Oregon Department of Environmental Quality

National Pollutant Discharge Elimination System

Permit Evaluation Report and Fact Sheet

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Oregon Department of Environmental Quality
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Permittee:	City of Tillamook 210 Laurel Avenue Tillamook, Oregon 97141
Existing Permit Information:	File Number: 88665 Permit Number: 10123 Expiration Date: October 30, 2014 EPA Reference Number: OR0020664
Source Contact:	Kenny Oleman, 503-812-6064 Supervisor
Facility Location:	710 5th Street Tillamook, Oregon 97141 Tillamook
LLID:	1238814454680-1.9D
Receiving Stream/Basin:	Trask River North Coast Wilson – Trask - Nestucca
Proposed Action:	Renew Permit Application Number: 960103 Date Received: May 6, 2014
Source Category:	NPDES Minor – Domestic
Sources Covered:	Process wastewater
Permit Type:	NPDES Domestic C2a
Permit Writer:	Steve Schnurbusch Water Quality Specialist/NW Region September 4, 2018

TABLE OF CONTENTS

1.0 Introduction 1
2.0 Permit History 1
2.1 Issuance, Renewal and Modifications 1
2.2 Compliance History 1
3.0 Proposed Revisions to Permit 2
4.0 Facility description 3
4.1 Wastewater Facilities Description 3
4.2 Outfalls 5
4.3 Sewage Collection System 6
4.4 Recycled Water 7
4.5 Wastewater Solids 7
4.5.1 Storage of Sewage Sludge 7
4.5.2 Transfer and Disposal 7
4.5.3 Land Application 7
4.5.4 Other Beneficial Reuse 7
4.6 Storm Water 7
4.7 Groundwater 8
4.8 Industrial Pretreatment 8
5.0 Receiving Water 8
5.1 Flows 8
5.2 Beneficial Uses 9
5.3 Receiving Stream Water Quality 10
5.4 Regulatory Mixing Zone Analysis 10
6.0 Overview of permit development 13
6.1 Types of Permit Limits 13
6.2 Existing Permit Limits 14
6.3 Overview of Whole Effluent Toxicity (WET) Analysis 15
6.3.1 Whole Effluent Toxicity Analysis for Tillamook WWTP 15
6.4 Recycled Water 16
6.5 Biosolids 16
6.5.1 Biosolids Production 16
6.5.2 Beneficial Reuse of Biosolids 16
6.5.3 Pollutant Limits 17
6.5.4 Agronomic Limits 17
6.5.5 Pathogen Reduction 17
6.5.6 Vector Attraction Reduction 17
6.5.7 Management practices 18
6.6 Anti-degradation 18
7.0 Permit Draft Discussion 19
7.1 Face Page 19
7.2 Permit Limit Derivation 19
7.2.1 Technology-Based Effluent Limits (TBELs) 19
7.2.2 Water Quality-Based Effluent Limits 22
7.3 Schedule A. Waste Discharge Limits 30
7.3.1 Discussion of Permit Limits in Table A1 32
7.3.2 Discussion of Other Schedule A Requirements 33
7.4 Schedule B – Minimum Monitoring and Reporting Requirements 34
7.5 Schedule D - Special Conditions 36
7.5.1 Inflow and Infiltration 36
7.5.2 Emergency Response and Public Notification Plan 36
7.5.3 Recycled Water Use Plan 36

7.5.4 Exempt Wastewater Reuse at the Treatment System 36
7.5.5 Biosolids Management Plan and Land Application Plan 37
7.5.6 Wastewater Solids Transfers 37
7.5.7 Hauled Waste Control....37
7.5.8 Whole Effluent Toxicity (WET) Testing....37
7.5.9 Operator Certification....38
7.5.10 Spill/Emergency Response Plan....38
7.5.11 Design Flow Specification....38
7.5.12 Inflow/Infiltration Analysis 38
7.6 Schedule E - Pretreatment....38
7.7 Schedule F - NPDES General Conditions....38
8.0 Permit Phases....39
8.1 Public Comment Period 39
8.2 Response to Comments....39
8.3 Modifications to PER....39
8.4 Issuance....39
Appendix A: WWTP Overall Site Plan 40
Appendix B: Anti-degradation Review Sheets 42
Appendix C: Wastewater system Classification Worksheet....49
Appendix D: Reasonable Potential Analysis (RPA) spreadsheets....52

LIST OF FIGURES

Figure 1: Facility and Outfall Location 4

LIST OF TABLES

Table 1: Average and Peak Daily Flow Statistics for City of Tillamook 6
Table 2: Summary of Trask River Flow Statistics 9
Table 3: Water Quality Limited Parameters....10
Table 4: Annual Biosolids Production and Use 2016....16
Table 5: Biosolids Pollutant Concentrations in mg/kg Dry Weight 17
Table 6: Biosolids Nutrient Conventional Parameters in % Dry Solids (pH in S.U.) 17
Table 7: Processes to Significantly Reduce Pathogens Listed in Appendix B of 40 CFR Part 503....17
Table 8: Vector Attraction Reduction Options....18
Table 9A: Comparison of Federal Secondary Treatment and Basin Design Standards 20
Table 9B: Fact Sheet vs Final Permit Limits....20
Table 10: Summary of Technology-Based Effluent Limits for the Tillamook WWTP 22
Table 11: Summary of Tools to Calculate WQBELs 23
Table 10: Testing Requirements for Publicly-Owned Treatment Works 24
Table 13: Applicable Trask River Temperature Criterion (From OAR 340-041)....25
Table 14: Copper BLM Input Parameters 29
Table 15: Copper BLM Reasonable Potential Analysis Values....30
Table A1: Permit Limits....31

1.0 Introduction

The Department of Environmental Quality (DEQ) proposes to renew the National Pollutant Discharge Elimination System (NPDES) wastewater permit for the City of Tillamook Wastewater Treatment Plant (WWTP) located at 710 5th Street in the City of Tillamook, Tillamook County, Oregon. This permit allows and regulates the discharge of treated wastewater directly to the Trask River at River Mile (RM) 1.9. The permit also authorizes the City of Tillamook to recycle the treated effluent as recycled water to qualified users, after the approval of a Recycled Water Use Plan. Lastly, the permit allows the City of Tillamook to process and apply to land treated liquid biosolids to approved sites in the vicinity of the City of Tillamook, after the approval of a Biosolids Management Plan and Land Application Plan.

This Permit Evaluation Report and Fact Sheet (PER) explains and provides justification for the permit. The City of Tillamook is the "permittee" identified in the permit and this PER.

This permit evaluation report describes the basis and methodology used in developing the conditions of this permit. The permit is divided into several sections:

Schedule A – Waste Discharge Limits
Schedule B – Minimum Monitoring and Reporting Requirements
Schedule C – Compliance Conditions and Schedules (not applicable)
Schedule D – Special Conditions
Schedule E – Pretreatment Activities (not applicable)
Schedule F – NPDES General Conditions – Domestic Facilities

The Federal Water Pollution Control Act of 1972 and its subsequent amendments, as well as Oregon Revised Statutes (ORS 468B.050), require a NPDES permit for the discharge of wastewater to surface waters. This proposed permit action by DEQ complies with both federal and state requirements.

2.0 Permit History

2.1 Issuance, Renewal and Modifications

The Tillamook WWTP has been in operation since 1948. The treatment plant has undergone several major upgrades since then, including the most recent facility upgrade completed in 2010. The last NPDES permit renewal for the City of Tillamook was issued on November 23, 2009.

The current NPDES Permit expired on October 30, 2014. DEQ received renewal application number 960103 from the permittee on May 6, 2014. Because the permittee submitted a renewal application to DEQ in a timely manner, the current permit will not expire until DEQ takes final action on the renewal application as per OAR 340-045-0040.

2.2 Compliance History

Inspections of the facility were conducted in August 2009, January 2010, September 2011, September 2013, and September 2015. No compliance issues were noted during 2009, 2011, 2013, and 2015 inspections. However, the 2010 inspection report noted several compliance issues. Also, during the current permit term, several Warning Letters and a Mutual Agreement and Order (MAO) were issued to the permittee by DEQ for various violations of the current permit. The compliance issues noted during the 2010 inspection, a summary of the Warning Letters, and the MAO, are detailed below:

- During the January 28, 2010 inspection of the facility by DEQ, it was noted that the waste activated sludge (WAS) pump was not operational for one month resulting in decant from the anaerobic sludge building being drained back to the influent and treatment system.

- During the January 28, 2010 inspection of the facility by DEQ, it was noted that influent sampling took place the area where influent and drained water from the recycle pumping station mixed, resulting in high influent loadings of biochemical demand (5-day @ 20ºC) (BOD_5) and total suspended solids (TSS).
- A March 16, 2010 Warning Letter (WL – NWR-WQ-2010-0038) was issued in response to a January 26, 2010 sanitary sewer overflow (SSO) at the City's manhole discharge on the west end of 12th Street. The Warning Letter was also issued in response to a review of the facility's December 2009 and January 2010 Discharge Monitoring Reports (DMRs) which indicated monitoring requirements were not being met for effluent *E. coli*, effluent alkalinity, and stream alkalinity.
- A February 27, 2012 Warning Letter (WL-NWR-WQ-2012-0008) was issued in response to the permittee's failure to submit a plan within 180 days of permit issuance to remove specific sanitary sewer/storm sewer cross connections, as required by Schedule D, Section 1 of the current permit. DEQ stated in the letter that the original deadline was unreasonable due to the short timeframe between permit issuance and removal of the cross connections.
- A February 27, 2012 MAO (WQ/M-NWR-12-024) established a compliance schedule for the permittee regarding the violation of Schedule D, Section 1 and 2, and a schedule of civil penalties to be instituted if the compliance schedule was violated. Schedule D, Section 1 required the permittee to submit to DEQ, a proposed program and time schedule for identifying and removing cross connections in specified areas. Schedule D, Section 2 required the permittee to report a notice of noncompliance for failures to comply with Schedule D, Section 1. The MAO was signed by the permittee on March 14, 2012. The permittee has fulfilled the requirements of the MAO as of <DATE>.
- A June 6, 2012 Warning Letter (WL-NWR-WQ-2012-0032) was issued for a March 15, 2012 SSO of 1,850 gallons at the manhole at 806 Evergreen Avenue with no discharge to surface waters.
- An October 27, 2016 Warning Letter (WL-NWR-WQ-2012-0008) was issued for failure to submit complete and accurate DMRs for the facility's influent location.
- A May 4, 2017 Warning Letter (2017-WL-2520) was issued for a violation of the average weekly BOD_5 concentration limit during the week of January 1-7, 2017.
- A May 12, 2017 Warning Letter (2017-WL-2545) was issued for a violation of the average weekly and maximum daily TSS load limit due to an exceedance on March 14, 2017.

3.0 Proposed Revisions to Permit

The proposed permit contains the following substantive changes from the 2009 permit:

- Schedule A (Waste Discharge Limits) – This schedule has been updated to reflect current DEQ permit format. For example, requirements related to ground water protection, biosolids and recycled water are now more thoroughly detailed in this schedule. In addition, effluent limitations for Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) have been corrected because errors were made during the previous permit renewal.
- Schedule B (Minimum Monitoring and Reporting Requirements) – Permit now includes expanded effluent characterization monitoring for toxics, copper and aluminum. The monitoring for copper and aluminum also requires ambient monitoring concurrent with effluent sampling. General monitoring and reporting requirements are listed in tabular format for additional clarity and include summary statistics to be consistent with web-based electronic Net Discharge Monitoring Reports (NetDMR).
- Schedule C (Compliance Conditions and Schedules) – There is no compliance schedule associated with this permit.
- Schedule D (Special Conditions) – A revised Schedule D with a number of new and updated special conditions has been included in the permit. The new special conditions include requirements for the development and implementation of an inflow and infiltration plan and associated reporting, recycled water use plan development and reporting, wastewater solids transfers, hauled waste control, an industrial waste survey, an inflow and infiltration economic analysis, and an updated design flow study. Conditions related to emergency response, public notification, recycled water use, biosolids management and land application,

whole effluent toxicity (WET) testing, operator certification and spill/emergency response planning have been updated in this schedule.

- Schedule E (Program Requirements) – There is no pretreatment program associated with this permit.
- Schedule F (General Conditions) – Includes the latest version of the NPDES General Conditions.

4.0 Facility description

4.1 Wastewater Facilities Description

The permittee's Tillamook Wastewater Treatment Plant (WWTP) is located at 710 5th Street in the City of Tillamook in Tillamook County near the Trask River (Figure 1). The permittee completed major upgrades to the WWTP in 2010, including a new activated sludge system as well as upgrades to other systems throughout the facility. Major facility improvements included: collection system and pump stations improvements, influent pump station, headworks improvements including an influent screen and bypass channel, selector activated sludge process with anoxic selectors, aeration and channel air blowers, secondary clarifiers with return and waste activated sludge pumping systems, chlorine contact chamber with dual basins and chemical flash mixers, chlorination-dechlorination system, and a reconstructed submerged outfall in the Trask River.

Treated effluent is discharged year-round to the Trask River at approximately river mile 1.9. Preliminary facility design documents indicate the designed average dry weather flow is 0.9 million gallons per day (MGD) and the average wet weather flow is 2.5 MGD. Portions of the treatment plant were not built as design so the existing design flows are unknown. Actual flows during the 2017 dry season averaged 0.9 MGD (includes wet weather flows that occurred during the dry season) and during the 2017-2018 wet season averaged 2.4 MGD. The peak flow design capacity is 4.0 MGD. The origin of the wastewater processed is approximately 95 percent domestic with the remainder being commercial and light industrial. The permittee reports a current service population of approximately 4,885 residents. Historically the WWTP has accepted hauled wastes, however the permittee has indicated that hauled wastes from the public will no longer be accepted. Future acceptance of hauled waste shall be subject to a DEQ-approved hauled waste control plan.

Figure 1: Facility and Outfall Location

The WWTP includes the following major treatment components:

- One step screen with bypass channel equipped with manual screen
- One vortex grit removal unit
- Two primary clarifiers
- One aeration basin
- Two secondary clarifiers
- One rotary drum thickener
- One anaerobic digester
- Two chlorine contact tanks

The permittee's WWTP overall process sequence consists of the headworks screening and grit removal, a primary influent pumping station, two primary clarifiers, an aeration basin, two secondary clarifiers, a rotary drum thickener, an anaerobic digester, and two chlorine contact tanks. Sodium hypochlorite is used for disinfection and sodium bisulfite is used for dechlorination. A general site plan of the WWTP is included in Appendix A.

Primary treatment includes screening, grit removal, and primary clarifiers. Variable frequency drives (VFDs) are used to transport raw wastewater to a step screen with 6 mm openings at the headworks. Grit is removed in a single gravity vortex unit. The grit handling process removes inert particulate matter from the screened raw sewage to reduce abrasive wear on downstream equipment and reduce the amount of material that settles in the tanks.

After screenings and grit removal, the wastewater flows to the primary clarifiers. The primary clarifiers concentrate the settleable portion of the suspended solids in the wastewater in the bottom of the clarifier. There are two primary clarifiers, each 20 feet wide by 60 feet in length. Settled solids are collected by rake mechanisms and transferred by progressive cavity pumps to the solids handling system. Effluent from the primary clarifiers is conveyed by gravity to the secondary treatment system.

The secondary treatment system consists of a single aeration basin with four biological zones, each set up for varying levels of mixing or aeration. The primary and conventional process mode is to distribute all primary effluent to Zone 1. Zone 1 consists of three cells, each with mixers to create a "No" free oxygen condition. The aeration basin is equipped with mixed liquor recycle pumps that can return nitrified effluent from the end of Zone 3 to Zone 1 for denitrification. A portion of the primary effluent may be transferred to the end of Zone 2 in a process mode referred to as step feed activated sludge. A portion of the primary effluent may also be transferred to the end of Zone 3 during a process referred to as hybrid contact stabilization activated sludge. The result of the aeration basin process is a settleable floc suitable for separation and removal in the secondary clarifier.

Secondary treatment also consists of two secondary clarifiers with return and waste activated sludge systems. The secondary clarifiers allow floc to settle out of the mixture forming a sludge on the bottom of the clarifier. This sludge can be drawn off and pumped back to the aeration basins as return activated sludge to improve process efficiency.

The secondary effluent is disinfected using chlorination prior to discharge into the Trask River. The chlorination system includes two chlorine contact tanks, each containing two channels used to provide adequate time for disinfection of secondary effluent. Sodium hypochlorite is used for disinfection and sodium bisulfite is used for dichlorination prior to discharge. The disinfected effluent is discharged by gravity to the Trask River through a 30-inch pipe with two discharge ports.

The solids processing system includes an anaerobic digester and rotary drum thickener. The anaerobic digester stabilizes and reduces the volume of volatile solids, usually by 40 percent or more, with a retention time of 38 days. The rotary drum thickener can be used for thickening or dewatering solids to reduce the amount of sludge remaining for disposal. Primary and secondary sludge make up the inflow to solids processing. Since 2012, the final dewatered sludge, is hauled to the Coffin Butte landfill in Oregon for disposal. The current practice of landfill disposal does not require a Biosolids Management Plan and Land Application Plan. However, this permit allows the permittee to land apply processed biosolids in accordance with Schedule A, Section 5 and Schedule B, Sections 5 and 6 of this permit, and a DEQ-approved Biosolids Management Plan and Land Application Plan. Prior to land application of biosolids, the permittee must submit and receive approval of a Biosolids Management Plan and Land Application Plan. Any proposed Biosolids Management Plan and Land Application Plan will be make available for public comment.

4.2 Outfalls

The WWTP's point of discharge into the Trask River (Outfall 001) is located approximately 1.9 miles upstream of Tillamook Bay along the east bank of the Trask River (RM 1.9) (Lat: 45.45, Long: -123.86) (Figure 1). Constructed in 2009 as part of a major facility upgrade, the outfall consists of a 30-inch diameter pipe oriented perpendicular to the riverbank with two discharge ports. Each port is fitted with a duckbill check valve, pointing downstream in the direction of the river current and at an angle of 30 degrees above horizontal. At mean lower low water (MLLW), the outfall extends approximately 35 feet from the riverbank at a depth of 8.1 feet.

The proposed permit requires the permittee to inspect and report on the integrity and function of Outfall 001 during the third year of the next permit term. The requirements for the outfall inspection are presented in Schedule B, Section 10 of the permit.

The proposed permit provides the Tillamook WWTP with the option for discharging recycled water when a recycled water use plan is developed and approved by DEQ.

4.3 Sewage Collection System

Sewage collection systems are designed to collect and transport raw sewage from residences and businesses to the municipality's wastewater treatment facility. The permittee has a collection system consisting of approximately 20 miles of sanitary sewer piping and 5 permittee-owned pump stations and approximately 60 privately-owned pump stations that serve approximately 4,885 people.

As collection systems age, the pipes develop cracks, allowing the infiltration of groundwater. Stormwater may also enter the system. Though no longer allowed under current plumbing codes, in the past it was common to connect stormwater drains directly to sewers. The entry of groundwater and stormwater into the collection system is known as infiltration and inflow (I/I).

When a collections system experiences excessive I/I, most of the flow that makes it to the treatment plant may in fact be stormwater or groundwater that by itself does not require treatment. This can result in the following:

- Overflows from the sanitary sewer system when it rains. These are referred to as SSOs (sanitary sewer overflows).
- The release of untreated or partially treated sewage from all or a portion of the treatment plant. Such a release is termed a bypass. Bypasses may be necessary to avoid damaging the plant.
- Both bypasses and SSOs pose risks to the public and the environment, and therefore EPA requires that all municipal permits issued by DEQ prohibit them (Schedule F, sections B.3 and B.6).
- Increased operation and maintenance costs.

The City of Tillamook's WWTP Facility Plan from 2005 indicates that they have a high contribution of I/I when compared to the plant's average daily flow rates. Average and peak daily flows from 2015-2017 are summarized below.

Table 1: Average and Peak Daily Flow Statistics for City of Tillamook

Flow Statistic	Year		
	2015	2016	2017
Average Daily Dry Weather Flow Rate (MGD)	0.64	1.1	1.1
Maximum Daily Dry Weather Flow Rate (MGD)	0.78	2.7	1.8
Average Daily Wet Weather Flow Rate (MGD)	2.3	2.7	2.7
Maximum Daily Wet Weather Flow Rate (MGD)	4.3	3.2	3.4

DEQ recognizes that it is not always practical to attempt to build and operate treatment plants and collection systems to eliminate all bypasses or overflows. Therefore, DEQ requires the implementation of programs and plan to reduce the rate at which SSOs and bypasses occur. To this end, the permit requires the following:

- The municipality must develop and implement a program to reduce I/I and submit a progress report on an annual basis (see Schedule D, Section 1)
- The municipality must develop and maintain an emergency response and public notification plan to cover bypass and SSO events (Schedule F, Sections B.7 and B.8)

The municipality must report all SSOs and bypasses (Schedule F, Sections B.6, B.7 and B.8).

4.4 Recycled Water

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

4.5 Wastewater Solids

The purpose of this section is to describe and document how wastewater solids are handled in the WWTP. The term wastewater solid includes sewage sludge and biosolids. Sewage sludge refers to solids from primary, secondary, or advanced treatment of domestic wastewater that have not been treated or determined to be suitable for land application as fertilizer or soil amendment. The term biosolids refers to domestic wastewater treatment facility solids that have undergone adequate treatment and are suitable for application to the land as a fertilizer or soil amendment.

In 2016, the permittee produced approximately 1,077 dry tons (dt) of biosolids from primary and secondary wastewater treatment that were transported to Coffin Butte Landfill for disposal. More detail on how the permittee has chosen to handle wastewater solids is provided in the sections below.

4.5.1 Storage of Sewage Sludge

The permittee stores sewage sludge in one of seven tanks previously used in the old facility as the primary and secondary digesters, primary and secondary clarifiers, and chlorine contact tank. These seven tanks have a combined capacity of 576,000 gallons. The primary digester and clarifiers store mixed sludge, and the secondary digester, secondary clarifiers, and chlorine contact tank store unmixed sludge.

4.5.2 Transfer and Disposal

Sludge is transported from the facility for disposal at Coffin Butte Landfill for disposal. Biosolids are transported to the landfill by a tanker truck. During the next permit term, the permittee requests the option to land apply solids processed at the facility. The proposed permit authorizes the removal of biosolids by the permittee staff or by contractors for land application in accordance with Schedule A, Section 5 and Schedule B, Sections 5 and 6 of this permit, and a DEQ-approved Biosolids Management Plan and Land Application Plan

4.5.3 Land Application

The permit holder has the capability to develop a new biosolids program to land apply biosolids or produce biosolids for sale and distribution during the term of this permit. Prior to land application, the permit holder will develop a comprehensive Biosolids Management Plan and Land Application Plan. DEQ will review the plans and provide an opportunity for public comment on the proposed land application activity. Once approved, conditions in the Biosolids Management Plan and Land Application Plan are enforceable permit conditions.

4.5.4 Other Beneficial Reuse

The permittee does not currently practice other types of beneficial reuse, such as energy recovery.

4.6 Storm Water

General NPDES permits for stormwater are not required for wastewater treatment facilities with a design flow greater than 0.1 MGD and less than 1.0 MGD when stormwater is collected, treated, and discharged as part of its treated wastewater. All stormwater originating from the WWTP is allowed to percolate into the ground within the

facility or flows off via overland flow to surrounding uplands and wetlands. Because there are no designated storm water discharge points for this plant site, a storm water discharge permit is not required.

4.7 Groundwater

No groundwater concerns have been identified in association with this facility. All treatment occurs in basins and the liquid storage of stabilized biosolids occurs in seven tanks with a combined capacity of 576,000 gallons.

4.8 Industrial Pretreatment

Municipalities that receive wastewater from certain categories of industries which impact plant operations must have approved pretreatment programs. These programs are designed to reduce the discharge of pollutants from identified industries that the treatment plant is not able to treat. These pollutants can interfere with treatment plant operation, reduce the value of wastewater and biosolids for reuse, cause worker health or safety concerns, and pose a risk to the public or the environment.

The permittee does not have a DEQ-approved industrial pretreatment program. In November 2016 and June 2017 the permittee reported exceedances of the average monthly BOD_5 effluent loading limitation of 177 lbs/day. The permittee determined that an industrial discharger (Pelican Brewing Company), was discharging an average flow of 9,000 gallons per day of wastewater to the WWTP with concentrations of BOD_5 between 11,000 to 15,000 mg/L. This discharge resulted in an average daily load contribution of up to 1,126 lbs per day of BOD_5 to the WWTP, with peak loading that may greatly exceed that value. On March 21, 2018, the permittee issued a wastewater discharge permit to Pelican Brewing Company requiring pretreatment necessary to achieve limits on flow, chemical oxygen demand, pH, and temperature. As a result, Pelican Brewing Company has ceased discharges to the WWTP. Pelican Brewing transports concentrated wastes to another facility. This load reduction is anticipated to reduce the organic loading the WWTP and increase the feasibility of future compliance with the proposed BOD_5 effluent limits in the future. Considering the size of the facility, and effective control mechanism implemented by the permittee, and anticipated future compliance with BOD_5 and TSS effluent limits, a formal pretreatment program does not appear necessary. However, the proposed permit requires the permittee to conduct an Industrial User Survey within 24 months of the permit effective date. DEQ will review the Survey results and, if DEQ determines that a pretreatment program is required, the permit may be reopened and modified to require development of a pretreatment program.

5.0 Receiving Water

The permittee's WWTP discharges to the Trask River at approximate RM 1.9.

5.1 Flows

The impact of the permittee's discharge on the Trask River is likely to be the greatest in the late summer and early fall when flows in the river are at their lowest. This period is sometimes referred to as the critical period and wastewater discharges to the receiving stream are evaluated with respect to the flows likely to occur during the critical period. To standardize this analysis, DEQ makes use of four different flow statistics utilizing streamflow data from local gauging stations. Each is designed to work with a different type of water quality impact and associated water quality criteria. There are several flow gaging stations located in the Trask River, with the nearest station approximately 9 miles upstream of the WWTP outfall located on the Trask River at USGS Monitoring Station No. 14302480 (Trask River above Cedar Creek). This station is maintained by USGS.

Critical flow statistics for this gauging station and their application are presented in Table 2 below. Smaller, ungauged tributary and spring flows enter the Trask River between this gaging station and the WWTP outfall. Due to these unaccounted for flows, the flow statistics presented below (with the exception of the 7Q10 low flow) are lower than the actual statistical flow values at the outfall. Lower statistical flow values provide a more conservative basis for evaluating potential water quality impacts of the proposed discharge. These flow statistics,

or more conservative values, are used in the sections of this report assessing potential water quality impacts of the discharge.

Table 2: Summary of Trask River Flow Statistics

Streamflow Statistic	Statistic Definition	Value for Trask River (cfs)[1]
1Q10	The lowest one-day average flow with a recurrence frequency of once in 10 years	53
7Q10	The lowest seven-day average flow with a recurrence frequency of once in 10 years	55[1]
Harmonic mean	Long-term mean flow value calculated by dividing the number of daily flows by the sum of the reciprocals of those daily flows	251
30Q5	The lowest 30-day consecutive day average flow with a recurrence frequency of once in 5 years	134
Spring Average	Average streamflow recorded between February and March	1,638
Fall Average	Average streamflow recorded between September and November	711

[1] Streamflow value flows calculated using USGS SW Toolbox and flow data at USGS Monitoring Location No. 14302480.

5.2 Beneficial Uses

Under the Clean Water Act, DEQ is required to identify the beneficial uses of every waterbody in Oregon. The intent of this requirement is to ensure that the water quality standards DEQ develops are consistent with how the waterbody is used. Permits issued by DEQ must in turn reflect the water quality standards that apply to the basin in which permits are issued.

The applicable water quality standards for the North Coast Basin, which includes the Trask River in the vicinity of the facility outfall, are found in Oregon Administrative Rule (OAR) 340-041. In their entirety, these standards are intended to be protective of the beneficial uses for the basin. The beneficial uses of the North Coast Basin, as listed in OAR 340-041 Table 230A, include the following:

- Public and Private Domestic Water Supply[2],
- Industrial Water Supply,
- Irrigation and Livestock Watering,
- Fish and Aquatic Life,
- Wildlife and Hunting,
- Fishing,
- Boating,
- Water Contact Recreation, and
- Aesthetic Quality.

The applicable numeric water quality criteria are also found in Oregon Administrative Rule (OAR) 340-041. These include general criteria and North Coast Basin-specific criteria (OAR 340-041-0230 through -0235). The criteria are intended to be protective of the beneficial uses for the basin, as listed above.

[1] As determined from Mixing Zone Dye Tracer Study for City of Tillamook, Oregon. NPDES Permit No. 101239. Cosmopolitan Marine Engineering. April 2015.
[2] With adequate pretreatment (filtration & disinfection) and natural quality to meet drinking water standards.

5.3 Receiving Stream Water Quality

Based upon data collected by DEQ and assessed in the most recent *Oregon Water Quality Index Summary Report* (June 2014), the water quality in the section of the Trask River where the permittee's WWTP discharges is considered "fair". However, this segment of the Trask River is listed as being water quality limited in DEQ's 2012 Integrated Report (the most recent assessment of water quality in Oregon) and cites this segment of the river as being water quality limited for the parameters in Table 3.

Table 3: Water Quality Limited Parameters

Waterbody Name	River Mile	Parameter	Season
Trask River	0 to 18.6	Temperature	Summer
Trask River	0 to 10.2	Fecal coliform	Year-round

A Total Maximum Daily Load (TMDL)[3] for temperature in the North Coast Subbasins, including the Trask River in the vicinity of the facility outfall, was developed by DEQ and approved by the USEPA in August 2003. The TMDL was modified by addendum in December 2006. The Tillamook Bay Watershed TMDL for fecal coliform, which includes the vicinity of the facility outfall, was approved by USEPA in July 2001. A TMDL can be thought of as an estimate of the total amount of pollution a waterbody can assimilate without exceeding water quality standards. The TMDL addresses the temperature listing for this section of the river. A discussion of the temperature issues associated with the discharge and the relationship to the TMDL is presented in Section 7.2.2.3.

The DEQ's 2002 Integrated Report previously listed this section of the Trask River as being impaired for flow modification. These parameters have been downgraded to a Category 3 listing with the DEQ's 2012 Integrated Report. No TMDLs were developed for the flow modification listing.[4] The DEQ's 2012 Integrated Report downgrades the category listing based on an incorrectly assigned Water Quality Limited Status from 2012, and corrects the status to reflect the 1998 assessment status. The proposed discharge of wastewater from the permittee's WWTP is not expected to have any negative impact on the instream river flows.

Based on the fish use and salmonid spawning use maps contained in OAR 340-041 (Figures 230A and 230B), the designated fish use for this segment of the Trask River is for salmon and trout rearing and migration (year-round). Fish distribution maps published by the Oregon Department of Fish and Wildlife[5], indicate that existing fish uses for this segment correlate with these designated uses. Both the chemical and physical (primarily temperature) characteristics of the wastewater have been assessed in the following sections to determine the potential impact on aquatic life.

5.4 Regulatory Mixing Zone Analysis

Federal regulations and Oregon Administrative Rules allow DEQ to suspend all or part of the water quality standards in small, designated areas around a discharge point. Initial mixing of the wastewater with the receiving stream occurs in these small areas. These are known as "allocated impact zones" or "regulatory mixing zones." Two mixing zones can be developed for each discharge: 1) The acute mixing zone, also known as the "zone of initial

[3]Section 303(d) of the Clean Water Act requires each state to develop a list (the "303(d)" list) of water bodies that do not meet state surface water quality standards after implementation of technology-based controls. Each state is then required to complete a Total Maximum Daily Load (TMDL) for water bodies on the 303(d) list. The TMDL must address water quality on a basin-wide scale to ensure overall water quality standards will be met. The North Coast Basin TMDL is available online at: https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Basin-N-Coast.aspx.

[4] During the 2002 listing process, a determination was made that the other water quality limited listing, flow modification, did not need TMDLs because the impairment was not caused by pollutants.

[5] https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=fishdistmaps

dilution" (ZID), and 2) the chronic mixing zone, usually referred to as "the mixing zone." The ZID is a small area where acute criteria can be exceeded as long as it does not cause acute toxicity to organisms drifting through it. The mixing zone is an area where acute criteria must be met but chronic criteria can be exceeded. It must be designed to protect the integrity of the entire water body. The applicable rules for Oregon are found in OAR 340-041-0053.

DEQ has developed mixing zone regulations and policy based in part on the acute and chronic aquatic life criteria. Based on EPA guidance and DEQ's mixing zone regulations, two mixing zones may be developed for each discharge that reflect acute and chronic effects: 1) The acute mixing zone, also known as the "zone of initial dilution" (ZID), and 2) the chronic mixing zone, usually referred to as "the mixing zone". Acute criteria are suspended within the ZID but it is designed to prevent lethality to organisms passing through the ZID. Chronic criteria are suspended with the mixing zone and is designed to protect the integrity of the entire water body as a whole. The allowable size of the mixing zone should be based upon the relative size of the discharge to the receiving stream, the beneficial uses of the receiving stream, location of other discharges to the same water body, location of drinking water intakes, and other considerations. More specific guidance is available from EPA regarding criteria used in appropriately sizing a ZID. Primarily the ZID must be designed to prevent lethality to drifting organisms.

The permittee's current permit designates the existing RMZ as the portion of the Trask River from the point of discharge to 100 feet downstream and 50 feet upstream of the point of discharge. The current ZID is defined as that portion of the allowable mixing zone that is 10 feet downstream and 5 feet upstream of the point of discharge. Currently dilution ratios of 17.5:1 and 2.3:1 are applied at the RMZ and ZID, respectively. The maximum modeled effluent plume width at the downstream RMZ boundary under all river flow conditions is 27 feet. This represents approximately 24% of the full river width at critical low flow (since the full river width at this location is estimated to be 110 feet). During higher river flows, including core salmonid migration periods, the RMZ will encompass a smaller percentage of the river. This sizing of the RMZ was designed to prevent impairment of critical resource areas and to provide a continuous zone of passage that meets water quality criteria for free-swimming and drifting organisms.

The mixing zone boundaries in the current permit were developed based upon a previous outfall configuration, which included a side bank discharge, and are not representative of the physical dilution induced by the recently installed submerged diffuser. The current outfall is a two-port submerged diffuser equipped with duckbill check values that terminate in the river at a depth of approximately 8 feet (under low flow conditions). The current dilution applied at the predetermined boundaries of the ZID and RMZ (based on the side bank discharge boundaries) are based on a June 2009 mixing zone study, that was conducted prior to the construction of the outfall, and was limited to using theoretical model outputs without model calibration or verification via a dye study.

Because the water quality modeling outputs could not be verified at the time of modeling in 2009, the current permit includes a special condition for a dye study to confirm the amount of dilution provided in the mixing zone. The applicable dilution and the boundaries of the ZID and RMZ were re-evaluated to verify the performance of the installed submerged outfall diffuser. In September 2014 the permittee conducted a 3-day dye injection study and later re-evaluated dilution via CORMIX using reflux data from the dye study. The permittee submitted an April 2015 "Mixing Zone Dye Tracer Study", with the modeling results.

The 2015 study concluded that the ZID length downstream should be increased from 10 feet to 20 feet, as significant discharge jet velocity remained in the plume at the 10 foot boundary, and rapid discharge induced mixing within the nearfield was still available.

The 2015 study based the applicable dilutions and mixing zone boundaries on the CORMIX modeling results using the applicable critical low flow conditions (7Q10 of 54 cfs), with an ambient current speed for chronic criteria at the RMZ based on the tidally-averaged speed of 0.17 m/sec and a current speed for acute conditions at the ZID of 0.05 m/sec based on the lowest 1-hour current as observed during the 3-day dye study.

An effluent flow of 2.4 MGD was used, assuming half the critical effluent flow (1.2 MGD) for each discharge port. Critical reflux conditions were accounted for within the study based on the results of the dye study. This

flow value is well above dry weather design flow conditions and existing flow conditions. DEQ reviewed existing dry weather flows over the past three years and determined that a flow rate of 1.1 mgd was more appropriate for the chronic mixing zone condition and a flow rate of 1.4 mgd was appropriate for the acute ZID condition. DEQ simulated these effluent flow conditions using CORMIX. The table below provides a summary of the results. The adjusted dilution values take into account effluent reflux concentrations.

Condition	Total Flow (mgd)	Single Port Flow (mgd)	Port Velocity (ft/s)	Port Diameter (ft)	CORMIX dilution	Adjusted Dilution
Acute-ZID	1.4	0.7	2.3	0.76	6	6
Chronic-MZ	1.1	0.6	2.1	0.72	35	28
Human Health-MZ	1.1	0.6	2.1	0.72	35	28

The Tillamook WWTP mixing zone is not located in the vicinity of public drinking water intakes, cold water refuges for salmonids, and other NPDES discharges. The full river width at the outfall location at mean lower-low water (MLLW) is approximately 100 feet. The primary salmonid use for this section of the Trask River is for migration and rearing. This section of the river is not considered critical spawning habitat for salmonids.

In addition to the aquatic life habitat in the discharge area, this general area is frequented by boaters, fishermen, bathers and other recreation users. The primary potential impact on these recreational activities from wastewater discharges is due to potential pathogenic (bacterial or viral) contamination and the indirect impacts on fishing (i.e., direct impacts to fish). The permittee discharge is expected to have a minimal pathogenic component (if any). The potential impacts on fish and other aquatic life are addressed below and in Section 6.3 of this report.

The proposed increase in dilution at the ZID does not result in an increase of pollutant mass-loading to the Trask River as no increase in mass-based limits are proposed, and the facility is not anticipated to alter operations as a result in the increased dilution within the ZID. No increased pollutant loading to the Trask River is anticipated as a result of the change in the ZID, and the increased dilution ratio and revised sizing is consistent with State and federal antidegradation requirements.

The dilutions discussed above were used to develop permit limits. This process of developing permit limits is described in more detail in Sections 6 and 7.

6.0 Overview of permit development

6.1 Types of Permit Limits

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

- TBELs:
    - The intent of TBELs is to require a minimum level of treatment of pollutants based on available treatment technologies, while allowing the discharger to use any available control technique to meet the limits
    - TBELs for municipal treatment plants, also known as federal secondary treatment standards have been developed for the following parameters: biochemical oxygen demand measured over 5 days (BOD_5), total suspended solids (TSS) and pH. These are found in the Code of Federal of Federal Regulations (CFR) and are known as secondary treatment standards. The CFR also allows special considerations and exceptions to these standards for certain circumstances and types of treatment facilities such as lagoons.
- WQBELs:
    - The intent of WQBELs is to ensure the water quality standards of a receiving stream are met. The water quality standards are developed to protect the beneficial uses of the receiving stream such as swimming and fishing. In many cases TBELs are not restrictive enough to ensure the receiving stream meets water quality standards. In these cases, WQBELs need to be established to protect the receiving stream.
    - Oregon is unique in that it has minimum design criteria for BOD and TSS that are only applicable to sewage treatment plants. These design criteria vary by watershed basin and are intended to protect water quality in their respective basins. These are often times more stringent than the federal secondary treatment standards. When this is the case, the basin standards supersede the federal standards.

TBELs are likely to be the most stringent if the receiving stream is large relative to the discharge, and WQBELs are likely to be the most stringent when the receiving stream is small or does not meet water quality standards.

In some cases, both a TBEL and a WQBEL will be developed for a particular parameter. Permit writers must include the more stringent of the two in the permit.

Permit limits for bacteria are WQBELs when they are derived from the water quality standards found in OAR 340-041-0009 for freshwater, marine, and estuarine waters or 40 CFR § 131.41 for coastal recreation waters. Bacteria limits are designed to protect human health when swimming or eating shellfish. When enforcing permit limits, the DEQ categorizes bacteria exceedances in OAR 340-012 as technology-based effluent limitation violations because bacteria violations are typically due to the failure of disinfection equipment.

Each time a permit is renewed, the permit writer evaluates the existing limits to see if they need to be modified as a result of changes to technology-based standards or water quality standards that occurred during the permit term. Anti-backsliding provisions (described in CFR 122.44(l)) generally do not allow relaxation of effluent limits in renewed/reissued permits. The more stringent of the existing or new limits must be included in the renewal permit, with some exceptions.

6.2 Existing Permit Limits

The existing permit limits are as follows:

1. Treated Effluent Outfall 001

a. May 1 - October 31:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly[1] Average lb/day	Weekly[1] Average lb/day	Daily Maximum lbs
BOD_5	10 mg/L	15 mg/L	177	265	354
TSS	10 mg/L	15 mg/L	177	265	354

[1] The maximum month dry weather design flow to the facility (MMDWF) is 2.1 MGD. Summer mass load limits are based on the previous facility design flow.

Other parameters	Limitations
Fecal Coliform Bacteria	Shall not exceed a monthly geometric mean of 200 organisms per 100 mL. No single sample shall exceed 400 organisms per 100 mL.
E. coli Bacteria	Shall not exceed a monthly geometric mean of 126 organisms per 100 mL. No single sample shall exceed 406 organisms per 100 mL.
BOD and TSS Removal Efficiency	Shall not be less than 85% monthly average for BOD_5 and 85% monthly for TSS.

b. November 1 - April 30:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly[1] Average lb/day	Weekly[1] Average lb/day	Daily Maximum lbs
BOD_5	25 mg/L	38 mg/L	530	795	1,060
TSS	25 mg/L	38 mg/L	530	795	1,060

[1] The average wet weather design flow to the facility (AWWF) is 2.5 MGD. The maximum month wet weather design flow to the facility (MMWWF) is 4.0 MGD. Winter mass load limits are based on the previous facility design flow.

Other parameters	Limitations
Fecal Coliform Bacteria	Shall not exceed a monthly geometric mean of 49 organisms per 100 mL. No single sample shall exceed 151 organisms per 100 mL.
E. coli Bacteria	Shall not exceed a monthly geometric mean of 126 organisms per 100 mL. No single sample shall exceed 406 organisms per 100 mL.
BOD and TSS Removal Efficiency	Shall not be less than 85%, except that when the monthly average influent concentration for BOD_5 and/or TSS is less than 167 mg/L, the percent removal shall not apply, provided that the treatment plant shall be operated as effectively as possible.

c. Effluent limits applicable year-round

Other parameters	Limitations
pH	Shall be within the range of 6.0 - 9.0
Total Chlorine Residual	Shall not exceed a monthly average of 0.01 mg/L and a maximum daily limit of 0.02 mg/L.
Ammonia (as Nitrogen)	Shall not exceed a monthly average concentration of 8.5 mg/L and a daily maximum concentration of 16.6 mg/L.
Human Use Allowance Maximum Change in Temperature (Max. Δ T °C)	Shall not exceed 0.08°C.

The basis for developing the new limits is described in detail in Section 7.2.

6.3 Overview of Whole Effluent Toxicity (WET) Analysis

Once the permit writer has determined the appropriate TBEL or WQBEL permit limits (described in the previous section) for the facility, the permit writer must determine whether there is reasonable potential for the discharge to cause toxicity due to combinations of chemicals that may be present in the effluent. This is done via WET testing. WET testing involves controlled laboratory experiments in which aquatic organisms are exposed to samples of effluent at different dilutions. EPA recommends running WET tests using an invertebrate, vertebrate, and a plant test organism, and has developed WET test protocols using freshwater, marine, and estuarine test species that measure both acute and chronic effects. Depending on the test, the measured effect may be fertilization, growth, reproduction, or survival.

For facilities that have mixing zones, an acute WET test is considered to show toxicity if significant mortality occurs at effluent concentrations less than that which is found at the edge of the ZID. A chronic WET test is considered to show toxicity if significant adverse effects occur at effluent concentration less than that which is known to occur at the edge of the mixing zone. If the facility does not have a mixing zone, the tests are conducted using 100% effluent.

The permittee must submit the results of WET tests as part of the permit application process. If the permit writer determines, based on the results of these tests that there is a potential for the effluent to cause toxicity in the receiving stream, the permit writer will include WET test requirements in the Special Conditions section of the permit. These conditions in the permit will describe follow-up requirements in the event that the WET tests indicate toxicity. The results of the WET testing conducted during the existing permit term for the Tillamook WWTP are discussed in the following sections.

6.3.1 Whole Effluent Toxicity Analysis for Tillamook WWTP

The results of WET tests were included as part of the Tillamook WWTP renewal application. These tests represented quarterly sampling for a 12-month period during 2011. The bioassay reports indicated that facility personnel had completed eight chronic and eight acute tests during the period of record (POR). An acute whole effluent toxicity test was considered to show toxicity if there was a statistically significant difference in survival between a control and 10 percent effluent. A chronic whole effluent toxicity test was considered to show toxicity if the inhibition concentration of 25 percent (IC_{25}) occurs at dilution equal to or less than 10 percent effluent.

In accordance with DEQ guidance, the Tillamook WWTP used a species of water flea (*Ceriodaphnia dubia*) for an invertebrate organism, fathead minnow (*Pimephales promelas*) for a vertebrate organism and a species of green algae (*Raphidocelis subcapitata)* for the algae organism. No acute tests failed during the POR and no acute

toxicity was noted in any of these tests for 100% effluent. In addition, the WET tests did not show chronic toxicity at effluent concentrations equivalent to those at the edge of the regulated mixing zone.

Based upon the results of the WET testing, the Tillamook WWTP effluent did not cause any adverse acute or chronic effects on the aquatic community of the Trask River during the current permit cycle. As with the current permit, the permit renewal will reinstate the WET testing requirements to make certain that no toxic pollutants are being released to the Trask River in toxic amounts. Based on the new ZID discussed in section 5.4, acute toxicity will be demonstrated if there is a statistically significant difference in survival between a control and 17 percent effluent. Further, based on the new RMZ discussed in section 5.4, chronic toxicity will be demonstrated if the IC25 occurs at dilution equal to or less than 4 percent effluent.

Details of the WET testing can be found in Schedule D Section 9 of the proposed renewal permit.

6.4 Recycled Water

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

6.5 Biosolids

Biosolids may be used as a soil amendment and fertilizer on agricultural land. For this beneficial use to be allowed, wastewater solids must meet federal criteria for pathogen reduction (Class A or Class B biosolids), vector attraction reduction for sludge stability, nutrients and pollutant concentrations (40 CFR Part 503). Currently, biosolids from the facility are not land applied, and are disposed of in a landfill.

6.5.1 Biosolids Production

Historically, the treatment facility generates an average of 1,077 dry tons of biosolids[6] per year as summarized in the following table.

Table 4: Annual Biosolids Production and Use 2016

Type of Biosolids	Use	Quantity (dry tons)
Unclassified	Hauled by tanker truck to Coffin Butte Landfill for disposal.	1,077

6.5.2 Beneficial Reuse of Biosolids

OAR 340-050-0031 requires facilities that reuse biosolids through land application to maintain a Biosolids Management Plan and Land Application Plan. The Biosolids Management Plan describes how the facility will generate biosolids that are suitable for beneficial use as a fertilizer or soil amendment via land application. The Land Application Plan identifies and describes the management of current and potential biosolids land application sites. Conditions in the Biosolids Management Plan and Land Application Plan are enforceable permit conditions. The permittee's current disposal method via landfill does not require a Biosolids Management Plan and Land Application Plan. However, the permit does allow the permittee to submit a Biosolids Management Plan and Land Application Plan for review and public comment. Upon DEQ approval of a Biosolids Management Plan and Land Application Plan, the permittee would be allowed to land apply biosolids consistent with the requirements of the permit.

[6] 2016 Biosolids Annual Report – City of Tillamook. February 21, 2017.

6.5.3 Pollutant Limits

Pollutant concentrations from the facility's biosolids production in 2018 are given in the following table.

Table 5: Biosolids Pollutant Concentrations in mg/kg Dry Weight

	As	Cd	Cu	Pb	Hg	Mo	Ni	Se	Zn
2018 Reported concentration	0.53	0.17	N/A	4.9	0.064	0.66	2.1	ND	45
Pollutant limit	41	39	1500	300	17	N/A	420	100	2800
Ceiling concentration	75	85	4300	840	57	75	420	100	7500

N/A = Not Available
ND = Not Detected

6.5.4 Agronomic Limits

Biosolids must be land applied at or below the agronomic loading rate needed for maximum crop production, based on the nitrogen requirement of the crop being grown. Limited nutrient data for the WWTP is available. Nutrient concentrations from the facility's biosolids production in 2005 and 2018 are given in the following table.

Table 6: Biosolids Nutrient Conventional Parameters in % Dry Solids (pH in S.U.)

Year	TKN	NO_3-N	NH_4-N	K	P	Total Solids	Volatile Solids	pH
2005	2,608	N/A	25	316	886	5.28	52.44	7.3
2018	ND	ND	N/A	N/A	N/A	N/A	0.65	N/A

N/A = Not Available
ND = Not Detected

6.5.5 Pathogen Reduction

Per 40 CFR Part 503.32(b)(2), the permittee employs Alternative 2 which requires that the biosolids be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) listed in Appendix B of 40 CFR Part 503. The permittee uses the anaerobic digestion process outlined in the table below.

Table 7: Processes to Significantly Reduce Pathogens Listed in Appendix B of 40 CFR Part 503

Anaerobic Digestion	Sewage sludge is treated in the absence of air for a specific mean cell residence time (MCRT) (i.e., solids retention time) at a specific temperature. Values for the MCRT and temperature shall be between 15 days at 35ºC to 55ºC (131ºF) and 60 days at 20ºC (68ºF).

6.5.6 Vector Attraction Reduction

If the permittee choses to land apply biosolids, the permittee is expected to satisfy the vector attraction reduction (VAR) requirements of 40 CFR Part 503.15(c) and OAR 340-050-0026(2)(c) using the option identified below.

Table 8: Vector Attraction Reduction Options

40 CFR Part 503 Requirement	What is Required?	Most Appropriate For
Option 1 503.33(b)(1)	At least 38% reduction in volatile solids during sewage sludge treatment	Sewage sludge processed by: Anaerobic biological treatment Aerobic biological treatment

6.5.7 Management practices

All biosolids used for beneficial reuse by application to land must meet the management practices described under 40 CFR §503.14. Class B biosolids must be land applied following the site restrictions described under 40 CFR §503.32(b)(5). In addition, biosolids land applied in bulk must follow the best management practices for site selection and the use and application of biosolids described under OAR 340-050-0060, -0065, -0070, and -0080. The specific site management practices followed by the facility shall be described in their Biosolids Management Plan, Land Application Plan and site authorization letters. All site management practices followed by the permittee must meet or exceed the referenced standards.

6.6 Anti-degradation

As part of renewing a permit, DEQ must demonstrate that the discharge does not lower water quality from the existing condition. DEQ is required to make this demonstration under Oregon's Anti-Degradation Policy for Surface Waters found in OAR 340-041-0004.

DEQ has performed an anti-degradation review for this discharge and determined that no increase in pollutant loading to the Trask River is allowed in the proposed permit, with the potential exception of thermal loading. The proposed permit contains BOD_5 and TSS concentration limits that are increased from the current permit limits, however the mass-loading limits are reduced from the current allowable mass-loading for BOD_5 and TSS. Thus, the proposed permit decreases the allowable pollutant loading of BOD_5 and TSS to the Trask River, and are consistent with State and federal antidegradation requirements.

New temperature limits have been established in the proposed permit based upon water quality criteria requiring the change in ambient temperature not to exceed 0.3ºC after full mixing, and an applicable waste load allocation from an approved TMDL. The temperature limit in the current permit is based upon a quarter (25%) 7Q10 low stream flow limit of 0.08ºC maximum temperature change. The current limit does not fully incorporate the applicable waste load allocation presented in Addendum #1 to the TMDL. Therefore, the proposed limit is calculated based on the maximum allowable temperature increase of 0.3ºC after full mixing as provided by Addendum #1 to the TMDL, and as discussed in section 7.2.2.3 of this fact sheet. The proposed limit may be interpreted to be less stringent than the current limit. Thus, an antidegradation review was conducted, and is discussed in Section 7.2.2.3 of this factsheet and Appendix B.1. The revised temperature limits are consistent with State and federal antidegradation requirements.

Ammonia limits have not been established in the proposed permit. Considering representative effluent data over the current permit term, a reasonable potential analysis for ammonia was conducted. The reasonable potential analysis indicates that there is no longer reasonable potential for the discharge to cause or contribute to exceedances of the water quality criteria for ammonia. Based on the results, the permit will not contain a permit limit for ammonia. The proposed permit without ammonia limits may be interpreted to be less stringent than the current permit. Thus, an antidegradation review was conducted, and is discussed in Section 7.2.2.5 of this factsheet and Appendix B.2. The revised ammonia limits are consistent with State and federal antidegradation requirements.

Permit renewals with the same or more stringent discharge loadings as the previous permit are not considered to lower water quality from the existing authorized condition. DEQ has reviewed appropriate designated fish use maps (such as the Trask River fish use and salmonid spawning use maps contained in OAR 340-041 [Figures 286A and 286B, respectively] and other information during the preparation of the permit to confirm existing beneficial uses. DEQ is not aware of any information indicating that proposed limits are not protective of the designated beneficial uses as listed in Section 5.2. These uses are very broad and include fish and aquatic life (including salmonid rearing, migration, fishing, boating, and water contact recreation). Furthermore, DEQ is also not aware of any existing uses present within the area impacted by the discharge other than those uses already designated and therefore protected by standards developed to protect designated beneficial uses. Therefore, DEQ has determined that existing uses will be protected and the proposed discharge complies with DEQ's anti-degradation policy.

7.0 Permit Draft Discussion

7.1 Face Page

The face page provides information about the permittee, description of the wastewater, outfall locations, receiving stream information, permit approval authority, and a description of permitted activities. The permit allows discharge to the Trask River within limits set by Schedule A and the following schedules. It prohibits all other discharges.

In accordance with state and federal law, NPDES permits will be effective for a fixed term not to exceed 5 years. Upon issuance, this permit will be effective for no more than 5 years.

DEQ evaluated the classifications for the treatment and collection systems (see Appendix C). The treatment system is considered a Class IV system and the collection system is considered a Class II system. DEQ is proposing to change to the existing system classification from a class IV to a class III treatment system.

7.2 Permit Limit Derivation

7.2.1 Technology-Based Effluent Limits (TBELs)

TBELs must be met at the outfall. The applicable TBELs for this facility are the most stringent of the federal secondary treatment standards and the Oregon basin standards, adjusted as necessary for the type of treatment system.

The table below shows a comparison of the federal secondary treatment standards and Oregon basin standards and also lists bacteria standards. Basin standards and bacteria standards are not strictly speaking TBELs; however, they function as such when they have to be met at the end of the pipe.

Table 9A: Comparison of Federal Secondary Treatment and Basin Design Standards

Parameter	Federal Secondary Treatment Standards		Applicable North Coast Basin Design Standards (OAR 340-041-0235)
	30-Day Average	7-Day Average	30-Day Average
BOD_5	30 mg/L	45 mg/L	Low Stream Flow (approximately May 1 – October 31: Monthly average effluent concentrations of 20 mg/L – BOD and TSS High Stream Flow (approximately November 1 – May 31: Minimum of secondary treatment or equivalent control
TSS	30 mg/L	45 mg/L	
pH	6.0 – 9.0		6.5 – 8.5 Note: Basin standards for pH do not have to be met at the outfall and can instead be met at the edge of the mixing zone.
% Removal	85% BOD_5 and TSS		Not specified

The more stringent of the federal or Oregon TBELs are applicable to the permit. Technical mistakes were made in setting the BOD_5 and TSS concentration-based effluents for the previous permit renewal. The limits in the issued permit are inconsistent with the discussion in the permit evaluation report and the requirements in OAR 340-041-0235 (North Coast Basin design standards). The table below shows the correct limits as described in the fact sheet versus the erroneous limits that were placed in the final permit.

Table 9B: Fact Sheet vs Final Permit Limits

	Fact Sheet		Final Permit	
Season	**Monthly Avg**	**Weekly Avg**	**Monthly Avg**	**Weekly Avg**
May - Oct	20 mg/L	30 mg/L	10 mg/L	15 mg/L
Nov - Apr	30 mg/L	45 mg/L	25 mg/L	38 mg/L

The proposed permit contains concentration-based effluent limits for BOD_5 and TSS that are consistent with the federal secondary treatment standards and with the North Coast Basin design standards. These limits are greater than limits in the existing permit. Consistent with 40 CFR 122.44(l)(2)(i)(B)(2), effluent limitations may be relaxed in a reissued permit when it is determined that technical mistakes or mistaken interpretations of law were made in issuing the permit. DEQ has determine that mistakes were made during the previous permit renewal and therefore the higher effluent limits are justified.

Existing BOD_5 and TSS mass load limits are based on an average dry weather design flow of 1.06 mgd and a wet weather design flow of 2.12 mgd. OAR 340-041-0061(9)(a) requires mass load limits be calculated as follows:

> Monthly Avg (lb/day) = design flow (mgd) x concentration limit (mg/L) x 8.34 lbs/gal
>
> The weekly average and maximum daily mass loads are developed from the monthly average by multiplying by 1.5 and 2, respectively.

The design flows of the upgraded facility is unknown at this time. Preliminary documents indicate an average dry weather design flow of 0.9 mgd and a wet weather design flow of 2.5 mgd. The previous fact sheet references a design flow of 1.06 mgd. The City states that the secondary treatment portion of the facility was constructed larger than planned. As a result, the City states that the design flows need to be re-evaluated based on the final construction. DEQ is proposing to retain the existing mass load limits based on the1.06 mgd dry weather design

flow and the 2.12 wet weather design flow and include a permit condition requiring the permittee submit design flow information based on the upgraded treatment plant (Schedule D.13). Mass loads could become more stringent during the next permit renewal depending on the results of this information. The mass load calculations for the proposed permit are shown below.

Summer:

Monthly Average: 1.06 MGD x 20 mg/L x 8.34 = 177 lbs/day

Weekly Average: 177 lbs/day monthly average x 1.5 = 265 lbs/day

Daily Maximum: 177 lbs/day monthly x 2 = 354 lbs/day

Winter:

Monthly Average: 2.12 MGD x 30 mg/L x 8.34 = 530 lbs/day

Weekly Average: 530 lbs/day x 1.5 = 795 lbs/day

Daily Maximum: 530 lbs/day monthly x 2 = 1060 lbs/day

The above 85 percent removal requirement may be adjusted for particular types of treatment systems and conditions described in 40 CFR Part 133.103. The adjustments that apply to the permittee are as follows:

Less concentrated influent wastewater for combined and separate sewers. Federal regulations (40 CFR 133.103(d)) include special considerations for less concentrated influent wastewater from separate sewers. In part, the rule states that "A…State Director is authorized to substitute either a lower percent removal requirement or a mass loading limit for the percent removal requirements…." provided that the permittee satisfactorily demonstrates that:

1. The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits, but its percent removal requirements cannot be met due to less concentrated influent wastewater;
2. To meet the percent removal requirements, the treatment works would have to achieve significantly more stringent limits (defined as at least 5 mg/L more stringent than the otherwise applicable concentration-based limits) than would otherwise be required by the concentration-based standards; and,
3. The less concentrated influent wastewater is not the result of excessive infiltration and inflow (I/I).

When these three conditions are met, federal regulations allow relaxed percent removal and mass load requirements during wet weather. DEQ analyzed each of the provisions below:

1. The City complies with the first provision because they consistently meet their BOD and TSS concentrations limits.

2. To assess the second provision, DEQ needs to show that meeting the 85 percent removal rule would require meeting BOD or TSS concentrations 5 mg/L less than what would otherwise be required. Tillamook's winter limits are 30 mg/L for BOD and TSS so the anlaysis needs to show that keeping the 85 percent removal condition would require the City to meet effluent concentrations of 25 mg/L or less. Influent concentrations of 167 mg/L or less would require them to meet a 25 mg/L limit. BOD and TSS influent concentrations are frequently below 167 mg/L demonstrating that the second provision is met.

3. For the third provision, 40 CFR 35.2005(b)(16) defines excessive inflow and infiltrations as follows:

The quantities of infiltration/inflow which can be economically eliminated from a sewer system as determined in a cost-effectiveness analysis that compares the costs for correcting the infiltration/inflow conditions to the total costs for transportation and treatment of the infiltration/inflow.

The City's December 2003 *Wastewater Facilities Plan* provided cost estimates of $24 million for a system-wide rehabilitation to remove inflow and infiltration. Using this information, the City determined that it was not economically feasible to eliminate the infiltration/inflow and that it was more cost effective to convey and treat it. The City's upgraded treatment plant was designed to treat the excessive inflow and infiltration.

DEQ concludes that the City meets each of the three provisions and is granting the City an exception to the 85 percent removal requirement. This exception is being carried forward from the existing permit. When the monthly average influent BOD or TSS concentrations are below 167 mg/L, there is no percent removal limit.

To ensure that the City is taking steps to reduce inflow and infiltration, the proposed permit requires the permittee to develop and implement an Inflow Removal Program and submit annual inflow and infiltration reports, as specified in Schedule D, Section 1. In addition, the proposed permit requires the permittee to submit an inflow and infiltration cost-effective analysis of removing the inflow and infiltration as secified in Schedule D, Section 14.

Table 10: Summary of Technology-Based Effluent Limits for the Tillamook WWTP

Effluent Parameter	Concentration		Percent Removal	Comments
	Monthly	Weekly		
BOD_5	30 mg/L	40 mg/L	85%[1]	High Stream Flow: approximately November 1 – April 30
TSS	30 mg/L	40 mg/L	85%[1]	High Stream Flow: approximately November 1 – April 30
BOD_5	20 mg/L	30 mg/L	85%[1]	Low Stream Flow: approximately May 1 – October 31 – reflects EPA's reduction in concentration limits for BOD_5
TSS	20 mg/L	30 mg/L	85%[1]	Low Stream Flow: approximately May 1- October 31
pH	Must not be outside the range of 6.0 and 9.0.			Based on Federal wastewater treatment technology for sewage treatment facilities. Facility effluent mixing with ambient water within the mixing zone will ensure pH at the edge of the mixing zone meets the standard. The proposed limits are protective of the water quality standard.

1. 85% removal requirements do not apply when the monthly average influent BOD or TSS concentrations are less than 167 mg/L.

7.2.2 Water Quality-Based Effluent Limits

Once TBELs and applicable basin standards have been established for the treatment facility, WQBELs must be developed. DEQ has developed several tools for calculating WQBELs. The table below provides a summary of these tools.

Table 11: Summary of Tools to Calculate WQBELs

Parameter	Link to Analytical Tool/Description	Application
pH	pH RPA Spreadsheet Use to perform a Reasonable Potential Analysis to see if the discharge has a reasonable potential to cause or contribute to violations of basin standards of pH.	• For facilities that have a mixing zone, to see if basin standards will be met at the edge of the mixing zone.
Temperature	Temperature RPA Spreadsheet 3.1 Used to perform a Reasonable Potential Analysis to see if the discharge has a reasonable potential to cause or contribute to water quality standards violations for temperature.	• Use when facility does not already have a WLA for temperature.
Ammonia	For ammonia, chlorine and other toxics listed in Tables 30, 31 and 40: Reasonable Potential Analysis Calculation Workbook, Domestic; Revision 3.12 (September 2017) Use to perform a Reasonable Potential Analysis to see if the discharge has a reasonable potential to cause or contribute to water quality standards violations for toxics.	Ammonia: • Used for facilities that discharge over 0.1 MGD, to insure no toxicity. • Use for facilities that have an ammonia limit when conditions have changed.
Chlorine		Chlorine: • Use for new facilities that do not have a limit for chlorine. • If a facility already has a limit, and conditions have changed, use limits tab of spreadsheet to re-calculate.
Other toxics listed in Tables 30, 31 and 40 of OAR 340-041-0033		Other toxics: • Use for facilities that discharge greater than 0.1 MGD and less than 1.0 MGD • Use for facilities where pollutant is known to be present.

As can be seen from the above table, WQBELs are generally developed as a result of a Reasonable Potential Analysis (described in more detail later in subsequent sections). An exception to this is when DEQ has developed a TMDL for the receiving stream. When there is a TMDL, the permit limit(s) must be developed based on the wasteload allocation (WLA) developed for the facility as part of the TMDL.

7.2.2.1 General Discussion of Reasonable Potential Analysis

EPA has developed a methodology called Reasonable Potential Analysis (RPA) for determining if there is a reasonable potential for a discharge to cause or contribute to violations of water quality standards for a particular parameter. An RPA takes into account effluent variability, available dilution (if applicable), receiving stream water quality and water quality standards for the protection of aquatic life and human health. If the RPA results indicate that there is a potential for the discharge to cause or contribute to exceedances of water quality standards, the methodology is then used to establish permit limits that will not cause or contribute to violations of water quality standards.

DEQ has adopted EPA's methodology for conducting an RPA, and has developed spreadsheets that incorporate this analysis.

The parameters for which a RPA must be performed will vary with the size and type of discharge. They are listed in the NPDES Permit Testing Requirements for Publicly Owned Treatment Works contained in Appendix J of 40 CFR Part 122. The relevant sections are reproduced below.

Table 10: Testing Requirements for Publicly-Owned Treatment Works

Pollutant List	Parameters for which RPA Needed
Table 1A – Effluent Parameters for All POTWs	pH, Temperature
Table 1 – Effluent Parameters for All POTWs w. Flow ≥ 0.1 MGD	Ammonia, Chlorine
Table 2 – Effluent Parameters for Selected POTWs Metals Volatile Organic Compounds Acid-extractable Compounds Base-neutral Compounds	All Parameters Listed
Table 3 - Pesticides, PCBs and Other Parameters w/ Water Quality Criteria Organochlorine Pesticides PCBS Other Parameters with State Water Quality Criteria	All Parameters Listed

Each of the parameters for which a RPA was performed is discussed in the sections below. The pollutants of concern for which an RPA was performed included pH, temperature, ammonia, copper, mercury and 85 other toxic pollutants for which Oregon has water quality criteria.

A RPA for Total Dissolved Solids (TDS) was not conducted. Relative to TDS, the DEQ conducted a statewide analysis showing that limits for TDS are not warranted for any domestic wastewater treatment plant such as the Tillamook WWTP since TDS concentrations in the effluent do not have the reasonable potential to negatively impact beneficial uses.

In general, the RPA was conducted using effluent monitoring results collected from January 2010 to April 2018. The dilutions used in the RPA analysis are based upon the existing dilutions for Outfall 001 discussed in Section 5.4[7]. Flow statistics used to support the RPA are presented in Table 2 in Section 5.1.

Ambient water quality data was used in the RPA based on data from 2013 to early 2018 for the Trask River, retrieved from the Department's Ambient Water Quality Monitoring System (AWQMS), where available. This system maintains water quality monitoring data from sampling stations located throughout the state of Oregon. The Tillamook analysis utilized data from the Trask River at Highway 101 sampling station (Monitoring Location ID ORDEQ-13433) located approximately 3 river miles upstream of Tillamook's Outfall 001.

Each of the parameters for which a RPA was performed is discussed in the sections below. The development of WQBELs and TBELs is also described.

7.2.2.2 Reasonable Potential Analysis for pH

The pH of water is a measure of how acidic or basic a solution is. At a pH of 7.0, the solution is considered neutral. Most aquatic organisms can tolerate a fairly narrow range around 7.0.

[7] As determined by the Mixing Zone Dye Tracer Study for City of Tillamook, Oregon. NPDES Permit No. 101239. Cosmopolitan Marine Engineering. April 2015.

In accordance with OAR 340-041-0290, the applicable water quality basin standard for the permittee's discharge to the Trask River is 6.5 to 8.5. The federal secondary treatment standards allow the permittee to discharge effluent with a pH between 6.0 and 9.0. This pH range was utilized in a reasonable potential analysis along with other effluent data collected from January 2010 to April 2018 and ambient river data collected from the DEQ's Trask River at Highway 101 monitoring station from 2013 to 2018. The reasonable potential analysis confirmed that dilution within the regulatory mixing zone will ensure that the basin standard is met at the edge of the mixing zone (See Appendix D: Attachment D-1). The proposed limits for pH are 6.0 to 9.0 and are considered TBELS.

7.2.2.3 Reasonable Potential Analysis for Temperature

Water temperatures affect the life cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations. The purpose of the temperature criteria in OAR 340-041-0028 is to protect designated, temperature-sensitive beneficial uses (including salmonid life cycle stages) from adverse warming caused by human activities. As part of the permit renewal, the DEQ conducted an analysis to determine the appropriate seasonal temperature effluent limits to be assigned to the permittee. A summary of this analysis is presented below.

Applicable Temperature Criteria

In Oregon, temperature water quality criteria are primarily based on the most sensitive aquatic species and life stages present in the water body. The most sensitive species are usually salmonids. Based on the North Coast Subbasins fish use and salmonid spawning use maps contained in OAR 340-041 (Figures 230A and 230B, respectively), the designated fish uses for this segment of the Trask River are salmon and steelhead migration (year-round). The Tillamook WWTP is in a section of the Trask River that has no spawning use.

For the streams identified as having salmon and trout rearing and migration uses, OAR 340-041-0028(4)(c) states that the 7-day average maximum temperature (7DADM) may not exceed 18ºC (64.4ºF). This criterion applies in the Trask River in the vicinity of the discharge year-round. The applicable temperature criterion is summarized in the table below:

Table 13: Applicable Trask River Temperature Criterion (From OAR 340-041)

Beneficial Use / Protection Standard	Date Range	Water Quality Criterion
Salmon and Trout Rearing and Migration (OAR 340-041-0028(4)(c)	Year-round	7-day average maximum temperature of stream may not exceed 18.0ºC (64.4ºF) - Insignificant anthropogenic inputs allowed.

TMDL Temperature Wasteload Allocation

As noted in Section 5.3 of this report, the portion of the Trask River into which the Tillamook WWTP discharges is listed as water quality limited for temperature with a TMDL approved (Category 4A). In 2001, DEQ issued the Tillamook Bay Watershed TMDL, modified by addendum in 2006[8], to address the temperature impairment. The Trask TMDL Addendum includes a wasteload allocation for the facility which addresses the criterion for the receiving stream (see discussion above). The wasteload allocation given by the TMDL allows for an allowable effluent temperature of 19.8ºC when the river flow is 54 cfs and the effluent flow is 2.6 cfs (1.7 MGD). This equates to an Excess Thermal Load Limit (ETLL) of 11.8 million kcals/day (as a 7-day average). The TMDL addendum includes equations to calculate applicable wasteload allocations for other river and effluent flow rates.[9]

[8] Addendum #1: Modifications to North Coast Basin Temperature Waste Load and Load Allocations for the Tillamook Bay Watershed Total Maximum Daily Load (TMDL) (June 2001). Prepared by DEQ. November 2006.
[9] TMDL Addendum#1, Revised Table 8.

Temperature Effluent Limit
The proposed permit includes an excess thermal load limit based on the wasteload allocation formulas provided in the TMDL Addendum #1. This flow-based limit is presented below and applies year-round to be consistent with the TMDL.

ETLL= (Qe*1.548 + Qr/4) * (0.3) * 2.448 million kcals/day, as a 7-day average

Where:

ETLL= Excess Thermal Load Limit (million kcal/day)

Q_e = Daily Average Effluent Flow (MGD)

Q_r = Daily Average River Flow (cfs)

The proposed permit provides two excess thermal load limit options. The first option is based on the fixed effluent flow of 1.7 mgd and the 7Q10 stream flow of 54 cfs. This equates to a fixed ETLL equal to 11.8 million kcals/day. The second option allows the City to use the above equation to calculate the ETLL on a daily basis using the effluent flow and stream flow. USGS maintains a flow gage on the Trask River that the City can use to obtain stream flow data.

To assess compliance with the proposed limit, the permit includes a new formula for calculating the ETL based upon the TMDL addendum criteria (formula provided in Table B3 of the permit). The formula is presented below:

ETL= 3.785 * Qe *(Te – 18) million kcals/day

Where:

ETL = Daily Excess Thermal Load Discharged (million kcal/day)

Q_e = Daily Average Effluent Flow (MGD)

T_e = Daily Maximum Effluent temperature (°C)

CWA section 402(o)(1) prohibits the establishment of less stringent limits "except in compliance with section 303(d)(4)." CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (b) which applies to attainment waters. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLA's will assure the attainment of such water quality standards. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The Trask River is a Water Quality Limited Water based on temperature, fecal coliform, and flow modification. If the proposed change would likely result in a measurable change in water quality away from conditions unimpacted by anthropogenic sources, then the proposed activity is considered to lower water quality. The proposed limit may allow for greater thermal loading to the receiving water. However, the proposed temperature limit is consistent with Addendum #1 and representative of an applicable WLA established in a TMDL, and as such the cumulative effect of all such revised effluent limits to the receiving water based on the TMDL assure the attainment of applicable water quality standards. The proposed revision is consistent with state and federal antibacksliding and antidegradation requirements.

7.2.2.4 Reasonable Potential Analysis for Chlorine

The permittee uses chlorine to disinfect the effluent before discharging to Trask River. Along with being an effective disinfectant, chlorine is toxic to many aquatic organisms. To ensure that the potential for toxicity is

minimized, the permittee employs dechlorination equipment to reduce the presence of chlorine in the discharge. The current permit contains a limit for chlorine, where it is referred to as Total Residual Chlorine.

The RPA analysis indicates that the permittee does not have reasonable potential to cause or contribute to an exceedance of water quality criteria within the Trask River. However, the permittee relies on chlorination and dechlorination as components of the treatment train. Because dechlorination is subject to operator error and mechanical failure, effluent limits for total residual chlorine have been retained. Proposed limits for chlorine are 0.01 mg/L as a monthly average and 0.02 mg/L as a daily maximum.

When the total residual chlorine limitation is lower than 0.05 mg/L, DEQ will use 0.05 mg/L as the compliance evaluation level; that is, daily maximum concentrations at or below 0.05 mg/L will be considered in compliance with the limit. In cases where an effluent limit is below the analytic range of available methods, the Quantitation Limit becomes the default compliance level. This is consistent with the example provided in Appendix D of the DEQ's RPA IMD. This IMD may be found at: http://www.deq.state.or.us/wq/pubs/imds/rpaIMD.pdf

The permit does not contain a mass load limit for chlorine. The primary purpose for mass limits is to prevent water quality violations from cumulative effects of conservative pollutants. Mass-based limits are particularly important for control of bioaccumulative pollutants. Chlorine is neither a conservative nor a bioaccumulative pollutant since chlorine rapidly reacts with organic matter. Therefore, cumulative effects outside of the regulatory mixing zone are not a concern.

7.2.2.5 Reasonable Potential Analysis for Ammonia

Water quality criteria for ammonia vary with pH and temperature, and with the presence of salmonids. The RPA for ammonia was conducted using ambient Trask River data collected from the DEQ's monitoring station at the Trask River at Highway 101 (No. 13433) during the 2012 through 2016 critical low flow seasons (May – October) and effluent data from May 2010 to October 2017. Effluent ammonia data is collected by the Tillamook WWTP once per month from May 1 to October 31, which gives a robust data set of more than 49 effluent samples.

Using the maximum effluent concentration of 10.4 mg/L recorded in September 2017, the results of the RPA for ammonia indicate that there is no longer reasonable potential for the discharge to cause or contribute to exceedances of the water quality criteria for ammonia. Based on the results, the permit will not contain a permit limit for ammonia. RPA results are included in Appendix D: Attachment D-2 and D-3. However, monthly monitoring from May through October has been retained for ammonia to provide robust data sets for future reasonable potential analysis.

CWA section 402(o)(1) prohibits the establishment of less stringent limits "except in compliance with section 303(d)(4)." CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (b) which applies to attainment waters. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLA's will assure the attainment of such water quality standards. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The Trask River is a Water Quality Limited Water based on temperature, fecal coliform, and flow modification. If the proposed change would likely result in a measurable change in water quality away from conditions unimpacted by anthropogenic sources, then the proposed activity is considered to lower water quality.

Since the development of the current permit, the permittee has implemented significant facility improvements, installing and operating a return activated sludge facility and observed significant improvements in ammonia removal. Ammonia data prior to the facility improvements between June 2005 and August 2009 indicate ammonia concentrations ranging from 6.7 mg/L to 27 mg/L. Ammonia data following the facility improvements

from September 2009 through November 2017 indicate ammonia concentrations ranging from <0.1 mg/L to 2.64 mg/L, with one exception during October 2017 of 10 mg/L. Based on the available data, the operation of the current activated sludge treatment system is anticipated to reduce loadings of ammonia to the Trask River over previous permit terms.

The proposed change to remove the effluent limits for ammonia are not anticipated to result in a measurable change in water quality within the Trask River, including a) a percentage change in ambient conditions at appropriate critical periods; b) the difference between current ambient conditions and the conditions that would result if the proposed activity were allowed; c) percentage change in loadings; d) percent reduction in assimilative capacity; e) nature, persistence, and potential effects of impacts on aquatic biota; and h) degree of confidence in any modeling techniques used.

Trask River is considered an attainment water for ammonia because the receiving water is not listed as impaired on the 303(d) list for ammonia, and the removal of the ammonia limits comply with federal and state antidegradaton requirements. The proposed revision is consistent with state and federal antibacksliding and antidegradation requirements.

7.2.2.6 Reasonable Potential Analysis for Other Toxic Pollutants

As discussed at the beginning of this section, the Tillamook WWTP is required to test their effluent to determine if it contains specific toxic substances at levels sufficient to cause toxicity to aquatic organisms or to affect human health. There are saltwater and freshwater criterion for many of the toxic pollutants. Limited salinity data was available for the Trask River at the point of discharge, however salinity data was collected on September 18, 2014 for the permittee's dye-study to evaluate mixing and dilution. Data provided in the 2015 mixing report indicate salinity concentrations between 0.1 ppt and 2.9 ppt depending on tidal conditions and flow direction within the river. Freshwater criteria are applicable at salinity below 1 ppt, and saltwater criteria are applicable at salinity great than 10 ppt. When estuarian conditions exist and salinity falls between 1 ppt and 10 ppt, both criteria must be applied. Both freshwater and saltwater criteria were considered during the RPA.

Only minimal, older data was available for the RPA, with the exception of copper, making it difficult to perform an accurate analysis. Most metals criteria are based on the dissolved fraction and for the effluent data only the total fraction was reported. In addition, the data was collected back in 2011 and 2012 which may not be representative of existing conditions and only 2-3 sample results are available. Trask River data collected by DEQ upstream at the Hwy 101 sample site was used. The anlaysis showed that the effluent did not have the potential to exceed most water quality criteriea. Due to the effluent data limiations discussed above additional effluent data is needed for silver, zinc, Aroclor 1260 and Bis (2-ethylhexyl)phthalate in order to perform a robust and accurate analysis. The permit requires quarterly monitoring for the first year of the permit for the full suite of toxic pollutants required by domestic facilities. In addition, PCB monitoring is being required as well. DEQ will perform an analysis, upon completion of the monitoring, using this data to determine if there is a reasonable potential to exceed the criterion for any of these pollutants. If necessary, DEQ will reopen the permit to incorporate new effluent limits. Results of the analyses are in Appendix D.

7.2.2.7 Reasonable Potential Analysis for Copper

Oregon's new freshwater copper standard became effective on January 9, 2017. As described in OAR 340-041-8033 (Table 30, Endnote N), the freshwater copper criteria are based upon the Biotic Ligand Model (BLM), a metal bioavailability model. This model calculates the applicable acute and chronic copper criteria based on the concentrations of 10 independent parameters in the effluent and receiving water (Table 14). Ideally, paired[10] sets of measured input parameters would be used to determine the applicable criteria. Because the input parameters

[10] Paired data refers to concurrent samples that have been taken from two locations (upstream ambient and effluent) within 24 hours of each other.

vary with time and location, the criterion varies with time and location as well. As such, the criterion is commonly referred to as an Instantaneous Water Quality Criterion (IWQC) and they are intended to protect against the toxicity of copper to aquatic life.

Table 14: Copper BLM Input Parameters

Parameter	Units
Dissolved Organic Carbon	mg/L
pH	S.U.
Temperature	^{o}C
Calcium	mg/L
Magnesium	mg/L
Sodium	mg/L
Potassium	mg/L
Sulfate	mg/L
Chloride	mg/L
Alkalinity	mg/L

As described in Section 7.2.2.1, acute criteria must be met at the edge of the Zone of Initial Dilution (ZID) and chronic criteria at the edge of the Regulatory Mixing Zone (RMZ). The standard methodology for determining whether or not a discharge has a reasonable potential to cause or contribute to exceedances of toxic water quality criteria is to first determine the applicable acute and chronic criteria, and then to determine whether the concentrations of the toxic parameter in the effluent will exceed these criteria during critical scenarios.

In order to facilitate the determination of applicable copper criteria, the permittee collected six sets of monthly paired effluent and ambient data from December 2017 through May 2018. Unfortunately, the quality of the ambient (Trask River) pH and copper data collected by the city is questionable. In particular, the ambient data reported by the permittee was compared with data collected by DEQ in the river approximately 2.9 miles upstream of the discharge (at Hwy. 101). Copper data for the City of Tillamook included Trask River values of 6.6 and 8.6 for dissolved copper, where none of the DEQ dissolved copper were quantifiable (at 1.5 ug/L, with 6 values collected from 7/14 to 3/16). There is no pollutant source between these two locations that would readily account for this discrepancy. In addition to the questionable copper data, the city-measured pH values were significantly lower than the values measured by DEQ in the Trask River (the minimum Tillamook-measured pH value was 6.98 and the maximum was 7.35, where the minimum DEQ value was 7.3 and the maximum was 7.7).

Using the questionable city-collected river data to determine applicable criteria would not result in an accurate analysis of the potential for the discharge to cause or contribute to the freshwater copper criteria. Instead, the proposed permit includes the requirement for the city to develop a copper sampling and analysis plan to collect new data resulting in a full 24 sets of accurate BLM data. DEQ will review this plan prior to implementation.

In the meantime, DEQ performed a limited freshwater copper reasonable potential analysis using DEQ-collected ambient copper values along with the remainder of the city-collected data (including the suspect pH data, which appear to be skewed low, which would result in more conservative criteria values).

The results of the freshwater analysis are shown in the table below. This analysis is based on the paired data sets collected by the city from December of 2017 through May of 2018, but with the DEQ ambient copper values substituted. The copper criteria were calculated using the data sets and the critical dilutions at the zone of initial dilution, mixing zone and the dilution after the effluent has fully mixed with the river. (Note that these dilution values are conservative and that actual dilutions are likely higher.) The calculated copper concentrations use these same dilutions and the city-collected effluent copper concentrations paired with DEQ ambient copper concentrations.

Toxics units are calculated to determine whether the copper criterion is exceeded. A toxic unit is calculated by dividing the criterion by the instream copper concentration. A toxic unit greater than one indicates an exceedance of the criterion. The results in Table 15 below show the toxic units are well below one for all of the paired samples. This indicates that the facility does not have a reasonable potential to cause or contribute to exceedances of the freshwater copper criterion for the days when sampling was conducted (and assuming the DEQ-collected data are representative). As noted above, the permit requires the permittee to develop and implement a robust sampling and analysis plan to collect accurate data sets during the permit cycle. The proposed permit also includes a reopener in the event the new data sets indicate a reasonable potential for the discharge to cause or contribute to an exceedance of the freshwater copper criterion and a new or revised copper effluent limit is warranted.

Table 15: Copper BLM Reasonable Potential Analysis Values

Copper BLM Analysis												
	ZID				Mixing Zone				100% Mix			
	CMC	Cu			CCC	Cu			CCC	Cu		
Date	ug/L	ug/L	Toxic Unit	RP?	ug/L	ug/L	Toxic Unit	RP?	ug/L	ug/L	Toxic Unit	RP?
12/13/2017	1.7	0.13	0.1	N	0.77	0.14	0.2	N	0.8	0.15	0.2	N
1/10/2018	2.6	0.13	0.05	N	1.3	0.14	0.1	N	1.3	0.15	0.1	N
2/21/2018	2.1	0.13	0.1	N	1.1	0.14	0.1	N	1.2	0.15	0.1	N
3/21/2018	2.0	0.13	0.1	N	0.9	0.14	0.2	N	0.9	0.15	0.2	N
5/9/2018	2.4	0.13	0.1	N	1.2	0.14	0.1	N	1.1	0.15	0.1	N
5/30/2018	4.6	1.36	0.3	N	2.0	0.41	0.2	N	1.8	0.36	0.2	N
6/13/2018	7.0	1.81	0.3	N	5.4	0.51	0.1	N	5.4	0.44	0.1	N

7.2.2.8 Reasonable Potential Analysis for Mercury

Oregon's water quality criterion for mercury is expressed in terms of a fish tissue concentration rather than a water column concentration. Because of this, DEQ's approach to performing the Reasonable Potential Analysis for mercury is different than that for other parameters. This approach is described in an Internal Management Directive entitled "Implementation of Methylmercury in NPDES Permits". It can be found at: http://www.deq.state.or.us/wq/pubs/imds/IMDmethylmercuryCriterion.pdf

A review of monitoring data submitted by the Tillamook WWTP indicates that total mercury is not present in the discharge. Therefore, there is no reasonable potential to cause or contribute to the exceedance of the water quality standard.

7.3 Schedule A. Waste Discharge Limits

The proposed permit limits for the Tillamook WWTP are included in Schedule A of the permit and the numeric limits are reproduced below. These limits are the result of the analyses described in Section 7.2. Schedule A of the permit also contains conditions relating to the mixing zone, groundwater protection, recycled water, and biosolids.

Schedule A – Waste Discharge Limits
The proposed effluent limits for Outfall 001 are as follows:

1. Outfall 001 – Permit Limits

During the term of this permit, the effluent quality must comply with the limits in the following table:

Table A1: Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
Biochemical Oxygen Demand, 5-day @ 20ºC (BOD_5) (May 1 – October 31)	mg/L	20	30	--
	lbs/day	177	265	354
	% removal	85[h]	--	--
Total Suspended Solids (TSS) (May 1 – October 31)	mg/L	20	30	--
	lbs/day	177	265	354
	% removal	85[h]	--	--
BOD_5 (November 1 – April 30)	mg/L	30	45	--
	lbs/day	530	795	1060
	% removal	85[h]	--	--
TSS (November 1 – April 30)	mg/L	30	45	--
	lbs/day	530	795	1060
	% removal	85[h]	--	--
pH[a]	Standard Units	Between 6.0 and 9.0		
Total Residual Chlorine[b]	mg/L	0.01	--	0.02
Fecal coliform bacteria (May 1 – October 31)[c]	MPN/100 ml	200[d]	--	400
Fecal coliform bacteria (November 1 – April 30)[e]	MPN/100 ml	49[d]	--	151
E. coli bacteria[f]	MPN/100 ml	126[d]	--	406
Excess Thermal Load[i] (Year-Round)	Option A (7-day rolling average)		Option B (7-day rolling average)	
	Shall not exceed a 7-day rolling average of 11.8 million Kcals		Shall not exceed a 7-day moving average as calculated in the equation below	

Notes:

a. May not be outside the range of 6.0 to 9.0 Standard Units.

b. Calculated effluent limitations are below analytic range of available methods. The compliance level is equal to the Quantitation Limit which is 0.05 mg/L monthly average and 0.05 mg/L daily maximum.

c. No single fecal coliform sample may exceed 400 organisms per 100 mL from May 1 through October 31. The permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 200 fecal coliform organisms/100 mL to demonstrate compliance with the limit.

d. Reported as a monthly geometric mean.

e. No single fecal coliform sample may exceed 151 organisms per 100 mL from November 1 through April 30. The permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 49 fecal coliform organisms/100 mL to demonstrate compliance with the limit.

f. No *E. coli* sample may exceed 406 organisms per 100 mL. The permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 *E. coli* organisms/100 mL to demonstrate compliance with the limit.

g. Calculated effluent limitations are below analytic range of available methods. The compliance level equal to the Quantitation Limit is 0.5 µg/L monthly average and 0.5 µg/L daily maximum.

h. The 85% removal limit does not apply when the monthly average influent BOD or TSS is less than 167 mg/L.

i. The Excess Thermal Load Limit (ETLL) must be calculated using the formula below.

$$ETLL = (Qe*1.548 + Qr/4) * (0.3) * 2.448 \text{ million kcals/day, as a 7-day average}$$

Where:

ETLL= Excess Thermal Load Limit (kcal/day), as a 7-day average

Q_e = Daily Average Effluent Flow (MGD)

Q_r = Daily Average River Flow (cfs)

7.3.1 Discussion of Permit Limits in Table A1

The limits in Table A1 are discussed in detail below, in the following order:

a. BOD_5, and TSS Concentration, Mass Load and Percent Removal Limits
b. Human Use Allowance Maximum Change in Temperature
c. Total Residual Chlorine
d. Bacteria
e. pH

Discussion of permit limits and requirements pertaining to the mixing zone, groundwater protection, the use of recycled water, biosolids, and chlorine usage follow the discussions of individual permit limits in Section 7.3.2.

a. BOD_5, and TSS Concentration, Mass Load and Percent Removal Limits

BOD_5 and TSS are indicators of the "strength" of the effluent. Section 7.2.1 describes the development of concentration and mass limits for BOD_5 and TSS. As explained, the permit includes mass load limits for high (winter) and low (summer) stream flow periods in the Trask River. These seasonal limits are based on the facility's average wet weather and dry weather design flows and associated concentrations.

As indicated in Table A1, concentrations for BOD_5 and TSS have been increased and mass loads have been reduced due to a technical error in the current permit. The new limits are based on the North Coast Basin minimum design criteria for wastewater treatment. In general, the limits for BOD_5 and TSS are all TBELs.

The removal efficiency required by the permit is 85% for BOD_5, and TSS during low flow, and 85% BOD_5, and TSS during high flow, except that when the monthly average influent concentration for BOD_5 and/or TSS is less than 167 mg/L. If the influent concentration of BOD_5 and/or TSS is less than 167 mg/L, the percent removal shall not apply, provided that the treatment plant shall be operated as effectively as possible. The derivation of this removal efficiency was described in Section 7.2.1; and is consistent with the Code of Federal Regulations (40 CFR part 133) for any type of activated sludge system.

b. Human Use Allowance Maximum Change in Temperature

The permit limit for temperature is an Excess Thermal Load (ETL) limit not to exceed either the numeric limit of 11.8 million kilocalories per day (million kcals/day), or the calculated formula-based limit, expressed as a 7-day rolling average of the daily Excess Thermal Loads. This limit is considered a WQBEL. The discussion of how this limit was determined is in Section 7.2.2.3. The permit provides the permittee with the formula for calculating the ETL in Table B3 (Effluent Monitoring).

c. Total Residual Chlorine

The permit limit for total residual chlorine is applicable to the permittee since the Tillamook WWTP utilizes chlorine for disinfection. The minimum reliably determined value for chlorine is 0.05 mg/L. When the total residual chlorine limitation is lower than 0.05 mg/L, DEQ will use 0.05 mg/L as the compliance evaluation level.

d. Bacteria

Limits for bacteria are considered to be WQBELs. Since the Tillamook WWTP discharges to a portion of the Trask River that is considered estuarine waters other than shellfish growing waters, the permit limit for bacteria is based on the *E. coli* criteria for freshwater contained in OAR 340-041-0009(5) and the North Coast Subbasins TMDL as described below.

Fecal Coliform

The proposed permit limits for fecal coliform are based on the TMDL allocation used by DEQ prior to 1996 and to be protective of shellfish growing in Tillamook Bay, the discharge to the river were given an allowance for decay based on temperature and velocity in the Trask River. The proposed limits from May 1 through October 31 are a monthly geometric mean of 200 fecal coliform per 100 mL, with no single sample exceeding 400 fecal coliform per 100 mL. The proposed limits from November 1 through April 30 are a monthly geometric mean of 49 fecal coliform per 100 mL, with no single sample exceeding 151 fecal coliform per 100 mL. If a single sample exceeds the single sample maximum, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to the monthly geometric mean, a violation is not triggered. The re-sampling must be taken at four hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken.

E. coli

The proposed permit limits for *E. coli* are based on the seasonal allocations in the North Coast Basin TMDL and standard contained in OAR 340-041-0009(5). The proposed limits are a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken.

e. pH

The derivation of pH limits is described in Section 7.2.2.2. The proposed permit limits were developed with respect to the basin standards adjusted for dilution at edge of the mixing zone and are therefore WQBELs.

7.3.2 Discussion of Other Schedule A Requirements

In addition to permit limits for specific parameters, Schedule A also contains requirements pertaining to the mixing zone, groundwater protection, the use of recycled water, biosolids, and septage requirements. These are discussed in more detail below, in the following order:

a. Mixing Zone
b. Groundwater Protection
c. Use of Recycled Water
d. Biosolids

a. Mixing Zone

The proposed permit provides for a mixing zone defined as that portion of the Trask River within one hundred (100) feet downstream of the outfall. The zone of initial dilution (ZID) is that portion of the allowable mixing zone that is within twenty (20) feet of the outfall. A detailed discussion on the establishment of the mixing zone and ZID are provided in section 5.4.

b. Groundwater Protection

The proposed permit maintains the existing condition in Schedule A for groundwater protection. The condition essentially prohibits the permittee from conducting any activities that could cause an adverse impact on existing or potential beneficial uses of groundwater. This condition also directs the permittee to manage and dispose of all wastewater and process related residuals in such a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR Chapter 340, Division 40).

c. Use of Recycled Water

The permit describes the treatment criteria and management practices the permittee must satisfy to distribute water for reuse. The requirements in Schedule A of the permit are derived from OAR 340-055.

d. Biosolids
The permit describes what discharge limits and management practices the Tillamook WWTP must satisfy to beneficially reuse biosolids as a soil amendment or fertilizer. The requirements in Schedule A of the permit contain limits for biosolids and are derived from OAR 340-050.

7.4 Schedule B – Minimum Monitoring and Reporting Requirements

Section 1 of Schedule B describes monitoring and reporting protocols for the permit and includes the following:

a. Monitoring and Reporting Protocols
b. Test Methods and Reporting of Detection Levels and Quantitation Limits
c. Laboratory Quality Assurance and Quality Control (QA/QC)
d. Re-analysis and Re-sampling if QA/QC Requirements Not Met
e. Reporting Sample Results
f. Calculating and Reporting Mass Loads

Schedule B also describes the minimum monitoring and reporting necessary to demonstrate compliance with the conditions of this permit. The authority to require periodic reporting by permittees is included in ORS 468.065(5). Self-monitoring requirements are the primary means of ensuring that permit limits are being met. Other parameters may also need to be monitored when insufficient data exist to establish a limit, but where there is a potential for a water quality concern.

Monitoring requirements are found in the following tables:

Table B1: Schedule for Reporting Requirements
Table B2: Influent Monitoring
Table B3: Effluent Monitoring
Table B4: Metals, Cyanide and Hardness
Table B5: Volatile Organic Compounds
Table B6: Acid-Extractable Compounds
Table B7: Base-Neutral Compounds
Table B8: Pesticides and PCBs
Table B9: Copper Biotic Ligand Model and Aluminum Sampling Requirements
Table B10: WET Test Monitoring
Table B11: Template for Reporting WET Test Results
Table B12: Recycled Water Monitoring
Table B13: Biosolids Monitoring
Table B14: Biosolids Minimum Monitoring Frequency
Table B15: Emergency Outfall Monitoring

Each of these tables is discussed in more detail below.

Table B1: Schedule for Reporting Requirements
This table summarizes, for the convenience of the permittee, the reporting requirements and due dates for all reports contained in the previously-listed tables.

Tables B2 and B3: Influent and Effluent Monitoring
Tables B2 and B3 specify the parameters to be monitored on a regular basis in the influent and effluent, along with associated monitoring frequencies, sample types and related reporting requirements. These tables also specify where in the treatment process the influent and effluent will be monitored and how monitoring will be conducted if certain continuous monitoring systems are not operable.

Table B3 includes the formula and procedures for calculating the ETL of the effluent discharge. This formula is based upon the 18.0ºC (64.4ºF) BBNC.

Tables B4: through B8: Monitoring for Toxics Monitoring and Other Parameters

Because the Tillamook WWTP discharges between 0.1 MGD and 1.0 MGD and a portion of the source water originates from small industrial facilities, the permit contains additional monitoring requirements for toxic pollutants. These parameters are listed in Tables B5 through B9 in Schedule B. The permittee must collect three samples for organic compounds and four samples for metals, cyanide, phenols and hardness during the permit cycle. Two of three samples must be collected no fewer than four months and no further than eight months apart. Sampling must represent both high and low river flow conditions. DEQ will then evaluate these results to determine if additional sampling will be needed.

If DEQ's analysis indicates that the permittee's effluent may cause or contribute to exceedances of water quality standards at the point of discharge with no dilution present, the permittee will first be required to submit a sample and analysis plan for DEQ approval. The requirements for the sampling plan are listed in Schedule B, Section 6. The purpose of this follow-up monitoring will be to determine if the discharge has a reasonable potential to cause or contribute to exceedances of water quality for the toxics in question in the Trask River.

Tables B5 through B9 also list QLs for each parameter. DEQ recognizes that there are circumstances under which these QLs may not be achievable, such as when there are high TSS levels leading to matrix effects. In such circumstances, DEQ will allow re-sampling as described in Schedule B. The use of minimum detection limits or QLs is supported by existing federal regulations under 40 CFR Part 122 and 40 CFR Part 136. DEQ recognizes that there are circumstances under which these QLs may not be achievable, such as when there are high TSS levels leading to matrix effects. In such circumstances, DEQ will allow re-sampling as described in Schedule B.

Table B9: Copper Biotic Ligand Model and Aluminum Sampling Requirements
This table requires the permittee to monitor the Trask River above Outfall 001, and effluent at Outfall 001, for parameters associated with the copper Biotic Ligand Model and aluminum. Prior to permit renewal, the permittee collected some copper BLM data that was used in the reasonable potential analysis for copper described in Section 7.2.2.6. Additional monitoring is required during the next permit term and copper monitoring will occur on a monthly basis for a period of 24 months beginning in 2011. Prior to sampling, the permittee is required to develop a coper sampling and analysis plan, which must be submitted to DEQ for approval before implementation.

The DEQ expects that new quality criteria for aluminum will be in effect by the time the proposed permit is renewed. As such, the next permit renewal will require a reasonable potential analysis of the permittee's discharge to exceed the anticipated aluminum criteria. The DEQ is requiring sampling for aluminum during the proposed permit term in order to have the necessary data available for the analysis and to reduce delays in renewing the permit. Sampling for aluminum will occur once per month for a period of two years and can be conducted concurrently with the sampling for copper.

Tables B10 and 11: WET Test Monitoring and Reporting
These tables specify the frequency, type and location of sampling needed to perform WET testing and provide a template for reporting results.

Table B12: Recycled Water Monitoring Requirements

OAR 340-055-0012 requires the permittee to monitor and demonstrate compliance with the treatment criteria for a specific Class of recycled water. Table B13 lists the monitoring requirements consistent with OAR 340-055-0012. Upon adoption of a recycled water use program by the permittee, specific monitoring and sampling procedures will be described in a DEQ-approved recycled water use plan.

Tables B13 and B14: Biosolids Monitoring Requirements and Monitoring Frequency

These tables list the monitoring requirements that pertain to biosolids, consistent with OAR 340-050-0035. Table B14 lists the monitoring requirements related to biosolids and Table B15 establishes the minimum frequency for the biosolids sampling. Specific details on how and where biosolids monitoring will be conducted are provided in the Biosolids Management Plan.

In addition to biosolids monitoring at the treatment facility, the facility is required to maintain records on the land application of biosolids. Records must be sufficient to demonstrate that biosolids were applied within agronomic loading rates and following required site management practices. The permit requires the permittee to record the date, quantity, and location of biosolids applied to the land on a site map or electronic GIS system.

Table B15: Emergency Outfall Monitoring

Raw sewage overflows are prohibited. Emergency outfall flow monitoring is required for all discharges from emergency outfalls.

7.5 Schedule D - Special Conditions

7.5.1 Inflow and Infiltration

As described in Section 4.3 on the sewage collection system, it is important for the permittee to assess and take steps to reduce the rate of infiltration and inflow of stormwater and groundwater into the sewer system. Consistent with this, Schedule D of the permit requires the permittee to undertake activities to track and reduce I/I in the sewer system.

7.5.2 Emergency Response and Public Notification Plan

Municipal wastewater treatment facilities are required, under General Condition B8. in Schedule F, to have an Emergency Response and Public Notification Plan.

7.5.3 Recycled Water Use Plan

The permittee does not currently operate a recycled water program. Should the permittee pursue a recycled water program over the next permit term, conditions requiring the permittee to develop and maintain a recycled water use plan are provided in Schedule D, Section 3. The recycled water use plan must meet the requirements in OAR 340-055-0025 and include location-specific information describing where and how recycled water is managed to protect public health and the environment.

7.5.4 Exempt Wastewater Reuse at the Treatment System

Schedule D exempts the permittee from the recycled water requirements in OAR 340-055, when recycled water is used for landscape irrigation at the treatment facility or for in-plant processes, such as in-plant maintenance activities. Landscape irrigation includes water applied to small-scale irrigation such as supplying supplemental irrigation to turf grass, shrubs, and ornamental trees. Landscape irrigation may include the irrigation of native vegetation along dikes, banks, and earthen impounds around wastewater lagoons—especially as needed to reduce erosion and maintain structural integrity. Landscape irrigation does not include large-scale applications to pasture, hayfields, or native vegetation adjacent to wastewater treatment facility (i.e., these activities are subject to OAR 340-055 and require development of a recycled water use plan). All of the conditions listed in 4(a) through 4(d) of Schedule D of the permit must be satisfied for an exempt use to be valid.

7.5.5 Biosolids Management Plan and Land Application Plan

Conditions requiring the permittee to develop and maintain a Biosolids Management Plan and Land Application Plan are provided in Schedule D. The Biosolids Management Plan and the Land Application Plan must meet the requirements in OAR 340-050-0031 and describe where and how the land application of biosolids is managed to protect public health and the environment.

The Land Application Plan includes all sites authorized by DEQ for land application of Class B biosolids and described in individual, DEQ-issued site authorization letters. During permit renewal, all previously authorized biosolids land application sites are available for public comment with the Biosolids Management Plan and Land Application Plan. During the term of the permit, DEQ-initiated public notice of previously authorized sites identified in the Land Application Plan is not required.

When the permittee needs a new land application site, the permittee is responsible for getting authorization from DEQ as well as notifying neighbors and providing them with an opportunity to comment. Any proposed new site must meet the site selection and site management criteria described in the Land Application Plan. DEQ-initiated public notice will be provided for any new site that does not meet these criteria and/or that DEQ considers sensitive with respect to residential housing, runoff potential, and/or threat to groundwater.

The permittee's current biosolids disposal method of via landfill does not require a Biosolids Management Plan and Land Application Plan. However, the proposed permit allows for the permittee to land apply if specific requirements are met. Permit conditions to allow land application require the permittee to develop their Biosolids Management Plan and Land Application Plan to include all sites used by the permittee for biosolids disposal. If the Tillamook WWTP produces Exceptional Quality (EQ) biosolids, the permittee is exempt from the requirements to obtain written authorization from DEQ for land application sites and to provide public notice on proposed land application sites. EQ biosolids are highly treated solids in which pollutants concentrations are less than the pollutant concentration limits in Schedule A, pathogen reduction requirements for Class A biosolids have been met, and vector attraction reduction requirements have been met.

7.5.6 Wastewater Solids Transfers

The permit allows the Tillamook WWTP to transfer treated or untreated wastewater solids to other in-state or out-of-state facilities that are permitted to accept the wastewater solids. The permittee is required to monitor, report, and dispose of solids as required by the permit of the receiving facility. Wastewater solids that are transferred out-of-state must meet all requirements for the use of disposal or wastewater solids as required by both Oregon and the receiving state.

7.5.7 Hauled Waste Control

This condition allows the permittee to accept hauled wastes at discharge points designated by the permittee after receiving written DEQ approval of a hauled waste control plan. Hauled wastes may include wastewater solids from another wastewater treatment facility, septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewaters and commercial/industrial wastewaters.

7.5.8 Whole Effluent Toxicity (WET) Testing

As discussed previously, the permittee is required to conduct WET tests to determine the aggregate effect of the effluent on aquatic organisms. EPA has developed protocols for performing these tests and for determining the percentage of effluent that produces an adverse effect on a group of test organisms. The Proposed permit requires 4 WET tests to be conducted over 4 years. Two of the tests must be freshwater tests and the other two must be saltwater tests because the effluent discharges to an estuarine environment that experiences fresh and saltwater conditions.

7.5.9 Operator Certification

The permittee is required to have a certified operator consistent with the size and type of treatment plant covered by the permit. The language in this section of the permit describes the requirements relating to operator certification. An updated copy of the wastewater classification worksheet for the Tillamook WWTP is attached as Appendix C.

7.5.10 Spill/Emergency Response Plan

The permittee is required to have an updated spill response plan for the prevention and handling of spills and unplanned discharges. The requirements of the plan are listed in Section 11 and applicable reporting requirements are found in Schedule F, Section D. 5.

7.5.11 Design Flow Specification

The permittee is required to submit design flow specifications by May 1 2023.

7.5.12 Inflow/Infiltration Analysis

The permittee is required to submit an inflow/infiltration analysis by May 1 2023 that compares the costs of correcting inflow/infiltration to the costs of transporting and treating it.

7.6 Schedule E - Pretreatment

Tillamook WWTP does not implement a pretreatment program.

7.7 Schedule F - NPDES General Conditions

These conditions are standard to all domestic NPDES permits and include language regarding operation and maintenance of facilities, monitoring and record keeping, and reporting requirements. The General Conditions for all individual permits issued by DEQ were substantially revised in August 2009. Minor modifications have been made since then. A summary of the changes is as follows:

- There are additional citations to the federal Clean Water Act and CFR, including references to standards for sewage sludge use or disposal.
- There is additional language regarding federal penalties.
- Bypass language has been made consistent with the Code of Federal Regulations and with other EPA Region 10 states.
- Reporting requirements regarding overflows have been made more explicit.
- Requirements regarding emergency response and public notification plans have been made more explicit.
- Language pertaining to duty to provide information has been made more explicit.
- Confidentiality of information is addressed.

8.0 Permit Phases

8.1 Public Comment Period

The proposed NPDES permit will be made available for public comment for 35 days. Public notice and links to the proposed permit will be posted on DEQ's website, advertised in newspapers, and sent to subscribers to DEQ's pertinent public notice e-mail lists. A Public Hearing will be scheduled if requested by 10 or more people, or by an authorized person representing an organization of at least 10 people. If a public hearing were to be held, then an additional public notice would be published to advertise the public hearing.

8.2 Response to Comments

DEQ will respond to comments received during the comment period. All those providing comment will receive a copy of DEQ's response. Interested parties may also request a copy of DEQ's response. Once comments are received and evaluated, DEQ will decide whether to issue the permit as proposed, to make changes to the permit, or to deny the permit. DEQ will notify the permittee of DEQ's decision.

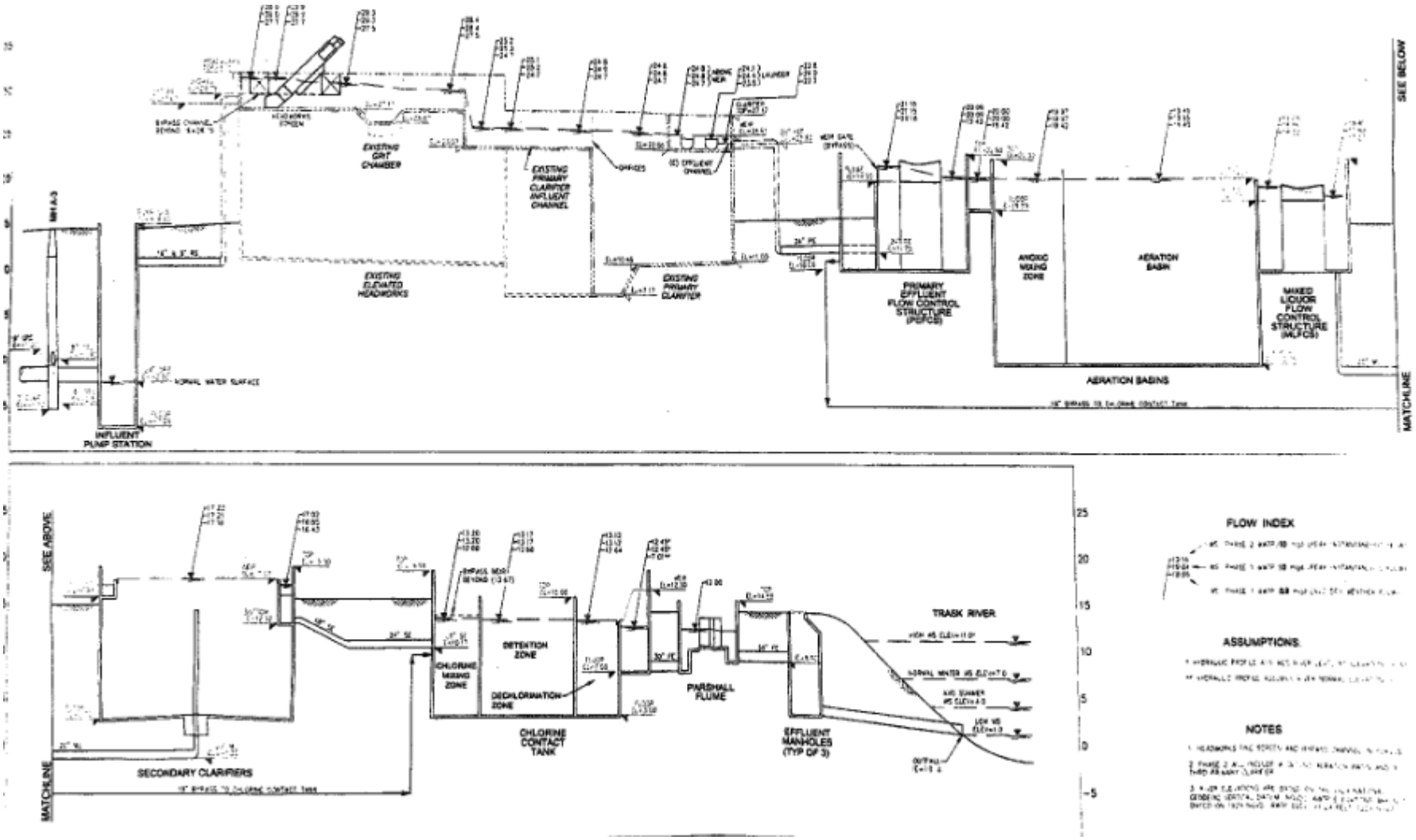
8.3 Modifications to PER

Depending on the nature of the comments and any changes made to the permit as result of comments, DEQ may modify this PER. DEQ may also choose to update the PER through memorandum or addendum. If substantive changes are made to the permit, then an additional round of public comment may occur.

8.4 Issuance

The DEQ mails the finalized, signed permit to the permittee. The permit effective date. Is on the front page of the permit.

APPENDIX A: WWTP OVERALL SITE PLAN


EXISTING GRIT CHAMBER
EXISTING PRIMARY CLARIFIER INFLUENT CHANNEL
EXISTING ELEVATED HEADWORKS
EXISTING PRIMARY CLARIFIER
PRIMARY EFFLUENT FLOW CONTROL STRUCTURE (PEFCS)
ANOXIC MIXING ZONE
AERATION BASIN
MIXED LIQUOR FLOW CONTROL STRUCTURE (MLFCS)
AERATION BASINS
SEE BELOW
MATCHLINE
NORMAL WATER SURFACE
INFLUENT PUMP STATION
SEE ABOVE
MATCHLINE
SECONDARY CLARIFIERS
CHLORINE MIXING ZONE
DETENTION ZONE
DECHLORINATION ZONE
CHLORINE CONTACT TANK
PARSHALL FLUME
EFFLUENT MANHOLES (TYP OF 3)
TRASK RIVER
FLOW INDEX
ASSUMPTIONS
NOTES

APPENDIX B: ANTI-DEGRADATION REVIEW SHEETS

Appendix B.1: Anti-degradation Review Worksheet for a Proposed Individual NPDES Discharge

Applicant: City of Tillamook

1. What is the name of the surface water that receives the discharge? Trask River

   Briefly describe the proposed activity: Revised temperature limits (may be considered an increase)

   This review is for a ☐ Renewal ☐ New

   Go to Step 2.

2. Are there any existing uses associated with the water body that are not included in the list of designated uses? Example: DEQ's Fish Use Designation Maps identify the waterbody as supporting salmonid migration; however ODFW has determined that it also supports salmonid spawning.

   ☐ Yes. Identify additional use(s), the basis for conclusion, and the applicable criteria: . Go to Step 3.

   ☐ No. Go to Step 3.

3. Was the analysis of the impact of the proposed activity performed relative to criteria applicable to the most sensitive beneficial use?

   ☐ Yes. Go to Step 4.

   ☐ No. Re-do analysis to develop permit limits using correct criteria, and modify permit as necessary. Go to Step 4.

4. Is this surface water an **Outstanding Resource Water** or **upstream** from an **Outstanding Resource Water**? Note: OAR 340-041-0004(8)(a) contains criteria for designating such waters. Example: North Fork Smith River

   ☐ Yes. Go to Step 7. ☐ No. Go to Step 5.

5. Is this surface water a **High Quality Water**? A High Quality Water is one for which none of the pollutants are Water Quality Limited. To determine, go to the database at http://www.deq.state.or.us/wq/assessment/rpt2010/search.asp and under Listing Status, select "Water Quality Limited – All (Categories 4 and 5)".

   ☐ Yes. Go to Step 10. ☐ No. Go to Step 6.

6. Is this surface water a **Water Quality Limited Water**? To determine, use the same database query as Step 5.

   ☐ Yes. Go to Step 16. ☐ No. Go to Step 4 (you must answer "yes" to either question 4, 5, or 6)

   Note: The surface water must fall into one of 3 categories: Outstanding Resource Water (Step 4), High Quality Water (Step 5), or Water Quality Limited Water (Step 6).

7. Will the proposed activity result in a permanent new or expanded source of pollutants directly to or affecting the **Outstanding Resource Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from anti-degradation review; otherwise see "Is an Activity Likely to Lower Water Quality?" in *Anti-*

degradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications.]

☐ Yes, Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

☐ No. Please provide basis for conclusion: . Go to Step8.

8. Will the proposed activity result in a lowering of water quality in the **Outstanding Resource Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from antidegradation review; otherwise see "Is an Activity Likely to Lower Water Quality?" in *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications*.]

☐ Yes. Provide basis for conclusion: Go to Step 9.

☐ No. Provide basis for conclusion: Go to Step 20.

9. If the proposed activity results in a non-permanent new or expanded source of pollutants directly to or affecting an **Outstanding Resource Water**, will the lowering of water quality in the **Outstanding Resource Water** be on a short-term basis in response to an emergency or to protect human health and welfare?

☐ Yes. Proceed with Application Process to Interagency Coordination and Public Comment. Go to Step 23.

☐ No. Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 20.

10. Will the proposed activity result in a Lowering of Water Quality in the **High Quality Water**[see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from antidegradation review; otherwise see "Is an Activity Likely to Lower Water Quality?" in *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications*.]

☐ Yes. Go to Step 11.

☐ No. Proceed with Permit Application. Applicant should provide basis for conclusion: Go to Step 23.

11. OAR 340-041-0004(6)(c) of the *High Quality Waters Policy* requires that the Department evaluate the application to determine that all water quality standards will be met and beneficial uses protected after allowing discharge to **High Quality Waters**. Will all water quality standards be met and beneficial uses protected?

☐ Yes. Provide basis for conclusion: Proceed with Application Process to Interagency Coordination and Public Comment. Go to Step 12.

☐ No. Provide basis for conclusion. Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

12. OAR 340-041-0004(6)(a) of the High Quality Waters Policy requires that the Department evaluate the application to determine if no other reasonable alternatives exist except to discharge to High Quality Waters. At a minimum, the following list must be considered:

- Improved operation and maintenance of existing treatment system
- Recycling or reuse with no discharge
- Discharge to on-site system

- Seasonal or controlled discharges to avoid critical water quality periods
- Discharge to sanitary sewer
- Land application

Were any of the alternatives feasible?

☐ Yes. Provide basis for conclusion (see below for information requirements): Recommend Preliminary Decision that applicant use alternative. Go to Step10.

☐ No. Provide basis for conclusion (see below for information requirements): Go to Step 13.

In a separate statement to this application, please explain the *technical feasibility* of the alternative, explain the *economic feasibility* of the alternative, and provide an *estimated cost* of NPDES permit alternative for a five-year period from start-up.

13. OAR 340-041-0004(6)(b) of the *High Quality Waters Policy* requires that the Department evaluate the application to determine if there are social and economic benefits that outweigh the environmental costs of allowing discharge to High Quality Waters. Do the social and economic benefits outweigh the environmental costs of lowering the water quality?

☐ Yes. Provide basis for conclusion (see below for information requirements): Go to Step 14.

☐ No. Provide basis for conclusion (see below for information requirements): Go to Step 23.

The basis for conclusion should include a discussion of whether the lowering of water quality is necessary and important. "Necessary" means that the same social and economic benefits cannot be achieved with some other approach. "Important" means that the value of the social and economic benefits due to lowering water quality is greater than the environmental costs of lowering water quality.

Benefits can be created from measures such as:

- Creating or expanding employment (provide current/expected number of employees, type & relative amount of each type
- Increasing median family income
- Increasing community tax base (provide current/expected annual sales, tax info)
- Providing necessary social services
- Enhancing environmental attributes

Environmental Costs can include:

- Losing assimilative capacity otherwise used for other industries/development
- Impacting fishing, recreation, and tourism industries negatively
- Impacting health protection negatively
- Impacting societal value for environmental quality negatively

14. OAR 340-041-0004(6)(d) of the *High Quality Waters Policy* requires that DEQ prevent federal threatened and endangered aquatic species from being adversely affected. Will lowering the water quality likely result in adverse effects on federal threatened and endangered aquatic species?

☐ Yes, please provide basis for conclusion (see below for information requirements): Go to Step 23.

☐ No, please provide basis for conclusion (see below for information requirements): Go to Step 15.

15. Will lowering water quality in the **High Quality Water** be on a short-term basis in response to an emergency or to protect human health and welfare?

☐ Yes, go to Step 20.

☐ No, recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23

16. Will the proposed activity result in a lowering water quality in the **Water Quality Limited Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from anti-degradation review; otherwise see "Is an Activity Likely to Lower Water Quality?" in *Anti-degradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications*.]

☐ Yes, go to Step 17.

☐ No, proceed with Permit Application. Permit writer should provide basis for determination in permit evaluation report: Detailed discussion provided in section 7.2.2.3 of Permit Evaluation Report Go to Step 23.

17. OAR 340-041-0004(9)(a)(A) of the *Water Quality Limited Waters Policy* requires that the Department evaluate the application to determine that all water quality standards will be met. Will all water quality standards be met?

☐ Yes, please provide basis for conclusion: Go to Step 18.

☐ No, please provide basis for conclusion. Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

18. OAR 340-041-0004(9)(a)(C) of the *Water Quality Limited Waters Policy* requires that the Department evaluate the application to determine that all recognized beneficial uses will be met and that threatened or endangered species will not be adversely affected. Will all beneficial uses be met and will threatened or endangered species be protected from adverse effects?

☐ Yes, please provide basis for conclusion: Go to Step 19.

☐ No, please provide basis for conclusion: Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

19. OAR 340-041-0004(9)(a)(D)(i-iv) of the *Water Quality Limited Waters Policy* requires that the Department evaluate the application for ***one of the following***:

- 19A. Will the discharge be associated (directly or indirectly) with the pollution parameter(s) causing the waterbody to be designated a Water Quality Limited Water?

☐ Yes, please provide basis for conclusion: . Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

☐ No, please provide basis for conclusion: Go to Step 20.

- 19B. Have TMDLs, WLAs, LAs, and reserve capacity been established, compliance plans been established, and is there sufficient reserve capacity to assimilate the increased load under the established TMDL?

☐ Yes, please provide basis for conclusion: Go to Step 20.

☐ No, please provide basis for conclusion: Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

- 19C. Will the proposed activity meet the requirements, as specified under OAR 340-041-0004(9)(a)(D)(iii) of the *Water Quality Limited Waters Policy*, for dissolved oxygen?

☐ Yes, please provide basis for conclusion: Go to Step 20.

☐ No, please provide basis for conclusion: Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

- 19D. Will the activity solve an existing, immediate, and critical environmental problem?

☐ Yes, please provide basis for conclusion: Go to Step 20.

☐ No, please provide basis for conclusion: Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

20. Is the proposed activity consistent with local land use plans?

☐ Yes, go to Step 21.

☐ No, please provide basis for conclusion: Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

21. OAR 340-041-0004(9)(c)(A) requires the Department to consider alternatives to lowering water quality. At a minimum, the following list must be considered:

- Improved operation and maintenance of existing treatment system
- Recycling or reuse with no discharge
- Discharge to on-site system
- Seasonal or controlled discharges to avoid critical water quality periods
- Discharge to sanitary sewer
- Land application

Were any of the alternatives feasible?

☐ Yes, please provide basis for conclusion (see below for information requirements): Recommend Preliminary Decision that applicant use alternative. Go to Step 16.

☐ No, please provide basis for conclusion (see below for information requirements: Go to Step 22.

In a separate statement to this application, please explain the *technical feasibility* of the alternative, explain the *economic feasibility* of the alternative, and provide an *estimated cost* of NPDES permit alternative for a five-year period from start-up.

22. OAR 340-041-0004(9)(c)(B) of the *Water Quality Limited Waters Policy* requires the Department to consider the economic effects of the proposed activity, which in this context consists of determining if the social and

economic benefits of the activity outweigh the environmental costs of allowing a lowering of water quality. Do the social and economic benefits outweigh the environmental costs of lowering the water quality?

☐ Yes. Provide basis for conclusion: Proceed with Application Process to Interagency Coordination and Public Comment. Go to Step 23.

☐ No. Provide basis for conclusion: Recommend Preliminary Decision to deny proposed activity (subject to Interagency Coordination and Public Comment). Go to Step 23.

The basis for conclusion should include a discussion of whether the lowering of water quality is necessary and important. "Necessary" means that the same social and economic benefits cannot be achieved with some other approach. "Important" means that the value of the social and economic benefits due to lowering water quality is greater than the environmental costs of lowering water quality.

Benefits can be created from measures such as:

- Creating or expanding employment (provide current/expected number of employees, type & relative amount of each type
- Increasing median family income
- Increasing community tax base (provide current/expected annual sales, tax info)
- Providing necessary social services
- Enhancing environmental attributes

Environmental Costs can include:

- Losing assimilative capacity otherwise used for other industries/development
- Impacting fishing, recreation, and tourism industries negatively
- Impacting health protection negatively
- Impacting societal value for environmental quality negatively

23. On the basis of the Anti-degradation Review, the following is recommended:

☐ Proceed with Application to Interagency Coordination and Public Comment Phase.

☐ Deny Application; return to applicant and provide public notice

☐ ACTION APPROVED

Review prepared by ☐ DEQ, go toDEQ info ☐ Other, go to Other info

DEQ info

Name:

Phone:

Date Prepared:

Other info

Name: Dan Connally

Name of Company: PG Environmental

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Phone: 703-956-1956

Fax:

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Date prepared: July 20, 2018

APPENDIX C: WASTEWATER SYSTEM CLASSIFICATION WORKSHEET

Oregon Department of Environmental Quality

Wastewater System Classification Worksheet
for Operator Certification

STEP 1: Criteria for Classifying Wastewater Treatment Systems (OAR 340-049-0025)

NOTE : see bottom two spreadsheet tabs for Worksheet Instructions & Worksheet Information. See Classification chart at bottom of this worksheet for Classes I-IV.

Wastewater System Common Name:	City of Tillamook		
Location:	City of Tillamook	Region:	NWR
County:	Tillamook	Date:	30-Aug-18
Facility File #:	88665	Classified by:	Kenny Oleman
Design ADWF (Influent MGD):	0.9 MGD	WWC Class:	
Design Population*:	7,500	WWT Class:	
Design BOD (Influent lbs/day):		**Small WWS:**	
		If Small WWS, # of connections:	
Is this a change from a prior classification? (yes/no)	Yes	Total Points:	73.0

1. Design Population	7,500	**or Population Equivalent**		
Based on:	**Flow (gallons/person/day)**		**BOD (pounds/person/day)**	

WWC Classification	(based on population size)		
Less than 500	**Eligible for Small WW System classification if treatment points < 30**		
1500 or less	**WWC Class 1**		
1501 to 15,000	**WWC Class 2**		
15,001 to 50,000	**WWC Class 3**		
over 50,000	**WWC Class 4**		
WWT Classification	(based on total points)		
Less than 750 persons		**0.5**	
		1.0	
2,001 to 5,000		**1.5**	
5,001 to 10,000		**2.0**	2.0
Greater than 10,000	(3 + 1 for each additional 10 K)	**3.0**	
2. Average Dry Weather Flow (Design Capacity)			
Less than 0.075 MGD		**0.5**	
Greater than 0.075 MGD to 0.1 MGD		**1.0**	
Greater than 0.1 to 0.5 MGD		**1.5**	
Greater than 0.5 to 1.0 MGD		**2.0**	2.0
Greater than 1.0 MGD	(3 + 1 for each additional 1.0 MGD)	**3.0**	

3. Unit Processes		
Preliminary Treatment and Plant Hydraulics		
Comminution (cutter, shredder, grinder, barminutor, etc.)	1.0	0.0
Grit Removal (gravity)	1.0	0.0
Grit Removal (mechanical)	2.0	2.0
Screen(s) (in-situ or mechanical, coarse solids only)	1.0	1.0
Pump/Lift Station(s) (pumping of main flow)	2.0	2.0
Flow Equalization (any type)	1.0	
Primary Treatment		
Community Septic Tank(s) (STEP, STEG, etc.)	2.0	0.0
Clarifier(s)	5.0	5.0
Flotation Clarifier(s)	7.0	
Chemical Addition System	2.0	
Imhoff Tanks (large septic tank or similar sedimentation & digestion)	3.0	
Secondary, Advanced, and Tertiary Treatment		
Low Rate Trickling Filter(s) (no recirculation)	7.0	
High Rate Trickling Filter(s) (recirculating)	10.0	
Trickling Filter - Solids Contact System	12.0	
Activated Sludge (includes SBR & basic MBR process)	15.0	15.0
Pure Oxygen Activated Sludge	20.0	
Activated Bio Filter Tower (less than 0.1 MGD)	6.0	
Activated Bio Filter Tower (greater than 0.1 MGD)	12.0	
Rotating Biological Contactors (1 to 4 shafts)	7.0	
Rotating Biological Contactors (5 or more shafts)	12.0	
Stabilization Lagoons (1 to 3 cells without aeration)	5.0	
Stabilization Lagoons (1 or more cells with primary aeration)	7.0	
Stabilization Lagoons (2 or more cells with full aeration)	9.0	
Recirculating Gravel Filter (or recirculating textile filters)	7.0	
Chemical Precipitation Unit(s)	3.0	
Gravity Filtration Unit(s)	2.0	
Pressure Filtration Unit(s)	4.0	
Nitrogen Removal (Biological (BNR) or Chemical/Biological System)	4.0	
Nitrogen Removal (Design Extended Aeration Only - Nitrification)	2.0	
Phosphorous Removal Unit(s)	4.0	
Effluent Microscreen(s)	2.0	
Chemical Flocculation Unit(s)	3.0	
Ultra Filtration Membrane(s)	15.0	
Chemical Addition System *Description:*	2.0	2.0
Solids Handling (excludes long-term storage in treatment lagoons above)		
Anaerobic Primary Sludge Digester(s) w/o Mixing and Heating	5.0	
Anaerobic Primary Sludge Digester(s) with Mixing and Heating	7.0	0.0
Anaerobic Primary and Secondary Sludge Digesters	10.0	10.0
Sludge Digester Gas Reuse	3.0	3.0
Aerobic Sludge Digester(s)	8.0	
Sludge Storage Lagoon(s) (List Basin(s) or Tank(s) in Step 2)	2.0	
Sludge Lagoon(s) with Aeration	3.0	
Sludge Drying Bed(s)	1.0	
Sludge Air or Gravity Thickening	3.0	
Sludge Composting (in Vessel)	12.0	
Sludge Belt(s) or Vacuum Press/Dewatering	5.0	5.0
Sludge Centrifuge(s)	5.0	
Sludge Incineration	12.0	
Sludge Chemical Addition Unit(s) (alum, polymer, alkaline stab, etc.)	2.0	2.0
Non-Beneficial Sludge Disposal (landfill or burial)	1.0	1.0
Beneficial Sludge Utilization (see also Step 2)	3.0	
Solids Reduction Processing	4.0	
Disinfection		
Liquid Chlorine Disinfection	2.0	2.0
Gas Chlorine Disinfection	5.0	
Dechlorination System	4.0	4.0
Other Disinfection System including Ultraviolet and Ozonation	5.0	
On-Site Chlorine Generation of Disinfectants	5.0	

4. Effluent Permit Requirements		
Minimum of Secondary Effluent Limitation for BOD and/or TSS	2.0	
Minimum of 20 mg/L BOD and/or Total Suspended Solids	3.0	3.0
Minimum of 10 mg/L and/or Total Suspended Solids	4.0	
Minimum of 5 mg/L BOD and/or Total Suspended Solids	5.0	
Effluent Limitations for Effluent Oxygen	1.0	
Other Limits (see Step 2)		
5. Variation in Raw Waste		
Points in this category will be awarded only when conditions are extreme to the extent that operation and handling procedure changes are needed to adequately treat waste due to variation of raw waste (strength or flow).		
Recurring deviations or excessive variations (100 - 200 %)	2.0	2.0
Recurring deviations or excessive variations of more than 200 %, **or**	4.0	
conveyance and treatment of industrial wastes covered by the		
pretreatment program.		
Septage or truck-hauled waste	2.0	
6. Sampling and Laboratory Testing		
Sample for BOD, Total Suspended Solids (performed by outside lab)	2.0	
BOD or Total Suspended Solids analysis (performed at treatment plant)	4.0	4.0
Bacteriological analysis (performed by outside lab)	1.0	
Bacteriological analysis (performed at wastewater treatment plant lab)	2.0	2.0
Nutrient, Heavy Metals, or Organic analysis (performed by outside lab, ≤ 1 per month = 1 pt)	*3.0	3.0
Nutrient, Heavy Metals or Organic analysis (performed at WWTP)	5.0	
	Points based on 340-049-0025:	72.0
	Classification based on 340-049-0025	**Class 3**
STEP 2: Complexity Reflected in OAR 340-049 0020(4)		
Note: Include additional points from Step 2 only if the complexity of the wastewater treatement system is not reflected in the points from Step 1. Be sure to justify any additional points from Step 2 in the permit Fact Sheet. Points shown below are given as guidance.		
Fine Screen Preliminary Treatment (includes washing & compaction)	2.0	
SCADA or similar instrumentation providing data/w process op.	2.0 - 4.0	
Post-aeration (includes mechanical and diffused aeration - not cascade)	1.0	
Class A recycled water (storage, distribution & monitoring)	6.0	
Class B, C, D and Non-disinfected Recycle (surface & subsurface)	3.0	
Sludge dewatering using bag or tube system	1.0	
Solids Composting (ASP or windrow)	6.0	
Land application of biosolids by system operator	5.0	
Odor or corrosion control (separate or combined)	2.0	
Chemical/physical advanced waste treatment	10 - 15.0	
Reverse Osmosis, Electro-dialysis, Membrane Filtration	15.0	
Standby power	1.0 - 3.0	1.0
Digester Gas Recovery Systems	1.0 - 3.0	
Other Effluent Limitations (describe below)	1.0	
Description:		
	Total	73.0
	Classification based on 340-049-0025	**Class 3**

APPENDIX D: REASONABLE POTENTIAL ANALYSIS (RPA) SPREADSHEETS

Attachment D-1: pH

Calculation of pH of a mixture of two flows in Fresh Waters.

Basic calculations are based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

Facility Name: Tillamook STP	RPA for pH	
INPUT	**Lower pH**	**Upper pH**
	Criteria	**Criteria**
1. DILUTION FACTOR AT MZ BOUNDARY - (Qe+Qr)/Qe	28	28
2. UPSTREAM/BACKGROUND CHARACTERISTICS @ Critical Flow		
Temperature (deg C):	17.4	17.4
pH:	7.3	7.6
Alkalinity (mg CaCO3/L):	26.0	26.0
3. EFFLUENT CHARACTERISTICS		
Temperature (deg C):	22.1	22.1
pH:	6.0	9.0
Alkalinity (mg CaCO3/L):	62.6	62.6
4. APPLICABLE PH CRITERIA	6.5	8.5
OUTPUT		
1. IONIZATION CONSTANTS		
Upstream/Background pKa:	6.40	6.40
Effluent pKa:	6.37	6.37
2. IONIZATION FRACTIONS		
Upstream/Background Ionization Fraction:	0.89	0.94
Effluent Ionization Fraction:	0.30	1.00
3. TOTAL INORGANIC CARBON		
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	29.13	27.64
Effluent Total Inorganic Carbon (mg CaCO3/L):	208.60	62.75
4. CONDITIONS AT MIXING ZONE BOUNDARY		
Temperature (deg C):	17.56	17.56
Alkalinity (mg CaCO3/L):	27.31	27.31
Total Inorganic Carbon (mg CaCO3/L):	35.54	28.90
pKa:	6.40	6.40
pH at Mixing Zone Boundary:	**6.920**	**7.634**
Is there Reasonable Potential?	**No**	**No**

Attachments D-2: Ammonia Freshwater

Ammonia RPA Calculation (2013 Criteria) Revision 1.6

RPA Run Information

Facility Name:	Tillamook STP
DEQ File Number:	DEQ File Number:
Permit Writer Name:	Hilary Rains
Outfall Number:	001
Date of RPA Run:	6/14/2018
RPA Run Notes:	

KEY:	--	Intermediate calc.s
* Enter data here	--	Calculated results

Please complete the following General Facility Information

1. Enter Facility Design Flow (MGD)		1.06
2. Do I have dilution values from a mixing zone study? (Yes/No)		Yes
3. If answered "No" to *Question 2*, then fill in the following table		
Stream Flow: 7Q10	CFS	na
Stream Flow: 30Q5	CFS	na
Stream Flow: 1Q10	CFS	na
% dilution at ZID	%	10%
% dilution at MZ	%	25%
Calculated Dilution Fact.		
Dilution @ ZID		#VALUE!
Dilution @ MZ (7Q10)		#VALUE!
Dilution @ MZ (30Q5)		#VALUE!

4. If answered "Yes" to *Question 2*, then fill in dilution factors from mixing zone study		
Dilution @ ZID (from study)		6
Dilution @ MZ 7Q10 (from study)		28
Dilution @ MZ 30Q5 (from study)		28
5. Is the receiving waterbody fresh or salt water? (Fresh/Salt)		Fresh
6. If answered "*Salt*" to *Question 5*, then enter salinity (ppt)		
Ambient Salinity	ppt	2.2
Effluent Salinity	ppt	0
7. Are Salmonid present? (Yes/No) (Mussels presumed present)		No
8. Please enter statistical *Confidence* and *Probability* values (note: defaults already entered)		
Confidence Level	%'ile	99%
Probability Basis	%'ile	95%

Dilution Calculations

Inputs

	ZID	MZ (7Q10)	MZ (30Q5)
Dilution Factors	6.0	28.0	28.0

Upstream Characterization

Temperature	deg. C	18.86
pH		7.56
Alkalinity	mg/L $CaCO_3$	31.4

Effluent Characterization

Temperature	deg. C	22.86
pH		6.433
Alkalinity	mg/L $CaCO_3$	62.78

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

Outputs

		ZID	MZ (7Q10)	MZ (30Q5)
Upstream				
pKa		6.4	6.4	6.4
Ionization Fraction		0.9	0.9	0.9
Total Inorganic Carbon	mg/L $CaCO_3$	33.5	33.5	33.5
Effluent				
pKa		6.4	6.4	6.4
Ionization Fraction		0.5	0.5	0.5
Total Inorganic Carbon	mg/L $CaCO_3$	116.2	116.2	116.2
Mixing Zone				
Temperature	deg. C	19.5	19.0	19.0
Alkalinity	mg/L $CaCO_3$	36.6	32.5	32.5
Total Inorganic Carbon	mg/L $CaCO_3$	47.3	36.5	36.5
pKa		6.4	6.4	6.4
pH		6.9	7.3	7.3
Salinity	ppt	--	--	

Reasonable Potential Analysis

	Identify Pollutants of Concern					Determine In-Stream Conc.				WQ CRITERIA			
Pollutant Parameter	# of Samples	Highest Effluent Conc.	Coefficent of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ (7Q10)	Max Total Conc. at RMZ (30Q5)	Acute CMC	Chronic Calc. (4-day avg.)	Chronic Calc. (7Q10)	Chronic Calc. (30 day avg.)
		mg/l	Default=0.6	mg/l	(Yes/No)	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/l	mg/l
Ammonia (Freshwater Salmonids)	--	--	--	--	--	--	--	--	--	--	--		--
Ammonia (Freshwater, Salmonids absent)	49	10.4	2.0834377	15.6	Yes	0.0189	2.6	0.6	0.6	**18.61**	4.31		1.7
Ammonia (Salt Water)	--	--	--	--	--	--	--	--		--		--	

Attachments D-3: Ammonia Saltwater

Ammonia RPA Calculation (2013 Criteria) Revision 1.6

RPA Run Information

Facility Name:	Tillamook STP
DEQ File Number:	DEQ File Number:
Permit Writer Name:	Hilary Rains
Outfall Number:	001
Date of RPA Run:	6/14/2018
RPA Run Notes:	

KEY:		
	--	Intermediate calc.s
* Enter data here	--	Calculated results

Please complete the following General Facility Information

1. Enter Facilty Design Flow (MGD)		1.06
2. Do I have dilution values from a mixing zone study? (Yes/No)		Yes
3. If answered "No" to *Question 2*, then fill in the following table		
Stream Flow: 7Q10	CFS	na
Stream Flow: 30Q5	CFS	na
Stream Flow: 1Q10	CFS	na
% dilution at ZID	%	10%
% dilution at MZ	%	25%
Calculated Dilution Fact.		
Dilution @ ZID		#VALUE!
Dilution @ MZ (7Q10)		#VALUE!
Dilution @ MZ (30Q5)		#VALUE!

4. If answered "Yes" to *Question 2*, then fill in dilution factors from mixing zone study		
Dilution @ ZID (from study)		6
Dilution @ MZ 7Q10 (from study)		28
Dilution @ MZ 30Q5 (from study)		28
5. Is the receiving waterbody fresh or salt water? (Fresh/Salt)		Salt
6. If answered "*Salt*" to *Question 5*, then enter salinity (ppt)		
Ambient Salinity	ppt	2.2
Effluent Salinity	ppt	0
7. Are Salmonid present? (Yes/No) (Mussels presumed present)		No
8. Please enter statistical *Confidence* and *Probabilty* values (note: defaults already entered)		
Confidence Level	%'le	99%
Probability Basis	%'le	95%

Dilution Calculations

Inputs

	ZID	MZ (7Q10)	MZ (30Q5)
Dilution Factors	6.0	28.0	28.0

Upstream Characterization		
Temperature	deg. C	18.86
pH		7.56
Alkalinity	mg/L $CaCO_3$	31.4

Effluent Characterization		
Temperature	deg. C	22.86
pH		6.433
Alkalinity	mg/L $CaCO_3$	62.78

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

Outputs

		ZID	MZ (7Q10)	MZ (30Q5)
Upstream				
pKa		6.4	6.4	6.4
Ionization Fraction		0.9	0.9	0.9
Total Inorganic Carbon	mg/L $CaCO_3$	33.5	33.5	33.5
Effluent				
pKa		6.4	6.4	6.4
Ionization Fraction		0.5	0.5	0.5
Total Inorganic Carbon	mg/L $CaCO_3$	116.2	116.2	116.2
Mixing Zone				
Temperature	deg. C	19.5	19.0	19.0
Alkalinity	mg/L $CaCO_3$	36.6	32.5	32.5
Total Inorganic Carbon	mg/L $CaCO_3$	47.3	36.5	36.5
pKa		6.4	6.4	6.4
pH		6.9	7.3	7.3
Salinity	ppt	1.8	2.1	

Reasonable Potential Analysis

Pollutant Parameter	Identify Pollutants of Concern					Determine In-Stream Conc.				WQ CRITERIA			
	# of Samples	Highest Effluent Conc.	Coefficent of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ (7Q10)	Max Total Conc. at RMZ (30Q5)	Acute CMC	Chronic Calc. (4-day avg.)	Chronic Calc. (7Q10)	Chronic Calc. (30 day avg.)
		mg/l	Default=0.6	mg/l	(Yes/No)	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/l	mg/l
Ammonia (Freshwater Salmonids)	--	--	--	--	--	--	--	--	--	--	--		--
Ammonia (Freshwater, Salmonids absent)	--	--	--	--	--	--	--	--	--	--	--		--
Ammonia (Salt Water)	49	10.4	2.0834377	15.6	Yes	0.0189	2.6	0.6		**60.9**		4.00	

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

Attachment D-4: Freshwater Toxics RPA – Aquatic Life

RPA Run Information	
Facility Name:	Tillamook STP
DEQ File Number:	88665
Permit Writer Name:	Steve Schnurbusch
Outfall Number:	EFF-001
Date of RPA Run:	11/8/2018
RPA Run Notes:	
KEY:	-- Intermediate calc.s
* Enter data here	-- Calculated results

Please complete the following General Facility Information		
1. Do I have dilution values from a mixing zone study? (Y/N)		Y
2. Is the receiving waterbody fresh water? (Y/N)		Y
3. If answered "N" to *Question 1*, then fill in the following table		
Eff. Flow Rate	MGD	*
Stream Flow: 7Q10	CFS	*
Stream Flow: 1Q10	CFS	*
% dilution at ZID	%	10%
% dilution at MZ	%	25%
Calculated dilution Factors		
Dilution @ ZID		na
Dilution @ MZ		na

4. If answered "Y" to *Question 1*, then fill in dilution factors from mixing zone study		
Dilution @ ZID (from study)		6
Dilution @ MZ (from study)		28
5. Please enter *Water Hardness Data* below to reflect critical conditions (values from 25 to 400 mg/l)		
Effluent	mg/L $CaCO_3$	29
Up-stream	mg/L $CaCO_3$	29.8
ZID boundary	mg/L $CaCO_3$	30
MZ boundary	mg/L $CaCO_3$	30
6. Please enter statistical *Confidence* and *Probablity* values (note: defaults already entered)		
Maximum Effluent Conc. %'ile	%'ile	95%
Confidence Level	%'ile	99%

Pollutant Parameter	Determine Monitoring Reqs.	Identify Pollutants of Concern					Determine In-Stream Conc.			Determine Reasonable Potential			
	RPA Evaluation Required?	# of Samples	Highest Effluent Conc.	Coefficent of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ	WQ CRITERIA 1 Hour (CMC)	WQ CRITERIA 4 Day (CCC)	Is there Reasonable Potential to Exceed? (Yes/No) Acute	Chronic
	(Yes/No)		µg/l	Default=0.6	µg/l	(Yes/No)	µg/l	µg/l	µg/l	µg/l	µg/l		
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD													
Nitrates-Nitrite	Yes	No Aquatic Water Quality Criteria											
Table 2 Effluent Parameters for Selected POTWs													
Hardness (Total as CaCO3)	Yes	Must be collected for metals criteria calculation. Submit data to the fields at the top of the spreadsheet											
Table 2: Metals (total recoverable), cyanide and totoal phenols								Use total data for dissolved criteria? (yes/no)					Yes
Arsenic (total recoverable)	Yes	3	0.03	No Water Quality Criteria			0.10						
Cadmium (total recoverable)	Yes	3	0.24	0.60	0.94	No	0.00	0.16	0.03	1.0	--	NO	--
Chromium (total recoverable)	Yes	3	0.73	No Water Quality Criteria			0.59						
Copper (total recoverable)	Yes	3	19.6	0.60	76.44	No	0.79	13.40	3.49	Enter	Enter	--	--
Iron (total recoverable)	No	--	--	0.60	--	--	*	--	--	--	####	--	--
Lead (total recoverable)	Yes	3	ND	No Water Quality Criteria			0.06						
Mercury (total)	Yes	3	ND	0.60	--	Non-Det.	*	--	--	2.4	0.0	--	--
Nickel (total recoverable)	Yes	3	ND	No Water Quality Criteria			0.39						
Nickel (dissolved)	No	--	--	0.60	--	--	*	--	--	167.8	18.7	--	--
Selenium (total recoverable)	Yes	3	10.5	No Water Quality Criteria			0.00						
Selenium (selenate+selenite,	No	--	10.5	0.60	40.95	Yes	0.00	6.83	1.46	13.0	4.6	NO	NO
Silver (total recoverable)	Yes	3	2.04	No Water Quality Criteria			0.00						
Silver (dissolved)	No	--	2.04	0.60	7.96	Yes	*	--	--	0.5	0.1	LD	LD
Thallium (total recoverable)	Yes	3											
Zinc (total recoverable)	Yes	3	73.7	No Water Quality Criteria			1.13						
Zinc (dissolved)	No	3	73.7	0.60	287.43	Yes	*	--	--	42.8	42.9	LD	--
Cyanide (total)	Yes	2	0.0022	No Water Quality Criteria			0.00						
Cyanide (free)	No	2	0.0022	0.60	0.01	No	0.00	0.00	0.00	22.0	5.2	NO	NO
Table 2: Volatile organic compounds													
Table 2: Acid-extractable compounds													
Pentachlorophenol	Yes	3	ND	0.60	--	Non-Det.	*	--	--	pH Data	pH Data	--	--
Table 2: Base-neutral compounds													
Table 3: Pesticides & PCBs													
Aldrin	Yes	2	ND	0.60	--	Non-Det.	*	--	--	3.0	--	--	--
BHC Gamma (Lindane)	Yes	2	ND	0.60	--	Non-Det.	*	--	--	1.0	0.1	--	--
Chlordane	Yes	2	ND	0.60	--	Non-Det.	*	--	--	2.4	0.0	--	--
Chlorpyrifos	No	--	--	0.60	--	--	*	--	--	0.1	0.0	--	--
Demeton	No	--	--	0.60	--	--	*	--	--	--	0.1	--	--
DDT 4,4'	Yes	2	ND	0.60	--	Non-Det.	*	--	--	1.1	0.0	--	--
Dieldrin	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.2	0.1	--	--
Endosulfan Alpha	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.2	0.1	--	--
Endosulfan Beta	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.2	0.1	--	--
Endosulfan	*	2.00	ND	0.60	--	Non-Det.	*	--	--	0.2	0.1	--	--
Endrin	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.1	0.0	--	--
Guthion	No	--	--	0.60	--	--	*	--	--	--	0.0	--	--
Heptachlor	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.5	0.0	--	--
Heptachlor Epoxide	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.5	0.0	--	--
Malathion	Yes	--	--	0.60	--	--	*	--	--	--	0.1	--	--
Methoxychlor	Yes	2	ND	0.60	--	Non-Det.	*	--	--	--	0.0	--	--
Mirex	No	--	--	0.60	--	--	*	--	--	--	0.0	--	--
Parathion	No	--	--	0.60	--	--	*	--	--	0.1	0.0	--	--
Toxaphene	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.7	0.0	--	--
Total PCBs	Yes	2.00	0.64	0.60	3.25	Yes	*	--	--	2.0	0.014	--	LD
PCB- Aroclor 1016	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1221	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1232	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1242	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1248	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1254	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1260	Yes	2	0.637	No Water Quality Criteria			*						

Attachment D-5: Saltwater Toxics RPA – Aquatic Life

RPA Run Information	
Facility Name:	Tillamook STP
DEQ File Number:	88665
Permit Writer Name:	Hilary Rains
Outfall Number:	EFF-001
Date of RPA Run:	6/13/2018
RPA Run Notes:	
KEY:	-- Intermediate calc.s
* Enter data here	-- Calculated results

Please complete the following General Facility Information		
1. Do I have dilution values from a mixing zone study? (Y/N)		Y
2. Is the receiving waterbody fresh water? (Y/N)		N
3. If answered "N" to *Question 1*, then fill in the following table		
Eff. Flow Rate	MGD	*
Stream Flow: 7Q10	CFS	*
Stream Flow: 1Q10	CFS	*
% dilution at ZID	%	10%
% dilution at MZ	%	25%
Calculated dilution Factors		
Dilution @ ZID		na
Dilution @ MZ		na

4. If answered "Y" to *Question 1*, then fill in dilution factors from mixing zone study		
Dilution @ ZID (from study)		6
Dilution @ MZ (from study)		28
5. Please enter *Water Hardness Data* below to reflect critical conditions (values from 25 to 400 mg/l)		
Effluent	mg/L $CaCO_3$	29
Up-stream	mg/L $CaCO_3$	25.54
ZID boundary	mg/L $CaCO_3$	26
MZ boundary	mg/L $CaCO_3$	26
6. Please enter statistical *Confidence* and *Probability* values (note: defaults already entered)		
Maximum Effluent Conc. %'ile	%'ile	95%
Confidence Level	%'ile	99%

Determine Monitoring Reqs.		Identify Pollutants of Concern					Determine In-Stream Conc.			Determine Reasonable Potential			
Pollutant Parameter	RPA Evaluation Required?	# of Samples	Highest Effluent Conc.	Coefficent of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ	WQ CRITERIA 1 Hour (CMC)	WQ CRITERIA 4 Day (CCC)	Is there Reasonable Potential to Exceed? (Yes/No) Acute	Chronic
	(Yes/No)		µg/l	Default=0.6	µg/l	(Yes/No)	µg/l	µg/l	µg/l	µg/l	µg/l		
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD													
Nitrates-Nitrite	Yes	No Aquatic Water Quality Criteria											
Table 2 Effluent Parameters for Selected POTWs													
Hardness (Total as CaCO3)	Yes	Must be collected for metals criteria calculation. Submit data to the fields at the top of the spreadsheet											
Table 2: Metals (total recoverable), cyanide and totoal phenols							Use total data for dissolved criteria? (yes/no)						Yes
Antimony (total recoverable)	*	No Aquatic Water Quality Criteria											
Arsenic (total recoverable)	Yes	3	0.03	No Water Quality Criteria			0.10						
Arsenic (total inorganic)	*	No Aquatic Water Quality Criteria											
Arsenic (total inorganic + dissolved)	No	--	0.03	0.60	--	--	*	--	--	69.0	36.0	--	--
Beryllium (total recoverable)	Yes	0								0.0	0.0		
Cadmium (total recoverable)	Yes	3	0.24	0.60	0.94	--	0.00	0.16	0.03	--	--	--	--
Cadmium (dissolved)	No	--	0.24	0.60	--	--	*	--	--	40.0	8.8	--	--
Chromium (total recoverable)	Yes	3	0.73	No Water Quality Criteria			0.59						
Chromium (dissolved)	No	--	--	Only for use in Tier 2			*						
Chromium III (dissolved)	No	--	--	0.60	--	--	*	--	--	--	--	--	--
Chromium VI (dissolved)	No	--	--	0.60	--	--	*	--	--	1100.0	50.0	--	--
Copper (total recoverable)	Yes	7	11.1	0.60	26.64	Yes	0.15	4.57	1.10	4.80	3.10	NO	NO
Copper (dissolved)	No	--	11.1	0.60	--	--	*	--	--	4.8	3.1	--	--
Iron (total recoverable)	No	--	--	0.60	--	--	*	--	--	--	--	--	--
Lead (total recoverable)	Yes	3	ND	No Water Quality Criteria			0.06						
Lead (dissolved)	No	--	--	0.60	--	--	*	--	--	210.0	8.1	--	--
Mercury (total)	Yes	3	ND	0.60	--	Non-Det.	*	--	--	2.1	0.0	--	--
Methyl Mercury	*	0	0										
Nickel (total recoverable)	Yes	3	ND	No Water Quality Criteria			0.39						
Nickel (dissolved)	No	--	--	0.60	--	--	*	--	--	74.0	8.2	--	--
Selenium (total recoverable)	Yes	3	10.5	No Water Quality Criteria			0.00						
Selenium (selenate+selenite,	No	--	10.5	0.60	40.95	No	*	--	--	290.0	71.0	--	--
Silver (total recoverable)	Yes	3	2.04	No Water Quality Criteria			0.00						
Silver (dissolved)	No	--	2.04	0.60	7.96	Yes	0.00	1.33	0.28	1.9	--	NO	--
Thallium (total recoverable)	Yes	3											
Zinc (total recoverable)	Yes	3	73.7	No Water Quality Criteria			1.13						
Zinc (dissolved)	No	3	73.7	0.60	287.43	Yes	1.11	48.83	11.34	90.0	81.0	NO	NO
Cyanide (total)	Yes	2	0.0022	No Water Quality Criteria			0.00						
Cyanide (free)	No	2	0.0022	0.60	0.01	No	0.00	0.00	0.00	1.0	1.0	NO	NO
Table 2: Volatile organic compounds													
Table 2: Acid extractable compounds													
Pentachlorophenol	Yes	3	ND	0.60	--	Non-Det.	*	--	--	13.0	7.9	--	--
Table 2: Base-neutral compounds													
Table 3: Pesticides & PCBs													
Aldrin	Yes	2	ND	0.60	--	Non-Det.	*	--	--	1.3	--	--	--
BHC Gamma (Lindane)	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.2	--	--	--
Chlordane	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.1	0.0	--	--
Chlorpyrifos	No	--	--	0.60	--	--	*	--	--	0.0	0.0	--	--
Demeton	No	--	--	0.60	--	--	*	--	--	--	0.1	--	--
DDT 4,4'	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.1	0.0	--	--
Dieldrin	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.7	0.0	--	--
Endosulfan Alpha	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.0	0.0	--	--
Endosulfan Beta	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.0	0.0	--	--
Endosulfan	*	2.00	ND	0.60	--	Non-Det.	*	--	--	0.0	0.0	--	--
Endrin	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.0	0.0	--	--
Guthion	No	--	--	0.60	--	--	*	--	--	--	0.0	--	--
Heptachlor	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.1	0.0	--	--
Heptachlor Epoxide	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.1	0.0	--	--
Malathion	Yes	--	--	0.60	--	--	*	--	--	--	0.1	--	--
Methoxychlor	Yes	2	ND	0.60	--	Non-Det.	*	--	--	--	0.0	--	--
Mirex	No	--	--	0.60	--	--	*	--	--	--	0.0	--	--
Parathion	No	--	--	0.60	--	--	*	--	--	--	--	--	--
Toxaphene	Yes	2	ND	0.60	--	Non-Det.	*	--	--	0.2	0.0	--	--
Total PCBs	*	2	0.64	0.60	3.25	Yes	*	--	--	10.0	0.03	--	LD
PCB- Aroclor 1016	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1221	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1232	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1242	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1248	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1254	Yes	2	ND	No Water Quality Criteria			*						
PCB- Aroclor 1260	Yes	2	0.637	No Water Quality Criteria			*						

Attachment D-6: Toxics RPA – Human Health

RPA Run Information	
Facility Name:	Tillamook STP
DEQ File Number:	88665
Permit Writer Name:	Steve Schnurbusch
Outfall Number:	001
Date of RPA Run:	11/8/2018
RPA Run Notes:	

Please complete the following General Facility Information		
1. Do I have dilution value from a mixing zone study? (Y/N)	Y	
2. Is the receiving waterbody fresh water? (Y/N)	Y	
3. If answered "N" to *Question 1*, then fill in the following table		
Eff. Flow Rate	MGD	*
Stream Flow: Harmonic Mean	CFS	*
Stream FLow: 30Q5	CFS	*
% dilution at MZ	%	25%
Calculated dilution factors		
Dilution @ Harmonic Mean Flow		na
Dilution @ 30Q5		na
4. If answered "Y" to *Question 1*, then fill in dilution factors from mixing zone study		
Dilution @ RMZ under harmonic mean flow		28
Dilution @ RMZ under 30Q5 flow		28
5. Please enter statistical *Confidence* and *Probability* values (note: defaults already entered)		
Max. Effluent Conc. %'ile	% 'ile	95%
Confidence Level	% 'ile	95%

Determine Monitoring Reqs.			Identify Pollutants of Concern					In-stream Conc.		Determine Reasonable Potential			
Pollutant Parameter	Carcinogen Status	Evaluation required?	# of Samples	Effluent Conc.	Coefficent of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at RMZ	WQ Criteria Water + Fish	WQ Criteria Fish	Is there Reasonable Potential to Exceed? (Yes/No) Water + Fish	Is there Reasonable Potential to Exceed? (Yes/No) Fish
Pollutant Type	(Y/N)	(Yes/No)		µg/l	default=0.6	µg/l	(Yes/No)	µg/l	µg/l	µg/l	µg/l		
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD													
Nitrates-Nitrite	N	Yes	48	27100.00	0.60	28554.66	Yes	0.00	#####	10000	na	NO	--
Table 2 Effluent Parameters for Selected POTWs													
Table 2: Metals (total recoverable), cyanide and totoal phenols													
Antimony (total recoverable)	N	Yes	3	ND	0.60	--	Non-Det.	*	--	5.1	64	--	--
Arsenic (total recoverable)	Y	Yes	3	0.023	No Human Health Water Quality Criteria			0.10					
Arsenic (total inorganic)	Y	*	3	0.02	0.60	0.07	No	0.095	0.0940	2.1	2.1	NO	NO
Copper (total recoverable)	N	Yes	3	19.60	0.60	58.79	No	0.80	2.8701	1300	na	NO	--
Mercury (total)	N	Yes	3	ND	No Human Health Water Quality Criteria			*					
Methyl Mercury	N	*	3	ND	--	--	--	na	na	na	.040 mg/kg	--	--
Nickel (total recoverable)	N	Yes	3	ND	0.60	--	Non-Det.	0.39	#VALUE!	140	170	--	--
Selenium (total recoverable)	N	Yes	3	10.50	0.60	31.50	No	0.00	1.1248	120	420	NO	NO
Thallium (total recoverable)	N	Yes	3	ND	0.60	--	Non-Det.	*	--	0.043	0.047	--	--
Zinc (total recoverable)	N	Yes	3	73.70	0.60	221.07	No	1.13	8.9887	2100	2600	NO	NO
Cyanide (total)	N	Yes	2	0.0022	0.60	0.01	No	*	--	130	130	--	--
Table 2: Volatile organic compounds													
Acrolein	N	Yes	3	ND	0.60	--	Non-Det.	*	--	0.88	0.93	--	--
Acrylonitrile	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.018	0.025	--	--
Benzene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.44	1.4	--	--
Bromoform	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	3.3	14	--	--
Carbon Tetrachloride	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.1	0.16	--	--
Chlorobenzene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	74	160	--	--
Chlorodibromomethane	Y	Yes	3	0.13	0.60	0.38	Yes	0.00	0.0136	0.31	1.3	NO	NO
Chloroform	N	Yes	3	14.30	0.60	42.89	No	*	--	260	1100	--	--
1,2-Dichlorobenzene (o)	N	Yes	3	ND	0.60	--	Non-Det.	*	--	110	130	--	--
1,3-Dichlorobenzene (m)	N	Yes	3	ND	0.60	--	Non-Det.	*	--	80	96	--	--
1,4-Dichlorobenzene (p)	N	Yes	3	ND	0.60	--	Non-Det.	*	--	16	19	--	--
Dichlorobromomethane	Y	Yes	3	0.25	0.60	0.74	Yes	0.00	0.0264	0.42	1.7	NO	NO
1,2-dichloroethane	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.35	3.7	--	--
1,2-trans-dichloroethylene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	120	1000	--	--
1,1-dichloroethylene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	230	710	--	--
1,2-dichloropropane	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.38	1.5	--	--
1,3-dichloropropene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.3	2.1	--	--
Ethylbenzene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	160	210	--	--
Methyl Bromide	N	Yes	3	ND	0.60	--	Non-Det.	*	--	37	150	--	--
Methylene Chloride	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	4.3	59	--	--
1,1,2,2-tetrachloroethane	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.12	0.4	--	--
Tetrachloroethylene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.24	0.33	--	--
Toluene	N	Yes	3	0.53	0.60	1.59	No	*	--	720	1500	--	--
1,1,2-trichloroethane	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.44	1.6	--	--
Trichloroethylene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	1.4	3	--	--
Vinyl Chloride	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	0.023	0.24	--	--
Table 2: Acid-extractable compounds													
2-chlorophenol	N	Yes	3	ND	0.60	--	Non-Det.	*	--	14	15	--	--
2,4-dichlorophenol	N	Yes	2	ND	0.60	--	Non-Det.	*	--	23	29	--	--
2,4-dimethylphenol	N	Yes	2	ND	0.60	--	Non-Det.	*	--	76	85	--	--
Methyl-4,6-dinitrophenol	N	Yes	3	ND	0.60	--	Non-Det.	*	--	9.2	28	--	--
2,4-dinitrophenol	N	Yes	2	ND	0.60	--	Non-Det.	*	--	62	530	--	--
Pentachlorophenol	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.15	0.3	--	--
Phenol	N	Yes	4	0.0037	0.60	0.01	No	*	--	9400	86000	--	--
2,4,5-trichlorophenol	N	Yes	3	ND	0.60	--	Non-Det.	*	--	330	360	--	--
2,4,6-trichlorophenol	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.23	0.24	--	--
Table 2: Base-neutral compounds													
Acenaphthene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	95	99	--	--
Anthracene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	2900	4000	--	--
Azobenzene	na	No	--	--	No Human Health Water Quality Criteria			*					
Benzidine	Y	Yes	3	ND	0.60	--	Non-Det.	0.00	#VALUE!	1.8E-05	2E-05	--	--
Benzo(a)anthracene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
Benzo(a)pyrene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
Benzo(b)fluoranthene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
Benzo(k)fluoranthene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
Bis(2-chloroethyl)ether	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.02	0.053	--	--
Bis(2-chloroisopropyl)ether	N	Yes	4	ND	0.60	--	Non-Det.	*	--	1200	6500	--	--
Bis (2-ethylhexyl)phthalate	Y	Yes	4	2.21	0.60	5.72	Yes	*	--	0.2	0.22	LD	--
Butylbenzyl phthalate	N	Yes	3	ND	0.60	--	Non-Det.	*	--	190	190	--	--
2-chloronaphthalene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	150	160	--	--
Chrysene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
Di-n-butyl phthalate	N	Yes	3	ND	0.60	--	Non-Det.	*	--	400	450	--	--
Dibenzo(a,h)anthracene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
3,3-Dichlorobenzidine	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0027	0.0028	--	--
Diethyl phthalate	N	Yes	3	ND	0.60	--	Non-Det.	*	--	3800	4400	--	--
Dimethyl phthalate	N	Yes	3	ND	0.60	--	Non-Det.	*	--	84000	110000	--	--
2,4-dinitrotoluene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.084	0.34	--	--
1,2-diphenylhydrazine	Y	Yes	3	ND	0.60	--	Non-Det.	0.00	#VALUE!	0.014	0.02	--	--
Fluoranthene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	14	14	--	--
Fluorene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	390	530	--	--
Hexachlorobenzene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	2.9E-05	3E-05	--	--
Hexachlorobutadiene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.36	1.8	--	--
Hexachlorocyclopentadiene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	30	110	--	--
Hexachloroethane	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.29	0.33	--	--
Indeno(1,2,3-cd)pyrene	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0013	0.0018	--	--
Isophorone	N	Yes	3	ND	0.60	--	Non-Det.	*	--	27	96	--	--
Nitrobenzene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	14	69	--	--
N-nitrosodimethylamine	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.00068	0.3	--	--
N-nitrosodi-n-propylamine	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.0046	0.051	--	--
N-nitrosodiphenylamine	Y	Yes	3	ND	0.60	--	Non-Det.	*	--	0.55	0.6	--	--
Pentachlorobenzene	N	No	--	--	0.60	--	--	*	--	0.15	0.15	--	--
Pyrene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	290	400	--	--
1,2,4-trichlorobenzene	N	Yes	3	ND	0.60	--	Non-Det.	*	--	6.4	7	--	--
Tetrachlorobenzene 1,2,4,5	N	No	--	--	0.60	--	--	*	--	0.11	0.11	--	--
Table 3: Pesticides & PCBs													
Aldrin	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	5E-06	5E-06	--	--
BHC-Technical	Y	No	2.00	#VALUE!	0.60	--	#VALUE!	*	--	0.0014	0.0015	--	--
BHC Alpha	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	0.00045	0.0005	--	--
BHC Beta	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	0.0016	0.0017	--	--
BHC-delta		Yes	2	ND	No Water Quality Criteria			*					
BHC Gamma (Lindane)	N	Yes	2	ND	0.60	--	Non-Det.	*	--	0.17	0.18	--	--
Chlordane	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	8.1E-05	8E-05	--	--
DDD 4,4'	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	3.1E-05	3E-05	--	--
DDE 4,4'	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	2.2E-05	2E-05	--	--
DDT 4,4'	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	2.2E-05	2E-05	--	--
Dieldrin	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	5.3E-06	5E-06	--	--
Endosulfan Alpha	N	Yes	2	ND	0.60	--	Non-Det.	*	--	8.5	8.9	--	--
Endosulfan Beta	N	Yes	2	ND	0.60	--	Non-Det.	*	--	8.5	8.9	--	--
Endosulfan Sulfate	N	Yes	2	ND	0.60	--	Non-Det.	*	--	8.5	8.9	--	--
Endrin	N	Yes	2	ND	0.60	--	Non-Det.	*	--	0.024	0.024	--	--
Endrin Aldehyde	N	Yes	2	ND	0.60	--	Non-Det.	*	--	0.03	0.03	--	--
Heptachlor	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	7.9E-06	8E-06	--	--
Heptachlor Epoxide	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	3.9E-06	4E-06	--	--
Methoxychlor	N	Yes	2	ND	0.60	--	Non-Det.	*	--	100	na	--	--
Toxaphene	Y	Yes	2	ND	0.60	--	Non-Det.	*	--	2.8E-05	3E-05	--	--
Total PCBs	Y	No	2	0.39	0.60	1.48	Yes	*	--	6.4E-06	6E-06	LD	LD
PCB- Aroclor 1016	Y	Yes	2	ND	No Water Quality Criteria			*					
PCB- Aroclor 1221	Y	Yes	2	ND	No Water Quality Criteria			*					
PCB- Aroclor 1232	Y	Yes	2	ND	No Water Quality Criteria			*					
PCB- Aroclor 1242	Y	Yes	2	ND	No Water Quality Criteria			*					
PCB- Aroclor 1248	Y	Yes	2	ND	No Water Quality Criteria			*					
PCB- Aroclor 1254	Y	Yes	2	ND	No Water Quality Criteria			*					
PCB- Aroclor 1260	Y	Yes	2	0.39	No Water Quality Criteria			*					