' (Y/N)	Use 'Mixed pH' (Y/N)
	N	N	N
Acute Zone Boundary	44.4	14.0	6.9
Chronic Zone Boundary	26.9	11.3	7.3
Whole river at 7Q10	25.8	11.1	7.4

Calculation of Fecal Coliform at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	35.5
Receiving Water Fecal Coliform, #/100 ml	10
Effluent Fecal Coliform - worst case, #/100 ml	400
Surface Water Criteria, #/100 ml	
OUTPUT	
Fecal Coliform at Mixing Zone Boundary, #/100 ml	21
Difference between mixed and ambient, #/100 ml	11

Conclusion: At design flow, the discharge has a reasonable potential to violate water quality standards for fecal coliform.

Calculation of Dissolved Oxygen at Chronic Mixing Zone

INPUT	
Chronic Dilution Factor	35.5
Receiving Water DO Concentration, mg/L	11.0
Effluent DO Concentration, mg/L	6.5
Effluent Immediate DO Demand (IDOD), mg/L	
Surface Water Criteria, mg/L	
OUTPUT	
DO at Mixing Zone Boundary, mg/L	10.84
DO decrease caused by effluent at chronic boundary, mg/L	0.13

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

Chronic Mixing Zone

***** REGULATORY MIXING ZONE SUMMARY *****

The plume conditions at the boundary of the specified RMZ are as follows:

Pollutant concentration	c = 2.60836 %
Corresponding dilution	s = 38.4
Plume location:	x = 78.25 m
(centerline coordinates)	y = 1.56 m
	z = 0 m
Plume dimensions:	half-width (bh) = 5.72 m
	thickness (bv) = 1.22 m
Cumulative travel time:	328.5368 sec.

Note:

Plume concentration c and dilution s values are reported based on prediction file values - assuming linear interpolation between predicted points just before and just after the RMZ boundary has been detected.

Please ensure a small step size is used in the prediction file to account for this linear interpolation. Step size can be controlled by increasing (reduces the prediction step size) or decreasing (increases the prediction step size) the - Output Steps per Module - in CORMIX input.

***** FINAL DESIGN ADVICE AND COMMENTS *****

The discharge port or nozzle points towards the nearest bank.

Since this is an UNUSUAL DESIGN, check whether you have specified correctly the port horizontal angle (SIGMA).

REMINDER: The user must take note that HYDRODYNAMIC MODELING by any known technique is NOT AN EXACT SCIENCE.

Extensive comparison with field and laboratory data has shown that the CORMIX predictions on dilutions and concentrations (with associated plume geometries) are reliable for the majority of cases and are accurate to within about +-50% (standard deviation).

As a further safeguard, CORMIX will not give predictions whenever it judges the design configuration as highly complex and uncertain for prediction.

Fact Sheet for NPDES Permit WA0021938
October 1, 2019
City of Cle Elum
Upper Kittitas County Regional Wastewater Treatment Facility
Page 60 of 65

Appendix E—Response to Comments

Facility Review

The City of Cle Elum and Veolia sent a well-reasoned joint response to Ecology (received 06/14/2019), objecting to the draft facility review permit's inclusion of Veolia as co-permittee. In response, Ecology decided not to include the contract operator Veolia as co-permittee. This response letter is presented below (four pages):

City of Cle Elum
119 West First Street
Cle Elum, WA 98922



Telephone: (509) 674-2262
Fax: (509) 674-4097
www.cityofcleelum.com

June 14, 2019

Via Express Mail and Email

Cindy Huwe
Permit Coordinator
Washington Department of Ecology
Central Regional Office
1250 West Adler Street
Union Gap, WA 98903

Re: Comments to Draft Fact Sheet and Permit for Permit No. WA0021938 for the City of Cle Elum – Upper Kittitas County Regional Wastewater Treatment Facility

Dear Ms. Huwe:

The City of Cle Elum (the “City”) and Veolia Water North America-West, L.L.C. (“Veolia”) are in receipt of the preliminary draft copy of the proposed Fact Sheet and Permit relating to the renewal of the above-referenced permit (the “Permit”). This letter is intended to serve as the City’s and Veolia’s joint response to the proposed Fact Sheet and changes to the Permit that the Department of Ecology (“Ecology”) has proposed.

In particular, the City and Veolia strongly object to and oppose Ecology’s proposal to name Veolia as a co-permittee on the Permit. The draft Fact Sheet lists no reasons for this change beyond a general statement of the Water Quality Program’s “standard procedures,” and the City and Veolia note that this decision is contrary to applicable federal guidance and the factors outlined in Ecology’s own Permit Writer’s Manual.

Including Veolia as Co-Permittee Does Not Comport with Federal Guidance

In addressing the co-permittee issue, the United States EPA’s interpretation of 40 C.F.R. §122(b) (and, by analogy, Washington state law) states that the term “operator” means the parties who “exercise primary management and operational decision-making authority,” stating “most parties conducting contract activities for POTWs do not exert such control over POTWs,” and concluding that “the municipality or sewage authority should be the sole permittee” in situations, like here, where professional service providers enter into public-private partnership agreements with municipalities to operate the municipalities’ treatment works. See Memorandum, James R. Elder, Dir., EPA Office of Water Enforcement & Permits, to Region I-X Water Management Div. Directors, Ms. Susan Lepow, Office of General Counsel, and Ms. Kathy Summerlee, Office of Enforcement & Compliance Monitoring (Oct. 28, 1988), which can be provided upon request. Indeed, the Hartsne Opinion, on which Ecology’s co-permittee policy is based, addressed this guidance and concluded that “the EPA memos are less than dispositive of the question before us, and are primarily directed to discussion of the situation where a private entity, not another

Washington Department of Ecology
June 14, 2019

public body, has operational responsibility for a facility." Order on Summary Judgment, PCHB No. 09-152, WSUD and Hartstene Pointe WSD v. Ecology, page 4 [emphasis added]. The Hartsne Opinion addressed a situation where one public entity operated sewer facilities on behalf of another public entity – it explicitly did not address a situation where a private entity operates and maintains a facility through a contractual relationship with a public entity owner, which is the case with Veolia and the City. Here, the EPA's guidance squarely suggests that Veolia should not be listed as a co-permittee.

Ecology's Own Guidance Suggests that Veolia Should Not Be the Co-Permittee

Ecology's Permit Writer's Manual (revised July 2018) outlines five factors that Ecology staff and managers should consider when identifying a contract operator as a co-permittee, all of which suggest that Veolia should not be named as a co-permittee.

1. Consider the extent of the operator's control over the treatment system, as described in the service agreement

The City ultimately controls the facilities and treatment system. Veolia, as an independent contractor, is responsible solely for the operation and physical conduct of maintenance relating to the City's wastewater treatment assets within the property lines of the City's Water Treatment Plant (the "Assets"), provided any such responsibility is limited to operations being within the approved design parameters enacted by the City and influent streams that comply with applicable law and local ordinances. The City is responsible for: funding all maintenance (Veolia works off of an annual maintenance budget that the City controls), capital upgrades, and all other funding relating to the Assets (including but not limited to any funding required to meet changes in permit requirements, modifications, and replacement of equipment); funding, arranging, and conducting all studies; defining specific parameters Veolia must comply with when operating the Assets; all planning, engineering, and responsibilities typically associated with ownership of the Assets; and all claims or damages arising out of the discharge, dispersal, release, or escape from any of the Assets (including effluent from the treatment works) into or upon the land, atmosphere, or any water course or body of water, except those resulting from Veolia's negligence.

The City sets rates and fees to finance capital, operations, and maintenance activities that are sufficient to maintain optimal operation of the facilities. Veolia has no control over the establishment of rates and fees.

Veolia is a contractor for the City, merely providing a service, and it does not control the City's facilities. This reality was recognized by the EPA in its guidance and should be recognized here.

2. Consider the experience and record of the operator at other facilities.

Veolia is one of the world's premier wastewater treatment operators, serving more than 150 municipal clients in North America and over 2,800 customers around the world. Veolia's reputation is built on its commitment to safety and compliance, and its safety record is exemplary. This is reflected in the manner in which Veolia has operated the facilities on behalf of the City, with no notices of violation issued since 2004 and only one notice of violation issued since Veolia began operations in 2002 (which was connected to the start-up of the facility).

Washington Department of Ecology
June 14, 2019

Ecology has consistently recognized Veolia's operational excellence by awarding the Cle Elum facility "Outstanding Treatment Plant" for each of the last 15 years.

Co-permittee status has not been necessary to maintain this long record of partnership between the City and Veolia or the excellent operations of the treatment facilities. There is nothing in the record to suggest that a change is required now, and indeed such a change would only upset the City and Veolia's outstanding working relationship.

3. Consider the performance and enforcement provisions in the service agreement between the owner and the operator.

The agreement between the City and Veolia provides that Veolia is responsible for fines or penalties resulting from violations of water quality standards or requirements that are a result of Veolia's negligence, and the City shall be responsible for those fines or penalties resulting from violations of water quality standards or requirements that are not a result of Veolia's negligence. Moreover, Veolia's overall liability for negligence is capped under the contract. Adding Veolia as a co-permittee would profoundly alter the risk balance negotiated between the City and Veolia and require the City and Veolia to re-negotiate their relationship. This would likely result in additional costs to the City that should not be borne by the City and its ratepayers.

4. Review the recommendations or comments from the Attorney General's office.

As Ecology did not provide any reasoning or commentary for its decision to include Veolia as a co-permittee, the City and Veolia have to conclude that the Attorney General's office was not consulted and did not provide recommendations or comments.

5. Make a reasoned decision based on the facts, Ecology guidance, and the manner in which the entities' service agreement defines the responsibilities each will have (see the Hartstene Opinion, pages 8 and 9).

Ecology provided no reasoning at all for its decision to include Veolia as co-permittee. In the absence of any stated reason, the City and Veolia are unable to make any determination about whether Ecology made a "reasoned decision based on the facts."

The City and Veolia note page 59 of the Ecology Permit Writer's Manual, which states "it is critical that permit writers note the contractor's responsibilities in the fact sheet (using the service agreement as a reference) and document the decision to identify (or not) the operator as co-permittee." The City and Veolia would welcome any documentation on Ecology's decision so that we may better understand the reasoning behind the decision and also address Ecology's concerns.

The Permit Writer's Manual also notes that there are facilities where Ecology staff and managers may consider issuing the permit to the owner only, including facilities where:

1. Listing the contractor as a co-permittee would create a disproportionate burden for a small community to attract an operator, due to location or other factor; or
2. The service agreement is for a limited duration; for example, to provide temporary service until the owner can hire a permanent contractor, or to train staff; or

Washington Department of Ecology
June 14, 2019

3. The need for enforcement has been or is expected to be low; for example, at larger facilities where owner resources and planning have historically addressed capacity or operational problems before they arise; or
4. The operator has a superior record of compliance at the facility or other facilities; and the service agreement allows the owner to enforce on permit requirements as a matter of service agreement compliance.

Here, the City is a small community, and the likely burden of attracting an operator willing to become a co-permittee would be significant. In the roughly 17 years that the City has contracted with Veolia, the need for enforcement has been extremely low, and Veolia has a long track record of addressing problems before they arise. Moreover, Veolia has a superior record of compliance at this facility and at other facilities in Washington and around the world, and the City will be able to enforce permit requirements through its service agreement with Veolia.

The City and Veolia ask that Ecology recognize the ramifications of this decision, which are spelled out in Ecology's own Permit Writer's Manual at page 59. This decision will lead Veolia to face greater risk and costs, which will likely be passed along to the City and its ratepayers. Eventually, the City could face difficulties finding contract operators willing to take on this additional risk and liability. Ecology puts it well when it notes "co-permittee status complicates the owner-contractor relationship."

One final comment, unrelated to the co-permittee issue, is with respect to the "First Submittal Dates" listed on the "Summary of Permit Report Submittals" in the Permit. The City and Veolia hereby request that Ecology review these dates and consider revising them to take into account the timing of the issuance of the Permit, especially the date for the "Application for Permit Renewal," which the City and Veolia submit should be within one year of the expiration date.

The City and Veolia hereby request a meeting with Ecology staff and management to discuss the concerns raised in this letter and consider alternatives. We look forward to discussing our concerns in person. Please do not hesitate to contact us with any questions or concerns.

Sincerely,



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Keith Oldewurtel, Senior Vice President, Veolia North America
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Fact Sheet for NPDES Permit WA0021938
October 1, 2019
City of Cle Elum
Upper Kittitas County Regional Wastewater Treatment Facility
Page 65 of 65

Public notice of draft

No comments were received by the Department of Ecology.