

Fact Sheet for NPDES Permit WA0000086

Millennium Bulk Terminals Longview, LLC

Revised February 7, 2018

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for Millennium Bulk Terminals Longview, LLC (Millennium).

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

Ecology made the draft permit and fact sheet available for public review and comment thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for Millennium, NPDES permit WA0000086, were available for public review and comment from July 17, 2017 until August 31, 2017. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

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

After the public comment period closed, Ecology summarized substantive comments and provided responses to them. Ecology included the summary and responses to comments in this fact sheet as **Appendix M - Response to Comments**, and publishes it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document becomes part of the legal history contained in the facility's permit file.

Summary

Millennium operates a process wastewater treatment plant and a stormwater treatment plant at the Longview site that discharge into the Columbia River. Ecology issued the previous NPDES permit on October 15, 1990 and modified the permit on April 1, 1992 and again on February 1, 2002. Ecology increased the monitoring frequencies for several parameters at Outfall 002A in writing on March 15, 2006 and March 23, 2006.

The proposed permit includes changes to effluent limits and monitoring requirements to reflect the current operations at the site, including closure of the aluminum smelter, updating bulk storage and transport activities, a change in the treatment of Millennium's sanitary wastewater, and management and treatment of remediation water from the pending cleanup of the site. These changes are summarized for each outfall below.

Other changes in the proposed permit include: notification requirements for new tenants, requirements for managing remediation water, a requirement to conduct an evaluation of Outfall 002A to determine the integrity of the discharge pipe and diffuser, a requirement to conduct acute whole effluent toxicity (WET) testing on the Outfall 002A discharge once in the last winter and once in the last summer of the new permit cycle, and a requirement to conduct a chronic WET effluent characterization on the Outfall 002A discharge.

Summary of proposed changes to limits and monitoring for Outfall 001:

Removed all effluent limits and monitoring requirements because Millennium began discharging their sanitary wastewater to the City of Longview Three River's municipal treatment facility.

Summary of proposed changes to limits and monitoring for Outfall 002A:

- Removed aluminum, antimony, and nickel effluent limits and monitoring requirements.
- Changed from mass loading limits (pounds per day) to concentration limits (milligrams per liter) for total suspended solids (TSS), fluoride, benzo(a)pyrene (B(a)P), and oil and grease (O&G). Fluoride, free cyanide, and B(a)P limits only apply when remediation water is treated at Facility 71 and Facility 73 and discharged through Outfall 002A.
- Removed monitoring requirement for total cyanide.
- Added monitoring for B(a)P.
- Reduced monitoring frequencies for fluoride and free cyanide from weekly to monthly during bulk terminal operations.
- Increased monitoring to 3 times per week for fluoride and free cyanide when treating remediation water at Facility 71.
- Added a monitoring requirement for daily precipitation.
- Added annual monitoring for priority pollutants.

Summary of proposed changes to limits and monitoring for Outfall 002B:

- Removed effluent limits for B(a)P and monitoring requirement for total cyanide.
- Changed monitoring frequencies for fluoride, free cyanide, and B(a)P to weekly when treating remediation water at Facility 71.

Summary of proposed changes to limits and monitoring for Outfall 003C:

- Reduced the monitoring requirements for fluoride and free cyanide from quarterly to annually.
- Removed limit for free cyanide.
- Added limit for TSS.
- Added stormwater benchmarks for copper and zinc.
- Added annual monitoring for priority pollutants.

Summary of proposed changes for Outfall 006:

- Authorized the discharge from Outfall 006 to Facility 73 and Outfall 002A.
- Authorized flows exceeding the hydraulic capacity of the sump at Outfall 006 to be discharged to CDID Ditch No. 14.

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I. Introduction

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

The following regulations apply to industrial NPDES permits:

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

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

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

After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix M**.

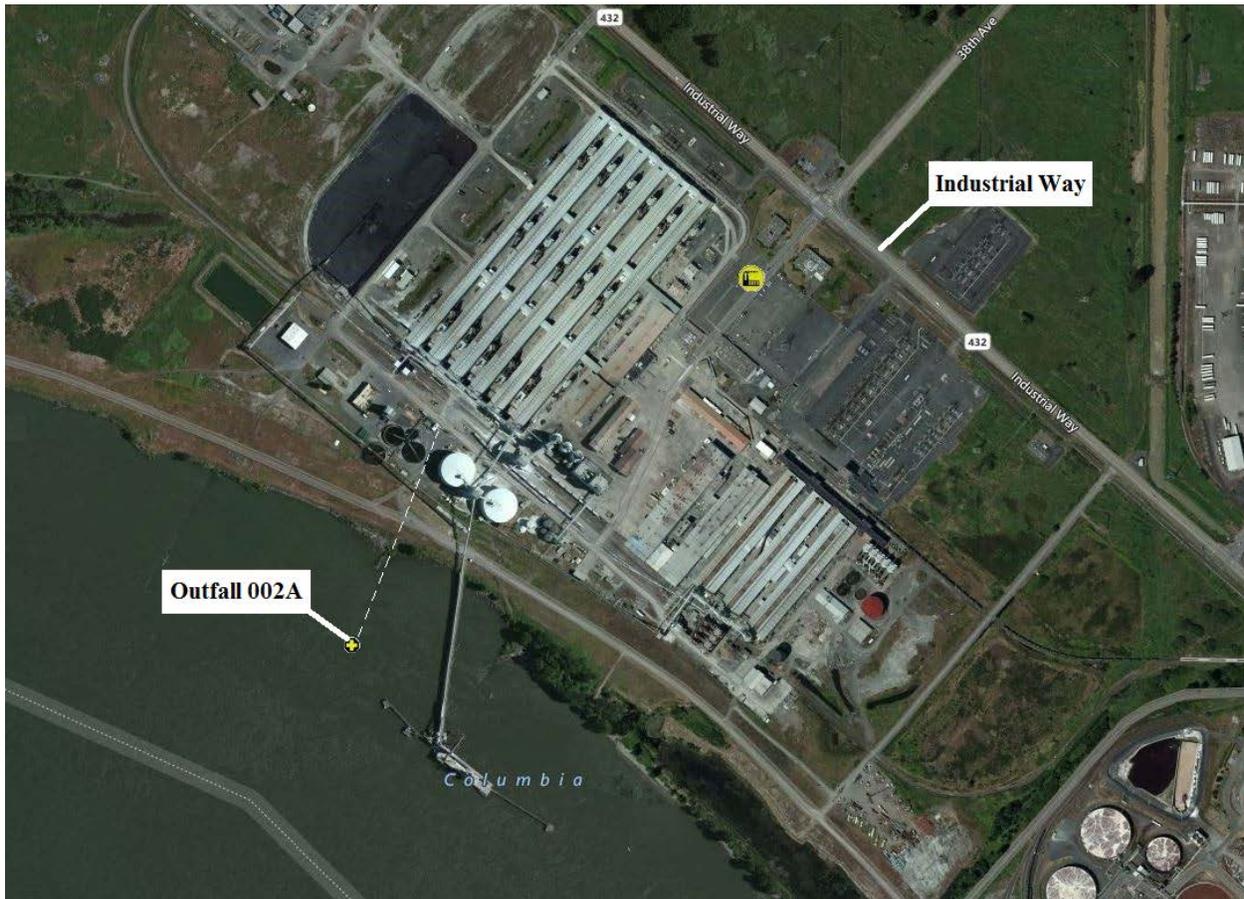
II. Background Information

Table 1 General Facility Information

Facility Information	
Applicant:	Millennium Bulk Terminals Longview, LLC
Facility Name and Address	Millennium Bulk Terminals Longview, LLC 4029 Industrial Way Longview, WA 98632
Contact at Facility	Name: Kristin Gaines Telephone #: (360) 425-2800
Responsible Official	Name: William H. Chapman Title: President and Chief Executive Officer Address: P.O. Box 2098, 4029 Industrial Way Longview, WA 98632 Telephone #: (360) 425-2800 FAX #: (360) 636-8340
Industry Type	Multi-Modal Bulk Materials Handling
Categorical Industry	Millennium is not subject to Categorical Pretreatment Standards
Type of Treatment	Industrial: Sedimentation, Chemical Precipitation, Gravity Thickening, and Flocculation Stormwater: Sedimentation and Filtration Sanitary: City of Longview's Three Rivers Publicly Owned Treatment Works (POTW)
SIC Codes	4491 (Marine Cargo and Handling) and 4226 (Special Warehousing and Storage)
NAIC Codes	48831 (Port and Harbor Operations) and 488320 (Marine Cargo Handling – Stevedoring and Other Marine Cargo Handling Services)
Facility Location	
Reference Datum	NAD83/WGS84
Latitude	46.14146
Longitude	-122.99635

Facility Information			
Discharge Waterbody Name and Location			
Name of Outfall	Discharge Waterbody	Location of Discharge to Waterbody (NAD83/WGS84 reference datum)	
		Latitude	Longitude
002A	Columbia River	46.13728	-123.007694
002B (discharges to Outfall 002A)		46.13994	-123.003511
003	City of Longview Consolidated Diking Improvement District (CDIC) Ditch No. 10	46.14711	-123.002936
006	Outfall 002A	46.84202	-123.05577
Outfall 006 discharges to Facility 73 and then to Outfall 002A. Flows exceeding the hydraulic capacity of Outfall 006 discharge to CDIC Ditch No. 14	CDIC Ditch No. 14	46.84972	-123.03751
Renewal Application			
Issuance Date of Previous Permit	October 15, 1990		
Application for Permit Renewal Submittal Date	August 31, 2011, updated July 28, 2014		
Date of Ecology Acceptance of Application	January 23, 2012		
Inspection Status			
Date of Last Sampling Inspection	June 21, 2016		
Date of Last Non-sampling Inspection	April 8, 2015		

Figure 1 Facility Location Map



A. Facility Description

History

Reynolds Metals Company owned and operated the site as an aluminum smelter from 1941, when the facility was constructed, to 2000. In 2000, Alcoa purchased Reynolds Metals Company as a wholly owned subsidiary. As a requirement of this transaction, Reynolds was required to divest itself of the Longview smelter. To fulfill this obligation, Reynolds sold the site assets to Longview Aluminum LLC in 2001 but retained ownership of the land.

Longview Aluminum permanently shut down aluminum production operations after the sale in 2001. The facility has not produced aluminum since that date.

Longview Aluminum declared bankruptcy in 2003. Following the bankruptcy, Reynolds continued to retain ownership of the land, and in September 2005, ownership of the land transferred from Reynolds Metals Company to Northwest Alloys, both wholly owned subsidiaries of Alcoa.

In December 2004, Chinook Ventures purchased the Longview Aluminum assets from the bankruptcy trustee. Chinook Ventures was the sole operator of the facility between 2004 and 2011.

Chinook began transitioning the primary focus of the operations to importing, handling, and/or exporting dry bulk materials, such as alumina, coal, green petroleum coke, cement, fly ash, slag, scrap metal, thin stillage (an agricultural byproduct of corn-based ethanol manufacturing) and other materials.

Millennium Bulk Terminals purchased the site assets from Alcoa and began operations as a bulk product terminal on January 11, 2011. Northwest Alloys retained ownership of the property.

The first NPDES permit was issued to Reynolds Metals Company on January 1, 1978. The current NPDES permit was issued on October 15, 1990 and modified on April 01, 1992 and February 01, 2002. Ecology reduced monitoring frequencies for several parameters at Outfalls 001S, 002A, 002B, and 003 in writing on June 26, 2003. Ecology increased the monitoring frequencies for aluminum, fluoride, and total suspended solids (TSS) on March 15, 2006 and March 23, 2006.

The permit was transferred from Chinook Ventures to Millennium on January 13, 2011. Millennium is classified as a major discharger.

Site Description

The Millennium site is located within an industrial land use corridor located along Industrial Way (Highway 432) and the Columbia River navigation channel. The site and the adjacent properties are zoned for industrial uses.

Northwest Alloys owns a total of approximately 536 acres of property. The Northwest Alloys property located north of Industrial Way remains undeveloped except for an ambient air monitor located in the old softball field. Only the southern portion of this property (approximately 436 acres located south of Industrial Way) was included in the historical aluminum manufacturing operations.

The Northwest Alloys-owned property extends to the extreme low water mark of the Columbia River. The aquatic lands located offshore of this point are owned by the State of Washington and are managed by the Washington State Department of Natural Resources (WDNR). Portions of the dock and outfalls are located on lands leased to Millennium for operation of a bulk products terminal. Millennium has leased the property since January 2011 when it purchased the facility assets from Chinook.

Industrial Activities

Prior the Millennium's operations, bulk materials handled at the site integral to aluminum smelting operations included, but were not necessarily limited to, alumina, calcined coke, coal, cryolite, aluminum fluoride, pitch, and aluminum. Following the curtailment of smelter operations, Chinook Ventures brought a number of products onto the site (green pet-coke, coal that was trucked to Weyerhaeuser, cement products, fly ash, slag, and anode carbon). These materials remained on site until Millennium removed them under Ecology's oversight. Millennium removed the last of the materials managed onsite by Chinook Ventures at the end of 2013.

Millennium operates the site as a multi-modal bulk materials handling facility that focuses on the import, storage, and export of materials.

The materials are transported to and from the site by ship, barge, train, or truck and managed at the site using marine vessel loading and unloading equipment, materials handling equipment, and mobile equipment, such as front loaders and trucks. Materials are either directly transferred to another mode of transportation (e.g., from ship to conveyor, to train or truck) or temporarily stored in buildings at the site. Millennium does not manufacture or process any materials onsite. The site includes buildings, equipment, and wastewater treatment facilities from the former Reynolds Aluminum Facility.

Until recently, Millennium used the existing dock to import bulk alumina by ship, stored it in silos onsite, and transported it via rail to the Alcoa aluminum smelter in Wenatchee, Washington. The Wenatchee smelter is temporarily curtailed. It shut down operations in December 2015. Millennium plans to resume importing and transporting alumina when the smelter restarts operations. Millennium imports an average of 110,000 tons of coal per year by rail, stores it in tanks, and then trucks it to the Nippon Dynacare Packaging Company, Inc. (formerly Weyerhaeuser) pulp and paper mill located on the adjacent property to the east.

Millennium manages the following products on site:

- Prior to 2016, Millennium imported an average of 300,000 tons of alumina per year, stored approximately 72,000 tons of alumina onsite at any one time, and transported approximately 25,000 tons of alumina per month on average to the Alcoa smelter. The Wenatchee smelter is temporarily curtailed. Approximately 600 tons of alumina remain onsite in silos.
- Millennium imports approximately 9,000 tons of coal per month on average, stores an estimated 6,000 tons of coal in silos and rail cars onsite at any one time, and transports approximately 9,000 tons of coal to Nippon per month on average.
- Millennium is currently storing approximately 800 tons of coal tar pitch in above-ground tanks (from former Reynold Metals' operations). Millennium is planning to resume importing pitch and transporting it to aluminum smelters at some time in the future. The pitch would be imported via rail, ship, or truck and transported out via rail or truck.
- Millennium is currently storing approximately 2,300 tons of green pet coke (petroleum coke) residuals in the carbon plant sizing equipment. The pet coke will be disposed of properly when the carbon plant and associated equipment are demolished.

Millennium's current air permit allows them to store up to 350,000 tons of alumina and 150,000 tons of coal per year.

Millennium is planning to manage a number of additional materials at the site in the future, including calcined coke, fly ash, sand and gravel, cementitious materials, and sodium hydroxide. The proposed permit includes notification and permitting requirements for potential new tenants.

Millennium's future plans also include constructing and operating a separate coal export facility at the site. The current NPDES permit renewal application does not include the coal export facility. Millennium will have to submit a new or revised NPDES permit application for the coal terminal and have an approved permit in place prior to discharging from any activities related to construction or operation of the coal terminal.

Millennium does not manufacture or process any materials at the site. Millennium currently operates 16 hours per day, 7 days a week and may operate 24 hours a day, 7 days per week. Millennium maintains security staff 24 hours a day, 7 days a week. Millennium currently employs 35 people.

Site Decommissioning and Remediation

Site decommissioning is ongoing as Millennium transitions from a former aluminum smelter to a bulk materials handling facility. Decommissioning has included removal of smelter air emission control equipment, cleaning of stormwater and process water collection lines, sediment removal from the Retention Basin, and select demolition activities. Millennium completed these projects in December 2013 and finished demolishing the South Plant in 2015.

A comprehensive summary of soil, groundwater, and sediment quality at the site is included in the Remedial Investigation/Feasibility Study (RI/FS), which was issued by Ecology for public review and comment in June 2014 and finalized in January 2015. The RI/FS was prepared consistent with the requirements of the State's Model Toxics Control Act (MTCA) Agreed Order No. DE-8940 and summarizes numerous rounds of site investigation and engineering evaluations completed between 2006 and 2014. The document also integrates the findings from previous investigations and cleanup actions completed prior to the development of the RI/FS and evaluates alternatives for final site remediation consistent with MTCA regulatory criteria.

In June 2014, Ecology issued an amendment to the Agreed Order requiring implementation of an interim remedial action. That work included removal and disposal of a localized area of sediment contamination adjacent to Outfall 002A. The contaminated sediment was taken to an approved landfill. The sediment work was completed in November 2016.

Other remediation activities will include ongoing groundwater monitoring in the vicinity of the closed Black Mud Pond and former cryolite recovery plant and excavation and consolidation of onsite waste deposits. Final remediation of the upland portion of the site is expected to be completed by 2019 following engineering design and permitting in accordance with Ecology's final cleanup decision. The final cleanup decision will be documented in the Cleanup Action Plan (CAP) and Consent Decree (CD). The draft CAP and CD were published for public review and comment in January 2016. Ecology is currently finalizing the Responsiveness Summary and revisions to the CAP and CD. Ecology will oversee the work performed by Northwest Alloys and Millennium to clean up the site under MTCA.

To get detailed information about the remediation activities and cleanup schedule for the Millennium site go to Ecology's website:
<http://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=11796>.

There are a number of wastewater streams expected to be generated during site remediation including contaminated groundwater from dewatering, stormwater runoff, and water used in dust suppression. The management of this water is discussed in more detail in the *Contact Water* and *Remediation Water* sections of this fact sheet.

Site Wastewater

MBTL currently treats industrial process wastewater and stormwater runoff from the site. The treated wastewater and stormwater are discharged into the Columbia River pursuant to National Pollutant Discharge Elimination System (NPDES) Permit WA 0000086. Millennium is planning to treat remediation water generated from the site cleanup in the onsite wastewater treatment system. Sanitary wastewater is no longer treated onsite. A Wastewater Treatment Flow Diagram is provided in **Appendix E**. The diagram illustrates the water intakes, operations, treatment, and outfalls related to Millennium’s wastewater streams.

Process Wastewater

Millennium has fewer sources of process wastewater (and smaller volumes) than those present when the current NPDES permit was issued in 1990. The permanent closure and subsequent removal of the aluminum production facilities and processes has resulted in portions of the process wastewater collection, conveyance, and treatment systems being discontinued or converted for other uses such as stormwater infrastructure and wastewater storage. The process wastewater and stormwater collection and treatment systems are described below. With the removal of the aluminum smelter operations, stormwater runoff comprises the majority of the discharges managed at the Millennium site.

Current onsite process wastewater flows and volumes are greatly reduced compared to the flows and volumes present when the facility was operating as an aluminum smelter. Most of the contact and non-contact cooling water is no longer generated. The greatest reduction in process wastewater flow is associated with the closure of the smelter. Current operational sources of process wastewater include contact water, treated ditch water, and non-contact cooling water. Table 2 below summarizes the Process Wastewater Streams: where they are generated, treated, and discharged. The treatment listed in the table is described later in the section *Wastewater Treatment Processes*.

Table 2 Process Wastewater Streams

Process Wastewater Type	Source	Estimated Quantity	Treatment/Outfall
Contact Water	Cleanup/Remediation	Varies	Pumped to Facility 77 then to Facility 71 and/or Facility 73 and discharged through Outfall 002A
	Construction Activities (not to include construction related to new coal export facility)	Varies	Pumped to Facility 77 then to Facility 71 and/or Facility 73 and discharged through Outfall 002A

Process Wastewater Type	Source	Estimated Quantity	Treatment/Outfall
	Filter Plant Backwash	7 gpm	Pumped to Facility 73 and discharged through Outfall 002A
	Steam Clean Area	Varies	Treated in Oil/Water Separator then pumped to Facility 73 and discharged through Outfall 002A
	Fire Suppression Water	Varies	Pumped to Facility 73 and discharged through Outfall 002A
Treated Ditch Water	Water from the Cryolite Ditches	30 gpm	Pumped to Facility 77 then to Facility 71 discharged through Outfall 002B and then discharged through Outfall 002A
	Waster from the Closed Black Mud Pond Leachate Ditch	30 gpm	Pumped to Facility 77 then to Facility 71, discharged through Outfall 002B and then through Outfall 002A
Non-contact Cooling Water	1. HVAC System 2. Well 7 Motor Cooling	0.32 MGD	1. Outfall 002A 2. Facility 73 then discharged through Outfall 002A

Facility 71 = Industrial Wastewater Treatment Plant (IWTP) designed to treat fluoride, B(a)P, and cyanide

Facility 73 = Retention Basin and Filter Plant (stormwater treatment facilities)

Facility 77 = Collection Sump and Storage Tanks

HVAC = Heating, Ventilation, and Air Conditioning

Contact Water

Contact water is generated in various operations onsite: handling of products, demolition, decommissioning of the aluminum smelter facilities, cleanup/remediation activities, and on-site development and improvements.

Sources of contact water include contact with equipment and vehicles (e.g., when handling bulk materials, cleaning during demolition, and conducting construction activities), filter plant backwash, cleanup/remediation activities, and from the steam clean area. The volume of contact water varies based on the extent of on-site activities. Contact wastewater streams are managed in different ways, depending on the nature of the contact water sources.

Contact water is treated prior to discharge through Outfall 002A. Contact water generated from cleanup/remediation activities will be collected, evaluated, and treated through appropriate onsite processes prior to discharge through the permitted outfalls or disposed of at an off-site location. See *Remediation Water*.

Treated Ditch Water

The Cryolite Ditches are a system of three earthen ditches that collect stormwater runoff and groundwater from the former Cryolite Plant (which was demolished in 2004) and the surrounding area.

The Black Mud Pond leachate ditch is an earthen ditch located south and east of the closed Black Mud Pond. This ditch is separated from the U-ditch (located east and south) by an earthen dam. Liquid beneath the impermeable cap layers of the Black Mud Pond (BMP) drained through the black mud and into a temporary dewatering sump. Water from the temporary sump was conveyed via pipe to the leachate ditch on the southern boundary of the pond. The sump is still in place; however, the sump has not collected leachate in over 10 years due to the consolidation of the black mud pond materials under the cap. Water in the leachate ditch consists of stormwater generated near the ditch and groundwater that may be in contact with the bottom of the leachate ditch.

During remediation under the CD and CAP, the former leachate ditch and cryolite ditches will be closed. There will no longer be a source of wastewater from these ditches to Facility 71. The cryolite ditches will be backfilled with reactive material and general fill. The former dewatering sump will be filled and the abandoned pipeline will be removed. The earthen dam associated with the former leachate ditch will be removed and the ditch routed via the U-ditch to Facility 77.

Water collected in the cryolite and leachate ditches is pumped to Facility 77 where it is stored in clarifiers for batch treatment at Facility 71. The effluent from Facility 71 is pumped through Outfall 002B back to a sump at Facility 77 and then to Facility 73 for further treatment before being discharged through Outfall 002A.

Facilities 71, 73, and 77 are discussed below in the section *Wastewater Treatment Processes*.

Non-Contact Cooling Water

Studies done by Chinook Ventures reported that up to 0.7 MGD (486 gpm) of non-contact cooling water is generated from the heating, ventilation, and air conditioning (HVAC) system for the main office buildings, laboratory, and other buildings. The HVAC system, for which the non-contact cooling water is needed, is in disrepair. Millennium has installed smaller replacement HVAC units in the main office building, but the old HVAC system remains in place for the other buildings.

The HVAC non-contact cooling water is discharged into a catch basin where it is commingled with stormwater and then discharged to a vegetated swale. The combined flow discharges into CDID Ditch #10 through Outfall 003C. Millennium is in the process of upgrading the heating and cooling system. The existing HVAC system will be removed, thereby eliminating the source of non-contact cooling water to Outfall 003C.

Another source of non-contact cooling water is the pump engine cooling system at Well 7, which is an emergency backup well with a diesel engine. Non-contact cooling water from Well 7 gravity drains to Facility 77 and is treated at Facility 73 before being discharged through Outfall 002A.

Stormwater

With the removal of the aluminum smelter and processes, stormwater runoff comprises the majority of the discharges managed onsite. Stormwater runoff in areas with industrial activity is collected in a system of ditches, pipes, and hydraulic structures (e.g., catch basin inlets, manholes, and vaults/sumps). Levees, Consolidated Diking Improvement District (CDID) ditches, and roadways prevent overland flow of stormwater from adjacent properties onto the site with a few exceptions as described below.

The major components of the stormwater collection and treatment system are the Sump (Facility 77), Retention Basin and Filter Plant (Facility 73), and the outfalls where stormwater is discharged (Outfalls 002A, 003C, 005, and 006). Stormwater drainage basins, treatment facilities, and discharge outfalls are shown in **Appendix F**.

Outfall 002A – Stormwater from the main plant area is collected at Facility 77, treated at Facility 73, and discharged through Outfall 002. The industrial activities in this area include bulk material handling and cleanup/remediation. Stormwater runoff historically discharged through Outfall 006 is now routed through stormwater treatment facilities and discharged at Outfall 002A.

Outfall 003C (Outfall 003 in the previous permit) – Stormwater from industrial sources that drain to Outfall 003C include impervious surfaces such as roads, parking areas, and equipment storage. The former Cable Plant roof and a portion of the surrounding area may also discharge to Outfall 003C in heavy rain events. The CDID ditches and roadways prevent overland flow of stormwater from adjacent properties onto the site, with the exception of runoff from a portion of Highway 432 (also known as Industrial Way) and the Bonneville Power Administration (BPA) transformer yard, which commingles with onsite runoff and discharges to Outfall 003C.

Samples were collected in the drainages between Outfalls 003C and 005 and the adjacent CDID ditches during the remedial investigation portion of the MTCA cleanup being planned at the site. This sampling was performed to determine the potential for legacy sources of B(a)P, fluoride, cyanide, and aluminum. These contaminants were not detected in the ditch water and soil sample results were below MTCA cleanup levels. There are no remediation activities planned in the Outfall 003C drainage basin.

Outfall 005 – The discharge at Outfall 005 includes stormwater runoff from pervious surfaces, impervious gravel surfaces, and vegetated areas.

The previous line of catch basins and a drainage ditch that collected runoff from the former Cable Plant roadways are no longer connected and draining to Outfall 005. The stormwater drainage from these areas was rerouted through the industrial wastewater treatment system to Outfall 002A in 1992. There is currently no stormwater associated with industrial activity discharged at Outfall 005, as defined in 40 CFR 122.26(b)(14). There are no remediation activities planned in the Outfall 005 drainage basin.

Outfall 006 - Stormwater runoff from the closed Black Mud Pond (BMP) cover drains to Outfall 006. The cover of the BMP is graded to drain stormwater flow into a network of perforated pipes that collect the infiltrated stormwater. The Outfall 006 discharge is conveyed to Facility 77 through the U-ditch then to Facility 73 where it is treated prior to discharge through Outfall 002A. The U-ditch is a drainage ditch which collects stormwater runoff from western portions of the site and conveys the runoff to the site's stormwater treatment facilities. Flows that exceed the Outfall 006 sump hydraulic capacity (from rainfall events larger than the 6-month, 24-hour storm) are discharged to CDID Ditch No. 14. The discharge at Outfall 006 is expected to be significantly diluted during overflow situations due to the additional stormwater collected from the drainage basin and in the ditch from the associated storm.

Sanitary Wastewater

Millennium began discharging their sanitary wastewater to the City of Longview's Three Rivers Regional Wastewater Authority Publicly-Owned Treatment Works (POTW) and shut down the on-site Sanitary Wastewater Treatment Plant (SWTP) on September 30, 2015. Millennium completed the dismantling of the SWTP and decommissioning of Outfall 001S (001 in the previous permit) on June 3, 2015.

Before discharging their sanitary wastewater to the Three Rivers Regional Wastewater Authority POTW, Millennium operated the SWTP for domestic wastewater generated onsite (restrooms, showers, break rooms, and drinking fountains). Domestic wastewater was treated onsite using primary and secondary treatment. Treatment included a primary spirogester (settling tank/anaerobic digester), filtration through a trickling filter, settling in a secondary treatment clarifier, and disinfection using contact chlorination. The treated SWTP effluent was discharged through Outfall 001S into the Columbia River. SWTP solids were dewatered, tested to confirm that they did not designate as a hazardous waste (per WAC 173-303), and shipped to Waste Management's non-hazardous waste landfill in Arlington, Oregon.

Proposed Coal Export Facility

The proposed coal export facility has not been permitted. Discharges from the construction and operation of the proposed coal export facility are not covered by the proposed permit.

Wastewater Treatment Processes

Facility 77 (Wastewater Collection Sump)

Facility 77 is a combination central drainage collection sump with a pump station.

The facility includes an underground sump with dedicated pumps for stormwater and process wastewater (including treated water from Facility 71) collection.

Facility 77 also includes three, 680,000-gallon clarifiers (No. 1 Thickener Tank, No. 2 Thickener Tank, and No. 3 Thickener Tank) that are currently used to store waters from the cryolite and leachate ditches for batch treatment in Facility 71.

The sump at Facility 77 collects untreated stormwater runoff, treated process wastewater, and untreated process wastewater. The treated process wastewater from Facility 71 is discharged through Outfall 002B. Process wastewater that is not treated at Facility 71 includes water from operations at the central unloading and the loading area, maintenance activities (steam cleaning, etc.), and water system operations (cooling water tower runoff, etc.). The untreated stormwater runoff, treated process wastewater, and untreated process wastewater are commingled and pumped to Facility 73 for treatment through the settling basin and, if necessary, through the Filter Plant before being discharged through Outfall 002A into the Columbia River.

Facility 77 is set up with one pump on a frequency drive that pumps all the time but adjusts its rate based on the amount of water in the vault. There are back-up pumps that will kick on if the water depth in the sump reaches a high level alarm.

Primary Wastewater Treatment Plant (Facility 73)

The Primary Wastewater Treatment Plant consists of a Retention Basin and a Filter Plant. The Retention Basin is used to treat two wastewater streams: the commingled flows from Facility 77 and the recirculated backwash water from the Filter Plant. The retention time in the basin allows solids and associated particulate metals to settle while facilitating oil and grease removal. Oil and grease is collected using a floating oil boom and oil skimmer and stored in a 500-gallon storage tank. The Filter Plant consists of four large multimedia filters. A system of continuous turbidity monitoring equipment and automatic control valves are located at the Filter Plant to direct effluent from the Retention Basin. If the effluent turbidity is below the control limit, the effluent is discharged through Outfall 002A. If the turbidity is greater than the control limit, the effluent is routed through the Filter Plant for additional treatment.

Industrial Wastewater Treatment Plant (Facility 71)

The Reynolds Metals 1985 NPDES permit was accompanied by Order No AODE85-213 which required Reynolds to design and install a new wastewater treatment system that would treat process wastewater from the aluminum smelter operations, including wastewater from potline air pollution controls, to meet permit limits. The Operations and Maintenance Manual for Facility 71 was finalized in February 1988. The Industrial Wastewater Treatment Plant (Facility 71) was constructed and became operational on May 31, 1988.

Facility 71 was damaged in a fire on June 6, 2011. After the fire, wastewater was stored in the clarifiers until a replacement treatment system could be constructed. Millennium submitted a proposal to replace the damaged treatment plant with a new wastewater treatment system. Ecology reviewed the proposal and approved the replacement on November 22, 2011.

The replacement treatment system was constructed and began operating in January 2012. The replacement system was constructed to provide treatment equivalent to that prior to the fire (per the 1988 Operations and Maintenance Manual).

The new batch treatment system consists of six portable tanks located within a High Density Polyethylene (HDPE) containment membrane. Since the 2011 fire, wastestreams treated in Facility 71 are stored in the Thickener Tanks at Facility 77. Wastewater from the thickener tanks is pumped to Facility 71's batch tanks then treated.

Facility 71 treats two wastestreams: water from the Cryolite Ditches and water from the Closed Black Mud Pond Leachate Ditch. Those wastestreams are pumped into one or more of the three thickener tanks at Facility 77. Wastewater from the thickener tanks is pumped to the batch tank at Facility 71. The treatment process through Facility 71 is operated in batch mode by a system of controls. Remediation water from the site that contains constituents above a defined threshold will be collected and treated at Facility 71 (see *Remediation Water* later in this document).

Facility 71 provides pH adjustment, chemical precipitation, flocculation, and sedimentation to remove B(a)P, cyanide, and fluoride from the wastewater. The sludge that is generated during treatment is gravity thickened and landfilled at a permitted disposal facility offsite (see discussion in *Solid wastes* below). Treated effluent from Facility 71 discharges to an internal monitoring point designated as Outfall 002B. During the previous permit cycle, the treatment plant successfully treated varying influent concentrations of B(a)P, cyanide, and fluoride to meet the Outfall 002B NPDES permit limits. The Outfall 002B discharge is conveyed to Facility 77 where it is combined with other facility wastewaters and conveyed to Facility 73 for additional treatment prior to discharge through Outfall 002A.

The automated operations at Facility 71 use a programmable logic controller (PLC) for process management and monitoring. Process tank levels, pump operations, and chemical pump operations are monitored continuously, and the control system will set off an alarm if a malfunction or operational error occurs. The alarm system will send a text and an email notification to Millennium staff available to respond, which includes a 24-hour guard.

The PLC logs flow, pH, chemical pump operation and process tank levels. Critical information is transferred to a Supervisory Control and Data Acquisition (SCADA) system for remote monitoring, trend analysis, alarm monitoring, and data processing. In addition to the automatic logging, manual inspections and recordings of key operational parameters (e.g., flow rates totalizers, pH) are logged daily during regular environmental staff business hours (Monday-Friday, 8:00 am to 5:00 pm).

When Facility 71 is operating, the average discharge is 0.08 MGD. This system operates 24/7 when it is running.

Solid wastes

Millennium updated the facility's solid waste control plan in April 2013 and submitted it to Ecology on October 18, 2013 as part of the permit renewal process. The facility has no active landfills. All solid and hazardous wastes generated on-site which cannot be beneficially reused are sent to permitted facilities including the Hillsboro Oregon industrial landfill, and the hazardous waste (HW) landfill in Arlington Oregon.

Treated solids from the Industrial Wastewater Treatment Plant (Facility 71) are dewatered in a plate/frame press and tested before shipment to confirm that they do not designate as a hazardous waste (per WAC 173-303). If the dewatered sludge does not designate as a HW it

is disposed of in the Hillsboro Oregon industrial landfill. If the sludge designates as a HW, it is disposed of in the Chemical Waste Management landfill in Arlington Oregon.

General site industrial debris includes floor sweepings, uncontaminated excavation materials (sand, rock, gravel, mud, brick, refractory, and alumina), rope, grass, and other industrial waste. These wastes are placed in a collection box and trucked to Waste Management's industrial landfill in Hillsboro, Oregon.

Discharge outfalls

Outfall 002A extends approximately 1,075 feet from the effluent pump station to a point approximately 450 feet from the river dike. The outfall consists of an alternating, multiple port diffuser fixed at the end of a 30-inch diameter pipe. The end of the diffuser is at a depth of 18.5 feet below low water level with the midpoint of the diffuser at a depth of approximately 15.5 feet.

Outfall 002B is an internal monitoring point intended to check the effectiveness of the treatment at Facility 71. It was used to determine compliance with effluent limits in the previous permit. The effluent from Outfall 002B is routed to Facility 77, then on to Facility 73 for further treatment prior to being discharged through Outfall 002A.

Outfall 003C discharges to Consolidated Diking Improvement District (CDID) Ditch No. 10. Outfall 006 discharges to Facility 73 where it is treated and discharged through Outfall 002A. The discharge at Outfall 006 was rerouted through Outfall 002A in 2012. Flows that exceed the Outfall 006 sump hydraulic capacity are discharged to CDID Ditch No. 14. Discharges to the CDID ditches flow to the Columbia River.

As previously mentioned, Outfall 001S was decommissioned and is no longer used. Outfall 004 was rerouted to discharge through Outfall 002A in 1991. Outfall 005 discharges to CDID Ditch No. 14. As previously mentioned, Outfall 005 no longer discharges stormwater associated with industrial activity so is not regulated under this permit.

B. Description of the receiving water

The Millennium facility discharges to the Columbia River at River Mile (RM) 63, approximately 4.5 miles downstream of the confluence of the Cowlitz and Columbia Rivers, and to CDID Ditches Nos. 10 and 14. The facility is located in the southeastern corner of the USGS's Grays/Elochoman Water Resource Inventory Area (WRIA) 25.

Other nearby point sources include outfalls belonging to the Nippon Dynawave Packaging (formerly Weyerhaeuser) facility, Longview Fibre dba KapStone Kraft Paper Corporation, the Three Rivers Regional Wastewater Plant, and the City of Rainier wastewater treatment plant. The Nippon Dynawave Packaging facility is located upstream of Millennium at RM 63. The Three Rivers and City of Rainier wastewater treatment plants are located 3 and 4 miles upstream of Millennium, respectively. Significant nearby non-point sources of pollutants include livestock and silviculture runoff into the Cowlitz River which discharges into the Columbia River upstream of Nippon Dynawave.

The only nearby drinking water intake is for the City of Rainier, Oregon, approximately ¼ mile upstream from the City of Rainier wastewater treatment plant. Section III.E. of this fact sheet describes any receiving waterbody impairments.

This permit does not require Millennium to conduct a receiving water study. The United States Geological Survey (USGS) collects ambient water data from the Beaver Army Terminal station. This data is sufficient to characterize the ambient water quality and provides conservative values for calculating water quality based effluent limits. In the event that data collection at the Beaver Army Terminal station is terminated and Ecology determines that the data is no longer representative, Ecology may require that a receiving water study be conducted by Millennium.

The ambient background data used for evaluating the discharge at Outfall 002A in this permit includes the following:

Table 3 Ambient Background Data

Parameter	Value Used
Temperature (90 th percentile annual 1-DAD Max) ^a	20.96°C
pH (Maximum/Minimum) ^b	8.3/7.32 standard units
Hardness ^c	56 mg/L
Phosphorus, unfiltered ^d	0.05 mg/L as P
Sulfate, filtered ^d	9.21 mg/L
Alkalinity, filtered ^e	49.5 mg/L as CaCO ₃
Turbidity ^e	9.9 NTU (geometric mean)
Ammonia ^e	20 µg/L
Aluminum, filtered ^f	7.82 µg/L (90 th percentile)
Antimony ^f	0.09 µg/L (geometric mean)
Arsenic, filtered ^e	0.99 µg/L (90 th percentile)
Boron, filtered ^e	9.9 µg/L (geometric mean)
Cadmium, filtered ^f	0.04 µg/L (90 th percentile)
Chromium ^e	0.19 µg/L (90 th percentile)
Copper, Total ^e	1.22 µg/L (90 th percentile)
Iron, filtered ^e	66.4 µg/L (90 th percentile)

Table 3 Ambient Background Data

Parameter	Value Used
Lead, Total ^c	0.7 µg/L (90 th percentile)
Magnesium, filtered ^e	5000 µg/L (90 th percentile)
Mercury ^g	0.005 µg/L (90 th percentile)
Nickel, filtered ^e	0.64 µg/L (90 th percentile)
Selenium, filtered ^e	0.16 µg/L (90 th percentile)
Zinc, Total ^e	4.36 µg/L (90 th percentile)

^a CH₂M Hill conducted extensive field data collections for Weyerhaeuser during the dry season (low river flow conditions) in the Columbia River between River Mile (RM) 64 immediately upstream of the Weyerhaeuser Longview Outfalls (Station UP-1) and RM 69 (immediately upstream of the mouth of the Cowlitz River). Temperature data was reported to Ecology in a document titled *Outfall Dilution and Temperature Study, Longview Mill Outfalls 001 and 002, Weyerhaeuser Company, Longview, Washington, 2004*.

^b The maximum pH value was taken from Integral Consulting's *Receiving Water Study, Weyerhaeuser Longview Mill, Longview, Washington, 2008*. The minimum pH value was taken from Appendix D, Table D-1 of CH₂M Hill's *Outfall Dilution and Temperature Study, Longview Mill Outfalls 001 and 002, Weyerhaeuser Company, Longview, Washington, 2004*.

^c The hardness of the receiving water was calculated using calcium and magnesium data from surface water sampling conducted as part of the Former Reynolds Metals Reduction Plant RI/FS (data from sample locations W5, W8, W9, and W10). The following calculation was used:

$$\text{Hardness (as mg CaCO}_3\text{/L)} = 2.497 * [\text{Ca(mg/L)}] + 4.118 * [\text{Mg(mg/L)}]$$

^d Ambient values taken from Integral Consulting's *Receiving Water Study, Weyerhaeuser Longview Mill, Longview, Washington, 2008*.

^e Percentile values were calculated from the USGS's *Water Data Reports, 14246900 Columbia River at Beaver Army Terminal, Near Quincy, OR, 2010 and 2011*.

^f Percentile values were calculated from the USGS's *Water Data Reports, 14246900 Columbia River at Beaver Army Terminal, Near Quincy, OR, 2007*.

^g The 90th percentile and geometric mean values were calculated from the Washington State Department of Ecology's *Water Quality Monitoring, 28A100 Columbia River at Vancouver, WA 2007*.

C. Wastewater characterization

Millennium reported the concentrations of pollutants detected in the discharges for Outfalls 002A and 003C in Forms 2C and 2F of the updated NPDES permit renewal application in Appendix B of the July 2014 Engineering Report. The tabulated data represents the quality of the effluent discharged from July 2011 through March 2014 including Millennium's 2011 priority pollutant scan and results from Ecology's Class II inspections conducted on July 17, 2013, April 08, 2014, June 16, 2015, and June 21, 2016.

The tabulated data for Outfall 002B represents the quality of effluent discharged from July 2011 through March 2014 as reported in Millennium's July 2014 Engineering Report.

The number of samples in the table below represents the total number of samples collected, not just those where the parameter was measured at or above the detection limit. The average values were taken from the spreadsheet titled "Compiled MBTL Data Presented in EPA Form 2C for RPA" in Appendix B of Millennium's 2014 Engineering Report.

The wastewater effluent at Outfalls 002A, 002B, and 003C is characterized as follows:

Table 4 Wastewater Characterization for Outfall 002A

Parameter	Units	# of Samples	Average Value	Maximum Value
Chemical Oxygen Demand (COD)	mg/L	1	-	17
Total Organic Carbon	mg/L	1	-	5.32
Total Suspended Solids (TSS)	mg/L	365	6.1	22
Ammonia	mg/L	1	-	0.164
Flow	MGD	1175	1.45	5.87
Temperature (summer)	°C	1	-	15.3
Color	mg/L	1	-	>70
Fecal Coliform	MPN/100 ml	1	-	20
Fluoride, Total	mg/L	364	5	18
Organic Nitrogen, Total	mg/L	1	-	0.425
Oil and Grease	mg/L	213	1.43	7.22
Phosphorus, Total	mg/L	1	-	0.306
Sulfate, as SO ₄	mg/L	1	-	3.36
Aluminum, Total	mg/L	366	0.24	1.19
Barium, Total	µg/L	1	-	18
Boron, Total	mg/L	1	-	0.028
Iron, Total	µg/L	1	-	1320
Magnesium, Total	µg/L	1	-	12400
Molybdenum, Total	µg/L	1	-	2.24

Table 4 Wastewater Characterization for Outfall 002A

Parameter	Units	# of Samples	Average Value	Maximum Value
Manganese, Total	µg/L	1	-	369
Antimony, Total	µg/L	211	0.6	6.5
Arsenic, Total	µg/L	9	5.53	8.15
Chromium, Total	µg/L	9	0.15	0.184
Copper, Total	µg/L	9	6.23	26.6
Lead, Total	µg/L	9	0.21	0.31
Nickel, Total	µg/L	206	0.002	0.05
Zinc, Total	µg/L	9	6	10.7
Cyanide, Total	mg/L	208	0.032	0.16
Cyanide, WAD	mg/L	175	0.0057	0.02
Chloroform	µg/L	1	-	1.11
Methylene chloride	µg/L	1	-	9.04
Benzo(a)pyrene	µg/L	9	-	0.068
Benzo(b)fluoranthene	µg/L	9	-	0.11
Fluoranthene	µg/L	9	-	0.15
pH	standard units	82	6.92	8.47

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Table 5 Wastewater Characterization for Outfall 002B

Parameter	Units	# of Samples	Average Value	Maximum Value
Fluoride	mg/L	73	32.6	67
Cyanide, Total	mg/L	73	0.26	0.73
Cyanide, WAD	mg/L	55	0.010	0.040
Benzo(a)pyrene	µg/L	73	1.21	17.8
Flow	MGD	1175	0.03	0.10
Antimony	µg/L	2	-	0.33
Arsenic	µg/L	2	-	3.0
Chromium	µg/L	2	-	2.66
Copper	µg/L	2	-	9.89
Lead	µg/L	2	-	0.41
Nickel	µg/L	2	-	5.63
Selenium	µg/L	2	-	0.58
Zinc	µg/L	2	-	13.6
Benz(a)anthracene	µg/L	2	-	0.11
Benzo(b)fluoranthene	µg/L	2	-	0.46
Benzo(g,h,i)perylene	µg/L	2	-	0.1
Benzo(k)fluoranthene	µg/L	2	-	0.17
Chrysene	µg/L	2	-	0.31
Dibenzo(a,h)anthracene	µg/L	2	-	0.028
Fluoranthene	µg/L	2	-	0.073
Indeno(1,2,3-c,d)pyrene	µg/L	2	-	0.069

Parameter	Units	# of Samples	Average Value	Maximum Value
Pyrene	µg/L	2	-	0.16

Table 6 Wastewater Characterization for Outfall 003C

Parameter	Units	# of Samples	Average Value	Maximum Value
Total Organic Carbon	µg/L	1	-	2.9
Total Suspended Solids	mg/L	2	-	11
Ammonia	mg/L	1	-	0.551
Temperature (summer)	°C	1	-	14.2
Color	mg/L	1	-	6
Fluoride	mg/L	23	0.78	1.5
Organic Nitrogen, Total	mg/L	1	-	0.332
Oil and Grease	mg/L	23	1.85	4.8
Phosphorus, Total	mg/L	1	-	0.304
Aluminum, Total	µg/L	1	-	86.8
Barium, Total	µg/L	1	-	10.6
Boron, Total	mg/L	1	-	0.021
Iron, Total	µg/L	1	-	496
Magnesium, Total	µg/L	1	-	13100
Molybdenum, Total	µg/L	1	-	2.35
Manganese, Total	µg/L	1	-	502
Titanium, Total	µg/L	1	-	24
Arsenic, Total	µg/L	7	4.82	6.66

Parameter	Units	# of Samples	Average Value	Maximum Value
Chromium, Total	µg/L	7	0.146	0.191
Copper, Total	µg/L	7	2.760	5.02
Lead, Total	µg/L	7	0.165	0.29
Nickel, Total	µg/L	7	1.165	1.83
Zinc, Total	µg/L	4	6.59	7.38
Cyanide, WAD	mg/L	23	0.0031	0.005
Chloroform	µg/L	1	-	1.37
Bis(2-ethylhexyl)phthalate	µg/L	1	-	8.58
Benzo(a)pyrene	µg/L	3	-	0.016
Benzo(b)fluoranthene	µg/L	2	-	0.061
Benzo(g,h,i)perylene	µg/L	2	-	0.03
Benzo(k)fluoranthene	µg/L	2	-	0.031
Chrysene	µg/L	2	-	0.046
Dibenzo(a,h)anthracene	µg/L	2	-	0.012
Fluoranthene	µg/L	2	-	0.05
Fluorene	µg/L	2	-	0.11
Indeno(1,2,3-c,d)pyrene	µg/L	2	-	0.024
Phenanthrene	µg/L	2	-	0.02
Pyrene	µg/L	2	-	0.044
pH	standard units	21	7.2	7.7

D. Summary of Compliance with Previous Permit Issued

The previous permit placed effluent limits and monitoring requirements on the discharges from Outfalls 001S, 002A, 002B, 003C, and 005.

The parameters with effluent limits varied for each outfall but included aluminum, total suspended solids, fluoride, oil and grease, benzo(a)pyrene, antimony, nickel, total cyanide and free cyanide, and PH. Millennium began operating as a bulk storage and transport facility at the site in January 2011. Millennium has complied with the effluent limits and permit conditions since beginning operations. Ecology assessed compliance based on its review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), discharge monitoring reports (DMRs), and on inspections. Monitoring data reported in Millennium's monthly discharge monitoring reports (DMRs) is summarized in **Appendix G**.

The previous permit was issued in 1990. The following table summarizes Reynolds Metals' compliance with report submittal requirements prior to shutting down the smelter in 2001. After purchasing the facility assets, Millennium continued to comply with permit limits and monitoring, salmonid bioassay testing, and DMR and WET report submittal requirements.

Table 7 Reynolds Metals Permit Submittals

Permit Section	Required Submittal	Frequency/Due Date	Status
S1.I.B.	Install a precipitation gauge on site	By February 15, 1991	Installed as required
S1.II.A.	Reroute stormwater runoff from Outfall 004 to the wet air pollution control system and/or Outfall 002A	By September 30, 1991	Reroute completed as required
S1.II.B.	Reroute stormwater runoff from Outfall 005 above gate dam to the wet air pollution control system and/or Outfall 002A	By December 12, 1990	Reroute completed as required
S1.II.B. and C.	Weekly monitoring of effluent/stormwater runoff at Outfalls 003 and 005	First six months of the permit term	Conducted as required
S1.II.B. and C.	If necessary, reroute Outfall 003 and/or 005 to the wet air pollution control system and/or Outfall 002A	By April 15, 1992	Outfall 005 reroute completed as required

Permit Section	Required Submittal	Frequency/Due Date	Status
S1.II.D.	Submit a report on the results of the weekly monitoring at Outfalls 003 and 005	Within two months following the six month period	Submitted as required
S1.II.D.	Submit the weekly results for each month with the monthly discharge monitoring report	Monthly for the first six months of the permit term	Submitted as required
S1.III.	Conduct salmonid bioassay and submit report to the Department at the conclusion of testing	Semiannually	Submitted as required
S3.	Submit discharge monitoring report and summary sheet to the Department	Monthly	Submitted as required
S4.A.	Update spill control plan and submit to the Department	By April 15, 1991 and annual updates thereafter	Submitted as required
S4.A.	Update solid waste control plan and submit to the Department	By April 15, 1991 and update 180 days before permit expiration	Submitted as required
S4.B.	Submit an updated stormwater runoff sampling program to the Department for review and approval	By July 15, 1991	Submitted as required
S4.B.	Conduct stormwater runoff study	Within four months of Departmental approval	Study conducted as required
S4.B.	Submit a report on results of the stormwater runoff study	Within four months of study completion	Submitted as required
S4.C.	Conduct engineering assessment on fluoride treatment plant conversion and submit written report	By August 17, 1992 to coincide with the stormwater study	Submitted as required
S4.D.	Update and submit an industrial discharge treatment system operating plan to the Department	Within six months of written	Submitted as required

Permit Section	Required Submittal	Frequency/Due Date	Status
		notification from the Department	
S4.F.	Obtain certification for operator in charge of sanitary treatment facility	By October 15, 1991	Submitted as required
S4.H.	Submit a plan for a wastewater discharge reduction/elimination study to the Department for review and approval	By October 15, 1991	Submitted as required
S4.H.	Conduct wastewater discharge reduction/elimination study	Within one month of Departmental approval	Conducted as required
S4.H.	Submit a report on the results and conclusions of the wastewater discharge reduction/elimination study to the Department	Within three months of study completion	Submitted as required
S4.I.	Conduct chemical analysis of Outfalls 002A and 002B effluent	Within second year of permit term	Conducted as required
S4.I.	Submit report on results of chemical analysis of Outfalls 002A and 002B effluent	Within four months of initial sampling	Submitted as required
S4.J.	Conduct particulate monitoring study	Upon written notification from the Department	No notification from Ecology was found in historical Reynolds on-site files
4.J.	Submit report on results of particulate monitoring study to the Department	Within nine months of written notification from the Department	No notification from Ecology was found in historical Reynolds on-site files

E. State Environmental Policy Act (SEPA) Compliance

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

Discharges from aluminum smelter operations and bulk material handling were covered by the previous permit. The proposed permit covers bulk material handling. The bulk products currently managed onsite are the same or similar to those managed when the facility operated as an aluminum smelter. The pollutant loading from the current activities is substantially less than that of the operating aluminum smelter. The proposed permit contains conditions that are no less stringent than federal and state rules and regulations.

III. Proposed Permit Limits

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

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

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

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

A. Design Criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for Facility 71 and Facility 73 in the *Engineering Report for NPDES Permit Application* dated July 2014 prepared for Millennium by Anchor QEA, LLC. The table below includes design criteria from the referenced report.

Storm events that exceed the hydraulic design criteria of stormwater treatment systems may bypass the treatment system when Ecology has determined the system meets AKART requirements. Ecology would not consider this a violation of the conditions of the permit, if the bypass can meet water quality criteria. AKART for stormwater is constantly progressing and, as technology advances, facilities will have more cost effective, more efficient, and higher capacity treatment system options available. Ecology expects the facility to meet AKART and make the necessary improvements to its treatment system as treatment technology evolves.

Table 8 Design Criteria

Parameter	Design Quantity
Maximum Design Flow at Facility 71 ^a	0.12 MGD
Maximum Design Flow at Facility 73 ^b	8.6 MGD

^a As measured at the influent to Facility 71

^b As measured at Outfall 002A

B. Remediation Water

Portions of the Millennium site are contaminated by the former Reynolds Metals aluminum smelter operations. Chemicals of concern identified at the site include the following:

- Fluoride and cyanide in surface water
- Fluoride, cyanide, and polycyclic aromatic hydrocarbons (PAHs) in groundwater.
- Fluoride, cyanide, PAHs, and petroleum in soil

Water associated with the cleanup up of the site (remediation water) will include groundwater from dewatering activities, stormwater runoff, and water used in dust suppression.

The proposed permit requires Millennium to capture all remediation water and analyze it for fluoride. Fluoride is the principal contaminant of concern for waters generated during the cleanup of the site. Fluoride levels will be used to determine the treatment process for the remediation water. The engineering report and AKART evaluation discussed below established a minimum influent fluoride level at which wastewater can benefit from treatment.

Remediation water at or above 45 mg/L fluoride will be routed to the thickener tanks at Facility 77 and batch-processed through Facility 71 before additional treatment at Facility 73. Remediation water below 45 mg/L fluoride will be conveyed through Facility 77 for treatment at Facility 73 and then discharged through Outfall 002A.

The description of how waters generated during the site cleanup will be managed is provided in the revised *Fluoride Waters Management Plan* for Millennium Bulk Terminals dated February 2017.

The proposed permit also requires Millennium to conduct a supplemental AKART study to evaluate the treatment effectiveness of remediation water at Facility 71. Millennium will sample the influent and effluent at Facility 71 and analyze the samples for fluoride, free cyanide, and B(a)P (an indicator pollutant for PAHs).

Millennium must update their Stormwater Pollution Prevention Plan and implement BMPs consistent with Ecology's 2012 Stormwater Management Manual for Western Washington as amended in December 2014, to remove and/or reduce sediment and suspended solids in any remediation water generated during site cleanup. Millennium must also keep records of volumes, dates, and influent data for all remediation water treated at the WWTP.

C. Technology-Based Effluent Limits

Ecology must ensure that facilities provide all known, available, and reasonable methods of prevention, control, and treatment (AKART) when it issues a permit. Effluent limits based upon demonstrated performance may be considered technology-based effluent limits under AKART.

In 2016, Millennium conducted an AKART study of the existing treatment technology for process water, remediation water, and stormwater at Facilities 71 and 73 and an evaluation of stormwater BMPs. A draft report titled *Engineering Report and AKART Evaluation for NPDES Permit Application* dated October 2016 was submitted to Ecology for review and comment. A final report addressing Ecology's comments was submitted February 2017. Ecology determined that the process water and stormwater prevention, control, and treatment provided at Millennium meets the requirements of AKART.

Effluent Limitations in the Previous Permit

Outfall 002A

The effluent limits in the previous permit for Outfall 002A were based on Best Available Technology Economically Achievable (BAT) and Best Professional Judgment (BPJ). In determining the technology-based effluent limitations, the federal effluent guidelines for Nonferrous Metals Manufacturing, Primary Aluminum Smelting Subcategory (40 CFR Part 421 Subpart B) were used. These guidelines are production-based and establish effluent limits for conventional, toxic, and nonconventional pollutants in discharges from processes at an operating aluminum smelter.

The federal effluent limit guidelines include allowances for aluminum, fluoride, total suspended solids (TSS), cyanide, oil and grease, benzo(a)pyrene (B(a)P), antimony, and nickel. Stormwater allowances were granted in addition to building block allowances for Outfall 002A to account for pollutants in stormwater runoff from material handling areas, vehicle traffic, and settled fugitive smelter emissions. The stormwater allowances were granted for aluminum, fluoride, TSS, cyanide, oil and grease, and B(a)P. The stormwater allowances were based on BPJ using stormwater data and technology-based treatability information for the operating smelter.

Outfall 002B

The effluent limitations for B(a)P at Outfall 002B in the previous permit were based on technology-based treatability concentrations. These limitations were intended to be applied at Outfall 002A but monitoring for compliance with the limits was required at Outfall 002B. The fact sheet for the previous permit stated that this was because expected B(a)P concentrations that would be seen at Outfall 002A were below analytical detection limits achievable at that time.

Outfalls 003 and 005

The previous permit included Individual Control Strategies (ICSs) to reduce/eliminate the discharge of toxics at Outfalls 003, 004, and 005 into the CDID ditch system. These control strategies included closing the Black Mud Pond, ceasing the discharge at Outfall 004, additional monitoring to determine compliance with water quality standards, and rerouting stormwater runoff and non-contact cooling water to the smelter's wet pollution control system or through the onsite industrial wastewater treatment system and discharge at Outfall 002A.

Following the implementation of the ICSs, the effluent limits established at Outfall 003 were for oil and grease, pH, and free cyanide. Ecology used BPJ and freshwater chronic water quality criteria in developing the effluent limitations. No limits were established at Outfall 005.

Basis for Limitations in the Proposed Permit

The aluminum smelter permanently closed in 2000. Most of the process equipment has been dismantled and removed from the site.

Since purchasing the plant assets in 2011, Millennium has been operating as a bulk product terminal. The primary wastewater generated onsite is stormwater runoff with small volumes of process water from non-contact cooling water, fire suppression water, wash down water, steam cleaning water, and lab water.

Remediation of the site is planned for this next permit cycle. Remediation water will be treated in batches at Facility 71 and Facility 73 and discharged through Outfall 002A.

The technology-based limits at Outfalls 002A, 002B, and 003C are different from the previous permit. Because the aluminum smelter is no longer in operation, the federal effluent limit guidelines for aluminum smelting no longer apply.

Ecology evaluated all available data for the facility (from the 2014 updated permit renewal application, 2011-2016 DMRs, and 2013-2016 Class II inspections) to establish effluent limits at Outfalls 002A and 003C. The basis for these limits is described below.

Outfall 002A

The effluent limits at Outfall 002A in the proposed permit are a combination of performance-based limits and limits based on Best Professional Judgment (BPJ). Limits proposed for TSS, pH, oil and grease, and free cyanide are based on demonstrated performance over the last 5 years that Millennium has been operating as a bulk product terminal. Ecology retained the concentration limits for free cyanide from the previous permit.

The primary pollutants of concern for the proposed remediation at the site (see *Site Decommissioning and Remediation*) include fluoride, cyanide, and benzo(a)pyrene. In accordance with RCW 90.48.520, “the department of ecology shall in issuing and renewing state and federal wastewater permits, review the applicant’s operations and incorporate permit conditions which require all known, available, and reasonable methods to control toxicants in the applicant’s wastewater”. To satisfy this requirement, Ecology used Millennium’s AKART study and BPJ to develop water quality-based effluent limitations for fluoride and B(a)P at Outfall 002A. See Section G. *Evaluation of surface water quality-based effluent limits for numeric criteria – Toxic pollutants*.

The limits for fluoride, free cyanide, and B(a)P only apply at Outfall 002A when remediation water (as defined in Condition S1.D. of the permit) is being treated at Facility 71 and/or discharged from Facility 73 through Outfall 002A.

Outfall 002B

In the proposed permit, Ecology has moved the effluent limit for B(a)P to the compliance monitoring point at Outfall 002A. Monitoring for B(a)P was retained at Outfall 002B to evaluate treatment effectiveness when processing remediation water at Facility 71.

Outfall 003C

The effluent limits at Outfall 003C in the proposed permit are a combination of performance-based limits, limits based on Best Professional Judgment (BPJ), and stormwater benchmarks. Ecology retained the effluent limits for oil and grease and pH from the previous permit. This decision was based on demonstrated performance at these limits.

A limit for TSS was added to evaluate solids in the discharge instead of including a stormwater benchmark for turbidity. The oil and grease limit replaces the oil sheen stormwater benchmark. The limit for free cyanide was removed because historic data showed it was not detectable in the discharge.

The stormwater benchmarks for copper and zinc are from Ecology’s 2015 Industrial Stormwater General Permit (ISGP). In the ISGP, these benchmarks are applicable to stormwater at all industrial facilities. These benchmarks are considered technology-based limits because Ecology’s analysis showed that there was no reasonable potential to exceed water quality standards for copper and zinc at Outfall 003C (see Appendix I). An annual requirement was added to test the discharge at Outfall 003C for priority pollutants.

Table 9 Technology-based Limits for Outfall 002A

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
TSS	mg/L	--	30 ^a
Oil and grease	mg/L	10 ^b	15 ^b
Cyanide, Free (WAD)	mg/L	--	0.110 ^c
pH	standard units	6.0 ^a	9.0 ^a

Table 10 Technology-based Limits for Outfall 003C

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
TSS	mg/L	--	30 ^a
Oil and grease	mg/L	--	10 ^a
Parameter	Units	Daily Minimum	Daily Maximum
pH	standard units	6.5 ^a	8.5 ^a

Parameter	Units	Benchmark ^d
Copper	µg/L	14
Zinc	µg/L	117

^a Demonstrated performance from 2011-2016

^b Technology-based limit to meet the narrative standard

^c Limit from previous permit

^d Ecology's 2015 Industrial Stormwater General Permit

C. Surface Water Quality-Based Effluent Limits

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

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

Numerical criteria for the protection of aquatic life and recreation

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

Numerical criteria for the protection of human health

The U.S. EPA published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA, 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

In 2015, EPA revised 94 of the existing human health criteria to reflect the latest scientific information, including updated exposure factors, bioaccumulation factors, and toxicity factors (EPA, 2015). The criteria were also updated to follow the current EPA methodology for deriving human health criteria (EPA, 2000).

States may adopt the criteria that EPA publishes, modify EPA's criteria to reflect site-specific conditions, or adopt different criteria based on other scientifically-defensible methods. EPA must, however, approve any new water quality standards adopted by a state before they can be used for Clean Water Act (CWA) purposes.

On November 15, 2016, EPA acted on Washington's new human health criteria and implementation tools revision to WAC 173-201A. Because EPA approved some of the criteria in WAC 173-201A and disapproved others, and because EPA has developed its new regulation containing its new criteria to replace those it disapproved in the Washington rule, the new human health criteria for CWA use will be in two separate rules:

WAC 173-201A and the new (and as yet unpublished) EPA regulation 40 CFR 131.45 *Revision of certain Federal water quality criteria applicable to Washington*. EPA has compiled a chart of human health criteria for use with CWA actions in Washington and it can be found at:

https://www.epa.gov/sites/production/files/2016-11/documents/cwa_effective_criteria_11_2_16_508c.pdf.

Narrative criteria

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

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

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

Antidegradation

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

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

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollution. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

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

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

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

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

Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

Ecology determined that this facility does not need to prepare a Tier II analysis and Tier III does not apply. There is not a new or expanded action at the facility. The facility is handling the same or similar bulk materials as those handled when the aluminum smelter was operating. The same pollutants are being generated but at much lower levels. Contaminated stormwater, surface water, and groundwater was being treated when the aluminum smelter was operating from site runoff, the cryolite ditches, and the Black Mud Pond leachate water. The AKART study demonstrated that the treatment system is still effectively treating pollutants in wastewater from the facility.

Washington State currently has no Tier III designated "outstanding resource waters."

Mixing zones

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

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

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

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*).

Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 4 means the effluent is 25% and the receiving water is 75% of the total volume of water at the boundary of the mixing zone.

Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

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

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

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water.
- A one-in-one-million cancer risk for carcinogenic chemicals.

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

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

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

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

Ecology has determined that the process water and stormwater prevention, control, and treatment provided at Millennium meets the requirements of AKART (see *Technology-based Effluent Limits*).

3. Ecology must consider critical discharge conditions.

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

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents, and the rate of discharge.

Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology's *Permit Writer's Manual* describes additional guidance on criteria/design conditions for determining dilution factors. The manual can be obtained from Ecology's website at: <https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>.

Table 11 Critical Conditions Used to Model the Discharge at Outfall 002A

Critical Condition	Value
The seven-day-average low river flow with a recurrence interval of ten years (7Q10)	115,000 cubic feet per second
River velocity	5.5 cm per second
Manning roughness coefficient	0.1
Maximum average monthly effluent flow for chronic and human health non-carcinogen	1.27 MGD
Annual average flow for human health carcinogen	2.81 MGD
Maximum daily flow for acute mixing zone	5.87 million gallons per day (MGD)
7-DAD MAX Effluent temperature	g18.85°C

Ecology obtained ambient data at critical conditions in the vicinity of Outfall 002A from the *Mixing Zone Analysis for Outfall 001S and Outfall 002A* prepared for Millennium by URS dated June 10, 2014. Millennium conducted a dye study at Outfall 002A on September 28, 2012.

The results of the dye study were used to calibrate/validate the Visual Plumes Model. The dilution model was used to evaluate dilution for the acute and chronic mixing zones under a range of ambient and effluent conditions.

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

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

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

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

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than two seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

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

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

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

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

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

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

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

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

7. Maximum size of mixing zone.

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

8. Acute mixing zone.

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

Ecology determined the acute criteria will be met at 10% of the distance of the chronic mixing zone at the ten year low flow.

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

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

- **Comply with size restrictions.**

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

9. Overlap of Mixing Zones.

This mixing zone does not overlap another mixing zone.

D. Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA established human health criteria for toxic pollutants (EPA 1992) which were recently updated (see discussion in *Numerical criteria for the protection of human health*). The table below summarizes the criteria applicable to this facility's discharge.

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

Table 12 Freshwater Aquatic Life Uses and Associated Criteria

Salmonid Spawning, Rearing, and Migration	
Temperature Criteria – Highest 1-DAD MAX	1-day maximum (1-DMax) of 20.0°C <ul style="list-style-type: none"> • When natural conditions exceed 1-DMax, no temperature increase will raise the receiving water temperature by greater than 0.3°C.
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	To exceed 90 percent saturation
Turbidity Criteria	<ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

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

Table 13 Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies/100 ml, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies/100 ml.

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

E. Water Quality Impairments

A segment of the Columbia River near RM 62 (downstream of Millennium's discharge at RM 63) is listed on the current 303(d) and is impaired for temperature. Ecology considers the entire Columbia River impaired for temperature. EPA has prepared a draft Total Maximum Daily Load (TMDL) Analysis for temperature, however has delayed issuance pending discussion and information exchanges. The Columbia River at RM 66 near the Lewis and Clark Bridge is also listed on the current 303(d) for bacteria (fecal coliform) and dioxin. Ecology has completed a TMDL for dioxin in this segment of the river.

CDID Ditch No. 10 is listed on the current 303(d) for fecal coliform. It is identified in the Water Quality Assessment as a Category 2 indicating that there is some evidence of a water quality concern but not enough to require a TMDL.

Ecology has not documented any water quality impairments in CDID Ditches No. 10 and 14 in the vicinity of Millennium's outfalls.

F. Evaluation of Surface Water Quality-Based Effluent Limits for Narrative Criteria

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

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

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

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

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

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

The diffuser at Outfall 002A is 49 feet long with a diameter of 8 inches. The diffuser has a total of sixteen 8-inch diameter ports spaced at 3-foot intervals on alternating sides of the diffuser with the port centerline directed upward at 35° from horizontal. The seventeenth port is located at the end of the diffuser. The midpoint diffuser depth of 15.5 feet was used for diffuser evaluations. The mean lower low water (MLLW) depth of + 0.5 feet was used for the mixing zone analysis. Ecology obtained this information from the dilution ratio study report titled *Millennium Bulk Terminals Longview LLC, Mixing Zone Analysis for Outfall 001S and 002A* prepared by URS and dated June 27, 2014.

Figure 2 below and **Appendix H** illustrate the dimensions of the Outfall 002A mixing zone.

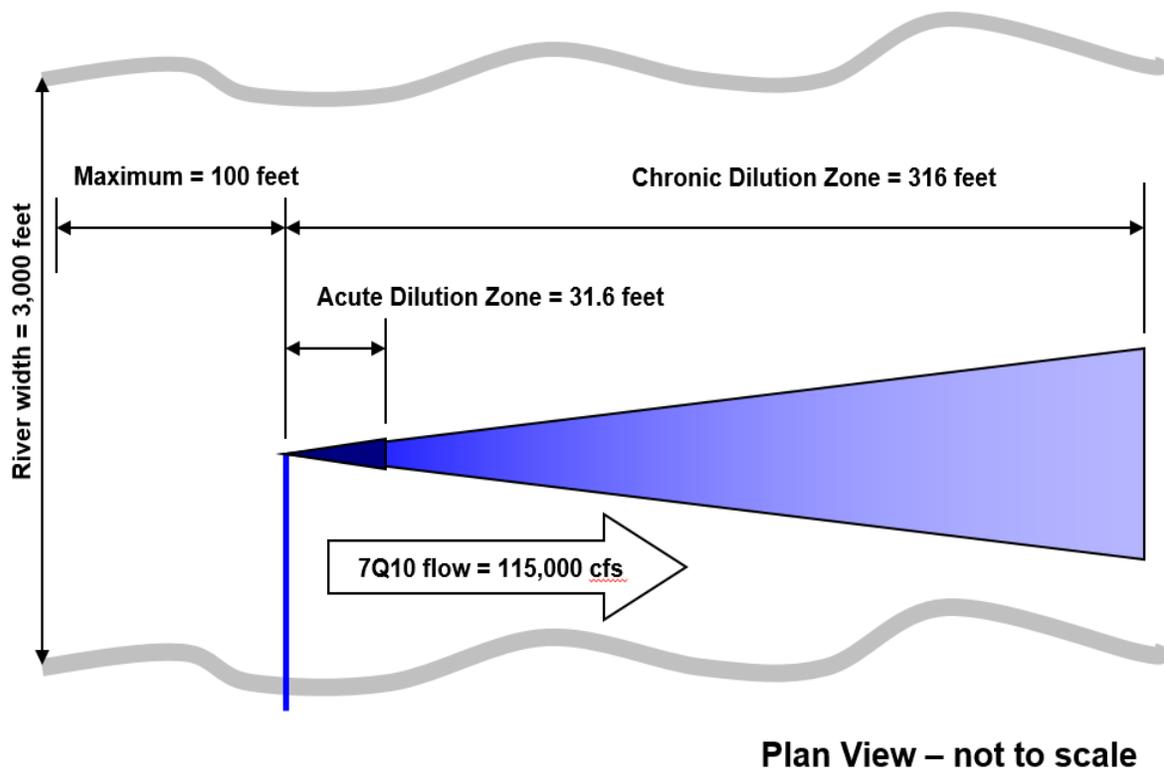


Figure 2 Outfall 002A Mixing Zone

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

The horizontal distance of the chronic mixing zone is 316 feet. The mixing zone extends from the bottom to the top of the water column.

Acute Mixing Zone--WAC 173-201A-400(8)(a) specifies that in rivers and streams a zone where acute toxics criteria may be exceeded must not extend beyond 10% of the distance towards the upstream and downstream boundaries of the chronic zone, not use greater than 2.5% of the flow and not occupy greater than 25% of the width of the water body.

The horizontal distance of the acute mixing zone is 31.6 feet from Outfall 002A. The mixing zone extends from the bottom to the top of the water column. The dilution factor is based on this distance.

Ecology determined the dilution factors that occur within these zones at the critical condition using a Rhodamine WT dye study and the model Visual Plumes. The dilution factors are listed below.

Table 14 Dilution Factors for Outfall 002A

Criteria	Acute	Chronic
Aquatic Life	19	77
Human Health, Carcinogen		74
Human Health, Non-Carcinogen		74

Ecology determined the impacts of pH, turbidity, toxics pollutants, and temperature as described below, using the dilution factors in Table 15. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

pH – Ecology predicts no violation of the pH criteria under critical conditions. Therefore, the proposed permit includes technology-based effluent limits for pH at Outfall 002A.

Turbidity—Ecology evaluated the impact of turbidity based on the range of turbidity in the effluent and turbidity of the receiving water. Based on visual observations of the facility's effluent, Ecology expects no violations of the turbidity criteria outside of the designated mixing zone.

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

The following toxic pollutants are present in the Outfall 002A discharge: ammonia, aluminum, antimony, arsenic, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, chloroform, chromium, copper, cyanide, fluoride, fluoranthene, iron, lead, manganese, methyl chloride, molybdenum, nickel, and zinc. Although total residual chlorine was detected in the discharge, the source of this pollutant was removed when Millennium hooked up to the city's drinking water system in December 2011.

The following toxic pollutants are present in the Outfall 003C discharge: ammonia, aluminum, antimony, arsenic, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, chloroform, chromium, copper, cyanide, fluoride, fluoranthene, iron, lead, manganese, molybdenum, nickel, zinc, and trace levels of polyaromatic hydrocarbons (PAHs). Although total residual chlorine was detected in the discharge, the source of this pollutant was removed when Millennium hooked up to the city's drinking water system.

Ecology conducted a reasonable potential analysis of the parameters in these discharges to determine whether effluent limits would be required in this permit. The information used in the analysis represented Millennium's operations as a bulk storage and transport facility (data collected since January 2011).

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

Valid ambient background data were available in the Columbia River for ammonia, aluminum, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. A hardness value of 110 mg/L for the CDID ditches was taken from the fact sheet of the previous permit. Ecology used all applicable data to evaluate reasonable potential for this discharge to cause a violation of water quality standards.

Ecology determined that none of the toxic pollutants present in the discharges at Outfalls 002A and 003C pose a reasonable potential to exceed freshwater acute aquatic life water quality criteria at the critical condition using EPA procedures (1991).

See the Reasonable Potential Analysis for Outfalls 002A and 003C in **Appendix I**.

The primary pollutants of concern in the remediation water generated during cleanup of the site (see *Site Decommissioning and Remediation*) are fluoride, cyanide, and benzo(a)pyrene. Washington State and EPA do not have surface water quality standards for fluoride. There is a State groundwater quality standard for fluoride of 4.0 mg/L. Ecology reviewed site specific conditions and acute toxicity data and determined that the groundwater standard would be protective of aquatic life in the receiving water under acute exposure conditions. North Carolina has a fluoride surface water quality standard of 1.8 mg/L based on chronic toxicity data. For the Millennium facility, Ecology used the 4.0 mg/L criterion as an acute value and the 1.8 mg/L as a chronic value to derive water quality-based limits at Outfall 002A. Ecology used Best Professional Judgment to derive these limits to be protective of receiving water quality.

Ecology is requiring that B(a)P is non-detect at Outfall 002A. The method detection limit of 0.50 µg/L using required analytical procedures in Appendix A of the permit is the basis for the maximum daily limit for B(a)P in the proposed permit. This is a BPJ limit that is technology-based to ensure that remediation waters are managed and treated appropriately.

The proposed permit establishes fluoride concentration limits at Outfall 002A of 32 mg/L and 76 mg/L for monthly average and daily maximum, respectively and a daily maximum B(a)P concentration limit at Outfall 002A of 0.50 µg/L. These limits are consistent with the available dilution in the acute and chronic mixing zones.

Table 15 Water Quality-based Limits for Outfall 002A

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
Fluoride	mg/L	32 ^a	76 ^a
B(a)P	µg/L	--	0.05 ^b

^a North Carolina surface water quality standard and Washington State groundwater quality criteria

^b Non-detect at a detection limit of 0.50 µg/L as specified in Appendix A of permit

Remediation at the site may generate wastewater with legacy pollutants including B(a)P, fluoride, and cyanide. Ecology has established effluent limits using BPJ and its AKART authority to check the effectiveness of treatment and BMPs implemented during these activities (see *Technology-based Effluent Limits*).

Oregon Water Quality Analysis

To ensure compliance with the applicable water quality requirements of all affected states [40 CFR 122.4(d)], Ecology performed a simple mixing analysis using Oregon’s water quality standards for the protection of aquatic life (Table 16). Simple mixing uses a mass balance approach to proportionally distribute a pollutant load from a discharge into the full mixing volume. The approach assumes no decay or generation of the pollutant of concern within the mixing volume. The analysis was performed using the following equation:

$$PC = [(EC * EV) + (AC * AV)] / (EV + AV)$$

Where:

PC = Pollutant concentration affecting Oregon water quality

EC = Maximum effluent pollutant concentration for the discharge at Outfall 002A

EV = Effluent discharge volume from Outfall 002A. Highest monthly average flow from the previous 3 years (65.1 MGD, October 2013). The value was converted from MGD to cfs.

AC = Ambient pollutant concentration in Columbia River (geometric mean)

AV = Ambient volume (half of the 7Q10 low river flow used to model the dilution from the Washington portion of the Columbia River)

Table 16 Oregon WQ Assessment – Outfall 002A

Observed Pollutant	OR WQS Aquatic Life [µg/L]	Number of Effluent Samples	Effluent Conc. [µg/L]	Effluent Volume [cfs]	Ambient Conc. [µg/L]	Ambient Volume [cfs]	Pollutant Conc. [µg/L]	OR WQ Impact?
Chromium	46.09	9	0.184	5.75	0.19	57500	0.19	NO
Lead	1.33	9	0.31	5.75	0.7	57500	0.7	NO
Nickel	31.84	206	0.05	5.75	0.64	57500	0.64	NO
Zinc	72.28	9	10.7	5.75	4.36	57500	4.36	NO

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

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

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

- Annual summer maximum and supplementary spawning/rearing criteria

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

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

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

- Incremental warming criteria

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

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

These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

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

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

- Protections for temperature acute effects

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

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

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

Annual summer maximum, supplemental spawning, and incremental warming criteria:

Ecology calculated the reasonable potential for the discharge to exceed the annual summer maximum, the supplemental spawning criterion, and the incremental warming criteria at the edge of the chronic mixing zone during critical conditions (see the temperature spreadsheet in **Appendix J**). The discharge is only allowed to warm the water by a defined increment when the background (ambient) temperature is cooler or warmer than the assigned threshold criterion. Ecology allows warming increments only when they do not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

The incremental increase for the Outfall 002A discharge is within the allowable amount. Therefore, the proposed permit does not include a temperature limit. No reasonable potential exists to exceed the temperature criterion.

H. Human health

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36) and recently updated in 2015. The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined that the effluent at Outfalls 002A and 003C may contain chemicals of concern for human health, based on data or information indicating that the discharges contain regulated chemicals. However, stormwater comprises the majority of the discharges at Outfalls 002A and 003C. Stormwater discharges are highly intermittent and highly variable in discharge volumes, durations, and pollutant concentrations, both between storms and during a single storm event. The batch discharges of treated remediation water at Outfall 002A are also expected to be highly intermittent and variable. Therefore, evaluating reasonable potential and deriving numeric effluent limits for human health criteria is infeasible. Based on the authority of 40 CFR 122.44(k)(3), the proposed permit requires the implementation of best management practices (BMPs) within the Stormwater Pollution Prevention Plan (SWPPP) to control or abate human health pollutants present in these discharges.

I. Sediment quality

The aquatic sediment standards (Chapter 173-204 WAC) protect aquatic biota and human health.

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

Millennium submitted a Sediment Sampling and Analysis Plan (SSAP) to Ecology on December 13, 2012. The purpose of the plan was to characterize sediment quality (nature and extent of chemical contamination and biological toxicity) in the vicinity of Millennium's wastewater discharges to the Columbia River. Millennium conducted the sediment monitoring in December 2012 and submitted the results to Ecology in a report titled *2012 NPDES Sediment Characterization Report - Outfalls 001 and 002A* dated June 07, 2013.

The sediment study revealed one location near Outfall 002A where polycyclic aromatic hydrocarbons (PAHs) exceeded MTCA cleanup levels. Millennium and Northwest Alloys (a subsidiary of Alcoa) submitted a work plan to Ecology in June 2014 for remediation of the localized area of sediment contamination. The work plan was updated in January 2016. Millennium and Northwest Alloys completed the sediment removal in November 2016 as an Interim Action under MTCA Agreed Order No. DE-8940. Approximately 6,000 cubic yards of contaminated sediments were dredged and sent off-site to the Wasco County landfill in Oregon for disposal. Clean, sandy backfill replaced the sediment that was removed. Contaminated dredge water was treated in Millennium's onsite wastewater treatment system (Facility 71).

J. Groundwater quality limits

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

Millennium does not discharge wastewater to the ground and has no unlined surface impoundments. No permit limits are required to protect groundwater.

K. Whole Effluent Toxicity

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

- *Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent.* Dischargers who monitor their wastewater using acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.
- *Chronic toxicity tests measure various sub lethal toxic responses, such as reduced growth or reproduction.*

Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Acute Toxicity

The results of acute WET testing conducted for Outfall 002A since Millennium began operations as a bulk storage and transport facility met the acute toxicity performance standard defined in WAC 173-205-020. The acute WET test results are summarized in **Appendix K**. Ecology has determined that the Permittee has not made any changes to the facility which would trigger additional effluent characterization for acute toxicity pursuant to WAC 173-205-060. For these reasons, Ecology has not included an acute WET limit in the proposed permit. Instead, the Permittee must conduct WET testing at the end of the permit term to verify that effluent toxicity has not increased.

Chronic Toxicity

The proposed permit requires the facility to conduct WET testing quarterly for one year, to characterize the chronic toxicity of the effluent at Outfall 002A.

If the year of WET testing shows chronic toxicity levels that have a reasonable potential to cause receiving water toxicity, then the proposed permit will:

- Set a limit on chronic toxicity.
- Require the facility operator to conduct WET testing to monitor compliance with a chronic toxicity limit.
- Specify the procedures the facility operator must use to come back into compliance if toxicity exceeds the limit.

Laboratories accredited by Ecology for WET testing know how to use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff know how to calculate an NOEC, LC50, EC50, IC25, etc.

Ecology gives all accredited labs the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (<https://fortress.wa.gov/ecy/publications/SummaryPages/9580.html>), which is referenced in the permit. Ecology recommends that each regulated facility send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the accredited laboratory.

L. Comparison of effluent limits with the previous permit modified on February 1, 2002

Table 17 Comparison of Previous and Proposed Effluent Limits

Parameter	Basis of Limit or Benchmark (Previous/Proposed)	Previous Effluent Limits: Outfall 002A		Proposed Effluent Limits: Outfall 002A	
		Average Monthly	Daily Maximum	Average Monthly	Daily Maximum
Aluminum	Technology/--	52 lbs/day	116 lbs/day	--	--
Total Suspended Solids	Technology/Technology	925 lbs/day	2030 lbs/day	--	30 mg/L
Fluoride	Technology/Water Quality (BPJ)	475 lbs/day	1075 lbs/day	32 mg/L	76 mg/L
Oil & Grease	Technology/Technology	175 lbs/day	425 lbs/day	10 mg/L	15 mg/L
Benzo(a) pyrene	Technology/Water Quality(BPJ)	0.05 lbs/day	0.10 lbs/day	--	0.50 µg/L
Antimony	Technology/--	4.0 lbs/day	9.1 lbs/day	--	--
Nickel	Technology/--	1.7 lbs/day	2.6 lbs/day	--	--
Cyanide, Free (WAD)	Technology/Technology	--	0.110 mg/l	--	0.110 mg/l
pH	Technology/Technology	6.0-9.0		6.0-9.0	

Parameter	Basis of Limit or Benchmark (Previous/Proposed)	Previous Effluent Limits: Outfall 002B		Proposed Effluent Limits: Outfall 002B	
		Average Monthly	Daily Maximum	Average Monthly	Daily Maximum
Benzo(a)pyrene	Technology	0.05 lbs/day	0.10 lbs/day	--	--

Parameter	Basis of Limit or Benchmark (Previous/Proposed)	Previous Effluent Limits: Outfall 003		Proposed Effluent Limits/Benchamarks: Outfall 003C	
		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Total Suspended Solids	--/Technology (BPJ)	--	--	--	30 mg/l

Parameter	Basis of Limit or Benchmark (Previous/Proposed)	Previous Effluent Limits: Outfall 003		Proposed Effluent Limits/Benchmarks: Outfall 003C	
		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Oil & Grease	Technology/--	--	10.0 mg/l	--	10.0 mg/l
pH	Technology/ Technology	6.5-8.5		6.5-8.5	
Cyanide, Free (WAD)	Technology/--	--	5.2 µg/l	--	--
Copper	--/Technology	--	--	--	14 µg/L
Zinc	--/Technology	--	--	--	117 µg/L

IV. Monitoring Requirements

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

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

A. Wastewater monitoring

In the proposed permit, Millennium is required to monitor for total suspended solids (TSS), oil and grease, fluoride, free cyanide, benzo(a)pyrene, pH, copper, zinc, and priority pollutants to further characterize the effluent. These pollutants could have a significant impact on the quality of the surface water.

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

Performance-based Reduction of Monitoring Frequencies

EPA published guidance in April 1996 entitled *Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies*. EPA's goal is to reduce the regulatory burden associated with reporting and monitoring on the basis of excellent performance. The guidance provides a tool to evaluate a facility's performance. Ecology used this guidance to evaluate parameters in Millennium's treated effluent at Outfall 002A. In addition to the approach recommended in the guidance, Ecology compared maximum values with proposed permit limits. See **Appendix L** for the summary and evaluation of monitoring data.

Ecology evaluated all available data (from the 2014 updated permit renewal application, 2011-2016 DMRs, and 2013-2016 Class II inspections) to determine monitoring requirements for the discharges at Outfalls 002A, 002B, and 003C.

TSS and oil and grease were retained as indicator pollutants at Outfall 002A and are required to be monitored more frequently than the other pollutants. Ecology also retained monitoring for legacy pollutants (fluoride, free cyanide, and B(a)P) at Outfalls 002A and 002B to monitor levels in the final effluent during bulk terminal operations and to check the treatment effectiveness at Facility 71 when processing remediation water from cleanup and other onsite activities.

Routine monitoring is no longer required for aluminum, antimony, and nickel at Outfall 002A. These metals were associated with aluminum smelting operations and there is no longer a significant source for these pollutants. Aluminum is still detected at low levels in the effluent at Outfall 002A but does not show a reasonable potential to exceed water quality standards. It is likely a soil contaminant as a result of air fall-out from smelter operations. BMPs required in Millennium’s Stormwater Pollution Prevention Plan will address stormwater runoff from these areas. Recent data for antimony and nickel shows mostly non-detects. These metals will be analyzed in the annual priority pollutant monitoring required at Outfall 002A.

Free cyanide will be monitored at Outfalls 002A and 002B. The monitoring for parameters added at Outfall 003C to check against stormwater benchmarks is consistent with Ecology’s 2015 *Industrial Stormwater General Permit*.

The following table shows a comparison of monitoring with the previous permit modified on February 1, 2002 and in writing on June 26, 2003, March 15, 2006, and March 23, 2006.

Table 18 Comparison of Previous and Proposed Monitoring Requirements

Parameter	Previous Monitoring: Outfall 002A	Proposed Monitoring: Outfall 002A
Aluminum	1/week	--
Total Suspended Solids	1/week	1/week
Fluoride	1/week	1/month, 3/week ^a
Oil & Grease	1/week	1/week
Benzo(a) pyrene	--	1/month, 3/week ^a
Antimony	1/week	--
Nickel	1/week	--
Cyanide, Total	1/week	--

Parameter	Previous Monitoring: Outfall 002A	Proposed Monitoring: Outfall 002A
Cyanide, Free (WAD)	1/week	1/month, 3/week ^a
pH	Continuous	Continuous
Priority Pollutants	At permit renewal	Annually

Parameter	Previous Monitoring: Outfall 002B	Proposed Monitoring: Outfall 002B
Fluoride	1/week	1/week ^b
Benzo(a) pyrene	1/week	1/week ^b
Cyanide, Total	1/week	--
Cyanide, Free (WAD)	Daily	1/week ^b

Parameter	Previous Monitoring: Outfall 003	Proposed Monitoring: Outfall 003C
Fluoride	Quarterly	Annually ^c
Total Suspended Solids	--	Quarterly
Oil and Grease	Quarterly	Quarterly
pH	Quarterly	Quarterly
Cyanide, Free (WAD)	Quarterly	Annually ^c
Copper	--	Quarterly
Zinc	--	Quarterly
Priority Pollutants	At permit renewal	Annually

^a Monitoring frequency must be increased to 3 times per week when treating remediation water at Facility 71 and/or discharging remediation water at Outfall 002A.

^b These parameters must be monitored weekly when treating remediation water at Facility 71.

- ° The monitoring of these parameters may be done as part of the annual priority pollutant monitoring.

B. Stormwater Monitoring (Outfall 003C)

The proposed permit requires Millennium to monitor Outfall 003C quarterly for total copper and total zinc and compare the results to benchmark values. Benchmark values are not water quality standards or permit limits. They are indicator values. Values at or below the benchmark are considered unlikely to cause a water quality violation.

The proposed permit includes standard language regarding general prohibitions and requires corrective actions in response to monitoring results above benchmark values. Millennium may petition Ecology to reduce the sampling frequency for one or more parameters based upon a consistent attainment of benchmark values. Consistent attainment is defined as eight consecutive quarters of monitoring.

C. Lab accreditation

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

Millennium contracts with several accredited commercial labs to perform the other permit-required analyses and bioassays.

D. Effluent limits which are near detection or quantitation levels

The effluent concentration limits for benzo(a)pyrene and free cyanide (WAD) are near the limits of current analytical methods to detect or accurately quantify. The method detection level (MDL) also known as detection level (DL) is the minimum concentration of a pollutant that a laboratory can measure and report with a 99 percent confidence that its concentration is greater than zero (as determined by a specific laboratory method). The quantitation level (QL) is the level at which a laboratory can reliably report concentrations with a specified level of error. Estimated concentrations are the values between the DL and the QL. Ecology requires permitted facilities to report estimated concentrations. When reporting maximum daily effluent concentrations, Ecology requires the facility to report “less than X” where X is the required detection level if the measured effluent concentration falls below the detection level.

V. Other Permit Conditions

A. Overflow at Outfall 006

The proposed permit authorizes Millennium to discharge stormwater at Outfall 006 during heavy rainfall events when the hydraulic capacity of the pump at the Outfall 006 sump is exceeded.

B. New tenants

Millennium is actively pursuing additional tenants and potential opportunities for expansion of the bulk product terminal. Discharges from any new tenant properties are likely to be stormwater, not process wastewater. The proposed permit requires Millennium to notify Ecology when they are planning to sign a lease agreement with a new tenant that will have a process water discharge or a stormwater discharge associated with industrial activity [as defined in 40 CFR 122.26(b)(14)]. The permit requires Millennium to provide information about the tenant, including a description of the tenant's business; the location of the tenant on Millennium's site; a description of the tenant's proposed discharge(s) including sources, characteristics, and estimated volumes; and how the discharge(s) will be treated.

If a tenant is proposing to convey their stormwater or process water to Millennium's WWTP for treatment or through one of the Permittee's outfalls, Millennium must submit a revised NPDES permit application to Ecology identifying this discharge as a new source to their wastewater treatment and conveyance system. Ecology may request that Millennium submit an engineering analysis to evaluate the discharge's impact on the WWTP. Ecology will review the information and determine if Millennium's NPDES permit needs to be modified. Millennium is prohibited from taking on a new tenant and their additional wastewater stream(s) until Ecology approves the revised NPDES permit application and makes a decision on whether a permit modification is required.

C. Reporting and record keeping

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

D. Operation and maintenance manual

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment systems in accordance with state and federal regulations [40 CFR 122.41(e) and WAC 173-220-150 (1)(g)]. The proposed permit requires Millennium to prepare and submit to Ecology an operation and maintenance manual for Facility 71 and Facility 73 as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

The proposed permit requires Millennium to review the O&M manual at least annually and submit any substantial changes or updates to Ecology for review.

E. Solid waste control plan

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

Millennium developed a Solid Waste Control Plan (dated August 2014) designed to prevent solid waste from causing pollution of waters of the state. Special Condition S5.C of the proposed permit requires Millennium to update the solid waste control plan and submit it to Ecology with the permit renewal application. Millennium must submit the updated plan to Ecology for review and approval.

F. Non routine and unanticipated wastewater

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

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

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

G. Spill plan

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

Millennium developed a Spill Prevention, Control, and Countermeasure Plan (dated November 2014) for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. Special Condition S9. of the proposed permit requires Millennium to update this plan and submit it to Ecology.

H. Stormwater pollution prevention plan

In accordance with 40 CFR 122.44(k) and 40 CFR 122.44(s), the proposed permit includes requirements for the implementation of a Stormwater Pollution Prevention Plan (SWPPP) along with Best Management Practices (BMPs) to minimize or prevent the discharge of pollutants to waters of the state. BMPs constitute Best Conventional Pollutant Control Technology (BCT) and Best Available Technology Economically Achievable (BAT) for stormwater discharges.

Millennium's SWPPP was last updated in September 2014. Special Condition S10. requires Millennium to update their SWPPP and implement adequate BMPs in order to meet the requirements of "all known, available, and reasonable methods of prevention, control, and treatment" (AKART). The updated plan must be submitted to Ecology for review and approval. A SWPPP requires a facility to implement actions necessary to manage stormwater to comply with the state's requirement under Chapter 90.48 RCW to protect the beneficial uses of waters of the state.

The SWPPP must identify potential sources of stormwater contamination from industrial activities and identify how the Permittee plans to manage those sources of contamination to prevent or minimize contamination of stormwater.

Millennium must continuously review and revise the SWPPP as necessary to assure that stormwater discharges do not degrade water quality. The SWPPP must be updated to address stormwater runoff from any changes in industrial activities onsite including those from new tenants. The SWPPP must be retained onsite or within reasonable access to the site and available for review by Ecology.

I. Best management practices

Best management practices (BMPs) are the actions identified in the SWPPP to manage, prevent contamination of, and treat stormwater. BMPs include schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state (including surface water and groundwater). BMPs also include treatment systems, operating procedures, and practices used to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage.

Millennium must ensure that its SWPPP includes the operational and structural source control BMPs listed as “applicable” in Ecology’s Western Washington Stormwater Management Manual. Many of these “applicable” BMPs are sector-specific or activity-specific and are not required at facilities engaged in other industrial sectors or activities.

J. Outfall evaluation

The proposed permit requires Millennium to conduct an outfall inspection and submit a report detailing the findings of that inspection (Special Condition S13). The inspection must evaluate the physical condition of the discharge pipe and diffusers and evaluate the extent of sediment accumulation in the vicinity of the outfall.

J. General conditions

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

VI. Permit Issuance Procedures

A. Permit modifications

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

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

B. Proposed permit Issuance

The proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge.

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

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

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

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

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

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

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

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

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

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

February 2007. *Focus Sheet on Solid Waste Control Plan, Developing a Solid Waste Control Plan for Industrial Wastewater Discharge Permittees*, Publication Number 07-10-024. (<https://fortress.wa.gov/ecy/publications/publications/0710024.pdf>)

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

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

Appendix A--Public Involvement Information

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

Ecology placed a Public Notice of Application on January 31, 2012 and February 7, 2012 in *The Daily News* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on July 16, 2017 in *The Daily News* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

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

For more information on commenting, Ecology's document called *Frequently Asked Questions about Effective Public Commenting*, is available on our website at <https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html>.

You may obtain further information from Ecology by telephone, (360) 407-6942, or by writing to the address listed below.

Judy Schwieters
Department of Ecology
Industrial Section
PO Box 47600
Olympia, WA 98504-7600

The primary author of this permit and fact sheet is Judy Schwieters.

Appendix B--Your Right to Appeal

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

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

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

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

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

ADDRESS AND LOCATION INFORMATION

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

Appendix C--Glossary

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

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

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

AKART -- The acronym for “all known, available, and reasonable methods of prevention, control and treatment.” AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ALSO GIVEN AS:

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

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

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

Sample Maximum -- No sample may exceed this value.

Significant industrial user (SIU) --

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

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

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

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

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

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

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

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

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

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

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

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

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

Total suspended solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna.

Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

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

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

Appendix D--Technical Calculations

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

Simple Mixing:

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

$$C_{mz} = Ca + \frac{(Ce - Ca)}{DF}$$

where: C_e = Effluent Concentration
 C_a = Ambient Concentration
 DF = Dilution Factor

Reasonable Potential Analysis:

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

Calculation of Water Quality-Based Effluent Limits:

Water quality-based effluent limits are calculated by the two-value wasteload allocation process as described on page 100 of the TSD (EPA, 1991) and shown below.

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

$$WLA_a = (\text{acute criteria} \times DF_a) - [(\text{background conc.} \times (DF_a - 1))]$$

$$WLA_c = (\text{chronic criteria} \times DF_c) - [(\text{background conc.} \times (DF_c - 1))]$$

where: DF_a = Acute Dilution Factor
 DF_c = Chronic Dilution Factor

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

$$LTA_a = WLA_a \times e^{[0.5\sigma^2 - z\sigma]}$$

where: $\sigma^2 = \ln[CV^2 + 1]$

$$z = 2.326$$

CV = coefficient of variation = std. dev/mean

$$LTA_c = WLA_c \times e^{[0.5\sigma^2 - z\sigma]}$$

where: $\sigma^2 = \ln[(CV^2 \div 4) + 1]$

$$z = 2.326$$

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

MDL = Maximum Daily Limit

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

where: $\sigma^2 = \ln[CV^2 + 1]$

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

LTA = Limiting long term average

AML = Average Monthly Limit

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

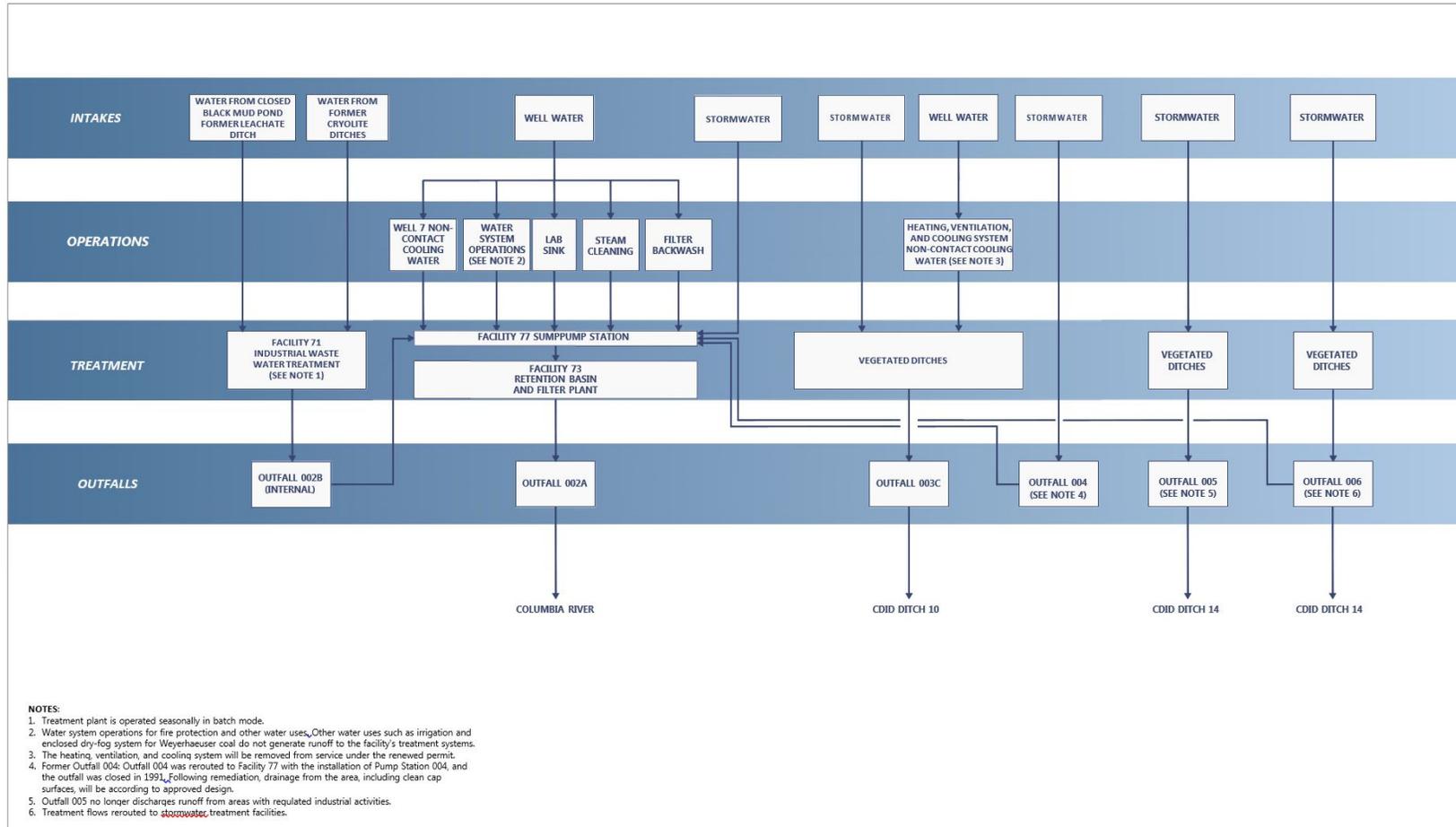
where: $\sigma^2 = \ln[(CV^2 \div n) + 1]$

n = number of samples/month

$$z = 1.645 \text{ (95th \% occurrence probability)}$$

LTA = Limiting long term average

Appendix E--Wastewater Treatment Flow Diagram



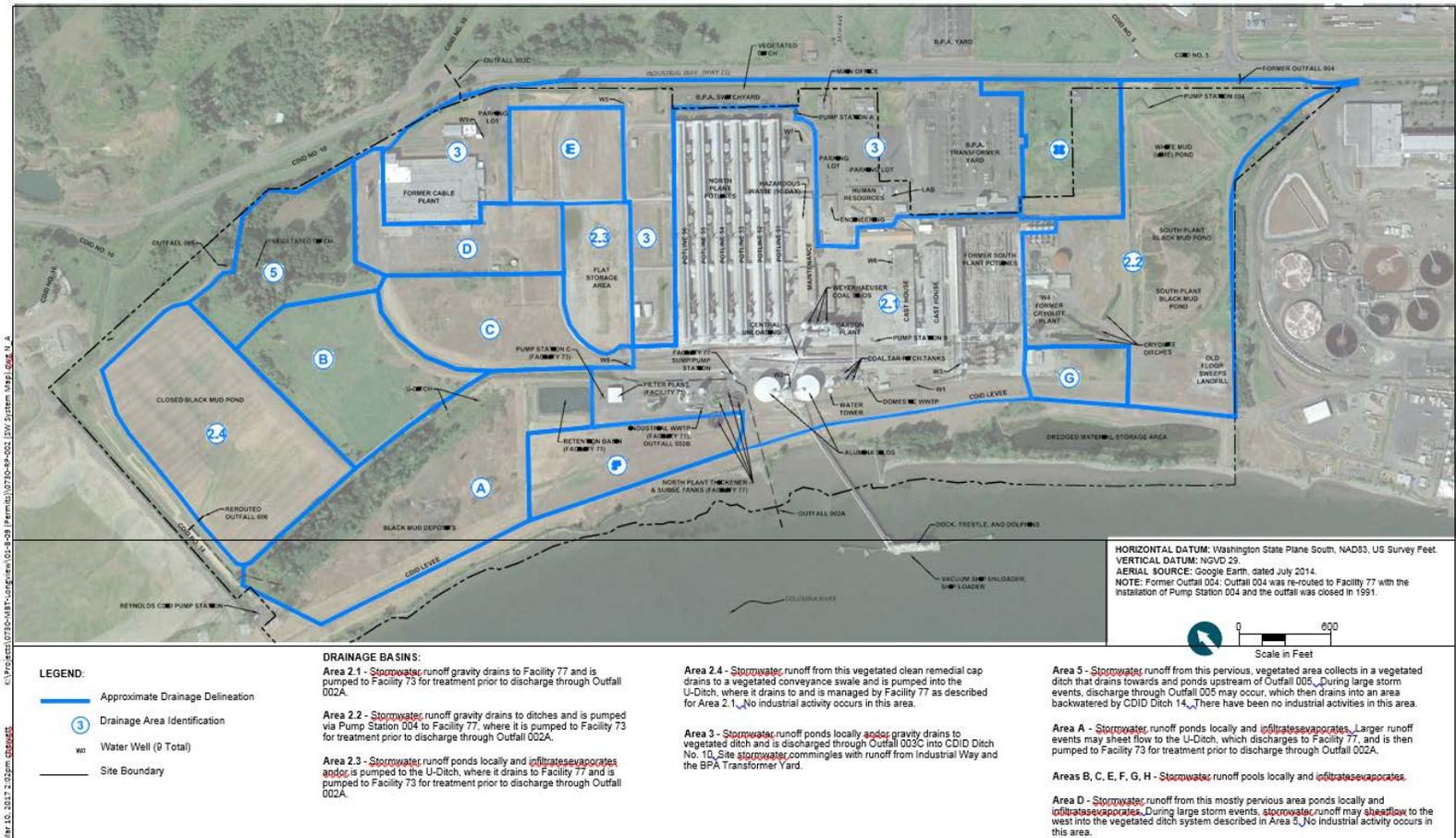
NOTES:

1. Treatment plant is operated seasonally in batch mode.
2. Water system operations for fire protection and other water uses, Other water uses such as irrigation and enclosed dry-fog system for Weyerhaeuser coal do not generate runoff to the facility's treatment systems.
3. The heating, ventilation, and cooling system will be removed from service under the renewed permit.
4. Former Outfall 004: Outfall 004 was rerouted to Facility 77 with the installation of Pump Station 004, and the outfall was closed in 1991. Following remediation, drainage from the area, including clean cap surfaces, will be according to approved design.
5. Outfall 005 no longer discharges runoff from areas with regulated industrial activities.
6. Treatment flows rerouted to ~~stormwater~~ treatment facilities.

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Appendix F--Stormwater Drainage Basin Map



Fact Sheet for NPDES Permit No. WA0000086
 Millennium Bulk Terminal Longview, LLC
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Outfall 002A PARAMETER	UNITS	LIMITS	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
pH - Minimum	SU	≥6	6.7	7.1	7.2	7.3	7.4	7.5	7.8	7.8	7.8	7.7	7.6	7.3
pH - Maximum	SU	≤9	7.1	7.8	7.8	7.6	8.3	8.7	8.6	8.4	8.4	8.4	9.0	8.9
TSS - MA	lbs/day	925.0	101.1	93.8	91.7	68.7	62	73.5	134	134.4	102.8	76.9	122.3	177.4
TSS - DM	lbs/day	2030.0	172.3	131.7	126.9	97	95.1	154.2	216.3	207.3	239.5	184.2	415.5	281.4
O & G - MA	mg/l	175.0	26.4J	10.4J	12.6J	16.6J	8.0J	10.2J	13.9J	14.0J	14.3J	0	14.2J	26.3J
O & G - DM	mg/l	425.0	59.9J	19.8J	35.5J	30.0J	14.9J	18.8J	26.3J	27.7J	45.5J	<9.1	40.3J	74.9J
FLUORIDE - MA	lbs/day	475.0	124.5	103.8	76.9	62.6	23.4	11.1	11.5	10.3	8.1	7.0	72.5	160.1
FLUORIDE - DM	lbs/day	1075.0	179.2	151.4	132.8	69.1	31.7	19.7	14.4	12.1	12	10.1	232.7	234.3
Nickel, Total-MA	lbs/day	1.7	0.0372	0.0304	0.0106	0.0126	0.008	<0.0054	<0.0120	<0.0117	<0.0083	<0.0056	0.0378	0.0463
Nickel, Total-DM	lbs/day	2.6	0.0624	0.0529	0.0140	0.0213	0.0166	<0.0079	<0.0122	<0.0121	<0.0115	<0.0056	0.0910	0.0804
Antimony, Total - MA	lbs/day	4.0	<0.0111	<0.0089	<0.0087	0.0104	<0.0058	<0.0054	<0.0120	<0.0117	<0.0083	<0.0056	0.0126	0.017
Antimony, Total - DM	lbs/day	9.1	<0.0172	<0.0110	<0.0118	0.0239	<0.0079	<0.0079	<0.0122	<0.0121	<0.0115	<0.0056	0.0299	0.035
Al - MA	lbs/day	52.0	6.3	4.7	2.49	1.90	0.72	0.37	0.72	1	0.9	0.35	4.8	12.15
Al - DM	lbs/day	116.0	11.4	10.8	6.44	3.00	1.11	0.84	1.38	1.86	1.44	0.58	13.3	26.03
Flow - MA	MGD	none	2.43	2.27	1.99	1.57	1.21	1.19	2.63	2.77	2.05	1.47	2.08	3.71
Flow -Max	MGD	none	4.24	4.28	3.81	2.14	1.9	1.91	2.95	3.06	2.87	3.36	4.98	6.24
Cyanide, Total - MA	lbs/day	none	0.67	0.74	0.49	0.39	0.12	<0.11	0.3	<0.23	<0.017	<0.11	2.17	1.26
Cyanide, Total - DM	lbs/day	none	0.78	0.83	0.71	0.60	<0.16	<0.16	0.48	<0.24	<0.23	<0.11	6.23	2.16
Cyanide, Free - DM	mg/L	0.110	0.006J	0.009J	0.011	0.012	0.004J	0.005J	0.003J	<0.003	<0.003	<0.003	0.018	0.005J
B(a)P	µg/l	None						<0.096						
Copper-DM	µg/l	None						2.64						
Zinc-DM	µg/l	None						3.23						
								3.64						
								5.0U						
Outfall 002A PARAMETER	UNITS	LIMITS	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
pH - Minimum	SU	≥6	7.4	7.4	7.4	7.6	7.7	7.7	7.8	7.8	7.7	7.4	7.5	7.4
pH - Maximum	SU	≤9	7.6	7.7	7.8	8.1	8.4	8.7	8.8	8.4	8.2	8.1	7.8	7.6
TSS - MA	lbs/day	925.0	155.1	123.5	113.7	90.9	51.4	82.8	83.3	102.3	72.6	93.3	115.5	134.6
TSS - DM	lbs/day	2030.0	231.9	162.7	141.9	239.5	112.6	104.1	<111.8	160.9	119.2	129.3	267.5	326.7
O & G - MA	mg/l	175.0	16.9J	13.7J	0	12.3J	6.3J	10.2J	13	10.4J	8.3J	18.2J	1	0
O & G - DM	mg/l	425.0	42.7J	31.1J	<22.6	30.1J	17.9J	20.6J	13.8J	25.1J	17.9J	45.9J	<23.0	<29.0
FLUORIDE - MA	lbs/day	475.0	118.9	121.5	115.7	45.3	33.1	18.5	29.7J	10.1	9.2	44.2	66.9	115.4
FLUORIDE - DM	lbs/day	1075.0	167.3	166.0	147.2	71.8	52.8	32.2	11.9	11.4	13.6	99.4	96.7	159.7
Nickel, Total-MA	lbs/day	1.7	0.0288	0.0294	0.034	0.021	0.0057	<0.0083	<0.0085	<0.0085	0.008	0.0139	0.0298	0.0231
Nickel, Total-DM	lbs/day	2.6	0.0386	0.0368	0.0425	0.0169	0.0084	<0.0087	<0.0112	<0.0101	0.013	0.0267	0.0686	0.0312
Antimony, Total - MA	lbs/day	4.0	<0.0113	<0.0105	0.0113	<0.0074	<0.0043	<0.0083	<0.0085	<0.0085	<0.0071	0.0091	<0.0098	<0.0135
Antimony, Total - DM	lbs/day	9.1	<0.0136	<0.0128	0.014	<0.0086	<0.0056	<0.0087	<0.0112	<0.0101	<0.0091	0.015	<0.0142	<0.0181
Al - MA	lbs/day	52.0	8.07	5.62	4.83	1.34	0.51	0.25	<0.13	0.20	0.31	1.69	2.97	5.66
Al - DM	lbs/day	116.0	11.26	7.92	6.43	2.34	1.17	0.6	<0.22	0.46	1.02	3.89	4.84	9.07
Flow - MA	MGD	none	2.77	2.76	2.63	1.72	1.00	1.83	2.02	2.18	1.62	2.10	2.45	2.79
Flow -Max	MGD	none	3.97	4.15	3.51	2.27	1.35	2.39	2.68	2.74	2.19	3.30	4.71	4.35
Cyanide, Total - MA	lbs/day	none	1.08	0.89	0.98	0.26	0.12	0.17	<0.17	<0.17	<0.14	0.61	0.74	0.7
Cyanide, Total - DM	lbs/day	none	1.36	1.02	1.40	0.35	0.17	<0.17	<0.22	<0.20	<0.18	1.40	1.14	1.09
Cyanide, Free - DM	mg/L	0.110	0.008J	0.012	0.012	0.007J	0.014	0.004J	<0.003	0.003J	<0.003	0.010J	0.007J	0.004J
B(a)P	µg/l	None						<0.095						
Copper-DM	µg/l	None						0.0493U						
Zinc-DM	µg/l	None						0.59						
								0.94						
								<2.0						
								5.0U						

OUTFALL 003C: Stormwater runoff from Drainage Basin 3 (Figure 7-1 of Millennium's July 2014 Updated Engineering Report in Appendix F)							
PARAMETER	UNITS	LIMITS	Mar-11	May-11	Jun-11	Aug-11	
pH - Minimum	SU	6.5	7.2	7.40	7.7	7.5	
pH - Maximum	SU	8.5	7.2	7.40	7.7	7.5	
O & G - DM	mg/l	10	<0.89	<0.89	<4.80	<0.88	
Cyanide, Free - DM	ug/l	5.2	<2.6	<5.0	<2.6	<3.4	
Fluoride - DM	mg/l	none	1.5	0.84	<0.50	<0.50	
PARAMETER	UNITS	LIMITS	Jan-12	Apr-12	Jul-12	Oct-12	
pH - Minimum	SU	6.5	7.4	7.3	7.6	7.56	
pH - Maximum	SU	8.5	7.4	7.3	7.6	7.56	
O & G - DM	mg/l	10	1.0J	1.63J	1.30J	1.15	
Cyanide, Free - DM	ug/l	5.2	<3.4	3.0J	<3.0	<3.0	
Fluoride - DM	mg/l	none	0.69	0.93	1.18	0.3	
PARAMETER	UNITS	LIMITS	Jan-13	Apr-13	Jul-13	Oct-13	
pH - Minimum	SU	6.5	7.40	7.37	7.43	7.26	
pH - Maximum	SU	8.5	7.40	7.37	7.46	7.26	
O & G - DM	mg/l	10	<0.86	<0.87	<0.90	2.50J	
Cyanide, Free - DM	ug/l	5.2	<2.6	<2.6	<3.0	<3.0	
Fluoride - DM	mg/l	none	1.04	0.82	0.51	1.08	
PARAMETER	UNITS	LIMITS	Jan-14	Apr-14	Jul-14	Oct-14	
pH - Minimum	SU	6.5	7.53	7.32	7.6	7.61	
pH - Maximum	SU	8.5	7.53	7.32	7.6	7.61	
O & G - DM	mg/l	10	3.71	3.55J	<0.8	<0.79	
Cyanide, Free - DM	ug/l	5.2	<3.0	<3.0	<0.3	<3.0	
Fluoride - DM	mg/l	none	0.52	0.88	0.4	0.34	
PARAMETER	UNITS	LIMITS	Jan-15	Apr-15	Jun-15	Jul-15	Oct-15
pH - Minimum	SU	6.5	7.37	7.49	7.4	7.6	7.4
pH - Maximum	SU	8.5	7.37	7.49	7.4	7.6	7.4
O & G - DM	mg/l	10	<0.80	<0.81	<0.8	1.37J	<0.79
Cyanide, Free - DM	ug/l	5.2	<3.0	<3.0	<3.0	<3.0	<3.0
Fluoride - DM	mg/l	none	0.64	0.69	0.37	0.32	0.42
PARAMETER	UNITS	LIMITS	Jan-16	Apr-16	Jun-16	Jul-16	Oct-16
pH - Minimum	SU	6.5	7.24	7.3		7.5	7.47
pH - Maximum	SU	8.5	7.24	7.3		7.5	7.47
O & G - DM	mg/l	10	<0.85	<0.82	1.69J	2.07J	<0.79
Cyanide, Free - DM	ug/l	5.2	<3.0	<3.0	4.0J	<3.0	<3.0
Fluoride - DM	mg/l	none	1.11	1.05	0.48	0.46	0.39

Appendix H -- Mixing Zone for Outfall 002A



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Appendix I--Reasonable Potential to Exceed Analysis

Outfall 002A Reasonable Potential Calculation- Page 1 of 2														
Facility												Dilution Factors:		
Water Body Type												Aquatic Life	Acute	Chronic
Rec. Water Hardness												Human Health Carcinogenic	19.0	77.0
Pollutant, CAS No. & NPDES Application Ref. No.		AMMONIA, Criteria as Total NH3	ALUMINUM, total recoverable, pH 6.5-9.0 7429905	ANTIMONY (INORGANIC) 7440360 1M	ARSENIC (dissolved) 7440382 2M	ARSENIC (inorganic)	BENZO(a)PYRENE 50328 6B	CHLOROFORM 67663 11V	CHROMIUM(HEX) 18540299 - Dissolved	CHROMIUM(TRI) -16065831 5M Hardness dependent	COPPER - 744058 6M Hardness dependent	CYANIDE (WAD) 57125 14M	FLUORANTHENE 206440 31B	
Effluent Data		# of Samples (n)	1	366	211	9	9	9	1	9	9	9	175	9
Receiving Water Data		Coeff of Variation (Cv)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Water Quality Criteria		Effluent Concentration, ug/L (Max. or 95th Percentile)	164	1190		8.15	8.15	0.068	1.11	0.184	0.184	26.6	24.7	0.15
Aquatic Life Reasonable Potential		Calculated 50th percentile Effluent Conc. (when n>10)			6.5									
Metal Criteria		90th Percentile Conc., ug/L	20	7.82	0.09	0.99	0.99			0.19	0.19	1.22		
Carcinogen?		Geo Mean, ug/L			0.09	0.8	0.8							
Acute		Aquatic Life Criteria, ug/L	3,149	750	-	360	-	-	-	15	341.296	9.85387	22	-
Chronic		WQ Criteria for Protection of Human Health, ug/L	-	-	6	-	0.018	0.000016	100	-	-	1300	9	6
Acute		Metal Criteria Translator, decimal	-	-	-	1	-	-	-	-	0.316	0.996	-	-
Chronic														
Reasonable Potential? Limit Required?			N	N	N	Y	Y	Y	Y	N	N	N	N	N
Effluent percentile value			0.950	0.950		0.950				0.950	0.950	0.950	0.950	
s ² =ln(CV ² +1)			0.555	0.555		0.555				0.555	0.555	0.555	0.555	
Pn Pn=(1-confidence level) ^{1/n}			0.050	0.992		0.717				0.717	0.717	0.717	0.983	
Multiplier			6.20	1.00		1.81				1.81	1.81	1.81	1.00	
Max concentration (ug/L) at edge of...		Acute	72	70.040		1.715				0.198	0.186	3.681	1.300	
Chronic														
Reasonable Potential? Limit Required?			NO	NO		NO				NO	NO	NO	NO	

Outfall 002A Reasonable Potential Calculation - Page 2 of 2								
		Dilution Factors:				Acute	Chronic	
Facility	Millennium	Aquatic Life				19.0	77.0	
Water Body Type	Freshwater	Human Health Carcinogenic					74.0	
Rec. Water Hardness	56 mg/L	Human Health Non-Carcinogenic					74.0	
Pollutant, CAS No. & NPDES Application Ref. No.		IRON 7439896	LEAD - 7439921 7M Dependent on hardness	MANGANESE 7439965	METHYL CHLORIDE 74873 21V	NICKEL - 7440020 9M - Dependent on hardness	ZINC- 7440666 13M hardness dependent	
Effluent Data	# of Samples (n)	1	9	1	1	211	9	
	Coeff of Variation (Cv)	0.6	0.6	0.6	0.6	0.6	0.6	
	Effluent Concentration, ug/L (Max. or 95th Percentile)	1320	0.31	369	9.04	50	10.7	
	Calculated 50th percentile Effluent Conc. (when n>10)							
Receiving Water Data	90th Percentile Conc., ug/L	66.4	0.7			0.64	4.36	
	Geo Mean, ug/L							
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	- 34.1683	-	-	866.6589	70.02378	
		Chronic	1000	1.33149	-	- 96.24943	63.94233	
	WQ Criteria for Protection of Human Health, ug/L		300	-	50	-	80	1000
	Metal Criteria Translator, decimal	Acute	-	0.466	-	-	0.998	0.996
		Chronic	-	0.466	-	-	0.997	0.996
	Carcinogen?		N	N	N	-	N	N
Aquatic Life Reasonable Potential								
Effluent percentile value		0.950	0.950			0.950	0.950	
s $s^2 = \ln(CV^2 + 1)$		0.555	0.555			0.555	0.555	
Pn $Pn = (1 - \text{confidence level})^{1/n}$		0.050	0.717			0.986	0.717	
Multiplier		6.20	1.81			1.00	1.81	
Max concentration (ug/L) at edge of...		Acute	493.5	0.677		3.233	5.146	
		Chronic	171.8	0.694		1.279	4.554	
Reasonable Potential? Limit Required?		NO	NO			NO	NO	

Outfall 003C Reasonable Potential Calculation Page 1 of 2													
										Dilution Factors:		Acute	Chronic
Facility	Millennium									Aquatic Life		1.0	
Water Body Type	Freshwater									Human Health Carcinogenic			
Rec. Water Hardness	110 mg/L									Human Health Non-Carcinogenic			
Pollutant, CAS No. & NPDES Application Ref. No.		ALUMINUM, total recoverable, pH 6.5-9.0 7429905	ARSENIC (dissolved) 7440382 2M	ARSENIC (inorganic)	BENZO(a)PYRENE	CHROMIUM(HEX) 18540299 - Dissolved	CHROMIUM(TRI) -16065831 5M Hardness dependent	COPPER - 744058 6M Hardness dependent	CYANIDE (WAD) 57125 14M	IRON 7439896	LEAD - 7439921 7M Dependent on hardness		
Effluent Data	# of Samples (n)	1	7	7	3	7	7	7	23	1	7		
	Coeff of Variation (Cv)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6		
	Effluent Concentration, ug/L (Max. or 95th Percentile)	86.8	6.66	6.66	0.016	0.191	0.191	5.02	5	496	0.29		
	Calculated 50th percentile Effluent Conc. (when n>10)												
Receiving Water Data	90th Percentile Conc., ug/L												
	Geo Mean, ug/L												
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	750	360	-	-	15	593.2882	18.6151	22	-	71.6321	
		Chronic											
	WQ Criteria for Protection of Human Health, ug/L		-	-	0.018	0.0028	-	-	1300	9	300	-	
	Metal Criteria Translator, decimal	Acute	-	1	-	-	-	0.316	0.996	-	-	0.466	
	Chronic												
Carcinogen?		N	Y	Y	-	N	N	N	N	N	N		
Aquatic Life Reasonable Potential													
Effluent percentile value		0.950	0.950			0.950	0.950	0.950	0.950		0.950		
s	$s^2 = \ln(CV^2 + 1)$	0.555	0.555			0.555	0.555	0.555	0.555		0.555		
Pn	$Pn = (1 - \text{confidence level})^{1/n}$	0.050	0.652			0.652	0.652	0.652	0.878		0.652		
Multiplier		6.20	2.01			2.01	2.01	2.01	1.00		2.01		
Max concentration (ug/L) at edge of...	Acute	538.0	13.354			0.383	0.121	10.025	5.000		0.271		
	Chronic												
Reasonable Potential? Limit Required?		NO	NO			NO	NO	NO	NO		NO		

Outfall 003C Reasonable Potential Calculation - Page 2 of 2					
		Dilution Factors:		Acute	Chronic
Facility	Millennium	Aquatic Life		1.0	
Water Body Type	Freshwater	Human Health Carcinogenic			
Rec. Water Hardness	110 mg/L	Human Health Non-Carcinogenic			
Pollutant, CAS No. & NPDES Application Ref. No.		MANGANESE 7439965	NICKEL - 7440020 9M - Dependent on hardness	ZINC- 7440666 13M hardness dependent	
Effluent Data	# of Samples (n)	1	7	5	
	Coeff of Variation (Cv)	0.6	0.6	0.6	
	Effluent Concentration, ug/L (Max. or 95th Percentile)	502	1.83	7.38	
	Calculated 50th percentile Effluent Conc. (when n>10)				
Receiving Water Data	90th Percentile Conc., ug/L				
	Geo Mean, ug/L				
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	-	1534.26142	124.0732
		Chronic			
	WQ Criteria for Protection of Human Health, ug/L		50	80	1000
	Metal Criteria Translator, decimal	Acute	-	0.998	0.996
		Chronic			
Carcinogen?		N	N	N	
Aquatic Life Reasonable Potential					
Effluent percentile value			0.950	0.950	
s	$s^2 = \ln(CV^2 + 1)$		0.555	0.555	
Pn	$Pn = (1 - \text{confidence level})^{1/n}$		0.652	0.549	
Multiplier			2.01	2.32	
Max concentration (ug/L) at edge of...	Acute		3.662	17.085	
	Chronic				
Reasonable Potential? Limit Required?			NO	NO	

Appendix J--Temperature Analysis

Freshwater Temperature Reasonable Potential and Limit Calculation

Based on WAC 173-201A-200(1)(c)(i)--(ii) and the Water Quality Program Guidance. All data inputs must meet WQ guidelines. The Water Quality temperature guidance document may be found at:
<https://fortress.wa.gov/lecy/publications/summarypages/0610100.html>

	Core Summer Criteria	Supplemental Criteria
	July 1-Sept 14	Sept 15-July 1
1. Chronic Dilution Factor at Mixing Zone Boundary	77.0	NA
2. 7DADMax Ambient Temperature (T) (Upstream Background 90th percentile)	18.0 °C	NA
3. 7DADMax Effluent Temperature (95th percentile)	25.6 °C	NA
4. Aquatic Life Temperature WQ Criterion in Fresh Water	17.5 °C	NA
OUTPUT		NA
5. Temperature at Chronic Mixing Zone Boundary:	18.1 °C	NA
6. Incremental Temperature Increase or decrease:	0.1 °C	NA
7. Maximum Allowable Incremental Temperature Increase:	0.3 °C	NA
8. Maximum Allowable Temperature at Mixing Zone Boundary:	18.3 °C	NA
A. If ambient temp is warmer than WQ criterion		
9. Does temp fall within this warmer temp range?	YES	NA
10. Temperature Limit if Required:	NO	NA
B. If ambient temp is cooler than WQ criterion but within 28 I(T,m*+7) and within 0.3 C of the criterion		
11. Does temp fall within this incremental temp. range?	---	---
12. Temp increase allowed at mixing zone boundary, if required:	---	---
C. If ambient temp is cooler than (WQ criterion - 0.3) but within 28 I(T,m*+7) of the criterion		
13. Does temp fall within this Incremental temp. range?	---	---
14. Temp increase allowed at mixing zone boundary, if required:	---	---
D. If ambient temp is cooler than (WQ criterion - 28/(T,m*+7))		
15. Does temp fall within this Incremental temp. range?	---	---
16. Temp increase allowed at mixing zone boundary, if required:	---	---
17. Do any of the above cells show a temp Increase?	NO	NA
18. Temperature Limit if Required?	NO	N

Appendix K--WET Testing Results

Millennium Longview Terminal Acute WET Test Results as % Survival in 100% Effluent					
Test Code	Collected	Start Date	Organism	Endpoint	% Survival
RMAR3147	10/8/2013	10/9/2013	<i>Daphnia pulex</i>	48-hour Survival	100%
RMAR3022	7/16/2013	7/17/2013	<i>Daphnia pulex</i>	48-hour Survival	100%
RMAR3023	7/16/2013	7/17/2013	rainbow trout	96-hour Survival	100%
RMAR2876	4/16/2013	4/17/2013	<i>Daphnia pulex</i>	48-hour Survival	100%
ekot0439	1/8/2013	1/9/2013	<i>Daphnia pulex</i>	48-hour Survival	100%
ekot0440	1/8/2013	1/9/2013	rainbow trout	96-hour Survival	100%
ekot0441	10/2/2012	10/3/2012	<i>Daphnia pulex</i>	48-hour Survival	100%
ekot0442	7/24/2012	7/25/2012	<i>Daphnia pulex</i>	48-hour Survival	100%
ekot0443	7/24/2012	7/25/2012	rainbow trout	96-hour Survival	95%
ekot0444	4/17/2012	4/18/2012	<i>Daphnia pulex</i>	48-hour Survival	100%
ekot0445	1/31/2012	2/1/2012	<i>Daphnia pulex</i>	48-hour Survival	95%
ekot0446	1/31/2012	2/1/2012	rainbow trout	96-hour Survival	100%
ekot0447	10/18/2011	10/19/2011	<i>Daphnia pulex</i>	48-hour Survival	95%
ekot0453	8/16/2011	8/17/2011	rainbow trout	96-hour Survival	100%
ekot0452	8/11/2011	8/12/2011	<i>Daphnia pulex</i>	48-hour Survival	100%
ekot0454	5/11/2011	5/11/2011	<i>Daphnia pulex</i>	48-hour Survival	95%
ekot0458	3/15/2011	3/16/2011	<i>Daphnia pulex</i>	48-hour Survival	75%
ekot0455	2/22/2011	2/23/2011	<i>Daphnia pulex</i>	48-hour Survival	90%
ekot0456	2/22/2011	2/23/2011	rainbow trout	96-hour Survival	100%
ekot0457	1/26/2011	1/27/2011	<i>Daphnia pulex</i>	48-hour Survival	100%

Appendix L--Performance-Based Reduction of Monitoring Frequencies

Appendix L: Performance-Based Monitoring Frequencies						
OUTFALL 002A	pH	Oil & Grease	Fluoride	Free Cyanide	TSS	B(a)P
Units	SU	mg/l	mg/l	mg/l	mg/l	µg/l
Number of samples⁽¹⁾	82	213	364	166	365	8 ⁽²⁾
Monthly average permit limit in proposed permit	NA ⁽³⁾	10	17	NA ⁽³⁾	25	0.21
Daily maximum permit limit in proposed permit	9	15	34	0.110	30	0.42
Long-term average⁽⁴⁾	NA ⁽³⁾	1.43	5	0.0057	6.1	0.0359
Long-term average/monthly average proposed permit limit (% basis)	NA ⁽³⁾	14%	29%	NA ⁽⁵⁾	24%	17%
Maximum of the monthly averages⁽⁶⁾	NA ⁽⁴⁾	4.76	14.1	NA ⁽⁵⁾	9.25	NA ⁽²⁾
Maximum Value	8.47	7.22	18	0.02	22	0.068
Current permit monitoring frequency	CONTINUOUS	1/7	1/7	1/7	1/7	None
EPA policy monitoring recommendation⁽⁶⁾	CONTINUOUS	1/7	1/2 mos	1/2 mos	2/mo	1/2 mos
Proposed permit monitoring frequency⁽⁸⁾	CONTINUOUS	1/7	1/mo	1/mo	1/7	1/mo
Notes:						
¹ The number of samples includes samples collected by Millennium for the NPDES permit renewal application on June 28, 2011, samples collected by Millennium to satisfy NPDES permit monitoring requirements from January 2011 through March 31, 2014, and samples split between Millennium and Ecology during the unannounced NPDES permit inspections conducted on July 17, 2013, April 08, 2014, June 16, 2015, and June 21, 2016. All of the samples collected by Millennium through March 31, 2014 are compiled in Appendix B of Millennium's July 2014 Engineering Report. Millennium began sampling for free cyanide in September 2011.						
² The previous permit required monitoring for B(a)P at Outfall 002B but none at Outfall 002A. The eight B(a)P samples collected for Outfall 002A include the samples split between Millennium and Ecology during Ecology's unannounced NPDES permit inspections conducted on July 17, 2013, April 08, 2014, June 16, 2015, and June 21, 2016.						
³ NA = Not Applicable. There is no limit for this parameter included in the proposed permit.						
⁴ The long-term averages and the maximum monthly averages were taken from the spreadsheet titled "Compiled MBTL Data Presented in EPA Form 2C for RPA" in Appendix B of Millennium's July 2014 Engineering Report.						
⁵ There is only a daily maximum limit (0.110mg/l), not a monthly average limit, for free cyanide included in the proposed permit.						
⁶ From EPA's Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies, April 1996.						
⁷ The eight B(a)P samples collected included two samples with values above detection levels and six samples with values below detection levels. The long term average was calculated by averaging the detected values and half of the respective detection level for the values reported below the detection level. The sample collected by Millennium on June 28, 2011 for the NPDES Permit renewal (<4.77 µg/l) was not included in the total number of samples collected or in the average because it appears to be an outlier.						
⁸ Monitor fluoride, free cyanide, and B(a)P 1/month during bulk terminal operations, and 3 times per week when processing remediation water at Facility 71.						

Appendix M--Response to Comments

WASHINGTON STATE DEPARTMENT OF ECOLOGY RESPONSE TO PUBLIC COMMENTS

**Millennium Bulk Terminals Longview, LLC
4029 Industrial Way
Longview, Washington 98632**

**NPDES Permit No. WA0000086
January 31, 2018**

Ecology published notice of the opportunity to comment on the renewal of this permit in The Daily News on July 16, 2017. In the notice, we invited public review of the proposed permit and provided a 45 day public comment period. The deadline for submittal of written comments was August 31, 2017. A public meeting, followed by a hearing, was held on August 17, 2017.

During the comment period, we received written comments from six individuals or entities. Comments were received from:

1. Aaron Larson
2. Chris Turner
3. Dave Hale
4. Millennium Bulk Terminals Longview, LLC
5. Columbia Riverkeeper, Landowners & Citizens for a Safe Community, and Northwest Environmental Advocates
6. Columbia River Inter-Tribal Fish Commission

Changes were made to the permit and fact sheet, where appropriate, to improve clarity and address the comments. The comments and Ecology's responses are presented below. We summarized and clarified the comments, where appropriate. The original comments comprise part of the legal record for this permit. The record is available for public review at Ecology's Industrial Section office in Lacey, Washington. Anyone interested in reading the full text of the comments or in obtaining a copy of a particular comment should call or e-mail Judy Schwieters in Lacey at (360) 407-6942 or judith.schwieters@ecy.wa.gov.

Comments appear in regular text, followed by Ecology's responses in italicized text.

Ecology will send a copy of the permit documents and response to comments to each individual who provided comments.

We will send a notice of the final permit issuance to all interested parties, will post the documents on the Industrial Section webpage at <https://fortress.wa.gov/ecy/industrial/UIPermit/ActivePermits.aspx>, and will send the documents to the Longview Public Library.

Comment 1: Aaron Larson

Please approve this export terminal. They are already exporting the coal out of a Canadian port, so we might as well bring jobs back to Washington ports instead if Canada.

Response to Comment 1

The draft NPDES permit is for Millennium's existing bulk terminal activities, not the proposed coal export terminal. If Ecology modifies this permit to address discharges from the construction and operation of the coal export terminal, there will be another opportunity for public comment.

Comments 2-6: Chris Turner

Comment 2

First of all, I did want to mention that Millennium should be commended for conducting studies, re-routing runoff, installing required equipment, and submitting documents as required.

Response to Comment 2

Comment noted.

Comment 3

Page 12 of the Fact Sheet states that:

"The current NPDES permit renewal application does not include the coal export facility. Millennium will have to submit a new or revised NPDES permit application for the coal terminal and have an approved permit in place prior to discharging from any activities related to construction or operation of the coal terminal."

The new or revised permit for the proposed coal terminal at Millennium is mentioned in this document. I would request that a decision be made at this point. It should be a simple matter. A permit for the addition of the proposed coal terminal, should be a NEW NPDES permit which would include the construction and operation of this proposed extremely large coal export terminal.

A revision of the current permit couldn't possibly include all of the increased stormwater/runoff that will be generated by watering down stacks of coal which will be 85 foot tall, and watering down all of the related conveyor systems, etc.

The construction of the facility, would also present additional considerations involving runoff, since it is a toxic cleanup site as well. It is so much of an increase in stormwater/runoff, that it should require a NEW PERMIT not a revision.

Response to Comment 3

A NPDES permit is required for any wastewater or stormwater that is discharged directly from a point source into a water of the United States. The point sources covered by the permit are Outfalls 002A and 003C. Millennium has indicated that any stormwater runoff or process wastewater from the proposed coal terminal will be sent to the onsite wastewater treatment plant and discharged through Outfall 002A. If the coal port is constructed, stormwater and process water from Millennium's existing operations and the coal terminal will be discharged from the same outfall and will need to be covered by the same permit. Ecology will need to modify (revise) the current permit to include requirements for the treatment and management of any stormwater and process water from the coal port activities. Please note that a new activity, such as the proposed coal export terminal, would be required to meet the same permitting and public participation requirements whether it is permitted by a new permit or a modification of the existing permit.

Comment 4

Pages 31 and 32 of the Fact Sheet refer to a particulate matter study. The study was required to be conducted upon written notification from Ecology. Ecology never notified Reynolds Metals so the study was never conducted.

I believe the particulate matter study to be an air particulate matter study.

There should have been a particulate study done before the remediation work was started. This bulk facility currently handles many products that could be hazardous to their workers and the public. It would still be a benefit, in that it would serve as a baseline for further studies. The proposed coal export terminal would increase the particulate matter substantially. It also seems necessary to access the protection currently required to protect the facility's workers. Particulate matter studies would be important to evaluate the diesel emissions from the vessels as well as the trucks and trains used at this facility and in the surrounding area.

Response to Comment 4

The particulate monitoring study was intended to analyze the particulate fraction of the treated wastewater effluent at Outfall 002A for various pollutants. The study was to be conducted after Ecology established guidelines and protocols for the particulate sampling and analysis. Ecology never developed these guidelines and protocols so the Permittee was not required to conduct the study.

The Southwest Clean Air Agency (SWCAA) regulates air emissions from the Millennium facility. Please contact SWCAA to find out about any air particulate monitoring they require or may require for the existing bulk terminal operations or the proposed coal port.

Comment 5

Pages 8, 17, and 21 of the Fact Sheet refer to overflows from Outfall 006. The Fact Sheet states that:

- "Flows that exceed the Outfall 006 sump hydraulic capacity (from rainfall events larger than the 6-month, 24-hour storm) are discharged to CDID Ditch No 14. Discharges to the CDID ditches FLOW TO THE COLUMBIA RIVER.
- "Stormwater runoff from the closed Black Mud Pond (BMP) cover drains to Outfall 006."
- The discharge at Outfall 006 is expected to be significantly diluted during overflow situations due to the additional stormwater collected from the drainage basin and in the ditch from the associated storm."

The overflow from the Outfall 006 to the CDID Ditch No 14, which would occur from lack of adequate hydraulic capacity just because of a 6-month, 24-hour storm event, should not be allowed. This type of storm event is very common and happens often in the Pacific Northwest.

This is stormwater that among other sources, would come from the closed Black Mud Pond. This outfall 006 is discharged to the COLUMBIA RIVER. By allowing this overflow to go untreated into the ditch, it would also go untreated into the ground, and directly into the Columbia River. To rely on the "storm" to provide sufficient dilution of these toxins, is ridiculous.

Millennium should be required to either update their equipment to handle a more intensive storm scenario or have the ability to reroute this stormwater overflow to another appropriate treatment facility on site.

Response to Comment 5

The sump, pump, and pipeline at Outfall 006 were designed to reroute peak flows from a 6-month, 24-hour storm event to Millennium's wastewater treatment plant. This runoff treatment capacity meets the requirements in Ecology's Stormwater Management Manual for Western Washington amended in 2014. A 6-month, 24-hour storm represents 92% of the total rainfall volume that would be expected based on rainfall amounts measured at USGS stations in the Longview area. The sump at Outfall 006 has the capacity to attenuate some flows in excess of the 6-month, 24-hour storm event, so more than 97% of the total runoff volume will be rerouted to the onsite treatment facility. No more than 3% will overflow to CDID Ditch No. 14.

When the Black Mud Pond was closed in 1992, a cover was installed over the impoundment to contain the waste and prevent infiltration of rainwater. The cover consists of a multi-layer, low permeability engineered cap and drainage system. The area has been vegetated and there are requirements in place to regularly inspect the cover and drainage system and make any repairs as necessary. If the cap is maintained as required, there should be no exposure of waste materials to stormwater runoff at the impoundment.

Comment 6

Page 38 of the Fact Sheet summarizes limits for Outfall 003C.

Limits at Millennium Outfall 003C vs. proposed Tesoro Savage Petroleum Terminal in Vancouver:

Millennium

Copper benchmark: 14 ug/L

Zinc benchmark: 117 ug/L

Tesoro

Copper maximum daily limit: 11 ug/L

Zinc maximum daily limit: 76 ug/L

Why would these limits be higher than Tesoro?

Page 55 of the Fact Sheet summarizes limits for Outfalls 002A and 003C.

Limits at Millennium Outfalls 002A and 003C vs. proposed Tesoro Savage Petroleum Terminal in Vancouver:

Millennium

Oil/Grease Average: 10/mg/L

Oil/Grease Monthly: 15 mg/L

Tesoro

Oil/Grease Average: 10/mg/L

Oil/Grease Monthly: 15 mg/L

Why would these two companies have the same limits on oil/grease, especially when Tesoro is an oil terminal? Millennium with their use of an oil/water separator etc. should not have a detectable amount of oil/grease in their stormwater.

Response to Comment 6

Based on effluent monitoring data from facilities with similar operations, EFSEC determined that copper, zinc, benzene, and BTEX in the discharges from the proposed Tesoro Savage terminal would have the potential to cause violations of water quality standards and it was necessary to establish effluent limits to protect the receiving water quality. The water quality based limits for copper and zinc were calculated using a statistical analysis based on water quality criteria.

Ecology evaluated copper and zinc concentrations in Millennium's discharges at Outfalls 002A and 003C. Ecology determined that there was no reasonable potential to exceed water quality standards for copper and zinc so numeric water-quality based effluent limits were not included for these outfalls in the permit.

However, Ecology did include water-quality based benchmarks combined with an adaptive management BMP approach (monitoring and corrective action requirements) for the stormwater discharge at Outfall 003C. The benchmarks were included to confirm that there continues to be no reasonable potential to violate the water quality standards at Outfall 003C during the next permit cycle. No additional requirements were included in the permit for copper and zinc at Outfall 002A because the concentrations at the edge of the mixing zones are significantly lower than the water quality standards. Priority pollutant monitoring is required to be conducted annually at both outfalls.

Technology-based limits for oil and grease were included in both the Millennium and Tesoro Savage draft permits. Technology-based limits represent the best treatment a facility can achieve consistent with the economic means of the industry as a whole (in the case of effluent guidelines) or of the specific facility being permitted. Technology-based effluent limits are process control parameters or numbers which indicate that a process, in this case wastewater treatment, is not functioning properly. The technology-based limits for oil and grease in both draft permits are based on the treatment capability of an oil water separator.

Comment 7: Dave Hale

Thank you for your service to our state, and the difficult task of issuing permits that affect the health of our ecosystems and ultimately human health as well.

Considering the past toxic contaminants left on the MBTL site from previous operators, I would like to see more frequent monitoring and sampling under Millennium's operations that is witnessed for accuracy and integrity by Dept. of Ecology employees. Self-monitoring leaves much to be desired when there is a tendency to keep profits up in an industry that may be experiencing decreasing demand for commodities the use of which should be reduced worldwide. Proposed uses of this site entail potential discharged of contaminants that are both bio-accumulative and bio-magnified in the ecosystem. Data exists that indicate that coal piles do pose a risk of heavy metal runoff as a result of pulverization from handling and repeated wetting and drying of the resulting small particles that can be oxidized, leached into waters, and not "bound in the matrix of the coal".

Many other potential pollutants from this facility are not only bio-accumulative, but also add to the existing pollutants in the Columbia River that we are struggling to limit. Fish consumption advisories are the sad proof of these issues. Please follow your mandate to protect us by erring on the side of caution.

Response to Comment 7

Congress established the Clean Water Act permitting program as a self-monitoring program. Permittees are required to use state certified labs which follow very specific analytical methods, including Millennium's onsite lab and contractor lab. There are severe penalties, both civil and criminal, for falsifying or manipulating samples and sample results. The company's executive must certify the results and can go to jail if they are found to be knowingly falsifying data.

Ecology regularly inspects and samples the outfalls at Millennium. These inspections are unannounced and are intended to check housekeeping at the facility, adequate operation of the wastewater treatment plant, proper implementation of Best Management Practices, and to verify the facility's sampling results. In addition, Millennium's onsite laboratory and contractor laboratories are inspected and accredited by Ecology to ensure that proper procedures are followed.

The permit only covers discharges from Millennium's existing operations and not the proposed coal port. Upon receiving a permit application for the proposed coal terminal, Ecology will evaluate the contaminants in the discharges from the terminal and modify Millennium's permit as needed to include additional monitoring, limits, or other requirements.

Comments 8-17: Millennium Bulk Terminals Longview, LLC

Comment 8

We are concerned with the fluoride discharge limits in the draft permit. There are no water quality standards for fluoride in surface waters of the state. For this reason, any fluoride discharge limits for MBTL must be based on scientifically derived water quality criteria that are appropriate for the protection of aquatic life and other designated uses in the Columbia River at Longview.

In the absence of applicable numeric water quality standards for fluoride, any water quality-based fluoride discharge limits must be based on a site- and permit-specific application of Washington's "narrative" water quality criteria for the protection of aquatic life and human health. See WAC 173-201A-240(4), -260(2)(a), (3).

Draft permit condition S1.B. includes water quality-based fluoride discharge limits at Outfall 002A of 76 milligrams per liter (mg/L) as a daily maximum and 32 mg/L as a monthly average. These limits are derived from Ecology's use of the 4.0 mg/L groundwater quality standard for the protection of drinking water as an acute aquatic life criterion and the 1.8 mg/L North Carolina surface water quality standard as a chronic aquatic life criterion.

The Anchor QEA fluoride toxicity evaluations (February and March 2017) demonstrate that both the 4.0 mg/L and 1.8 mg/L criteria that were used to derive the fluoride discharge limits do not have a sound scientific basis and are not appropriate for the Columbia River at the site. Anchor QEA's evaluations include extensive scientific studies of the effects of fluoride on a wide range of aquatic life and consider the specific characteristics of the Columbia River and fish and aquatic life uses at the site. Those evaluations demonstrate that a fluoride criterion of 4.1 to 4.5 mg/L would be conservatively protective of aquatic life in the Columbia River adjacent to the facility both from chronic toxicity effects and from any adverse effects on fish passage. In addition, although the evaluations did not specifically address the appropriate criterion to protect against the effects of acute toxicity, such a criterion would necessarily be equal to or higher than the chronic criterion. If water quality-based fluoride discharge limits are applied to Outfall 002A, the limits should be derived from aquatic life criteria of no less than 4.5 mg/L.

Response to Comment 8

WAC 173-201A-260(3) requires the department to establish water quality requirements for water bodies, in addition to those numeric criteria specifically listed, on a case-specific basis where determined necessary to provide full support for designated and existing uses. Because there is not a state or federal surface water quality standard for fluoride, Ecology used Best Professional Judgment in using the North Carolina surface water quality standard to derive the monthly average fluoride limit for Outfall 002A to protect the aquatic life uses of the receiving water.

Ecology does not agree with Anchor QEA's toxicity evaluation supporting the use of the 4.0 mg/L groundwater quality standard for the protection of drinking water as a fluoride chronic aquatic life criterion.

Comment 9

Condition S1.E of the permit, Remediation Water AKART Study - The first paragraph says that the AKART study will be submitted within 1 year of the permit effective date, although the processing of remediation water will most likely not start until later. We suggest the following edit:

“The Permittee must prepare and submit an AKART study plan to evaluate the treatment of remediation water at Facility 71. The study plan must be submitted to Ecology for review and approval by _____ (within 6 months of the planned start date of remediation water processing/treating). The study plan must include a proposed schedule for sampling and report submittal.”

Response to Comment 9

This paragraph was changed to state that the study plan must be submitted to Ecology for review and approval at least 6 months prior to the planned start date of remediation water processing/treatment.

Comment 10

Condition S2.A. Monitoring Schedule Table: (2) Outfall 002A Commingled Process Wastewater and Stormwater including Remediation Water - For the three times per week composite sampling schedule, a contingency permit condition should be added regarding the use of a grab sample as a substitute in the event collecting one of the composite samples is not possible. Given a 5-day operating period and 24-hour composite run times, sometimes equipment malfunction or sample shipping delays can make a sample unavailable or invalid. In those instances, there would not be enough days in the sampling week to collect a makeup 24-hour composite sample.

Response to Comment 10

Because it should be a rare occasion when the monitoring frequency cannot be met, Ecology prefers to review these incidents individually and handle them with enforcement discretion rather than including an automatic contingency in the permit.

Comment 11

The summary on page 1 of the draft fact sheet states that Ecology changed monitoring frequencies for fluoride, free cyanide, and B(a)P at Outfall 002B from quarterly to weekly when treating remediation water at Facility 71. The monitoring at Outfall 002B under Reynolds' operations was daily but reduced to weekly sampling in 2003.

Response to Comment 11

The fact sheet was revised to correct this information.

Comment 12

The summary on page 1 of the draft fact sheet states that Ecology reduced the monitoring requirements for O&G, pH, and free cyanide at Outfall 003C from monthly to quarterly. Sampling at Outfall 003C under Reynolds' operations was monthly but reduced to quarterly sampling in 2003.

Response to Comment 12

The fact sheet was revised to correct this information.

Comment 13

In Section II.A of the draft fact sheet, Facility Description, an edit should be made as follows:

“Wastewater Treatment Processes

Facility 77 (Wastewater Collection Sump)

...Facility 77 also includes three, 680,000-gallon clarifiers (No. 1 Thickener Tank, No. 2 Thickener Tank, and No. 3 Thickener Tank) that are currently used to store ~~leachate~~ waters from the cryolite and leachate ditches for batch treatment in Facility 71.”

Response to Comment 13

The fact sheet was revised to make this change.

Comment 14

Table 9 of the draft fact sheet (page 37) refers to fluoride "Technology-based Limits for Outfall 002A" that differ from those in the draft permit. Table 9, including footnote b to the table, should be updated to be consistent with the draft permit's fluoride discharge limits, which are water quality-based, not technology-based.

Response to Comment 14

The fact sheet was revised to make this change.

Comment 15

Table 9 of the draft fact sheet, "Technology-based Limits for Outfall 002A" – The average monthly and maximum daily limits for fluoride and B(a)P do not match the permit.

Response to Comment 15

The fact sheet was revised to correct the limits.

Comment 16

Table 10 of the draft fact sheet, "Technology-based Limits for Outfall 003C" - Footnote b refers to the North Carolina surface water quality standard and John Day Dam study. The reference to John Day Dam is not in the draft permit.

Response to Comment 16

The fact sheet was revised to correct the footnote.

Comment 17

Appendix H of the draft fact sheet, "Mixing Zone for Outfall 002A" - The figure provided with the draft fact sheet is out of date. The correct figure is included with this transmittal.

Response to Comment 17

The figure provided by Millennium during public comment did not appear to match the dimensions from the 2014 mixing zone study used in developing the new permit. Ecology asked for further clarification and a different figure was provided. Appendix H was changed to include the new figure.

Comments 18-36: Columbia Riverkeeper, Landowners and Citizens for a Safe Community (LCSC), and Northwest Environmental Advocates

Comment 18

As one of the largest private ports in the lower Columbia River, Millennium's site could generate varying types and quantities of water pollution depending on future tenants. In turn, Columbia Riverkeeper, LCSC, and Northwest Environmental Advocates have significant concerns about current and future pollution from Millennium's facility.

Commenters' concerns about pollution from Millennium are based, in part, on Ecology's failure to reissue Millennium's permit for 27 years and prevent gross violations of environmental laws by a prior owner, Chinook Ventures. The Clean Water Act ("CWA") limits the length of NPDES permit to five years. However, if a permittee applies for a permit renewal within 180 days before the permit expires, the U.S. Environmental Protection Agency ("EPA") or a state with delegated CWA authority may administratively extend the permit. Ecology has failed to reissue Millennium's permit for nearly three decades and, in turn, failed to ensure the facility is complying with current water quality standards and modern pollution controls.

In addition, Ecology failed to prevent extreme violations of federal and state environmental laws by Chinook Ventures. Chinook Ventures filled acres of wetlands without permits, discharged pet coke into the Columbia River, and violated terms of its NPDES permit, among other things. Ecology's failure to stymie Chinook Ventures' violations of clean water laws through regulatory actions, including issuing fines for egregious violations, leaves the public with little confidence that Ecology will take the necessary actions to ensure future tenants do not pollute the Columbia River.

Response to Comment 18

The NPDES permit for the Reynolds aluminum smelter expired in 1995. Ecology was in the process of drafting the new permit when Reynolds began plans to temporarily curtail the facility. The permit was administratively extended as the requirements were still applicable to the curtailed smelter. The permit was modified in 2001 and 2003 to reduce monitoring frequencies after the facility permanently closed.

Chinook Ventures was not a good environmental steward and was recalcitrant in meeting their obligations under the NPDES permit, among other requirements. Ecology investigated numerous complaints, spills, and releases during Chinook Ventures' tenure at the Millennium site. Ecology issued a number of enforcement actions to Chinook Ventures for violations of air, water, and hazardous waste regulations and for the petroleum coke spill. These actions included three enforcement orders and two penalties totaling \$190,000. Eventually, Ecology and several other state agencies were able to persuade Alcoa to terminate their relationship with Chinook Ventures.

Ecology began working with Millennium when they purchased the property in 2011 to submit an NPDES permit application and engineering report; conduct mixing zone, sediment, and AKART studies; evaluate activities in stormwater drainage basins; remove equipment and materials

remaining onsite from Chinook Ventures; decommission the sanitary wastewater treatment plant; and continue work on the cleanup of the former smelter property.

Comment 19

The CWA implementing regulations clearly specify that permitting agencies must evaluate narrative criteria and establish limits, or prohibit specific discharges, to ensure the narrative criteria are met. See 40 C.F.R. 122.44(d)(1), 122.44(d)(1)(i), 122.44(d)(1)(v), 122.44(d)(1)(vi).

Ecology fails to ensure compliance with Oregon and Washington's narrative criteria.

Ecology's analysis fails to meet requirements of state and federal law. First, Ecology fails to ensure compliance with Oregon's narrative criterion. Second, for the reasons described below, Ecology fails to conduct a chronic toxicity WET testing and, in turn, fails to ensure compliance with WAC 173-201A-240(1). Third, Ecology's AKART analysis which focuses on technology, not toxicity impacts to the most sensitive biota does not address whether Millennium's discharges would "introduce toxic substances above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department." WAC 173-201A-240(1). Ecology must revise the permit and ensure Millennium's discharges will not cause or contribute to violations of narrative water quality standards.

Response to Comment 19

Please see the responses to Comments 20, 23, 24, and 29.

Comment 20

Ecology's outdated and under protective aquatic life criteria for copper and ammonia illustrate the importance of analyzing compliance with the narrative toxics criteria, as well as protection of beneficial uses. For example, the National Marine Fisheries Service ("NMFS") issued a so-called "jeopardy" Biological Opinion for Oregon's proposed aquatic life criteria for copper and ammonia. Oregon's proposed criteria were more stringent than Washington current numeric criteria. Washington's numeric criteria for ammonia were last updated in 2006, as compared to EPA's most recent 304(a) recommended criteria that are dated 2013, and are less protective than EPA's criteria (based on a pH of 7 and a temperature of 20° C).

Similarly, EPA made new recommendations for copper in 2007 that have not been incorporated into Washington's numeric copper criteria and may result in more stringent criteria (depending upon other parameters). Other Washington numeric criteria that are likely not protective of aquatic life are: arsenic, cadmium, chromium III, cyanide, nickel, and selenium. Of these, Washington's criteria for arsenic, cadmium, chromium III (chronic), cyanide, and nickel are less stringent than current EPA recommended criteria. And NMFS found that criteria Idaho adopted the same year that Washington adopted its criteria, 1997, posed jeopardy to salmonids for arsenic, cyanide, and selenium. Washington has no numeric criteria for aluminum, further requiring application of the narrative criterion.

Finally, NMFS issued a draft Biological Opinion finding jeopardy for salmonids exposed to cyanide at EPA-recommended criteria, which are the same as Washington's numeric criteria.

Commenters' exhibits provide examples of federal, state, and academic studies documenting toxic pollution in the Columbia River estuary, including near Millennium's facility, and the heavy toll of pollution on ESA-listed species and other aquatic life and wildlife. Overall, Ecology's approach to NPDES permitting in the Columbia River estuary turns ignores decades of scientific evidence documenting toxic pollution in the water column, sediment, aquatic life, and wildlife. The Draft Permit stands out as stark example of Ecology authorizing pollution loads to the Columbia River based on modelling and fact sheet assumptions that ignore existing toxic pollution -- in the water column, sediment, and aquatic life. For example, Ecology's mixing zone analysis, discussed below, and narrative criteria review -- to the extent a review occurs -- completely fail to account for the current conditions of toxic pollution in the Columbia River estuary. Ecology must revise the Draft Permit and conduct the required narrative criteria and beneficial uses analyses.

Response to Comment 20

Ecology can only enforce the water quality standards promulgated for Washington State which have been determined to be protective of the designated uses for the state's waterbodies. The reasonable potential analysis performed for Outfall 002A includes background receiving water quality data for metals. The fact sheet was revised to include a reasonable potential analysis for Outfall 002A to evaluate compliance with Oregon's promulgated numeric and narrative water quality criteria.

Comment 21

Ecology fails to ensure Millennium's process wastewater and industrial stormwater discharges will comply with the state's human health criteria water quality standards. Washington's water quality standards include numeric human health-based criteria that Ecology must consider when writing NPDES permits. EPA, and to an extent Ecology, recently revised the human health criteria applicable to Washington state. See 40 CFR 131.45; see also WAC 173-201A. Ecology fails to ensure the Draft Permit complies with applicable human health criteria.

In short, Ecology fails to conduct a reasonable potential analysis for human health water quality criteria and, instead, requires BMPs within the SWPPP. Ecology ignores batch discharges of treated remediation water at Outfall 002A. Ecology's analysis is unlawful.

Ecology cites no authority in the Clean Water Act, EPA implementing regulations, or state law to support its reasoning that human health criteria do not apply to "highly intermittent and highly variable discharge volumes." Nor does Ecology analyze, based on rain data or discharge monitoring report records from other industrial facilities at the Port of Longview or other industrial sites, the factual validity of its statement that stormwater discharges are "highly intermittent and highly variable" in Longview, Washington. In short, Ecology's conclusion that stormwater discharges to waterbodies in Longview, Washington, are "highly variable" and "highly intermittent" is arbitrary. For example, does Ecology believe that stormwater discharges are "highly intermittent from October to April? How does Ecology define, in state statute or regulation, "highly intermittent" and "highly variable"?

Furthermore, Ecology fails to cite authority for its decision to ignore batch discharges of treated remediation water in its analysis of human health criteria.

The only legal authority Ecology cites, 40 CFR 122.44(k)(3), does not override Ecology's duty to ensure compliance with human health criteria water quality standards. In particular, Ecology cites 40 CFR 122.44(k)(3) to demonstrate the agency's authority to require the implementation of best management practices ("BMPs") for stormwater discharges. However, the authority to require BMPs does not override the applicability of 40 CFR 122.44(a)-(j) or the agency's duty to ensure compliance with all state water quality standards, including human health criteria.

Overall, Ecology fails to cite any authority for: (1) the proposition that a state agency can require BMPs as a substitute for ensuring compliance with human health criteria water quality standards in an NPDES permit and, (2) failing to ensure batch discharges of treated remediation water comply with human health criteria. Accordingly, Ecology must revise the Draft Permit.

Response to Comment 21

The characteristics of stormwater discharges are discussed in Section 5.1 of Chapter 7 of Ecology's Water Quality Program Permit Writer's Manual (PWM). In addition, Section 6.1.1. of Appendix C of the PWM states that "Because most human health criteria are based on lifetime exposures, direct comparisons of the receiving water criteria with pollutant concentrations in intermittent stormwater discharges are not appropriate." The high variability of stormwater pollutant concentrations make the application of human health criteria problematic and establishing numeric effluent limits based on the criteria are considered infeasible. Unlike a continuous discharge that maintains steady concentrations of pollutants during the acute and/or chronic duration, concentrations of pollutants in an intermittent stormwater discharge do not remain constant. Rather, the first flush concentrations continuously decrease throughout the duration of the storm at non-uniform rates based on site specific activity, the storm intensity, antecedent dry periods, and other factors.

The remediation water that will be generated during the cleanup of the former Reynolds aluminum smelter will be intermittent, occurring over a relatively short period of time, and with variable pollutant concentrations. Ecology believes that these factors also make it inappropriate to compare pollutant concentrations in the remediation water with human health criteria. The permit requires BMPs for preventing and controlling contaminants in both stormwater and remediation water. These BMPs must be consistent with Ecology's Stormwater Management Manual for Western Washington.

Comment 22

Ecology authorizes mixing zones for persistent bioaccumulative toxics ("PBTs") without ensuring the discharges will comply with numeric and narrative water quality standards and protect designated uses.

EPA has come to the common-sense conclusion that mixing zones for PBTs generally do not assure the attainment of water quality standards and the protection of beneficial uses.

Millennium's discharges include pollutants classified as PBTs under Washington state law: lead and PAHs. The Fact Sheet fails to analyze whether Millennium's PBT discharges comply with the numeric and narrative water quality standards, as well as protect designated uses.

Ecology should revise the Draft Permit to prohibit mixing zones for PAH and lead and, in turn, develop a water quality based effluent limit ("WQBEL") to ensure end-of-pipe compliance with narrative and numeric water quality standards for PBTs.

Response to Comment 22

Ecology's policy is to not authorize a mixing zone when the receiving water is impaired for a pollutant, including PBTs. The receiving water at Millennium is not impaired on the 303(d) list for lead or PAHs.

Comment 23

Ecology fails to ensure pollution discharges will not violate state water quality standards. For Outfall 002A, Ecology fails to ensure Millennium's discharges will comply with the narrative toxics standard, WAC 173-201A-260(2) -- which applies to copper and zinc -- as well as the numeric standards for copper and zinc. For Outfall 003C, Ecology adopts the Industrial Stormwater General Permit ("ISGP") benchmarks. Notably, Ecology exempts (i.e., fails to include as permit conditions) Millennium from complying with the heart of the ISGP: the escalating level response report requirements. Instead, the Draft Permit includes general terms that require Millennium evaluate updating best management practices -- a far less rigorous permit requirement than the ISGP regulatory scheme. Even if Ecology had imposed ISGP requirements in this individual permit, Ecology fails to demonstrate that benchmarks will ensure compliance with state water quality standards. For the reasons explained below, Ecology must revise the Draft Permit.

Response to Comment 23

Ecology conducted a statistical analysis which compared Millennium's maximum discharge concentrations for copper and zinc at Outfalls 002A and 003C to the respective aquatic life criteria and concluded that there was no reasonable potential to violate the water quality standards for these pollutants. Ecology required benchmarks and the adaptive management BMP approach (monitoring and corrective action requirements) at Outfall 003C to confirm this conclusion during the next permit cycle. No additional requirements were included in the permit for copper and zinc at Outfall 002A because the concentrations at the edge of the mixing zones are significantly lower than the water quality standards.

Condition SI.D.4 was revised to include more stringent requirements in response to exceedances of the copper and zinc benchmarks. Timelines as well as specific mention of the types of BMPs to be evaluated were added to the permit.

Comment 24

Ecology fails to include any technology- or water quality-based effluent limits for copper or zinc pollution discharged at Outfall 002A. Ecology acknowledges, however, that industrial stormwater discharges comprise the majority of Outfall 002A's effluent.

Ecology's has a lengthy history of regulating copper and zinc in the ISGP. For example, if registered under the ISGP, the zinc and copper benchmarks, and associated adaptive management scheme, would apply to Millennium.

For Outfall 002A, Ecology fails to explain:

- Why Millennium's discharges do not have a reasonable potential to exceed copper and zinc water quality criteria;
- How the agency determined that Millennium's copper and zinc discharges do not violate the state narrative toxic criterion, WAC 173-201A-260(2), and
- The rationale for excluding copper and zinc benchmarks and associated ISGP terms related to adaptive management (i.e., level response reports) in Millennium's individual NPDES permit.

Response to Comment 24

Please see the reasonable potential to exceed analysis for Outfall 002A in Appendix I of the fact sheet. Ecology assured compliance with the narrative criteria when we evaluated the pollutants in Millennium's discharges and whether the facility was meeting AKART for those pollutants and by requiring acute and chronic WET testing in the permit. Copper and zinc concentrations in the discharge at Outfall 002A are low and the discharge is well mixed in the receiving water. Ecology determined that there is no reasonable potential for violations of the copper and zinc water quality standards at Outfall 002A. The permit requires continued monitoring of copper and zinc in the annual priority pollutant testing. This data along with the metals data collected during Ecology's annual water quality inspections will be evaluated during development of the next permit.

Comment 25

For B(a)P, Ecology derives a technology based effluent limitation ("TBEL") using the 1992 National Toxics Rule. Ecology must revise the Draft Permit and derive effluent limits based on the water quality standards in effect. As Ecology is well-aware, the 1992 NTR is no longer "the law of the land" in Washington State.

Response to Comment 25

The B(a)P limit in the permit is non-detect at a detection limit of 0.5 ug/L. The basis for this limit was corrected in the fact sheet.

Comment 26

Ecology fails to ensure discharges from Outfall 003C comply with water quality standards. As an initial matter, Ecology asserts that Outfall 003C discharges exclusively stormwater; however, based on the industrial activities that occur within the catchment area for Outfall 003C, it appears highly likely that process wastewater would enter Outfall 003C.

In addition, Ecology fails to adopt effluent limits for toxic and other pollutants. For example, Ecology fails to impose TBELs or water quality-based effluent limitations ("WBELs") and, instead, adopts the ISGP benchmarks for copper and zinc.

In addition, Ecology retains TBEL oil and grease and pH limits from the thirty-two year old permit, stating that limits are based on Best Professional Judgment ("BPJ").

First, Ecology does not analyze or adopt a mixing zone for Outfall 003C and, in turn, must require compliance with water quality standards end-of-pipe. Second, Ecology does not explain its rationale for failing to analyze and impose TBELs or WBELs for copper and zinc. Third, Ecology fails to explain why BPJ has not changed in over thirty years for oil and grease and pH.

Notably, in the Fact Sheet, Ecology fails to specify if the agency applied a mixing zone for any toxics criteria at Outfall 003C when it analyzed (if it did) compliance with water quality standards. Outfall 003C discharges to the CDID Ditch; it is unclear if Ecology analyzed compliance with WAC 173-201A-400 for stormwater and process wastewater discharges to a ditch. Ultimately, the Draft Permit contains no mixing zone authorization and, as noted above, Ecology must ensure compliance with water quality standards end-of-pipe.

Response to Comment 26

Millennium has not identified any sources of process water that will be discharged within the stormwater drainage basin for Outfall 003C. Should this change in the future, Ecology will need to revisit monitoring requirements, limits, and BMPs for the discharge at Outfall 003C.

Please see the response to Comment 23 regarding the evaluation of copper and zinc at Outfall 003C.

During the last 5 years, the concentrations of the stormwater discharge at Outfall 003C were less than technology-based limits (TBELs) for oil and grease and pH. Ecology used its BPJ to retain the more stringent effluent limits from the previous permit for these constituents based on past performance instead of switching to the less stringent TBELs.

Ecology does not authorize a mixing zone for Outfall 003C in the draft permit. The reasonable potential analysis performed for the discharge at Outfall 003C is at end-of-pipe, with no dilution.

Comment 27

The Fact Sheet does not explicitly describe Ecology's reasonable potential analysis on copper and zinc. However, in general terms, Fact Sheet states: "Ecology conducted a reasonable potential analysis of the parameters in these discharges [i.e., discharges from Outfalls 002A, 003C, and others] to determine whether effluent limits would be required in this permit. The information used in the analysis represented Millennium's operations as a bulk storage and transport facility (data collected since January 2011).". Given Ecology's decision to include zinc and copper benchmarks, Commenters assume that Ecology found a reasonable potential to violate the copper and zinc water quality standards. The Fact Sheet lists copper and zinc as pollutants found in effluent from Outfall 003C. Under 40 C.F.R.; 122.44(d)(1)(i) - (iii), if Ecology determines there is a reasonable potential to exceed a water quality standard, the agency must impose a TBEL or QBEL (whichever is more stringent).

Response to Comment 27

Ecology determined that there is no reasonable potential to exceed the copper and zinc water quality standards at Outfall 003C. Please see the reasonable potential to exceed analysis in Appendix I of the fact sheet.

Comment 28

Ecology's decision to adopt the ISGP benchmarks for copper and zinc ignores the Washington Court of Appeals recent decision in *Puget Soundkeeper All. v. Dept' of Ecology*, which rejected Ecology's similar decision in the Seattle Iron and Metals ("SIM") NPDES permit. In *Puget Soundkeeper All. v. Dept.' of Ecology*, Ecology imported numeric benchmark values for copper and zinc from the 2009 ISGP for SIM's Outfall 002, which discharges to the Lower Duwamish Waterway. Using the ISGP benchmarks, Ecology imposed daily effluent limitations of 14 ug/L for copper and 117 ug/L for zinc. Ecology reasoned that it had only two data points because Outfall 002 had not been previously regulated. *Id.* Puget Soundkeeper asserted that the ISGP benchmarks were significantly higher than what site-specific WQBELs would be: daily limits of 4.8 ug/L for copper and 90 ug/L for zinc. Ecology claimed that the ISGP limitations were water quality based, not technology-based as Puget Soundkeeper argued, and the permit ensued compliance with state water quality standards.

The Washington Court of Appeals rejected Ecology's rationale.

The court held that Ecology could not import copper and zinc benchmarks from the ISGP and substitute those benchmarks for WQBELs in an individual NPDES permit. The court reasoned: "Washington law is clear that Ecology cannot issue NPDES permits that would allow discharges of toxic substances that would violate applicable water quality standards."

First, the court found that Ecology's ISGP copper and zinc benchmarks were technology-based - rejecting Ecology's argument that the benchmarks were water-quality based. In addition, the court found that Ecology could have calculated site-specific WQBELs for Outfall 002 despite the lack of data. The court concluded, "Therefore, we hold that the [Pollution Control Hearings] Board erred in concluding that the effluent limitations in SIM's NPDES permit - which were significantly higher than the water quality standards - were consistent with applicable law." *Id.* at 26.

Second, the court held that Washington law requires Ecology to use the lower, site specific WQBELs instead of the higher, ISGP limitations. The court noted that there was no mixing zone and no dilution factor and, "[t]his means that the water quality criteria would have been the effluent criteria.

Notably, in the SIM permit at issue in *Puget Soundkeeper All.*, Ecology imported the copper and zinc ISGP benchmarks and imposed the benchmarks as effluent limits in the NPDES permit. Here, Ecology does not conclude that it can utilize a mixing zone for Outfall 003C - there is no discussion of a mixing zone for Outfall 003C in the Draft Permit or Fact Sheet - and uses a benchmark approach, rather than effluent limits. For the reasons explained above and in *Puget Soundkeeper Alliance*, Ecology must impose WQBELs - not benchmarks or substitute ISGP benchmarks for effluent limits.

Ecology's rationale ignores the court's decision in Puget Soundkeeper Alliance. Examples of Ecology's errors in development of effluent limitations for Outfall 003C, and the agency's impermissible use of benchmarks, include:

- On a parameter-by-parameter basis, Ecology fails to describe whether it applied a mixing zone to Outfall 003C and, if so, its legal rationale for applying a mixing zone.
- Ecology fails to explain its rationale for imposing ISGP benchmarks -- and no effluent limits -- for copper and zinc.
- Ecology's uses "incomplete effluent data for aluminum and iron" as an excuse not to impose TBELs or WQBELs for those parameters. This "lack of data" rationale was rejected by the court in *Puget Soundkeeper All. v. Dept' of Ecology*. Moreover, Ecology's treatment of aluminum and iron is even less protective than Ecology's treatment of copper and zinc in the SIM permit. For SIM, Ecology imported copper and zinc benchmarks and deemed them effluent limits; for Millennium, Ecology fails to impose any effluent limits for aluminum and iron.

Ecology must revise the Draft Permit and impose effluent limits for toxics found in Millennium's effluent at Outfall 003C.

Response to Comment 28

Ecology did not apply a mixing zone in conducting the reasonable potential analysis for Outfall 003C. Ecology concluded that there was no potential to violate the water quality standards for copper and zinc using a 1:1 dilution. Ecology required benchmarks and an adaptive management BMP process for Outfall 003C to verify this conclusion during the next permit cycle. Ecology does not believe that the water quality standards will be exceeded at the end of pipe by using the benchmarks from the ISGP. The benchmarks for copper and zinc are 14 ug/L and 117 ug/L, respectively. Using a hardness value of 110 mg/L measured in the CDID ditch, the aquatic life criteria for copper and zinc are 18.615 ug/L and 124.07 ug/L, respectively. We believe there will be enough dilution so that the benchmarks and adaptive management BMP process will be protective of the receiving water.

There was an error in the reasonable potential analysis for Outfall 003C in Appendix J. The analysis should only compare values in the stormwater discharge to acute aquatic life criteria, not chronic aquatic life criteria. With this correction, there is no reasonable potential for aluminum or iron to violate water quality standards at Outfall 003C. The effects of stormwater runoff on a receiving water are typically of a short duration and so are compared to acute criteria. Most acute water quality criteria are based on a 1-hour to 24-hour exposure time period whereas chronic water quality criteria are primarily based on a 4-day (96-hour) exposure period.

The permit requires annual priority pollutant monitoring at Outfall 003C to collect additional data for the stormwater discharge, including data for aluminum and iron. The BMPs required by the permit are expected to minimize these pollutants in the discharge.

Comment 29

Ecology fails to ensure the discharges will not violate WAC 173-201A-260(2) due to chronic toxicity impacts. In particular, Ecology required that Millennium conduct WET testing for acute toxicity, but failed to require testing for chronic toxicity. Ecology cannot ensure compliance with water quality standards and, in turn, issue the permit until WET testing for chronic toxicity is complete.

Ecology fails to explain why WET testing to characterize chronic toxicity was not completed prior to the development of the Draft Permit. Millennium's NPDES permit expired 27 years ago and Ecology has been working on permit development for multiple years. Ecology must require chronic WET testing, and incorporate the findings of those tests, prior to issuing the permit.

Response to Comment 29

Condition S13. of the permit requires chronic WET testing. Millennium must characterize the effluent at Outfall 002A for chronic toxicity. If the effluent characterization shows a reasonable potential for chronic toxicity, the permit establishes a WET limit and requires quarterly compliance testing for the duration of the permit.

WAC 173-205-050(1) requires dischargers to characterize their effluent for toxicity during permit application or during the first year of the permit term. Condition S13.A. requires Millennium to begin chronic toxicity testing within 60 days of the permit effective date.

Comment 30

The Draft Permit fails to protect the Columbia River and CDID ditches, and their respective designated uses, from PAH pollution. PAH pollution is a recognized problem in the lower Columbia River. In fact, earlier this month the Northwest Power and Conservation Council authorized a pilot study to map PAH pollution as part as an ongoing effort to protect aquatic life. The Draft Permit contains no effluent limits, benchmarks, or other terms to reduce PAH pollution from Millennium's port facility.

Millennium's current permit failed to protect the Columbia River from harmful PAH pollution, yet Ecology imposes no more stringent requirements in the Draft Permit. This is not acceptable. As Ecology is well aware, PAH pollution from Outfall 002A likely contaminated Columbia River sediment to the point at which the sediment exceeded MTCA cleanup levels and Ecology required a cleanup action. Ecology fails to recognize that effluent limit - or a lack thereof - in the current NPDES permit contributed to sediment pollution. The agency must impose more stringent PAH effluent limits in the Draft Permit.

In particular, Ecology fails to incorporate the requirements of WAC 173-204-400 in the Draft Permit. While Ecology recognizes that PAH contamination occurred near Outfall 002A, Ecology fails to connect the dots between known sediment contamination and decades of pollution discharged by Millennium and its predecessors from Outfall 002A.

Ecology must revise the Draft Permit and incorporate the requirements of WAC 173-204-400 to ensure protection of designated uses and compliance with water quality criteria. See WAC 173-204-400(7).

Response to Comment 30

Ecology does not believe the PAH contamination near Outfall 002A is related to the discharge from the facility. Please see the response to Comment 34. Benzo(a)pyrene (B(a)P) is considered an indicator parameter for PAHs. The permit includes an effluent limit and monitoring requirements for B(a)P at Outfall 002A.

The effluent limit for B(a)P is non-detect at a detection limit of 0.50 ug/L from Appendix A of the permit. With the permanent closure of the aluminum smelter, there should no longer be any sources of PAHs and after treatment of remediation water at the wastewater treatment plant, B(a)P concentrations in the discharge at Outfall 002A should be negligible.

Comment 31

Regardless of whether Millennium operates a coal export terminal, Millennium proposes new tenants at the facility or expanding the company's marine cargo handling operations in the future. The Draft Permit fails to ensure that Ecology will protect the Columbia River from increased or new pollutant loads and, similarly, allow for public comment on new or expanded discharges.

Effluent limits and other permit terms were derived based on current operations as described in the Fact Sheet.

Every NPDES permittee must employ "[a]ll known, available, and reasonable methods of prevention, control, and treatment" to decrease pollution. WAC 173-216-110(1)(a); WAC 173-216-020(1). This requirement, commonly called "AKART," is the legal standard for TBELs in NPDES permits. Unless water quality concerns dictate stricter limits, the effluent limits in Millennium's permit must reflect AKART.

Ecology fails to describe what criteria the agency would use to determine if a new tenant or Millennium activity requires a permit modification and complies with AKART.

The Draft Permit fails to state that Millennium is prohibited from taking on new tenants and their additional waste streams until Ecology approves the revised NPDES permit application (i.e., through a permit modification, if appropriate).

Commenters' interest in clarity around what operations trigger a permit reopener stem from Ecology's failure to protect water quality when Chinook Ventures, and later Millennium, began operating under an expired NPDES permit developed for an aluminum smelter. This issue, and other unlawful pollution from the facility, prompted CWA enforcement actions by Columbia Riverkeeper and LCSC and fines from Ecology.

Commenters request that Ecology clarify how it would determine if a new tenant or new facility operations by Millennium would prompt a permit modification and, in turn, public notice and comment.

Response to Comment 31

The permit was revised to include a statement that Millennium is prohibited from taking on new tenants and their additional wastewater streams until Ecology approves the revised NPDES permit application and makes a decision on whether a permit modification is required.

Ecology will evaluate the estimated volumes and characteristics of any stormwater or process water discharges from a proposed tenant and compare them to the treatment and hydraulic capacities of Millennium's wastewater treatment and conveyance system. Ecology will also review the monitoring requirements and limits in the existing permit to determine if these adequately cover the new discharge. There may be other factors involved in Ecology's decision about whether to modify the permit, depending on the proposed tenant and how their stormwater or process water will be managed.

Comment 32

The Fact Sheet and Draft Permit omit discussion of industrial stormwater from Millennium's dock. Runoff from the dock and conveyors constitutes stormwater associated with an industrial activity. Ecology cannot ignore these industrial areas in developing the Draft Permit. Commenters request that Ecology revise the Draft Permit to account for industrial stormwater discharges from Millennium's dock.

Response to Comment 32

Best management practices (BMPs) covering the dock and trestle with the vacuum ship unloader conveyor system are included in Millennium's Stormwater Pollution Prevention Plan (SWPPP) dated September 2014. Condition S10. of the permit requires Millennium to update their SWPPP and to make sure the BMPs in the plan are consistent with Ecology's Stormwater Management Manual for Western Washington, amended in 2014.

Comment 33

Ecology does not address the age or functionality of Millennium's diffuser in the Fact Sheet. The Draft Permit, however, requires that Millennium conduct an outfall inspection and submit a report detailing the findings of that inspection. The inspection must evaluate the physical condition of the discharge pipe and diffusers and evaluate the extent of sediment accumulation in the vicinity of the outfall. Did Ecology require that Millennium conduct an outfall inspection and submit a report detailing the findings of the inspection to inform Ecology's development of the Draft Permit? If not, Ecology should require the inspection and report submittal prior to issuing the final permit. Ecology derives effluent limits based on mixing zone analyses that assume full functionality of the diffuser; in turn, Ecology must confirm this assumption is valid.

Response to Comment 33

Outfall 002A was last evaluated in October 2011 by NW Underwater Construction. At the time of the study, the discharge through Outfall 002A was operating within normal parameters (flow rate, pump performance and efficiency). Outfall 002A is 49 feet long with 17 diffuser ports. Nine of the ports had visible flow with some varying amounts of sedimentation or loose debris. Visual observations of the remaining ports were impeded due to sedimentation and/or large woody debris.

The 2014 mixing zone analysis was based on a dilution dye study that represented the actual performance of the diffuser at Outfall 002A. The permit has been revised to require Millennium to conduct an evaluation of Outfall 002A within 2 years of the permit effective date.

Comment 34

The Fact Sheet fails to address the suspected cause of contaminated sediment at Outfall 002A. In June 2014, Ecology issued an amendment to the Agreed Order DE-8940 requiring implementation of an interim remedial action. That work included removal and disposal of a localized area of sediment contamination adjacent to Outfall 002A. Did Ecology investigate the cause of contaminated sediment? If so, does the cause of sediment contamination inform any Draft Permit terms or should the cause inform Draft Permit terms?

Response to Comment 34

Based on the depth and localized nature of the sediment contamination near Outfall 002A, Ecology determined that the contamination is likely due to a spill or release from the facility during Chinook Venture's tenure at the site.

Comment 35

Finally, the Fact Sheet fails to provide an accurate account of permit compliance under the expired permit. Ecology should consult its files - including enforcement files - on this permit and revise the Fact Sheet to describe permit noncompliance by both Millennium and its predecessors.

Response to Comment 35

The permit is for Millennium's existing operations, not for its predecessors. In preparing the permit renewal, Ecology assessed Millennium's compliance with the previous permit. The fact sheet states that Millennium has been in compliance with the effluent limits, monitoring, WET testing, and other requirements of the previous permit since beginning operations in 2011.

Comment 36

To the extent Ecology modifies the Draft Permit based on public or Millennium's comments, Commenters request that Ecology reopen the comment period.

Response to Comment 36

Ecology has made a number of changes to the permit in response to public comment. These changes are all more stringent than the public noticed version. Under these circumstances, Ecology's policy is to not reopen the comment period.

Comments 37-41: Columbia River Inter-Tribal Fish Commission

Comment 37

The Columbia River Inter-Tribal Fish Commission (CRITFC) appreciates the opportunity to comment on the Millennium Bulk Terminals, Longview L.L.C.'s National Pollutant Discharge Elimination System (NPDES) wastewater permit. CRITFC remains concerned about all aspects of Millennium's proposal and its potential for long-term impacts to the region, including chemical and physical risks posed to aquatic species, water quality, air quality, and habitat. More importantly, the project will unfairly burden the treaty tribes with these risks.

The project will discharge effluent directly to the Columbia River which will impact the river's ecosystem. Any discharge of thermal and chemical pollutants into the Columbia River has the potential of effecting aquatic species and their habitat. Ecology should deny this permit, or, at a minimum, modify the monitoring requirements of this permit and establish procedures to limit effluent during low flow, high temperature conditions.

Response to Comment

It appears that the commenter is referring to the proposed coal port. The draft NPDES permit is for Millennium's existing bulk terminal activities, not the proposed coal export terminal. If Ecology modifies this permit to address discharges from the construction and operation of the coal export terminal, there will be another opportunity for public comment.

Comment 38

In mixing zone calculations, Ecology choose an average low river flow condition of 115,000 cubic feet per second based upon a recurrence of ten years (e.g., "7Q10"). While a reasonable worst-case for historic conditions is represented in this prediction, the calculation fails to consider the impacts of declining snowpack and lower summer streamflow that are expected to occur in the future. These conditions were experienced in 2015, where data from Columbia Basin Research records the flow at Bonneville of 79,000 cubic feet per second on day 270 and a low seven-day average of 91,000 cubic feet per second on days 281-288. The Earth's climate is undoubtedly warming and the year 2015 foreshadows what typical conditions may look like in the future. Part of adaptation to this reality should be reasonable consideration of these flow conditions.

Response to Comment 38

The mixing zone study for the Millennium facility was conducted in 2014. It followed the guidance provided in Chapter 6 of Ecology's PWM. In preparing the next permit renewal, Ecology will have the opportunity to evaluate changes in ambient and effluent conditions and update the reasonable potential analysis, as necessary.

Comment 39

As with most of the Columbia River, the section of the river near the Millennium Bulk facility, (river mile 63) is listed as impaired for temperature. In 2015, the "seven-day average daily maximum temperature" at Bonneville exceeded 22° C. The temperature "reasonable potential and limit" calculation used an ambient temperature of 18.0° C. Release of thermal pollution into these conditions warrants protections beyond those provided by Ecology's 0.3° C incremental warming policy. Emergency situations such as those experienced in 2015 should trigger a temporary hold on the release of thermal pollution into the environment.

Response to Comment 39

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

However, the State temperature standards do include protections against acute temperature effects. Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C. Ecology notes that at higher ambient temperatures in the receiving water, the effect of the discharge on the ambient temperature will be reduced. According to Ecology's "Temperature Analysis" tool, Millennium's discharge will not cause an increase in temperature in the receiving water when the ambient temperature of the receiving water is 22°C.

Comment 40

We recommend that Ecology include copper, zinc, and aluminum monitoring at Outfall 002A. The proposed permit requires Millennium to monitor Outfall 003C for total copper and total zinc from storm water. Outfall 002A also receives considerable storm water and it is unclear why this outfall would not be expected to discharge these metals into the Columbia River. Routine monitoring for aluminum is no longer required at Outfall 002A. Monitoring aluminum in the effluent should continue as before. Millennium's current permit allows them to store up to 350,000 tons of alumina and they plan to resume importing and transporting alumina when the Wenatchee smelter restarts operations. Aluminum from this source could continue at the site and should be monitored.

Response to Comment 40

Based on a review of five years of data for the Millennium operations, Ecology determined that there was no potential to exceed the water quality standards for copper, zinc, and aluminum at Outfall 002A. Condition S2.A. of the permit includes a requirement to monitor copper, zinc, and aluminum at Outfall 002A annually as part of ongoing effluent characterization and priority pollutant testing.

Aluminum is not a good indicator of pollution from alumina handling activities. Alumina is converted to aluminum in a chemical reaction using electrical current (called electrolytic conversion) in the aluminum manufacturing process. Since the aluminum smelter is no longer operating at the Reynolds facility and much of the remaining smelter equipment and buildings have been cleaned or dismantled, there should no longer be a source of aluminum at the site. Alumina is a fairly inert material. The primary concern is solids build up that could cause smothering of benthic organisms in the receiving water. The permit includes BMPs to minimize solids in stormwater runoff and monitoring for total suspended solids (TSS) at Outfall 002A.

Comment 41

Polycyclic aromatic hydrocarbons (PAH) should be monitored past the time that remediation water is being treated at Facility 71 and Facility 73 to ensure that there is not an additional source of PAH discharging to Outfall 002A. In the past, PAHs were identified in sediments near Outfall 002A. In order to verify that all sources of PAH at the site have been removed, monitoring should continue.

Response to Comment 41

Benzo(a)pyrene (B(a)P) is considered an indicator parameter for PAHs. Condition S2.A. requires Millennium to monitor B(a)P monthly at Outfall 002A throughout the duration of the permit. When Millennium is processing/treating remediation water from cleanup or other activities, they are required to monitor B(a)P 3 times a week at Outfall 002A.