Fact Sheet for IPDES Permit No. ID0028436

03/01/2020

Idaho Department of Environmental Quality (DEQ) proposes to issue an Idaho Pollutant Discharge Elimination System (IPDES) Permit to discharge pollutants pursuant to the provisions of IDAPA 58.01.25 to:

Princeton-Hampton Sewer District
3409 Highway 6
Princeton, Idaho 83857

Public Comment Start Date:	12/18/2019
Public Comment Expiration Date:	01/17/2020
Technical Contact:	Karen Jackson, (208) 373-0382, Karen.Jackson@deq.idaho.gov

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Idaho Department of Environmental Quality (DEQ) made in writing the Idaho Pollutant Discharge Elimination System (IPDES) permit for Princeton-Hampton Water Sewer District.

This fact sheet complies with IDAPA 58.01.25.108.02 of the Idaho Administrative Code, which requires DEQ to prepare a permit and accompanying fact sheet for public evaluation before issuing an IPDES permit.

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Acronyms

1Q10	1-day, 10 year low flow
7Q10	7-day, 10 year low flow
30Q5	30-day, 5 year low flow
30Q10	30-day, 10 year low flow
AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
DMR	Discharge Monitoring Report
EPA	U.S. Environmental Protection Agency
IDAPA	Refers to citations of Idaho administrative rules
IDWR	Idaho Department of Water Resources
I/I	Inflow and Infiltration
IPDES	Idaho Pollutant Discharge Elimination System
lbs/day	Pounds per day
LTA	Long Term Average
MDL	Maximum Daily Limit or Method Detection Limit
mgd	Million gallons per day
mg/L	Milligrams per liter
mL	Milliliters
O&M	Operations and maintenance
POC	Pollutant(s) of Concern
POTW	Publicly Owned Treatment Works
QAPP	Quality Assurance Project Plan
RPA	Reasonable Potential Analysis
RPMF	Reasonable Potential Multiplication Factor

RPTE	Reasonable Potential To Exceed
SIU	Significant Industrial User
s.u.	Standard Units
TBEL	Technology Based Effluent Limits
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_c	Toxic Units, Chronic
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQC	Water Quality Criteria
WQS	Water Quality Standards

1 Introduction

This fact sheet provides information on the permit for the Idaho Department of Environmental Quality (DEQ) Idaho Pollutant Discharge Elimination System (IPDES) permit for Princeton-Hampton Water & Sewer District. This fact sheet complies with the Rules Regulating the Idaho Pollutant Discharge Elimination System Program (IDAPA 58.01.25), which requires DEQ to prepare a permit and accompanying fact sheet for public evaluation before issuing an IPDES permit.

DEQ proposes to issue the IPDES permit for Princeton-Hampton Water & Sewer District Publicly Owned Treatment Works (POTW). To ensure protection of water quality and human health, the permit places conditions on the type, volume, and concentration of pollutants discharged from the facility to waters of the United States.

This fact sheet includes:

- A map and description of the discharge location;
- A listing of effluent limits and other conditions the facility must comply with;
- Documentation supporting the effluent limits;
- Technical material supporting the conditions in the permit; and
- Information on public comment, public hearing, and appeal procedures.

Terms used in this fact sheet are defined in Section 5, Definitions, of the permit.

Public Comment

The permit application, permit, and fact sheet describing the terms and conditions applicable to the permit are available for public review and comment during a public comment period. The public is provided at least 30 days to provide comments to DEQ. Persons wishing to request a public meeting for this facility's permit must do so in writing within 14 calendar days of public notice being published that a permit has been prepared; requests for public meetings must be submitted to DEQ by 01/02/2020. Requests for extending a public comment period must be provided to DEQ in writing before the last day of the comment period. For more details on preparing and filing comments about these documents, please see the IPDES guidance *Public Participation in the Permitting Process* at "*http://www.deq.idaho.gov/media/60178029/ipdes-public-participation-permitting-process-0216.pdf*". For more information, please contact the permit writer.

After the close of the public comment period, DEQ considers information provided by the public, prepares a document summarizing the public comments received, and may make changes to the permit in response to the public comments. DEQ will include the summary and responses to comments in Appendix D of the final fact sheet. DEQ may request more information from the applicant in order to respond to public comments (IDAPA 58.01.25.109.02.h.). After the public comment period and prior to issuing the final permit decision, DEQ will also provide the applicant an opportunity to submit additional information to address proposed changes and support the response to public comments. DEQ will assess the public comment in conjunction with any additional information received from the applicant and develop a proposed permit.

The Environmental Protection Agency (EPA) may take up to 90 days from the publication of public notice of the permit to develop and document specific grounds for objections to a proposed permit. If EPA objects to a proposed permit DEQ must satisfactorily address the objections within the time period specified in the memorandum of agreement between EPA and DEQ (40 CFR §123.44). Otherwise, EPA may issue a permit in accordance with 40 CFR 121, 122, 124. If EPA issues the permit, any state, interstate agency, or interested person may request EPA hold a public hearing regarding the objection.

Permit Issuance

Following the public comment period on a permit and after receipt of any comments on the proposed permit from EPA, DEQ will issue a final permit decision, the final permit, and the fact sheet. All comments received will be addressed in Appendix D of the final fact sheet and any resulting changes to the permit or fact sheet documented. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit (IDAPA 58.01.25.107.04.). The final permit and final fact sheet will be posted on the DEQ webpage. Response to comments will be located in the final fact sheet as an appendix.

The permit holder or applicant and any person or entity who filed comments or who participated in a public meeting on the permit may file a petition for review of a permit decision as outlined in Appendix C. The petition for review must be filed with DEQ's hearing coordinator within 28 days after DEQ serves notice of the final permit decision. Any party that participated in the petition for review that is still aggrieved by the final IPDES action or determination has a right to file a petition for judicial review (IDAPA 58.01.25.204.26).

Documents are Available for Review

The IPDES permit and fact sheet can be reviewed or obtained by visiting or contacting the DEQ State office between 8:00 a.m. and 5:00 p.m., Monday through Friday at the address below. The permit, and fact sheet can also be found by visiting the DEQ website at "*http://www.deq.idaho.gov/news-public-comments-events/*."

DEQ
1410 N. Hilton St.
Boise, ID 83706
208-373-0502

The fact sheet and permits are also available at the DEQ Regional Office:

DEQ Lewiston Regional Office
1118 F Street
Lewiston, ID 83501

Disability Reasonable Accommodation Notice

For technical questions regarding the permit or fact sheet, contact the permit writer at the phone number or e-mail address at the beginning of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 (ask to be connected to the permit writer at the above phone number). Additional services can be made available to a person with disabilities by contacting the permit writer.

2 Background Information

2.1 Facility Description

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

Table 1. Facility information.

Permittee	Princeton-Hampton Water & Sewer District
Facility Physical Address	3409 Highway 6, Princeton, Idaho 83857
Facility Mailing Address	PO Box 111, Princeton, Idaho 83857
Facility Contact	Cindy McNeal
Responsible Official	Cas Burns
Facility Location	Latitude: 46.913413°N Longitude: 116.849061°W
Receiving Water Name	Palouse River
Outfall Location	Latitude: 46.911413°N Longitude: 116.849744°W
Permit Status	
Application Submittal Date	July 28, 2008
Date Application Deemed Complete	August 6, 2010

The Princeton-Hampton Sewer District (District) owns the Princeton-Hampton Publicly Owned Treatment Works (POTW) located in Hampton, Idaho. The collection system has no combined sewers. The facility serves a resident population of 175 based on their permit application. There are no major or minor industries discharging to the facility.

2.1.1 Facility Information

The design flow of the facility is 0.02 mgd. The treatment process consists of a two-cell stabilization lagoons and chlorine contact basin used to treat domestic wastewater. Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A. Because of a low design flow and no industrial users, the facility is considered a minor facility.

The POTW is operated by Cindy McNeal, a licensed operator. There are no current industrial users discharging to the POTW, however historically a café and a bar have discharged to the treatment works.

2.1.2 Permit History

The system consists of gravity collection to a sewer lift station then to a two-cell facultative lagoon. Effluent is disinfected using tablet chlorination and flows to a chlorine contact basin. Effluent ultimately discharges to a slough of the Palouse River.

The POTW was built in 1981. Under the CWA, the Princeton-Hampton POTW is a new discharger. The District keeps weekly influent flow records based on pump run times but no

effluent flow records. The District discharges approximately five times a year between February and May, during the spring runoff. The lagoons are routinely cleaned of cattails and riprapped lagoon walls are repaired. There is an overflow that bypasses the second cell and goes directly into the chlorine contact basin.

2.1.3 Compliance History

The POTW submitted a NPDES permit application to the EPA on July 28, 2008. The application was deemed complete on August 6, 2010. EPA Region 10 sent the POTW a Compliance Order by Consent (Order) on May 4, 2012. The Order instructed the POTW to conduct influent and effluent monitoring in accordance with 40 CFR 136, and report results until a NPDES permit could be issued. Monitoring and reporting was not conducted. No limits were included in the Order, thus there are no limit violations to discuss.

DEQ conducted a reconnaissance inspection of the facility in November 2011. The inspection encompassed the wastewater treatment process and discharge location. Inspection findings were sent to EPA Region 10.

2.1.4 Sludge/Biosolids

The EPA Region 10, under the authority of the CWA, issues separate sludge-only permits for the purpose of regulating biosolids. Permits for sludge management are independent of IPDES discharge permits and must be obtained from EPA. The IPDES program will take over permitting of sludge/biosolids in July 2021. In addition, sludge management plans must be submitted to DEQ and must follow the procedures in IDAPA 58.01.16.

To date, no sludge has been removed and disposed of from the POTW.

2.1.5 Outfall Description

The POTW outfall discharges into a slough to the Palouse River south of the two-cell lagoon system and chlorine contact basin. The discharge is a weir structure between the chlorine contact basin and the slough. The concrete weir is rectangular with an approximate 2x2 foot grate installed.

Discharges to the chlorine contact basin are intermittent in the spring (February through May). When Palouse River flows are high, annually, receiving water enters the chlorine contact basin up through the grate.

2.1.6 Wastewater Influent Characterization

Influent data were not available during permit development.

2.1.7 Wastewater Effluent Characterization

The only effluent data provided was on the permit application. The effluent pollutant concentrations results are characterized in Table 2.

Table 2. Wastewater effluent characterization.

Parameter	Units	# of Samples	Average Values	Maximum Values
BOD_5	mg/L	1	NA	6.5
TSS	mg/L	1	NA	Non-detect
Parameter	**Units**	**# of Samples**	**Average Geometric Mean**	**Maximum Reported Instantaneous Value**
Fecal coliform	MPN/100mL	1	NA	13
Parameter	**Units**	**# of Samples**	**Minimum Value**	**Maximum Value**
pH	standard units	1	8.5	8.5

2.2 Description of Receiving Water

The Princeton-Hampton POTW discharges to Palouse River in the Palouse Subbasin (HUC 17060108, ID17060108CL016_04), Strychnine Creek to Hatter Creek. At the point of discharge, the Palouse River is protected for the following designated uses (IDAPA 58.01.02.120.01 C-16):

- Cold water aquatic life
- Salmonid spawning
- Primary contact recreation
- Domestic water supply

The outfall is located 0.25 miles upstream of the confluence of the Palouse River and Hatter Creek. For more information on the outfall see 2.1.5 Outfall Description. Other nearby point source outfalls include Bennett Lumber Products at 4.5 river miles upstream and the Potlatch POTW at 4.5 river miles downstream. Nearby non-point sources of pollutants include agriculture and livestock grazing. There are no nearby public drinking water intakes. Section 2.2.1 describes any receiving waterbody impairments.

The nearest background data used for this permit includes the following from the City of Potlatch POTW receiving water monitoring which was conducted from 2007 to 2009. The temperature receiving water information was taken from the USGS gaging station daily maximum measurements near Potlatch (USGS 13345000).

Table 3. Ambient background data.

Parameter	Units	Percentile	Value
Temperature	°C	90^{th}	26.4
pH	Standard units	5^{th} – 95^{th}	7-7.9
Ammonia	mg/L	90^{th}	0.17
Total Phosphorus	mg/L	maximum	0.055

Ambient receiving water data are used reasonable potential analysis (RPA) calculations for ammonia; however, no effluent ammonia data were available for this permit cycle. More representative data will be available after the permittee has collected upstream data for a permit cycle. These data were not used in permit limit development.

2.2.1 Water Quality Impairments

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants

causing impairment. A central purpose of TMDLs is to establish wasteload allocations (WLAs) for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limits that are consistent with the assumptions and requirements of WLAs that have been assigned to the discharge in an EPA-approved TMDL.

The Palouse River, Strychnine Creek to Hatter Creek is not on the 2016 303(d) list, however the contact recreation use is unassessed. There is an EPA-approved TMDL for tributaries to the Palouse (DEQ, 2005), but no TMDL WLAs have been created for the Palouse River.

2.2.2 Critical Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits (WQBELs). In general, Idaho's water quality standards (WQS) require criteria be evaluated at the following low flow design conditions (See IDAPA 58.01.02.210.03) as defined in Table 4. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years. The 7Q10 represents lowest average seven consecutive day flow with an average recurrence frequency of once in 10 years. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in five years. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

Sources for data that DEQ examines are the United States Geological Survey (USGS), Idaho Department of Water Resources (IDWR) and other available data for the receiving water. For this permit, DEQ determined critical low flows downstream of the discharge from the USGS Station 13345000 (1914 through 2019). The seasonal estimated low flows are presented in Table 4. Seasons were characterized by when the facility is most likely to discharge.

Table 4. Low flow design conditions.

Criteria	Flow Condition	Critical Flow (cfs) July-Nov	Critical Flow (cfs) Dec-June
Acute aquatic life	1Q10	1.15	4.92
Chronic aquatic life	7Q10	1.65	8.93
Carcinogenic human health criteria	harmonic mean flow	4.75	10.1

2.3 Pollutants of Concern

DEQ may identify pollutants of concern (POC) for the discharge based on, but not limited to, those which:

- Have a technology-based limit (TBEL)
- Have an assigned WLA from a TMDL
- Had an effluent limit in the previous permit
- Are present in the effluent monitoring data reported in the application, DMRs, or special studies
- Are expected to be in the discharge based on the nature of the discharge
- Are impairing the beneficial uses of the receiving water

To determine POCs for further analysis, DEQ evaluated all pertinent and available information such as the permit application, the EPA compliance order, previous DMRs, and the facility's industrial user surveys. The wastewater treatment process for this facility includes waste stabilization lagoons. Pollutants expected in the discharge from a facility with this type of treatment, include but are not limited to:

- BOD_5
- TSS
- *E. coli* bacteria
- TRC
- pH
- Temperature
- Total ammonia as N

3 Effluent Limits and Monitoring

Table 5 presents the proposed effluent limits and monitoring requirements in the permit. Because this is a new permit, there are no existing limits for the POTW.

Table 5. Pollutants with effluent limits and monitoring requirements for Outfall 001.

Parameter	Discharge Period	Units	Effluent Limits						Monitoring Requirements		Reporting Period (DMR Months)
			Monthly Average	Weekly Average	Monthly Geometric Mean	Instan-taneous Minimum	Instan-taneous Maximum	Daily Maximum	Sample Type	Sample Frequency	
Biochemical Oxygen Demand (BOD_5)	01/01 to 12/31	mg/L	30	45	—	—	—	—	Grab[a]	2/month	Monthly (All Months)
		lb/day	5.0	7.5	—	—	—	—	Calculation[b]		
BOD_5 Percent Removal	01/01 to 12/31	%	85 (minimum)	—	—	—	—	—	Calculation[c]	1/month	
Total Suspended Solids (TSS)	01/01 to 12/31	mg/L	30	45	—	—	—	—	Grab[a]	2/month	Monthly (All Months)
		lb/day	5.0	7.5	—	—	—	—	Calculation[b]		
TSS Percent Removal	01/01 to 12/31	%	85 (minimum)	—	—	—	—	—	Calculation[c]	1/month	
E. coli[d, e, f]	01/01 to 12/31	#/ 100 mL	—	—	126	—	—	—	Grab[a]	5/month	Monthly (All Months)
pH	01/01 to 12/31	std. units	—	—	—	6.5[f]	9.0[f]	—	Grab[a]	2/week	Monthly (All Months)
Total Residual Chlorine (TRC)[g]	07/01 to 11/30	mg/L	0.097	—	—	—	—	0.20[f]	Grab[a]	1/week	Monthly (July, Aug, Sept, Oct, Nov)
		lb/day	0.016	—	—	—	—	0.033[f]	Calculation[b]		
Total Residual Chlorine (TRC)[g]	12/01 to 06/30	mg/L	0.39	—	—	—	—	0.77[f]	Grab[a]	1/week	Monthly (Dec, Jan, Feb, Mar, April, May, June)
		lb/day	0.064	—	—	—	—	0.13[f]	Calculation[b]		

a. A grab sample is an individual sample collected over a 15-minute period or less.
b. Calculation - Calculated means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in mgd) X Conversion Factor (8.34) = lb/day
c. % Removal= ([Influent](mg/L)-[Effluent](mg/L))/([Influent](mg/L))×100%
Brackets "[ ]" indicate concentration of the attribute contained inside.
d. Idaho's water quality standards for primary contact recreation include a single sample value of 406 #/100 mL. Exceedance of this value indicates likely exceedance of the 126 #/100 mL average monthly effluent limit; however, it is not an enforceable limit for a daily value, nor is exceeding this value a

violation of water quality standards. If this value is exceeded at any point within the month, the facility should consider collecting more than the 5 samples per month required in this permit to determine compliance with the monthly geometric mean according to IDAPA 58.01.02.251.01.a.

e. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126 #/100 ml based on a minimum of five samples taken every 3 – 7 days within a calendar month.
f. Exceedance of a maximum daily limit, instantaneous maximum limit, or instantaneous minimum limit requires 24-hour reporting in accordance with 2.2.7. For *E. coli*, the maximum daily threshold that triggers 24-hour reporting is 406 #/100mL. Please see 2.2.7 for additional 24-hour reporting requirements.
g. TRC has a compliance schedule, see section 5.1.

Table 6. Pollutants with interim effluent limits for Outfall 001.

Parameter	Interim Limit Period	Units	Effluent Limits		Monitoring Requirements		Reporting Period (DMR Months)
			Monthly Average	Weekly Average	Sample Type	Sample Frequency	
TRC[a]	Permit issuance to [4 years from issuance]	mg/L	0.50	0.75	Grab[b]	1/week	Monthly (All Months)
		lb/day	0.08	0.13	Calculation[c]		

a. See Section 3.1 of the permit for additional compliance schedule requirements.
b. Grab means an individual sample collected over a fifteen (15) minute, or less, period.
c. Calculation - Calculated means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in mgd) X Conversion Factor (8.34) = lb/day

3.1 Basis for effluent limits

Regulations require that effluent limits in an IPDES permit must be either technology-based or water quality-based.

TBELs are set according to the level of treatment that is achievable using available technology. TBELs are based upon the treatment processes used to reduce specific pollutants. TBELs are set by the EPA and published as a regulation. DEQ may develop a TBEL on a case-by-case basis (40 CFR 125.3, IDAPA 58.01.25.302, and IDAPA 58.01.25.303).

WQBELs are calculated so the effluent will comply with the Surface Water Quality Standards (IDAPA 58.01.02) or the National Toxics Rule (40 CFR 131.36) applicable to the receiving water.

DEQ must apply the most stringent of these limits to each POC. These limits are described below.

3.2 Technology-Based Effluent Limits

IDAPA 58.01.25.302. requires that IPDES permits include applicable TBELs and standards, while 40 CFR 125.3(a)(1) states that TBELs for POTWs must be based on secondary treatment standards or as specified in 40 CFR 133. The following section explains secondary treatment effluent limits for the conventional pollutants discharged by POTWs: 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH. These effluent limits are given in 40 CFR Part 133 and are outlined in Table 7.

Table 7. Secondary treatment effluent limits.

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	—
pH	within the limits of 6.0 - 9.0 s.u.	

The District does not meet the requirements for equivalent to secondary treatment standards. Limited effluent data are available to evaluate which standards apply. The only effluent data available were found in the permit application.

The three requirements for equivalent to secondary treatment listed under 40 CFR 133.101(g). 40 CFR 133.101(g) states:

"Facilities eligible for treatment equivalent to secondary treatment... Treatment works shall be eligible for consideration for effluent limitations described for treatment equivalent to secondary treatment (Section 133.105), if:

(1) The BOD_5 and SS effluent concentrations consistently achievable through proper operation and maintenance (Section 133.101(f)) of the treatment works exceed the minimum level of the effluent quality set forth in Sections 133.102(a) and 133.102(b),

(2)A trickling filter or waste stabilization pond is used as the principal process, and

(3)The treatment works provide significant biological treatment of municipal wastewater."

At this time, requirement (1) is unknown, and equivalent to secondary treatment standards cannot be applied.

3.2.1 Mass-Based Limits

IDAPA 58.01.25.303.06 requires that effluent limits be expressed in terms of mass, except under certain conditions. IDAPA 58.01.25.303.02 requires that effluent limits 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[i]

Since the design flow for this facility is 0.02 mgd, the technology based mass limits for:

BOD_5:

Average Monthly Limit = 30 mg/l × 0.02 mgd × 8.34 = 5.0 lbs/day

Average Weekly Limit = 45 mg/l × 0.02 mgd × 8.34 = 7.5 lbs/day

TSS:

Average Monthly Limit = 30 mg/l x 0.02 mgd x 8.34 = 5.0 lbs/day

Average Weekly Limit = 45 mg/l x 0.02 mgd x 8.34 = 7.5 lbs/day

3.3 Water Quality-Based Effluent Limits

3.3.1 Statutory and Regulatory Basis

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limits in permits necessary to meet WQS. The IPDES regulation IDAPA 58.01.25.302.06 implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any WQS including narrative criteria for water quality. Effluent limits must also meet the applicable water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (IDAPA 58.01.25.103.03, IDAPA 58.01.25.302.06, see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures that account for existing controls on point and non-point sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that WQS are met and must be consistent with any available TMDL WLA for the discharge. If there are no approved TMDLs

[i] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

that specify WLAs for this discharge, all of the WQBELs are calculated directly from the applicable WQS.

3.3.2 Reasonable Potential Analysis (RPA) and Need for Water Quality-Based Effluent Limits

DEQ uses the process described in the *Effluent Limit Development Guidance* (DEQ 2017) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria (WQC) for a given pollutant, DEQ compares the maximum projected receiving water concentration to the WQC for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a WQBEL must be included in the permit.

In some cases, a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and within which certain water quality criteria may be exceeded (IDAPA 58.01.02.060). While the criteria may be exceeded within the mixing zone, the use and size of the mixing zone must be limited such that the waterbody as a whole will not be impaired, all designated uses are maintained and acutely toxic conditions are prevented.

The proposed mixing zones for this facility's pollutants are summarized in Table 8. The calculated limits based on the size of the mixing zones do not impede receiving water beneficial uses.

Table 8. Authorized mixing zones for Outfall 001.

Pollutant	Discharge Period	Authorized Mixing Zone (% of Critical Low Flow)			
		Aquatic Life		Human Health	
		Acute (1Q10)	Chronic (7Q10)	Water and Fish (30Q5 or Harmonic Mean)	Fish Only (30Q5 or Harmonic Mean)
TRC	07/01 to 11/30	25% of 1.15 cfs	25% of 1.65 cfs	NA	NA
TRC	12/01 to 06/30	25% of 4.92 cfs	25% of 8.92 cfs	NA	NA

DEQ also calculated dilution factors for critical low flow conditions (see Appendix B). All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.02 mgd (IDAPA 58.01.02.060.01.c).

The RPA and WQBEL calculations were based on mixing zones shown in Table 8. The equations used to conduct the RPA and calculate the WQBELs are provided in Appendix B. If DEQ revises the allowable mixing zone before final issuance of the permit, the RPA and WQBEL calculations will be revised accordingly.

3.3.3 Reasonable Potential and Water Quality-Based Effluent Limits

The reasonable potential and WQBELs for specific parameters are summarized below. The calculations are provided in Appendix B.

3.3.3.1 E. coli

The Idaho WQS states that waters of the State of Idaho that are designated for recreation (primary or secondary) are not to contain *E. coli* bacteria in concentrations exceeding a geometric mean of 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a 30-day period. A mixing zone is not appropriate for bacteria for waters designated for contact recreation. Since a mixing zone is not appropriate, an RPA was not conducted and end-of-pipe limits are included in this permit. There are no TBELs for fecal coliform or *E. coli*, therefore, the permit contains a monthly geometric mean WQBEL for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho WQS 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 WQS. 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.ii.). For waters designated only for secondary contact recreation the single sample maximum value is 576 organisms per 100 mL (IDAPA 58.01.02.251.01.b.i.).

Monitoring of the effluent five times per month will ensure compliance with the criterion can be assessed. If the single sample maximum is exceeded, the permittee may choose to monitor more frequently than the permit requires to ensure adequate disinfection and compliance with permit effluent limits.

Regulations at IDAPA 58.01.25.303.04 require that effluent limits for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms “average monthly limit” and “average weekly limit” are defined in IDAPA 58.01.25.10.06 and 07 respectively 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. Therefore, the permit monthly effluent limit is a geometric mean for *E. coli* of 126 organisms per 100 ml.

3.3.3.2 TRC

The Idaho WQS in Table 1 at IDAPA 58.01.02.210 establish an acute criterion of 19 µg/L and a chronic criterion of 11 µg/L for the protection of aquatic life. There are no effluent TRC data. The Water Pollution Control Federation’s *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection on a monthly average basis if a 500 µg/L chlorine residual is maintained after 15 minutes of contact time. Based on this, an expected average weekly concentration is less than 750 µg/l, equal to 1.5 times the expected monthly average value. A reasonable potential calculation using the expected maximum weekly average concentration of 750 µg/l showed that the discharge

from the facility would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. The calculated water quality-based effluent limits for July through November are:

Average Monthly Limit: 97 µg/l, and 0.016 lb/day

Maximum Daily Limit: 200 µg/l, and 0.033 lb/day

The calculated water quality-based effluent limits for December through June are:

Average Monthly Limit: 390 µg/l, and 0.064 lb/day

Maximum Daily Limit: 770 µg/l, and 0.13 lb/day

DEQ does not believe the effluent limits are immediately achievable because:

- The facility does not have a dechlorination process,
- The monthly average chlorine residual following 15 minutes of contact time is 500 µg/L, and
- There are no effluent data.

Because the limits are not achievable DEQ authorizes a compliance schedule to meet the final TRC limits. The compliance schedule requires the permittee to meet an interim effluent limit until final compliance with the final TRC effluent limit. A 0.5 mg/L average monthly limit for chlorine is derived from standard operating practices. A wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L TRC limit on a monthly average basis. In addition to average monthly limits (AMLs), IPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. For TRC, the AWL is calculated to be 1.5 times the AML, consistent with the "secondary treatment" limits for BOD_5 and TSS. This results in an AWL for TRC of 0.75 mg/L.

Since the federal regulations at 40 CFR 122.45 (b) and (f) require limitations for POTWs to be expressed as mass based limits using the design flow of the facility, mass based interim limits for TRC are calculated as follows:

Average Monthly Limit= 0.5 mg/L x 0.02 mgd x 8.34 = 0.08 lb/day

Average Weekly Limit = 0.75 mg/L x 0.02 mgd x 8.34 = 0.13 lb/day

3.3.3.3 pH

The Idaho WQS, at IDAPA 58.01.02.250.01.a, require pH values of the receiving water to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH; therefore the most stringent WQC must be met before the effluent is discharged to the receiving water.

3.3.3.4 Total Phosphorus as P

Total phosphorus has no numeric criteria; however, dischargers are required to meet narrative criteria in IDAPA 58.01.02.200.

3.3.3.5 Total Ammonia as N

Data were not available to conduct a RPA for ammonia. For this reason, monitoring of ammonia, pH and temperature will be required in effluent monitoring and upstream receiving water monitoring. The RPA of ammonia will be evaluated during the next permit cycle.

3.3.3.6 Temperature

Currently there is no temperature data to evaluate if the permittee has reasonable potential to cause or contribute to a temperature water quality criteria exceedance. For this reason, data will be collected in effluent monitoring and upstream receiving water monitoring.

3.4 Narrative Criteria

DEQ must incorporate the narrative criteria described in IDAPA 58.01.02.200 when it determines permit limits and conditions. Narrative WQC limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic attributes, or adversely affect human health.

The Idaho WQS require that surface waters of the State be free from floating, suspended, or submerged matter of any kind in concentrations impairing designated beneficial uses. The permit contains a narrative limitation prohibiting the discharge of such materials.

3.5 Antidegradation

DEQ's antidegradation policy provides three levels of protection to water bodies in Idaho subject to Clean Water Act (CWA) jurisdiction (IDAPA 58.01.02.051).

- Tier I of antidegradation protection is designed to ensure that existing uses and the water quality necessary to protect those uses is maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). A Tier I review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier II protection applies to any water bodies considered to be high quality waters (where the water quality exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water) and provides that water quality will be maintained and protected unless allowing for lower water quality is deemed by the state as necessary to accommodate important economic or social development in the area. In allowing any lowering of water quality DEQ must ensure adequate water quality to protect existing uses fully and must assure that there will be achieved the highest statutory and regulatory requirements for all new and existing point sources (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier III protection applies to water bodies that have been designated by the Idaho Legislature as outstanding national resource waters and provides that water quality is to be maintained and protected (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ employs a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be

considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

According to DEQ's 2016 Integrated Report, this receiving water body AU is fully supporting its aquatic life use and salmonid spawning use (IDAPA 58.01.02.052.05.a). As such, DEQ will provide Tier II protection in addition to Tier I for the aquatic life use (IDAPA 58.01.02.051.01 and 02). The contact recreation and domestic water supply uses are unassessed. Therefore, DEQ must provide an appropriate level of protection on a case-by-case basis using information available at this time (IDAPA 58.01.02.052.05.b).

3.5.1 Protection and Maintenance of Existing Uses (Tier I Protection)

A Tier I review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing and designated uses and the level of water quality necessary to protect existing and designated uses shall be maintained and protected. In order to protect and maintain existing and designated beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality-limited, and a TMDL must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limits that are consistent with wasteload allocations in the approved TMDL.

Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04). There are no EPA-approved TMDLs for the section of river POTW discharges to, and no WLAs for the Princeton-Hampton POTW.

The effluent limits and associated requirements contained in the 2020 permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the Palouse River in compliance with the Tier I provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

3.5.2 High-Quality Waters (Tier II Protection)

The Palouse River is considered high quality for cold water aquatic life and salmonid spawning. The primary recreation use is not assessed. Based on discussion with the permittee, it will be assumed that the section of the Palouse River the POTW discharges into is high quality for primary contact recreation. As such, the water quality relevant to cold water aquatic life, primary contact recreation, and salmonid spawning of the Palouse River must be maintained and

protected, unless a lowering of water quality is insignificant or is deemed necessary to accommodate important social or economic development (IDAPA 58.01.02.052.08).

To determine whether degradation will occur, DEQ must evaluate how the discharge will affect water quality for each pollutant of concern that is relevant to cold water aquatic life, primary contact recreation, and salmonid spawning uses of the Palouse River (IDAPA 58.01.02.052.06); these include all POCs listed in section 2.3**.** Numeric effluent limits are set in the permit for all these pollutants except ammonia, temperature, and phosphorus. The ammonia and temperature parameters have no numeric limit because their reasonable potential to cause or contribute to a water quality exceedance is unknown. A numeric phosphorus limit was not included since the receiving water is not impaired for nutrients, there is no TMDL allocation, and the POTW has been in operation with no upgrades or expansion since the 1980s, albeit unpermitted.

For a new permit, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit (IDAPA 58.01.02.052.06.a). Since the discharge commenced before July 1, 2011, and no changes have been made to the facility or its operation, degradation of POCs is insignificant (IDAPA 58.01.02.052.08.a.i).

3.6 Antibacksliding

Section 402(o) of the CWA and regulations at IDAPA 58.01.25.200 generally prohibit the renewal, reissuance, or modification of an existing IPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the existing permit (i.e., antibacksliding) but provides limited exceptions. For explanation of the antibacksliding exceptions refer to section 4.1 of the Effluent Limit Development Guidance (DEQ 2017).

There is no existing permit or permit limits, so antibacksliding does not apply to the 2020 permit limits.

4 Monitoring Requirements

Idaho regulations IDAPA 58.01.02 and 58.01.25 require that monitoring be included in permits to determine compliance with effluent limits and other permit restrictions. Monitoring may also be required to gather data to assess the need for future effluent limits or to monitor effluent impacts on receiving water quality. Permittees are responsible for conducting the monitoring and reporting the results on monthly DMRs and in annual reports.

4.1 Influent Monitoring

Flow, TSS, and BOD_5 monitoring requirements are listed below in Table 9. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 9. Influent monitoring requirements.

Parameter	Monitoring Period	Units	Sample Frequency	Sample Type	Report	Reporting Period (DMR Months)
Flow	01/01 to 12/31	mgd	2/month	Record	Monthly Average, Daily Maximum	All Months
BOD_5	01/01 to 12/31	mg/L	2/month	Grab	Monthly Average	All Months
TSS	01/01 to 12/31	mg/L	2/month	Grab	Monthly Average	All Months
Hauled waste received Septage	01/01 to 12/31	Gal	1/month	Record	Monthly Total	All Months

4.1.1 Influent Monitoring Changes from the 2012 Compliance Order

Monitoring frequencies for influent parameters have been changed relative to the 2012 EPA Compliance Order. Changes in monitoring are presented in Table 10.

Table 10. Changes in influent monitoring frequency comparison.

Parameter	2012 Compliance Order	2020 Permit	Rationale
Flow	1/week	2/month	Necessary for I&I monitoring
BOD_5	1/month	2/month	Reflects effluent monitoring frequency
TSS	1/month	2/month	Reflects effluent monitoring frequency
Hauled waste received Septage	NA	1/month	Not previously reported

4.2 Additional Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit. Pollutants that must be monitored but do not have effluent limits are presented in Table 11. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 11. Additional Effluent Monitoring.

Parameter	Monitoring Period	Units	Sample Frequency	Sample Type	Report	Reporting Period (DMR Months)
Flow	01/01 to 12/31	mgd	1/week	Measure	Monthly Average, Daily Maximum	All Months
Total Ammonia (as N)	01/01 to 12/31	mg/L	1/month	Grab[a]	Monthly Average, Daily Maximum	All Months
Temperature[b]	01/01 to 12/31	°C	1/week	Grab[a]	Monthly Average, Daily Maximum	All Months
E. coli	01/01 to 12/31	#/100 mL	5/month	Grab[a]	Instantaneous Maximum	All Months

a. A grab sample is an individual sample collected over a 15-minute period or less.
b. Collected during the warmest part of the day (between 2 and 4 pm).

4.2.1 Effluent Monitoring Changes from the 2012 Compliance Order

Monitoring frequencies and parameters have been changed relative to the 2012 EPA Compliance Order. Changes in monitoring are presented in Table 12, below.

Table 12. Changes in effluent monitoring frequency comparison.

Parameter	2012 Compliance Order	2020 Permit	Rationale
Flow	1/week	1/week	There are no recorded flow data from the 2012 Compliance Order
BOD_5	1/month	2/month	More frequent monitoring allows compliance determination for monthly, and weekly effluent limits
TSS	1/month	2/month	
pH	1/week	2/week	More frequent monitoring provides data supporting more accurate compliance assessment
Temperature	---	1/week	Temperature RPTE is unknown. The receiving water is fully supporting for salmonid spawning and must be protected. More temperature data is needed for this reach.
E. coli	5/month	5/month	No change. Consistent with Idaho WQS.
TRC	1/week	1/week	No change
Ammonia	1/month	1/month	RPTE is unknown

4.3 Receiving Water Monitoring

Table 13 presents the receiving water monitoring requirements for the permit. The POTW should establish receiving water monitoring at the established locations. Receiving water monitoring results must be submitted with the DMR.

Table 13. Receiving water monitoring requirements.

Parameter	Units	Frequency[a, b, c]	Sample Type	Report	Reporting Period (DMR Months)
Temperature[d, e]	°C	Quarterly	Grab	Monthly Average, Daily Maximum	Quarterly (March, June, September, December)
pH[d ,e]	std units	Quarterly	Grab	Instantaneous Maximum, Instantaneous Minimum	Quarterly (March, June, September, December)
Total Ammonia (as N)	mg/L	Quarterly	Grab	Monthly Average, Daily Maximum	Quarterly (March, June, September, December)

a. Monitoring frequency of 1/quarter is required during the warmest part of the day (between 2 and 4 pm).
b. Receiving water sampling must occur, even if the facility is not discharging effluent.
c. To the extent practicable, surface water collection shall occur on the same day as effluent sample collection.
d. pH and temperature must be analyzed within 15 minutes of sample collection.
e. Must be collected at the same time as the total ammonia (as N) sample.

No receiving water monitoring was required in the 2012 EPA Compliance Order.

4.4 Permit Renewal Monitoring

The permit renewal monitoring requires data collected to characterize the effect of the effluent on the Palouse River. At a minimum, three samples of the final wastewater effluent for the parameters listed in Table 14 are required so that DEQ can assess the surface water impacts.

DEQ has the discretion to waive a permit renewal requirement if DEQ has access to substantially identical information (IDAPA 58.01.25.105.11.b). The City of Montpelier effluent samples from lagoons has a greater than 24-hours holding time, and is substantially identical to a 24-hour composite. The 24-hour composite requirement for this facility is waived.

Table 14. Effluent monitoring required for all permit renewals.

Parameter	Units	Sample Type	Report
pH	s.u.	Grab	Minimum and maximum value
Flow	mgd	Recorded	Maximum daily value, average daily value, number of samples
Temperature (March)	°C	Grab	
Temperature (July)	°C	Grab	
BOD_5	mg/L	Grab	Maximum daily value, average daily value, analytical method and ML or MDL
TSS	mg/L	Grab	
E. coli	#/100 mL	Grab	

The permittee must conduct full scans of the final effluent in March, July, and November during the third year of the permit cycle.

5 Special Conditions

5.1 Compliance Schedule

IDAPA 58.01.25.305 and 40 CFR 122.47 allow for compliance schedules in IPDES permits to provide additional time for permittees to achieve compliance.

The permit includes a compliance schedule for TRC. Compliance schedules are authorized in Idaho WQS at IDAPA 58.01.25.305 and IDAPA 58.01.02.400.03. Compliance schedules allow a discharger to phase in, over time, compliance with WQBELs when limitations are in the permit for the first time. DEQ has found that a compliance schedule including interim effluent limits is appropriate for TRC because the facility is likely unable to immediately comply with the new WQBEL on the effective date of the permit.

To comply with permit conditions and requirements the facility will need to undergo upgrades and develop a Facility Plan. Upgrades will also bring the facility into compliance with the Idaho Wastewater Rules (IDAPA 58.01.16). A time schedule to complete upgrades is provided to the facility to allow for bids, design, and construction.

5.2 Nondomestic Waste Management

The permittee has nonsignificant, nondomestic (industrial/commercial) users, which are neither subject to the pretreatment standards in 40 CFR 405 through 471, nor meet any of the criteria of a significant industrial user (SIU) as specified in 40 CFR 403.3(v), and therefore, DEQ does not require an authorized pretreatment program. The permittee must ensure that pollutants from nondomestic wastes discharged to their system do not negatively impact system operation or pass through the wastewater treatment facility. The permittee must not authorize indirect discharges of pollutants that would inhibit, interfere with, or otherwise be incompatible with operation of the wastewater treatment works, including interference with the use or disposal of municipal sludge.

5.3 Plans

5.3.1 Spill Control Plan

The permittee shall develop and implement a plan for chlorine and other chemical use and storage.

6 Standard Conditions

Section 4 of the permit contains standard regulatory language that must be included in all IPDES permits. DEQ bases the Standard Conditions on state and federal law and regulations. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

6.1.1 Quality Assurance Project Plan

In accordance with IDAPA 58.01.25.300.05, permittees are required to develop procedures to ensure that the monitoring data submitted is accurate and explain data anomalies if they occur. The permittee is required to develop, maintain, and implement a plan. The quality assurance project plan (QAPP) shall consist of standard operating procedures for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to DEQ upon request.

6.1.2 Operation and Maintenance Manual

The permit requires the District to properly operate and maintain all facilities and systems of conveyance, treatment, and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility. The plan must be retained on site and made available to DEQ upon request.

6.1.3 Emergency Response Plan

The permittee must develop and implement an emergency response plan that identifies measures to protect public health and the environment. At a minimum, the plan must include mechanisms for the following:

1. Ensure that the permittee is aware (to the greatest extent possible) of all overflows from portions of the collection system over which the permittee has ownership or operational control as well as any unanticipated treatment unit bypass or upset that may exceed any effluent limit in the permit.
2. Ensure that reports of an overflow or of an unanticipated bypass or upset that may exceed any effluent limit in this permit are immediately dispatched to appropriate personnel for investigation and response.
3. Ensure immediate notification to DEQ of any noncompliance that may endanger public health or the environment and identify the public health district and other officials who will receive immediate notification for items that require 24-hour.
4. Ensure that appropriate personnel understand, are appropriately trained on, and follow the Emergency Response Plan; and
5. Provide emergency facility operation.

7 Compliance with other DEQ Rules

7.1 Operator's License

The permittee must meet the requirements and operator license levels listed in the wastewater rules at IDAPA 58.01.16.203 for the types of operations at the facility.

7.2 Lagoon Seepage Testing

The permittee must comply with the Wastewater Rules in IDAPA 58.01.16, including the seepage testing requirements in IDAPA 58.01.16.493 for municipal lagoons. Prior to lagoon seepage testing, the permittee must consult DEQ. The seepage test report submittals to DEQ must be up-to-date per the IDAPA 58.01.16 timelines.

7.3 Sludge/Biosolids

DEQ separates wastewater and sludge permitting for the purposes of regulating biosolids. DEQ may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR 503 and the requirements of Idaho's Wastewater Rules (IDAPA 58.01.16.480 and 650). The 503 regulations are self-implementing, and facilities must comply with them whether or not a permit has been issued. Idaho's Wastewater Rules require a POTW to have the capability to process sludge accumulated on site in preparation for final disposal or reuse (IDAPA 58.01.16.650). Operations of these sludge processing, storage, and disposal activities must comply with the facility's sludge management plan.

8 Permit Expiration or Modification

The permit will expire five years after the effective date.

DEQ may modify a permit before its expiration date only for causes specified in IDAPA58.01.25.201. A modification other than a minor modification requires preparing a permit that incorporates the proposed changes, preparing a fact sheet, and conducting a public review period. Only the permit conditions subject to the modification will be reopened when a permit is modified. All other conditions of the existing permit remain in effect. Modifying a permit does not change the expiration date of the original permit.

9 References for Text and Appendices

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DEQ. 2017. *Palouse River Subbasin 2017 Temperature TMDL.* Boise, ID: DEQ. *http://www.deq.idaho.gov/media/60180158/palouse-river-subbasin-temperature-tmdl-2017.pdf*

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EPA. 2012. *Compliance Order, Docket No. CWA-10-2012-0123.* Environmental Protection Agency, Office of Compliance and Enforcement.

Appendix A. Facility Maps/Process Schematics

Figure 1: Aerial Map of the Princeton-Hampton Sewer District POTW. Labeled locations are approximations.

Appendix B. Technical Calculations

The results of the technical calculations are discussed above in sections 3.2 and 0 of the fact sheet.

A. Technology-Based Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as secondary treatment, which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated secondary treatment effluent limits, which are found in 40 CFR 133. These TBELs apply to all municipal wastewater treatment facilities and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH.

The concentration, load, and removal rate limits for BOD_5 and TSS are the technology-based effluent limits of 40 CFR 133.102. As explained in section 3.3.3, DEQ has determined that more-stringent water quality-based effluent limits (WQBELs) are necessary for pH.

All other parameter limits for *E. coli* and TRC are based on WQBELs in order to ensure compliance with water quality standards. RPA was conducted for TRC and reasonable potential existed to prompt limit development using the Water Pollution Control Federation's *Chlorination of Wastewater* (1976) monthly average (500 µg/L) and weekly average (750 µg/l) disinfection standards. Equations used in this determination are given below.

Reasonable Potential and Water Quality-Based Effluent Limit Calculations
DEQ uses the process in the *Effluent Limit Development Guidance* (DEQ 2017) to determine reasonable potential. After characterizing the effluent and receiving water, DEQ compares the projected receiving water concentration after the effluent is discharged to the water quality criteria for the pollutant of concern. If the projected concentration exceeds the criterion, there is reasonable potential and an effluent limit is developed.

If DEQ chooses to authorize a mixing zone, the water quality criteria must still be met at the edge of the mixing zone. If after the analysis of the mixing zone, water quality criteria are not being met, the facility will receive an effluent limit that identifies both the size of the mixing zone and the final effluent limit.

Mass-Balance
For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass-balance equation:

$$C_d = \frac{(C_e Q_e) + \lfloor C_u(Q_u \times \%MZ) \rfloor}{Q_e + (Q_u \times \%MZ)}$$

Equation 1. Simple mass-balance equation.

Where:

C_d = downstream receiving water concentration	Calculated value
Q_e = critical effluent flow	From discharge flow data (design flow for POTW)
Q_u = critical upstream flow (1Q10 acute criterion, 7Q10 chronic, or harmonic mean)	From water quality standards
%MZ = percent of critical low flow provided by mixing zone	From mixing zone analysis
C_u = critical upstream pollutant concentration (90th to 95th percentile)	From receiving water data
C_e = critical effluent pollutant concentration	Calculated value using

A dilution factor (D) can be introduced to describe the allowable mixing. A dilution factor represents the ratio of the receiving water body low flow percentage (i.e., the low-flow design discharge conditions) to the effluent discharge volume and is expressed as:

$$Dilution\ Factor = D_f = \frac{(Q_S \times P + Q_e)}{Q_e} = \frac{(Q_s \times P)}{Q_e} + 1$$

Equation 2. Dilution factor calculation.

Where: D_f= Dilution factor

Qs = Receiving water low-flow condition (cfs)

P = Mixing zone percentage

Qe = Effluent discharge flow (cfs)

The above equations for C_d are the forms of the mass-balance equation, which were used to determine reasonable potential and calculate WLAs.

Critical Effluent Pollutant Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, DEQ's *Effluent Limit Development Guidance* (DEQ 2017) recommends using the critical effluent pollutant concentration (C_e) in the mass balance calculation (see Equation 1). To determine the C_e DEQ has adopted EPA's statistical approach that accounts for day-to-day variability in effluent quality by identifying the number of samples, calculating the coefficient of variation (CV) (Equation 7, below), and selecting a reasonable potential multiplying factor (RPMF) from the tables in the *Effluent Limit Development Guidance* (DEQ 2017).

$$CV = \frac{Standard\ Deviation}{Mean}$$ **Equation 3. CV calculation.**

$$C_e = MOEC\ x\ RPMF$$ **Equation 4. C_e calculation.**

If the C_e exceeds water quality criteria then a reasonable potential analysis is conducted.

RPA Calculations for Total Residual Chlorine

The calculations below are also shown in Table 15.

$$C_d = \frac{(C_e Q_e) + \lfloor C_u(Q_u \times \%MZ)\rfloor}{Q_e + (Q_u \times \%MZ)}$$

Where:

C_d = downstream receiving water concentration = calculated
Q_e = critical effluent flow = 0.031 cfs (0.02 mgd design flow)
$Q_{u\text{-}acute}$ = critical upstream flow (1Q10) = 1 cfs
$Q_{u\text{-}chronic}$ = critical upstream flow (7Q10) = 1.6 cfs
%MZ = percent of critical low flow = 25%
C_u = critical upstream concentration = 0 µg/L
C_e = critical effluent pollutant concentration = $MOEC \times RPMF$ = 2,263
MOEC = maximum observed effluent concentration = 750 µg/L
RPMF = reasonable potential multiplying factor =3.018 (see Table 15)

$$C_{d-acute} = \frac{\left(2{,}263\frac{\mu g}{L} \times 0.031 cfs\right) + \lfloor 0\mu g/L(1\ cfs \times 25\%)\rfloor}{0.031 cfs + (1 cfs \times 25\%)}$$

$$C_{d-acute} = \frac{(70.15) + \lfloor 0\rfloor}{0.281}$$

$$C_{d-acute} = 249$$

Acute WQS for TRC is 19 µg/L. $C_{d\text{-}acute}$ > WQS therefore there is reasonable potential to cause or contribute to water quality impairments.

$$C_{d-chronic} = \frac{\left(2{,}263\frac{\mu g}{L} \times 0.031 cfs\right) + \lfloor 0\mu g/L(1.6\ cfs \times 25\%)\rfloor}{0.031\ cfs + (1.6 cfs \times 25\%)}$$

$$C_{d-chronic} = \frac{(70.15) + \lfloor 0\rfloor}{0.431}$$

$$C_{d-chronic} = 163$$

Chronic WQS for TRC is 11 µg/L. $C_{d\text{-}chronic}$ > WQS therefore there is reasonable potential to cause or contribute to water quality impairments.

Reasonable Potential Analysis

The discharge has reasonable potential to cause or contribute to an exceedance of WQC, referred to as a reasonable potential to exceed (RPTE), if the critical concentration of the pollutant at the end of pipe exceeds the most stringent WQC for that pollutant. This RPTE may result in end-of-pipe limits or may be accommodated if the receiving water has sufficient low flows to provide a mixing zone and the POC does not have acute toxicity attributes. Other conditions may also be applicable that may restrict the use of a mixing zone for the POC.

B. WQBEL Calculations

The following calculations demonstrate how the WQBELs in the permit were calculated. The permit includes WQBELs for TRC. The following discussion presents the general equations used to calculate the WQBELs.

Calculate the Wasteload Allocations (WLAs)

WLAs are calculated using the same mass-balance equations used to calculate the concentration of the pollutant at the mixing zone boundary in the RPA. WLAs must be calculated for both acute and chronic criteria. To calculate the WLAs, C_d is set equal to the appropriate criterion and the equation is solved for C_e. The calculated C_e is the WLA. Equation 9 is rearranged to solve for the WLA:

$$C_e = WLA_{(a\ or\ c)} = \frac{WQC_{(a\ or\ c)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

Equation 5. Simple mass-balance equation for calculating WLA for flowing water.

Where:

$WQC_{(a\ or\ c)}$ = Pollutant water quality criterion (acute or chronic)	Calculated value
Q_e = Critical effluent flow	From discharge flow data (design flow for POTW)
Q_u = Critical upstream flow (1Q10 acute criterion or 7Q10 chronic)	From water quality standards
%MZ = Percent of critical low flow provided by mixing zone	From mixing zone analysis
C_u = Critical upstream pollutant concentration (90th to 95th percentile)	From receiving water data
$C_e = WLA_{(a\ or\ c)}$ = wasteload allocation (acute or chronic)	Calculated from Equation 4

Idaho's WQC for some metals are expressed as the dissolved fraction, but the rules regulating the IPDES program (IDAPA 58.01.25.303.03) and federal regulations (40 CFR 122.45(c)) require that effluent limits be expressed as total recoverable metal unless standards have been promulgated allowing limits specified in dissolved, valent, or total forms, a case-by-case basis has been established for limits specified in dissolved, valent, or total form, or all approved analytical methods for the metal inherently measure only its dissolved form. Therefore, the permit writer should calculate a WLA in total recoverable metal that will be protective of the

dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator. As discussed in *Guidance Document on Dynamic Modeling and Translators* (EPA 1993), the criteria translator (CT) is equal to the conversion factor when site-specific translators are not available. Conversion factors for metals criteria are listed in DEQ's Water Quality Standards (WQS) at IDAPA 58.01.02.210.02. The WQS also lists several guidance documents at IDAPA 58.01.02.210.04 that are recommended for the development of site specific translators.

The next step is to compute the acute and chronic long-term average ($LTA_{(a\ or\ c)}$) concentrations, which will be derived from the acute and chronic WLAs. This is done using the following equations from the *Effluent Limit Development Guidance* (DEQ 2017):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z_{99}\sigma)}$$ **Equation 6. Acute LTA for toxics.**

Where:

LTA_a = Acute long-term average	Calculated value
WLA_a = Acute wasteload allocation	Calculated value. See Equation 5.
e = Base of natural log	Approximately 2.718
σ = Square root of σ^2	
$\sigma^2 = Ln(CV^2+1)$	Ln is the natural log
CV = Coefficient of variation	Calculated using field data. If 10 or less samples available, use default value of 0.6. See Equation 3
Z_{99} = z score of the 99th percentile of the normal distribution	2.326

$$LTA_c = WLA_c \times e^{(0.5\sigma_n^2 - z_{99}\sigma_n)}$$ **Equation 7. Chronic LTA average for toxics.**

Where:

LTA_c = Chronic long-term average	Calculated value
WLA_c = Chronic wasteload allocation	Calculated value. See Equation 5.
e = Base of natural log	Approximately 2.718
σ_n = Square root of σ_n^2	
$\sigma_n^2 = Ln[(CV^2)/n + 1)]$	Ln is the natural log
CV = Coefficient of variation	Calculated using field data. If 10 or less, samples available use default value of 0.6. See Equation 3.
Z_{99} = z score of the 99th percentile of the normal distribution	2.326
n = Averaging period for the chronic water quality criterion (typically 4 days)	Varies

The acute and chronic LTAs are compared, and the more stringent of the two is used to calculate the maximum daily and average monthly limits.

Derive the Maximum Daily and Average Monthly Effluent Limits

Using the *Effluent Limit Development Guidance* (DEQ 2017) equations, the maximum daily limit (MDL) and average monthly limit (AML) are calculated as follows:

$$Maximum\ Daily\ Limit = LTA_m \times e^{(z_{99}\sigma - 0.5\sigma^2)}$$ **Equation 8. Maximum daily limit for toxics.**

Where:

LTA_m = Minimum long-term average value	Lesser value calculated from Equation 6 and Equation 7
e = Base of natural log	Approximately 2.718
σ = Square root of σ^2	
$\sigma^2 = Ln(CV^2+1)$	Ln is the natural log of base e
Z_{99} = z score of the 99th percentile of the normal distribution	2.326
CV = Coefficient of variation	See Equation 3.

$$AML = LTA_m \times e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}$$ **Equation 9. Average monthly limit for toxics.**

Where:

LTA_m = Minimum long-term average	Lesser value calculated from Equation 6 and Equation 7
AML = Average monthly limit	Calculated value
e = Base of natural log	Approximately 2.718
σ_n = Square root of σ_n^2	
$\sigma_n^2 = Ln[(CV^2)/n + 1]$	Ln is the natural log of base e
Z_{95} = z score of the 95th percentile of the normal distribution	1.645
n = Number of sample specified in the permit to be analyzed each month	Typically n = 1, 2, 4, 10, or 30.
CV = Coefficient of variation	See Equation 3

Example RPA Calculations with RPTE -TRC

In first step in calculating effluent limits, the wasteload allocation (WLA) of both acute and chronic are calculated.

$$WLA_{(a\ or\ c)} = \frac{WQC_{(a\ or\ c)}[Q_e+(Q_u\times\%MZ)]-[C_u\times(Q_u\times\%MZ)]}{Q_e}$$

Where:

C_d = downstream receiving water concentration	= calculated
Q_e = critical effluent flow	= 0.031 cfs (0.02 mgd design flow)
$Q_{u\text{-}acute}$ = critical upstream flow (1Q10)	= 1.0 cfs
$Q_{u\text{-}chronic}$ = critical upstream flow (30Q5)	= 21.6 cfs
%MZ = percent of critical low flow	Acute 25%, Chronic 25%
C_u = critical upstream concentration	= 0 µg/L
C_e = critical effluent pollutant concentration	= $MOEC \times RPMF$ = 2,263 µg/L
MOEC = maximum observed effluent concentration	= 750 µg/L
RPMF = reasonable potential multiplying factor	=3.018 (see Table 15)
$C_{d\ (a)}$	=249 µg/L
$C_{d\ (c)}$	=163 µg/L
$WQC_{(a)}$	=19 µg/L
$WQC_{(c)}$	=11 µg/L

$$WLA_{(a)} = \frac{WQC_{(a)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

$$WLA_{(a)} = \frac{19\ \mu g/L[0.031cfs + (1.0cfs \times 25\%)] - [0\mu g/L \times (1.0cfs \times 25\%)]}{0.031cfs}$$

$$WLA_{(a)} = \frac{5.339 - [0]}{0.031}$$

$$WLA_{(a)} = 172\ \mu g/L$$

$$WLA_{(c)} = \frac{WQC_{(c)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

$$WLA_{(c)} = \frac{11\ \mu g/L[0.031cfs + (1.6cfs \times 25\%)] - [0 \times (1.6cfs \times 25\%)]}{0.031cfs}$$

$$WLA_{(c)} = \frac{4.741 - [0]}{0.031}$$

$$WLA_{(c)} = 153\ \mu g/L$$

A long term average (LTA) is calculated using the values in the step above.

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z_{99}\sigma)}$$

Where:

LTA_a = Acute long-term average	Calculated value
WLA_a = Acute wasteload allocation	=172 ug/L
e = Base of natural log	Approximately 2.718
σ = Square root of σ^2	=0.555
σ^2 = Ln(CV^2+1)	=0.307
CV = Coefficient of variation	Assumed 0.6
Z_{99} = z score of the 99th percentile of the normal distribution	2.326

$$LTA_a = 172\ \mu g/L \times 2.718^{(0.5*0.307-2.326*0.555)}$$

$$LTA_a = 55.4\ \mu g/L$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_n^2 - z_{99}\sigma_n)}$$

Where:

LTA_c = Chronic long-term average	Calculated value
WLA_c = Chronic wasteload allocation	=153 ug/L

e = Base of natural log	Approximately 2.718
σ_n = Square root of σ_n^2	=0.294
σ_n^2 = Ln[(CV^2)/n + 1)]	=0.086
CV = Coefficient of variation	=1.233
Z_{99} = z score of the 99th percentile of the normal distribution	2.326
n = Averaging period for the chronic water quality criterion (typically 4 days)	4

$$LTA_c = 153\ \mu\text{g/L} \times 2.718^{(0.5*0.086-2.326*0.294)}$$

$$LTA_c = 80.8\ \mu\text{g/L}$$

The acute long term average is more limiting and will be used for effluent limit calculations.

$$Maximum\ Daily\ Limit = LTA_m \times e^{(z_{99}\sigma - 0.5\sigma^2)}$$

Where:

LTA_m = Minimum long-term average value	=55.4 ug/L
σ = Square root of σ^2	=0.555
σ^2 = Ln(CV^2+1)	=0.307
Z_{99} = z score of the 99th percentile of the normal distribution	2.326

$$Maximum\ Daily\ Limit = 55.4\ \text{ug/L} \times e^{(2.326*0.555-0.5*0.307)}$$

$$Maximum\ Daily\ Limit = 173\ \mu\text{g/L}$$

Maximum Daily Limit = 0.173 mg/L × 0.02 mgd × 8.34 = 0.029 lb/day

$$AML = LTA_m \times e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}$$

Where:

LTA_m = Minimum long-term average	=55.4 ug/L
AML = Average monthly limit	Calculated value
e = Base of natural log	Approximately 2.718
σ_n = Square root of σ_n^2	=0.294
σ_n^2 = Ln[(CV^2)/n + 1]	=0.086
Z_{95} = z score of the 95th percentile of the normal distribution	1.645
n = Number of sample specified in the permit to be analyzed each month	= 4

$$AML = 55.4\ \text{ug/L} \times e^{(1.645*0.294-0.5*0.086)}$$

$$AML = 86\ \text{ug/L}$$

Average Monthly Limit = 0.086 mg/L × 0.02 mgd × 8.34 = 0.014 lb/day

Table 15 details the calculations for WQBELs.

Table 15. RPA spreadsheet Screenshot

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Princeton-Hampton
Facility Flow (mgd)	0.0200
Facility Flow (cfs)	0.03094

Critical River Flows	(IDAPA 58.01.02 03. b)	Annual Crit. Flows	Units
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1Q10	1.0	cfs
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	7Q10 or 4B3	1.6	cfs
Ammonia	30B3/30Q10 (seasonal)	2.4	cfs
Human Health - Non-Carcinogen	30Q5	3.5	cfs
Human Health - carcinogen	Harmonic Mean Flow	18.3	cfs

Receiving Water Data		Notes:	Annual	
Hardness, as mg/L $CaCO_3$	Hardness, as mg/L $CaCO_3$	5th prctile at critical flow		min.
Temperature, °C	Temperature, °C	90th - 95th percentile		
pH, S.U.	pH, S.U.	90th - 95th percentile		

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages	CHLORINE (Total Residual)
Effluent Data	Number of Samples in Data Set (n)			10
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)			0.6
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)			750
	Calculated 50th prctile Effluent Conc. (when n>10), Human Health Only			
Receiving Water Statistics	90th Percentile Conc., µg/L - (C_u)			0
	Geometric Mean, µg/L, Human Health Criteria Only			
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	--	19.
	Aquatic Life Criteria, µg/L	Chronic	--	11.
	Human Health Water and Organism, µg/L		--	--
	Human Health, Organism Only, µg/L		--	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute		--
		Chronic		--
	Carcinogen (Y/N), Human Health Criteria Only		--	N
Percent River Flow	Aquatic Life - Acute	1Q10	--	25.00%
	Aquatic Life - Chronic	7Q10 or 4B3		25.00%
		30B3 or 30Q10		--
	Human Health - Non-Carcinogen and Chronic Ammonia	30Q5	--	--
	Human Health - Carcinogen	Harmonic Mean		--
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	--	9.08
	Aquatic Life - Chronic	7Q10 or 4B3		13.93
		30B3 or 30Q10		--
	Human Health - Non-Carcinogen and Chronic Ammonia	30Q5	--	--
	Human Health - Carcinogen	Harmonic Mean		--

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)				4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			--	4
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		--	0.600
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		--	0.600
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a - 1)$	Acute	--	172.5
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_u \times (MZ_c - 1)$	Chronic	--	153.2
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2 - z\sigma)$, Acute	99%	--	55.4
(99^{th} % occurrence prob.)	WLAa x $\exp(0.5\sigma^2 - z\sigma)$; ammonia n=30, Chronic	99%	--	80.8
Limiting LTA, ug/L	used as basis for limits calculation		--	55.4
Applicable Metals Criteria Translator (metals limits as total recoverable)				--
Average Monthly Limit (AML), ug/L	, where % occurrence prob =	95%	--	**86**
Maximum Daily Limit (MDL), ug/L	, where % occurrence prob =	99%	--	**173**
Average Monthly Limit (AML), mg/L			--	**0.086**
Maximum Daily Limit (MDL), mg/L			--	**0.173**
Average Monthly Limit (AML), lb/day			--	**0.014**
Maximum Daily Limit (MDL), lb/day			--	**0.029**

Human Health Reasonable Potential Analysis

σ	$\sigma^2 = \ln(CV^2+1)$			0.555
P_n	$=(1\text{-confidence level})^{1/n}$ where confidence level =	95%		0.741
Multiplier	$=\exp(2.326\sigma - 0.5\sigma^2)/\exp[\text{invnorm}(P_N\sigma - 0.5\sigma^2]$, prob. =	50%		0.699
Dilution Factor (for Human Health Criteria)		.		--
Max Conc. at edge of Chronic Zone, ug/L (C_d)				--
Reasonable Potential to exceed HH Water & Organism				**NO**
Reasonable Potential to exceed HH Organism Only				**NO**

Appendix C. Your Right to Appeal

Persons aggrieved, as specified in IDAPA 58.01.25.204.01.a., have a right to appeal the final permit decision to the Board of Environmental Quality. A Petition for Review must be filed with the Department's Hearing Coordinator within twenty eight (28) days after the Department serves notice of the final permit decision under IDAPA 58.01.25.107 (Decision Process).

All documents concerning actions governed by these rules must be filed with the Hearing Coordinator at the following address: Hearing Coordinator, Department of Environmental Quality, 1410 N. Hilton, Boise, ID 83706-1255. Documents may also be filed by FAX at FAX No. (208) 373-0481 or may be filed electronically. The originating party is responsible for retaining proof of filing by FAX. The documents are deemed to be filed on the date received by the Hearing Coordinator. Upon receipt of the filed document, the Hearing Coordinator will provide a conformed copy to the originating party. Additional requirements for appeals of IPDES final permit decisions can be found in IDAPA 58.01.25.204.

Appendix D. Public Involvement and Public Comments

A. Public Involvement Information

DEQ proposes to issue a permit to the Princeton-Hampton Sewer District. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and DEQ's reasons for requiring permit conditions.

DEQ will place a Public Notice of Draft on 12/17/2019 in the Moscow-Pullman Daily News to inform the public and to invite comment on the draft Idaho 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 draft permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on DEQ'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 about the draft IPDES permit.
- Explains the next step(s) in the permitting process.

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502
www.idaho.deq.gov

Brad Little, Governor
John H. Tippets, Director

DEQ SEEKS COMMENT ON DRAFT IDAHO POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FOR THE PRINCETON-HAMPTON WATER AND SEWER DISTRICT WASTEWATER TREATMENT FACIITY

PROPOSED ACTION: The Princeton-Hampton Water and Sewer District has applied to the Department of Environmental Quality (DEQ) for an Idaho Pollutant Discharge Elimination (IPDES) wastewater discharge permit for its publically owned wastewater treatment facility located on 3409 Highway 6 in Princeton, ID. DEQ is seeking public comment on the draft IPDES permit, associated fact sheet, and application for the Princeton-Hampton Water and Sewer District Wastewater Treatment Facility. This proposed permit authorizes the discharge of treated municipal wastewater year-round to the Palouse River for five years. The permit identifies the pollutants of concern and lists the required limits for each pollutant or parameter, and monitoring and reporting requirements necessary to ensure compliance with the permit and protect human health and the environment.

PUBLIC COMMENT PERIOD: Notice is given that DEQ has scheduled a period to receive public comments on the draft permit and fact sheet through Thursday, January 16th, 2019 at 5 p.m. MST. A public meeting may be held, if requested in writing by Tuesday, December 31st, 2019. The draft permit and fact sheet are available for public review at DEQ's state office in Boise, the Lewiston Regional Office, and on DEQ's website.
http://www.deq.idaho.gov/news-public-comments-events/

SUBMISSION OF WRITTEN COMMENTS–ASSISTANCE ON TECHNICAL QUESTIONS:
Anyone may submit written comment regarding the proposed permit. To be most effective, comments should address water quality considerations and include supporting materials where available. Comments, requests, and questions regarding the public comment process should be directed to Karen Jackson at the address below; or to the DEQ Web site at http://www.deq.idaho.gov. Please reference the city name and permit number when sending comments or questions. All information regarding this matter, including the issuance of the final permit, will be available on DEQ's website.
Please submit requests for a public meeting electronically on DEQ's website, by mail, or email to Lori Flook.

Lori Flook
Idaho Department of Environmental Quality
Surface & Wastewater Division
1410 N. Hilton
Boise, ID 83706
Email: Lori.Flook@deq.idaho.gov

Karen Jackson
Idaho Department of Environmental Quality
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B. Public Comments and Response to Comments

Idaho Pollutant Discharge Elimination System Discharge Permit No. ID0028436

Response to Comments on Draft Princeton-Hampton Sewer District IPDES Permit

January 31, 2020 comment deadline

Mountain Waterworks January 31 2020 Letter

Minor Editorial Comments – Fact Sheet

1. The District's legal name is Princeton-Hampton Sewer District. It is listed as Princeton-Hampton Water & Sewer District in the Fact Sheet.

Response 1: Thank you for your comment, this edit has been made.

Changes to draft fact sheet: References to the facility have been changed to "Princeton-Hampton Sewer District".

2. In Table 1. Facility information, the Responsible Official listed is Jerry Ross. It should be Cas Burns.

Response 2: Thank you for your comment, this edit has been made.

Changes to draft fact sheet: The correct Responsible Official is now listed.

3. In Table 6, footnote "a", the reference is missing.

Response 3: Thank you for your comment, this reference has been corrected.

Changes to draft fact sheet: The formatting of the reference has been fixed.

4. Under Section 2.1.2, we would like to make the suggested edit:

    a. Effluent is disinfected using tablet chlorination in a rectangular weir flows to a chlorine contact basin.

    b. Suggested edit: Effluent is disinfected using tablet chlorination ~~in a rectangular weir~~ and flows to a chlorine contact basin.

Response 4: Thank you for your comment, this edit has been made.

Changes to draft fact sheet: The suggested language has been added to the fact sheet.

5. Under Section 2.2, the reference to section 2.15 in the second paragraph should be "2.1.5".

Response 5: Thank you for your comment, this edit has been made.
Changes to draft fact sheet: This edit has been made.

Minor Editorial Comments – Draft Permit

6. The District's legal name is Princeton-Hampton Sewer District. It is listed as Princeton-Hampton Water & Sewer District in the Draft Permit.

Response 6: Thank you for your comment, this edit has been made.

Changes to draft permit: References to the facility have been changed to "Princeton-Hampton Sewer District".

7. Regarding Table 6, is the E. coli requirement necessary since it is in the District's permitted effluent limits (Table 2)? Table 6 is "additional effluent monitoring."

Response 7: An E.coli limit for the "monthly geometric mean" statistical basis is given in Table 2 of the draft permit. Table 6 of the draft permit consists of required additional monitoring, and is requiring monitoring for the "instantaneous maximum" statistical basis for E. coli. Both "monthly geometric mean" and "instantaneous maximum" monitoring and reporting[ii] on monthly DMRs will be necessary, however, only the "monthly geometric mean" has an associated effluent limit (126/100mL).

Changes to draft permit: None.

8. Under section 2.1.4, item (6) mentions testing for metals in the Palouse River, but IDEQ is not requiring metals analysis in Table 7.

Response 8: The list of parameters that must be sampled concurrently is template language. The reference to metals will be removed, however, it may be added in future permits if a metal become a pollutant of concern.

Changes to draft permit: The reference to metals in section 2.1.4 has been removed.

9. In the third row of text in Section 2.1.5, delete "are required".

Response 9: Thank you for your comment, this edit has been made.

Changes to draft permit: This edit has been made.

10. The narrative immediately above Table 8 in the permit states "The……..very….", but it should be "The……every…."

[ii] Please note, reporting is required within 24 hours of discovery of a single sample value greater than 406 #/100 ml. See Sections 2.2.7 and 2.2.8 of the permit for more information.

Response 10: Thank you for your comment, this edit has been made.

Changes to draft permit: This edit has been made.

Requests for Adjustment of Permit Conditions

11. Under Section 4 Standard Conditions, item 4, the draft Permit requires "The permittee must notify DEQ of all significant QAPP modifications (i.e., modifications to sample collections, sample analysis, or other procedures)." The District requests this section be replaced with the following: "The permittee must amend the QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP. Copies of the QAP must be kept on site and made available to EPA and/or IDEQ upon request." This language is more in line with current EPA requirements.

Response 11: Section 4.1.1 is template language and consistent across DEQ permits. The section references copies being kept on site and available to DEQ upon request in item number 5 of section 4.1.1.

Please note, recent NPDES permits from EPA (Kootenai-Ponderay, 2018; Kooskia, 2020; Jug Mountain, 2019) require similar QAP notification in submission schedules. EPA's submission language consists of:

> *"The permittee must provide EPA and the Idaho Department of Environmental Quality (IDEQ) with written notification that the Plan has been developed and implemented within 180 days after the effective date of the final permit (see Part II.B of this permit). The Plan must be kept on site and made available to EPA and IDEQ upon request."*

Changes to draft permit: None.

12. The Total Residual Chlorine (TRC) limits contained in the draft permit are based on a dilution calculation assuming a 25 percent mixing zone during the critical low flow period, presumed to occur during late summer or early fall. The District has historically only needed to discharge over a reasonably short window, typically in the spring months when flow in the receiving water is relatively high. The critical flows (1Q10 and 7Q10) as listed in the Fact Sheet can be reasonably assumed to occur during late summer or early fall; USGS gauging station data from the Palouse River near Potlatch confirms this assumption. The District does not anticipate needing to discharge during the months of July through November, during which the critical flows certainly occur. By using flow data from that period to calculate TRC effluent limits, the proposed year-round limits are overly stringent as they will only apply when the facility is actually discharging during higher receiving water flows.

    The District requests that the Mixing Zone, Reasonable Potential Analysis, and Water Quality Based Effluent Limits for TRC be recalculated using the 1Q10 and 7Q10 of the receiving water flows, excluding flow data for the months of July through November. If the TRC limits are recalculated, the District requests an additional comment period to review the revised proposed permit limits and calculations by which the revised proposed limits were developed.

Response 12: Currently DEQ does not have data that confirm the permittee does or does not discharge between July through November. Seasonal limits have been added, with seasons consisting of July through November, and December through June.

Please note that DEQ submitted the permit for public comment for 30 days (IDAPA 58.01.109.c) and changes to the permit are logical outgrowths of comments received. Accordingly, DEQ will not seek public comment a second time.

Changes to draft permit: Seasonal limits for TRC have been added, and low flow calculations for the July through November, and December through June seasons have been incorporated.

13. If a seasonal permit is granted per comment 2 above, the District requests that all loading limits contained in the permit be adjusted to the actual proposed daily discharge of the facility. As an example, if a December through June (212 days) discharge is authorized, the loading limits should be based on the prorated daily flow of 34,400 gpd calculated according to the following:

$$Annual\ Average\ Flow\ (gpd) * \frac{365\ days}{212\ days} = Prorated\ Flow(gpd)$$

$$\left(20{,}000\ gpd * \frac{365\ days}{212\ days} = 34{,}400\ gpd\right)$$

*Response 13: Limits are derived using the monthly average design flow in mass balance equations. Flows, concentration, and most loads cannot be prorated in permits. For more information on how design flow is incorporated into limit development see DEQ's Effluent Limit Development Guidance (*https://www.deq.idaho.gov/media/60181085/ipdes-effluent-limit-development-guidance-1217.pdf).

Changes to draft permit: None.

Association of Idaho Cities, January 31, 2020 Letter

14. General Comments

The Idaho Department of Environmental Quality (DEQ) is seeking public comment on a draft Idaho Pollutant Discharge Elimination System (IPDES) permit for the Princeton-Hampton Sewer District Wastewater Treatment Facility (draft Permit). While Princeton-Hampton Sewer District is not one of AIC's members, AIC members do have an interest in how IPDES permits and policies are interpreted and applied by the DEQ. Certain precedents in this and other draft Permits have the potential to directly impact AIC's members in the future.

AIC has discussed the draft Permit with Mountain Water Works, Ind. and the Princeton-Hampton Sewer District, and shares their concerns regarding the seasonal discharge authorization needed, coupled with corrected, daily loading limits that reflect the facility's actual operations. AIC further concurs with all other the comments submitted by Mountain Water Works in their January 31, 2020 letter as well.

AIC acknowledges how the comments and requests from the District will require extensive revisions between the draft and final Permit. Because of this, AIC respectfully requests a meeting with the DEQ Permit Writer, Mountain Water Works (Ryan Rehder), and the District to review the revised critical flow conditions, Reasonable Potential Analysis, mixing zone calculations, loading limits, and water quality based effluent limits prior to the completion and issuance of the final Permit. AIC will make our webinar and conferencing resources available for this meeting upon request.

Response 14: Thank you for your comment. Please note that DEQ submitted the permit for public comment for 30 days (IDAPA 58.01.109.c) and changes to the permit are logical outgrowths of comments received. Accordingly, DEQ will not seek public comment a second time; however, a permit handoff meeting invitation for the permittee will be sent prior permit issuance where a presentation and explanation of all changes can be made.

Changes to draft permit: See Responses 1-13.

Idaho Conservation League, January 31, 2020 Letter

15. Mixing Zone

ICL requests that DEQ remove the mixing zone authorized in the draft permit and recalculate the effluent in the final permit accordingly. If DEQ declines this request, please discuss the legal and factual basis that make authorizing a mixing zone for PHWSD appropriate in this instance. We would like to understand how DEQ arrived at its decision to authorize a mixing zone for total residual chlorine ("TRC"), when there were no influent data available, no effluent data regarding TRC available, and no receiving water data besides 10-year old data from another point source 4.5 miles downstream from PHWSD. Moreover, we would like to understand how DEQ arrived at this decision without the benefit of PHWSD completing and submitting a Mixing Zone Data Needs Form, as recommended by the 2016 Idaho Mixing Zone Implementation Guidance at Appendix B. Without this mixing zone information, we do not understand how DEQ determined that a 25% percent mixing zone for TRC will comply with DEQ's Mixing Zone Policy, IDAPA 58.01.02.060. For example, how did DEQ determine the assimilative capacity of the receiving water? And, how did DEQ determine that the mixing zone will not exceed 25% of the stream width?

Given the uncertainties of this facility's influent, effluent, and receiving water, we recommend DEQ issue a conservative initial IPDES permit for PHWSD and remove the mixing zone for TRC. Upon the renewal of this permit, DEQ can evaluate the facilities monitoring data and, at that time, determine whether a mixing zone is appropriate.

Response 15: DEQ may authorize a mixing zone on a case-by-case basis when a permit is issued, renewed, or materially modified (IDAPA 58.01.02.060.01). Further, these IDAPA rules allow DEQ to authorize mixing zones that vary from the provisions in Subsection 060.01.h. One component of a case-by-case basis analysis is whether or not there is assimilative capacity in the receiving water. The assimilative capacity of the receiving water calculations are incorporated in our RPA workbook. All calculations in the RPA are included in DEQ's ELDG, and an example of TRC specific calculations are included in Appendix B. Please see page 33 of the fact sheet for calculations of the assimilative capacity of the receiving water. An instream 0 ug/L was assumed, as TRC is not naturally found in streams, and no TRC sources are located upstream of the facility.

DEQ did not have TRC effluent data at the time of permit development. The conservative estimate RPA input for chlorine in effluent from a POTW is 750 ug/L. Limits are calculated on the volume of receiving water available for mixing, the concentration of that pollutant already in the receiving water, and the WQS. The effluent input in RPA only determines whether a limit is necessary or not to protect water quality. An effluent input of 750 ug/L is high enough to warrant a TRC limit[iii].

Not all permittees need to provide the Mixing Zone Data Needs Form in the 2016 Idaho Mixing Zone Implementation Guidance. As described in section 3.4 of the guidance, depending on the permittee and receiving water, there are three levels of effort in a mixing zone analysis. A copy of the flow chart for determining level of analysis is included.

[iii] *In other words, running the RPA, an effluent input of 750 ug/L and 1,000,000 ug/L results in the same monthly average and daily maximum limit.*

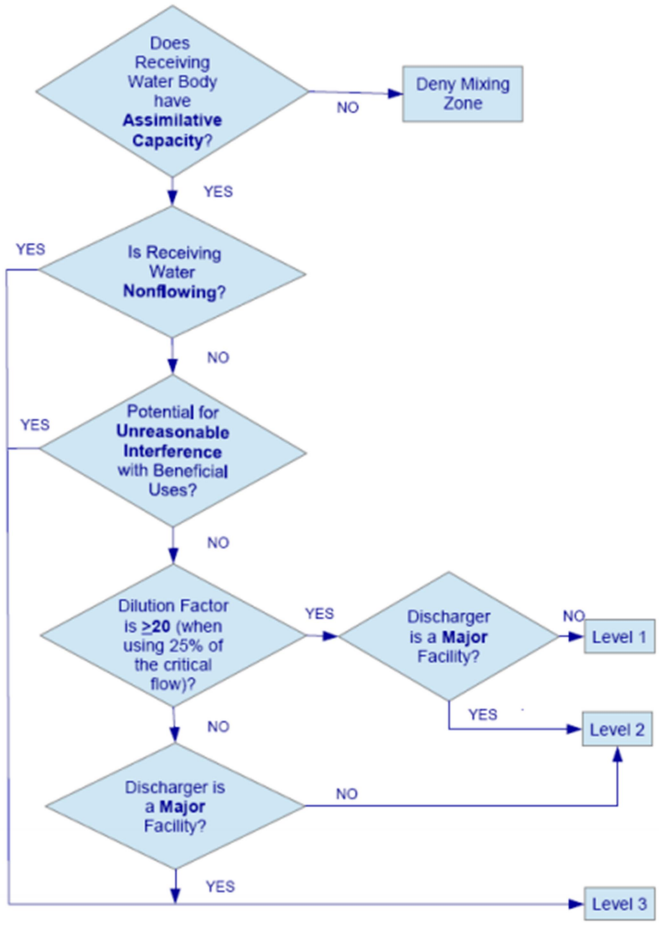
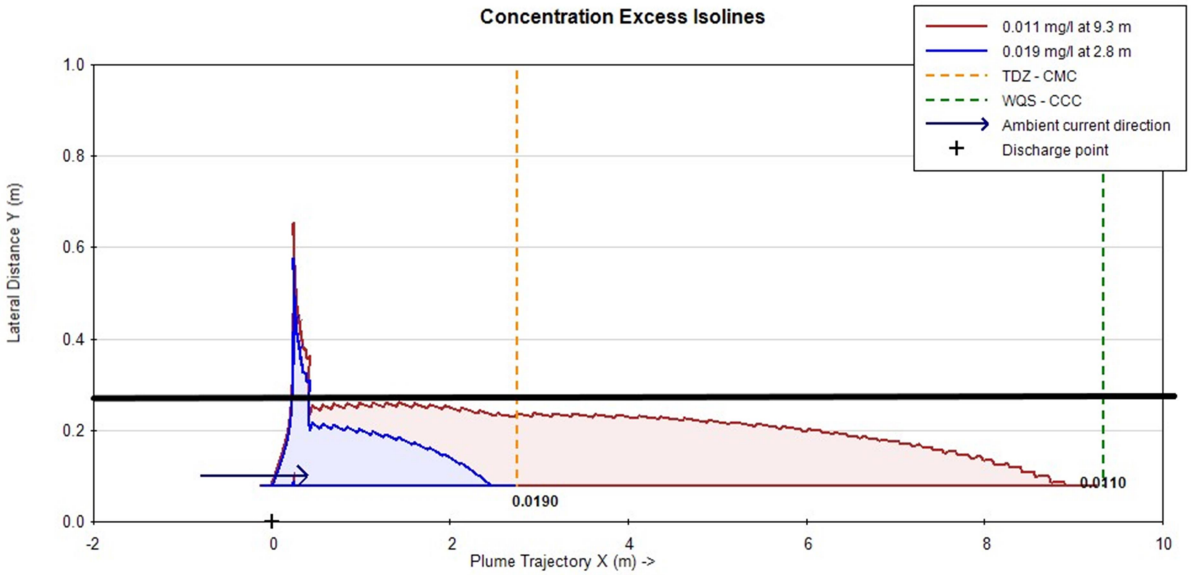


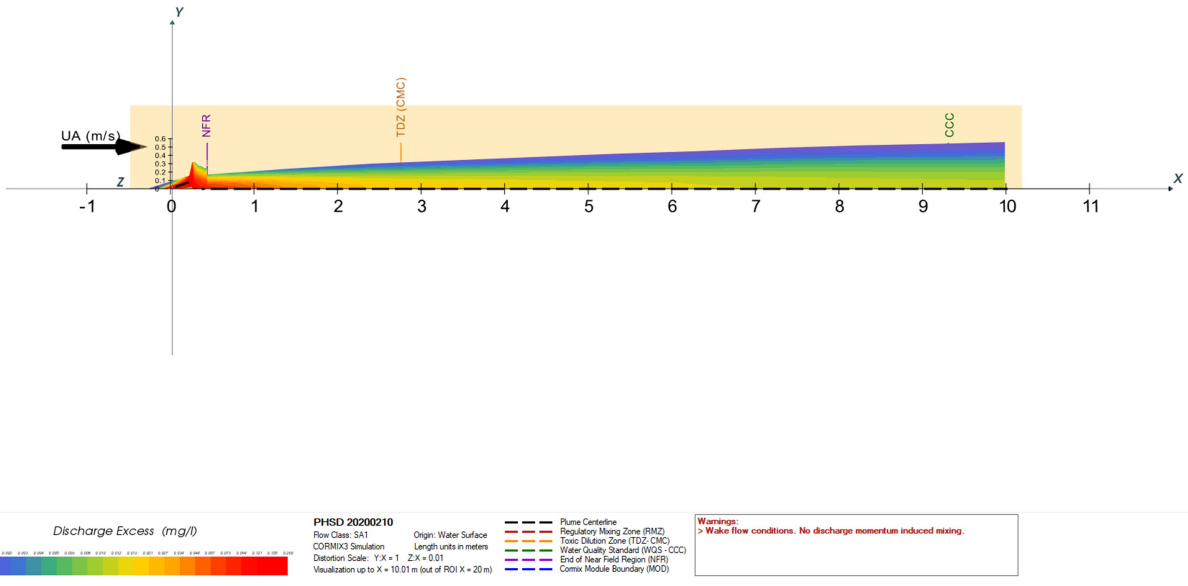
Figure 3. Decision flow chart for determining level of analysis.

The dilution factor when using 25% of the critical low flow between the July through November season is 10.3, and between December through June is 40.8. Using the suggestions in this flow chart, the permittee requires Level 2 Analysis only for the low flow season which consists of "Modeling…to understand the location and configuration of the mixing zone, but some of the modeling inputs can be estimated rather than measured" (2016 Idaho Mixing Zone Implementation Guidance pg. 32). Using the Cormix program, the known flow and TRC concentration data were used, and channel geometry was estimated assuming low flows traveled along a mostly flat bottom of the larger river channel. Results of TRC concentration within the mixing zone are displayed in the figures below.

Mixing Zone Level 2 Analysis – July through November



The thick black line indicates 25% of the stream width. The TRC plume does not exceed 25% of the stream width at the most conservative of flow conditions. While the mixing zone appears to temporarily exceed 25% of the stream width at the discharge point, this model is assuming the outfall is at the bank of the low flow condition, which at low flows would not be the case. At low flows, the discharge would likely travel from the outfall pipe, down the side of the stream channel, slowing down before entering flowing water.



Changes to draft permit: Rationale of using 0 ug/L as an instream TRC concentration already in the fact sheet RPA appendix has been added to Section 3.3.3.2 of the Fact Sheet.

16. Receiving Water Monitoring for Temperature

    ICL requests DEQ require more frequent sampling of receiving water temperature and require samples be taken during critical conditions.

    DEQ's draft IPDES permit for PHWSD only requires quarterly monitoring for temperature in the receiving water, during the months of March, June, September, and December. As DEQ states in its Antidegradation Implementation Guidance, "[k]nowing the upstream water quality is essential to calculating potential degradation caused by new and increased sources as well as remaining assimilative capacity." Moreover, DEQ recommends 30 measurements of a parameter in order to confidently assess the receiving water. Importantly, DEQ's guidance states that these measurements must be taken during critical conditions. However, the draft IPDES permit does not require 30 measurements for temperature in the receiving water, nor does it require the measurements be taken during the hottest months or times of the day.

    We request DEQ require 1/week monitoring of the receiving water and require the sample be collected during the warmest part of the day.

Response 16: Temperature is not impaired in the assessment unit (ID17060108CL016_04) that the permittee discharges into. Temperature is included in receiving water sampling to accompany ammonia sampling (pH and temperature data are necessary to calculate ammonia criteria during the next permit cycle). If reasonable potential for effluent temperature to cause or contribute to a receiving water exceedance is present after a permit cycle, a limit will be added, and effluent temperature monitoring frequency will be increased. Footnote a in Table 7 of the receiving water monitoring requirements denotes "Monitoring frequency of 1/quarter is required during the warmest part of the day."

Changes to draft permit: Section 3.3.3.6 of the Fact Sheet has been edited to be consistent with effluent and receiving water tables (a reference to hourly temperature monitoring was removed).

17. Tier II Antidegradation Review

    We request DEQ more fully explain the basis for its conclusion, in the Tier II analysis section of PHWSD's Factsheet, that the degradation of pollutants of concern is insignificant.

    As DEQ states in the PHWSD Factsheet, the Tier II review must evaluate the effect of a new discharge on water quality by reviewing the difference between the existing receiving water quality and the water quality that would result from the discharge, as proposed in the new permit. However, as noted above DEQ has no data for the receiving water quality in this case, and the receiving water quality data collected by the downstream City of Potlatch POTW is over a decade old.

Furthermore, DEQ's conclusion that degradation of pollutants of concern is insignificant simply because no changes have been made to the PHWSD facility or its operation assumes there have been no changes to the assimilative capacity of the receiving water, since July 1, 2011, from changes to upstream point and non-point sources, changes to upstream land use practices, or changes associated with climate change. There is at least one upstream point source, as well as upstream agriculture and live-stock grazing non-point sources that may have made changes to their facilities or operations over the past eight years, further depleting the assimilative capacity of the PHWSD's receiving water. In addition, the Environmental Protection Agency estimates the snowpack in the Palouse headwaters has experienced 40-60% decline between 1955-2015 due to climate change.[iv] With less melting snow during the summer months, water temperatures may have increased and water flow may have decreased since July 1, 2011. And yet, DEQ provided no discussion or analysis of upstream influences on the assimilative capacity of the receiving water.

We request DEQ more fully discuss how it reached the conclusion that issuance of PHWSD's permit will not significantly degrade pollutants of concern. We also request DEQ refer us to the appropriate sections in DEQ's Antidegradation Implementation Guidance and/or regulations that guided DEQ's Tier II analysis and justify its conclusion in this case.

Response 17: Section 4.2 of DEQ's Idaho Antidegradation Implementation Procedures Guidance states (pg. 26):

> *"Existing activities that propose no expansion or existing discharges that propose no change in their discharge upon permit or license renewal will not cause degradation of water quality.[v] Nondegrading activities and discharges are <u>not subject to Tier II antidegradation analysis</u>. Thus, once DEQ determines that an activity would not expand or a discharge would not increase, the antidegradation question that remains is whether Tier I requirements are met." (Emphasis added)*

As stated in the fact sheet, for a new permit, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit (IDAPA 58.01.02.052.06.a). Since the discharge commenced before July 1, 2011, and no changes have been made to the facility or its operation, degradation of POCs is insignificant (IDAPA 58.01.02.052.08.a.i).

[iv] See "What Climate Change Means for Idaho, August 2016" at

https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-id.pdf.

[v] "It is possible that water quality could decline even if an activity or discharge does not increase, such as with a decrease in flow and thus the assimilative capacity of the receiving water body. If this change in flow is not due to the activity or discharge under review, then that activity or discharge will not be held responsible with regard to antidegradation requirements. In such a situation, compliance with water quality-based effluent limits may require a reduction in activity or discharge independent of antidegradation requirements." Idaho Antidegradation Implementation Procedures Guidance.

Changes to draft permit: None.

Other changes

Permit template text changes to improve clarity of the permit include:

1. The term and definition of scan has been removed. Text refers to permit renewal "samples" instead of "scans."
2. A footnote referring to *E. coli* effluent samples has been changed to:
   Idaho's water quality standards for primary contact recreation include a single sample value of 406 #/100 ml. Exceedance of this value indicates likely exceedance of the 126 #/100 ml average monthly effluent limit. If this value is exceeded at any point within the month, the facility should consider collecting more than the 5 samples per month required in this permit to determine compliance with the monthly geometric mean ~~begin monitoring~~ according to IDAPA 58.01.02.251.01.a. ~~to determine compliance with the monthly geomean.~~