FACT SHEET

NPDES Permit Number: WA-002565-8
Public Notice Start Date: September 6, 2011
Public Notice Expiration Date: October 6, 2011

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a Wastewater Discharge Permit to:

Lummi Indian Business Council
Sandy Point Wastewater Treatment Plant
4369 Germaine Road
Ferndale, WA 98248

and
the State of Washington Proposes to Certify the Permit

EPA Proposes NPDES Permit Reissuance
EPA proposes to reissue a National Pollutant Discharge Elimination System (NPDES) permit to the Lummi Indian Business Council for discharge from its Sandy Point Wastewater Treatment Plant (WWTP). The draft permit sets conditions on the discharge of pollutants from the Sandy Point WWTP to the Strait of Georgia. 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.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a listing of proposed effluent limitations and other conditions
- a map and description of the discharge location
- background information supporting the conditions in the draft permit

The State of Washington Proposes Certification
The Washington State Department of Ecology proposes to certify the NPDES permit for the Sandy Point WWTP under provisions of Section 401 of the Clean Water Act (CWA).

Public Comments on the Draft Permit
Persons wishing to comment on the draft permit or to request a public hearing must do so, in writing, by October 6, 201. A request for a public hearing must state the nature of

the issues to be raised as they relate to the permit, as well as the requester's name, address, and telephone number.

All comments and requests for public hearing must be submitted to EPA as described in the Public Comments section of the attached public notice.

If no significant comments are received during the public comment period, the proposed conditions in the draft permit will be included in the final permit and will become effective upon reissuance of the permit.

Any significant comments will be considered before EPA Region 10's Director of the Office of Water and Watersheds makes a final decision regarding permit issuance. EPA will address significant comments when it issues the permit. In such a case, the permit will become effective no less than 30 days after the reissuance date, unless a request for an appeal is filed with the Environmental Appeals Board within 30 days.

Public Comment on the State Preliminary CWA Section 401 Certification
The Washington State Department of Ecology (Ecology) proposes to certify the NPDES permit for the Sandy Point WWTP, under Section 401 of the Clean Water Act. Ecology provided preliminary comments prior to EPA's Public Notice which have been incorporated into the draft permit.

Documents are Available for Review
The draft permit and fact sheet can be found online by visiting the Region 10 website at http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/DraftPermitsORWA. The draft NPDES permit and related documents can also 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 (address below).

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 900, OWW-130
Seattle, Washington 98101-3140
(206) 553-0523 or
1-800-424-4372 x0523 (within Alaska, Idaho, Oregon, and Washington)

For technical questions regarding the permit or fact sheet, contact Tonya Lane at 1-800-424-4372 (within Region 10) or via e-mail at lane.tonya@epa.gov. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 and ask to be connected to the appropriate phone number. Persons with disabilities may request additional services by communicating with the technical contact above.

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LIST of ACRONYMS

ACEC	Acute critical effluent concentration
AML	Average monthly limit
AWL	Average weekly limit
BMP	Best Management Practices
BOD5	Five day biochemical oxygen demand (a measure of organic matter)
BPJ	Best Professional Judgment
CFR	Code of Federal Regulations
CV	coefficient of variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FWS	U.S. Fish and Wildlife Service
LTSWD	Lummi Tribal Sewer and Water District
MDL	maximum daily limit
MGD	million gallons per day
mg/l	milligrams per liter
ml	milliliter
N	nitrogen
NH3	ammonia
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
pH	a measure of the acidity or alkalinity of a solution
POTW	Publicly-owned treatment works (includes tribally owned)
QAP	Quality Assurance Plan
s.u.	Standard Unit *(for measuring pH; <7=acid; 7=neutral; >7= alkaline)*
TMDL	Total Maximum Daily Load
TSD	*Technical Support Document for Water Quality-Based Toxics Control*
TSS	Total Suspended Solids
WAC	Washington Administrative Code
WET	whole effluent toxicity
WLA	wasteload allocation
WQLS	water-quality limited segment
WWTP	wastewater treatment plant

I. FACILITY INFORMATION

A. Applicant

Name: **Lummi Indian Business Council**
Sandy Point Wastewater Treatment Plant

NPDES Permit No.: **WA-002565-8**

Mailing Address: **2156 Lummi View Drive**
Bellingham, Washington 98226

Facility Location: **4369 Germaine Road** (see Appendix A for map)
Ferndale, Washington

Facility Contact: **Liam Carnahan, District Manager, Lummi Tribal Sewer & Water District, 360-815-6092**

B. Facility Activity

The Lummi Tribal Sewer and Water District (LTSWD) operates a wastewater treatment plant (WWTP) that provides secondary treatment and disinfection of domestic wastes prior to discharge to Strait of Georgia. The maximum month design flow of the facility is 0.25 million gallons per day (mgd). In 2008, the treatment plant had an average annual flow of 0.104 mgd and a maximum daily flow of 0.172 mgd. The plant receives domestic wastewater from residential sources. There are no industrial discharges to the collection system.

Biosolids generated in the treatment process are hauled to a land application site on the reservation or to a permitted off-Reservation site by a commercial biosolids transport and application company.

C. Facility Background

1. Permit Status

a. 2004 Permit – EPA last issued an NPDES permit for the Sandy Point WWTP on April 12, 2004; it expired May 31, 2009.

b. 2008 Application – Lummi Indian Business Council submitted an application for renewal of its NPDES permit on November 26, 2008.

2. Compliance History

Recent Violations – the following effluent violations have occurred since the last permit was issued:

Table 1: Compliance History

Parameter	Limit	Date of Violation	Violation Amount
Fecal coliform	400/100 ml	9/08	420/100 ml

		2/05 9/04 7/04	2000/100 ml 700/100 ml 660/100 ml
BOD 5-Day (% Removal)	85% (minimum)	2/05	83%
TSS	45 mg/l (weekly ave)	2/06 10/04 9/04	46 mg/l 48 mg/l 100 mg/l
	30 mg/l (monthly ave)	9/04	40 mg/l
TSS (% Removal)	85% (minimum)	1/09 2/06 11/04 9/04	75% 77% 78% 79%
pH	6.0 std units (min)	12/04	5.9 std units
Chlorine (Total Residual)	0.39 mg/L (ave monthly)	2/05 1/05	0.65 0.57
	0.65 mg/L (max daily)	9/09 9/07 8/07 7/07 9/05 7/05 4/05 3/05 2/05 1/05	0.95 1.05 1.60 1.05 0.94 0.99 1.88 1.58 4.40 3.46

Compliance Schedule Violations (followed by month/year of violation):	
NOT RECEIVED; 1ST REPORT OF PROGRESS (plan for meeting chlorine compliance schedule)	8/04
NOT RECEIVED; FINAL COMPLIANCE W/EFF LIMITS (chlorine compliance schedule item)	12/04
NOT RECEIVED; SUBMIT FIRST ANNUAL REPORT (surface water monitoring)	1/05
NOT RECEIVED; SUBMIT SECOND ANNUAL REPORT	1/06
NOT RECEIVED; SUBMIT THIRD ANNUAL REPORT	1/07
NOT RECEIVED; SUBMIT FOURTH ANNUAL REPORT	1/08
NOT RECEIVED; SUBMIT FIFTH ANNUAL REPORT	1/09

NOT RECEIVED; 1ST BIOASSAY RESULT	12/06
NOT RECEIVED; 2ND BIOASSAY RESULT	5/07

II. RECEIVING WATER

A. Location of Discharge

The Sandy Point WWTP outfall is located at latitude: 48° 48' 56" N and longitude: -122° 42' 57" W. Outfall 001 is located 1458 feet from shore at 44 feet below the surface in the Strait of Georgia in North Puget Sound.

B. Water Quality Standards

The marine boundary of the Lummi Reservation parallels the shoreline at the - 4.5 foot contour.

Beyond the boundary, the State of Washington has jurisdiction. Since the Sandy Point WWTP discharges to the Strait of Georgia at a point at 44 feet below the water surface, the WWTP discharge point is in State of Washington waters, and state water quality standards apply.

Washington State's water quality standards are composed of classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The State designates the characteristic uses for each class. The State further designates the numeric and/or narrative water quality criteria necessary to protect the characteristic uses for which its water bodies are protected. A third component of the water quality standard is the State's anti-degradation policy, which aims to maintain existing in-stream uses and the level of water quality necessary to protect them.

The Strait of Georgia is a marine water in North Puget Sound designated as estuarine by the State of Washington in WAC 173-201A-400(7)(b)(ii). In WAC 173-201A-612 (Table 612), the State designates all marine waters in North Puget Sound west of 122° 39' W as being of extraordinary quality; the Sandy Point WWTP discharge point is west of 122° 39' W. Characteristic uses include industrial water supply; salmonid and other fish migration, rearing, spawning, and harvesting; clam, oyster, and mussel and other shellfish rearing, spawning, and harvesting; wildlife habitat; recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment); and commerce and navigation.

Appendix C of this fact sheet shows in more detail how the Washington water quality standards were considered in developing limits and conditions proposed in the draft permit.

C. Water Quality Limited Segment

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.

Once a water body is identified as a WQLS, the State of Washington is required under Section 303(d) of the Clean Water Act to develop a total maximum daily load (TMDL) for the pollutant of concern. A TMDL is a mechanism for determining the assimilative capacity of a water body and allocating that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. The allocations for point sources, or "waste load allocations" (WLAs), are implemented through limits in NPDES permits. There are no Category 5 303(d) listed waters in the vicinity of the Sandy Point WWTP outfall. The State of Washington identifies Category 5 waters as those for which the preparation of a TMDL is necessary.

III. EFFLUENT LIMITATIONS

EPA adhered to the requirements of the Clean Water Act (CWA), state and federal regulations, and EPA's 1991 *Technical Support Document for Water Quality-Based Toxics Control* (TSD) to develop the effluent limits in the draft permit. In general, the CWA requires that the effluent limit for a particular pollutant be the more stringent of either the technology-based limit or water quality-based limit. Appendix C provides discussion on the legal basis for the development of technology-based and water quality-based effluent limits.

EPA sets technology-based limits based on the effluent quality that is achievable using readily available technology. EPA evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must develop more stringent water quality-based limits. Water quality-based limits are designed to prevent exceedances of the water quality standards in the receiving waters.

The proposed permit includes technology-based limits for BOD_5, TSS, pH, and fecal coliform, and water-quality based limits for total residual chlorine. Appendix C describes in detail how the effluent limits were developed.

Table 2 of the permit summarizes the effluent limitations and monitoring requirements that are proposed in the draft permit. The draft permit specifies a different average monthly chlorine residual limit than was contained in the previous permit.

In addition to the requirements listed in Table 2 below, 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)].

Table 2: Outfall 001 Effluent Limits Comparison

Parameter	Average Monthly Limit		Average Weekly Limit		Maximum Daily Limit	
	Draft Permit (2011)	Existing Permit	Draft Permit (2011)	Existing Permit	Draft Permit (2011)	Existing Permit
BOD_5, mg/L lb/day[1] Minimum % Removal	30 63 85%	30 63 85%	45 94 ---	45 94 ---	--- --- ---	--- --- ---
TSS, mg/L lb/day Minimum % Removal	30 63 85%	30 63 85%	45 94 ---	45 94 ---	--- --- ---	--- --- ---
Fecal Coliform #/100 mL[2]	200	200	400	400	---	---
pH, std units	---	---	---	---	6.0 - 9.0[3]	6.0 - 9.0
Total Residual Chlorine, mg/L	0.23	0.39	---	---	0.65	0.65

Notes:

1. Mass-based loadings are based on a design flow of 0.25 mgd. See Appendix C Basis for Effluent Limits.
2. Monthly average and weekly average shall be measured as a geometric mean. No more than 10 percent of samples used to calculate the monthly average shall exceed 200/100 ml. See Part V of the permit for a definition of geometric mean.
3. The draft permit requires that the pH be within the specified range of 6.0 to 9.0 at all times.

IV. MONITORING REQUIREMENTS

Section 308 of the Clean Water Act and the federal regulation 40 CFR 122.44(i) require that monitoring requirements be included in permits to determine compliance with effluent limitations. Section 308 also authorizes additional effluent monitoring to gather information for possible future effluent limitations or to evaluate effluent impacts on receiving water quality.

A. Basis for Effluent Monitoring

The draft permit requires monitoring of the effluent for BOD_5, TSS, fecal coliform, total residual chlorine, and pH to determine compliance with the limits; it also requires flow monitoring and monitoring of the influent for BOD_5 and TSS in order to calculate monthly removal rates. 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. The permit includes quarterly monitoring for one year of effluent ammonia, total Kjeldahl nitrogen, and nitrate+nitirite nitrogen. This data is to be submitted within 60 days of the conclusion of the four quarters of expanded nutrients monitoring.

LTSWD is responsible for conducting the monitoring and reporting the results to EPA on monthly discharge monitoring reports (DMRs); courtesy copies should also be sent to the Washington Department of Ecology on the same schedule to provide the state with information about the discharge into waters of the State of Washington. Providing copies to the Washington Department of Ecology does not constitute a waiver of sovereign immunity by the Lummi Nation and does not provide the State with the right to access to the facility for inspections or other purposes.

B. Whole Effluent Toxicity (WET) Testing

The permittee completed bioassay tests in June 2006 and December 2008/January 2009. The chronic toxicity tests were conducted on Pacific topsmelt and purple sea urchins. The echinoderm fertilization test was chosen especially to evaluate the potential for toxicity of the discharge towards local herring stocks which spawn and forage in the area. The test results revealed that no statistically significant difference was observed between the acute critical effluent concentration (ACEC) of 2% sample compared to the control. Additional whole effluent toxicity monitoring is not being required by the new permit.

C. Representative Sampling

The draft permit has expanded the requirement in the federal regulations regarding representative sampling (40 CFR 122.41[j]). This provision now specifically 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 exceedences that could result from bypasses, spills, or non-routine discharges. This requirement directs LTSWD to conduct

additional, targeted monitoring to quantify the effects of such occurrences on the final effluent discharge.

V. OTHER PERMIT CONDITIONS

A. Operation and Maintenance Manual

The permit requires the permittee 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 the facility within 180 days of the effective date of the final permit. The plan shall be retained on site and made available to EPA upon request.

B. Quality Assurance Plan

Federal regulations at 40 CFR 122.41(e) require permittees to properly operate and maintain their facilities, including "adequate laboratory controls and appropriate quality assurance procedures." To implement this requirement, the draft permit requires that LTSWD update their Quality Assurance Plan (QAP) to ensure that the monitoring data submitted is accurate and data anomalies can be explained if they've occurred. The QAP must include standard operating procedures that the permittee must follow for collecting, handling, storing, and shipping samples, for laboratory analysis, and for data reporting. The draft permit requires that LTSWD submit to EPA certification that the QAP has been updated and is being implemented and reviewed with staff annually. The annual QAP review letter and a copy of the staff attendance sheet used for the review session will be submitted with the January DMR of each subsequent year.

C. Facility Planning Requirement

The draft permit requires LTSWD to develop a plan when the annual average flow reaches 85% of the design flow of the plant. The permit requires LTSWD to develop a strategy for remaining in compliance with the effluent limits in the permit.

D. 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 shellfishing, 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 collection system 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.

E. Sewage Sludge

Under the Clean Water Act (CWA), facilities which generate sewage sludge are subject to national standards for sewage sludge and to NPDES sludge permitting.

Generally, EPA Region 10 separates wastewater and sludge permitting. Under the CWA, EPA has the authority to issue separate sludge-only permits for the purposes of regulating biosolids. EPA may issue a sludge-only permit to this facility at a later date. The NPDES rules require the facility to submit an application for a sewage sludge permit (Form 2S).

In any case, sludge management and disposal activities at the facility continue to be subject to the national sewage sludge standards in 40 CFR Part 503. These regulations are self-implementing, therefore permittees must comply with them whether or not a separate permit has been issued.

F. Standard Permit Provisions

In addition to facility-specific requirements, most of sections III through V of the draft permit contain standard regulatory language. Standard regulatory language applies to all permittees and must be included in NPDES permits. Because it is based on regulations, standard regulatory language cannot be challenged in the context of an NPDES permit action. Standard regulatory language addresses conditions, such as monitoring, recording, and reporting requirements, compliance responsibilities, and general requirements.

VI. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed threatened or endangered species. In this case, the action would be the reissuance of the Sandy Point WWTP NPDES permit. The Services and EPA identified the following threatened species in Puget Sound and the Strait of Georgia 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)
- Marbled Murrelet (Brachyramphus marmoratus)
- Stellar Sea Lion (Eumetopias jubatus)

Endangered Species:

- Southern Resident Killer Whales (Orcinus orca)
- Bocaccio Rockfish (Sebastes paucispinis)
- Humpback Whale (Megaptera novaeangliae)
- Leatherback Sea Turtle (Dermochelys coriacea)

EPA determined that permitting the continued discharge from this source will have no effect on listed species. Appendix D provides further information.

B. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect Essential Fish Habitat. EPA tentatively determined that reissuance of this NPDES permit will have no measurable impact on EFH, therefore EPA considers there to be no effect on EFH on account of this action.

C. State Certification

Section 401 of the Clean Water Act requires EPA to seek certification from the State of Washington for any discharges into state waters that the permit is adequate to meet State water quality standards before issuing a final permit. The regulations allow for the state to stipulate more stringent conditions in the permit, if the certification cites the Clean Water Act or State law references upon which that condition is based. In addition, the regulations require that the state's certification include statements on the extent to which each condition of the permit can be made less stringent without violating the requirements of State law. Not providing this statement for any condition waives the right to certify or object to any less stringent condition which may be established during the EPA permit issuance process (see 40 CFR Part 124.53(e)(3)).

D. Antidegradation

In setting permit limitations, EPA must consider the State's antidegradation policy. This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. For high quality waters, antidegradation requires that the State find that allowing lower water quality is necessary to accommodate important economic or social development before any degradation is authorized. This means that, if water quality is better than necessary to meet the water quality standards, increased permit limits can be authorized only if they do not cause degradation of water quality or if the State makes the determination that such degradation is necessary.

The draft permit includes effluent limits for biochemical oxygen demand, total suspended solids, fecal coliform, total residual chlorine, and pH from outfall 001. Because the issuance of this permit places continuing and more restrictive limits on an already existing discharge, the conditions in the permit will improve water quality and therefore will comply with the State's antidegradation requirements.

E. Permit Expiration

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

APPENDIX A

Facility Location

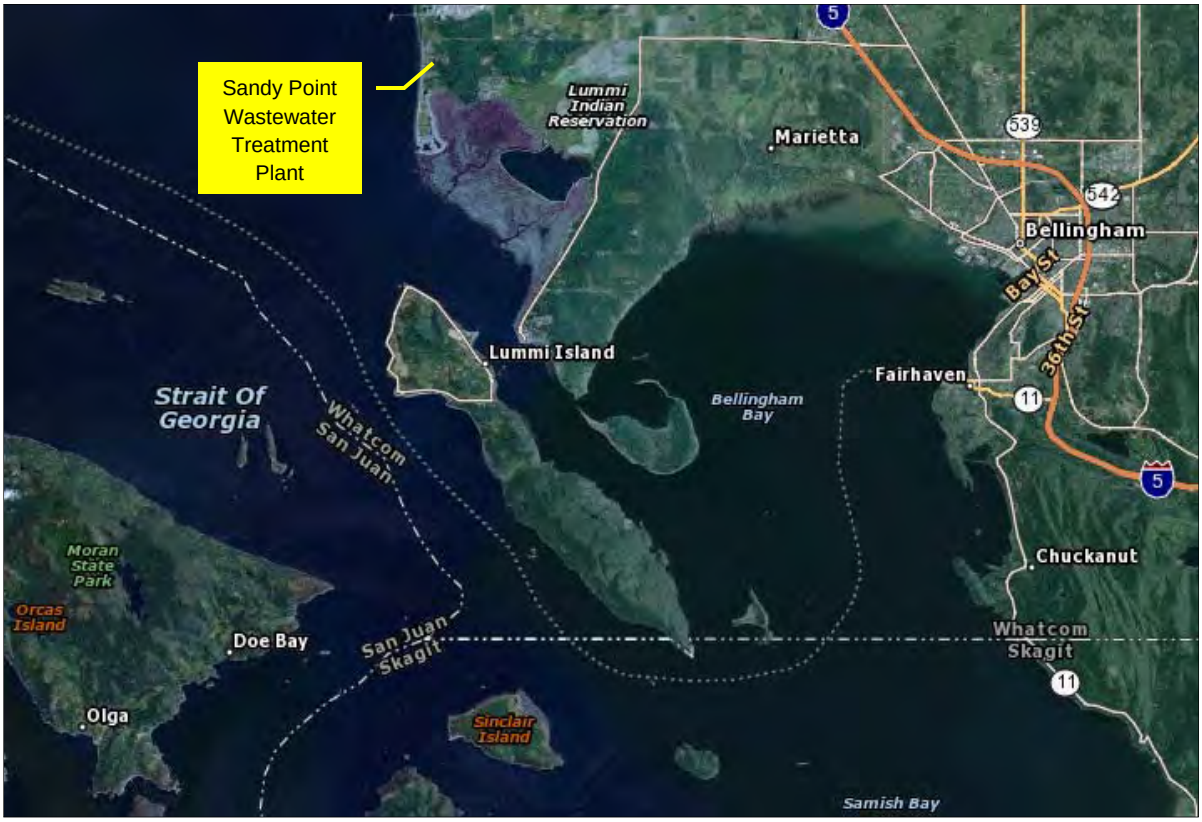

Figure A-1: Sandy Point Wastewater Treatment Plant Location (48° 48' 52" N, 122 ° 42' 22" W).

Figure A-2: Sandy Point WWTP Aerial Photograph (4369 Germaine Rd, Ferndale, WA).

Both images courtesy of 2009 MapQuest, Inc.

APPENDIX B

Waste Streams and Treatment Processes

I. Discharge Composition

In its NPDES application and in Discharge Monitoring Reports, the Lummi Tribal Sewer and Water District reported the pollutants listed in Table B-1 as being detected in its discharge from outfall 001. The toxic and conventional pollutant categories are defined in the regulations (40 CFR §401.15 and §401.16, respectively). The category of nonconventional pollutants includes all pollutants not included in toxic or conventional categories.

Table B-1 Pollutants Detected in Discharge

Pollutant Type	Parameter	Maximum Reported Concentration	Data Source
Conventional	BOD5, max daily	18 mg/L	Application
	TSS, max daily	25 mg/L	Application
	pH, min-max	6.04-7.51	Application
	Fecal coliform, weekly ave monthly ave	2000 /100mL 121 /100mL	DMR data (for 6/2004-6/2009)
	Oil & grease	4.0[1] mg/L	Analytical turned in with application
Non-Conventional	Chlorine, total residual	0.95 mg/L	DMR data (for 1/2008-1/2011)
	Ammonia	15.1 mg/L	DMR data (for 6/2004-6/2009)

Note: [1]Results less than the Practical Quantitation Limit (5.0 mg/L) are estimates.

II. Treatment Process:

The headworks facility includes the influent flow meter, bar screen, comminutor, and aerated grit chamber. Grit collected in the aerated grit chamber is sent to a landfill. The primary clarifier allows settleable and floatable solids to be removed from the wastewater. In the pre-aeration basin, large amounts of air are entrained in the wastewater before flowing to one of the two rotating biological contactors (RBCs) that provide secondary treatment. Two secondary clarifiers provide settling of secondary sludge. Sludge from primary and secondary clarifiers is stabilized using aerobic digesters before land application at the tribal biosolids site or to a permitted off-Reservation site by a commercial biosolids transport and application company. Secondary effluent is chlorinated in the chlorine mixing basin before routing through the chlorine contact chamber to give sufficient time for the chlorine to provide the desired level of disinfection.

APPENDIX C

Basis for Effluent Limitations

I. Statutory and Legal Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act (CWA) provide the basis for the effluent limitations and other conditions in the draft permit. EPA evaluates the discharge with respect to these sections of the CWA and the relevant NPDES regulations to determine which conditions to include in the draft permit.

Section 301(b)(2) of the CWA requires technology-based controls on effluents. A technology-based effluent limit assumes a minimum level of treatment for municipal wastewater treatment plants, based on currently available treatment technology. EPA determines which technology-based limits must be incorporated into the permit.

The Clean Water Act further requires that the effluent limits for a particular pollutant be the more stringent of either the technology-based or the water quality-based limit. To meet this requirement, EPA evaluates the effluent quality expected from the assumed treatment to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur using the technology-based limits, EPA must calculate water quality-based limits for the permit.

The draft permit limits reflect whichever requirements (technology-based or water quality-based) are more stringent. The limits that EPA is proposing in the draft permit are found in Section III in the body of this fact sheet. This Appendix describes the technology-based and water quality-based evaluation for the Sandy Point WWTP discharge.

II. Technology-based Evaluation

A. Secondary Treatment – Concentration-based Limits

1. BOD_5, TSS, and pH – The 1972 Clean Water Act required publicly owned treatment works (POTWs), including those that are tribally owned, to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the Act established a required performance level, referred to as “secondary treatment,” that all POTWs were required to meet by July 1, 1977. EPA specified secondary treatment requirements in 40 CFR §133.102. They identify the minimum level of effluent quality attainable by secondary treatment in terms of five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Fecal coliform – The State of Washington has promulgated a technology-based performance standard for fecal coliform in WAC 173-221-040(2).

3. Chlorine – A technology-based average monthly chlorine effluent limitation of 0.5 mg/L for wastewater treatment plants is derived from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater (1976)* states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is

maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis.

B. BOD_5 and TSS, mass based limits: Federal regulations at (40 CFR § 122.45 (f)) require BOD and TSS limitations to be expressed as mass based limits using the design flow of the facility.

1. **Monthly Average Loading** – BOD_5 and TSS
30 mg/l x (Design flow) x (Conversion factor) = loading
(30 mg/L) x (0.25 MGD) x (8.34) = **63 lbs/day**

2. **Weekly Average Loading** – BOD_5 and TSS:
45 mg/l x (Design flow) x (Conversion factors) = loading
(45 mg/L) x (0.25 MGD) x (8.34) = **94 lbs/day**

III. Water Quality-based Evaluation

A. Water Quality Standards
EPA evaluated the Sandy Point WWTP discharge to determine compliance with Section 301(b)(1)(C) of the CWA. This section requires the establishment of limitations in permits necessary to meet water quality standards.

The regulations at 40 CFR 122.44(d) implement section 301(b)(1)(C) of the CWA. These regulations require that NPDES 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 water quality standard, including State narrative criteria for water quality. The limits must be stringent enough to ensure that water quality standards are met.

EPA uses the approach outlined below in determining whether water quality-based limits are needed and in developing those limits when necessary:

1. Determine the appropriate water quality criterion;
2. Determine whether there is “reasonable potential” to exceed the criterion;
3. If there is “reasonable potential”, develop a WLA;
4. Develop effluent limitation based on WLA.

The first step in developing water quality-based limits is to determine the applicable water quality criteria. The State of Washington’s water quality standards are found at WAC 173-201A.

The applicable criteria are determined based on the class designation of the receiving water. The waters of the Strait of Georgia have been identified as being of extraordinary quality (formerly a Class AA aquatic life use designation) and estuarine. Other uses identified include shellfish harvesting, primary contact recreational use, and its

miscellaneous uses such as wildlife habitat and harvesting, commerce and navigation, boating, and aesthetics.

The pollutants of concern in the discharge include BOD_5, TSS, fecal coliform, ammonia, chlorine, pH, and temperature. Each of these is discussed in more detail below.

1. BOD_5: –The technically-based limits above were applied because the discharge results in a small amount of biochemical oxygen demand (BOD_5) relative to the large amount of dilution in the receiving water at critical conditions. Technology based limits will ensure that dissolved oxygen criteria are met in the receiving water.

2. Total Suspended Solids – There is no state water quality criteria for TSS; therefore, the technically-based limits above are applied.

3. pH: The Washington water quality criteria for waters of extraordinary quality specifies a pH range of 7.0 to 8.5 standard units, with a human-caused variation within the above range of less than 0.2 units (WAC 173-201A-210(1)(f)). 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. The impact of effluent pH on the receiving water was modeled and confirms compliance with the water quality standards using calculations developed by Lewis and Wallace, 1988, and the chronic dilution factor tabulated below. Consequently, the permit includes technology-based pH limits.

Table C-1 Calculation of pH Mixing in Seawater

Calculation of pH of a mixture in seawater.
Based on the CO2SYS program (Lewis and Wallace, 1998)
http://cdiac.esd.ornl.gov/oceans/co2rprt.html

INPUT

1. MIXING ZONE BOUNDARY CHARACTERISTICS	
Dilution factor at mixing zone boundary	168.000
Depth at plume trapping level (m)	0.000
2. BACKGROUND RECEIVING WATER CHARACTERISTICS	
Temperature (deg C):	9.43
pH:	7.80
Salinity (psu):	29.86
Total alkalinity (meq/L)	2.10
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	17.37
pH:	6.00
Salinity (psu)	0.50
Total alkalinity (meq/L):	2.22
4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>>	calculate

OUTPUT

CONDITIONS AT THE MIXING ZONE BOUNDARY	
Temperature (deg C):	9.48
Salinity (psu)	29.69
Density (kg/m^3)	1022.89
Alkalinity (mmol/kg-SW):	2.06
Total Inorganic Carbon (mmol/kg-SW):	2.01
pH at Mixing Zone Boundary:	7.74

Notes on Table C-1: The point of compliance for pH is set at the chronic dilution zone boundary (using a dilution factor = 168 in this model). The plume trapping depth was set at 0.0 meters (the water surface). Background receiving water characteristics were average values obtained from ambient marine monitoring station #GRG002 in the Georgia Strait. The background total alkalinity value was obtained as a first approximation by the following approach, Alk = 0.45 + 0.0554 S where Alk = total alkalinity (meq/L) and S = salinity (psu). Units of mgCaCO3/L were converted to meq/L by dividing by 50.044 mgCaCO3/meq. Effluent characteristics were obtained from monitoring data submitted to EPA, though the salinity value was not reported but rather is a typical value for wastewater effluent. High and low reported effluent pH values were in turn input as an effluent characteristic and the resulting pH at the mixing zone boundary was checked against the water quality standard.

4. Ammonia: Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature, pH, and salinity of the receiving marine water. Available receiving water information from ambient station #GRG002 (Georgia Strait) was used to derive the Washington State water quality criterion for marine waters. Effluent ammonia data collected during the previous permit cycle was analyzed (See Table C-2) and did not show a reasonable potential to exceed the water quality standards; therefore, a limit for ammonia is not required by this permit.

5. Temperature: The Washington State water quality criterion for temperature limits the ambient water temperature to 13.0°C. When natural conditions exceed 13.0°C, no temperature increase caused by a point source is allowed which will raise the receiving water temperature by greater than 0.3°C at the edge of the chronic mixing zone.

EPA calculated the reasonable potential for the discharge to exceed the annual summer maximum, and the incremental warming criteria at the edge of the chronic mixing zone during critical condition. No reasonable potential exists to exceed the temperature criterion where:

(Criterion + 0.3) > (Criterion + ($T_{effluent95}$ – Criterion))/DF.

(13 + 0.3) > (13 + (23 – 13))/168).

(13.3) > (13.06) *(the maximum temperature discharge does not exceed the criterion)*

Given:

Criterion = criterion for waters of Extraordinary Quality (13°C).

$T_{effluent95}$ = 95th percentile 1-D_{max} effluent temperature (the more conservative maximum daily effluent temperature is used in this case)

DF = the chronic dilution factor at the critical condition.

Therefore, the proposed permit does not include a temperature limit.

6. Fecal Coliform: The Washington water quality criteria for marine waters of extraordinary quality require that fecal coliform levels shall both not exceed a geometric mean of 14 colonies/100 ml and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 43 colonies/100 ml. (WAC 173-201A-210(2)(b)).

Reasonable Potential Analysis for Fecal Coliform

EPA modeled the numbers of fecal coliform by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 168. Under critical conditions, modeling predicts no violation of the water quality criterion for fecal coliform.

400/168 = 2.3 < 14 colonies/100 ml therefore the technology-based limit is protective

Therefore, the proposed permit includes the technology-based effluent limit for fecal coliform bacteria.

Comparison between Technical & Water Quality Based Chlorine Limit

Technology-based Limit

Average Monthly Limit = 0.5 mg/L

Water quality-based effluent limits determined by the previous permit:

Maximum Daily Limit for Total Residual Chlorine: 0.65 mg/l

Average Monthly Limit for Total Residual Chlorine: 0.23 mg/l

The water quality-based average monthly limit is the most stringent AML (0.23 < 0.5), and has been placed in the permit as the chlorine effluent limit. The water quality-based maximum daily effluent limit for chlorine has also been added to the permit.

Table C-2: Reasonable Potential Calculations (Left)
Table C-3: Chlorine Effluent Limit Calculation (Right)

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

Parameter	State Water Quality Standard: Acute ug/L	State Water Quality Standard: Chronic ug/L	Max concentration at edge of... Acute Mixing Zone ug/L	Max concentration at edge of... Chronic Mixing Zone ug/L	LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured (metals as total recoverable) ug/L	Coeff Variation CV	S	# of samples n	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
ammonia (as N)	8025.00	1205.00	2947.28	877.17	NO	0.99	0.736	1.5E+04	2.25	1.34	15	9.76	50	168	Data from DMRs for June 2004 through June 2009
chlorine (total residual)	13.00	7.50	39.23	11.67	YES	0.99	0.877	9.5E+02	0.69	0.62	35	2.06	50	168	Data from DMRs for January 2008 through January 2011

CALCULATIONS	
	0.57
	0.95

This spreadsheet calculates water quality based permit limits based on the two value steady state model using the State Water Quality standards contained in WAC 173-201A. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 99. Last revision

Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.

PARAMETER	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator Acute	Metal Criteria Translator Chronic	Ambient Concentration ug/L	Water Quality Standard Acute ug/L	Water Quality Standard Chronic ug/L	Permit Limit Calculation Summary: Average Monthly Limit (AML) ug/L	Maximum Daily Limit (MDL) ug/L	Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations: WLA Acute ug/L	WLA Chronic ug/L	LTA Acute ug/L	LTA Chronic ug/L	LTA Coeff. Var. (CV) decimal	LTA Proby Basis decimal	Limiting LTA ug/L	Statistical variables for permit limit calc: Coeff. Var. (CV) decimal	AML Proby Basis decimal	MDL Proby Basis decimal	# of Samples per Month n
chlorine	50.0	168.00				13.00	7.50	**226.5**	**650.0**	650	1260.00	185.9	613.2	0.69	0.99	185.9	0.69	0.95	0.99	30.00