Fact Sheet

U.S. Environmental Protection Agency
Region 10

The United States Environmental Protection Agency (EPA)
Plans to Issue a
National Pollutant Discharge Elimination System (NPDES) Permit to:

Applicant: City of Hansen
P.O. Box 170
Hansen, Idaho 83334

Permit No.: ID0022446

Public Comment Period
Starts: June 6, 2007
Ends: July 6, 2007

Technical Contact
Name: Lindsay Guzzo
Phone: (206)553-0268
1-800-424-4372 ext.0268 (within Alaska, Idaho, Oregon, and Washington)
Email: guzzo.lindsay@epa.gov

EPA's Tentative Determination
EPA proposes to issue an NPDES permit to the City of Hansen Wastewater Treatment Plant. The draft permit places conditions on the discharge of pollutants from the Sewage Treatment Plant to an unnamed canal. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

•information on public comment, public hearing, and appeal procedures;
•a description of the facility and proposed discharge;
•a listing of proposed effluent limitations, and other conditions;
•description of the discharge location; and
•detailed technical material supporting the conditions in the permit.

Public Comment and Public Hearings

Persons wishing to comment on the tentative determinations contained in the draft permit must do so, in writing, by the end date of this public comment period. All comments should include the name, address, and telephone number of the commenter, reference the facility name and NPDES permit number, and include a concise statement of the exact basis of any comment and the relevant facts upon which it is based.

Persons wishing to request that a public hearing be held may do so, in writing, by the end date of this public comment period. A request for a public hearing must state the nature of the issues to be raised, reference the facility name and NPDES permit number, and include the requester's name, address, and telephone number.

All written comments and requests should be submitted to the attention of the Director, Office of Water and Watersheds at the following address:

U.S. EPA, Region 10
1200 Sixth Avenue, M/S OWW-130
Seattle, Washington 98101

Comments may also be submitted electronically to the technical contact listed above.

After the Public Notice expires, and all comments have been considered, EPA's Director for the Office of Water in Region 10 will make a final decision regarding permit issuance. If no significant comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board within 30 days.

Availability of Documents

The following documents are available at the EPA Region 10 Office, 1200 Sixth Ave, Seattle, Washington, between 8:30 a.m. and 4:00 p.m., Monday through Friday:

•permit application and any supporting data submitted by the permittee
•draft permit
•fact sheet
•documents referenced in fact sheet
•other documents (e.g., meeting reports, correspondence, trip reports, telephone memos, calculations, etc.)
•State of Idaho preliminary comments

Copies of the draft permit and fact sheet are also available at:

EPA Region 10 website: **www.epa.gov/r10earth**

EPA Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(206) 378-5746

State Certification

EPA is requesting that the Idaho Department of Environmental Quality certify this NPDES permit for the **City of Hansen**, under section 401 of the Clean Water Act. The State provided preliminary comments on the draft permit, and those comments have been incorporated into this draft permit.

Persons wishing to comment on the State's intent to certify this permit should submit written comments by the end date of this public comment period to the Administrator of IDEQ, with a copy to EPA, at the following address:

Administrator, State of Idaho
Department of Environmental Quality
Twin Falls Regional Office
1363 Fillmore Street
Twin Falls, Idaho 83301

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ACRONYMS

BMPs	Best management practices
BOD	Biochemical oxygen demand
BOD_5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Division of Environmental Quality
lb	pounds
mg/L	milligrams per liter
mL	milliliter
MSWLF	Municipal solid waste landfill
N	Nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NR	Not required
OW	Office of Water
P	Phosphorus
POTW	Publicly owned treatment works
QAPP	Quality assurance project plan
sp.	Species
TRC	Total residual chlorine
TSD	Technical Support document (EPA, 1991)
TSS	Total suspended solids
TWTDS	Treatment works treating domestic sewage
USFWS	U.S. Fish and Wildlife Service
WET	Whole effluent toxicity
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

I. BACKGROUND

A. Applicant

City of Hansen
Wastewater Treatment Plant (WWTP)

Facility Location:
3715 North 3775 East
Hansen, Idaho

Mailing Address:
P.O. Box 170
Hansen, Idaho 83334

Facility Contact: George Urie, Mayor
(208) 425-5158

B. Activity

The City of Hansen is located in south central Idaho, approximately one quarter mile west of Highway 30 near the 4th Street junction in Twin Falls County, Idaho. The city owns operates, and has maintenance responsibility for a wastewater treatment plant which treats domestic sewage from the residents and commercial establishments of Hansen, including the storage of sludge in a separate sludge storage lagoon. No industrial wastes are received at this facility.

The Hansen wastewater treatment plant provides secondary treatment. The treatment plant consists of a parshall flume, an oxidation ditch, a clarifier, sludge drying beds, and chlorination basins. The facility discharges to an unnamed agricultural canal. Waters in the canal are diverted for irrigation, resulting in minimum flows ultimately reaching the Snake River.

The facility's design flow is 0.125 million gallons per day (mgd) but the facility has been discharging an average flow of 0.084 mgd.

C. Plant Performance

A review of the Discharge Monitoring Reports (DMRs) for the past seven years shows that the existing plant has, for the most part, been complying with their permit limits. There have been a few violations of permit limits, but none that were long term or consistent. A summary of the plant performance for the past

seven years is provided in Table I-1. The violations indicated in Table I-1 occurred from November 1999 through March 2006.

TABLE I-1. SUMMARY OF PLANT PERFORMANCE (1999 – 2006)

Parameter	Average Plant Performance	# Reported Violations
Flow	0.081 mgd	N/A
Effluent BOD_5	5.9 mg/L	3
	4.1 lbs/day	0
Effluent TSS	10.3 mg/L	4
	7 lbs/day	4
% Removal, BOD_5	96.9 %	1
% Removal, TSS	94 %	5
Fecal Coliform	68 colonies/100 mL (average weekly)	6
Total Residual Chlorine (daily max limit)	0.71 mg/L	2
PH	7.0	0

II. RECEIVING WATER

Unnamed agricultural canal, Idaho

The City of Hansen WWTP effluent discharges to an unnamed agricultural canal through outfall 001, located at latitude 43°32'05" and longitude 114°18'25". After traveling through the canal for approximately six miles, effluent eventually enters the Middle Snake River located in the Upper Snake River Basin.

The unnamed canal is not designated in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements; therefore, it is to be protected for primary contact recreation, secondary contact recreation, cold water biota, and agricultural water supply (IDAPA 58.01.02.101.01). In past permits the flow from the Snake River was used to determine the reasonable potential to exceed water quality standards and to determine mixing zones. However, all mixing is done in the canal, therefore, the flow in the canal shall be used to provide the mixing zones and be used in determining reasonable potential. Since the flow in the canal has not historically been measured we do not have a potential mixing zone.

III. EFFLUENT LIMITATIONS

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

In general, EPA first determines which technology-based limits are required to be incorporated into the permit (40 CFR Part 122.44[a]), as well as best management practices or other requirements. Technology-based limits for municipal facilities are derived from secondary treatment standards (40 CFR Part 133.102) and based on end of pipe technology. However, the CWA also requires NPDES permitted discharges to demonstrate compliance with state water quality standards.

Water quality-based effluent limits are derived from state water quality standards to protect the water quality of state waters. Therefore, the effluent limitations are developed from the technology available to treat the pollutants (technology-based limits) and limits that are protective of the designated uses of the receiving water (water quality-based limits). The proposed permit will reflect whichever limits (technology-based or water quality-based) are more stringent.

A. Summary of Draft Permit Limitations

For wastewater treatment plants, technology-based limits cover three parameters: five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS) and pH. In their permit application, the City of Hansen identified the following additional pollutants as being present in their discharge: fecal coliform bacteria, temperature, total residual chlorine, nitrogen, ammonia, and phosphorus. While fecal coliform has been used in past permits, the Idaho water quality standards now require E. coli instead of fecal coliform for protection of human health. Therefore, the draft permit is proposing effluent limitations for BOD, E. Coli, pH, phosphorus, total residual chlorine, and TSS.

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

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34 (where 8.34 is the conversion factor for (lb × L)/(mg × mgd)=lb/day)

Table III-1 presents the City of Hansen's proposed effluent limitations for their wastewater treatment plant. For comparison purposes, the table also shows the effluent limitations of the current permit.

TABLE III-1. PROPOSED EFFLUENT LIMITATIONS

Parameter	Units	Monthly Average		Weekly Average		Maximum Daily		Minimum Daily	
		Current (1999)	Draft (2007)	Current (1999)	Draft (2007)	Current (1999)	Draft (2007)	Current (1999)	Draft (2007)
BOD_5[1]	mg/L	30	30	45	45	---	---	---	---
	lb/day	40	31	60	47	---	---	---	---
E. Coli	colonies / 100 mL	---	126[2]	---	---	---	406[3]	---	---
pH	s.u.	---	---	---	---	9.0	9.0	6.5	6.5
Phosphorus	lb/day	3.3	3.3	6.6	6.6	---	---	---	---
Total Residual Chlorine	mg/l	0.5	0.5	---	0.75	1.0	---	---	---
	lb/day	---	0.5	---	0.8	---	---	---	---
TSS[1]	mg/L	30	30	45	45	---	---	---	---
	lb/day	60	7.1	40	19	---	---	---	---

1 The average monthly percent removal shall be greater than 85% and calculated from the arithmetic mean of the influent values and arithmetic mean of the effluent values for that month.

2 Based on a geometric mean of all samples taken in that month.

3 Compliance with the E. Coli limitation shall be based on a single sample measurement.

B. Compliance Schedule and Interim Limits TSS

a. Compliance dates: The permittee must achieve compliance with the effluent loading limitations for TSS established in Part III.A, Table III-1, no later than January 1, 2010.

b. Beginning on the effective date of this permit and continuing to, no later than December 31, 2009 the permittee must achieve the following interim limits for TSS:

TSS:
Average Monthly Limit: 31 lbs/day
Average Weekly Limit: 47 lbs/day

C. Mixing Zone

A mixing zone is a limited area or volume of water where initial dilution of an effluent discharge takes place. States may, at their discretion, adopt certain policies in their water quality standards affecting the application and implementation of standards (40 CFR 131.13). Mixing zones are an example of such a policy. A mixing zone should not impair designated uses or the integrity of the water body as a whole, must not allow lethality to passing organisms, and must be as small as practicable. Mixing zones are only available for water quality based effluent limits.

Because flow data does not exist for the canal a mixing zone cannot be developed. Monitoring will be done throughout the duration of the permit and a mixing zone allowance will be reevaluated for the next reissuance.

D. Evaluation of Effluent Limitations

1. Biochemical Oxygen Demand, five-day (BOD_5)

The City of Hansen WWTP is a secondary treatment facility that is subject to the federal technology-based requirements for BOD_5. These requirements state that the 30-day average must not exceed 30 mg/L, the 7-day average must not exceed 45 mg/L, and the 30-day average percent removal must not be less than 85 percent. Furthermore, the Idaho water quality standards (IDAPA 58.01.02.420) require that sewage wastewater discharges limit BOD to the equivalent of 85 percent removal but not more than a 30-day average concentration of 30 mg/L. Since the facility can consistently achieve these limitations, the technology-based limits will be the proposed limits in the draft permit, along with the mass loadings that correspond with the concentration limits.

The draft permit proposes to retain the existing BOD_5 concentration limits and to correct the loading limits, using the design flow, to 30 mg/L (31 lb/day) average monthly limit, 45 mg/L (47 lb/day) average weekly limit, and an average monthly limit of >85% removal.

2. Bacteria.

When the *Upper Snake Rock Watershed Management Plan* was developed the Idaho water quality standards contained a water quality criterion for fecal coliform bacteria which was used as an indicator of potential human health risks associated with water's recreational use. Since the TMDL was developed the State of Idaho has revised their water quality standards and adopted E. coli bacteria as its indicator organism for the protection of

human health. This is consistent with EPA's recommended 1986 bacteria criteria. In 1986 EPA recommended using either enterococci or E.coli for bacteria criteria to protect for human health because EPA studies found that there was a strong correlation between the densities of enterococci and gastro-intestinal disease, and there was a correlation between E.coli and gastro-intestinal disease. The EPA studies found that there was no correlation between fecal coliform or total coliform and gastro-intestinal disease, and does not recommend that these be used as indicator species for the protection of human health.

When an effluent limit is based on a wasteload allocation from a TMDL the NPDES regulations at 122.44(d)(vii) state that the effluent limit must be derived from and comply with the applicable water quality standard and be consistent with the assumptions and requirements of any approved wasteload allocation. Although an approved wasteload allocation exists for fecal coliform, the wasteload allocation is not derived from the applicable water quality standard. Therefore, EPA has not incorporated the wasteload allocation into the permit. Rather the effluent limits for the permit are based on the E. coli bacteria criteria being achieved prior to the effluent being discharged to the receiving water.

Waters of the State of Idaho that are designated for recreation are not to contain E. coli bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a thirty day period. Therefore, the draft permit contains a monthly geometric mean effluent limit for E. coli of 126 organisms per 100 ml, and a minimum sampling frequency of five grab samples in 30 days (IDAPA 58.01.02.251.01.a.).

The Idaho water quality rules also state that a water sample that exceeds certain “single sample maximum” values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the “single sample maximum” value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.i.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent (EPA, 1991). Because a single sample value exceeding 406 organisms per 100 ml may indicate an exceedance of the geometric mean criterion, EPA has included an instantaneous (single grab

sample) maximum effluent limit for E. coli of 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for E. coli. This will ensure that the discharge will have a low probability of exceeding the geometric mean criterion for E. coli and provide warning of and opportunity to avoid possible non-compliance with the geometric mean criterion.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. The terms “average monthly limit” and “average weekly limit” are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

The draft permit is proposing to eliminate the existing fecal coliform limits and add the following E. Coli limits: 406 colonies/100 mL instantaneous maximum limit and 126 colonies/100 mL average monthly limit based on a geometric mean of all samples taken during the month.

3. Floating, Suspended or Submerged Matter.

The Idaho water quality standards require surface waters of the state to be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. This includes any petroleum products that cause a sheen or coating on the water surface.

The draft permit proposes adding suspended and submerged matter to the existing requirement that the facility meet a narrative standard for floating solids or visible foam other than in trace amounts.

4. Nutrients

Idaho water quality standards require that surface waters of the United States within Idaho shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.

Nutrients consist of phosphorus, nitrogen and carbon compounds. The nutrient of concern for this facility is phosphorus. The State of Idaho added the Snake River to the list of impaired water bodies for nutrients and a TMDL was issued for phosphorus in 1997.

Phosphorus as phosphate is one of the major nutrients required for plant nutrition and is essential for life. In excess of critical concentration, phosphates stimulate plant growths. This excess growth can lead to noxious plant growth, especially in lakes and reservoirs, and eutrophication or aging of waters. A TMDL has been established for the Snake River, and the City of Hansen received a waste load allocation (WLA) for phosphorus. The wasteload allocation was effective in the 1999 permit and has not changed since.

The draft permit proposes to retain the existing phosphorus limits of 3.3 lb/day average monthly limit, and 6.6 lb/day average weekly limit.

5. pH

The technology-based limitation for POTWs, based on federal regulations (40 CFR Part 133.102) is 6.0 to 9.0 standard units. The Idaho water quality standards for aquatic life gives an allowable pH range of 6.5 to 9.5 standard units. The permit should use the most stringent lower limit, from the state WQS, of 6.5 standard units and the most stringent higher limit, from the technology-based limit, of 9.0 standard units.

The draft permit proposes to retain the existing a pH limit of 6.5 to 9.0 standard units. Based on past DMRs the facility should be able to meet this pH limit with proper operations and maintenance.

6. Total Residual Chlorine (TRC)

A technology-based average monthly chlorine effluent limitation of 0.5 mg/L for wastewater treatment plants is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A

treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. The AWL is derived as 1.5 times the AML, resulting in an AWL for chlorine of 0.75 mg/L.

For the protection of aquatic life, the water quality criteria for total residual chlorine requires that concentrations not exceed 19 µg/L to protect against acute effects to aquatic life and 11.0 µg/L to protect against chronic effects to aquatic life [IDAPA 58.01.02.210.01]. A mixing zone would usually be used in determining the reasonable potential to violate water quality standards, however, the flow in the canal is unknown at this time. In stream flow sampling will be conducted throughout the duration of the permit and TRC will be reevaluated for the next permit.

The 1999 NPDES permit contained an average monthly and maximum daily technology based effluent limits for chlorine. Because average monthly and average weekly limits are required, the draft permit proposes the technology based 0.5 mg/L (0.5 lb/day) average monthly and 0.75 mg/L (0.8 lb/day) average weekly limits.

7. Total Suspended Solids (TSS)

The City of Hansen WWTP is a secondary treatment facility that is subject to the federal technology-based requirements for TSS. These requirements state that the 30-day average must not exceed 30 mg/L, the 7-day average must not exceed 45 mg/L, and the 30-day average percent removal must not be less than 85 percent. Furthermore, the Idaho water quality standards (IDAPA 58.01.02.420) require that sewage wastewater discharges limit TSS to the equivalent of 85 percent removal but not more than a 30-day average concentration of 30 mg/L, since the facility can consistently achieve these limits.

Where technology-based limits are not sufficient to achieve compliance with water quality standards, water quality based effluent limits should be established. When a total maximum daily load management plan (TMDL) has been developed by the state and approved by EPA, the permit limitations developed for point sources must be consistent with the wasteload allocations (WLAs) in the TMDL (40 CFR 122.44(d)(1)(vii)(B)). In the TMDL for the Middle Snake (*Middle Snake River Watershed Management Plan*), the city of Hansen was provided

with a WLA of 1.3 tons/year. In translating the WLA into a permit limit, the EPA followed the procedures in the TSD.

The draft permit proposes the concentration and removal limits from the previous permit and the loading limits presented in the TMDL: TSS limits: 30 mg/L (7.1 lb/day) average monthly limit, 45 mg/L (19 lb/day) average weekly limit, and >85% removal.

Idaho's water quality standards (IDAPA 58.01.02.400.03) allow compliance schedules to be incorporated into NPDES permits when water quality based effluent limits are being incorporated into the permit for the first time. A compliance schedule has been included in the permit and requires compliance with the water quality based limits by January 1, 2010. Until that time the permitee will be required to achieve the technology loading limits of 31 lb/day average monthly limit and 47 lb/day average weekly limit.

8. Turbidity

The Idaho water quality standards for cold water biota require that turbidity shall not exceed background turbidity by more than fifty NTU instantaneously or more than twenty-five NTU for more than ten consecutive days. Since turbidity is directly related to total suspended solids, the TSS limit shall prove protective of this requirement.

No limit for turbidity is proposed in the draft permit.

9. Temperature

The Idaho water quality standards have temperature criteria for cold water biota. Waters designated for cold water biota are required to exhibit water temperatures at or below 22 degrees Celsius (^{0}C) with a maximum daily average of no greater than 19 ^{0}C.

For TMDL development IDEQ is requiring continuous sampling in the influent and effluent, and upstream and downstream of the discharge. The reason for this level of monitoring is three-fold:

a. to ascertain the increase or decrease in temperature from the effluent discharge,
b. to ascertain the increase or decrease in temperature in the receiving waterbody as a result of the discharge, and
c. to ascertain the annual seasonal component.

IDEQ's perspective is that this level of monitoring for this parameter is crucial for the self-protection of the permittee, especially where temperature gradient effects from nonpoint sources in the system may play a dominant role.

Temperature will be continuously sampled in the effluent and effluent and will also be sampled for both above and below the point of discharge.

10. Ammonia

The Idaho water quality standards contain criteria for the protection of aquatic life from the toxic effects of ammonia (IDAPA 58.01.02.250.01.d.). The water quality standards apply the criteria for early life stages to water bodies (IDAPA 58.01.02.250.01.d.(3)). The criteria are dependent on pH and temperature, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase.

In this case, ambient temperature and pH data are not available for the unnamed canal. When the permit is re-issued the data will be evaluated to determine if the new facility needs an ammonia limit. The draft permit contains ambient monitoring for flow, ammonia, pH, and temperature.

IV. MONITORING REQUIREMENTS

Section 308 of the CWA and federal regulation 40 CFR Part 122.44(i) require that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee is responsible for conducting the monitoring and for reporting results with Discharge Monitoring Reports (DMRs) to EPA. IDEQ must receive the temperature data electronically each month for their TMDL research.

A. Effluent Monitoring

Table IV-1 presents the effluent monitoring requirements for the draft permit. For comparison purposes, the table also includes the monitoring requirements of the current permit

TABLE IV-1: EFFLUENT MONITORING FREQUENCY REQUIREMENTS		
Parameter	**Current Permit (1999)**	**Draft Permit (2007)**
Ammonia as N	1/month	1/month
BOD_5	4/month	1/week
E. Coli[1] (formerly Fecal coliform)	5/month	5/month
Flow	continuous	continuous
PH	3/week	3/week
Temperature	3/week	continuous
Total Phosphorus as P	4/month	1/week
TSS	4/month	1/week
Total Residual Chlorine (TRC)	3/week	3/week
1 Monthly limits are based on a minimum of five samples taken every 3-7 days within a calendar month.		

B. Ambient Monitoring

The purpose of ambient monitoring is to determine water quality conditions as part of the effort to evaluate the reasonable potential for the discharge to cause an instream excursion above water quality criteria, to ensure limits are protecting the water quality, and to provide information for the next permit. Unless otherwise noted, the draft permit requires the permittee to conduct monthly ambient (in-stream) monitoring upstream of outfall 001, for two years. The permittee must collect surface water samples as grab samples, unless otherwise noted. Upstream monitoring shall consist of ammonia, flow, pH, and TRC.

Ambient temperature sampling must occur both upstream and downstream of outfall 001, for a period of five (5) years starting 90 days after the effective date of the permit. This sampling must be continuous with samples recorded every 15 minutes, 24 hours a day. The temperature data, in electronic form, must be sent to IDEQ with the monthly DMRs.

V. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP)

Under 40 CFR Part 122.41(e), the permittee is required to ensure adequate laboratory controls and appropriate quality assurance procedures in order to properly operate and maintain all facilities which it uses. Therefore, this permit

requires the permittee to update their QAP that will assist in planning for the collection and analysis of samples in support of the permit and assist in explaining data anomalies when they occur. The permittee is required to revise and update their QAP within 90 days of the effective date of the final permit, and notify EPA that they have done so. The QAP shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Operation and Maintenance Plan & Best Management Practices

Section 402 of the CWA and federal regulation 40 CFR Part 122.44(k) authorize EPA to require best management practices (BMPs) in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility Operation & Maintenance (O&M) plans. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires that the permittee revise and update their O&M plan including the implementation of BMPs within 90 days of permit issuance. EPA has a guidance manual (*Guidance Manual for Developing Best Management Practices* EPA, 1993) that may provide some assistance in the development of BMPs. Specifically, the permittee must consider spill prevention and control, optimization of chemical use, public education aimed at controlling the introduction of household hazardous materials to the sewer system and water conservation. Furthermore, it is considered a good management practice to maintain a log of daily plant operations and observations. Additionally, the BMP operating plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants.

C. Standard Permit Provisions

Sections III, IV, and V of the draft permit contain regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities and other general requirements.

D. Sludge (Biosolids) Requirements

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

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

VI. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries), and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

The following federally-listed endangered and threatened species may be located in the vicinity of the discharge. This list was developed from the *County by County Species List* found on the U.S. Fish and Wildlife Services-Pacific Region web page at: http://www.fws.gov/idahoes/TESpecies.htm and NOAA's National Marine Fisheries Services website at www.nmfs.noaa.gov/pr/species/esa. There are no federally-listed endangered and threatened species under the jurisdiction of NOAA's National Marine Fisheries Services within the vicinity of these discharges.

Endangered Species:
- Gray wolf (*Canis lupus*) - experimental
- Utah valvata snail (*Valvata utahensis*)
- Snake River physa snail (*Physa natricina*)

Threatened Species:
- Bald eagle (*Haliaeetus leucocephalus*)
- Bliss Rapids snail (*Taylorconcha serpenticola*)

EPA has determined that issuance of this permit will have no effect on the Gray wolf or the Bald eagle, and it is not likely to adversely affect the Utah valvata snail, Snake River Physa snail or the Bliss Rapids snail. EPA has completed a biological assessment and submitted it to the USFWS. The final permit may be modified as a result of consultation.

B. Essential Fish Habitat

Essential fish habitat (EFH) are the waters and substrates (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-

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

According to information from the NOAA Fisheries website, there is no designated EFH in the vicinity of the City of Hansen wastewater treatment facility.

C. State Certification

Since this permit authorizes discharge to Idaho State waters, Section 401 of the CWA requires EPA to seek state certification before issuing a final permit. This certification by the state ensures that federally issued permits are in compliance with the laws of the state. EPA is requesting Idaho State officials to review and provide appropriate certification to this NPDES permit pursuant to 40 CFR Part 124.53. Additionally, in accordance with 40 CFR Part 124.10(c)(1), public notice of the draft permit has been provided to the State of Idaho agencies having jurisdiction over fish, shellfish, and wildlife.

D. Permit Expiration

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

VII. REFERENCES

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

EPA. 1993. *Guidance Manual for Developing Best Management Practices (BMP).* U.S. Environmental Protection Agency, Office of Water, EPA/833/B-93-004.

EPA. 1996. *U.S. EPA NPDES Permit Writer's Manual.* U.S. Environmental Protection Agency, Office of Water, EPA/833/B-96-003.

IDAPA. 2007. *Water Quality Standards and Wastewater Treatment Requirements.* Idaho Department of Environmental Quality, Title 01, Chapter 02.

APPENDIX A

CALCULATIONS

WATER QUALITY-BASED EFFLUENT LIMIT CALCULATIONS

This appendix discusses the calculations for the proposed water quality-based effluent limits in the draft permit. This section includes: a discussion of the calculations used to determine reasonable potential to cause or contribute to a violation of water quality standards (Section I); a discussion of the calculations used to develop wasteload allocations (Section II); and a discussion of the calculations used to develop water quality-based effluent limits (Section IV).

I. Reasonable Potential Calculations

To determine if there is "reasonable potential" to cause or contribute to an exceedence of water quality criteria for a given pollutant (and therefore whether a water quality-based effluent limit is needed), for each pollutant present in a discharge, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is "reasonable potential", and a limit must be included in the permit. EPA uses the recommendations in Chapter 3 of the TSD to conduct this "reasonable potential" analysis. This section discusses how reasonable potential is evaluated.

A. Maximum Projected Receiving Water Concentration

The maximum projected receiving water concentration is determined using the following mass balance equation.

$$C_d \times Q_d = (C_e \times Q_e) + (C_u \times Q_u) \qquad \text{(Equation 1)}$$

where,

C_d = maximum projected receiving water concentration
C_e = maximum projected effluent concentration
C_u = receiving water upstream concentration
Q_e = effluent flow
Q_u = receiving water upstream flow
Q_d = receiving water flow downstream of the effluent discharge $= (Q_e + Q_u)$

If a mixing zone is allowed and solving for C_d, the mass balance equation becomes :

$$C_d = \frac{[C_e Q_e + C_u (Q_u \times MZ)]}{[Q_e + (Q_u \times MZ)]} \qquad \text{(Equation 2)}$$

where, MZ is the percent dilution in the mixing zone based on receiving water flow.

Where no mixing zone is allowed,

$C_d = C_e$. (Equation 3)

B. Maximum Projected Effluent Concentration (C_e)

To better characterize the effects of effluent variability and reduce uncertainty in the process of deciding whether to require an effluent limit, EPA utilizes the statistical approach recommended in the TSD to project the 99th percentile of the effluent data. Since the monitoring data represents a subset of the true effluent concentrations, it is necessary to project the 99th percentile of the effluent data by multiplying the highest concentration in an effluent sample by a multiplier that takes into account effluent variability (i.e., the coefficient of variation or CV) and uncertainty in the effluent data. The 99th percentile concentration of the effluent is calculated using the following equation:

$C_e = MEC \times RPM$ (Equation 4)

where,

MEC = maximum measured effluent concentration
RPM = reasonable potential multiplier.

When there are not enough data to reliably determine a CV (less than 10 data points), the TSD recommends using 0.6 as a default value. Once the CV of the data is determined, the RPM is determined using the statistical methodology discussed in Section 3.3 of the TSD (alternately, Table 3-1 of the TSD may be used). If all the data was below detect, EPA assumes a RPM of 1.0.

$$RPM = \frac{\exp(2.326\sigma - 0.5\sigma^2)}{\exp(z_p\sigma - 0.5\sigma^2)}$$ (Equation 5)

where,

σ^2 = $\ln (CV^2 + 1)$
CV = coefficient of variation
z_p = statistical z-score for p_n
p_n = percentile of highest concentration = $(1 - 0.99)^{1/n}$
n = number of samples

C. Upstream Receiving Water Concentration (C_u)

The upstream receiving water concentration in the mass balance equation is based on a reasonable worst-case estimate of the pollutant concentration upstream from the discharge point. Where sufficient data exists, the 95th percentile of the receiving water data is generally used as an estimate of worst-case. When no data exists, EPA assumes an upstream concentration of zero.

D. Upstream Flow (Q_u)

The upstream flow used in the mass balance equation depends upon the criterion that is being evaluated. In accordance with the applicable federal and state regulations and the TSD guidance, the critical low flows used to evaluate compliance with the water quality criteria are:

- The 1-day, 10-year low flow (1Q10) is used for the protection of aquatic life from acute effects. It represents the lowest daily flow that is expected to occur once in 10 years.
- The 7-day, 10-year low flow (7Q10) is used for protection of aquatic life from chronic effects. It represents the lowest 7-day average flow expected to occur once in 10 years.
- The 30-day, 5-year low flow (30Q5) is used for the protection of human health and agricultural uses from non-carcinogens. It represents the 30-day average flow expected to occur once in 5 years.
- The harmonic mean flow is a long-term average flow and is used for the protection of human health and agricultural uses from carcinogens. It is the number of daily flow measurements divided by the sum of the reciprocals of the flows.

E. Mixing Zone (MZ)

Mixing zones are defined as a limited area or volume of water where the discharge plume is progressively diluted by the receiving water. Water quality criteria may be exceeded in the mixing zone as long as acutely toxic conditions are prevented from occurring and the applicable existing designated uses of the water body are not impaired as a result of the mixing zone. Mixing zones are allowed at the discretion of the State, based on the State waster quality standards regulations.

The Idaho water quality standards at IDAPA 58.01.02.060 allow for the use of mixing zones after a biological, chemical, and physical appraisal of the receiving water and the discharge. The standards allow water quality within a mixing zone to exceed chronic water quality criteria so long as chronic water quality criteria are met at the boundary of the mixing zone. Acute water quality criteria may be exceeded within a zone of initial dilution inside the chronic mixing zone.

F. Effluent Flow (Q_e)

The effluent flow used in the mass balance equation is the design flow for the facility.

II. Development of Wasteload Allocations (WLAs)

Once EPA has determined that a water quality-based effluent limit is required for a pollutant, the first step in deriving the effluent limit is development of a wasteload allocation (WLA) for the pollutant. A WLA is the concentration (or loading) of a pollutant that the permittee may discharge without causing or contributing to an exceedence of water quality standards in the receiving water. WLAs and permit limits are derived based on guidance in the TSD (EPA, 1991). WLAs for this permit were established in two ways: based on a mixing zone and based on meeting water quality criteria at "end-of-pipe".

WLAs are calculated for each parameter for each criterion. Where the state authorizes a mixing zone for the discharge, the WLA is calculated as a mass balance, based on the available dilution, background concentration of the pollutant, and the water quality criterion.

Since the different criteria (acute aquatic life, chronic aquatic life, human health, agriculture) can apply over different time frames and may have different mixing zones, it is not possible to compare the criteria, or the WLAs developed from the criteria, directly to determine which criterion results in the most stringent limits. For comparison between aquatic life criteria, human health criteria, and agricultural criteria, effluent limits must be derived for each, and the most stringent effluent limits apply to the discharge.

WLAs are calculated using the same mass balance equation used in the reasonable potential evaluation (see Equation 1) although, C_d becomes the criterion and C_e the WLA. Making these substitutions, Equation 1 is rearranged to solve for the WLA (or C_e), becoming:

$$WLA = C_e = \frac{[criterion \times (Q_e + (Q_u \times MZ)] - [C_u (Q_u \times MZ)]}{Q_e} \qquad \text{(Equation 6)}$$

Where no mixing zone is allowed, the criterion becomes the WLA (see Equation 6). Establishing the criterion as the WLA ensures that the permittee does not contribute to an exceedence of the criteria.

$$WLA = criterion. \qquad \text{(Equation 7)}$$

III. Derivation of Water Quality-based Effluent Limits

Because many criteria for protection of aquatic life have two criteria, acute and chronic, the effluent limits for each requirement yields different effluent treatment requirements

that cannot be compared to each other without calculating the long-term average performance level the facility would need to maintain in order to meet each requirement. Therefore, EPA develops effluent limits for aquatic life protection by statistically converting the WLAs to long-term average (LTA) concentrations and using the most stringent LTA to develop effluent limitations for protection of aquatic life. This procedure will allow the facility to design a treatment system for one level of effluent toxicity - the most limiting toxic effect.

A. Long-term Average Concentrations (LTAs) for Aquatic Life Criteria

The conversion of a WLA to a LTA is dependent upon the coefficient of variation (CV) of existing effluent data and the selected probability distribution of the effluent. The probability distribution corresponds to the percentile of the estimated effluent concentration. EPA uses a 99th percentile probability distribution for calculating a long-term average, as recommended in the TSD (EPA, 1991). The following equation from Chapter 5 of the TSD is used to calculate the LTA concentrations (alternately, Table 5-1 of the TSD may be used):

$$LTA = WLA \times \exp[0.5\sigma^2 - z\sigma] \qquad \text{(Equation 8)}$$

where,

σ^2 = $\ln(CV^2 + 1)$ for acute aquatic life criteria
= $\ln(CV^2/4 + 1)$ for chronic aquatic life criteria
CV = coefficient of variation
z = 2.326 for 99th percentile occurrence probability.

B. Effluent Limits Based on Aquatic Life Criteria

Once the LTA concentration is calculated for each criterion, the most stringent LTA concentration is then used to develop the maximum daily (MDL) and monthly average (AML) permit limits. The MDL is based on the effluent variability (i.e., CV of the data) and the selected probability distribution, while the AML is dependent upon these two variables as well as the monitoring frequency. As recommended in the TSD, EPA used the 95th percentile as the selected probability distribution for the AML calculation and the 99th percentile for the MDL calculation. The MDL and AML are calculated using the following equation from the TSD (alternately, Table 5-2 of the TSD may be used):

$$\text{MDL or AML} = LTA\ \sigma \exp[z\sigma - 0.5\sigma^2] \qquad \text{(Equation 9)}$$

for the MDL:

σ^2 = $\ln(CV^2 + 1)$
z = 2.326 for the 99th percentile occurrence probability

for the AML:

σ^2 = $\ln(CV^2/n + 1)$
n = number of sampling events required per month

z = 1.645 for the 95th percentile occurrence probability.

C. Effluent Limits Based on Human Health and Agricultural Criteria

Developing permit limits for pollutants affecting human health and agriculture is somewhat different from setting limits for aquatic life because the exposure period is generally longer than one month and the average exposure, rather than the maximum exposure, is usually of concern. Because compliance with permit limits is normally determined on a daily or monthly basis, it is necessary to set human health and agriculture permit limits that meet a given WLA for every month.

If the procedures described previously for aquatic life protection were used for developing permit limits for human health and agriculture, both MDLs and AMLs would exceed the WLA necessary to meet criteria concentrations in the receiving water. Thus, even if a facility was discharging in compliance with permit limits calculated using these procedures; it would be possible to constantly exceed the WLA.

In addition, the statistical derivation procedure is not applicable to exposure periods more than 30 days. Therefore, the recommended statistical approach for setting water quality-based limits for human health and agriculture protection is to set the AML equal to the WLA, and then calculate the MDL based on effluent variability and the number of samples per month using the multipliers provided in Table 5-3 of the TSD. These multipliers are the ratio of the MDL to the AML as calculated by the following relationship:

$$\frac{MDL}{AML} = \frac{\exp[z_m\sigma - 0.5\sigma^2]}{\exp[z_a\sigma_n - 0.5\sigma_n^2]} \qquad \text{(Equation 10)}$$

where,

σ_n^2 = $\ln (CV^2/n + 1)$
σ^2 = $\ln (CV^2 + 1)$
CV = see Table D-7
n = number of samples per month
z_m = 2.326 for the 99th percentile exceedance probability of the MDL
z_a = 1.645 for the 95th percentile exceedance probability of the AML.

As stated above, EPA used the 95th percentile as the selected probability distribution for the AML and the 99th percentile for the MDL in this calculation