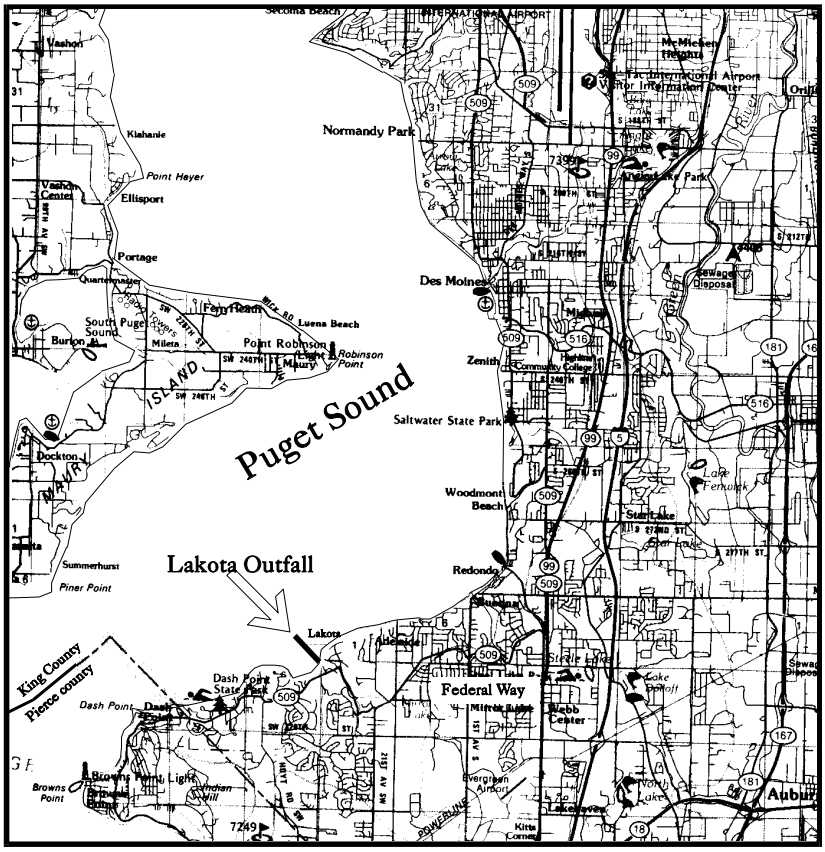
FACT SHEET FOR NPDES PERMIT WA WA-002262-4
LAKEHAVEN UTILITY DISTRICT - LAKOTA



LAKOTA VICINITY MAP

SUMMARY

The Lakehaven Utility District (the District) operates a 10 MGD activated sludge wastewater treatment plant that discharges to Dumas Bay in mid-Puget Sound. Ecology issued the previous permit for this facility on July 15, 2003. The proposed permit contains the same effluent limits for Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), Total Suspended Solids, Fecal Coliform Bacteria, pH, acute toxicity, and chlorine as the permit issued in 2003. The proposed permit adds temperature and nutrient monitoring to the monitoring schedule.

GENERAL INFORMATION	
Applicant:	Lakehaven Utility District – Lakota WWTP 31627 – 1st Avenue South PO Box 4249 Federal Way, Washington 98063
Facility Name and Address:	Lakota Wastewater Treatment Plant 3203 SW Dash Point Road Federal Way, Washington 98023
Type of Treatment:	Activated Sludge
Discharge Location:	Dumas Bay - Puget Sound, 1224819475188 Latitude: 47° 20' 09.267" N Longitude: 122° 22' 54.286" W
Waterbody ID Number:	WA-PS-0270, South Central Puget Sound

PURPOSE of this Fact Sheet

This fact sheet explains and documents the decisions Ecology made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the Lakota Wastewater Treatment Plant (WWTP). This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before we issue the final permit. For more details on preparing and filing comments about these documents, please see *Appendix A - Public Involvement*.

The Lakehaven Utility District reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving water.

After the public comment period closed, Ecology summarized substantive comments and provided responses. Ecology included the summary and responses to comments in this fact sheet as *Appendix G - Response to Comments*.

TABLE OF CONTENTS

I. INTRODUCTION

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

The following regulations apply to municipal NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC).
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC).
- Water quality criteria for surface waters (chapter 173-201A WAC) and for ground waters (chapter 173-200 WAC).
- Sediment management standards (chapter 173-204 WAC).

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

Under the NPDES permit program, Ecology must prepare a draft permit and accompanying fact sheet and make them available for public review. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments on the draft permit, during a period of thirty days (WAC 173-220-050). (See *Appendix A—Public Involvement* for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit. Ecology will summarize the responses to comments and any changes to the permit in *Appendix G - Response to Comments.*

II. BACKGROUND INFORMATION

A. Facility Description

HISTORY

Lakehaven Utility District, formerly known as Federal Way Water and Sewer District, owns and operates two wastewater treatment plants, Lakota and Redondo, which discharge into Puget Sound. The Lakota WWTP is the larger of the two with a capacity of 10 million gallons per day (mgd). The plant currently serves a population of 69,000 people. The District originally built the Lakota facility as a primary treatment plant, but upgraded it as a secondary treatment plant in 1990.

COLLECTION SYSTEM STATUS

The Lakota plant is fed by about 150 miles of collection system piping and 18 pump stations. The sanitary collection system is separate from the storm drainage system. The District completed a comprehensive wastewater system plan in 1999 and has made several amendments since then. A collection system analysis found that the piping within the Lakota basin is sufficiently sized for existing flows, and that all pump stations, force mains, and siphons are functioning properly. An Infiltration/Inflow (I/I) study in the Lakota basin concluded that I/I is not a significant problem, but the study did recommend various I/I and flow reduction programs. The district has an existing I/I rehab program which has been dealing strictly with improvements in the Redondo basin area.

Four industrial users discharge to Lakota's collection system. Lakota tracks its industrial users but does not have a delegated pretreatment program. Ecology administers any necessary pretreatment permits for industrial users discharging to the plant.

TREATMENT PROCESSES

The treatment train consists of preliminary treatment using mechanical bar screens and aerated grit removal, primary sedimentation using clarifiers, secondary treatment with activated sludge followed by secondary clarifiers, and ultraviolet (UV) disinfection. Operators control dissolved oxygen levels in the three activated sludge aeration basins to approximately 2 mg/L. Most process units at the plant are covered with hatches and lids to control odor. One pump station enters the plant downstream of the influent flow meter, so the District calculates total influent flow by adding the main influent flow to the flow measured at that pump station. The plant currently accepts about 2,700 gallons of septage per day at its septage receiving facility. A schematic of the treatment processes is included in Appendix C.

STAFFING

Lakehaven staffs the Lakota plant five days a week from 6:30 a.m. to 5:00 p.m. Weekend coverage consists of one operator for a period of two hours to conduct a facility inspection and routine tasks. Lakota is a Class 4 plant and has eight certified operators. The Lakota laboratory operates from 7:00 am to 3:30 pm, five days per week, with additional testing on weekends when needed.

DISCHARGE OUTFALL

The District discharges secondary treated and disinfected effluent from the facility to Dumas Bay via a 36-inch diameter pipeline from the plant to the beach. The 36-inch pipe ties in to a 24-inch diameter outfall pipe that extends 2,670 feet offshore and discharges at a depth of 184 feet. The location is shown in Figure 1. There is no diffuser on the end of the pipe. Cosmopolitan Engineers inspected the outfall in November 2003 and found the outfall to be in good working condition.

Lakehaven Utility District is working with DNR, DOH, and Ecology in considering the construction of a new outfall. The primary incentive for an outfall extension is to provide enhanced protection for the nearby geoduck beds.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained, compacted, and trucked to a sanitary waste landfill. Solids removed from the secondary clarifiers are processed in anaerobic digesters, dewatered by belt press, and trucked to a contract composting operation.

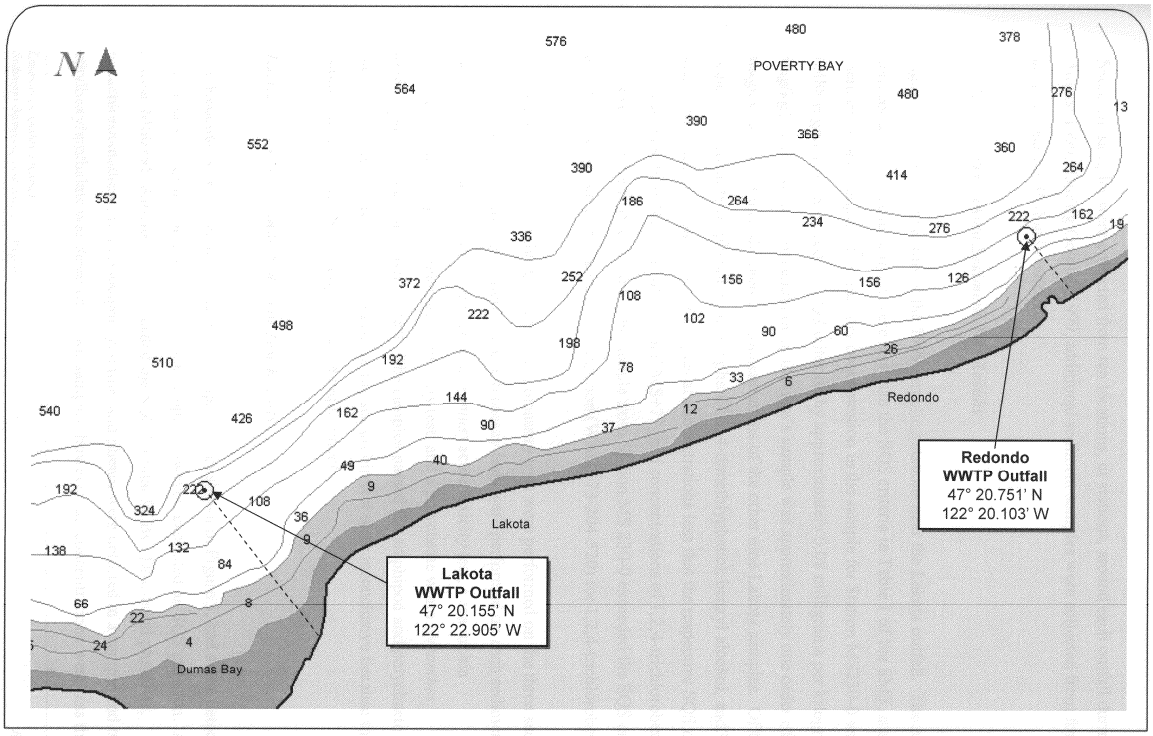


Figure 1. Lakota Outfall Location (figure from Sediment Sampling and Analysis Report, June 2006, Cosmopolitan Engineering).

B. Permit Status

Ecology issued the previous permit for this facility on July 15, 2003. The previous permit placed effluent limits on $CBOD_5$, TSS, fecal coliform, pH, chlorine, and acute toxicity. The Lakehaven Utility District submitted an application for permit renewal on January 14, 2008. Ecology accepted it as complete on January 25, 2008.

C. Summary of Compliance With Previous Permit Issued July 15, 2003

Ecology staff last conducted a non-sampling compliance inspection on October 10, 2006. The facility was found in good condition and the effluent was clear. Throughout the term of the existing NPDES permit**,** the Lakota WWTP remained in compliance with the effluent limits and conditions of the permit with two exceptions**.** One noncompliance occurred in February 2006 when the UV bulbs failed prematurely, causing a violation of effluent fecal coliform limits. The second noncompliance occurred in September 2007 when a shock load to the plant caused an upset that resulted in elevated effluent TSS levels. Ecology's

assessment of compliance is based on our review of the facility's discharge monitoring reports (DMRs) and on inspections conducted by Ecology.

D. Wastewater Characterization

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized in Table 1.

Table 1. Effluent Wastewater Characterization, 2003-2007

Parameter	Concentration
Flow - annual average, winter average	4.45, 4.74 mgd
pH - range	6.8 - 7.6
Fecal Coliform - geometric mean	50/100 mL
$CBOD_5$ - average, max weekly average	9, 20 mg/L
TSS - average, max weekly average	19, 48 mg/L
Ammonia-N - average, max	29, 52 mg-N/L*
Nitrate + Nitrite-N (NO_2+NO_3) - average, max	3.7, 9.6 mg-N/L*
Dissolved Oxygen - average, minimum	5.4, 4.6 mg/L*

*source: DMR data except * values which are from permit application*

E. Local Shellfish Toxicity Study

The Agency for Toxic Substances and Disease Registry (ATSDR) sponsored an evaluation of potential contamination of geoduck tissues by selected metals (arsenic, cadmium, lead, mercury) in Dumas Bay. They concluded that 'Exposure to arsenic, cadmium, lead and mercury in Dumas Bay geoduck represents *no apparent public health hazard*.' This information can be found online at: http://www.atsdr.cdc.gov/HAC/pha/GeoduckTracts/GeoduckTissue-DumasBayHC041807.pdf.

III. PROPOSED PERMIT LIMITS

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

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

- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

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

Nor does Ecology usually develop limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. If significant changes occur in any constituent of the effluent discharge, Lakehaven is required to notify Ecology (40 CFR 122.42(a)). Lakehaven may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

A. Design Criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. The Ecology approved design criteria for this treatment facility are taken from design drawings prepared by HDR Engineering, November 1987, and are as shown in Table 2.

Table 2. Design Criteria for Lakota WWTP

Parameter	Design Quantity
Monthly average flow (max month)	10 MGD
Instantaneous peak flow	22.2 MGD
BOD influent loading	17,515 lb/day
TSS influent loading	15,850 lb/day

B. Technology-based Effluent Limits

Federal and state regulations define technology-based effluent limits for municipal wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for municipal wastewater.

The technology-based mass limits shown in Table 3 for pH, fecal coliform, BOD_5, and TSS are based on WAC 173-221. The $CBOD_5$ limit is used in place of a BOD_5 limit because the plant has demonstrated interference from nitrifying bacteria in the BOD_5 analysis.

The monthly effluent mass limit (lb/day) for $CBOD_5$ was calculated as the maximum monthly design flow (10 MGD) x concentration limit (25 mg/L) x 8.34 (conversion factor) = mass limit (2085 lb/day). Monthly effluent mass limit (lb/day) for TSS was calculated as the maximum monthly influent design loading (15,850 lb/day) x 0.15 = mass limit (2378 lb/day).

Table 3. Technology-based Limits.

Parameter	Limit
pH	Shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
$CBOD_5$ (concentration)	Average Monthly Limit is the most stringent of the following: - 25 mg/L - may not exceed 15% of the average influent concentration Average Weekly Limit = 40 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed 15% of the average influent concentration Average Weekly Limit = 45 mg/L

The weekly effluent mass (lb/day) for $CBOD_5$ was calculated as the maximum monthly design flow (10 MGD) x concentration limit (40 mg/L) x 8.34 (conversion factor) = mass limit (3336 lb/day). The weekly average effluent TSS mass limit is calculated as 1.5 x monthly loading (2377.5 lb/day) = mass limit (3566 lb/day).

C. Surface Water Quality-based Effluent Limits

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Numerical Criteria for the Protection of Aquatic Life and Recreation

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

Numerical Criteria for the Protection of Human Health

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

Narrative Criteria

Narrative water quality criteria (WAC 173-201A) limit concentrations of toxic, radioactive, or deleterious material. Levels are set below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh and marine surface waters in the state of Washington.

Antidegradation

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

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

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

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

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

This facility must 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.

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

MIXING ZONES

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

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

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control and treatment (AKART). Mixing zones typically require compliance with water quality criteria within 200 to 300 feet from the point of discharge; and use no more than 25% of the available width of the water body for dilution. We use modeling to estimate the amount of mixing within the mixing zone. Through modeling we determine the potential for violating the water quality standards at the edge of the mixing zone and derive any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for effluent and receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent is 10% and the receiving water is 90% of the total volume of water at the boundary of the mixing zone. We use dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

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

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

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

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

1. *Ecology must specify both the allowed size and location in a permit* - The proposed permit specifies the size and location of the allowed mixing zone based on estimates of discharge quality.

2. *The facility must fully apply "all known available and reasonable methods of prevention, control and treatment" (AKART) to its discharge* - Ecology has determined that the treatment provided at the Lakota Wastewater Treatment Facility meets the requirements of AKART (see "Technology based Limits").

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

   Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents and the rate of discharge. Ecology's Permit Writer's Manual describes additional guidance on criteria/design conditions for determining dilution factors. The Manual can be obtained from Ecology's website at: http://www.ecy.wa.gov/biblio/92109.html.

   Dilution factors for the Lakota outfall were determined at the critical condition using dilution models. The outfall was modeled as part of a diffuser study completed for the Lakota WWTP. The Diffuser Report was submitted to the Department on September 30, 1994. Ambient currents and water column density profiles were obtained from measurements taken on July 16, 1982, at ambient monitoring station no. 3 off Brown's Point. For modeling, ambient currents were assumed to be 0.05 m/s.

   Effluent dilution was modeled for reasonable worst-case conditions with the U.S. EPA's UM Model (contained in the PLUMES mixing model interface, Edition 3, March 14, 1994). At the chronic mixing zone boundary, dilution is based on a dry weather average design flow of 4 mgd, a 24-inch orifice, and a median ambient current speed of 0.05 m/s. The resulting dilution is 263:1.

   An acute mixing zone dilution was calculated assuming a peaking factor of 2.05, to give a flow of 8.2 mgd. Acute mixing was modeled for a 24-inch orifice, current speed of 0.05 m/s. The resulting dilution at the boundary of the acute mixing zone is 24:1. Modeled dilutions are summarized in Table 4.

Table 4. Dilution factors for this discharge

Current	Water Col. Data	Effluent Flow	Port Diameter	Acute	Chronic
0.05 m/s	Sta.3 off Brown's Pt	4 mgd	24"	--	263:1
0.05 m/s	Sta.3 off Brown's Pt	8.2 mgd	24"	24:1	--

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

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

   Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms, and set the criteria to generally protect 95% of the species tested and to fully protect all commercially and recreationally important species.

   EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for 4 days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of being discharged.

   The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than 2 seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

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

5. *The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone* - Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant of concern. We concluded the discharge/receiving water mixture will not likely violate water quality criteria outside the boundary of the mixing zone, unless the receiving water is already impaired for a given parameter. For parameters in which the receiving water is already impaired, Ecology may propose future TMDL allocations.

6. *Maximum size of mixing zone* - The authorized mixing zone does not exceed the maximum size restriction.

7. *Acute Mixing Zone* -

   - *The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.* We determined the acute criteria will be met at 10% of the chronic mixing zone.
   - *The pollutant concentration, duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.*
     As described above the toxicity of any pollutant depends upon the exposure, the pollutant concentration and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).
   - *Comply with size restrictions* - The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

8. *Overlap of Mixing Zones* - This mixing zone does not overlap another mixing zone.

D. Description of the Receiving Water

Lakota WWTP discharges to Dumas Bay in south Puget Sound. Other nearby point source outfalls include Redondo WWTP, a 6 MGD facility also in the Lakehaven Utility District, located 2.6 miles northeast of Lakota, and Midway (Des Moines) Sewer District, a 6 MGD WWTP located approximately 7.3 miles northeast of Lakota.

The ambient background data used for this permit is shown in Table 5. It was obtained from the ambient water quality monitoring station CMB003 at Brown's Point, just south of Lakota and north of Commencement Bay (http://www.ecy.wa.gov/apps/eap/marinewq/mwdataset.asp?staID=19).

Table 5. Receiving Water Data (Brown's Point) 1989-2007

Parameter	Value used
Temperature - 90th percentile annual 1-DADMax	13.3^{o}C
Temperature - highest annual 1-DADMax	16.04^{o}C
pH Maximum / Minimum	8.7 / 7.1
Dissolved Oxygen – average, 5th percentile	8.1, 6.5 mg/L
Total Ammonia-N - maximum	4.38 ug/L
Fecal Coliform - 90th percentile	84/100 mL

DOH Office of Shellfish and Water Protection took 21 sets of fecal coliform samples in the Dumas and Poverty Bay area between 2006 and 2008. Sample locations are shown in Figure 2 and results are summarized in Table 6. These results show fecal coliform levels much lower than those measured at Brown's Point.

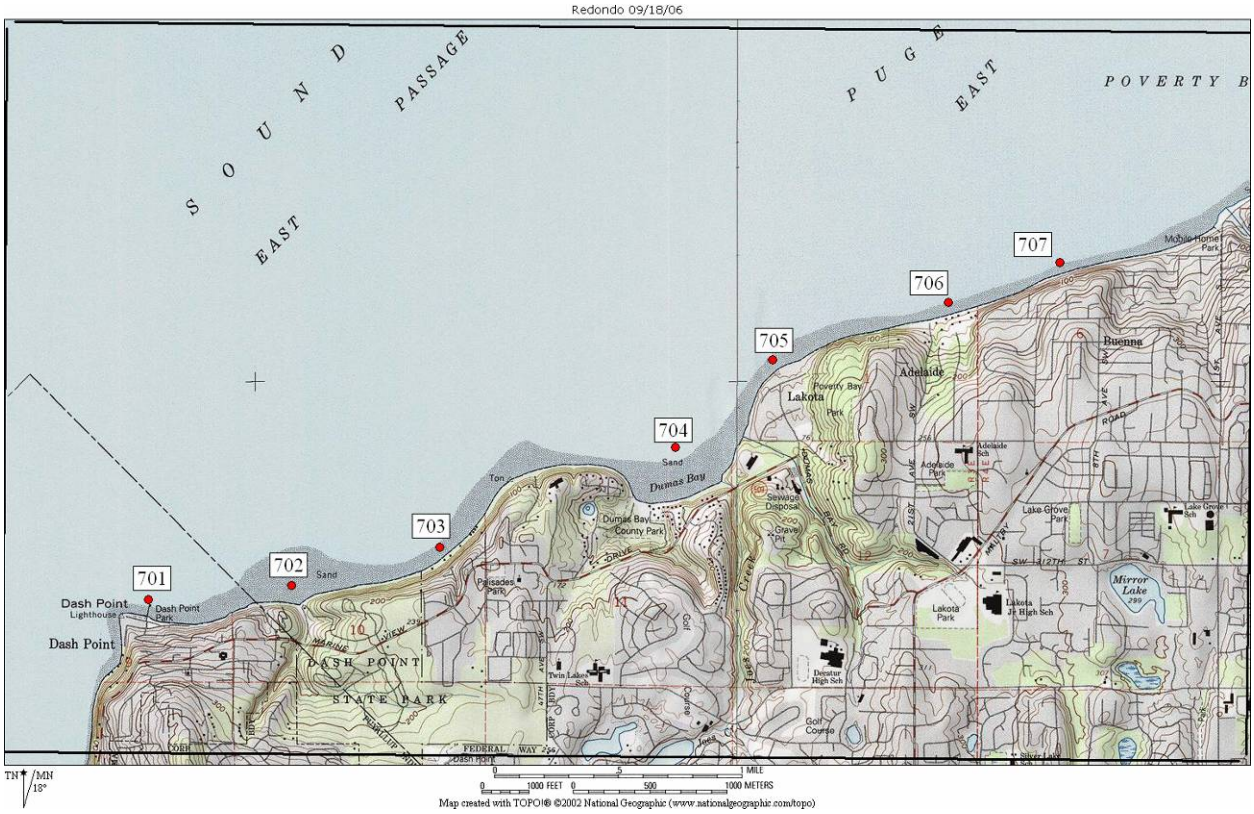


Figure 2. DOH Sample locations.

Table 6. Lakota Area Fecal Coliform Sampling, June 2006 to May 2008

Station	#Samples	Geometric Mean	Range	90th Percentile
701	21	2.9	1.7-23	8
702	21	2.8	1.7-70	9
703	21	3.5	1.7-130	18
704	21	2.8	1.7-33	8
705	21	2.8	1.7-49	9
706	21	2.4	1.7-33	7
707	21	2.6	1.7-17	6

E. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992).

Aquatic Life Uses are designated using the following general categories. All indigenous fish and non-fish aquatic species must be protected in waters of the state.

(a) *Extraordinary 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.

(b) *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.

(c) *Good quality* - salmonid migration and rearing; 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.

(d) *Fair quality* - salmonid and other fish migration.

The designated aquatic life use for this receiving water is Extraordinary Quality, as defined in Table 7.

Table 7. Aquatic Life Uses and Associated Criteria

Extraordinary Quality	
Temperature Criteria – Highest 1D MAX	13°C (55.4°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	7.0 mg/L
Turbidity Criteria	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH Criteria	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.2 units.

To protect ***shellfish harvesting***, fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, and not have more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

Recreational Uses include primary contact recreation and secondary contact recreation. The designated recreational use for this receiving water is Primary Contact Recreation, as defined in Table 8.

Table 8. Recreational Use

Recreational Use	**Criteria**
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies /100 mL.

The designated ***Miscellaneous Marine Water Uses*** for this waterbody include wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

F. Evaluation of Surface Water Quality-based Effluent Limits for Numeric Criteria

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

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

The outfall is 2,670 feet long with a diameter of 36 inches. The 36-inch outfall pipe ties in to a 24-inch diameter outfall pipe and discharges at a depth of 184 feet. There is no diffuser on the end of the pipe. Dilution factors (the ratio of receiving water to effluent) that occur within this zone have been determined at the critical condition using dilution models.

Chronic Mixing Zone

WAC 173-201A-400(7)(b) specifies that mixing zones must not extend in any horizontal direction from the discharge ports for a distance greater than 200 feet plus the depth of water over the discharge ports as measured during MLLW.

The horizontal distance of the chronic mixing zone is 384 feet. The mixing zone extends from the seabed to the top of the water surface.

Acute Mixing Zone

WAC 173-201A-400(8)(b) specifies that in estuarine waters a zone where acute criteria may be exceeded must not extend beyond 10% of the distance established for the chronic zone. The acute mixing zone for Outfall 001 extends 38.4 feet in any direction from any discharge port.

Dilution Factors

The outfall was modeled as part of a diffuser study completed for the Lakota WWTP. The Diffuser Report was submitted to the Department on September 30, 1994. The dilution factors were determined in these zones at the critical condition using U.S. EPA's UM Model (contained in the PLUMES mixing model interface, Edition 3, March 14, 1994). The dilution factors are listed in Table 9.

Ecology determined the impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform, ammonia, metals, nutrients and other toxics as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes

into account the variability of pollutant concentrations in both the effluent and the receiving water.

Table 9. Dilution Factors (DF)

Criteria	Acute	Chronic
Aquatic Life	24:1	263:1
Human Health, Carcinogen		263:1
Human Health, Non-carcinogen		263:1

$CBOD_5$—With technology-based limits, this discharge results in a small amount of $CBOD_5$ loading 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.

Temperature—The state temperature standards include multiple criteria, each with different durations of exposure and points of application. Ecology evaluates each criterion independently to determine reasonable potential and permit limits.

1. **Annual summer maximum**

   The annual maximum temperature criterion (13°C) protects specific categories of aquatic life by controlling the effect of human actions on summer temperatures. Marine water criteria are expressed as the highest one-day annual maximum temperature (1-DMax). Ecology does not have background temperature data for the receiving water in the vicinity of the outfall. Ecology does measure water quality parameters at several monitoring stations in Puget Sound. We evaluated temperature measurements at three locations closest to this facility's outfall for this analysis. The 90^{th} percentile of 1-DMax temperatures measured at these stations at depths greater than 10 meters are: (1) 12.6°C at Station CMB 003 (Commencement Bay – Brown's Point), (2) 13.0°C at Station EAP 001 (East Passage SW of Three Tree Point), and (3) 13.4°C at Station QMH 002 (Quartermaster Harbor – Inner Harbor). The average of these values is 13.0°C. The data indicate that this area of the Puget Sound naturally has temperatures close to the criteria in the summer months.

2. **Incremental warming criteria**

   Some waters are naturally incapable of meeting their assigned threshold temperature criteria. At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

   When Ecology has not yet completed a TMDL, Ecology's policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold

criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25 percent or less of the critical flow. This is because the fully mixed effect on temperature will be only a fraction (0.075°C or less) of the 0.3°C cumulative allowance for all human sources combined.

Lakehaven Utility District reported a maximum effluent temperature of 21.7°C on their NPDES application. Using the dilution ratio of 263:1 (receiving water : effluent) and maximum daily temperature of 13.0°C for the receiving water and 21.7°C for the effluent, the predicted maximum daily temperature inside the dilution zone is ((263x13.0)+(1x21.7))/(263+1) = 13.03°C. Thus, under the worst case scenario, the effluent discharge from this facility results in warming of the ambient temperature by 0.03°C, which is less than the allowable warming temperature of 0.3°C.

Since there is no potential for the effluent to violate the water quality standards for temperature in the receiving water, Ecology placed no limits in the permit for effluent temperature. To acquire better effluent temperature data, the proposed permit requires the Lakehaven Utility District to monitor the effluent temperature during the afternoon hours between 2 pm and 3 pm, 5 times per week during the months of July through September.

3. Temperature acute effects - Instantaneous lethality to passing fish.

The upper 99th percentile daily maximum effluent temperature must not exceed 33°C; unless a dilution analysis indicates ambient temperatures will not exceed 33°C for more than two seconds after discharge. The upper 99th percentile daily maximum effluent temperature prior to discharge is less than 33°C. Therefore there is no instantaneous lethality for passing fish.

pH—Compliance with the technology-based limits of 6.0 to 9.0 will assure compliance with the water quality standards of surface waters because of the high buffering capacity of marine water.

Fecal Coliform—Ecology modeled the numbers of fecal coliform by simple mixing analysis using the technology-based (weekly maximum effluent) limit of 400 organisms per 100 ml and a dilution factor of 263.

Ambient data collected by Ecology at three nearby locations in Puget Sound were considered during this analysis. Table 10 shows that at two nearby monitoring stations, fecal coliform levels are consistently one (or zero).

For protection of shellfish and primary contact recreation, the water quality standards in the vicinity of the outfall require that the geometric mean value of all fecal coliform data sampled be less than 14 colonies/100mL, and that not more than 10 percent of all samples exceed 43 colonies/100mL. Table 10 shows that the geometric mean of all data sampled at these three sample locations is 3 colonies/100 mL, and that 9% of the sample points exceed 43 colonies/100 mL.

With the dilution ratio of 263:1 and the technology-based limit of 400/100 ml, and an ambient fecal concentration of 3/100 mL, Ecology calculated a fecal coliform concentration at the edge of the mixing zone boundary of 5/100 mL, well below the water quality standard of 14 colonies/100 mL. Therefore, the proposed permit includes the technology-based effluent limitation for fecal coliform bacteria.

Table 10. Ambient fecal coliform data

Ambient Monitoring Location	# of Samples	Fecal Coliform, colonies/10 mL		
		Geometric Mean	Maximum	% of samples > 43 /100 mL
Station CMB 003 Commencement Bay – Brown's Point	172	7	640	16%
Station EAP 001 East Passage SW of Three Tree Point	106	1	5	0%
Station QMH 002 Quartermaster Harbor – Inner Harbor	25	1	1	0%
Geometric Mean of All 3 Sets of Data		3		9%

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

The toxic pollutants shown in Table 11 were detected in the effluent. Ecology conducted a reasonable potential analysis (See Appendix D) to determine whether effluent limits for these pollutants would be required in this permit, using procedures given in EPA, 1991.

No valid ambient background data was available for any of these pollutants except ammonia. Ecology found no reasonable potential to exceed the water quality criteria using zero for background (see Appendix D). The proposed permit requires Lakehaven Utility District to continue to collect priority pollutant data throughout the next permit cycle (Condition S11).

Lakota needs an acute WET limit in the next permit because many recent tests have had less than 65% survival in 100% effluent. Ecology believes this high rate of fathead minnow fatality results from high ammonia levels; this is discussed further in the next section. The proposed permit does not include a chronic WET limit because Ecology found no statistically significant toxicity at the ACEC of 4.17% effluent.

Chlorine—Lakota WWTP disinfects with UV and only uses chlorine for back-up. The existing permit has an average monthly chlorine limit of 0.12 mg/L, and an average weekly limit of 0.31 mg/L; the proposed permit includes the same limits. Limit calculations are shown in Appendix D.

Table 11. Toxic Pollutants Detected in Effluent.

Parameter	Maximum Concentration Measured, µg/L
Ammonia	51,500
Arsenic	10
Bis(2-Ethylhexyl) Phthalate	6.3
Cadmium	2
Chloroform	1.5
Chromium - Total	5
Copper	57
Cyanide - Total	25
1,3 Dichlorobenzene	3.18
Mercury	0.2
Toluene	5.7
Zinc	220

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. Table D-2 in Appendix D shows the calculation to correlate the unionized ammonia criteria with total ammonia levels measured in the effluent and the receiving water. Receiving water ammonia levels were determined from the ambient monitoring stations, as summarized in Table 12. The maximum effluent ammonia level was measured in June 2007 as 51.5 mg/L. Calculations using all applicable data, and a dilution ratio of 263:1, show no reasonable potential for this discharge to cause a violation of the ammonia water quality standard.

Table 12. Ambient Ammonia Data

Ambient Monitoring Location	# of Samples	Ammonia as N, mg/L		
		Average	Maximum	90th Percentile
Station CMB 003 Commencement Bay – Brown's Point	183	0.022	0.061	0.048
Station EAP 001 East Passage SW of Three Tree Point	158	0.013	0.061	0.033
Station QMH 002 Quartermaster Harbor – Inner Harbor	30	0.037	0.141	0.090
Average of All 3 Sets of Data		0.024	0.088	0.057

However, almost half of the acute WET tests performed during the current permit cycle resulted in less than 65% survival in 100% effluent (see WET results in Appendix E.) 16% of these tests showed 0% survival. This is likely a result of the high ammonia concentrations in the effluent. Figure 3 compares survival of fathead minnows to ammonia levels in the effluent. It should be noted that the WET test samples were composite samples pulled over a 24 hour period while the ammonia samples were grab samples, so the timing of the sampling is not ideal for comparison.

In addition to toxic effects, ammonia is a nutrient and can impact the dissolved oxygen levels in surface waters. Nutrient loading to the Puget Sound has seen increased scrutiny in recent years, and it is likely that nutrients will be more closely controlled in the near future. Lakehaven Utility District needs to be aware of this, and should re-focus efforts to provide additional nutrient control for the Lakota effluent. The treatment plant currently provides very little nitrification and denitrification compared to other activated sludge facilities in the area.

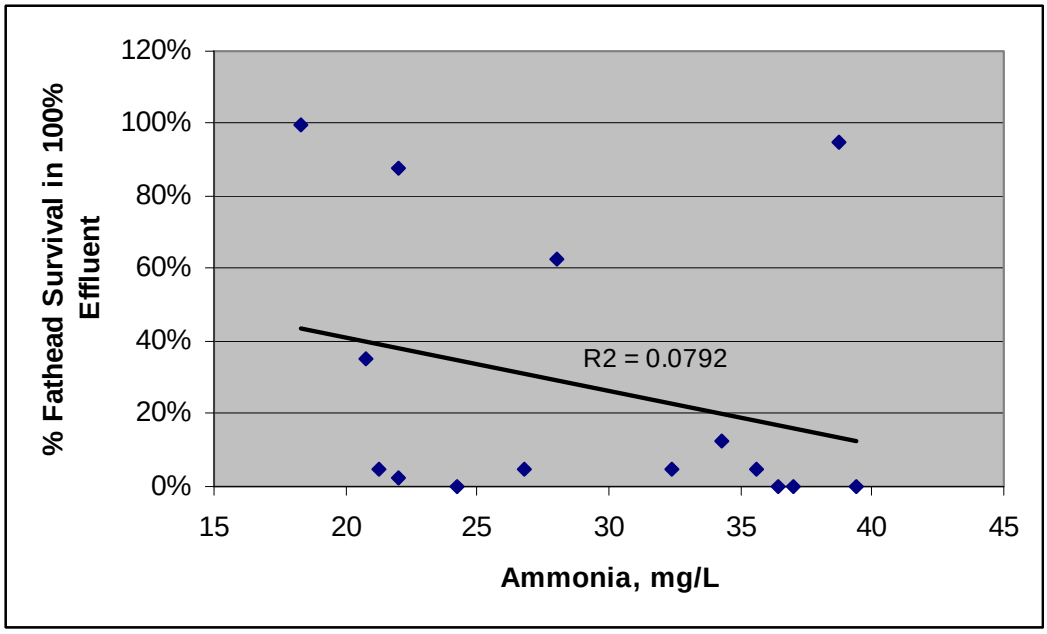


Figure 3. Correlation between ammonia concentration and % survival of fathead minnows.

G. Whole Effluent Toxicity

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

- *Acute toxicity tests measure mortality as the significant response* to the toxicity of the effluent. Dischargers who monitor their wastewater using acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.

- *Chronic toxicity tests measure various sub-lethal toxic responses,* such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Ecology-accredited WET testing laboratories use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff knows about WET testing and how to calculate an NOEC, LC_{50}, EC_{50}, IC_{25}, etc. Ecology gives all accredited labs the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (http://www.ecy.wa.gov/biblio/9580.html), which is referenced in the permit. Ecology recommends that Lakehaven Utility District send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

Acute Toxicity

The existing permit required the Lakota WWTP to perform quarterly acute WET tests to determine compliance with the acute limit. Lakota's effluent never exceeded the acute limit because the ACEC sample never showed a statistically significant difference in the test organism survival from the control sample. However, WET testing conducted during the previous permit term showed the facility's effluent has a reasonable potential to cause acute toxicity in the receiving water because several tests resulted in less than 65% survival in 100% effluent. Therefore, the proposed permit includes an acute toxicity limit. *The effluent limit for acute toxicity is: no acute toxicity detected in a test sample representing the acute critical effluent concentration (ACEC).* The acute critical effluent concentration (ACEC) is the concentration of effluent at the boundary of the acute mixing zone during critical conditions. The ACEC equals 4.17% effluent.

Compliance with an acute toxicity limit is measured by an acute toxicity test comparing test organism survival in the ACEC (using a sample of effluent diluted to equal the ACEC) to survival in nontoxic control water. The Lakota WWTP is in compliance with the acute toxicity limit if there is no statistically significant difference in test organism survival between the ACEC sample and the control sample.

Chronic Toxicity

The existing permit required the Lakota WWTP to perform chronic WET tests twice during the permit term. WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water chronic toxicity because there was no statistically significant toxicity at the ACEC of 4.17% effluent. Therefore, the proposed permit will not impose a chronic WET limit. Lakota WWTP must re-test the effluent before submitting an application for permit renewal.

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization

- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased. Lakehaven Utility District may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing after the process or material changes have been made.

H. Human Health

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

Ecology determined the effluent may contain chemicals of concern for human health, based on the facility's status as an EPA major discharger and data indicating regulated chemicals occur in the discharge.

Ecology evaluated the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d). We followed the procedures published in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and Ecology's *Permit Writer's Manual* to make a reasonable potential determination. Our evaluation showed that the discharge has no reasonable potential to cause a violation of water quality standards and an effluent limit is not needed.

I. Sediment Quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400).

Lakehaven completed extensive sediment sampling and submitted a *Sediment Sampling and Analysis Report* in June 2006. The report concluded that "the sediment in the areas surrounding the Lakota and Redondo outfalls is high quality and does not have concentrations that exceed SQS criteria. The sediment concentrations are not a risk to local populations of marine organisms." Therefore the permittee does not have to resample sediments in the vicinity of the existing outfall.

J. Ground Water Quality Limits

The ground water quality standards (chapter 173-200 WAC) protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100). The Lakota WWTP does not discharge wastewater to the ground. No permit limits are required to protect ground water.

K. Comparison of Effluent Limits With the Previous Permit Issued on July 15, 2003

The proposed effluent limits are the same as the existing limits.

IV. MONITORING REQUIREMENTS

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

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 2002) for activated sludge treatment facilities >5.0 MGD.

Lakehaven Utility District made a request during the drafting of the existing permit to reduce fecal coliform sample frequency from seven samples per week to three samples per week. For an activated sludge facility with an average design flow greater than 5.0 MGD, Ecology's *Permit Writer's Manual* recommends seven samples per week for fecal coliform. Ecology calculated the ratio of the long-term average to the average monthly limit (LTA/AML) for Lakota's effluent (fecal) to be 0.48 with a standard deviation of 3.6 and a coefficient of variation (COV) of 1.43. Ecology granted a sample frequency of 4 times per week in the existing permit because, according to the *Permit Writer's Manual*, Lakota's data supported a sampling frequency of 15 times per month. Since the facility consistently met permit limits throughout the permit cycle, Ecology included the same frequency, 4 samples per week, in the proposed permit.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

Lab Accreditation

Ecology requires that all monitoring data (with the exception of certain parameters) be prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* Ecology accredited the laboratory at this facility for BOD/CBOD, chlorine (residual), DO, pH, TSS, Turbidity, and fecal coliform. The lab accreditation number is M028.

V. OTHER PERMIT CONDITIONS

A. Reporting and Record Keeping

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

B. Prevention of Facility Overloading

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 restricts the amount of flow and TSS and BOD loading to the plant.

I/I Study

Significant portions of the collection system are 30 years old. Due to the age of the collection system, Ecology expects that the system leaks. The permit will require the collection system to be characterized for the presence of leaks:

- How much of the annual average and peak daily flow under worst conditions (inflow or infiltration) can be attributed to leaks?
- Where are the (individual) leaks?
- How large is each leak or how much inflow or infiltration does a run of sewer contribute?
- Are the force mains and/or inverted siphons experiencing exfiltration?

Three good references to aid in these tasks are:

1. American Society of Civil Engineers and Water Environment Federation Manual of Practice FD-6, *Existing Sewer Evaluation and Rehabilitation*.
2. U.S. Environmental Protection Agency, *Handbook for Sewer System Infrastructure Analysis and Rehabilitation*, EPA/625/6-91/030, 1991.
3. Washington State Department of Transportation, *Standard Specifications for Road, Bridge, and Municipal Construction*, 2002.

Following characterization of the leaks, Ecology may require corrective actions by issuing an administrative order following review of the assessment.

C. Operation and Maintenance (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. The proposed permit requires submission of an updated O&M manual for the entire sewage system.

D. Pretreatment

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), Ecology has been delegated authority to administer the

Pretreatment Program**.** Under this delegation of authority, Ecology issues wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue their own wastewater discharge permits. The requirements for a Pretreatment Program are contained in Title 40, Part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), Ecology is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) (40 CFR 403.8 (f)(1)(i)).

Ecology is responsible for issuing State Waste Discharge Permits to industrial users of the sewer system. Industrial dischargers must obtain these permits from Ecology before the POTW accepts the discharge (WAC 173-216-110(5)). Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to take "continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs)" discharging to their sewer system. Examples of such routine measures include regular review of business tax licenses, water billing records, and existing connection authorization records. System maintenance personnel can also identify and report new industrial dischargers in the course of performing their jobs. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW must notify an industrial discharger, in writing, of their responsibility to apply for a State Waste Discharge Permit and send a copy of the written notification to Ecology.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

- The first portion of the provision prohibits acceptance of pollutants, which causes pass-through or interference. The definitions of pass-through and interference are in Appendix B of the fact sheet.

- The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition, wastes with excessive BOD, petroleum-based oils, or which result in toxic gases are prohibited. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

- The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from Ecology. These discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

SUPPORT BY ECOLOGY FOR DEVELOPING PARTIAL PRETREATMENT PROGRAM BY POTW

Ecology commits to providing technical and legal assistance to the Lakehaven Utility District in fulfilling these joint obligations. In particular, Ecology will assist with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

E. Residual Solids Handling

To prevent water quality problems the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under chapter 70.95J RCW, chapter 173-308 WAC "Biosolids Management," and chapter 173-350 WAC "Solid Waste Handling Standards." The disposal of other solid waste is under the jurisdiction of the King County Health Department.

F. Outfall Evaluation

Cosmopolitan Engineers inspected the Lakota outfall in November 2003, and found the outfall to be in good working condition. Lakehaven Utility District is working with DNR, DOH, and Ecology in planning the construction of a new outfall. The primary incentive for an outfall extension is to provide enhanced protection to the nearby geoduck beds. Since the existing outfall will likely be out of commission in the near future, the proposed permit does not require an outfall inspection. If the new outfall does not get constructed within this permit cycle, an outfall inspection will likely be required with the next permit cycle.

G. General Conditions

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

VI. PERMIT ISSUANCE PROCEDURES

A. Permit Modifications

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

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

B. Proposed Permit Issuance

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

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

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

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

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

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

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

Lakehaven Utility District

2006. *Lakota and Redondo Wastewater Treatment Plants, Sediment Sampling and Analysis Report*. Prepared by Cosmopolitan Engineering Group, June 2006.

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

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

Washington State Department of Ecology.

2006. *Permit Writer's Manual.* Publication Number 92-109 (http://www.ecy.wa.gov/biblio/92109.html)

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

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/wastewater/index.html)

Water Pollution Control Federation.

1976. *Chlorination of Wastewater.*

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

1979. *In-stream Deoxygenation Rate Prediction.* Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to Lakehaven Utility District – Lakota Wastewater Treatment Plant. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on January 28, 2008 and February 4, 2008 in *The Seattle Times* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology placed a Public Notice of Draft on June 3, 2008 in *The Seattle Times* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice –

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

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting* which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone, 425-649-7000, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008

The author of this permit and fact sheet is Alison Evans.

APPENDIX B—GLOSSARY

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

AKART—An acronym for "all known, available, and reasonable methods of prevention, control and treatment."

Ambient Water Quality—The existing environmental condition of the water in a receiving water body.

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

Average Monthly Discharge Limitation—The average of the measured values obtained over a calendar month's time.

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

BOD_5—Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

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

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

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

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

Compliance Inspection - Without Sampling—A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling—A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and, as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

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

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

Continuous Monitoring—Uninterrupted, unless otherwise noted in the permit.

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

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

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

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

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

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

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

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

Method Detection Level (MDL)—The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

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

Mixing Zone—An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

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

pH—The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)—A calculated value five times the MDL (method detection level).

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

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)—Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

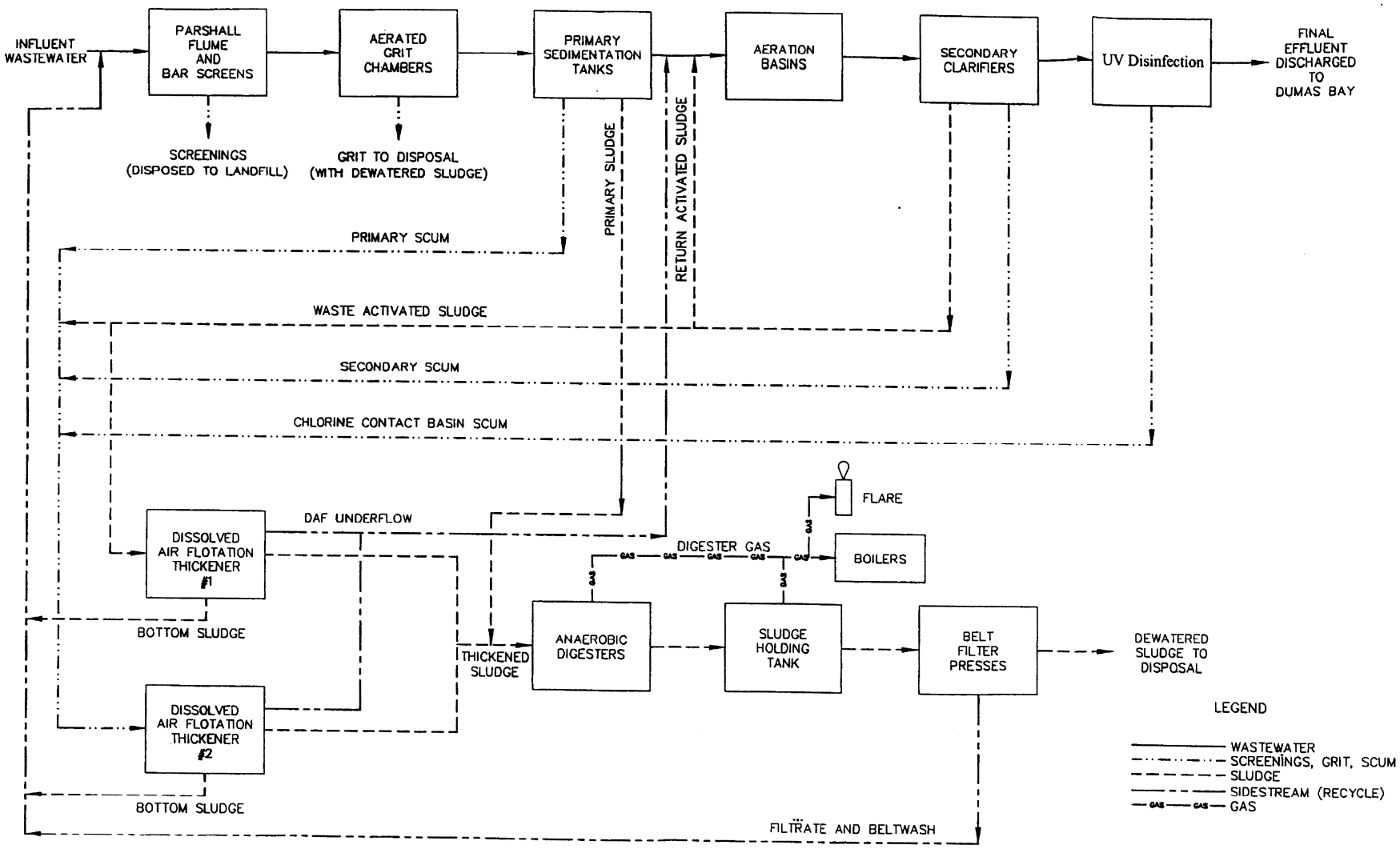
State Waters—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

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

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

Water Quality-based Effluent Limit—A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

APPENDIX C—FACILITY FLOW DIAGRAM



APPENDIX D—TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at http://www.ecy.wa.gov .

Table D-1. Simple Mixing Calculations for Fecal Coliform and Temperature

Lakota WWTP Receiving Water Calculations

Chronic Dilution Factor	263	1	
Acute Dilution Factor	24		
Facility Design Max Month Flow	10.00	mgd	
	15.47	cfs	

Fecal Coliform Dilution Calculation

Receiving Water Fecal Coliform	3	#/100 ml	
Effluent Fecal Coliform - worst case	400	#/100 ml	
Downstream Fecal Coliform	**5**	#/100 ml	
Difference between mixed and ambient	**2**	#/100 ml	
Primary Contact and Shellfish Habitat Surface Water Criteria	*14*	*#/100 ml*	*Current state WAC designation*

Conclusion: At design flow, the discharge has no reasonable potential for violation of water quality standards for fecal coliform.

Temperature Dilution Calculation

Receiving Water Temperature	13.00	ºC	
Effluent Temperature - worst case	21.7	ºC	
Downstream Temperature	**13.03**	ºC	
Difference between mixed and ambient	**0.03**	ºC	
Surface Water Criteria - Extraordinary Quality Aquatic Life Use	*13.0*	ºC	*Current state WAC designation*

Conclusion: At design flow, the discharge has no reasonable potential for violation of water quality standards for temperature (<0.3ºC).

Table D-2. Saltwater Un-ionized Ammonia Criteria Calculation

Calculation of seawater fraction of un-ionized ammonia
from Hampson (1977). Un-ionized ammonia criteria for
salt water are from EPA 440/5-88-004. Revised 19-Oct-93.

Facility: Lakota WWTP
Permit No: WA-0022262-4(M)

INPUT*	
1. Temperature, deg C (90th percentile):	13.3
2. pH, (90th percentile):	8.2
3. Salinity, g/Kg (90th percentile):	30.2
OUTPUT	
1. Pressure (atm; EPA criteria assumes 1 atm):	1.0
2. Molal Ionic Strength (not valid if >0.85):	0.621
3. pKa8 at 25 deg C (Whitfield model "B"):	9.317
4. Percent of Total Ammonia Present as Unionized:	3.091%
5. Unionized ammonia criteria (mg un-ionized NH3 per liter) from EPA 440/5-88-004	
Acute:	0.233
Chronic:	0.035
6. Total Ammonia Criteria (mg/L as NH3)	
Acute:	7.54
Chronic:	1.13
7. Total Ammonia Criteria (mg/L as NH3-N)	
Acute:	6.20
Chronic:	0.93

* Data from ambient monitoring station no. 3 off Browns Point, north of Commencement Bay

Table D-3. Reasonable Potential Analysis – Aquatic Life

				State Water Quality Standards		Max concentration at edge of...			Calculations					
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Conc. (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?		Max effluent conc. measured (metals as total recoverable)	Coeff Variation		# of samples	Multiplier
			ug/L	*ug/L*	*ug/L*	*ug/L*	*ug/L*		*Pn*	*ug/L*	*CV*	*s*	*n*	
AMMONIA (unionized)			4	6196	931	1880	175	**NO**	0.970	51500	0.60	0.55	100	0.87
ARSENIC (dissolved)	1.00			69.0	36.00	0.58	0.05	**NO**	0.854	10.00	0.60	0.55	19	1.39
CADMIUM	0.99	0.99		42.0	9.30	0.11	0.01	**NO**	0.854	2.00	0.60	0.55	19	1.39
CHROMIUM(HEX)	0.99	0.99		1100	50.00	0.29	0.03	**NO**	0.854	5.00	0.60	0.55	19	1.39
COPPER	0.83	0.83		4.80	3.10	2.74	0.25	**NO**	0.854	57.00	0.60	0.55	19	1.39
CYANIDE*				9.10	2.80	0.62	0.06	**NO**	0.368	5.00	0.60	0.55	3	3.00
MERCURY	0.85			1.80	0.025	0.01	0.001	**NO**	0.854	0.20	0.60	0.55	19	1.39
ZINC	0.95	0.95		90	81	12.03	1.10	**NO**	0.854	220.00	0.60	0.55	19	1.39

** Weak acid dissociable Cyanide (instead of Total Cyanide) measurements used for aquatic life calculation*

Chronic Dilution Factor:	263
Acute Dilution Factor:	24

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)

Table D-4. Reasonable Potential Analysis – Human Health

Parameter	Ambient Conc. (Geo. Mean) *ug/L*	Water Quality Criteria for Protection of Human Health *ug/L*	Max conc. at edge of chronic mixing zone. *ug/L*	LIMIT REQ'D ?	Estimated Percentile at 95% Confidence	*Pn*	Max effluent conc. measured *ug/L*	Coeff Variation *CV*	**S**	# of samples from which # in col. K was taken *n*	Multiplier	Calculated 50th percentile Effluent Conc. (When n>10)
ARSENIC (inorganic)	0.0000	0.14	0.02	**NO**	0.50	0.85	10.00	0.60	0.6	19	0.56	
BIS(2-ETHYLHEXYL) PHTHALATE	0.0000	5.90	0.01	**NO**	0.50	0.47	6.30	0.60	0.6	4	1.04	2.40
CHLOROFORM	0.0000	470	0.00	**NO**	0.50	0.47	1.50	0.60	0.6	4	1.04	1.00
CYANIDE*	0.0000	220,000	0.02	**NO**	0.50	0.37	25.0	0.60	0.6	3	1.20	5.00
1,3 DICHLOROBENZENE	0.0000	2,600	0.01	**NO**	0.50	0.47	3.18	0.60	0.6	4	1.04	2.00
MERCURY	0.0000	0.15	0.00	**NO**	0.50	0.85	0.20	0.60	0.6	19	0.56	
TOLUENE	0.0000	200,000	0.00	**NO**	0.50	0.47	5.70	0.60	0.6	4	1.04	1.00

** Total Cyanide (instead of weak acid dissociable Cyanide) measurements used for human health calculation*

Chronic Dilution Factor:	263

Table D-5. Chlorine Limit Calculation

Parameter	Acute Dil'n Factor	Chronic Dil'n Factor	Ambient Conc. *ug/L*	**Permit Limit Calculation Summary**					**Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations**							**Statistical variables for permit limit calculation**			
				Water Quality Standard Acute *ug/L*	Water Quality Standard Chronic *ug/L*	Average Monthly Limit (AML) ug/L	Average Monthly Limit (AML) lbs/day	Max Daily Limit (MDL) ug/L	WLA Acute *ug/L*	WLA Chronic *ug/L*	LTA Acute *ug/L*	LTA Chronic *ug/L*	LTA Coeff. Var. (CV) *decimal*	LTA Prob'y Basis *decimal*	Limiting LTA *ug/L*	Coeff. Var. (CV) *decimal*	AML Prob'y Basis *decimal*	MDL Prob'y Basis *decimal*	# of Samples per Month *n*
Chlorine	24.0	263		13	7.50	**119**	**9.9**	**312**	312	1973	100	1040	0.60	0.99	100.2	0.60	0.95	0.99	30

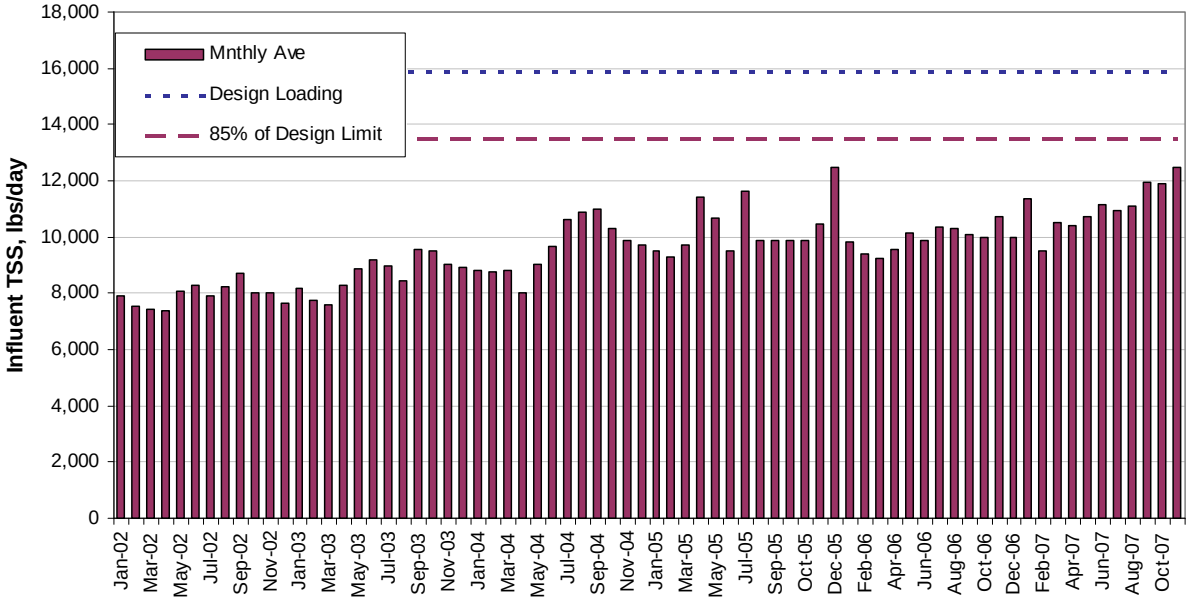
This spreadsheet calculates water quality based permit limits based on the two value steady state model using the State Water Quality standards contained in WAC 173-201A. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 99. Last revision date 9/98.

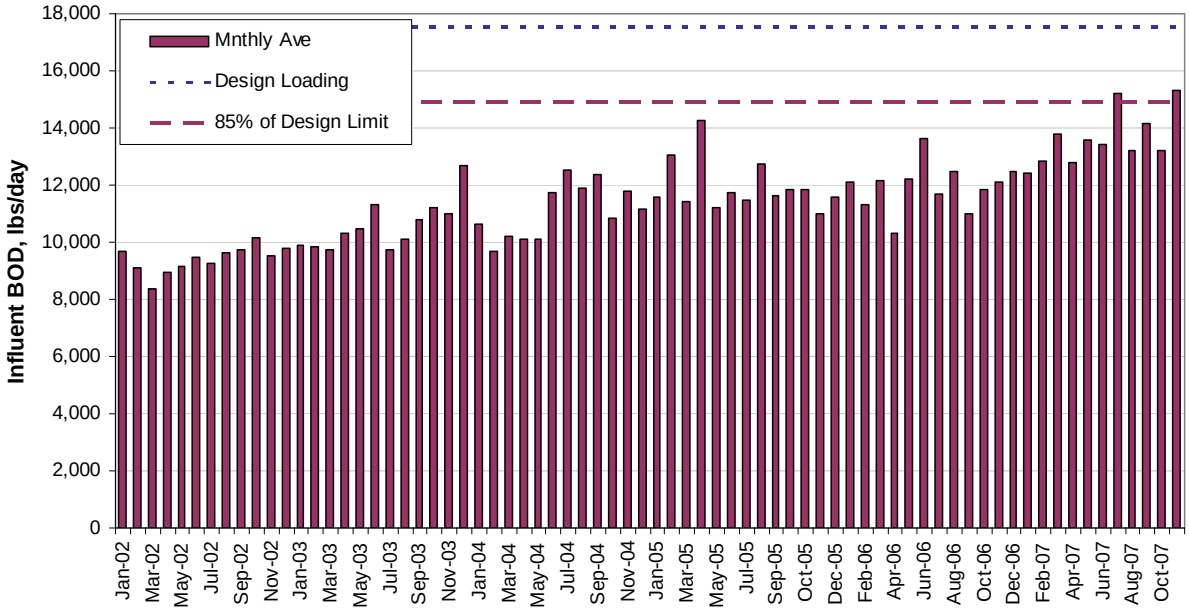
APPENDIX E—LAKOTA WWTP DATA, 2003 - 2007

	Influent														Effluent														
Date	Flow, MGD	Flow, MGD	BOD, mg/L	BOD, mg/L	BOD, ppd	BOD, ppd	CBOD, mg/L	CBOD, mg/L	CBOD, ppd	CBOD, ppd	TSS, mg/L	TSS, mg/L	TSS, ppd	TSS, ppd	CBOD, mg/L	CBOD, mg/L	CBOD, ppd	CBOD, ppd	CBOD, % Removal	TSS, mg/L	TSS, mg/L	TSS, ppd	TSS, ppd	TSS, % Removal	PH	PH	Coliform, #/100 ml	Coliform, #/100 ml
	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Min	Max	GEM	GM7
1/1/03	4.34	6.05	283	340	9889	11646	198	260	7154	8906	228	320	8202	10605	7	10	261	352	96	17	21	623	759	92	6.9	7.3	7	9
2/1/03	4.05	4.87	298	320	9852	10446	220	260	7484	9537	231	260	7771	9081	9	12	324	403	96	19	22	638	757	92	6.9	7.2	15	26
3/1/03	4.09	4.95	300	320	9738	10163	213	270	7254	8991	224	280	7601	9932	9	10	296	357	96	22	26	769	923	90	6.9	7.2	16	32
4/1/03	4.18	4.74	296	330	10337	12525	256	320	9041	11857	237	270	8305	10473	9	9	320	331	96	17	20	609	663	93	7.1	7.3	22	23
5/1/03	4.18	4.66	298	320	10451	11396	269	350	9469	13591	252	300	8852	10236	11	12	403	428	96	23	29	817	982	91	7.1	7.3	28	39
6/1/03	4.13	4.44	325	410	11323	14341	281	360	9758	13024	265	330	9164	11350	7	8	242	299	98	16	21	575	753	94	7.0	7.2	20	30
7/1/03	4.04	4.24	290	330	9752	11309	271	350	9148	12067	266	320	8995	10795	11	12	371	396	96	26	29	879	975	90	7.0	7.2	29	44
8/1/03	4.14	4.74	297	320	10085	10854	291	360	9900	12085	243	290	8426	10083	11	12	363	430	96	22	26	774	887	91	7.1	7.3	43	82
9/1/03	4.25	4.54	308	340	10782	12111	295	320	10271	11398	270	320	9575	11441	10	10	335	342	97	22	23	768	800	92	7.0	7.3	37	65
10/1/03	4.53	9.41	296	320	11222	14184	295	380	11282	14184	251	320	9514	12555	8	11	339	389	97	18	20	684	990	93	6.8	7.2	54	100
11/1/03	4.52	5.83	303	370	11009	12507	269	350	9759	13220	243	310	9016	12795	12	15	429	596	95	23	27	874	1025	90	7.0	7.3	64	138
12/1/03	4.67	5.48	322	370	12658	15982	284	320	10758	13242	233	270	8925	10235	12	15	561	1210	96	23	31	873	1210	90	7.2	7.4	60	209
1/1/04	4.9	6.23	265	320	10643	14270	237	360	9348	13378	221	250	8831	11053	11	13	444	548	95	24	26	951	1042	89	7.1	7.3	60	116
2/1/04	4.47	5.34	268	280	9661	10076	226	260	8202	8864	236	310	8771	11609	10	12	354	390	96	19	22	695	786	92	7.1	7.3	68	102
3/1/04	4.03	4.35	312	340	10226	10727	259	310	8504	10163	265	310	8813	11128	11	13	375	430	96	22	25	731	834	92	7.1	7.3	41	67
4/1/04	3.8	4.01	320	340	10115	10645	270	370	8468	11615	253	290	8005	9462	12	20	474	765	95	19	26	720	834	93	7.1	7.4	111	291
5/1/04	4.04	4.67	303	320	10107	11266	263	320	8721	12431	271	350	9047	12598	9	11	381	476	96	23	32	943	1327	92	7.1	7.4	62	146
6/1/04	4.45	4.76	312	340	11754	12792	270	320	10156	12405	259	300	9668	11679	10	11	393	487	96	19	26	771	1070	92	7.3	7.4	73	137
7/1/04	4.87	5.3	318	340	12522	12840	258	320	10130	12856	272	410	10624	16642	10	13	417	512	96	23	32	934	1311	91	7.1	7.4	69	248
8/1/04	4.79	5.03	295	310	11916	12886	246	310	9909	12283	272	310	10897	12272	9	16	396	677	96	18	21	716	895	94	6.9	7.3	64	121
9/1/04	4.65	5.14	326	380	12380	13859	257	370	9944	13494	281	390	10974	14484	11	15	439	574	96	21	31	969	1243	91	6.9	7.4	85	125
10/1/04	4.44	5.17	298	320	10853	11761	247	310	8950	11456	276	340	10299	13372	9	12	357	454	96	20	27	808	1059	93	7.1	7.5	131	204
11/1/04	4.44	4.78	323	350	11814	13220	247	360	9132	14018	266	320	9877	11809	6	9	256	348	97	15	19	602	763	94	7.0	7.4	69	183
12/1/04	4.6	5.5	296	320	11140	11871	246	380	9249	14059	255	340	9710	13373	10	12	422	508	96	24	30	1002	1192	91	6.9	7.3	94	242
1/1/05	4.64	6.56	310	340	11581	12473	208	270	7808	8639	249	300	9524	13511	7	7	305	403	97	16	20	722	840	93	6.9	7.3	113	149
2/1/05	4.25	4.74	373	450	13074	15447	254	290	8853	10228	263	360	9307	12661	9	10	386	435	96	20	23	829	925	92	6.9	7.2	82	220
3/1/05	4.36	5.59	324	340	11403	12080	245	280	8671	9714	267	380	9692	12639	8	11	439	318	97	16	21	763	664	94	6.9	7.3	83	193
4/1/05	1.6	5.58	383	590	14269	22069	275	400	10257	14962	299	440	11430	16521	8	9	334	352	97	18	19	760	800	94	6.9	7.2	115	198
5/1/05	4.51	5.07	303	350	11191	12814	248	320	9220	11828	284	390	10680	14416	10	14	411	619	96	21	29	874	1234	93	6.9	7.3	104	237
6/1/05	4.48	4.76	318	340	11750	12794	257	350	9556	13354	254	380	9530	14499	7	9	290	402	97	16	20	669	851	94	7.0	7.3	25	55
7/1/05	4.61	4.8	298	310	11449	11898	247	310	9435	12263	302	420	11629	16170	8	10	332	384	97	17	19	687	735	94	7.1	7.3	7	11
8/1/05	4.64	4.86	332	370	12762	14232	274	340	10589	13605	254	290	9881	11604	9	12	375	460	96	21	27	838	1068	92	7.0	7.3	73	113
9/1/05	4.48	7.24	323	350	11650	12251	265	340	9663	12298	269	340	9902	12757	10	13	388	528	96	22	25	878	976	92	7.0	7.3	79	187
10/1/05	4.26	4.73	343	360	11827	12073	276	320	9565	10504	274	320	9865	11914	9	12	360	451	97	22	28	868	1104	92	7.1	7.5	168	355
10/1/05	4.26	4.73	343	360	11827	12073	276	320	9565	10504	274	320	9865	11914	9	12	360	451	97	22	28	868	1104	92	7.1	7.5	168	355
11/1/05	4.49	5.15	306	340	11003	12842	236	330	8604	11702	280	380	10464	13475	12	15	504	605	95	25	30	1064	1144	91	7.1	7.4	73	239
12/1/05	4.72	6.42	308	360	11585	13649	232	280	8734	11132	255	330	12473	9693	13	14	581	749	94	27	29	1209	1590	89	6.8	7.4	75	92
1/1/06	6.07	8.43	255	300	12107	13537	181	220	8778	11244	197	250	9818	13352	9	11	642	497	95	25	35	1481	2209	87	6.8	7.2	122	294
2/1/06	4.82	6.15	280	300	11303	12528	211	240	8385	10115	236	350	9410	15252	10	13	474	554	95	27	34	1250	1485	89	7.0	7.4	239	303
3/1/06	4.43	4.81	332	410	12141	15165	224	270	8134	9721	250	300	9226	10801	9	10	385	423	96	25	31	1061	1350	90	7.0	7.5	140	260
4/1/06	4.48	4.84	285	310	10318	11435	250	280	9099	10100	257	290	9549	10702	10	12	422	522	96	30	40	1283	1857	88	7.0	7.4	150	220
5/1/06	4.39	4.68	334	400	12203	14445	251	290	9103	10332	277	340	10167	11824	10	10	383	437	96	24	28	953	1195	91	7.0	7.4	180	340
6/1/06	4.64	5.24	360	430	13608	16109	272	400	10304	15109	257	290	9876	11806	9	11	361	454	97	23	34	948	1382	91	7.0	7.4	120	216
7/1/06	4.61	5.13	313	360	11689	13030	269	310	10146	12076	270	310	10335	12159	9	12	346	468	97	17	20	687	774	94	7.0	7.4	68	130
8/1/06	4.53	4.74	334	350	12476	13165	285	340	10648	13429	273	370	10320	13932	10	11	397	440	96	18	23	710	920	93	7.2	7.6	110	190
9/1/06	4.48	4.89	300	330	10979	12085	256	300	9391	11389	270	350	10086	14277	8	11	318	443	97	16	21	630	863	94	7.2	7.4	22	42
10/1/06	4.4	4.86	328	370	11825	13105	262	310	9347	11327	272	340	9979	12922	6	8	250	325	98	11	13	422	497	96	7.1	7.4	26	53
11/1/06	5.74	7.97	274	330	12108	13894	221	260	10324	13416	223	260	10727	14620	6	8	307	440	97	13	18	694	1053	94	6.9	7.4	67	140
12/1/06	5.51	8.25	253	280	12461	14449	213	280	9930	11663	213	280	9972	14603	10	12	512	552	95	13	14	631	741	94	7.0	7.3	31	56
1/1/07	5.96	8.11	256	290	12447	14722	199	250	9802	16229	230	580	11339	28897	9	10	471	645	95	13	16	682	962	94	7.0	7.3	26	39
2/1/07	5.01	5.76	310	370	12836	14506	235	290	9750	12463	227	300	9496	12463	9	11	403	465	96	12	14	525	617	95	7.1	7.4	42	83
3/1/07	5.4	6.44	318	370	13799	16491	232	320	10120	14275	234	300	10511	12933	8	9	364	409	96	12	13	604	670	95	7.0	7.3	25	67
4/1/07	4.9	5.57	315	360	12774	14658	248	310	9987	12622	253	300	10387	13088	8	9	332	391	97	13	17	562	730	95	7.1	7.3	20	56
5/1/07	4.68	5.16	348	400	13574	15569	232	280	9038	10595	276	370	10749	14133	7	9	297	379	97	13	15	552	611	95	7.0	7.3	30	76
6/1/07	4.73	5.11	345	410	13439	15859	243	280	9511	10961	280	360	11140	13892	7	8	303	328	97	12	14	509	570	96	7.1	7.3	24	41
7/1/07	4.79	6.03	393	510	15209	20016	276	340	10780	13489	273	310	10950	12622	5	5	194	209	98	11	12	447	510	96	7.0	7.4	14	33
8/1/07	4.78	8.33	336	430	13229	16837	222	250	8793	9816	275	390	11089	16266	6	7	228	294	98	10	13	426	545	96	7.2	7.4	10	20
9/1/07	4.75	5.29	363	440	14134	16876	248	290	9739	12676	303	460	11971	20107	9	15	367	415	96	24	48	978	1878	92	7.2	7.5	45	115
10/1/07	4.89	5.52	322	360	13212	15838	246	290	9904	11796	290	490	11890	19742	5	8	187	300	98	10	16	429	661	97	7.1	7.4	11	18
11/1/07	4.74	5.27	395	460	15320	17452	281	410	10982	16314	313	560	12463	21246	9	11	383	464	96	17	23	733	994	94	7.1	7.4	26	64
AVE:	4.54	5.52	314	358	11813	13536	250	314	9408	12017	259	339	9926	13208	9	11	372	462	96	19	24	783	986	93	7.0	7.3	67	134
MIN:	1.60	4.01	253	280	9661	10076	181	220	7154	8639	197	250	7601	9081	5	5	187	209	94	10	12	422	497	87	6.8	7.2	7	9
MAX:	6.07	9.41	395	590	15320	22069	295	410	11282	16314	313	580	12473	28897	13	20	642	1210	98	30	48	1481	2209	97	7.3	7.6	239	355
Design	10.00				17515								15850		25	40	2085	3336	85	30	40	2502	3753	85	6.0	9.0	200	400
85%	8.50				14888								13473				1772	2836				2127	3190					

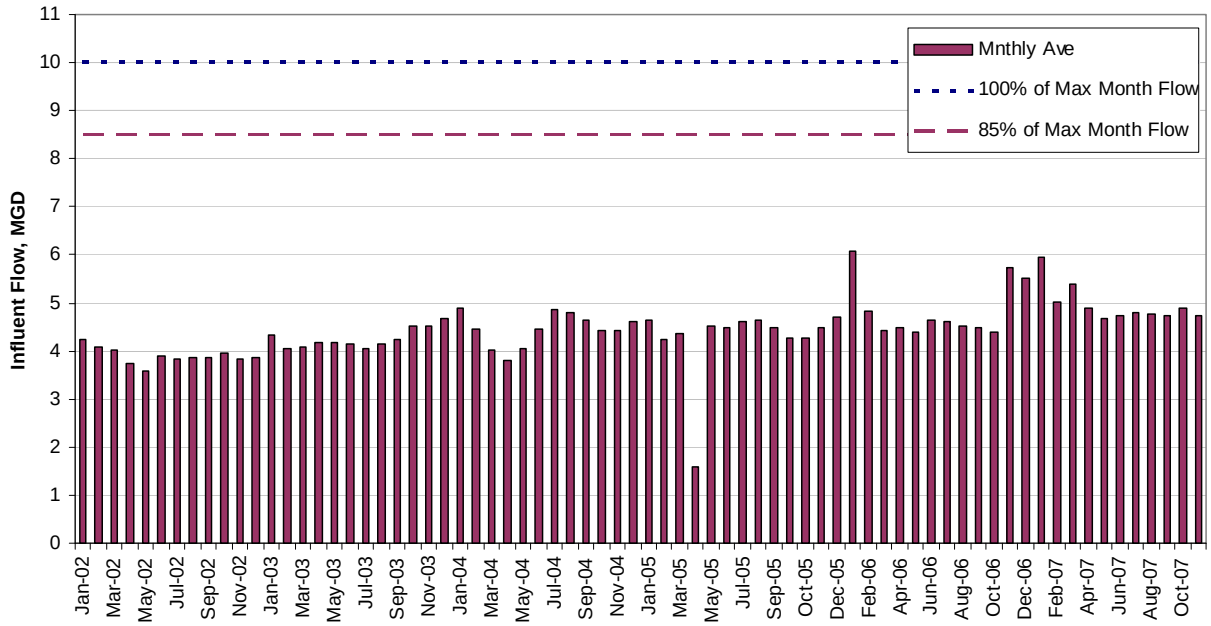
exceeds permit limits

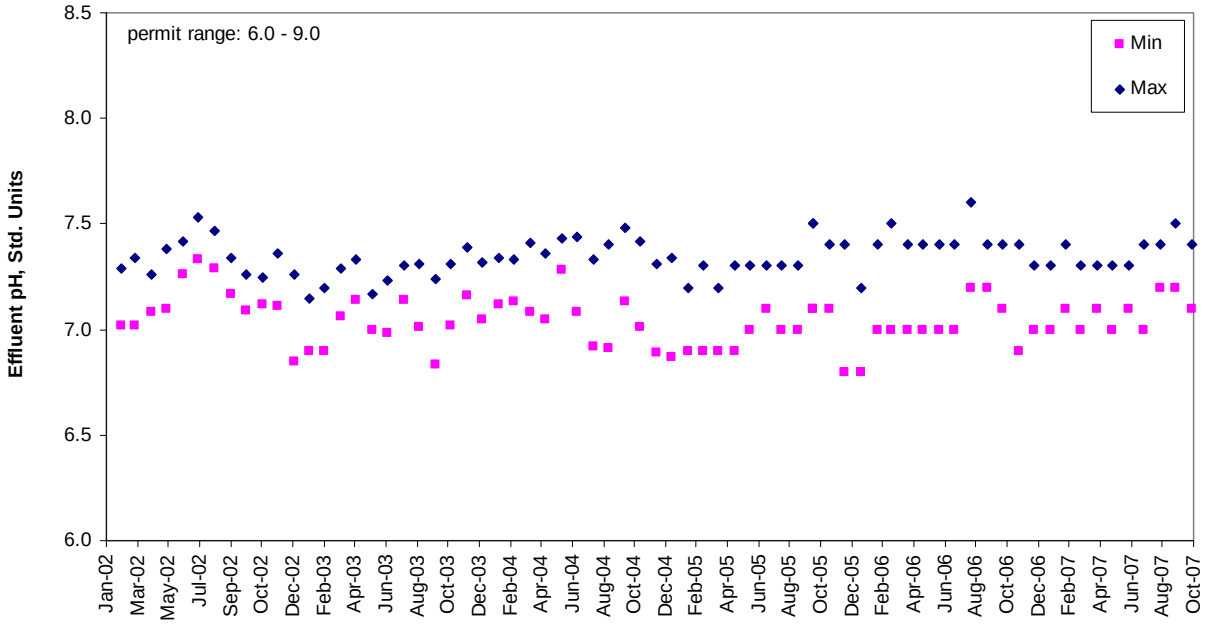
(APPENDIX E— LAKOTA WWTP DATA, continued)





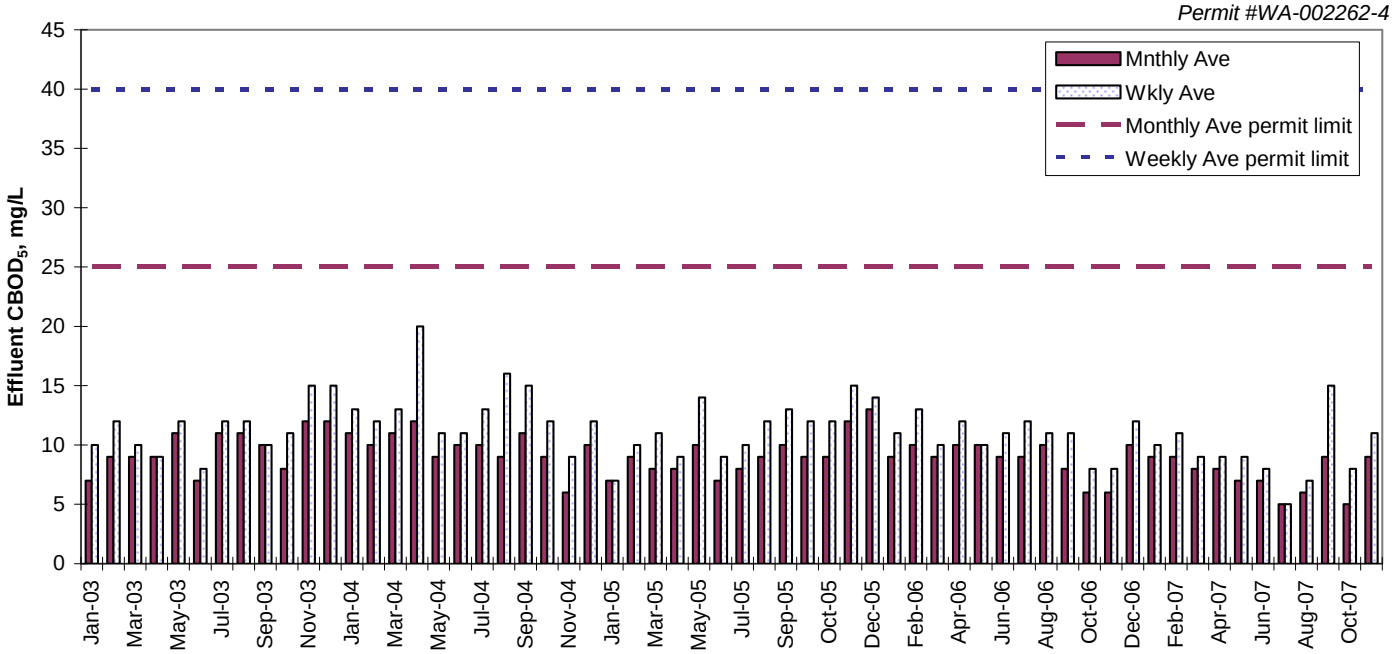
(APPENDIX E— LAKOTA WWTP DATA, continued)

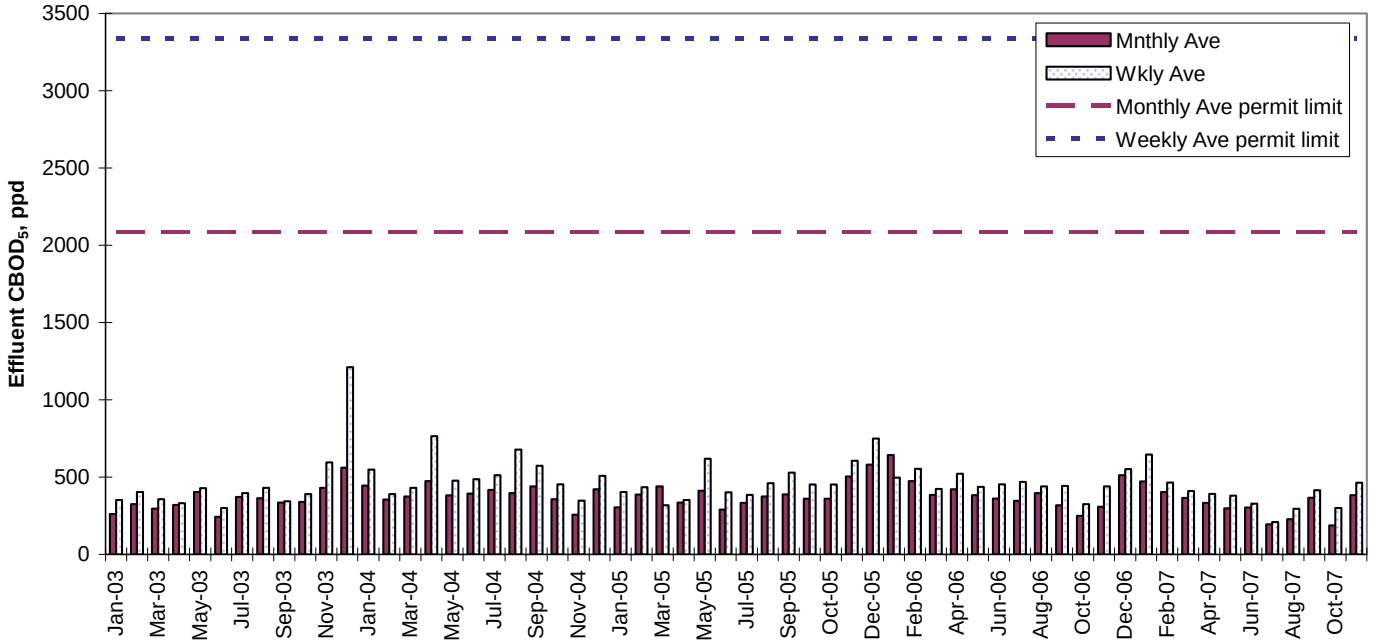




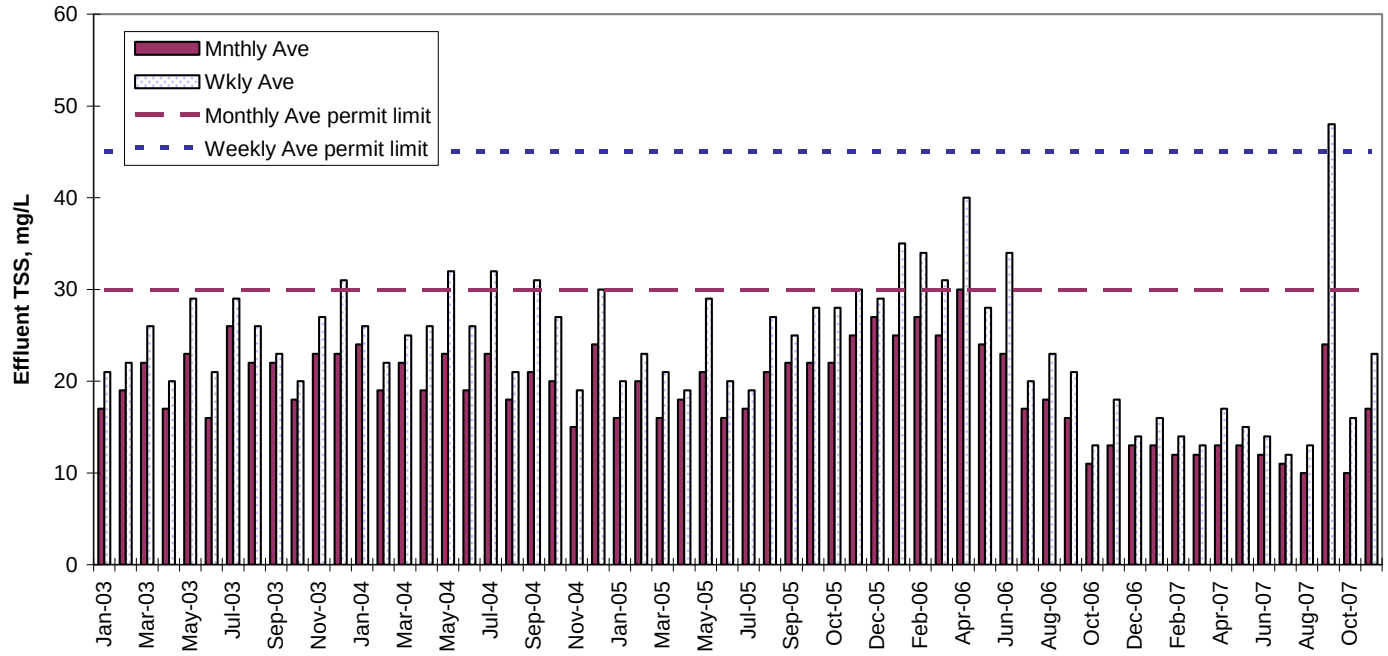
(APPENDIX E— LAKOTA WWTP DATA, continued)

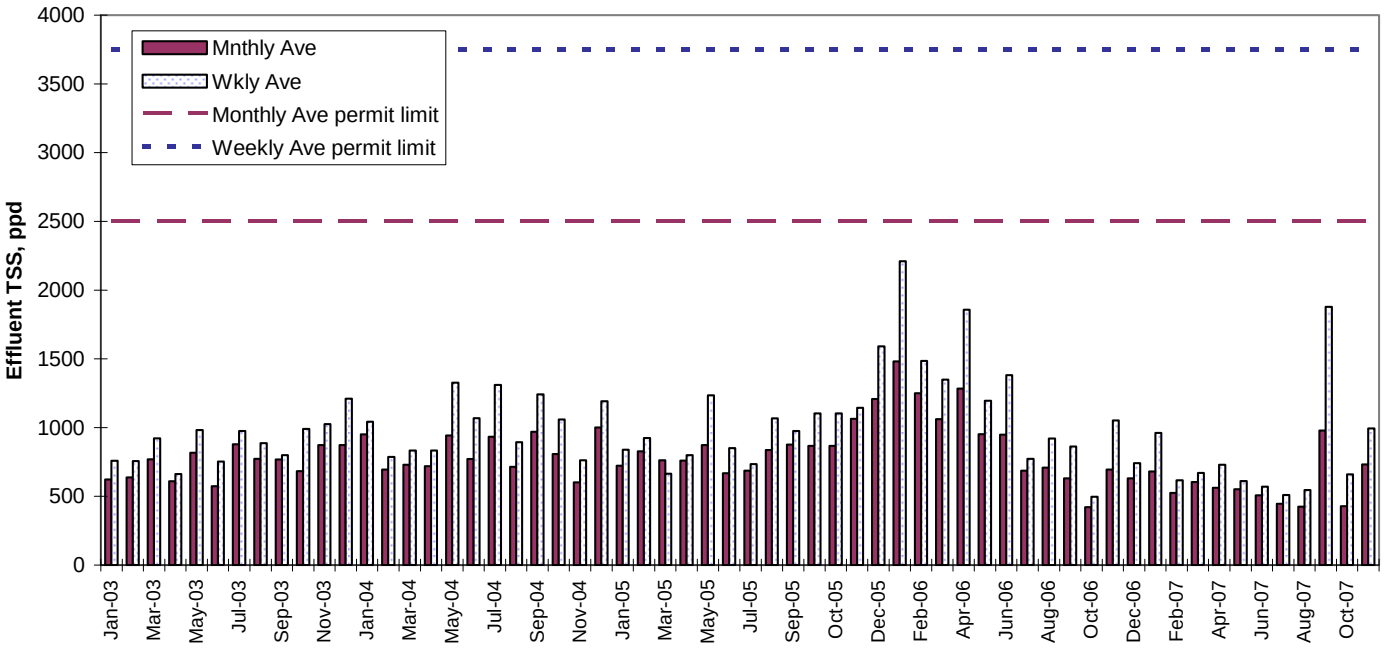
Lakota WWTP
Permit #WA-002262-4



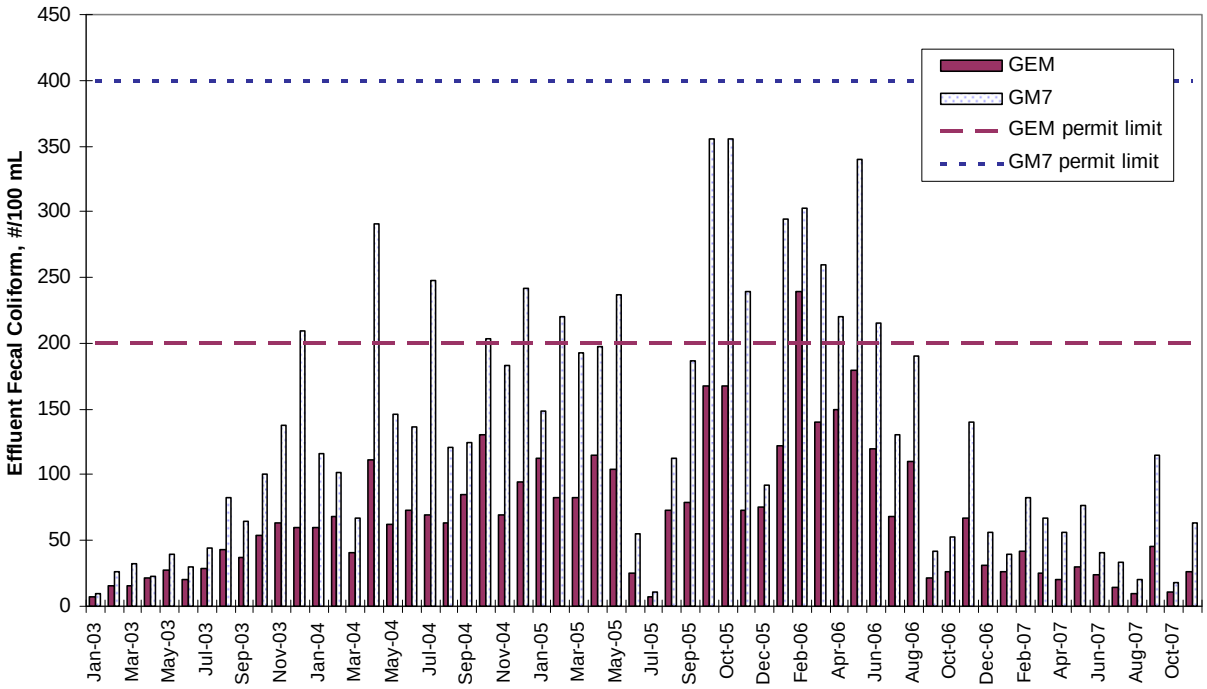


(APPENDIX E— LAKOTA WWTP DATA, continued)





(APPENDIX E— LAKOTA WWTP DATA, continued)



(APPENDIX E— LAKOTA WWTP DATA, continued)

Part D - Base Neutral Compounds

	Flow, MGD	5.24		4.51		4.35		5.10		Max	Max	Avg	Avg
Parameter	CASRN	**10/18/2004**		**5/31/2005**		**7/12/2006**		**11/5/2007**		**conc**	**mass**	**conc**	**mass**
		ug/L	lbs	ug/L	lbs	ug/L	lbs	ug/L	lbs	ug/L	lbs	ug/L	lbs
acenaphthene	83-32-9	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.38	0.02	< 2.00	< 0.09	< 1.6	< 0.06
acenaphthylene	208-96-8	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
anthracene	120-12-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
benzidine	92-87-5	< 51.00	2.23	< 50.00	1.88	< 50.00	1.81	< 23.00	0.98	< 51.00	< 2.23	< 43.5	< 1.72
benzo(a)anthracene	56-55-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
benzo(a)pyrene	50-32-8	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
benzo(b)fluoranthene	207-08-9	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 1.50	0.06	< 2.00	< 0.09	< 1.9	< 0.07
benzo(ghi)perylene	191-24-2	< 4.10	0.18	< 4.00	0.15	< 4.00	0.15	< 0.94	0.04	< 4.10	< 0.18	< 3.3	< 0.13
benzo(k)fluoranthene	207-08-9	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 1.50	0.06	< 2.00	< 0.09	< 1.9	< 0.07
bis(2-chloroethoxy)methane	111-91-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
bis(2-chloroethyl)ether	111-44-4	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
bis(2-chloroisoproppyl)ether	108-60-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 1.90	0.08	< 2.00	< 0.09	< 2.0	< 0.08
bis(2-ethylhexyl)phthalate	117-81-7	**6.30**	0.28	**2.80**	0.11	< 2.00	0.07	**1.79**	0.08	**6.30**	**0.28**	**3.2**	**0.13**
4-bromophenyl phenyl ether	101-55-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.38	0.02	< 2.00	< 0.09	< 1.6	< 0.06
butylbenzyl phthalate	85-68-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
2-chloronaphthalene	91-58-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
4-chlorophenyl phenyl ether	7005-72-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
chrysene	218-01-9	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
di-n-butyl phthalate	84-74-2	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
di-n-octyl phthalate	117-84-0	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
dibenzo(a,h)anthracene	53-70-3	< 4.10	0.18	< 4.00	0.15	< 4.00	0.15	< 1.50	0.06	< 4.10	< 0.18	< 3.4	< 0.13
1,2-dichlorobenzene	95-50-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	* 1.90	0.08	< 2.00	< 0.09	< 2.0	< 0.08
1,3-dichlorobenzene	541-73-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	**3.18**	0.14	**3.18**	0.14	< 2.3	< 0.09
1,4-dichlorobenzene	106-46-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	* 1.80	0.08	< 2.00	< 0.09	< 2.0	< 0.08
3,3-dichlorobenzidine	91-94-1	< 3.10	0.14	< 3.00	0.11	< 3.00	0.11	< 0.94	0.04	< 3.10	< 0.14	< 2.5	< 0.10
diethyl phthalate	84-66-2	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
dimethyl phthalate	131-11-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.38	0.02	< 2.00	< 0.09	< 1.6	< 0.06
2,4-dinitrotoluene	121-14-2	< 5.10	0.22	< 5.00	0.19	< 5.00	0.18	< 0.38	0.02	< 5.10	< 0.22	< 3.9	< 0.15
2,6-dinitrotoluene	606-20-2	< 5.10	0.22	< 5.00	0.19	< 5.00	0.18	< 0.38	0.02	< 5.10	< 0.22	< 3.9	< 0.15
1,2-diphenylhydrazine	122-66-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 1.90	0.08	< 2.00	< 0.09	< 2.0	< 0.08
fluoranthene	206-44-0	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
fluorene	86-73-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
hexachlorobenzene	118-74-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
hexachlorobutadiene	87-68-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
hexachlorocyclopentadiene	77-47-4	< 5.10	0.22	< 5.00	0.19	< 5.00	0.18	< 0.94	0.04	< 5.10	< 0.22	< 4.0	< 0.16
hexachloroethane	67-72-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
indeno(1,2,3-cd)pyrene	193-39-5	< 4.10	0.18	< 4.00	0.15	< 4.00	0.15	< 0.94	0.04	< 4.10	< 0.18	< 3.3	< 0.13
isophorone	78-59-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
naphthalene	91-20-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 1.50	0.06	< 2.00	< 0.09	< 1.9	< 0.07
nitrobenzene	98-95-3	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
n-nitrosodimethylamine	62-75-9	< 5.10	0.22	< 5.00	0.19	< 5.00	0.18	< 3.80	0.16	< 5.10	< 0.22	< 4.7	< 0.19
n-nitrosodi-n-propylamine	621-64-7	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
n-nitrosodiphenylamine	86-30-6	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.94	0.04	< 2.00	< 0.09	< 1.7	< 0.07
phenanthrene	85-01-8	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
pyrene	129-00-0	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06
1,2,4-trichlorobenzene	120-82-1	< 2.00	0.09	< 2.00	0.08	< 2.00	0.07	< 0.57	0.02	< 2.00	< 0.09	< 1.6	< 0.06

(APPENDIX E— LAKOTA WWTP DATA, continued)

Metals

	Flow	Antimony		Arsenic		Beryllium		Cadmium		Chromium		Copper		Lead		Mercury	
Sample date	MGD	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day
10/6/2003	4.49			< 10.00	0.4			< 0.50	0.02	2.00	0.07	37.00	1	< 10.00	0.4	< 0.20	0.01
1/8/2004	5.76			< 10.00	0.5			< 0.50	0.02	< 1.00	0.05	< 1.00	0.0	< 10.00	0.5	0.20	0.01
4/6/2004	3.69			< 10.00	0.3			< 0.50	0.02	< 1.00	0.03	35.00	1.1	< 10.00	0.3	< 0.20	0.01
7/6/2004	4.59			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	48.00	1.8	< 10.00	0.4	< 0.20	0.01
10/5/2004	4.28			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	57.00	2.0	< 10.00	0.4	< 0.20	0.01
10/18/2004	5.24																
10/26/2004	4.18	< 10.00	0.3	10.00	0.3	<	0.50	0.02	< 0.50	0.02	1.00	0.03	23.00	0.8	< 10.00	0.3	< 0.20	0.01
1/2/2005	4.64			< 10.00	0.4			< 0.50	0.02	2.00	0.08	56.00	2.2	< 10.00	0.4	< 0.20	0.01
4/10/2005	4.71			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	29.00	1.1	< 10.00	0.4	< 0.20	0.01
5/31/2005	4.51																
6/1/2005	4.50	< 10.00	0.4	< 10.00	0.4	<	0.50	0.02	< 0.50	0.02	< 1.00	0.04	24.00	0.9	< 10.00	0.4	< 0.20	0.01
7/6/2005	4.57			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	20.00	0.8	< 10.00	0.4	< 0.20	0.01
10/16/2005	4.49			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	< 1.00	0.0	< 10.00	0.4	< 0.20	0.01
1/8/2006	6.36			< 10.00	0.5			0.60	0.03	< 1.00	0.05	21.00	1.1	< 10.00	0.5	< 0.20	0.01
4/2/2006	4.72			< 10.00	0.4			2.00	0.08	5.00	0.20	39.00	1.5	< 10.00	0.4	0.20	0.01
7/9/2006	4.75			< 10.00	0.4			< 0.50	0.02	2.00	0.08	43.00	1.7	< 10.00	0.4	< 0.20	0.01
7/11/2006	4.47	< 10.00	0.4	< 10.00	0.4	<	0.50	0.02	< 0.50	0.02	< 1.00	0.04	33.00	1.2	< 10.00	0.4	< 0.20	0.01
7/12/2006	4.35																
10/8/2006	4.71			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	33.00	1.3	< 10.00	0.4	< 0.20	0.01
1/7/2007	8.32			< 10.00	0.7			< 0.50	0.03	2.00	0.14	20.00	1.4	< 10.00	0.7	< 0.10	0.01
4/8/2007	5.12			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	22.00	0.9	< 10.00	0.4	< 0.10	0.00
7/10/2007	4.73			< 10.00	0.4			< 0.50	0.02	< 1.00	0.04	< 1.00	0.0	< 10.00	0.4	< 0.10	**0.00**
Maximum		**< 10.00**	0.4	**10**	0.7	**<**	**0.5**	0.02	**2.0**	0.08	**5**	0.20	**57**	2.2	**< 10**	0.7	**0.2**	0.01
Minimum		< 10.00	0.3	< 10	0.3	<	0.5	0.02	< 0.5	0.02	< 1	0.03	< 1	0.0	< 10	0.3	< 0.1	0.00
Average		< 10.00	0.4	< 10	0.4	<	0.5	0.02	0.6	0.02	**1**	0.06	**29**	1.1	< 10	0.4	< 0.2	0.01
# of samples		3.00	3	19	19		3	3	19	19	19	19	19	19	19	19	19	19
50th Percentile																		

Metals (continued)

		Nickel		Selenium		Silver		Thallium		Zinc		Cyanide		Total Phenolics		CN WAD	
Sample date	MGD	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day	conc ug/L	mass lbs/day
10/6/2003	4.49	< 5.00	0.2							54.00	2.0						
1/8/2004	5.76	< 5.00	0.2							30.00	1.4						
4/6/2004	3.69	< 5.00	0.2							48.00	1.5						
7/6/2004	4.59	< 5.00	0.2							59.00	2.3						
10/5/2004	4.28	< 5.00	0.2							67.00	2.4						
10/18/2004	5.24													< 5.00	0.2		
10/26/2004	4.18	< 5.00	0.2	< 10.00	0.3	< 10.00	0.3	< 10.00	0.3	62.00	2.2	< 5.00	0.2			< 5.00	0.2
1/2/2005	4.64	< 5.00	0.2							220	8.5						
4/10/2005	4.71	< 5.00	0.2							63.00	2.5						
5/31/2005	4.51													< 5.00	0.2		
6/1/2005	4.50	< 5.00	0.2	< 10.00	0.4	< 10.00	0.4	< 10.00	0.4	52.00	1.9	< 5.00	0.2			< 5.00	0.2
7/6/2005	4.57	< 5.00	0.2							54.00	2.1						
10/16/2005	4.49	< 5.00	0.2							62.00	2.3						
1/8/2006	6.36	< 5.00	0.3							46.00	2.4						
4/2/2006	4.72	< 5.00	0.2							71.00	2.8						
7/9/2006	4.75	< 5.00	0.2							78.00	3.1						
7/11/2006	4.47	< 5.00	0.2	< 10.00	0.4	< 10.00	0.4	< 10.00	0.4	70.00	2.6	25.00	0.9			< 5.00	0.2
7/12/2006	4.35													< 5.00	0.2		
10/8/2006	4.71	< 5.00	0.2							40.00	1.6						
1/7/2007	8.32	< 5.00	0.3							25.00	1.7						
4/8/2007	5.12	< 5.00	0.2							52.00	2.2						
7/10/2007	4.73	< 5.00	0.2							29.00	1.1						
Maximum		**< 5**	0.3	**< 10**	0.4	**< 10**	0.4	**< 10**	0.4	**220**	8.5	**25**	0.9	**< 5**	0.2	**< 5**	0.2
Minimum		< 5	0.2	< 10	0.3	< 10	0.3	< 10	0.3	25	1.1	< 5	0.2	< 5	0.2	< 5	0.2
Average		< 5	0.2	< 10	0.4	< 10	0.4	< 10	0.4	**62**	2.5	12	0.4	< 5	0.2	< 5	0.2
# of samples		19	19	3	3	3	3	3	3	19	19	3	3	3	3	3	3
50th Percentile												5.00					

(APPENDIX E— LAKOTA WWTP DATA, continued)

Part D - Volatile Organic Compounds

	Flow, MGD	4.08			4.29			4.35			5.10				Max	Max		Avg	Avg
Parameter	CASRN	10/28/2004			6/2/2005			7/12/2006			11/5/2007				conc	mass		conc	mass
			ug/L	lbs		ug/L	lbs		ug/L	lbs		ug/L	lbs		ug/L	lbs		ug/L	lbs
acrolein	107-02-8	<	10.00	0.34	<	10.00	0.36	<	10.00	0.36	<	5.00	0.21	<	10.00	0.36	<	8.8	0.32
acrylonitrile	107-13-1	<	10.00	0.34	<	10.00	0.36	<	10.00	0.36	<	5.00	0.21	<	10.00	0.36	<	8.8	0.32
benzene	71-43-2	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
bromoform	75-25-2	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
carbon tetrachloride	56-23-5	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
chlorobenzene	108-90-7	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
chlorodibromomethane	124-48-1	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
chloroethane	75-00-3	<	5.00	0.17	<	5.00	0.18	<	5.00	0.18	<	1.00	0.04	<	5.00	0.18	<	4.0	0.14
2-chloroethylvinyl ether	110-75-8	<	10.00	0.34	<	10.00	0.36	<	10.00	0.36	<	1.00	0.04	<	10.00	0.36	<	7.8	0.28
chloroform	67-66-3	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	*	1.50	0.06		**1.50**	0.06		**1.1**	0.04
dichlorobromomethane	75-27-4	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
1,1-dichloroethane	75-34-3	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
trans-1,2-dichloroethene	156-60-5	<	10.00	0.34	<	10.00	0.36	<	10.00	0.36	<	1.00	0.04	<	10.00	0.36	<	7.8	0.28
1,2-dichloropropane	78-87-5	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
ethylbenzene	100-41-4	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
bromomethane	74-83-9	<	5.00	0.17	<	5.00	0.18	<	5.00	0.18	<	5.00	0.21	<	5.00	0.21	<	5.0	0.19
chloromethane	74-87-3	<	5.00	0.17	<	5.00	0.18	<	5.00	0.18	<	1.00	0.04	<	5.00	0.18	<	4.0	0.14
methylene chloride	75-09-2	<	1.50	0.05	<	1.50	0.05	<	1.50	0.05	<	5.00	0.21	<	5.00	0.21	<	2.4	0.09
1,1,2,2-tetrachloroethane	79-34-5	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
tetrachloroethene	127-18-4	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
toluene	108-88-3	<	1.00	0.03	<	1.00	0.04		**5.70**	0.21	<	1.00	0.04		**5.70**	0.21		**2.2**	0.08
1,1,1-trichloroethane	71-55-6	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
1,1,2-trichloroethane	79-00-5	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
trichloroethene	79-01-6	<	10.00	0.34	<	10.00	0.36	<	10.00	0.36	<	1.00	0.04	<	10.00	0.36	<	7.8	0.28
vinyl chloride	75-01-4	<	5.00	0.17	<	5.00	0.18	<	5.00	0.18	<	1.00	0.04	<	5.00	0.18	<	4.0	0.14
1,2-dichloroethane	107-06-2	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
1,1-dichloroethylene	75-35-4	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
cis-1,3-dichloropropene	10061-02-5	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04
trans-1,3-dichloropropene	10061-02-6	<	1.00	0.03	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.00	0.04	<	1.0	0.04

* MDL < 1.5 ug/L < RDL

Part D - Acid Extractable Compounds

	Flow, MGD	5.24			4.51			4.35			5.10				Max	Max		Avg	Avg
Parameter	**CASRN**	10/18/2004			5/31/2005			7/12/2006			11/5/2007				conc	mass		conc	mass
			ug/L	lbs		ug/L	lbs		ug/L	lbs		ug/L	lbs		ug/L	lbs		ug/L	lbs
4-chloro-3methylphenol	59-50-7	<	2.00	0.09	<	2.00	0.08	<	2.00	0.07	<	1.90	0.08	<	2.00	0.09	<	2.0	0.08
2-chlorophenol	95-57-8	<	2.00	0.09	<	2.00	0.08	<	2.00	0.07	<	1.90	0.08	<	2.00	0.09	<	2.0	0.08
2,4-dimethylphenol	105-67-9	<	2.00	0.09	<	2.00	0.08	<	2.00	0.07	<	0.94	0.04	<	2.00	0.09	<	1.7	0.07
2-methyl-4,6-dinitrophenol	534-52-1	<	5.10	0.22	<	5.00	0.19	<	5.00	0.18	<	1.90	0.08	<	5.10	0.22	<	4.3	0.17
2,4-dinitrophenol	51-28-5	<	10.00	0.44	<	10.00	0.38	<	10.00	0.36	<	1.90	0.08	<	10.00	0.44	<	8.0	0.31
2-nitrophenol	88-75-5	<	5.10	0.22	<	5.00	0.19	<	5.00	0.18	<	0.94	0.04	<	5.10	0.22	<	4.0	0.16
4-nitrophenol	100-02-7	<	10.00	0.44	<	10.00	0.38	<	10.00	0.36	<	1.90	0.08	<	10.00	0.44	<	8.0	0.31
pentachlorophenol	87-86-5	<	5.10	0.22	<	5.00	0.19	<	5.00	0.18	<	0.94	0.04	<	5.10	0.22	<	4.0	0.16
phenol	108-95-2	<	2.00	0.09	<	2.00	0.08	<	2.00	0.07	<	3.80	0.16	<	3.80	0.16	<	2.5	0.10
2,4,6-trichlorophenol	88-06-2	<	2.00	0.09	<	2.00	0.08	<	2.00	0.07	<	3.80	0.16	<	3.80	0.16	<	2.5	0.10
2,4-dichlorophenol	120-83-2	<	2.00	0.09	<	2.00	0.08	<	2.00	0.07	<	0.94	0.04	<	2.00	0.09	<	1.7	0.07

(APPENDIX E— LAKOTA WWTP DATA, continued)

Pesticides/PCBs

		10/18/2004	5/31/2005	7/12/2006	11/5/2007
Parameter	**CAS number**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
aldrin	309-00-2	< 0.03	< 0.03	< 0.03	<0.047
alpha-BHC	319-84-6	< 0.03	< 0.03	< 0.03	<0.047
beta-BHC	319-85-7	< 0.03	< 0.03	< 0.03	<0.047
gamma-BHC	58-89-9	< 0.03	< 0.03	< 0.03	<0.047
delta-BHC	319-86-8	< 0.03	< 0.03	< 0.03	<0.047
chlordane	57-74-9	< 0.03	< 0.03	< 0.03	<0.047
4,4 DDT	50-29-3	< 0.03	< 0.03	< 0.03	<0.047
4,4-DDE	72-55-9	< 0.03	< 0.03	< 0.03	<0.047
4,4-DDD	72-54-8	< 0.03	< 0.03	< 0.03	<0.047
dieldrin	60-57-1	< 0.03	< 0.03	< 0.03	<0.047
alpha endosulfan	959-98-8	< 0.03	< 0.03	< 0.03	<0.047
beta endosulfan	33212-65-9	< 0.03	< 0.03	< 0.03	<0.047
endosulfan sulfate	1031-07-8	< 0.03	< 0.03	< 0.03	<0.047
endrin	72-20-8	< 0.03	< 0.03	< 0.03	<0.047
endrin aldehyde	7421-93-4	< 0.03	< 0.03	< 0.03	<0.047
heptachlor	76-44-8	< 0.03	< 0.03	< 0.03	<0.047
heptachlor epoxide	1024-57-3	< 0.03	< 0.03	< 0.03	<0.047
PCB-1242	53469-21-9	< 0.1	< 0.1	< 0.5	< 0.47
PCB-1254	11097-69-1	< 0.1	< 0.1	< 0.5	< 0.47
PCB-1221	1104-28-2	< 0.1	< 0.1	< 0.5	< 0.47
PCB-1232	11141-16-5	< 0.1	< 0.1	< 0.5	< 0.47
PCB-1248	12672-29-6	< 0.1	< 0.1	< 0.5	< 0.47
PCB-1260	11096-82-5	< 0.1	< 0.1	< 0.5	< 0.47
PCB-1016	12674-11-2	< 0.1	< 0.1	< 0.5	< 0.47
toxaphene	8001-35-2	< 0.1	< 0.1	< 0.5	< 0.47

(APPENDIX E— LAKOTA WWTP DATA, continued)

Additional Effluent Monitoring Results

Date	Total Ammonia	TKN	Nitrate + Nitrite	Total P	TDS	Hardness CaCO3	DO	Oil & Grease measured as HEM[+]
	mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L
1/6/2004	28	28	1	3.9	270			
1/8/2004							6.3	1.5
5/25/2004	47	56	6.3	6.9	290	110		
5/26/2004							5	1.2
1/3/2005	22	25	5	3.1	280	91		
1/4/2005							5.9	<1
5/2/2005	27	30	9.6	4.2	290	89	5.5	<1
9/28/2005	30	34	7.5	5.3	390	98		
9/29/2005							4.6	<1
1/19/2006	26	28	4.1	3.5	230	67		
1/20/2006							5.5	<1
5/1/2006							5.2	1
5/2/2006	39	46	2.9	3.2	340	95		
9/14/2006	45	50	0.38	6.4	320	100	5	<1
1/11/2007	30	35	0.39	1.1	300	83		2.2
1/22/2007							5.68	
4/30/2007	37	44	0.2	3.2	230	53		
5/1/2007							5.5	1
Maximum	**51.5***	**56**	**9.6**	**6.9**	**390**	**110**	**6.3**	**2.2**
Minimum	**6.96***	**25**	**0.2**	**1.1**	**230**	**53**	**4.6**	**1**
Average	**29***	**38**	**3.7**	**4.1**	**294**	**87**	**5**	**1.2**
# of samples	**967***	**10**	**10**	**10**	**10**	**9**	**10**	**10**

[+]HEM = Hexane Extractable Material

* see additional ammonia data table

(APPENDIX E— LAKOTA WWTP DATA, continued)

Lakota Ammonia

Day	Date	EFF mg/L N	Day	Date	mg/L N	Day	Date	mg/L N	Day	Date	mg/L N
Tuesday	1/6/2004	28	Sunday	8/1/2004	13.5	Tuesday	11/23/2004	29.1	Wednesday	3/16/2005	31.0
Sunday	4/11/2004	10.3	Monday	8/2/2004	13.5	Wednesday	11/24/2004	28.0	Thursday	3/17/2005	31.7
Monday	4/12/2004	30.2	Tuesday	8/3/2004	20.8	Thursday	11/25/2004	16.1	Sunday	3/20/2005	17.3
Tuesday	4/13/2004	34.5	Wednesday	8/4/2004	24.0	Sunday	11/28/2004	13.0	Monday	3/21/2005	25.6
Wednesday	4/14/2004	33.3	Thursday	8/5/2004	26.9	Monday	11/29/2004	24.1	Tuesday	3/22/2005	28.5
Thursday	4/15/2004	42.0	Sunday	8/8/2004	11.9	Tuesday	11/30/2004	22.9	Wednesday	3/23/2005	27.0
Sunday	4/18/2004	21.5	Monday	8/9/2004	14.0	Wednesday	12/1/2004	23.7	Thursday	3/24/2005	19.8
Monday	4/19/2004	32.0	Tuesday	8/10/2004	17.9	Thursday	12/2/2004	26.1	Sunday	3/27/2005	10.9
Tuesday	4/20/2004	34.5	Wednesday	8/11/2004	20.2	Sunday	12/5/2004	11.0	Monday	3/28/2005	21.6
Wednesday	4/21/2004	35.4	Thursday	8/12/2004	18.6	Monday	12/6/2004	26.9	Tuesday	3/29/2005	29.3
Thursday	4/22/2004	32.8	Sunday	8/15/2004	7.0	Tuesday	12/7/2004	23.4	Wednesday	3/30/2005	22.5
Sunday	4/25/2004	21.3	Monday	8/16/2004	17.9	Wednesday	12/8/2004	21.1	Thursday	3/31/2005	21.1
Monday	4/26/2004	30.7	Tuesday	8/17/2004	20.8	Thursday	12/9/2004	18.6	Sunday	4/3/2005	11.0
Tuesday	4/27/2004	37.0	Wednesday	8/18/2004	22.0	Sunday	12/12/2004	9.3	Monday	4/4/2005	21.6
Wednesday	4/28/2004	31.2	Thursday	8/19/2004	26.9	Monday	12/13/2004	26.3	Tuesday	4/5/2005	19.8
Thursday	4/29/2004	35.1	Sunday	8/22/2004	17.3	Tuesday	12/14/2004	22.7	Wednesday	4/6/2005	19.8
Sunday	5/2/2004	18.3	Monday	8/23/2004	16.3	Wednesday	12/15/2004	31.0	Thursday	4/7/2005	19.0
Monday	5/3/2004	25.6	Tuesday	8/24/2004	25.6	Thursday	12/16/2004	34.4	Sunday	4/10/2005	13.9
Tuesday	5/4/2004	28.5	Wednesday	8/25/2004	24.7	Sunday	12/19/2004	13.6	Monday	4/11/2005	21.3
Wednesday	5/5/2004	28.5	Thursday	8/26/2004	23.8	Monday	12/20/2004	31.7	Tuesday	4/12/2005	26.2
Thursday	5/6/2004	24.7	Sunday	8/29/2004	7.9	Tuesday	12/21/2004	26.9	Wednesday	4/13/2005	25.8
Sunday	5/9/2004	10.8	Monday	8/30/2004	18.6	Wednesday	12/22/2004	23.8	Thursday	4/14/2005	27.0
Monday	5/10/2004	20.2	Tuesday	8/31/2004	18.6	Thursday	12/23/2004	15.0	Sunday	4/17/2005	13.6
Tuesday	5/11/2004	20.3	Wednesday	9/1/2004	21.3	Sunday	12/26/2004	14.4	Monday	4/18/2005	25.1
Wednesday	5/12/2004	20.2	Thursday	9/2/2004	29.1	Monday	12/27/2004	32.0	Tuesday	4/19/2005	31.4
Thursday	5/13/2004	16.1	Sunday	9/5/2004	7.5	Tuesday	12/28/2004	25.5	Wednesday	4/20/2005	22.0
Sunday	5/16/2004	8.3	Monday	9/6/2004	9.0	Wednesday	12/29/2004	22.6	Thursday	4/21/2005	30.2
Monday	5/17/2004	27.5	Tuesday	9/7/2004	16.7	Thursday	12/30/2004	24.9	Sunday	4/24/2005	12.0
Tuesday	5/18/2004	25.8	Wednesday	9/8/2004	17.9	Sunday	1/2/2005	12.1	Monday	4/25/2005	27.5
Wednesday	5/19/2004	24.2	Thursday	9/9/2004	18.6	Monday	1/3/2005	22	Tuesday	4/26/2005	26.5
Thursday	5/20/2004	23.2	Sunday	9/12/2004	8.0	Monday	1/3/2005	28.0	Wednesday	4/27/2005	31.6
Sunday	5/23/2004	17.3	Monday	9/13/2004	19.4	Tuesday	1/4/2005	31.5	Thursday	4/28/2005	30.8
Monday	5/24/2004	28.0	Tuesday	9/14/2004	19.4	Wednesday	1/5/2005	29.1	Sunday	5/1/2005	11.2
Tuesday	5/25/2004	47	Wednesday	9/15/2004	24.6	Thursday	1/6/2005	26.2	Monday	5/2/2005	27
Tuesday	5/25/2004	41.6	Thursday	9/16/2004	17.3	Sunday	1/9/2005	13.9	Monday	5/2/2005	27.0
Wednesday	5/26/2004	30.2	Sunday	9/19/2004	10.8	Monday	1/10/2005	28.6	Tuesday	5/3/2005	29.1
Thursday	5/27/2004	29.1	Monday	9/20/2004	21.7	Tuesday	1/11/2005	28.5	Wednesday	5/4/2005	21.9
Sunday	5/30/2004	19.8	Tuesday	9/21/2004	17.9	Wednesday	1/12/2005	26.5	Thursday	5/5/2005	21.8
Monday	5/31/2004	19.8	Wednesday	9/22/2004	26.9	Thursday	1/13/2005	34.3	Sunday	5/8/2005	11.9
Tuesday	6/1/2004	33.4	Thursday	9/23/2004	17.9	Sunday	1/16/2005	11.7	Monday	5/9/2005	20.6
Wednesday	6/2/2004	35.2	Sunday	9/26/2004	17.3	Monday	1/17/2005	9.9	Tuesday	5/10/2005	22.7
Thursday	6/3/2004	34.9	Monday	9/27/2004	28.5	Tuesday	1/18/2005	13.0	Wednesday	5/11/2005	22.5
Sunday	6/6/2004	18.3	Tuesday	9/28/2004	33.4	Wednesday	1/19/2005	14.3	Thursday	5/12/2005	23.2
Monday	6/7/2004	39.7	Wednesday	9/29/2004	37.0	Thursday	1/20/2005	16.1	Sunday	5/15/2005	13.5
Tuesday	6/8/2004	38.3	Thursday	9/30/2004	38.3	Sunday	1/23/2005	8.0	Monday	5/16/2005	13.1
Wednesday	6/9/2004	30.8	Sunday	10/3/2004	27.5	Monday	1/24/2005	22.5	Tuesday	5/17/2005	20.6
Thursday	6/10/2004	39.0	Monday	10/4/2004	37.0	Tuesday	1/25/2005	20.8	Wednesday	5/18/2005	23.8
Sunday	6/13/2004	22.8	Tuesday	10/5/2004	41.2	Wednesday	1/26/2005	17.9	Thursday	5/19/2005	23.6
Monday	6/14/2004	50.6	Wednesday	10/6/2004	43.6	Thursday	1/27/2005	18.6	Sunday	5/22/2005	13.1
Tuesday	6/15/2004	40.8	Thursday	10/7/2004	44.0	Sunday	1/30/2005	9.9	Monday	5/23/2005	
Wednesday	6/16/2004	34.3	Sunday	10/10/2004	25.6	Monday	1/31/2005	17.9	Tuesday	5/24/2005	
Thursday	6/17/2004	31.8	Monday	10/11/2004	25.3	Tuesday	2/1/2005	18.6	Wednesday	5/25/2005	
Sunday	6/20/2004	19.4	Tuesday	10/12/2004	35.2	Wednesday	2/2/2005	18.6	Thursday	5/26/2005	
Monday	6/21/2004	29.1	Wednesday	10/13/2004	40.1	Thursday	2/3/2005	18.6	Sunday	5/29/2005	
Tuesday	6/22/2004	33.6	Thursday	10/14/2004	35.8	Sunday	2/6/2005	10.7	Monday	5/30/2005	12.8
Wednesday	6/23/2004	31.1	Sunday	10/17/2004	21.6	Monday	2/7/2005	19.7	Tuesday	5/31/2005	23.2
Thursday	6/24/2004	34.9	Monday	10/18/2004	20.3	Tuesday	2/8/2005	20.6	Wednesday	6/1/2005	23.8
Sunday	6/27/2004	17.0	Tuesday	10/19/2004	34.2	Wednesday	2/9/2005	22.9	Thursday	6/2/2005	27.7
Monday	6/28/2004	25.0	Wednesday	10/20/2004	36.0	Thursday	2/10/2005	21.6	Sunday	6/5/2005	12.3
Tuesday	6/29/2004	26.9	Thursday	10/21/2004	36.0	Sunday	2/13/2005	15.2	Monday	6/6/2005	33.9
Wednesday	6/30/2004	28.0	Sunday	10/24/2004	20.3	Monday	2/14/2005	19.4	Tuesday	6/7/2005	31.2
Thursday	7/1/2004	23.6	Monday	10/25/2004	32.6	Tuesday	2/15/2005	21.5	Wednesday	6/8/2005	32.5
Sunday	7/4/2004	10.5	Tuesday	10/26/2004	34.0	Wednesday	2/16/2005	20.2	Thursday	6/9/2005	21.3
Monday	7/5/2004	13.4	Wednesday	10/27/2004	35.2	Thursday	2/17/2005	22.8	Sunday	6/12/2005	11.8
Tuesday	7/6/2004	36.7	Thursday	10/28/2004	32.1	Sunday	2/20/2005	10.7	Monday	6/13/2005	24.4
Wednesday	7/7/2004	32.4	Sunday	10/31/2004	15.3	Monday	2/21/2005	12.3	Tuesday	6/14/2005	32.1
Thursday	7/8/2004	28.5	Monday	11/1/2004	16.1	Tuesday	2/22/2005	21.4	Wednesday	6/15/2005	31.6
Sunday	7/11/2004	16.4	Tuesday	11/2/2004	25.0	Wednesday	2/23/2005	26.7	Thursday	6/16/2005	32.1
Monday	7/12/2004	26.5	Wednesday	11/3/2004	31.4	Thursday	2/24/2005	22.8	Sunday	6/19/2005	12.3
Tuesday	7/13/2004	29.7	Thursday	11/4/2004	29.1	Sunday	2/27/2005	12.4	Monday	6/20/2005	28.8
Wednesday	7/14/2004	29.7	Sunday	11/7/2004	15.5	Monday	2/28/2005	19.4	Tuesday	6/21/2005	34.9
Thursday	7/15/2004	27.5	Monday	11/8/2004	25.6	Tuesday	3/1/2005	22.4	Wednesday	6/22/2005	27.3
Sunday	7/18/2004	13.4	Tuesday	11/9/2004	31.8	Wednesday	3/2/2005	21.9	Thursday	6/23/2005	21.9
Monday	7/19/2004	13.0	Wednesday	11/10/2004	29.7	Thursday	3/3/2005	24.6	Sunday	6/26/2005	14.7
Tuesday	7/20/2004	21.1	Thursday	11/11/2004	23.6	Sunday	3/6/2005	10.2	Monday	6/27/2005	23.2
Wednesday	7/21/2004	30.8	Sunday	11/14/2004	17.7	Monday	3/7/2005	21.0	Tuesday	6/28/2005	23.0
Thursday	7/22/2004	27.5	Monday	11/15/2004	25.3	Tuesday	3/8/2005	25.3	Wednesday	6/29/2005	28.0
Sunday	7/25/2004	12.6	Tuesday	11/16/2004	36.4	Wednesday	3/9/2005	27.4	Thursday	6/30/2005	18.6
Monday	7/26/2004	24.4	Wednesday	11/17/2004	31.4	Thursday	3/10/2005	28.0	Sunday	7/3/2005	18.7
Tuesday	7/27/2004	31.7	Thursday	11/18/2004	27.5	Sunday	3/13/2005	17.7	Monday	7/4/2005	19.0
Wednesday	7/28/2004	33.9	Sunday	11/21/2004	14.8	Monday	3/14/2005	25.3	Tuesday	7/5/2005	29.1
Thursday	7/29/2004	28.0	Monday	11/22/2004	30.2	Tuesday	3/15/2005	29.1	Wednesday	7/6/2005	23.0

Lakota Ammonia (continued)

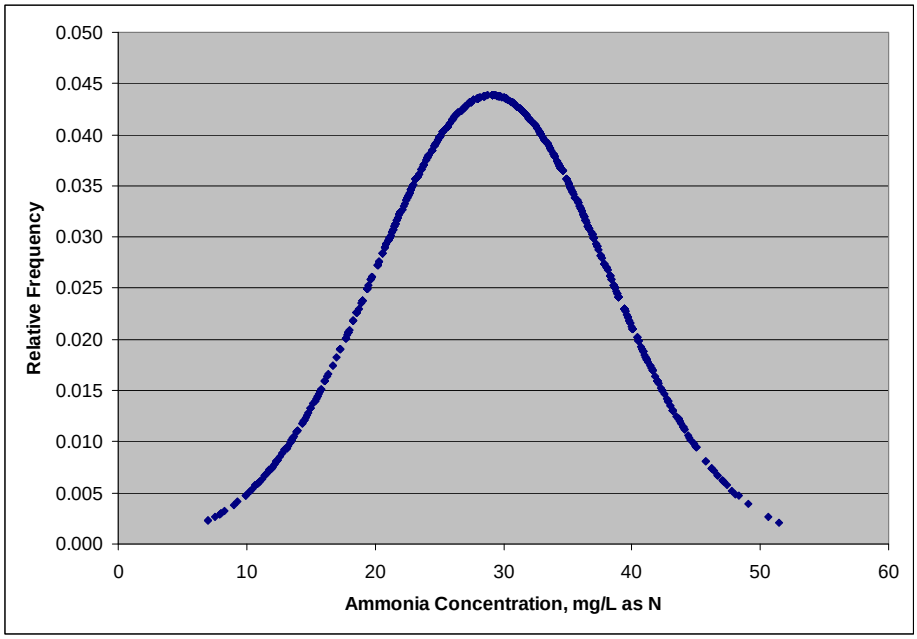
Day	Date	mg/L N	Day	Date	mg/L N	Day	Date	mg/L N	Day	Date	mg/L N
Sunday	10/30/2005	32.8	Monday	2/20/2006	23.4	Tuesday	6/13/2006	33.2	Wednesday	10/4/2006	
Monday	10/31/2005	30.2	Tuesday	2/21/2006	35.2	Wednesday	6/14/2006	36.9	Thursday	10/5/2006	44.0
Tuesday	11/1/2005	34.5	Wednesday	2/22/2006	36.4	Thursday	6/15/2006	36.9	Friday	10/6/2006	43.6
Wednesday	11/2/2005	31.2	Thursday	2/23/2006	33.4	Sunday	6/18/2006	23.3	Sunday	10/8/2006	31.6
Thursday	11/3/2005	25.0	Sunday	2/26/2006	23.8	Monday	6/19/2006	32.9	Monday	10/9/2006	
Sunday	11/6/2005	20.2	Monday	2/27/2006	28.0	Tuesday	6/20/2006	36.9	Tuesday	10/10/2006	
Monday	11/7/2005	38.7	Tuesday	2/28/2006	33.3	Wednesday	6/21/2006	38.3	Wednesday	10/11/2006	
Tuesday	11/8/2005	36.4	Wednesday	3/1/2006	33.1	Thursday	6/22/2006	36.2	Thursday	10/12/2006	
Wednesday	11/9/2005	34.9	Thursday	3/2/2006	33.3	Sunday	6/25/2006	20.6	Sunday	10/15/2006	32.2
Thursday	11/10/2005	40.4	Sunday	3/5/2006	21.5	Monday	6/26/2006	29.1	Monday	10/16/2006	38.3
Sunday	11/13/2005	21.8	Monday	3/6/2006	32.4	Tuesday	6/27/2006	26.7	Tuesday	10/17/2006	42.4
Monday	11/14/2005	36.4	Tuesday	3/7/2006	36.9	Wednesday	6/28/2006	27.7	Wednesday	10/18/2006	43.2
Tuesday	11/15/2005	40.4	Wednesday	3/8/2006	31.6	Thursday	6/29/2006	24.8	Thursday	10/19/2006	41.2
Wednesday	11/16/2005	37.0	Thursday	3/9/2006	24.4	Sunday	7/2/2006		Sunday	10/22/2006	28.5
Thursday	11/17/2005	36.1	Sunday	3/12/2006	22.7	Monday	7/3/2006	26.4	Monday	10/23/2006	37.6
Sunday	11/20/2005	23.2	Monday	3/13/2006	30.3	Tuesday	7/4/2006	18.6	Tuesday	10/24/2006	39.4
Monday	11/21/2005	34.5	Tuesday	3/14/2006	33.4	Wednesday	7/5/2006	24.0	Wednesday	10/25/2006	42.8
Tuesday	11/22/2005	39.4	Wednesday	3/15/2006	35.5	Thursday	7/6/2006	32.8	Thursday	10/26/2006	41.2
Wednesday	11/23/2005	37.6	Thursday	3/16/2006	32.4	Sunday	7/9/2006	17.8	Sunday	10/29/2006	29.1
Thursday	11/24/2005	24.1	Sunday	3/19/2006	19.0	Monday	7/10/2006	24.2	Monday	10/30/2006	37.3
Sunday	11/27/2005	22.6	Monday	3/20/2006	25.0	Tuesday	7/11/2006	28.5	Tuesday	10/31/2006	40.5
Monday	11/28/2005	29.1	Tuesday	3/21/2006	29.1	Wednesday	7/12/2006	37.0	Wednesday	11/1/2006	42.8
Tuesday	11/29/2005	36.6	Wednesday	3/22/2006	30.7	Thursday	7/13/2006	32.3	Thursday	11/2/2006	42.0
Wednesday	11/30/2005	26.0	Thursday	3/23/2006	29.1	Sunday	7/16/2006	21.1	Sunday	11/5/2006	25.3
Thursday	12/1/2005	40.1	Sunday	3/26/2006	19.4	Monday	7/17/2006	30.2	Monday	11/6/2006	12.3
Sunday	12/4/2005	17.9	Monday	3/27/2006	29.1	Tuesday	7/18/2006	36.0	Tuesday	11/7/2006	21.4
Monday	12/5/2005	28.0	Tuesday	3/28/2006	34.6	Wednesday	7/19/2006	36.0	Wednesday	11/8/2006	27.7
Tuesday	12/6/2005	30.7	Wednesday	3/29/2006	31.6	Thursday	7/20/2006	36.6	Thursday	11/9/2006	34.4
Wednesday	12/7/2005	29.1	Thursday	3/30/2006	29.7	Sunday	7/23/2006	23.2	Sunday	11/12/2006	19.0
Thursday	12/8/2005	26.4	Sunday	4/2/2006	19.4	Monday	7/24/2006	30.7	Monday	11/13/2006	30.8
Sunday	12/11/2005	18.6	Monday	4/3/2006	26.8	Tuesday	7/25/2006	32.2	Tuesday	11/14/2006	30.8
Monday	12/12/2005	23.2	Tuesday	4/4/2006	31.6	Wednesday	7/26/2006	34.5	Wednesday	11/15/2006	27.9
Tuesday	12/13/2005	26.5	Wednesday	4/5/2006	36.4	Thursday	7/27/2006	37.0	Thursday	11/16/2006	27.4
Wednesday	12/14/2005	27.4	Thursday	4/6/2006	32.1	Sunday	7/30/2006	25.0	Sunday	11/19/2006	31.1
Thursday	12/15/2005	28.0	Sunday	4/9/2006	20.9	Monday	7/31/2006	34.0	Monday	11/20/2006	39.5
Sunday	12/18/2005	22.4	Monday	4/10/2006	32.9	Tuesday	8/1/2006	38.7	Tuesday	11/21/2006	31.0
Monday	12/19/2005	24.6	Tuesday	4/11/2006	36.6	Wednesday	8/2/2006	38.7	Wednesday	11/22/2006	28.5
Tuesday	12/20/2005	26.2	Wednesday	4/12/2006	23.3	Thursday	8/3/2006	39.0	Thursday	11/23/2006	20.2
Wednesday	12/21/2005	32.0	Thursday	4/13/2006	19.7	Sunday	8/6/2006	26.7	Sunday	11/26/2006	21.2
Thursday	12/22/2005	26.7	Sunday	4/16/2006		Monday	8/7/2006	35.1	Monday	11/27/2006	30.6
Sunday	12/25/2005	11.4	Monday	4/17/2006	35.2	Tuesday	8/8/2006	38.6	Tuesday	11/28/2006	29.6
Monday	12/26/2005	13.2	Tuesday	4/18/2006	30.2	Wednesday	8/9/2006	38.6	Wednesday	11/29/2006	26.0
Tuesday	12/27/2005	22.2	Wednesday	4/19/2006	24.2	Thursday	8/10/2006	37.3	Thursday	11/30/2006	35.3
Wednesday	12/28/2005	21.9	Thursday	4/20/2006	22.1	Sunday	8/13/2006	25.5	Sunday	12/3/2006	37.9
Thursday	12/29/2005	21.0	Sunday	4/23/2006	13.7	Monday	8/14/2006	35.7	Monday	12/4/2006	35.9
Sunday	1/1/2006	12.8	Monday	4/24/2006	30.8	Tuesday	8/15/2006	38.3	Tuesday	12/5/2006	40.9
Monday	1/2/2006	13.1	Tuesday	4/25/2006	19.5	Wednesday	8/16/2006	40.9	Wednesday	12/6/2006	35.6
Tuesday	1/3/2006	28.0	Wednesday	4/26/2006	22.3	Thursday	8/17/2006	38.6	Thursday	12/7/2006	38.6
Wednesday	1/4/2006	23.3	Thursday	4/27/2006	20.9	Sunday	8/20/2006	28.0	Sunday	12/10/2006	25.1
Thursday	1/5/2006	24.6	Sunday	4/30/2006	15.3	Monday	8/21/2006	39.4	Monday	12/11/2006	31.6
Sunday	1/8/2006	11.4	Monday	5/1/2006	33.7	Tuesday	8/22/2006	42.4	Tuesday	12/12/2006	34.4
Monday	1/9/2006	18.3	Tuesday	5/2/2006	39	Wednesday	8/23/2006	44.1	Wednesday	12/13/2006	32.9
Tuesday	1/10/2006	16.1	Tuesday	5/2/2006	40.4	Thursday	8/24/2006	40.9	Thursday	12/14/2006	30.1
Wednesday	1/11/2006	14.6	Wednesday	5/3/2006	34.0	Sunday	8/27/2006	22.8	Sunday	12/17/2006	19.7
Thursday	1/12/2006	16.7	Thursday	5/4/2006	32.4	Monday	8/28/2006	35.7	Monday	12/18/2006	26.2
Sunday	1/15/2006	11.6	Sunday	5/7/2006	21.4	Tuesday	8/29/2006	40.5	Tuesday	12/19/2006	36.3
Monday	1/16/2006	11.8	Monday	5/8/2006	28.5	Wednesday	8/30/2006	41.2	Wednesday	12/20/2006	31.2
Tuesday	1/17/2006	19.4	Tuesday	5/9/2006	35.6	Thursday	8/31/2006	45.0	Thursday	12/21/2006	25.0
Wednesday	1/18/2006	25.0	Wednesday	5/10/2006	21.2	Sunday	9/3/2006	25.3	Sunday	12/24/2006	18.3
Thursday	1/19/2006	26	Thursday	5/11/2006	17.7	Monday	9/4/2006	26.3	Monday	12/25/2006	21.0
Thursday	1/19/2006	25.0	Sunday	5/14/2006	17.7	Tuesday	9/5/2006	36.6	Tuesday	12/26/2006	21.0
Sunday	1/22/2006	12.3	Monday	5/15/2006	33.1	Wednesday	9/6/2006	41.2	Wednesday	12/27/2006	25.3
Monday	1/23/2006	20.9	Tuesday	5/16/2006	37.3	Thursday	9/7/2006	42.1	Thursday	12/28/2006	27.4
Tuesday	1/24/2006	21.4	Wednesday	5/17/2006	35.4	Sunday	9/10/2006	30.3	Sunday	12/31/2006	23.3
Wednesday	1/25/2006	24.4	Thursday	5/18/2006	29.6	Monday	9/11/2006	34.2	Monday	1/1/2007	26.0
Thursday	1/26/2006	27.5	Sunday	5/21/2006	15.8	Tuesday	9/12/2006	38.6	Tuesday	1/2/2007	28.0
Sunday	1/29/2006	14.5	Monday	5/22/2006	32.9	Wednesday	9/13/2006	44.5	Wednesday	1/3/2007	27.0
Monday	1/30/2006	14.4	Tuesday	5/23/2006	37.9	Thursday	9/14/2006	45	Thursday	1/4/2007	37.0
Tuesday	1/31/2006	21.1	Wednesday	5/24/2006	37.9	Thursday	9/14/2006	44.1	Sunday	1/7/2007	17.3
Wednesday	2/1/2006	23.6	Thursday	5/25/2006	33.5	Sunday	9/17/2006	28.0	Monday	1/8/2007	22.0
Thursday	2/2/2006	21.1	Sunday	5/28/2006	13.0	Monday	9/18/2006	35.8	Tuesday	1/9/2007	28.0
Sunday	2/5/2006	15.6	Monday	5/29/2006	21.6	Tuesday	9/19/2006	40.8	Wednesday	1/10/2007	31.2
Monday	2/6/2006	18.9	Tuesday	5/30/2006	31.3	Wednesday	9/20/2006	42.4	Thursday	1/11/2007	30
Tuesday	2/7/2006	24.4	Wednesday	5/31/2006	36.2	Thursday	9/21/2006	42.8	Thursday	1/11/2007	40.5
Wednesday	2/8/2006	26.7	Thursday	6/1/2006	35.0	Sunday	9/24/2006	28.0	Sunday	1/14/2007	24.1
Thursday	2/9/2006	30.6	Sunday	6/4/2006	18.0	Monday	9/25/2006	37.3	Monday	1/15/2007	26.0
Sunday	2/12/2006		Monday	6/5/2006	30.2	Tuesday	9/26/2006	43.2	Tuesday	1/16/2007	33.6
Monday	2/13/2006	29.1	Tuesday	6/6/2006	36.6	Wednesday	9/27/2006	43.2	Wednesday	1/17/2007	30.2
Tuesday	2/14/2006	33.9	Wednesday	6/7/2006	38.3	Thursday	9/28/2006	43.6	Thursday	1/18/2007	38.3
Wednesday	2/15/2006	33.6	Thursday	6/8/2006	36.0	Sunday	10/1/2006	29.7	Sunday	1/21/2007	23.3
Thursday	2/16/2006	31.5	Sunday	6/11/2006	22.6	Monday	10/2/2006	36.7	Monday	1/22/2007	38.6
Sunday	2/19/2006	22.8	Monday	6/12/2006	29.6	Tuesday	10/3/2006	41.6	Tuesday	1/23/2007	35.4

Lakota Ammonia (continued)

Day	Date	mg/L N	Day	Date	mg/L N	Day	Date	mg/L N
Wednesday	1/24/2007	39.0	Thursday	5/17/2007	44.0	Monday	9/10/2007	15.5
Thursday	1/25/2007	39.0	Sunday	5/20/2007	28.5	Tuesday	9/11/2007	35.7
Sunday	1/28/2007	26.0	Monday	5/21/2007	38.0	Wednesday	9/12/2007	27.9
Monday	1/29/2007	34.2	Tuesday	5/22/2007	46.7	Thursday	9/13/2007	29.1
Tuesday	1/30/2007	37.6	Wednesday	5/23/2007	41.2	Sunday	9/16/2007	30.3
Wednesday	1/31/2007	40.1	Thursday	5/24/2007	48.1	Monday	9/17/2007	36.1
Thursday	2/1/2007	39.7	Sunday	5/27/2007	28.5	Tuesday	9/18/2007	32.7
Sunday	2/4/2007	33.6	Monday	5/28/2007	28.5	Wednesday	9/19/2007	31.3
Monday	2/5/2007	26.5	Tuesday	5/29/2007	42.0	Thursday	9/20/2007	40.9
Tuesday	2/6/2007	37.3	Wednesday	5/30/2007	45.0	Sunday	9/23/2007	27.5
Wednesday	2/7/2007	43.6	Thursday	5/31/2007	47.8	Monday	9/24/2007	37.2
Thursday	2/8/2007	41.6	Sunday	6/3/2007	28.0	Tuesday	9/25/2007	39.5
Sunday	2/11/2007	23.8	Monday	6/4/2007	39.7	Wednesday	9/26/2007	41.8
Monday	2/12/2007	32.0	Tuesday	6/5/2007	44.8	Thursday	9/27/2007	43.0
Tuesday	2/13/2007	40.5	Wednesday	6/6/2007	44.8	Sunday	9/30/2007	29.7
Wednesday	2/14/2007	41.2	Thursday	6/7/2007	51.5	Monday	10/1/2007	38.9
Thursday	2/15/2007	35.1	Sunday	6/10/2007	29.1	Tuesday	10/2/2007	40.5
Sunday	2/18/2007	25.0	Monday	6/11/2007	40.1	Wednesday	10/3/2007	40.7
Monday	2/19/2007	24.9	Tuesday	6/12/2007	49.1	Thursday	10/4/2007	41.0
Tuesday	2/20/2007	35.7	Wednesday	6/13/2007	42.8	Sunday	10/7/2007	29.9
Wednesday	2/21/2007	40.9	Thursday	6/14/2007	46.7	Monday	10/8/2007	35.3
Thursday	2/22/2007	35.1	Sunday	6/17/2007	29.1	Tuesday	10/9/2007	39.9
Sunday	2/25/2007	23.0	Monday	6/18/2007	41.2	Wednesday	10/10/2007	42.4
Monday	2/26/2007	38.7	Tuesday	6/19/2007	46.2	Thursday	10/11/2007	41.4
Tuesday	2/27/2007	37.0	Wednesday	6/20/2007	47.1	Sunday	10/14/2007	26.9
Wednesday	2/28/2007	36.7	Thursday	6/21/2007	46.2	Monday	10/15/2007	35.6
Thursday	3/1/2007	37.6	Sunday	6/24/2007	29.7	Tuesday	10/16/2007	38.9
Sunday	3/4/2007	24.7	Monday	6/25/2007	41.5	Wednesday	10/17/2007	39.4
Monday	3/5/2007	34.0	Tuesday	6/26/2007	46.2	Thursday	10/18/2007	38.4
Tuesday	3/6/2007	32.9	Wednesday	6/27/2007	47.4	Sunday	10/21/2007	34.9
Wednesday	3/7/2007	38.7	Thursday	6/28/2007	43.5	Monday	10/22/2007	29.6
Thursday	3/8/2007	37.0	Sunday	7/1/2007	31.7	Tuesday	10/23/2007	31.4
Sunday	3/11/2007	22.5	Monday	7/2/2007	37.6	Wednesday	10/24/2007	39.0
Monday	3/12/2007	31.4	Tuesday	7/3/2007	43.7	Thursday	10/25/2007	37.3
Tuesday	3/13/2007	33.9	Wednesday	7/4/2007	28.1	Sunday	10/28/2007	27.5
Wednesday	3/14/2007	34.5	Thursday	7/5/2007	36.3	Monday	10/29/2007	28.5
Thursday	3/15/2007	36.3	Sunday	7/8/2007	27.4	Tuesday	10/30/2007	34.6
Sunday	3/18/2007	24.1	Monday	7/9/2007	36.4	Wednesday	10/31/2007	36.5
Monday	3/19/2007	33.3	Tuesday	7/10/2007	43.0	Thursday	11/1/2007	36.9
Tuesday	3/20/2007	37.0	Wednesday	7/11/2007	37.4	Sunday	11/4/2007	25.4
Wednesday	3/21/2007	38.0	Thursday	7/12/2007	39.7	Monday	11/5/2007	
Thursday	3/22/2007	35.4	Sunday	7/15/2007	26.4	Tuesday	11/6/2007	38.3
Sunday	3/25/2007	18.6	Monday	7/16/2007	41.2	Wednesday	11/7/2007	48.3
Monday	3/26/2007	25.1	Tuesday	7/17/2007	44.9	Thursday	11/8/2007	42.0
Tuesday	3/27/2007	33.2	Wednesday	7/18/2007	39.4	Sunday	11/11/2007	28.0
Wednesday	3/28/2007	33.4	Thursday	7/19/2007	35.9	Monday	11/12/2007	24.4
Thursday	3/29/2007	23.8	Sunday	7/22/2007	26.9	Tuesday	11/13/2007	29.3
Sunday	4/1/2007	34.6	Monday	7/23/2007	38.8	Wednesday	11/14/2007	32.8
Monday	4/2/2007	34.3	Tuesday	7/24/2007	37.9	Thursday	11/15/2007	34.4
Tuesday	4/3/2007	39.4	Wednesday	7/25/2007	38.0	Sunday	11/18/2007	22.7
Wednesday	4/4/2007	41.6	Thursday	7/26/2007	36.7	Monday	11/19/2007	36.9
Thursday	4/5/2007	42.0	Sunday	7/29/2007	27.5	Tuesday	11/20/2007	34.6
Sunday	4/8/2007	24.7	Monday	7/30/2007	35.8	Wednesday	11/21/2007	43.2
Monday	4/9/2007	36.3	Tuesday	7/31/2007	39.6	Thursday	11/22/2007	28.2
Tuesday	4/10/2007	40.5	Wednesday	8/1/2007	41.1	Sunday	11/25/2007	27.9
Wednesday	4/11/2007	39.8	Thursday	8/2/2007	39.4	Monday	11/26/2007	38.4
Thursday	4/12/2007	39.8	Sunday	8/5/2007	27.7	Tuesday	11/27/2007	37.9
Sunday	4/15/2007	26.0	Monday	8/6/2007	36.3	Wednesday	11/28/2007	37.6
Monday	4/16/2007	36.7	Tuesday	8/7/2007	42.5	Thursday	11/29/2007	39.9
Tuesday	4/17/2007	39.7	Wednesday	8/8/2007	39.8	Sunday	12/2/2007	24.1
Wednesday	4/18/2007	42.8	Thursday	8/9/2007	40.0	Monday	12/3/2007	21.7
Thursday	4/19/2007	45.8	Sunday	8/12/2007	25.0	Tuesday	12/4/2007	23.8
Sunday	4/22/2007	27.5	Monday	8/13/2007	36.2	Wednesday	12/5/2007	29.5
Monday	4/23/2007	37.6	Tuesday	8/14/2007	41.3	Thursday	12/6/2007	34.4
Tuesday	4/24/2007	43.2	Wednesday	8/15/2007	42.7	Sunday	12/9/2007	26.7
Wednesday	4/25/2007	43.2	Thursday	8/16/2007	36.1	Monday	12/10/2007	37.2
Thursday	4/26/2007	43.7	Sunday	8/19/2007	27.5	Tuesday	12/11/2007	41.1
Sunday	4/29/2007	26.4	Monday	8/20/2007	46.4	Wednesday	12/12/2007	42
Monday	4/30/2007	37	Tuesday	8/21/2007	44.6	Thursday	12/13/2007	40.1
Monday	4/30/2007	29.1	Wednesday	8/22/2007	38.1	Sunday	12/16/2007	27.2
Tuesday	5/1/2007	33.4	Thursday	8/23/2007	40.1	Monday	12/17/2007	41.5
Wednesday	5/2/2007	44.4	Sunday	8/26/2007	29.8	Tuesday	12/18/2007	37.7
Thursday	5/3/2007	43.6	Monday	8/27/2007	35.7	Wednesday	12/19/2007	32.6
Sunday	5/6/2007	28.0	Tuesday	8/28/2007	41.4	Thursday	12/20/2007	30.5
Monday	5/7/2007	38.0	Wednesday	8/29/2007	41.6	Sunday	12/23/2007	26
Tuesday	5/8/2007	44.0	Thursday	8/30/2007	43.8	Monday	12/24/2007	31.8
Wednesday	5/9/2007	47.1	Sunday	9/2/2007	28.0	Tuesday	12/25/2007	27.4
Thursday	5/10/2007	42.0	Monday	9/3/2007	29.4	Wednesday	12/26/2007	35.8
Sunday	5/13/2007	28.5	Tuesday	9/4/2007	15.0	Thursday	12/27/2007	36.8
Monday	5/14/2007	35.2	Wednesday	9/5/2007	25.6	Sunday	12/30/2007	27.5
Tuesday	5/15/2007	39.7	Thursday	9/6/2007	42.3			
Wednesday	5/16/2007	45.8	Sunday	9/9/2007	7.0			

Maximum	52	mg/L as N
Minimum	7	mg/L as N
Average	29	mg/L as N
std. dev.	9.10	
# of samples	967	
CV	0.31	
90th %	41.1	mg/L as N
95th %	43.2	mg/L as N

(APPENDIX E— LAKOTA WWTP DATA, continued)



Lakota Chronic WET Results

Test #	Sample Date	Start Date	Lab	Organism	Endpoint	NOEC	LOEC	PMSD
AQTX002661	4/2/01	4/3/01	Nautilus Environmental	Topsmelt	7-day Survival	25	50	19.45%
					Biomass	12.5	25	18.87%
					Weight	50	> 50	18.76%
AQTX002667	10/8/01	10/8/01	Nautilus Environmental	Topsmelt	7-day Survival	50	100	9.59%
					Biomass	50	100	24.11%
					Weight	50	100	21.72%
AQTX002668	10/8/01	10/9/01	Nautilus Environmental	Atlantic Mysid	7-day Survival	50	100	15.59%
					Biomass	25	50	23.51%
					Weight	25	50	21.40%
AQTX003033	4/1/02	4/2/02	Nautilus Environmental	Atlantic Mysid	7-day Survival	50	100	15.71%
					Biomass	25	50	16.48%
					Weight	25	50	14.19%
RMAR0846	1/8/07	1/9/07	Nautilus Environmental	Atlantic Mysid	7-day Survival	50	100	13.52%
					Biomass	25	50	16.09%
					Weight	25	50	11.74%
RMAR0847	1/8/07	1/9/07	Nautilus Environmental	Topsmelt	7-day Survival	50	100	11.86%
					Biomass	50	100	15.07%
					Weight	50	> 50	9.92%
RMAR0932	7/9/07	7/10/07	Nautilus Environmental	Atlantic Mysid	7-day Survival	50	100	21.01%
					Biomass	25	50	18.57%
					Weight	25	50	16.79%
RMAR0933	7/9/07	7/10/07	Nautilus Environmental	Topsmelt	7-day Survival	50	100	14.30%
					Biomass	25	50	16.55%
					Weight	25	50	19.19%

(APPENDIX E— LAKOTA WWTP DATA, continued)

Lakota Acute WET Results

Test #	Sample Date	Start Date	Lab	Organism	Endpoint	% Survival	NOEC	LOEC	PMSD
RMAR0097	8/22/90	8/23/90	Bioassay Testing Services	Rainbow Trout	96-hour Survival	100%	100	> 100	0.00%
RMAR0098	8/22/90	8/22/90	Bioassay Testing Services	Daphnia pulex	48-hour Survival	97%	100	> 100	7.24%
RMAR0099	8/22/90	8/22/90	Bioassay Testing Services	Fathead Minnow	48-hour Survival	97%	100	> 100	4.85%
RMAR0100	10/10/90	10/10/90	Bioassay Testing Services	Rainbow Trout	96-hour Survival	0%	< 100	100	0.00%
RMAR0101	10/10/90	10/10/90	Bioassay Testing Services	Daphnia pulex	48-hour Survival	0%	< 100	100	0.00%
RMAR0102	10/10/90	10/10/90	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0103	12/28/90	12/28/90	Bioassay Testing Services	Rainbow Trout	96-hour Survival	0%	< 100	100	0.00%
RMAR0104	12/28/90	12/28/90	Bioassay Testing Services	Daphnia pulex	48-hour Survival	0%	< 100	100	0.00%
RMAR0105	12/28/90	12/28/90	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0106	1/4/91	1/4/91	Bioassay Testing Services	Rainbow Trout	96-hour Survival	97%	100	> 100	
RMAR0107	1/4/91	1/4/91	Bioassay Testing Services	Daphnia pulex	48-hour Survival	80%	50	100	
RMAR0108	1/4/91	1/4/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	70%	50	100	
RMAR0109	2/28/91	2/28/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	40%	< 100	100	8.14%
RMAR0110	2/28/91	3/3/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	47%	50	100	
RMAR0111	4/17/91	4/17/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	100%	100	> 100	0.00%
RMAR0112	6/19/91	6/19/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	67%	< 100	100	2.85%
RMAR0113	9/25/91	9/25/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0114	9/25/91	9/28/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	6.25	12.5	
RMAR0115	12/16/91	12/16/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0116	12/16/91	12/18/91	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	12.5	25	
KJOH729	1/22/92	1/24/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	27%	< 100	100	3.21%
KJOH730	1/22/92	1/29/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	7%	50	100	
RMAR0117	1/22/92	1/24/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	27%	< 100	100	3.21%
KJOH731	6/3/92	6/6/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	50	100	
KJOH732	6/3/92	6/4/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0118	6/4/92	6/4/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0119	6/4/92	6/6/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	50	100	
KJOH733	8/20/92	8/21/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
KJOH734	8/20/92	8/22/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	30%	50	100	
RMAR0120	8/21/92	8/21/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0121	8/21/92	8/22/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	30%	50	100	
RMAR0122	12/8/92	12/10/92	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
SSIN377	3/10/93	3/11/93	Bioassay Testing Services	Fathead Minnow	48-hour Survival	83%	< 100	100	4.09%
KJOH453	5/11/93	5/12/93	Bioassay Testing Services	Fathead Minnow	48-hour Survival	97%	100	> 100	4.85%
KJOH449	12/7/93	12/8/93	Bioassay Testing Services	Fathead Minnow	48-hour Survival	30%	< 100	100	8.95%
KJOH450	12/7/93	12/9/93	Bioassay Testing Services	Fathead Minnow	48-hour Survival	90%	100	> 100	
AQTX0043	3/2/94	3/3/94	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	6.17%
AQTX0047	6/8/94	6/8/94	Bioassay Testing Services	Fathead Minnow	48-hour Survival	97%	100	> 100	4.85%
AQTX0048	9/21/94	9/22/94	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	0.00%
RMAR0124	9/21/94	9/23/94	Bioassay Testing Services	Fathead Minnow	48-hour Survival	7%	50	100	
AQTX0111	12/18/94	12/22/94	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	< 100	100	6.17%
AQTX0112	12/18/94	12/19/94	Bioassay Testing Services	Fathead Minnow	48-hour Survival	0%	25	50	
AQTX0230	3/1/95	3/1/95	Bioassay Testing Services	Fathead Minnow	48-hour Survival	100%	100	> 100	0.00%
AQTX0385	5/22/95	5/24/95	Bioassay Testing Services	Fathead Minnow	48-hour Survival	53%	< 100	100	2.71%
RMAR0125	5/23/95	5/24/95	Bioassay Testing Services	Fathead Minnow	48-hour Survival	53%	< 100	100	2.71%
AQTX0386	6/26/95	6/28/95	Bioassay Testing Services	Fathead Minnow	48-hour Survival	97%	100	> 100	
RMAR0126	6/27/95	6/28/95	Bioassay Testing Services	Fathead Minnow	48-hour Survival	97%	100	> 100	
AQTX0650	8/7/95	8/9/95	Bioassay Testing Services	Fathead Minnow	96-hour Survival	0%	< 100	100	0.00%
AQTX0651	8/7/95	8/10/95	Bioassay Testing Services	Fathead Minnow	96-hour Survival	13%	50	100	13.83%
AQTX0699	11/14/95	11/15/95	Bioassay Testing Services	Fathead Minnow	96-hour Survival	83%	< 100	100	8.75%
AQTX0841	6/14/96	5/15/96	Bioassay Testing Services	Fathead Minnow	96-hour Survival	83%	50	100	14.22%
AQTX0970	7/23/96	7/23/96	Bioassay Testing Services	Fathead Minnow	96-hour Survival	93%	100	> 100	49.54%
AQTX1246	12/11/96	12/13/96	Bioassay Testing Services	Fathead Minnow	96-hour Survival	97%	100	> 100	
AQTX1277	3/17/97	3/18/97	Bioassay Testing Services	Fathead Minnow	96-hour Survival	93%	100	> 100	
AQTX1384	6/19/97	6/20/97	Bioassay Testing Services	Fathead Minnow	96-hour Survival	7%	50	100	
AQTX00265[7]	1/29/01	1/30/01	Nautilus Environmental	Daphnia pulex	48-hour Survival	10%	50	100	18.84%
AQTX00265[8]	1/29/01	1/29/01	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	50	100	
AQTX00265[9]	4/2/01	4/3/01	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	25	50	
AQTX00266[0]	4/2/01	4/2/01	Nautilus Environmental	Daphnia pulex	48-hour Survival	90%	100	> 100	17.99%
AQTX00266[3]	7/9/01	7/10/01	Nautilus Environmental	Daphnia pulex	48-hour Survival	80%	100	> 100	13.05%
AQTX00266[4]	7/9/01	7/10/01	Nautilus Environmental	Fathead Minnow	96-hour Survival	20%	50	100	
AQTX00266[5]	10/8/01	10/9/01	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	12.5	25	
AQTX00266[6]	10/8/01	10/9/01	Nautilus Environmental	Daphnia pulex	48-hour Survival	100%	100	> 100	22.64%
RMAR0331	10/6/03	10/7/03	Nautilus Environmental	Fathead Minnow	96-hour Survival	93%	100	> 100	7.96%
RMAR0332	10/6/03	10/6/03	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	5.00%

(APPENDIX E— LAKOTA WWTP DATA, continued)

Lakota Acute WET Results (cont'd)

Test #	Sample Date	Start Date	Lab	Organism	Endpoint	% Survival	NOEC	LOEC	PMSD
RMAR0333	1/9/04	1/9/04	Nautilus Environmental	Fathead Minnow	96-hour Survival	90%	100	> 100	20.87%
RMAR0334	1/9/04	1/9/04	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	5.00%
RMAR0335	4/7/04	4/7/04	Nautilus Environmental	Fathead Minnow	96-hour Survival	78%	100	> 100	19.11%
RMAR0336	4/7/04	4/7/04	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	0%	50	100	15.69%
RMAR0337	7/7/04	7/7/04	Nautilus Environmental	Fathead Minnow	96-hour Survival	5%	50	100	18.58%
RMAR0338	7/7/04	7/7/04	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	0%	50	100	14.45%
RMAR0339	10/4/04	10/5/04	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	70%	50	100	9.56%
RMAR0340	10/4/04	10/5/04	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	50	100	10.09%
RMAR0341	1/3/05	1/4/05	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	5.00%
RMAR0342	1/3/05	1/4/05	Nautilus Environmental	Fathead Minnow	96-hour Survival	88%	100	> 100	12.54%
RMAR0343	4/11/05	4/11/05	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	5.00%
RMAR0344	4/11/05	4/12/05	Nautilus Environmental	Fathead Minnow	96-hour Survival	63%	25	50	13.73%
RMAR0345	7/7/05	7/7/05	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	70%	100	> 100	31.49%
RMAR0346	7/7/05	7/7/05	Nautilus Environmental	Fathead Minnow	96-hour Survival	5%	50	100	6.57%
RMAR0347	10/17/05	10/18/05	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	9.21%
RMAR0348	10/17/05	10/18/05	Nautilus Environmental	Fathead Minnow	96-hour Survival	35%	50	100	9.80%
pbro233	1/9/06	1/9/06	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	95%	100	> 100	10.86%
pbro234	1/9/06	1/10/06	Nautilus Environmental	Fathead Minnow	96-hour Survival	95%	100	> 100	10.48%
RMAR0623	4/3/06	4/4/06	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	5.00%
RMAR0624	4/3/06	4/4/06	Nautilus Environmental	Fathead Minnow	96-hour Survival	100%	100	> 100	4.57%
RMAR0677	7/10/06	7/10/06	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	5.00%
RMAR0678	7/10/06	7/11/06	Nautilus Environmental	Fathead Minnow	96-hour Survival	5%	50	100	11.17%
RMAR0741	10/9/06	10/9/06	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	65%	50	100	8.86%
RMAR0742	10/9/06	10/10/06	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	25	50	20.56%
RMAR0844	1/8/07	1/9/07	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	100%	100	> 100	25.72%
RMAR0845	1/8/07	1/9/07	Nautilus Environmental	Fathead Minnow	96-hour Survival	3%	25	50	8.70%
RMAR0876	4/2/07	4/3/07	Nautilus Environmental	Fathead Minnow	96-hour Survival	13%	4.17	12.5	10.45%
RMAR0877	4/2/07	4/2/07	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	45%	100	> 100	24.29%
RMAR0930	7/9/07	7/9/07	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	10%	50	100	14.11%
RMAR0931	7/9/07	7/10/07	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	25	50	18.85%
RMAR1027	10/15/07	10/15/07	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	50%	100	> 100	31.13%
RMAR1028	10/15/07	10/16/07	Nautilus Environmental	Fathead Minnow	96-hour Survival	0%	25	50	7.48%
RMAR1121	1/22/08	1/22/08	Nautilus Environmental	Ceriodaphnia dubia	48-hour Survival	90%	100	> 100	16.88%
RMAR1122	1/22/08	1/22/08	Nautilus Environmental	Fathead Minnow	96-hour Survival	5%	50	100	7.58%
RMAR0123	NR	10/1/93	Bioassay Testing Services	Fathead Minnow	48-hour Survival	87%	100	> 100	23.28%

APPENDIX F —EPA LIST OF 126 PRIORITY POLLUTANTS

EPA List of 126 Priority Pollutants

(source: 40 CFR Part 423, titled "Appendix A to Part 403 - 126 Priority Pollutants")

Chlorinated Benzenes
- Chlorobenzene
- 1,2-dichlorobenzene
- 1,3-dichlorobenzene
- 1,4-dichlorobenzene
- 1,2,4-trichlorobenzene
- Hexachlorobenzene

Chlorinated Ethanes
- Chloroethane
- 1,1-dichloroethane
- 1,2-dichloroethane
- 1,1,2-trichloroethane
- 1,1,1-trichloroethane
- 1,1,2,2-tetrachloroethane
- Hexachloroethane

Chlorinated Phenols
- 2-chlorophenol
- 2,4-dichlorophenol
- 2,4,6-trichlorophenol
- Parametachlorocresol (4-chloro-3-methyl phenol)

Other Chlorinated Organics
- Chloroform (trichloromethane)
- Carbon tetrachloride (tetrachloromethane)
- Bis(2-chloroethoxy)methane
- Bis(2-chloroethyl)ether
- 2-chloroethyl vinyl ether (mixed)
- 2-chloronaphthalene
- 3,3'-dichlorobenzidine
- 1,1-dichlorethylene
- 1,2-trans-dichloroethylene
- 1,2-dichloropropane
- 1,2-dichloropropylene (1,3-dichloropropene)
- Tetrachloroethylene
- Trichloroethylene
- Vinyl chloride (chloroethylene)
- Hexachlorobutadiene
- Hexachlorocyclopentadiene

Haloethers
- 4-chlorophenyl phenyl ether
- 2-bromophenyl phenyl ether
- Bis(2-chloroisopropyl)

Halomethanes
- Methylene chloride (dichloromethane)
- Methyl chloride (chloromethane)
- Methyl bromide (bromomethane)
- Bromoform (tribromomethane)
- Dichlorobromomethane
- Chlorodibromomethane

Nitroamines
- N-nitrosodimethylamine
- N-nitrosodiphenylamine
- N-nitrosodi-n-propylamine

Phenols (other than chlorinated)
- 2-nitrophenol
- 4-nitrophenol
- 2,4-dinitrophenol
- 4,6-dinitro-o-cresol (4,6-dinitro-2-methylphenol)
- Pentachlorophenol
- Phenol
- 2,4-dimethylphenol
- 1, 2-diphenyl hydrazine (azobenzene)
- Total Phenolic Compounds

Phthalate Esters
- Bis(2-ethylhexyl)phthalate
- Butyl benzyl phthalate
- Di-n-butyl phthalate
- Di-n-octyl phthalate
- Diethyl phthalate
- Dimethyl phthalate

Polynuclear Aromatic Hydrocarbons (PAHs)
- Acenaphthene
- 1,2-benzanthracene (benzo(a)anthracene)
- Benzo(a)pyrene (3,4-benzo-pyrene)
- 3,4-benzofluoranthene (benzo(b)fluoranthene)
- 11,12-benzofluoranthene (benzo(k)fluoranthene)
- Chrysene
- Acenaphthylene
- Anthracene
- 1,12-benzoperylene (benzo(ghi)perylene)
- Fluorene
- Fluoranthene
- Phenanthrene
- 1,2,5,6-dibenzanthracene (dibenzo(a,h)anthracene)
- Indeno (1,2,3-cd) pyrene (2,3-o-phenylene pyrene)
- Pyrene

Pesticides and Metabolites
- Aldrin
- Dieldrin
- Chlordane (technical mixture and metabolites)
- Alpha-endosulfan
- Beta-endosulfan
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Heptachlor
- Heptachlor epoxide (BHChexachlorocyclohexane)
- Alpha-BHC
- Beta-BHC
- Gamma-BHC (Lindane)
- Delta-BHC
- Toxaphene

DDT and Metabolites
- 4,4-DDT
- 4,4-DDE (p,p-DDX)
- 4,4-DDD (p,p-DDE)

Polychlorinated Biphenyls (PCBs)
- PCB-1242 (Aroclor 1242)
- PCB-1254 (Aroclor 1254)
- PCB-1221 (Aroclor 1221)
- PCB-1232 (Aroclor 1232)
- PCB-1248 (Aroclor 1248)
- PCB-1260 (Aroclor 1260)
- PCB-1016 (Aroclor 1016)

Other Organics
- Acrolein
- Acrylonitrile
- Benzene
- Benzidine
- 2,4-dinitrotolulene
- 2,6-dinitrotolulene
- Ethylbenzene
- Isophrone
- Naphthalene
- Nitrobenzene
- Tolulene

Inorganics
- Antimony
- Arsenic
- Beryllium
- Cadmium
- Chromium, total
- Copper
- Cyanide, total
- Cyanide, weak acid dissociable
- Lead
- Mercury
- Nickel
- Selenium
- Silver
- Thallium
- Zinc

APPENDIX G—RESPONSE TO COMMENTS

The following comments were received from Mark Toy from the Department of Health Office of Shellfish and Water Protection:

Comment 1:

1. Fact Sheet, 'Description of Receiving Water':
Ecology uses Brown's Point water quality data (near Commencement Bay) to characterize the receiving water for the Redondo and Lakota outfalls and reports a 90th percentile value of 84 fecal coliforms/100 ml. Please note that DOH OSWP has taken 21 sets of marine samples in Dumas/Poverty Bay area (closer to outfalls than Brown's Point) since June 2006 with much better results:

Redondo Area Marine Sampling, June 2006 to May 2008

Station	#Samples	GM	Range	90th %
701	21	2.9	1.7-23	8
702	21	2.8	1.7-70	9
703	21	3.5	1.7-130	18
704	21	2.8	1.7-33	8
705	21	2.8	1.7-49	9
706	21	2.4	1.7-33	7
707	21	2.6	1.7-17	6

A map showing these sample locations is attached.

Response to Comment 1:

Thanks for the updated data. This information was added to the fact sheet. This data supports Ecology's conclusion that the Lakota discharge has no reasonable potential to violate water quality standards for fecal coliform.

Comment 2:

2. Fact Sheet, 'Human Health'
I don't know if you consider this appropriate for this section, but ATSDR did sponsor an evaluation of potential contamination of geoduck tissues by selected metals (arsenic, cadmium, lead, mercury) in Dumas Bay. The link is here: http://www.atsdr.cdc.gov/HAC/pha/GeoduckTracts/GeoduckTissue-DumasBayHC041807.pdf. They concluded that 'Exposure to arsenic, cadmium, lead and mercury in Dumas Bay geoduck represents *no apparent public health hazard*.' If nothing else, it's useful to know for baseline information.

Response to Comment 2:

Thanks for the information; it was added to the fact sheet under 'Introduction'.