Region 10, NPDES Permits Unit
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Seattle, WA 98101

Fact Sheet

Public Comment Start Date: May 7, 2012
Public Comment Expiration Date: June 6, 2012

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Proposed Issuance of a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)

Swinomish Indian Tribal Community (SITC)
North End Wastewater Treatment Plant

EPA Proposes To Issue NPDES Permit
EPA proposes to issue an NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

Tribal Certification
EPA is requesting that the Swinomish Indian Tribal Community certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Swinomish Indian Tribal Community
Office of Planning & Community Development
Water Resources Program
11430 Moorage Way
La Conner, WA 98257

Public Comment
Persons wishing to comment on or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

Documents are Available for Review
Pursuant to 40 CFR § 124.9, the Administrative Record for the draft permit, which consists of the draft permit, fact sheet, and the documents referenced in this fact sheet, is available for review. These documents are available upon request by contacting Catherine Gockel at (206) 553-0325 or gockel.catherine@epa.gov.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at ―http//epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

USEPA R10 Washington Operations Office
300 Desmond Dr., SE, Suite 102
Mail Code: WOO
Lacey, WA 98503

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Acronyms

AML	Average Monthly Limit
AWL	Average Weekly Limit
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
ºC	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
I/I	Infiltration and Inflow
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential

RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SITC	Swinomish Indian Tribal Community
SS	Suspended Solids
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

Swinomish Indian Tribal Community
SITC North End Wastewater Treatment Plant

NPDES Permit Number:
WA-0025062

Physical Location:
Swinomish Channel & State Highway 20

Northern Lights Casino
12903 Casino Drive
Anacortes, WA 98221 (See Appendix B for map)

Mailing Address:
Swinomish Indian Tribal Community
Office of Planning & Community Development
Water Resources Program
11430 Moorage Way
La Conner, Washington 98257

Contact: John Petrich, Manager, Swinomish Utility Authority

B. Permit History

A complete application for a new NPDES permit was submitted to the EPA on September 17, 2009. According to the permit application, the Tribe desired to begin discharge from the new facility in June, 2011.

II. Facility Information

A. Treatment Plant Description

The Swinomish Indian Tribal Community (SITC) owns, operates, and maintains the North End Wastewater Treatment Plant (WWTP) on the Swinomish Indian Reservation near Anacortes, Washington. The facility provides advanced treatment using a membrane bioreactor (MBR), and uses ultraviolet disinfection.

The tribe plans to discharge the treated wastewater to the Swinomish Channel. The WWTP serves the tribe's Northern Lights Casino. The design flow of the facility is 0.05 million gallons per day (mgd). The facility currently serves the casino and a gas station. The facility presently averages 12,000 gallons per day, and expects to reach 35,000 gallons per day with the addition of

a planned hotel adjacent to the casino. The facility has intermittent discharge and uses batch processing. There are no industrial discharges to the facility. The collection system has no combined sewers. Details about the wastewater treatment process and a map showing the location of the treatment facility are included in Appendices A and B, respectively.

For the purposes of this permit, the Swinomish tribe is considered a municipality (40 CFR 122.2), and the facility is a publicly owned treatment works (POTW) as that term is defined in federal regulations (40 CFR 403.3).

B. Background Information

This will be the second NPDES permit issued to the tribe at the Northern Lights Casino. The tribe was first granted a permit in the 1970s for wastewater treatment lagoon discharge to the Swinomish Channel. The discharge pipe was never used and the permit expired in the late 1970s. The wastewater lagoon was replaced by a new membrane bioreactor (MBR) facility in the fall of 2007. Currently, the MBR plant effluent is discharged to lagoons/percolation basins adjacent to the facility (not to waters of the US).

EPA conducted a site visit and toured the facility on August 25, 2011. The outfall is currently in a state of disrepair and will require rehabilitation. Since dilution factors used as a basis for permit conditions are based on assumptions about improvements to the outfall, SITC is required to meet the conditions in Section I of the permit prior to beginning discharge.

III. Receiving Water

A. Location of Discharge

This facility proposes to discharge to the Swinomish Channel, within the boundaries of the Swinomish Indian Reservation, near State Highway 20 on Fidalgo Island in Skagit County, Washington. The North End Wastewater Treatment Plant outfall is located at latitude: 48º 27' 29" N and longitude: 122º 30' 57" W.

The outfall is located approximately 1,000 feet to the east of the MBR facility. The point of discharge is located at the mouth of the Swinomish Channel, approximately 300 feet from Padilla Bay (See Appendix B for maps). Swinomish Channel is an 11-mile artificial waterway that connects Skagit Bay to Padilla Bay. The Channel is periodically dredged to maintain navigability. According to SITC's Office of Planning & Community Development, the regulatory boundary extends to the historic midpoint of the Swinomish Channel. Therefore, the facility will discharge to tribal waters.

Padilla Bay is an intertidal area with one of the largest continuous beds of eelgrass in the contiguous United States (NOAA, DOE http://www.padillabay.gov/; http://nerrs.noaa.gov/Reserve.aspx?ResID=PDB). Species found in Padilla Bay include herring, smelt, pink and chum salmon, flatfish, Dungeness crab, ducks including Black Brant, eagles, shorebirds, and peregrine falcons. Mammals found in Padilla Bay include harbor seals and river otters (http://nerrs.noaa.gov/Reserve.aspx?ResID=PDB). Shellfish harvest is a designated use for Padilla Bay.

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy.

This facility discharges to the Swinomish Channel, within the boundaries of the Swinomish Indian Reservation. The SITC does not have EPA approved water quality standards at this time. Beyond the reservation boundary, the State of Washington has jurisdiction. The point of discharge is located in tribal waters, roughly 400 feet from the reservation boundary, and therefore can affect waters of the State of Washington that are downstream from the discharge. Washington WQS were used as a basis for setting permit limits in order to assure protection of the downstream waters of the State of Washington, in compliance with federal regulations (40 CFR 122.4(d), 122.44(d)(4)).

Use Designations

Washington State water quality standards (WQS) do not specifically identify use designations for State waters in the Swinomish Channel. Therefore, the use designations for Padilla Bay will be used to represent the designations for Washington standards as used in this permit. Padilla Bay is a marine water in North Puget Sound designated as estuarine by the State of Washington (WAC 173-201A-400(7)(b)(ii)). According to WAC 173-201A-612 (Table 612 of the Washington water quality standards), the aquatic life use for all marine waters in North Puget Sound east of longitude 122° 39' W and north of latitude 48°27'20''N are categorized as Excellent quality.

Waters classified as "Excellent" for aquatic life uses have a general description of: "Excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc) rearing and spawning." Designated uses also include shellfish harvesting, wildlife habitat, recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment); and commerce and navigation.

Numeric or Narrative Water Quality Criteria

The numeric and narrative water quality criteria associated with the designated uses are the criteria deemed necessary to support the beneficial use classification of the water body. The criteria may be numeric or narrative.

The numeric and narrative water quality criteria being applied to the Swinomish Channel are listed in Appendix C (Basis for Effluent Limitations) of this fact sheet. The appendix also shows in more detail how the Washington water quality standards were considered in developing limits and conditions proposed in the draft permit.

Treatment as a State

On April 18, 2008 EPA approved the Swinomish Indian Tribal Community of Washington application for ~~"~~treatment in the same manner as a State." After reviewing the application and comments provided by the State of Washington, EPA found that the tribe meets the eligibility criteria of Section 518(e) of the CWA and EPA regulations at 40 CFR § 131.8(a). Therefore, the Swinomish Indian Tribal Community is eligible to adopt water quality standards and seek EPA approval, pursuant to Section 303(c) of the CWA, and to certify that discharges comply with those water quality standards, pursuant to Section 401 of the CWA, for all surface waters of the Swinomish Reservation(http://yosemite.epa.gov/R10/WATER.NSF/Water+Quality+Standards/Tribal+WQS+Inv). The Swinomish Tribe does not yet have Water Quality Standards (WQS) that have been approved by EPA. Therefore, Washington WQS were used for setting permit limits in order to protect downstream waters of the State of Washington in compliance with federal regulations (40 CFR 122.4(d), 122.44(d)(4)).

C. Critical 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 aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

Washington State Water Quality Standards allow the use of mixing zones around the point of discharge to comply with numerical water standards. A very limited acute zone is allowed to meet the acute standards (based on a one-hour exposure every three years) and a larger ~~"~~chronic" mixing zone is allowed for meet the chronic standards (standards based on average four-day average concentration once every three years). The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone during the worst-case receiving water conditions. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-400. The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

WAC 173-201A-400(7)(b)(i) defines the mixing zone for estuarine receiving waters. The maximum size of a mixing zone in estuaries may not extend greater than 200 feet plus the depth of water over the discharge port as measured during Mean Lower Low Water (MLLW). WAC 173-201A-400(8)(b) indicates that the maximum size of the mixing zone where acute criteria may be exceeded is 10% of the mixing zone defined in WAC 173-201A-400(7)(b).

Prior to discharge to the Swinomish Channel, the sewage treatment plant outfall will be rehabilitated so that it is to 2.5 below mean lower low water (MLLW). Assuming a depth of 2.5 feet below MLLW, the maximum size of the chronic mixing zone is 202. 5 feet, and the acute mixing zone is 20.25 feet.

The amount of dilution provided was estimated using the Very Shallow Water (VSW) modeling program. See Appendix D for reasonable potential calculations.

- Acute dilution factor: 23.9

- Chronic dilution factor: 433

D. Water Quality Assessment and 303(d) List

In accordance with Section 303(d) of the Clean Water Act, the state of Washington must identify state waters not achieving water quality standards in spite of application of technology-based controls in the NPDES permits for point sources. Such water bodies are known as water quality limited segments (WQLSs). A water quality limited segment is any water body or definable portion of a water body where it is known that water quality does not meet applicable water quality standards and/or is not expected to meet applicable water quality standards.

The current water quality assessment and 303(d) list for the state of Washington is for the 2008 listing cycle. The EPA approved the 2008 report on January 29, 2009 (http://apps.ecy.wa.gov/wqawa2008/viewer.htm.) There is a Category 5, 303(d) (i.e., impaired) listing for Benzo[a]anthracene and Chrysene in the State waters of the Swinomish Channel, approximately two miles south of the North End WWTP. There is also a Category 5 303(d) listing for Chrysene in the outer (northwest) Padilla Bay, approximately four miles away from the North End WWTP. However, these waterbody impairments are from industrial discharges and are unlikely to be affected by the North End WWTP. Therefore, there are no relevant Category 5 303(d) listed waters in the vicinity of the North End WWTP outfall. The State waters at the mouth of the Swinomish Channel near the North End WWTP's point of discharge are listed as a Category 2, 303(d) ~~"~~water of concern" for fecal coliform and dissolved oxygen.[1] Both of these parameters can be impacted by the discharge of wastewater treatment plants. In any case, permit limits will be calculated to ensure that downstream State standards are met.

E. Antidegradation Analysis

The EPA is required under Section 301(b)(1)(C) of the Clean Water Act (CWA) and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure protection of the downstream State water quality standards, including antidegradation requirements. EPA has prepared an antidegradation analysis consistent with Ecology's antidegradation implementation procedures. EPA referred to Washington's antidegradation policy (WAC 173-201A-300) and Ecology's 2011 Supplemental Guidance on Implementing Tier II Antidegradation (http://www.ecy.wa.gov/biblio/1110073.html)

The purpose of Washington's Antidegradation Policy 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.

[1] ~~"~~Waters of concern" are waters where there is some evidence of a water quality problem, but not enough to require production of a water quality improvement project (also known as a TMDL) at this time. There are several reasons why a water body would be placed in this category. A water body might have pollution levels that are not quite high enough to violate the water quality standards, or there may not have been enough violations to categorize it as impaired according to Ecology's listing policy.

- Apply to human activities that are likely to have an impact on the water quality of surface water.

- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).

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

Based on a review of the water quality data for Padilla Bay, the receiving water qualifies for both Tier I and Tier II protection (explained in more detail below).

Tier I Protection

A facility must first meet Tier I requirements. Existing and designated uses must be maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in Chapter 173-201A WAC.

Padilla Bay has the following designated beneficial uses: "Excellent" for aquatic life uses (excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc) rearing and spawning); shellfish harvesting, wildlife habitat, recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment); and commerce and navigation. The effluent limits in the draft permit ensure compliance with applicable numeric and narrative water quality criteria. The numeric and narrative water quality criteria are set at levels that ensure protection of the designated uses. As there is no information indicating the presence of existing beneficial uses other than those that are designated, the draft permit ensures a level of water quality necessary to protect the designated uses and, in compliance with WAC 173-201A-310 and 40 CFR 131.12(a)(1), also ensures that the level of water quality necessary to protect existing uses is maintained and protected.

If EPA receives information during the public comment period demonstrating that there are existing uses for which Swinomish Channel is not designated, EPA will consider this information before issuing a final permit and will establish additional or more stringent permit conditions if necessary to ensure protection of existing uses.

Tier II Protection

A facility must prepare a Tier II analysis when the facility is planning a new or expanded action that has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone. A Tier II analysis consists of an evaluation of whether or not the proposed

degradation of water quality that would be associated with a new or expanded action would be both necessary and in the overriding public interest. A Tier II analysis focuses on evaluating feasible alternatives that would eliminate or significantly reduce the level of degradation. The analysis also includes a review of the benefits and costs associated with the lowering of water quality. New discharges and facility expansions are prohibited from lowering water quality without providing overriding public benefits.

The effluent from the North End WWTP is a new discharge to the Swinomish Channel and therefore is considered a new or expanded source of pollution. Accordingly, EPA evaluated whether a Tier II analysis would be necessary. If a discharge has the potential to cause measurable change degradation to existing water quality at the edge of the chronic mixing zone, the facility would then need to conduct a full Tier II analysis.

Ecology water quality standards define a measurable change to include:

(a) Temperature increase of 0.3°C or greater;
(b) Dissolved oxygen decrease of 0.2 mg/L or greater;
(c) Bacteria level increase of 2 cfu/100 mL or greater;
(d) pH change of 0.1 units or greater;
(e) Turbidity increase of 0.5 NTU or greater; or
(f) Any detectable increase in the concentration of a toxic or radioactive substance.

To determine what is measurable, EPA evaluated the expected change for each parameter at the edge of the chronic mixing zone, using a chronic dilution factor of 433. EPA determined that a Tier II analysis was **not** required because this facility will not cause measurable change to existing water quality at the edge of the chronic mixing zone. An explanation of EPA's Tier II eligibility analysis is below.

(a) Temperature

According to the mixing zone study submitted by the facility as part of this permit application, the surface temperature at the Swinomish Channel outfall was 23 °C in August. For the purposes of modeling effluent impact on receiving water temperature, EPA assumed an effluent temperature of 18.7 °C based on facility monitoring data. Given the dilution factor (433), the temperature of the receiving water will be 22.9 °C at the mixing zone boundary— a slight temperature *decrease* of 0.1 °C. Thus, the discharge will not cause or contribute to a temperature increase of 0.3°C or greater and therefore this parameter does not trigger the Tier II antidegradation analysis.

(b) Dissolved oxygen (DO)

MBR systems produce high quality effluent that is low in biochemical oxygen demand (BOD). In fact, the North End WWTP produced an average BOD of 2.03 between 2008 and 2011. The facility is a minor discharger, with a design flow of 0.05 mgd. Its effluent is extremely low in BOD and the receiving water has a high dilution factor. Therefore, the facility's discharge does

not have the potential to cause a measurable depression of dissolved oxygen (0.2 mg/L or greater) at the edge of the chronic mixing area.

For dissolved oxygen, the point of compliance for determining if a measurable change would occur is at the point of maximum oxygen depletion (caused by an increase in BOD and nutrients)- this often occurs many miles down gradient. The North End WWTP discharges to Puget Sound; if the point of maximum oxygen depletion occurs miles down gradient, the dilution factor will be even greater. Therefore, the facility's discharge will not cause any measurable change of dissolved oxygen in the near or far field and therefore this parameter does not trigger the Tier II antidegradation analysis.

(c) Bacteria

Because the North End WWTP will discharge to the Swinomish Channel near Padilla Bay, permit limits for shellfish harvest will apply. The discharge will be limited to 14 colonies of fecal coliform bacteria per 100 mL. EPA does not anticipate that the North End WWTP will have trouble meeting its permit limits for fecal coliform since fecal coliform effluent data for the facility are consistently less than 2 colonies per 100 mL. Given the receiving water's high dilution factor (433) and the fact that this facility treats wastewater with MBRs and UV disinfection, the North End WWTP does not have potential to cause a bacteria level increase of 2 cfu/100 mL or greater. Therefore, it will not cause measurable change to existing water quality at the edge of the chronic mixing zone and therefore this parameter does not trigger the Tier II antidegradation analysis.

(d) pH

From 2008 to 2011, a total of 835 effluent pH samples were collected at the North End WWTP. The data ranged from 6.16 – 7.85 standard units, with a median value of 7.4 standard units. In accordance with Ecology's antidegradation guidance for a newly proposed discharge, EPA ran the pH spreadsheet using both 6.6 and 8.4 standard units in order to get a reasonable worst-case estimate on whether the wastewater discharge would cause a measurable change in pH (see Table 1 below). If the effluent had caused the pH to drop from 6.6 to 6.5 or to rise from 8.4 to 8.5, the discharge would have triggered Tier II antidegradation analysis. This was not the case; EPA found that the wastewater would not cause measurable change in pH. Since the proposed discharge will not cause a pH change of 0.1 units or greater, this parameter does not trigger the Tier II antidegradation analysis.

Table 1: Calculation of pH of a mixture in seawater for Tier II antidegradation analysis.

INPUT	
1. MIXING ZONE BOUNDARY CHARACTERISTICS	
Dilution factor at mixing zone boundary	433.000
Depth at plume trapping level (m)	0.760

2. BACKGROUND RECEIVING WATER CHARACTERISTICS

Temperature (deg C):	23.00
pH:	6.60
Salinity (psu):	30.00
Total alkalinity (meq/L)	2.30

3. EFFLUENT CHARACTERISTICS

Temperature (deg C):	18.70
pH:	6.00
Salinity (psu)	30.00
Total alkalinity (meq/L):	1.625693894

4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>> calculate

OUTPUT

CONDITIONS AT THE MIXING ZONE BOUNDARY

Temperature (deg C):	22.99
Salinity (psu)	30.00
Density (kg/m^3)	1020.15
Alkalinity (mmol/kg-SW):	2.25
Total Inorganic Carbon (mmol/kg-SW):	2.68
pH at Mixing Zone Boundary:	6.60

INPUT

1. MIXING ZONE BOUNDARY CHARACTERISTICS

Dilution factor at mixing zone boundary	433.000
Depth at plume trapping level (m)	0.760

2. BACKGROUND RECEIVING WATER CHARACTERISTICS

Temperature (deg C):	23.00
pH:	8.40
Salinity (psu):	30.00
Total alkalinity (meq/L)	2.30

3. EFFLUENT CHARACTERISTICS

Temperature (deg C):	18.70

pH:	9.00
Salinity (psu)	30.00
Total alkalinity (meq/L):	1.625693894

4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>> calculate

OUTPUT

CONDITIONS AT THE MIXING ZONE BOUNDARY

Temperature (deg C):	22.99
Salinity (psu)	30.00
Density (kg/m^3)	1020.15
Alkalinity (mmol/kg-SW):	2.25
Total Inorganic Carbon (mmol/kg-SW):	1.77
pH at Mixing Zone Boundary:	8.40

(e) Turbidity

Per Ecology's guidance, EPA assumed turbidity to have a linear relationship to dilution. For example, if there were a dilution factor of 100, effluent turbidity would need to exceed 50 NTU to indicate potential to cause a measurable lowering of water quality. In this case, the dilution factor is 433 and the North End WWTP's highest recorded turbidity is 1.40 NTU (based on 844 turbidity samples from the facility's 2008-2011 data with mean = 0.10 NTU). Therefore, this facility does not have the potential to cause a turbidity increase of 0.5 NTU or greater and therefore this parameter does not trigger the Tier II antidegradation analysis.

(f) Toxic or radioactive substances

Ecology provides guidance for estimating whether a new discharge would have the potential to cause a measurable degradation of water quality due to toxic substances. The first step is to estimate the concentrations of toxic pollutants at the edge of a chronic mixing zone. This procedure is based on the premise that the quantification level associated with the analytical method yielding the lowest detection level represents measurable degradation under Tier II for toxics. If the estimated effluent concentration is below the method with the lowest detection level, then no Tier II analysis is required. In the case of this permit, ammonia is the only toxic substance of concern.

The analytical method yielding the lowest detection limit that is approved for use in surface water analysis by the EPA is Method 350.1, "Determination of Ammonia Nitrogen by Semi-automated Colorimetry." The applicable range is 0.01-2.0 mg/L NH3 as N. The maximum measured effluent concentration for the North End WWTP (4.2 mg/L). In accordance with

Ecology's guidance, the maximum reported effluent concentration was divided by the dilution factor (the North End WWTP's chronic dilution factor is 433).

4.2 mg/L ÷ 433 = 0.0097 mg/L

Because the resulting value is less than the method detection limit that would have been provided by the most sensitive analytical method, this facility has no potential to cause a measurable degradation of water quality due to toxic substances. Because there is no measurable change in ammonia, this parameter does not trigger a Tier II antidegradation analysis.

IV. Authorization to Discharge

Since dilution factors used in the permit and permit conditions are based on assumptions about improvements to the outfall that are identified in the SITC permit application, SITC is required to meet the certain conditions prior to beginning discharge. Specifically, SITC must replace a length of the discharge pipe to extend it so that it is submerged to a depth of at least 2.5 feet below mean lower low water (MLLW), measured at the centerline of the port. SITC must also install a diffuser to promote mixing. SITC must notify EPA in writing when installation of the diffuser and outfall is complete.

V. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendices C, and D.

B. Proposed Effluent Limitations

Below are the proposed effluent limits that are in the draft permit (Table 2). The final limits are the more stringent of the secondary treatment requirements, the water quality based effluent limits, or the anti-backsliding or anti-degradation requirements.

Narrative secondary treatment percent removal requirements for POTWs

1. Removal Requirements for BOD_5 and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.

Table 2: Proposed average monthly, average weekly, and maximum daily effluent limits.

Table 2: Proposed Effluent Limits				
Parameter	**Units**	**Effluent Limits**		
		Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**
Flow	mgd	—	—	—
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—
	lb/day	12.51	18.765	—
	% removal	85% (min)	—	—
Total Suspended Solids (TSS)	mg/L	30	45	60
	lb/day	12.51	18.765	—
	% removal	85% (min)	—	—
Fecal Coliform Bacteria[1]	#/100 ml	14 colonies/100 mL.[2]		
pH	s.u.	Shall be within a range of 6 to 9 standard units at all times.		
Total Ammonia	mg/L	—	—	—
	lb/day	—	—	—

1. The permittee must report the geometric mean fecal coliform concentration. If any value used to calculate the geometric mean is less than 1, the permittee must round that value up to 1 for purposes of calculating the geometric mean.
2. No more than 10% of samples (or any single sample when less than 10 sample points) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

The permittee must not use chlorine for disinfection.

In addition to the requirements listed in Table 2, the following limitations shall also apply:

1. The permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have clearly been identified in the permit application process.

2. Toxic substances shall not be introduced above natural background levels in waters of the state of Washington 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 Washington Department of Ecology [WAC 173-201A-240(1)].

VI. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather

effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent and surface/receiving water monitoring so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for renewal, as appropriate, to the U.S. Environmental Protection Agency (EPA).

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits.

Table 3, below, presents the proposed effluent monitoring requirements for the SITC North End WWTP. The (effluent) sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

One year of expanded nutrients monitoring is also introduced in the permit to enable EPA to better quantify the amount of nutrient loadings to Puget Sound and the resulting water quality impacts. This monitoring includes quarterly monitoring for one year of total phosphorus, effluent ammonia, total Kjeldahl nitrogen, and nitrate+nitrite nitrogen. The quarterly nutrients monitoring is to take place in the fourth year of the permit cycle. The quarterly nutrients data is to be submitted within 60 days of the conclusion of the four quarters of expanded nutrients monitoring.

Table 3: Proposed Monitoring and Effluent Discharge Limitations.

Parameter	Effluent Limitations				Monitoring Requirements[f]		
	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit[b]	Percent Removal[c]	Sample Location	Sample Frequency	Sample Type
Flow (mgd)	Report	---	Report	---	Effluent	Continuous	Measurement
Biochemical Oxygen Demand (BOD_5)	30 mg/L	45 mg/L	---	85% (min.)	Influent and Effluent	1/week	24-hr Composite
	12.51 lbs/day[d]	18.77 lbs/day	---				
Total Suspended	30 mg/L	45 mg/L	---	85%	Influent	1/week	24-hr

Parameter	Effluent Limitations				Monitoring Requirements[f]		
	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit[b]	Percent Removal[c]	Sample Location	Sample Frequency	Sample Type
Solids (TSS)	12.51 lbs/day	18.77 lbs/day	---	(min.)	and Effluent		Composite
Fecal Coliform[a]	14/100 mL geometric mean				Effluent	1/week	Grab
Total Ammonia[e]as N	Report	---	Report Max. Daily Value	---	Effluent	1/quarter	24-hr Composite
Temperature (°C)	Report	---	Report Max. Daily Value	---	Effluent	2/week	Grab
Alkalinity (mg/L) as $CaCo_3$	Report	---	Report Max. Daily Value	---	Effluent	1/quarter	Grab
pH	6.0 to 9.0 at all times				Effluent	5/week	Grab
Total Phosphorus as P (mg/L) [g]	Report	---	---	---	Effluent	1/quarter	24-hr Composite
Oil and Grease (mg/L)	Report	---	---	---	Effluent	1/quarter	Visual
Nitrate plus Nitrite[g] --- , mg/L	Report	---	---	---	Effluent	1/quarter	24-hr Composite
Total Kjeldahl Nitrogen[g] --- , mg/L	Report	---	---	---	Effluent	1/quarter	24-hr Composite
Dissolved Oxygen, mg/L	Report	---	---	---	Effluent	1/quarter	Grab

Parameter	Effluent Limitations				Monitoring Requirements[f]		
	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit[b]	Percent Removal[c]	Sample Location	Sample Frequency	Sample Type

(a) The Average Monthly Limit and the Average Weekly Limit for Fecal coliform are based on the Geometric Mean in organisms/100 ml. If any value used to calculate the geometric mean is less than 1, the permittee must round that value up to 1 for purposes of calculating the geometric mean.

(b) Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Parts I.B.2 and III.G.

(c) Percent Removal is calculated using the following equation: ((monthly average influent concentration – monthly average effluent concentration)/monthly average influent concentration) x 100. Influent and effluent samples must be taken over approximately the same time period.

(d) Loading is calculated by multiplying the concentration in mg/L by the flow in mgd and a conversion factor of 8.34. If the concentration is measured in µg/L, the conversion factor is 0.00834.

(e) The maximum ML for Total Ammonia is 0.05 mg/l.

(f) **If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR**.

(g) The duration of expanded nutrients monitoring is one year. The data is to be collected in the fourth year of the new permit cycle. Sampling must occur during the following intervals: January – March, April – June, July – September, October – December.

C. Representative Sampling

As per 40 CFR 122.41(j), this draft permit requires representative sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit.

This provision is included in the draft permit because routine monitoring could miss permit violations and/or water quality standards exceedances that could result from bypasses, spills, or non-routine discharges. This requirement directs SITC to conduct additional, targeted monitoring to quantify the effects of such occurrences on the final effluent discharge.

D. Surface Water Monitoring

Table 4 presents the proposed surface water monitoring requirements for the draft permit. Surface monitoring must start within 90 days after the effective date of the permit and continue for as long as the permit remains in effect. *Surface monitoring will occur regardless of whether or not the facility discharges.*

SITC must establish monitoring stations in the Swinomish Channel in order to capture water quality data both above the influence of the facility's discharge and downstream from the facility's discharge.

Surface water monitoring results shall be submitted with the August and November DMR reports. The draft permit proposes surface water monitoring outside of the mixing zone in the area approximately 200 feet south of the discharge, during the months of August and November.

The density profiles in these two months likely result in the least amount of mixing because they capture the minimum and maximum stratification in the water column. The minimum stratification likely occurs during a November storm event, and maximum stratification likely takes place in August because of warmer surface water temperatures. August and November also represent the highest and lowest surface salinities (according to SITC's mixing zone study). Thus, requiring receiving water monitoring during August and November will ensure that the receiving water monitoring captures the maximum and minimum stratification.

Table 4: Proposed surface water monitoring requirements.

Parameter (units)	Sample Frequency	Maximum MDL
Dissolved oxygen (mg/L)	August and November	—
pH (s.u.)	August and November	—
Total ammonia as N (mg/L)	August and November	0.05 mg/L
Total dissolved solids (mg/L)	August and November	10 mg/L
Total nitrogen as N (µg/L)	August and November	100 µg/L
Total phosphorus as P (µg/L)	August and November	10 µg/L
Turbidity (NTU)	August and November	—
Salinity (ppt)	August and November	—
Temperature (°C)	August and November	—

VII. Sewage Sludge (Biosolids) Requirements

EPA Region 10 separates wastewater and sludge permitting. EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

VIII. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The Tribe is required to update the Quality Assurance Plan for the North End wastewater treatment plant within 180 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to EPA and SITC upon request.

B. Operation and Maintenance Plan

The permit requires SITC to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility within **(180 days)** of the effective date of the final permit. The plan shall be retained on site and made available to EPA and SITC upon request.

C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfish harvesting, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. **SSOs are *not* authorized under this permit.** Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

Written Reports – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure;

or unanticipated bypass and upset that exceeds any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

Record Keeping – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

D. Standard Permit Provisions

In addition to facility-specific requirements, Sections III, IV, and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

IX. Other Legal Requirements

A. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (collectively ~~"t~~he Services") if their actions could beneficially or adversely affect any threatened or endangered species and/or their critical habitat. In this case, the federal action is the reissuance of the Swinomish Tribe's North End WWTP NPDES permit. The receiving water for the discharge is the Swinomish Channel within Skagit County.

EPA compiled a list of species and critical habitat designations within the vicinity of the discharge. The following are threatened species in Puget Sound and the Swinomish Channel/Padilla Bay action area:

THREATENED SPECIES

- Chinook Salmon (*Oncorhynchus tshawytscha*)
- Puget Sound Steelhead (*Salvelinus confluentus*)
- Bull Trout (*Salvelinus confluentus*)
- Canary Rockfish (*Sebastes pinniger*)
- Yelloweye Rockfish (*Sebastes ruberrimus*)
- Stellar Sea Lion (*Eumetopias jubatus*)
- Marbled Murrelet (*Brachyramphus marmoratus*)
- Canada Lynx (Lynx canadensis)
- Grizzly Bear (*Ursus arctos horribilis)*
- Northern Spotted Owl (*Strix occidentalis caurina)*

ENDANGERED SPECIES

- Southern Resident Killer Whales (*Orcinus orca*)
- Bocaccio Rockfish (*Sebastes paucispinis*)
- Humpback Whale (*Megaptera novaeangliae*)
- Leatherback Sea Turtle (*Dermochelys coriacea*)[2]
- Gray Wolf (*Canis lupus)*

Critical Habitat

Critical habitat is designated for areas that contain the physical and biological features essential for the conservation of a threatened or endangered species and that may require special management considerations. Under ESA, all federal agencies must ensure any action they authorize, fund or carry out does not destroy or adversely modify designated critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve or other conservation area.

USFWS designated the following species' critical habitat for Skagit County:

- Bull Trout
- Marbled Murrelet
- Northern Spotted Owl

EPA also identified the following NMFS-designated critical habitat within the Action Area:

- Critical habitat for Chinook Salmon[3]
- Critical habitat for Southern Resident Killer Whales[4]

[2] Leatherback sea turtles are extremely rare in Puget Sound.

[3] National Oceanic and Atmospheric Administration. Chinook Salmon Critical Habitat. http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/chinooksalmon.pdf

EPA has evaluated all the listed species and associated critical habitats from NMFS and the U.S. Fish and Wildlife that could be potentially impacted from this discharge. Based on this analysis, EPA determined that the reissuance of this NPDES permit will have no measurable impact (i.e., **no effect**) on threatened or endangered species or their critical habitat in the vicinity of the discharges. As such, consultation is not required for this action.

There are numerous site-specific factors supporting EPA's no effect determination. These factors are summarized below:

- The WWTP is a minor facility with a design flow of 50,000 gallons per day and an average flow of 12,000 gallons per day.
- The treatment plant is a membrane bioreactor facility, which is expected to produce a high quality effluent.
- The facility is required to meet water quality criteria for fecal coliform at end-of-pipe.
- The facility uses ultraviolet disinfection, and thus will not discharge chlorine.
- Effluent pollutant concentrations are expected to be less than levels known to cause toxicity to aquatic life, including threatened and endangered species.
- The receiving water provides a great deal of dilution of the effluent. The chronic dilution factor is 433 to 1. This dilution factor was calculated under critical conditions for both the effluent and receiving water. Under typical conditions, the dilution factors will be even larger.
- Finally, many of the listed species are not found in the action area due to unsuitable habitat conditions. For example, rockfish, humpback whale, stellar sea lions, leatherback sea turtles, and Canada lynx are not found in the action area.

This fact sheet and the draft permit were sent to USFWS and NMFS for review during the public comment period. EPA will consider any comments made by the Services prior to issuance of a final permit. EPA has prepared a memorandum evaluating the potential effects to ESA species and their critical habitat, which is included in the administrative record for the permit.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NMFS when a proposed discharge has the potential to adversely affect EFH. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

[4] National Oceanic and Atmospheric Administration. Southern Resident Killer Whale Critical Habitat. http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/killerwhale_sr.pdf

EPA has prepared an EFH assessment, which is included in the administrative record for the permit.

The EFH assessment concluded that the issuance of the permit will **not adversely affect EFH**. EPA has prepared an assessment evaluating the potential effects to EFH, which is included in the administrative record for the permit.

EPA has provided NMFS with copies of the draft permit and fact sheet for review during the public notice period. Any comments received from NMFS regarding EFH will be considered prior to reissuance of the permit.

C. Tribal Certification

Section 401 of the CWA requires EPA to seek Tribal certification before issuing a final permit. As a result of the certification, the Tribe may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any Tribal law or regulation.

D. Permit Expiration

The permit will expire five years from the effective date of the permit.

X. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

Water Pollution Control Federation. Subcommittee on Chlorination of Wastewater. *Chlorination of Wastewater.* Water Pollution Control Federation. Washington, D.C. 1976.

Appendix A: Facility Information

General Information

NPDES ID Number:	WA-002506-2
Physical Location:	Northern Lights Casino 12903 Casino Drive Anacortes, WA 98221
Mailing Address:	Swinomish Utility Authority P.O. Box 340 La Conner, Washington 98257
Facility Background:	This is the second NPDES permit issued to this facility.

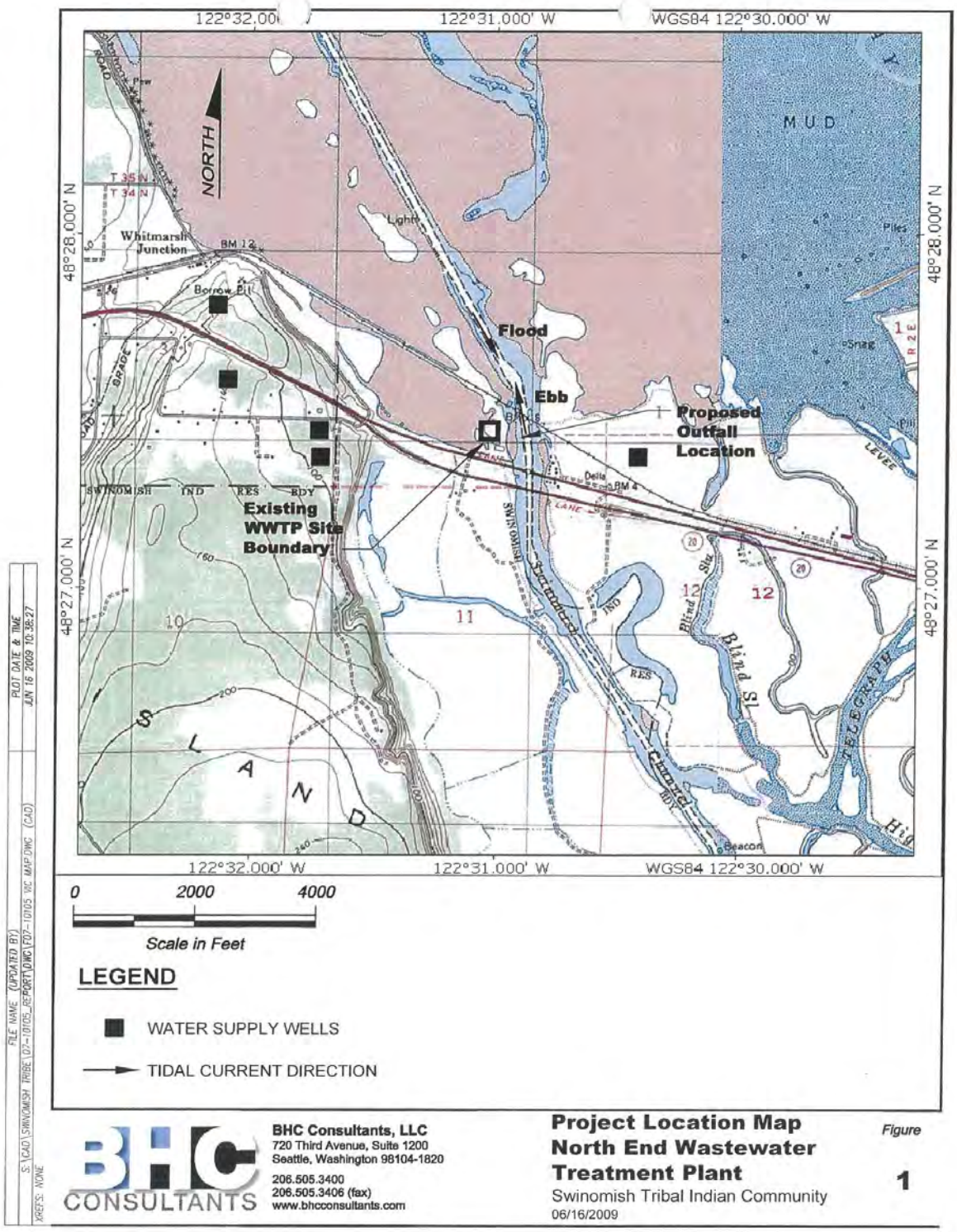
Facility Information

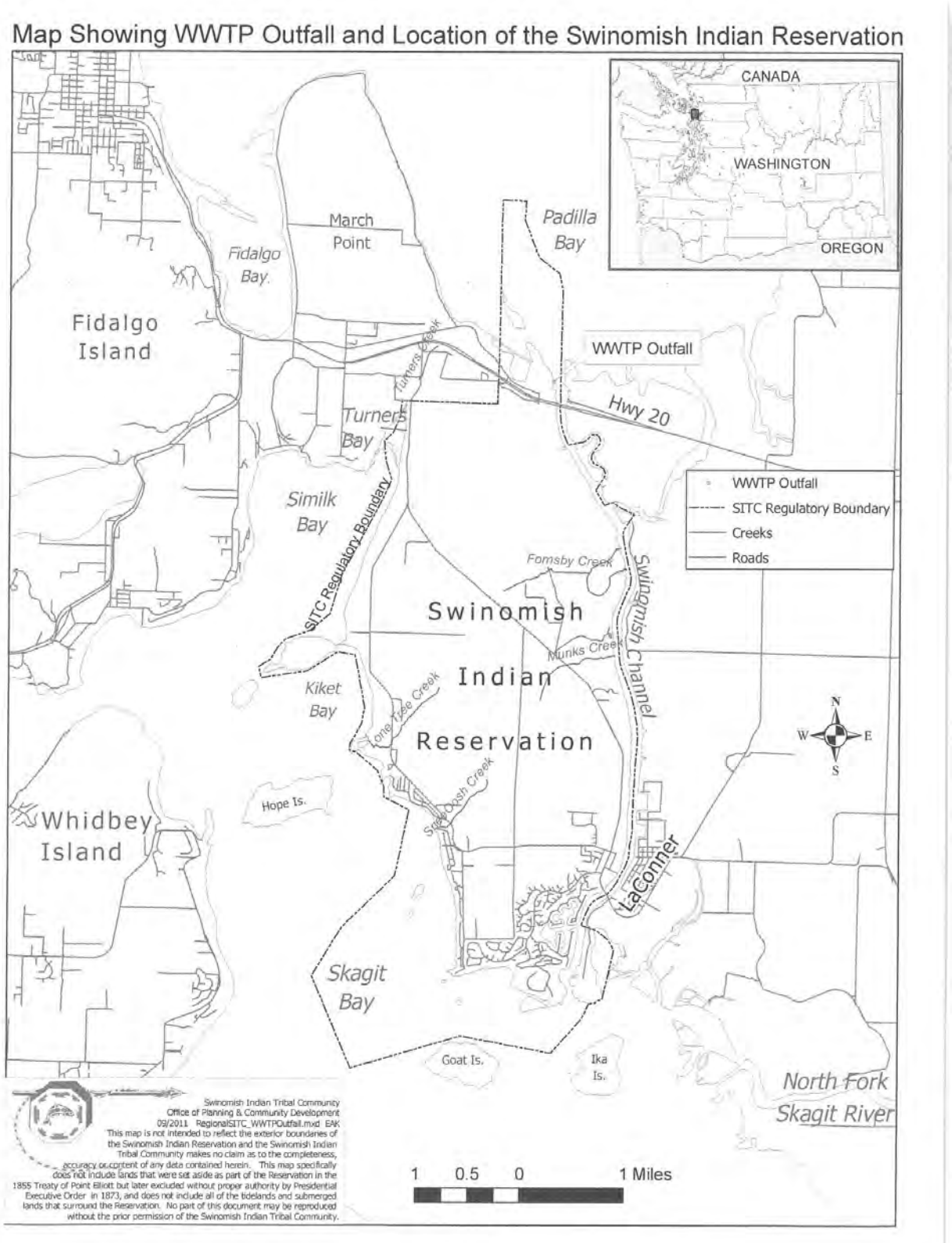
Type of Facility:	Publicly Owned Treatment Works (POTW)
Treatment Train:	The facility consists of screening and grit removal followed by biological treatment using a membrane bioreactor. The facility uses ultraviolet disinfection.
Flow:	Design flow is 0.05 mgd.
Outfall Location:	Latitude: 48º 27' 29" N; Longitude: 122º 30' 57" W

Receiving Water Information

Receiving Water:	Swinomish Channel
Watershed:	Strait of Georgia (HUC 17110002)
Beneficial Uses:	Shellfish harvesting, wildlife habitat, boating, recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment); and commerce and navigation.
Aquatic Life Uses:	Excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

Appendix B: Facility Maps




Map Showing WWTP Outfall and Location of the Swinomish Indian Reservation
CANADA
WASHINGTON
OREGON
March Point
Padilla Bay
Fidalgo Bay
Fidalgo Island
WWTP Outfall
Turners Creek
Hwy 20
Turners Bay
Similk Bay
SITC Regulatory Boundary
Fornsby Creek
Swinomish Channel
Swinomish
Munks Creek
Indian
Kiket Bay
Long Tree Creek
Reservation
Hope Is.
Whidbey Island
Skagit Bay
LaConner
Goat Is.
Ika Is.
North Fork Skagit River
WWTP Outfall
SITC Regulatory Boundary
Creeks
Roads
N
W
E
S
1 0.5 0 1 Miles
Swinomish Indian Tribal Community
Office of Planning & Community Development
09/2011 RegionalSITC_WWTPOutfall.mxd EAK
This map is not intended to reflect the exterior boundaries of the Swinomish Indian Reservation and the Swinomish Indian Tribal Community makes no claim as to the completeness, accuracy or content of any data contained herein. This map specifically does not include lands that were set aside as part of the Reservation in the 1855 Treaty of Point Elliott but later excluded without proper authority by Presidential Executive Order in 1873, and does not include all of the tidelands and submerged lands that surround the Reservation. No part of this document may be reproduced without the prior permission of the Swinomish Indian Tribal Community.

Appendix C: Basis for Effluent Limits

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, and Part C discusses facility specific water quality-based effluent limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as ―secondary treatment," which all POTWs were required to meet by July 1, 1977. EPA has developed and promulgated ―secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table C-1.

Table C-1: Secondary Treatment Effluent Limits
(40 CFR 133.102)

Parameter	Average Monthly Limit	Average Weekly Limit	Range
BOD_5	30 mg/L	45 mg/L	---
TSS	30 mg/L	45 mg/L	---
Removal Rates for BOD_5 and TSS	85% (minimum)	---	---
pH	---	---	6.0 - 9.0 s.u.

Mass-Based Limits for Total Suspended Solids and BOD5

Effluent limits are generally calculated on a concentration basis. However, the federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are generally calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[5]

Since the design flow of the facility is 0.05 mgd, the technology-based mass limits for BOD5 and TSS are calculated as:

Average monthly limit = 30 mg/L × 0.05 mgd × 8.34 = 12.5 lb/day.

Average weekly limit = 45 mg/L × 0.05 mgd × 8.34 = 18.8 lb/day.

[5] 8.34 is a conversion factor equal to the density of water in pounds per gallon.

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States. The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits are needed, based on numeric criteria, EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific chemical, then the discharge has the reasonable potential to cause or contribute to an exceedance of the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and when the receiving water meets the criteria necessary to protect the designated uses of the water body.

A mixing zone study was provided as part of the permit application. The mixing zone study calculated dilution factors and is posted on EPA's website (http://epa.gov/r10earth/waterpermits.htm). EPA reviewed the mixing zone study and found it to be acceptable. The mixing zone study followed Ecology's Guidance for Conducting Mixing Zone Analyses (http://www.ecy.wa.gov/programs/eap/mixzone/mixzone.html), and used the Very Shallow Water (VSW) algorithm in the 3PLUMES interface. The VSW dilution model is appropriate because it provides reliable results when depth approaches three pipe diameters or less. The mixing zone study ran the VSW model using a combination of scenarios to identify a

reasonable worst-case condition (varying salinity, peak daily flow, and average daily maximum month flow). Dilution factors were then applied to each scenario. EPA applied a tidal reflux factor of 0.6 to dilution estimates (based on drift stick observations and analysis of tidal fluctuations as described in the mixing zone study)[6]. EPA used the lowest, or most conservative, dilution factors when calculating reasonable potential to exceed water quality standards.

The acute mixing zone is 202.25 feet; the chronic mixing zone is 202.5 feet. The dilution factors are: Acute dilution factor: 23.9; Chronic dilution factor: 433.

If the SITC does not grant the mixing zones in its final certification, the water quality-based effluent limits will be recalculated such that the criteria are met before the effluent is discharged to the receiving water.

EPA performed a reasonable potential analysis for ammonia, temperature, pH, dissolved oxygen, and fecal coliform. Appendix D provides the details of the reasonable potential analyses.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based Wasteload Allocation

Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

[6] In tidal rivers, some of the effluent that is discharged is carried back upstream during the flood tide (reflux). In conducting a mixing analysis for a tidal river, the permit manager should model as an outgoing current and then assume reflux reduces the dilution factor by 1/2. This is based on Ecology's studies of these situations. The permittee may supply information to show the factor is something else in their situation (Water Quality Program Permit Writer's Manual at http://www.ecy.wa.gov/biblio/92109.html).

There are no TMDLs for the receiving water to which the facility discharges.

2. Mixing zone based WLA

When the State/Tribe authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone and the background concentrations of the pollutant.

3. Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation.

Establishing the criterion as the wasteload allocation ensures that the permittee will not cause or contribute to an exceedance of the criterion. The WLA for pH was derived using this method because the facility can achieve the effluent limit without a mixing zone. The following discussion details the specific water quality-based effluent limits in the draft permit.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency and water quality standards.

Fecal Coliform

The Washington water quality standards state that waters of the State of Washington that are designated for shellfish harvesting are not to contain fecal coliform bacteria in concentrations exceeding a geometric mean of 14 colonies per 100 mL, and not have more than 10% of all samples (or any single sample when less than 10 sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies (see WA 173-201A-210 for more specific sampling requirements).

The Washington water quality standards for waters of the State of Washington designated for contact recreation are the same as those for shellfish harvesting.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. The terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is not practical to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

C. References

EPA. 1986. *Quality Criteria for Water 1986*. Environmental Protection Agency. Office of Water. Regulations and Standards. Washington, DC. May 1, 1986. EPA-440-5-86-001.

EPA. 1994. *Water Quality Standards Handbook: Second Edition*. Environmental Protection Agency. Office of Water. Washington, DC. August 1994. EPA 823-B-94-005a.

Thurston R.V., R.C. Russo, C.M. Fetterolf, T.A. Edsall, Y.M. Barber Jr., editors. 1979. *Review of the EPA Red Book: Quality Criteria for Water.* Bethesda, MD. Water Quality Section, American Fisheries.

Appendix D: Reasonable Potential Calculations

This appendix provides the reasonable potential analysis for ammonia, temperature, pH, dissolved oxygen, and fecal coliform. A summary of the results of the Reasonable Potential Analysis is presented in Table D-1 below.

A. Summary of Reasonable Potential Analysis

Table D-1: Summary of reasonable potential analysis.

Parameter	Is There Reasonable Potential to exceed the criterion?
Ammonia	No
Temperature	No
pH	No
Dissolved Oxygen (BOD5)	No
Fecal Coliform	Yes

Ammonia

The following describes the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Washington State's federally approved water quality standards. EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

B. Mass Balance

For discharges to a marine environment, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_d V_d = C_e V_e + C_u V_u \qquad \text{(Equation D-1)}$$

where,

C_d = Receiving water concentration at the edge of the mixing zone
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
V_d = Volume of the plume
V_e = Volume of the effluent

V_u = Volume of the receiving water

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_e V_e + C_u V_u}{V_e + V_u} \quad \text{(Equation D-2)}$$

Equation D-2 can be simplified by introducing a "dilution factor,"

$$D = \frac{V_e + V_u}{V_e} \quad \text{(Equation D-3)}$$

After the dilution factor simplification, Equation D-2 becomes:

$$C_d = \frac{(C_e - C_u)}{D} + C_u \quad \text{(Equation D-4)}$$

Equation D-4 is the forms of the mass balance equation which was used to determine reasonable potential.

C. Maximum Projected Effluent Concentration

To calculate the maximum projected effluent concentration, EPA has used the procedure described in section 3.3 of the TSD, "Determining the Need for Permit Limits with Effluent Monitoring Data." In this procedure, the 99th percentile of the effluent data is the maximum projected effluent concentration in the mass balance equation.

Other means of determining the maximum projected effluent concentration are using the technology-based effluent limit for the pollutant, or by using data submitted in the permit application (for new facilities). An example explanation of the use of a technology-based effluent limit follows. If the permittee consistently discharges at a concentration or loading much lower than the techlology-based effluent limit, this may not be a reasonable way to determine reasonable potential.

Using the equations in section 3.3.2 of the TSD, the reasonable potential multiplier (RPM) is calculated based on the CV and the number of samples in the data set as follows. The following discussion presents the equations used to calculate the RPM for ammonia. Reasonable potential calculations can be found in Table D-2.

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - \text{confidence level})^{1/n} \quad \text{(Equation D-5)}$$

where,
p_n = the percentile represented by the highest reported concentration
n = the number of samples
confidence level = 99% = 0.99

The data set contains 185 ammonia samples collected from the effluent, therefore:

$$p_n = (1\text{-}0.99)^{1/185}$$

$p_n = 0.975$

This means that we can say, with 99% confidence, that the maximum reported effluent ammonia concentration of 185 samples is greater than the 97.5 percentile. The reasonable potential multiplier (RPM) is the ratio of the 99th percentile concentration (at the 99% confidence level) to the maximum reported effluent concentration. This is calculated as follows:

$RPM = C_{99}/C_p$ (Equation D-6)

Where,
$C = \exp(z\sigma - 0.5\sigma^2)$ (Equation D-7)

Where,
$\sigma^2 = \ln(CV^2 + 1)$ (Equation D-8)
$\sigma = \sqrt{\sigma^2}$
CV = coefficient of variation = (standard deviation) ÷ (mean)
z = the inverse of the normal cumulative distribution function at a given percentile

In order to calculate if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for ammonia, EPA used facility effluent data for the years 2008-2011. The reasonable potential calculations for ammonia are as follows:

CV = coefficient of variation = 3.47
$\sigma^2 = \ln(CV^2 + 1) = 2.57$
$\sigma = \sqrt{\sigma^2} = 1.60$
z = 2.33 for the 99th percentile = 1.97 for the 97.5 percentile

$C_{99} = \exp(2.33 \times 1.60 - 0.5 \times 2.57) = 11.52$
$C_{97.5} = \exp(1.97 \times 1.60 - 0.5 \times 2.57) = 6.48$

$RPM = C_{99}/C_{91} = 1.78$
RPM = 1.78

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$C_e = (RPM)(MRC)$ (Equation D-9)

where MRC = Maximum Reported Concentration

In this case,

$C_e = (1.78)(4200\ \mu g/L) = 7469.59\ \mu g/L$

D. Maximum Projected Receiving Water Concentration

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria *if* the maximum projected concentration of the pollutant at the edge of the mixing zone

exceeds the most stringent criterion for that pollutant. The maximum projected receiving water concentration is calculated from Equation D-4:

$$C_d = \frac{(C_e - C_u)}{D} + C_u \quad \text{(Equation D-4)}$$

For ammonia, the acute receiving water concentration is, in micrograms per liter:

$$C_d = \frac{(7469.59 - 100)}{23.9} + 100 = 408.31 \text{ µg/L} \quad \text{(Equation D-4)}$$

For ammonia, the chronic receiving water concentration is, in micrograms per liter:

$$C_d = \frac{(7469.59 - 100)}{433} + 100 = 117.02 \text{ µg/L} \quad \text{(Equation D-4)}$$

EPA calculated acute and chronic water quality criteria for ammonia based on Washington State's water quality standards, using Ecology's PWSPREAD.XLS ~~–n~~h3salt" spreadsheet tool (http://www.ecy.wa.gov/programs/eap/pwspread/pwspread.html). The ~~–n~~h3salt" spreadsheet calculates saltwater total ammonia criteria from temperature, pH, and salinity to meet the un-ionized ammonia criteria in WAC 173-201A as amended 20-Nov-2006. Based on critical conditions (temperature of 23 ºC, pH of 8 s.u., and salinity of 12 g/Kg), the acute and chronic water quality criteria for ammonia are 4319.00 µg/L and 649.00 µg/L, respectively.

EPA compared the water quality criteria for ammonia to maximum projected receiving water concentration:

Acute: 4319.00 µg/L > 408.31 µg/L

Chronic: 649.00 µg/L > 117.02 µg/L

Since the maximum projected receiving water concentrations for ammonia are less than the state water quality criteria, there is **No Reasonable Potential for ammonia** to exceed Water Quality Standards. Therefore, EPA has not established water quality-based effluent limits for ammonia.

Temperature

EPA considered the discharge's impact to water temperature by using Ecology's conservative screening temperature guidance (http://www.ecy.wa.gov/pubs/0610100.pdf). Because the discharge has such a large chronic dilution factor (433) and the magnitude of the discharge is so low, there will be no reasonable potential to cause or contribute to excursions above water quality standards for temperature and no effluent limits are proposed for temperature.

pH

The Washington water quality criterion for Excellent Quality Marine Waters specifies a pH range of 7.0 to 8.5 standard units, with human-caused variation within the above range of less than 0.5 units (WAC 173-201A-210(1)(f)).

Effluent pH data was collected weekly at the facility. From 2008 to 2011, a total of 835 samples were collected. The data ranged from 6.16 – 7.85 standard units, with a median value of 7.4 standard units. In December 2011, the facility collected data for effluent temperature and effluent alkalinity, which EPA included in the pH analysis. EPA used the most conservative data points for each parameter: 18.7 °C and 1.63 meq/L, respectively.

EPA modeled the impact of effluent pH on the receiving water using calculations developed by Lewis and Wallace, 1988. EPA used critical conditions for ambient receiving water data from SITC's mixing zone study.

According to Table D-2, even at critical conditions the effluent will not have reasonable potential to violate water quality standards for pH. Compliance with the technology-based limits of 6.0 to 9.0 standard units will assure compliance with the water quality standards of surface waters because of the high buffering capacity of marine water. Consequently, the permit includes technology-based pH limits of 6.0 to 9.0.

Table D-2: Calculation of pH of a mixture in seawater.

INPUT

1. MIXING ZONE BOUNDARY CHARACTERISTICS	
Dilution factor at mixing zone boundary	433.000
Depth at plume trapping level (m)	0.760
2. BACKGROUND RECEIVING WATER CHARACTERISTICS	
Temperature (deg C):	23.00
pH:	8.00
Salinity (psu):	30.00
Total alkalinity (meq/L)	2.30
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	18.70
pH:	6.00
Salinity (psu)	30.00
Total alkalinity (meq/L):	1.625693894

calculate

4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>>

OUTPUT

CONDITIONS AT THE MIXING ZONE BOUNDARY	
Temperature (deg C):	22.99
Salinity (psu)	30.00
Density (kg/m^3)	1020.15

Alkalinity (mmol/kg-SW):	2.25
Total Inorganic Carbon (mmol/kg-SW):	2.02
pH at Mixing Zone Boundary:	7.99

INPUT

1. MIXING ZONE BOUNDARY CHARACTERISTICS

Dilution factor at mixing zone boundary	433.000
Depth at plume trapping level (m)	0.760

2. BACKGROUND RECEIVING WATER CHARACTERISTICS

Temperature (deg C):	23.00
pH:	8.00
Salinity (psu):	30.00
Total alkalinity (meq/L)	2.30

3. EFFLUENT CHARACTERISTICS

Temperature (deg C):	18.70
pH:	9.00
Salinity (psu)	30.00
Total alkalinity (meq/L):	1.625693894

4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>> calculate

OUTPUT

CONDITIONS AT THE MIXING ZONE BOUNDARY

Temperature (deg C):	22.99
Salinity (psu)	30.00
Density (kg/m^3)	1020.15
Alkalinity (mmol/kg-SW):	2.25
Total Inorganic Carbon (mmol/kg-SW):	2.02
pH at Mixing Zone Boundary:	8.00

Dissolved Oxygen (BOD5)

EPA applied the technology based limits for biochemical oxygen demand (BOD5) because the discharge results in a small amount of BOD5 relative to the large amount of dilution in the receiving water at critical conditions. Thus, technology based limits will ensure that dissolved oxygen criteria are met in the receiving water, and there is no reasonable potential for BOD5 to exceed water quality standards.

Fecal Coliform

The Washington water quality standards state that waters of the State of Washington that are designated for shellfish harvesting are not to contain fecal coliform bacteria in concentrations exceeding a geometric mean[7] of 14 colonies per 100 mL, and not have more than 10% of all samples (or any single sample when less than 10 sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies (see WA 173-201A-210 for more specific sampling requirements).

The water quality standards for waters of the state of Washington designated for contact recreation are the same as for shellfish harvesting.

The draft permit does not provide a mixing zone for fecal coliform, therefore the water quality criteria must be met at the end of the pipe.

Based on effluent monitoring conducted between January and July of 2008, all of the North End WWTP's fecal coliform samples were less than 2 MPN[8] per 100 mL. EPA believes that the facility will not have trouble meeting the 14 colonies per 100 mL limit.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. The terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits.

Total Suspended Solids

There are no state water quality criteria for TSS; therefore, EPA applied the technology-based limits above.

[7] The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

[8] The most probable number (MPN) of coliform or fecal coliform bacteria per unit volume of a sample. It is expressed as the number of organisms which are most likely to have produced the laboratory results noted in a particular test.

Appendix E: Clean Water Act Section 401 Certification

Swinomish Office of Planning & Community Development
Water Resources Program
11430 Moorage Way - LaConner, WA 98257 - 360.466.7280 - 360.466.1615 fax

April 18, 2012

Ms. Catherine Gockel
US Environmental Protection Agency, Region 10
Attn: NPDES Permits Unit Manager
1200 6th AVE, Suite 900 OWW-130
Seattle, WA 98101-3140

Re: Section 401 Water Quality Certification of **NPDES Permit for North End Wastewater Treatment Plant, WA-002506-2,** Swinomish Channel, Swinomish Reservation, Washington.

Dear Ms. Gockel:

This Clean Water Act (CWA) Section 401 certification **No. 2012-03** applies to the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) permit described in NPDES Permit and Fact Sheet # WA-002506-2 (2012), involving the discharge of treated wastewater from the North End Wastewater Treatment Plant located on the Swinomish Reservation and discharging to the Swinomish Channel of the Regulated Surface Waters of the Swinomish Tribal Community.

Section 401 of the CWA [33 U.S.C. Section 1341 (a)] requires that applicants for Federal permits allowing discharges into waters of the United States obtain certification that the discharge will comply with the applicable provisions of CWA Sections 301, 302, 303, 306 and 307.

The Swinomish Office of Planning and Community Development (OPCD) is providing Water Quality Certification pursuant to Section 401, for this Permit. As the Tribe has no approved water quality standards, OPCD will be using the state water quality standards [WAC 173-201A] as guidance per Tribal Resolution #2008-08-201.

The OPCD has completed its review of your application and certifies that the discharge will comply with the applicable provisions of the CWA. This certification is valid for the duration of this NPDES Permit. For further coordination with OPCD on this project, please contact me at (360) 466-7201.

Sincerely,

Todd Mitchell, Water Resources Manager

cc: file