Fact Sheet

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

City of Plummer Wastewater Treatment Plant
NPDES Permit No. ID0022781

Public Comment Start Date: March 30, 2020
Public Comment Expiration Date: April 28, 2020

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

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

EPA Certification
Since this facility discharges to tribal waters and the Coeur d'Alene Tribe does not have Treatment as a State (TAS) from the EPA for purposes of the Clean Water Act for these waters, the EPA is the certifying authority for the permit (See Section VIII.C). Comments regarding the intent to certify should be directed to the EPA technical contact listed above.

Public Comment
Because of the COVID-19 virus, access to the Region 10 EPA building is limited. Therefore, we request that all comments on EPA's draft permits or requests for a public hearing be submitted via email to petersen.maxwell@epa.gov. If you are unable to submit comments via email, please call 206-553-6118.

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

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Water Division will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review
The draft NPDES permit and related documents can be found by visiting the Region 10 NPDES website at:
https://www.epa.gov/npdes-permits/draft-npdes-permit-city-plummer-wastewater-treatment-plant-idaho
Because of the COVID-19 virus and limited building access, we cannot make hard copies available for viewing at our offices.

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q5	30 day, 5 year low flow
AML	Average Monthly Limit
AWL	Average Weekly Limit
BOD_5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
ECHO	Enforcement and Compliance History Online
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
HUC	Hydrologic Unit Code
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
mL	Milliliters
µg/L	Micrograms per liter
MDL	Maximum Daily Limit or Method Detection Limit
mgd	Million gallons per day
MOVE	Maintenance of Variance Extension
N	Nitrogen

NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
P	Phosphorus
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TAS	treated in a similar manner as a state
TBEL	Technology-based Effluent Limit
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TP	Total Phosphorus (as P)
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WD	Water Division
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Background Information

A. General Information

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

Table 1. General Facility Information

NPDES Permit #:	ID0022781
Applicant:	City of Plummer Wastewater Treatment Plant
Type of Ownership	Municipal – Publicly Owned Treatment Works (POTW)
Physical Address:	324 Toetley Rd Plummer, ID 83851
Mailing Address:	P.O. Box B Plummer, ID 83851
Facility Contact:	William Weems Mayor (208) 686-1641 plummerwastewater@gmail.com
Operator Name:	Leonard Johnson Public Works Director (208) 818-6875 plummerwastewater@gmail.com Paul Sifford (208) 930-5575 Idaho Rural Water Association 6065 West Corporal Lane Boise, ID 83704
Receiving Water	Plummer Creek
Facility Outfall	47.33287222, -116.88416667

B. Permit History

The most recent NPDES permit for the City of Plummer (facility) Wastewater Treatment Plant (WWTP) was issued on May 15, 2012, became effective on July 1, 2012, and expired on June 30, 2017. An NPDES application for a reissued permit was submitted by the permittee on December 29, 2016. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively continued and remains fully effective and enforceable.

C. Tribal Consultation

The EPA consults on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Meaningful tribal consultation is an integral component of the federal government's general trust relationship with federally recognized tribes. The federal government recognizes the right of each tribe to self-government, with sovereign powers over their members and their territory. Executive Order 13175 (November, 2000) entitled "Consultation and Coordination with Indian Tribal Governments" requires federal agencies to have an accountable process to assure meaningful and timely input by tribal officials in the development of regulatory policies on matters that have tribal implications and to strengthen the government-to-government relationship with Indian tribes. In May 2011, the EPA issued the "EPA Policy on Consultation and Coordination with Indian Tribes" which established national guidelines and institutional controls for consultation.

The City of Plummer WWTP is located on the Coeur d'Alene Reservation of the Coeur d'Alene Tribe. Consistent with the executive order and the EPA tribal consultation policies, the EPA coordinated with the Coeur d'Alene Tribe during development of the draft permit and is inviting the Coeur d'Alene Tribe to engage in formal tribal consultation.

II. Facility Information

A. Treatment Plant Description

Service Area

The facility owns and operates the WWTP located in Plummer, Idaho. The collection system has no combined sewers. The facility serves a resident population of 1,017. There are no major industries discharging to the facility.

Treatment Process

The design flow of the facility is 0.32 million gallons per day (mgd). The reported actual flows from the facility range from 0.041 to 0.4 mgd (average monthly flow). Because the design flow is less than 1 mgd, the facility is considered a minor facility.

The facility provides advanced treatment of wastewater using an extended aeration activated sludge process with an anaerobic tank and fermenter for biological phosphorus removal. After the wastewater undergoes biological treatment, additional phosphorus removal is provided by ferric sulfate addition and filtration. The facility uses ultraviolet disinfection. Waste sludge is dewatered using belt filter presses.

The facility installed a Huber screening system on 9/11/13. The facility completed construction of an equalization basin during November 2019. No other upgrades have been made to the facility during the previous permit term.

The facility is currently implementing an Inflow/Infiltration (I/I) study to try and locate problems within the collection system.

The day to day operations of the WWTP are conducted by Leonard Johnson, who has been working under Paul Sifford's license since 2016. Paul Sifford works for Idaho Rural Water Associates and is under contract to visit the WWTP monthly.

A schematic of the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A.

Outfall Description

The facility's outfall is located approximately 3,800 feet South-Southwest from the WWTP. Effluent is discharged through a six inch diameter pipe, that is perforated on the top half by ¼ inch diameter holes, into a rock filter wetland, draining to Plummer Creek. During summer months, the effluent flows one hundred feet before infiltrating into the dry streambed.

Effluent Characterization

To characterize the effluent, the EPA evaluated the facility's application form, discharge monitoring report (DMR) data, and additional data provided by the Facility. The effluent quality from January 2014 through August 2019 is summarized in Table 2. Data are provided in Appendix B.

Table 2. Effluent Characterization

Parameter	Statistical Base	Units	Statistic Used	Value
Biochemical Oxygen Demand (BOD_5)	Monthly Average	mg/L	95th %	6.05
Total Suspended Solids (TSS)	Monthly Average	mg/L	95th %	8.76
E. coli bacteria	Monthly Average	# /100 mL	95th %	9
Total Ammonia	Monthly Average	mg/L	95th %	11.3
Total Phosphorus	Monthly Average	µg/L	95th %	183.5
pH	Instantaneous	s.u.	5th % - 95th %	6.49-7.8
Temperature	Monthly Average	°C	95th %	20.7
Dissolved Oxygen (DO)	Daily Minimum	mg/L	5th %	0.50
Oil and Grease	Daily Maximum	mg/L	95th %	1.7
Total Dissolved Solids	Daily Maximum	mg/L	95th %	388.9
Total Kjeldahl Nitrogen (TKN)	Daily Maximum	mg/L	95th %	23.4
Nitrite + Nitrate	Daily Maximum	mg/L	95th %	20.84

Compliance History

A summary of effluent violations from January 2014 – September 2019 is provided in Table 3. Effluent violations were accessed online at the web address given below, on 9/30/2019.

Additional compliance information for this facility, including compliance with other environmental statutes, is available on Enforcement and Compliance History Online (ECHO). The ECHO web address for this facility is: https://echo.epa.gov/detailed-facility-report?fid=110013719075

Table 3. Summary of Effluent Violations (January 2014 – September 2019)

Parameter	Limit Type	Limit Unit	Number of Exceedances
BOD_5	Monthly Average	mg/L	2
		lbs/d	1
	Weekly Average	mg/L	3
		lbs/d	3
pH	Instantaneous Minimum	s.u.	3
TSS	Monthly Average	mg/L	2
		lbs/d	2
	Weekly Average	mg/L	4
		lbs/d	3
Total Ammonia	Daily Maximum	mg/L	15
		lbs/d	4
	Monthly Average	mg/L	17
		lbs/d	7
Total Phosphorus	Monthly Average	mg/L	28
		lbs/d	20
	Weekly Average	mg/L	18
		lbs/d	15
***E. coli* bacteria**	Instantaneous Maximum	#/100mL	7
BOD_5 Percent Removal	Minimum	%	3
TSS Percent Removal	Minimum	%	2

The Idaho Department of Environmental Quality (IDEQ) conducted an inspection of the facility on March 3, 2016. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, sludge handling/disposal, the collection system, and self-monitoring program. Overall, the results of the inspection noted: inflow and infiltration (I/I) as a contributor to effluent limit exceedances, the need for the permittee to use NetDMR, influent flow should be calculated correctly and past DMRs revised, and the Emergency Response and Public Notification Plan should be revised.

In September 2017, the EPA and the facility entered into a Compliance Order By Consent (Order). One of the tasks in the Order required the facility to construct an equalization project for the WWTP and to achieve compliance with effluent limits by September 1, 2018. In May of 2018, the EPA granted the facility's request to extend this deadline to December 1, 2018. The facility completed construction of an equalization basin as required by the Order in November 2019.

III. Receiving Water

In drafting permit conditions, the EPA must analyze the effect of the facility's discharge on the receiving water. The details of that analysis are provided later in this Fact Sheet. This section summarizes characteristics of the receiving water that impact that analysis.

A. Receiving Water

This facility discharges to Plummer Creek in the City of Plummer, Benewah County, Idaho and is located within the Coeur d'Alene Tribe Indian Reservation. Plummer Creek flows into Chatcolet Lake which is a part of Lake Coeur d'Alene.

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The Coeur d'Alene Tribe has Treatment as a State (TAS) for CWA purposes for a portion of the Reservation. As part of this TAS authority, the Tribe implements the water quality standards program and has EPA-approved water quality standards (WQS) applicable to the St. Joe River and a portion of Lake Coeur d'Alene, referred to as the "Reservation TAS Waters." In addition, for all other surface waters within the Coeur d'Alene Reservation, the Tribe has tribally-adopted WQS which have not been approved by the EPA. These waters are referred to as "Reservation Waters." The Reservation TAS Waters are a subset of Reservation Waters. The Reservation Waters and Reservation TAS Waters have similar WQS for pollutants of concern in this permit.

The facility is located within the exterior boundaries of the Coeur d'Alene Reservation, and discharges to Reservation Waters. The receiving water ultimately flows to Reservation TAS Waters and Idaho State Waters. Since the facility discharges to a portion of the Reservation where the Tribe does not have TAS, the EPA used the downstream Idaho WQS and Reservation TAS WQS as reference for determining the permit limits to protect tribal designated uses and to protect downstream uses in the State of Idaho. The EPA notes that the tribal WQS which have not been submitted to the EPA are the same as or similar to Reservation TAS WQS and Idaho WQS, thus, application of those standards ensures that tribal waters are protected at the point of discharge. The distance from the point of discharge to Chatcolet Lake is approximately six miles.

Designated Beneficial Uses

This facility discharges to Plummer Creek in the St. Joe Subbasin (HUC 17010304). At the point of discharge, Reservation WQS protect Plummer Creek for the following designated uses:

Reservation WQS (Section 21: Special Conditions)

- Agricultural Water Supply
- Recreational and Cultural Uses
- Aquatic Life Uses: Cutthroat Trout

Table 4. Downstream Designated Beneficial Uses

Downstream Water	Reservation WQS	Reservation TAS WQS	Idaho WQS
Chatcolet Lake	-	-	None listed
Lake Coeur d'Alene	Domestic Water Supply, Recreational and Cultural Use, Aquatic Life Uses: Bull Trout	Domestic Water Supply, Recreational and Cultural Use, Aquatic Life Uses: Bull Trout and Cutthroat Trout	Cold Water Communities, Salmonid Spawning, Primary Contact Recreation, Domestic Water Supply

In addition, Reservation WQS state that all Reservation Waters shall be designated for the protection of Cold Water Biota, Industrial Water Supply, Aesthetics, and Wildlife Habitat (Reservation WQS Section 20: General Conditions).

Reservation TAS WQS state that all Reservation TAS Waters shall be designated for the protection of industrial water supply, aesthetics, and wildlife habitat (Reservation TAS WQS Section 20. General Conditions).

Idaho WQS state that all waters of the State of Idaho are protected for Industrial and Agricultural Water Supply, Wildlife Habitats, and Aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

C. Water Quality

The water quality for the receiving water is summarized in Table 5.

Table 5. Receiving Water Quality Data

Parameter	Units	Statistic (Number of Samples)	Value
Dissolved oxygen	mg/L	Minimum (9)	3.01
BOD_5	mg/L	Maximum (9)	11
Temperature	°C	Maximum (8)	16.8
Source: Data collected by permittee, upstream of the point of discharge, on Plummer Creek for the months of June – September, 2016-2018.			

D. Water Quality Limited Waters

The Coeur d'Alene Tribe has not listed any Reservation Waters as water quality limited.

The State of Idaho's 2014 Integrated Report Section 5 (section 303(d)) lists Plummer Creek from source to the mouth and Chatcolet Lake as not assessed. The Integrated Report lists Coeur d'Alene Lake as impaired for Cold Water Aquatic Life due to Cadmium, Lead and Zinc.

E. Low Flow Conditions

According to the WWTP operator, Plummer Creek is typically dry in the summer, making it difficult to gather receiving water samples. Given this information, the critical receiving water flows of Plummer Creek, near the point of discharge, are zero[1].

Flow information from the United States Geological Survey (USGS) was used to determine the flow conditions for Plummer Creek near its mouth (approximately six miles downstream from the outfall). USGS gauging station number 12415250 (Plummer Creek near Plummer, Idaho) has flow data from 1991 through 1992 and is now inactive. Because of the limited monitoring data, the EPA calculated the design flows using a correlation between the Plummer Creek flow data and a nearby station with a long-term record (USGS 12415350 Wolf Lodge Creek near Coeur d'Alene, Idaho). The 1Q10, 7Q10, 30B3, 30Q5, and harmonic mean flow rates of Plummer Creek near its mouth are 0.18, 0.20, 0.27, 0.27, and 1.59, respectively. Details of this analysis can be found in Part C of Appendix C.

The design flow of the facility is 0.32 mgd or 0.495 cubic feet per second (cfs) which is greater than most of the critical low flows of Plummer Creek near its mouth. As explained in Section IV.D, Plummer Creek near the point of discharge cannot provide a consistent level of dilution, thus, no mixing zones have been authorized.

IV. Effluent Limitations and Monitoring

Table 6 below presents the existing effluent limits and monitoring requirements in the current permit. Table 7, below, presents the proposed effluent limits and monitoring requirements in the draft permit. Table 8, below, summarizes the changes in effluent limits and monitoring requirements between the existing and draft permits.

[1] Communication with the WWTP operator on 4/1/2019.

Table 6. Existing Permit - Effluent Limits and Monitoring Requirements

Parameter	Effluent Limitations				Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Sample Location	Sample Frequency	Sample Type
Flow, mgd	Report	—	Report	—	Effluent	continuous	recording
Biochemical Oxygen Demand (BOD_5)	10 mg/L	15 mg/L	—	—	Influent and Effluent	2/month	24-hour composite
	27 lb/day	40 lb/day	—	—			calculated
	≥ 85% removal	—	—	—	% removal	1/month	calculated
Total Suspended Solids (TSS)	17 mg/l	25 mg/l	—	—	Influent and Effluent	2/month	24-hour composite
	45 lb/day	67 lb/day	—	—			calculated
	≥85% removal	—	—	—	% removal	1/month	calculated
E. Coli Bacteria	126/100 ml	—	—	235/100 ml	Effluent	5/month	grab
Total Ammonia as N	2.50 mg/L	—	7.80 mg/L	—	Effluent	1/week	24-hour composite
	6.67 lb/day	—	20.8 lb/day	—			calculated
Total Phosphorus as P	50 µg/L	131 µg/L	—	—	Effluent	1/week	24-hour composite
	0.133 lb/day	0.350 lb/day	—	—			calculated
pH, s.u.	6.5 – 8.5 s.u.				Effluent	1/week	grab
Temperature, ºC	Report	—	Report	—	Effluent	continuous	recording
Dissolved Oxygen, mg/L	Report Minimum				Effluent	1/month	grab
Oil and Grease, mg/L	—	—	Report	—	Effluent	1/quarter	grab
Total Dissolved Solids, mg/L	—	—	Report	—	Effluent	1/quarter	24-hour composite
Total Kjeldahl Nitrogen, mg/L	—	—	Report	—	Effluent	1/quarter	24-hour composite
Nitrate plus Nitrite as N	—	—	Report	—	Effluent	1/quarter	24-hour composite

Table 7. Draft Permit - Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Parameters with Effluent Limits							
BOD_5	mg/L	10	15	--	Influent and Effluent	2/month	24-hour composite
	lbs/day	27	40	--			Calculation
BOD_5 Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation
TSS	mg/L	17	25	--	Influent and Effluent	2/month	24-hour composite
	lbs/day	45	67	--			Calculation
TSS Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation
E. coli	CFU/ 100 mL	126	--	235 (instant. max)	Effluent	5/month	Grab
pH	s.u.	Between 6.5 – 8.5			Effluent	1/week	Grab
Total Ammonia (as N)	mg/L	2.5	--	7.8	Effluent	1/week	24-hour composite
	lbs/day	6.67	--	20.8			Calculation
Total Phosphorus (as P) April 1 – November 30	µg /L	50	131	--	Effluent	1/week	24-hour composite
	lbs/day	0.133	0.350	--			Calculation
Total Phosphorus (as P) December 1 – March 31	µg /L	100	301	--	Effluent	1/week	24-hour composite
	lbs/day	0.267	0.803	--			Calculation
Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.2 of the permit				1/month	Visual Observation
Report Parameters							
Flow	mgd	Report	--	Report	Effluent	continuous	Meter
Temperature	°C	Report	--	Report	Effluent	continuous	Meter
Effluent Testing for Permit Renewal							
Permit Application Effluent Testing Data	--				Effluent	1/year	--

Table 8. Changes in Permit Effluent Limits

Parameter	Existing Permit		Draft Permit	
	Average Monthly Limit	Average Weekly Limit	Average Monthly Limit	Average Weekly Limit
Phosphorus	**Year Round Limit**		**April 1 – November 30**	
	50 µg/L 0.133 lbs/day	131 µg/L 0.350 lbs/day	50 µg/L 0.133 lbs/day	131 µg/L 0.350 lbs/day
			December 1 – March 31	

			100 µg/L 0.267 lbs/day	301 µg/L 0.803 lbs/day

Changes in effluent monitoring requirements from the previous permit can be found in Table 11 of Section V.B.

A. Basis for Effluent Limits

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based effluent limits (TBEL) are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit (WQBEL) is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

B. Pollutants of Concern

Pollutants of concern are those that either have technology-based limits or may need water quality-based limits. The EPA identifies pollutants of concern for the discharge based on those which:

- Have a technology-based limit
- Have an assigned wasteload allocation (WLA) from a TMDL
- Had an effluent limit in the previous permit
- Are present in the effluent monitoring. Monitoring data are reported in the application and DMR and any special studies
- Are expected to be in the discharge based on the nature of the discharge

The wastewater treatment process for this facility includes tertiary treatment. Pollutants expected in the discharge from a facility with this type of treatment, include but are not limited to: five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli* bacteria, pH, ammonia, temperature, phosphorus, and dissolved oxygen (DO). Additionally, the current permit requires the permittee to monitor effluent for Total Kjeldahl Nitrogen (TKN), Nitrite-Nitrate, Oil and Grease, and Total Dissolved Solids (TDS).

Based on this analysis, pollutants of concern are as follows:

- BOD_5
- DO
- TSS
- *E. coli* bacteria
- Ammonia
- Phosphorus
- pH
- Temperature
- TDS
- TKN
- Nitrite + Nitrate
- Oil and Grease

C. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet technology-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated "secondary treatment"

effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to certain municipal WWTPs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table 9.

Table 9. 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.	
Source: 40 CFR 133.102		

Mass-Based Limits

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

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[2]

Since the design flow for this facility is 0.32 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.32 mgd × 8.34 = 80 lbs/day

Average Weekly Limit = 45 mg/L × 0.32 mgd × 8.34 = 120 lbs/day

Chlorine

The facility uses ultraviolet disinfection and must not use chlorine for disinfection. Therefore, no technology-based effluent limits for chlorine are applicable to this facility.

Use of Technology-based Effluent Limits in the Draft Permit

As explained below, the EPA has determined that more-stringent WQBELs are necessary for BOD_5 and TSS concentration and pH, in order to ensure compliance with water quality standards. The draft permit proposes the technology-based 85% removal rate effluent limits from the secondary treatment rule, for BOD_5 and TSS.

[2] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

D. Water Quality-Based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. 40 CFR 122.44(d)(1), implementing Section 301(b)(1)(C) of the CWA, requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality. 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 (40 CFR 122.4(d), 122.44(d)(4), see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation for the discharge in an approved Total Maximum Daily Load (TMDL). If there are no approved TMDLs that specify wasteload allocations for this discharge; all of the water quality-based effluent limits are calculated directly from the applicable water quality standards.

Reasonable Potential Analysis and Need for Water Quality-Based Effluent Limits

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit.

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 (EPA, 2014). 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.

Since flow in Plummer Creek is zero at the point of discharge during the summer months, it is not appropriate for the EPA to use mixing zones or to consider dilution when determining reasonable potential and calculating effluent limits for this permit. Even near the mouth of Plummer Creek, several miles downstream from the point of discharge, the critical low flow rates (e.g. 1Q10, 7Q10) are less than the design flow (0.495 cfs) of the POTW (See Section III.E and Appendix C.C for more information). Thus, the receiving water cannot consistently provide significant dilution of the effluent.

Reasonable Potential and Water Quality-Based Effluent Limits

The reasonable potential and water quality-based effluent limit for specific parameters are summarized below. The calculations are provided in Appendix D.

BOD_5 and DO

Reservation WQS establish a minimum level of 8.0 mg/L DO for protection of the Cutthroat Trout aquatic life designated use (Reservation WQS Section 19(4)(b)(ii)).

Reservation TAS WQS have an identical DO criterion as the Reservation WQS criterion for the protection of the Bull Trout and Cutthroat Trout aquatic life designated use (Reservation TAS WQS Section 19(4)(a)(ii)).

Idaho WQS establish a one day minimum of 6.0 mg/L DO for protection of the salmonid spawning designated use (IDAPA 58.01.02.25.02.f).

Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances downstream of the discharge. The BOD_5 of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. Nutrients such as ammonia and phosphorus cause excessive plant and algae growth and decay which can also significantly affect the amount of dissolved oxygen available.

The water quality-based effluent limits for BOD_5 established by the previous permit will ensure that the discharge does not cause or contribute to a violation of the dissolved oxygen criteria in the receiving water. The previous permit conducted a DO sag analysis for the discharge and found that, with an effluent BOD concentration of 15 mg/L, there is no DO sag but rather immediate reaeration of Plummer Creek (Bertelsen, 2006). Therefore, the EPA maintain a water quality-based effluent limit for BOD_5 of 15 mg/L, as an average weekly limit. NPDES regulations require that effluent limitations for POTWs that discharge continuously be expressed as average monthly and average weekly discharge limitations, unless impracticable (40 CFR 122.45(d)(2)). Consistent with the technology-based effluent limits for BOD_5, the average monthly limit is equal to two thirds of the average monthly limit, or 10 mg/L.

This draft permit keeps the same BOD_5 effluent limits established by the previous permit and removes the monthly DO monitoring requirement.

TSS

Reservation WQS and Reservation TAS WQS contain the same narrative water quality criterion for floating, solids which states that waters of the Reservation shall be free from suspended substances of a persistent nature resulting from anthropogenic causes (Reservation WQS Section 5(1) and Reservation TAS WQS Section 5(1)).

Idaho WQS have a similar narrative water quality criterion for floating, suspended or submerged matter which states that waters of the state shall be free from suspended matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses (IDAPA 58.01.02.200.05).

Where a State or Tribe has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable

potential to cause, or contributes to an excursion above a narrative criterion within an applicable State or Tribal water quality standard, the permitting authority must establish limits using one or more of the options provided in 40 CFR 122.44(d)(1)(vi).

In the previous permit, the EPA established water quality-based effluent limits for TSS based on 40 CFR 122.44(d)(1)(vi)(A), which allows the permitting authority to establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Suggested limits for suspended sediment have been developed by the European Inland Fisheries Advisory Commission and the National Academy of Sciences. A limit of 25 mg/L of suspended sediment provides a high level of protection of aquatic organisms; 80 mg/L moderate protection; 400 mg/L low protection; and over 400 mg/L very low protection (Thurston et al. 1979). Since Plummer Creek and Lake Coeur d'Alene are designated for sensitive aquatic life uses including bull trout (for Lake Coeur d'Alene only) and cutthroat trout, the EPA interpreted the Tribe's narrative water quality criterion for sediment as requiring a limit of 25 mg/L of suspended sediment, in order to provide a high level of protection for the sensitive aquatic life uses for which the receiving water is designated.

No mixing zone is proposed for TSS, because the receiving water flow rate is too low to provide significant dilution of the effluent. NPDES regulations require that effluent limitations for POTWs that discharge continuously be expressed as average monthly and average weekly discharge limitations unless impracticable (40 CFR 122.45(d)(2)). Therefore, the interpreted narrative criterion (25 mg/L) was applied at the end-of-pipe, as the average weekly limit. Consistent with the technology-based effluent limits for TSS, the average monthly limit was set equal to two thirds of the average weekly limit, or 17 mg/L. This accounts for effluent variability within a calendar month.

This draft permit keeps the same TSS effluent limits established by the previous permit.

E. coli

Reservation WQS and Reservation TAS WQS state that "waters designated for recreational and cultural use shall not contain concentrations of *E. coli* bacteria exceeding a 30-day geometric mean of 126 colonies per 100 mL, based on a minimum of five samples." The Reservation WQS and Reservation TAS WQS also specify a single sample maximum *E. coli* concentration of 235 colonies per 100 mL (Reservation WQS Section 19(3) and Reservation TAS WQS Section 19(3)).

Idaho WQS state that waters of the State of Idaho, that are designated for recreation, are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 mL based on a minimum of five samples taken every three to seven days over a thirty-day period (IDAPA 58.01.02.251.01). A mixing zone is not appropriate for bacteria for waters designated for contact recreation. Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 mL (IDAPA 58.01.02.251.01.b.iii.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 235 colonies per 100 mL indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 235 colonies per 100 mL, in addition to a monthly geometric mean limit of 126 colonies per 100 mL. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

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

This draft permit keeps the same *E. coli* effluent limits established by the previous permit.

Ammonia

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. Utilizing the ammonia criteria in the Idaho WQS and found in EPA's 1999 *Update of Ambient Water Quality Criteria for Ammonia*, EPA determined that there is reasonable potential for the discharge of ammonia to impair the designated uses for Plummer Creek. The EPA determined that utilizing Idaho's WQS would be protective of the Coeur d'Alene Tribe's designated uses because the designated uses are similar.

Both the Reservation WQS and Reservation TAS WQS contain criteria for the protection of aquatic life from the toxic effects of ammonia (see the Reservation WQS at section 7 and the Reservation TAS WQS at sections 7 and 12). The Reservation WQS for ammonia use EPA's Clean Water Act Section 304(a) recommended criteria from 1986 (EPA 440/5-85-0001) which have been superseded by more recent recommendations (EPA, 1999a and 2013). Reservation TAS WQS and Idaho WQS apply to portions of lake Coeur d'Alene downstream of the discharge. The Tribe's Reservation TAS WQS only contain chronic aquatic life criteria for ammonia that apply where early life stages of fish are absent, however, early life stages of fish may be present in Plummer Creek. The Idaho WQS use the recommended criteria from the *1999 Update of Ambient Water Quality Criteria for Ammonia* (EPA, 1999a) to protect the cold water aquatic life designated use (IDAPA58.01.02.250.02).

The table below details the equations used to determine water quality criteria for ammonia, and the values of these equations at the 95th percentile pH, which is 7.8 standard units, and the 95th percentile temperature observed in the discharge, which is 20.7 °C. Discharge pH

and temperature values are used because the facility is not allowed a mixing zone within Plummer Creek.

Table 10. Ammonia Criteria

Total ammonia nitrogen criteria (mg N/L)
Annual Basis

INPUT	
1. Receiving Water Temperature (deg C):	20.7
2. Receiving Water pH:	7.80
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent:	Present
OUTPUT	
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**8.11**
Chronic Criterion (CCC)	**2.14**

Acute Criteria Equation: Cold Water

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

Acute Criteria Equation: Warm Water

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

Chronic Criteria: Cold Water, Early Life Stages Present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

Chronic Criteria: Cold Water, Early Life Stages Absent

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet 1.45 \cdot 10^{0.028(25-T)})$$

A reasonable potential calculation showed that the facility's discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit contains water quality-based effluent limits for ammonia. The draft permit does not require that the permittee monitor the receiving water for ammonia, pH and temperature because the permittee must meet the water quality criteria at end-of-pipe. See Appendix D for reasonable potential and effluent limit calculations for ammonia.

The ammonia criteria and corresponding effluent limitations change as pH and temperature change. Using the pH and temperature found in the facility's discharge results in less stringent effluent limitations than found in the previous permit. Due to anti-backsliding requirements this draft permit keeps the same ammonia effluent limits established by the previous permit (See Section IV.E).

Phosphorus

The Coeur d'Alene Tribe has a narrative water quality criterion in both its Reservation WQS and Reservation TAS WQS which reads, "nutrients or other substances from anthropogenic causes shall not be present in concentrations which will produce objectionable algal densities or nuisance aquatic vegetation, result in a dominance of nuisance species, or otherwise cause nuisance conditions."

Idaho WQS have a similar narrative criterion which states, "surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses."

Where a State or Tribe has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State or Tribal water quality standard, the permitting authority must establish limits using one or more of the options provided in 40 CFR 122.44(d)(1)(vi).

In the previous permit, the EPA established a water quality-based effluent limit of 50 µg/L for average monthly phosphorus based on 40 CFR 122.44(d)(1)(vi)(A), which allows the permitting authority to establish effluent limits using a calculated numeric water quality

criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use.

This effluent limit was based on protecting Chatcolet Lake, Lake Coeur d'Alene, and on *Quality Criteria for Water 1986*, which states that, "to prevent the development of biological nuisances and to control accelerated or cultural eutrophication, total phosphates as phosphorus (P) should not exceed 50 µg/L in any stream at the point where it enters any lake or reservoir…"

The EPA evaluated whether the phosphorus discharge is likely to affect Chatcolet Lake and Lake Coeur d'Alene which are six miles downstream of the facility's discharge. Lake Coeur d'Alene has an approximate volume of 2.3 million acre-feet and a residence time of 0.5 years (IDEQ and the Coeur d'Alene Tribe, 2009). Given the volume and residence time a calculated flow of Lake Coeur d'Alene is 4,106.6 mgd[3]. The design flow of the Plummer WWTP is 0.32 mgd, which is only 0.008% of the flow of Lake Coeur d'Alene. Furthermore, the 2009 Lake Management Plan for Lake Coeur d'Alene gives an inflow phosphorus loading of 144,000 kg/year. The facility's new monthly average phosphorus loading limit is set at 0.267 lbs/day equivalent to 44.2 kg/year[4]. The yearly phosphorus load of the facility is 0.03% of the annual phosphorus load to Lake Coeur d'Alene. The facility's flow and annual phosphorus load is miniscule compared to the overall flow and inflow phosphorus load of Lake Coeur d'Alene. However, during the summer months Chatcolet Lake is eutrophic and at times anoxic (Fields, 2020). During development of the current permit, the Coeur d'Alene Tribe analyzed effluent from the the facility as well as in-stream data and concluded that due to Plummer Creek being an effluent dominated stream in the summer months, an effluent limit of 50 µg/L of TP was stringent enough to protect Chatcolet Lake (Fields, 2020). During the winter and early spring the conditions of Chatcolet Lake are controlled by the flood waters of the St. Joe River, which flush Chatcolet Lake in the spring thereby limiting the impact of TP (Fields, 2020). Due to high flows flushing Chatcolet Lake and Lake Coeur d'Alene in the winter, an increased TP loading from the facility would not impact the downstream water quality as it would during the low flow summer months. Therefore, the EPA determined that establishing seasonal limits for TP were more appropriate. Given the flow conditions of Plummer Creek, Chatcolet Lake, Lake Coeur d'Alene, and the St. Joe River, as described above, it is appropriate to maintain the current effluent limit of 50 µg/L of TP during the spring, summer, and fall months. Furthermore, as discussed in Sections IV.E and VIII.D, backsliding on TP limits from April 1st – November 30th does not meet one of the antibacksliding exceptions because there would be degradation of the existing downstream uses. During the winter months, the EPA proposes to make the TP effluent limit less stringent, as outlined below.

The *Quality Criteria for Water 1986* states that, "A desired goal for the prevention of plant nuisances in streams or other flowing waters not discharging directly to lakes or impoundments is 100 µg/L total phosphorus (Mackenthun, 1973)." The draft permit proposes to change the average monthly phosphorus limit from 50 µg/L to 100 µg/L between

[3] (2.3 million acre-feet) / (0.5 years) * (1 year / 365 days) * (0.32585 mgd / 1 acre-feet) = 4106.6 mgd
[4] (0.267 lbs / day) * (365 days / 1 year) * (0.454 kg / 1 lbs) = 44.2 kg/year

December 1st through March 31st. The proposed limit is set at a level that is protective of the designated uses of Plummer Creek and downstream waters. The EPA is proposing to maintain the average monthly phosphorus limit of 50 µg/L between April 1st through November 30th.

Because the proposed phosphorus limits between December 1st through March 31st are less stringent than the previous permit, anti-backsliding and antidegradation requirements must be met. Antibacksliding and antidegradation analyses can be found in Sections IV.E and VIII.D, respectively.

NPDES regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits unless impracticable. The EPA has set the December 1st through March 31st average monthly limit equal to the 100 µg/L interpreted narrative criterion. The EPA has established an average weekly discharge limitation for phosphorus, in addition to the average monthly discharge limitation. To calculate the average weekly limit, the EPA used Table 5-3 of the *Technical Support Document for Water Quality-based Toxics Control.* This table provides ratios between the average monthly and the maximum daily limit. However, when the required sampling frequency is once per week or less frequent, there is no practical difference between an average weekly limit and a maximum daily limit. The draft permit maintains the sampling frequency for phosphorus from the previous permit, once per week. The coefficient of variation (CV) for phosphorus, based on effluent data, is 1.79. The EPA has used the 95th percentile probability basis for the average monthly limit and the 99th percentile probability basis for the average weekly limit. This results in a ratio between the average monthly and average weekly limit of 3.01:1. Therefore, the December 1st through March 31st average weekly limit is 301 µg/L.

The draft permit proposes new mass-based average monthly and average weekly effluent limits from December 1st through March 31st based on the new concentration-based effluent limits for this time period. More information on mass-based limits can be found in Section IV.C. This draft permit proposes phosphorus effluent limits of 100 µg/L and 0.267 lbs/day average monthly and 301 µg/L and 0.803 lbs/day average weekly from December 1st through March 31st.

<u>pH</u>

The Reservation WQS for pH, for aquatic life uses, is a range of 6.5 – 8.5 standard units (Reservation WQS Section 19(4)). Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water.

Downstream Reservation TAS WQS for pH, for aquatic life: bull trout & cutthroat trout are identical to Reservation WQS for aquatic life uses (Reservation TAS WQS Section 19(4)).

The Idaho WQS at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0.

The previous permit effluent limit for pH is a minimum of 6.5 and a maximum of 8.5, identical to the Reservation WQS and Reservation TAS WQS. This limit is protective of downstream Idaho WQS.

This draft permit keeps the same pH effluent limits established by the previous permit.

Temperature

The Reservation WQS include temperature water quality criteria for protection of cutthroat trout. The criteria are as follows: "The 7-day average of the daily maximum temperatures is not to exceed: (A) 14°C from February 1 to June 30; with no single daily maximum over 18°C. (B) 18°C from July 1 to January 31; with no single daily maximum over 21°C (Reservation WQS Section 19(4)(b)).

Temperature monitoring was conducted during the summer months both upstream and downstream of the point of discharge from 2016 – 2018 (Appendix B). These limited data suggest the facility's effluent is not raising the receiving water temperature even during summer months when the facility's effluent has exceeded 20°C. Due to the limited data the EPA is requiring more extensive receiving water monitoring for temperature in order to evaluate the effluent's impact on the temperature of Plummer Creek (see Section V.C).

Downstream of the point of discharge in Lake Coeur d'Alene, the Reservation TAS WQS include temperature water quality criteria for the protection of bull trout and cutthroat trout. The 7 day average of daily maximum temperatures is not to exceed 16°C from June 1 to September 30 within the hypolimnion (Reservation TAS WQS Sections 19(4)(a)). Idaho WQS include water quality criteria for the protection of bull trout and for salmonid spawning. The 7-day average of daily maximums is not to exceed 10°C from June 1 to September 30, to ensure protection of bull trout (IDAPA 58.02.01.250.02.g). Additionally, the maximum daily average is not to exceed 9°C and the instantaneous maximum is not to exceed 13°C to ensure protection of salmonid spawning (IDAPA 58.01.02.250.02.f).

The temperature water quality criteria in the Reservation TAS WQS only address the temperature of Lake Coeur d'Alene. The Reservation TAS WQS and Idaho WQS only apply downstream of the point of discharge. Chatcolet Lake and Lake Coeur d'Alene are several miles downstream of the point of discharge and temperature is a non-conservative pollutant. As previously explained, the design flow of the Plummer WWTP is 0.32 mgd, which is only 0.008% of the flow of Lake Coeur d'Alene. Therefore, EPA does not expect that the City of Plummer discharge will have any effect upon the temperature of downstream waters including Chatcolet Lake and Lake Coeur d'Alene.

This draft permit keeps the same effluent temperature monitoring requirements established by the previous permit and changes the receiving water temperature monitoring requirements.

Total Dissolved Solids

Downstream Reservation TAS WQS lists Lake Coeur d'Alene as protected for domestic water supply with a numeric criterion for TDS of 500 mg/L (Reservation TAS WQS Section 19(1)). This numeric criterion is consistent with the Safe Drinking Water Act and is the same as the secondary maximum contaminant level for TDS (40 CFR 143.3). The maximum measured concentration of TDS in the discharge was 425 mg/L, below the downstream criterion of 500 mg/L, therefore the discharge does not have reasonable potential to exceed or contribute to an exceedance of water quality criteria. Neither Reservation WQS nor Idaho WQS have numeric nor narrative Total Dissolved Solids criterion.

Since there is no reasonable potential, this draft permit removes the quarterly monitoring requirement for TDS established by the previous permit.

Total Kjeldahl Nitrogen & Nitrite + Nitrate

Nutrient limits were established in the previous permit to control eutrophication in Plummer Creek, Chatcolet Lake and Lake Coeur d'Alene. Phosphorus is generally the limiting nutrient in freshwaters, and particularly in lakes and reservoirs. This is because blue-green algae can "fix" elemental nitrogen from the air as a nutrient source and thereby grow in a low-nitrogen environment (EPA, 1999b), and because freshwater lakes, reservoirs, rivers, and streams are generally supported by large watershed areas, which capture, accumulate, and mobilize large amounts of nitrogen relative to phosphorus (Paerl, 2009). Because primary productivity in the receiving water is likely controlled by phosphorus rather than nitrogen, effluent monitoring of TKN and Nitrite + Nitrate is unnecessary.

This draft permit removes the quarterly monitoring requirements for TKN and nitrite + nitrate established by the previous permit.

Floating Solids and Oil and Grease

Reservation WQS and downstream Reservation TAS WQS have the same narrative criteria stating "All waters shall be free from visible oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature" except those from natural causes (Reservation WQS Section 5(1) and Reservation TAS WQS Section 5(1)). This criterion has been included in the permit as a narrative effluent limit.

The downstream Idaho WQS have similar narrative critera that state "surface waters of the state shall be free from floating, suspended or submerged matter of any kind in concentrations… impairing designated beneficial uses" (IDAPA 58.01.02.200.05). The narrative limitation in the draft permit prohibits the discharge of such materials.

This draft permit keeps the same floating solids and oil and grease narrative limit established by the previous permit. This draft permit removes the quarterly monitoring requirement for Oil and Grease established by the previous permit.

E. Anti-backsliding

Section 402(o) of the Clean Water Act and 40 CFR §122.44(l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions.

Ammonia

Less stringent effluent limitations may be allowed in a reissued permit if one of the conditions found at 40 CFR(l)(2)(i) are met. For ammonia, the facility does not meet any of the listed conditions that would allow for a less stringent effluent limitation. Therefore, the EPA is retaining the existing effluent limits for ammonia.

Phosphorus

When an effluent limitation is based on a water quality standard it may be relaxed if it meets one of the listed exceptions in Section 402(o)(2) of the CWA or if it is consistent with Section 303(d)(4) of the CWA. The proposed seasonal effluent limits for phosphorus (from

December 1st – March 31st of each year) meet one of the listed exceptions found in Section 402(o)(2) and are consistent with the applicable antidegradation policy (See Section VIII.D). The proposed seasonal effluent limits for phosphorus (from April 1st – November 30th of each year) meet one of the listed exceptions found in Section 402(0)(2), but do not meet the requirements of the antidegradation policy and therefore do not meet anti-backsliding requirements (See Section VIII.D). Therefore, the EPA is proposing to backslide on the average monthly and average weekly phosphorus concentration and mass-based limits (See Section IV.D and Table 8) during the months of December 1st – March 31st, only.

The proposed phosphorus limits are water quality based effluent limits based on narrative criterion for nutrients. A revision is allowed for effluent limits based on water quality standards when a listed exception from Section 402(o)(2) is met. Section 402(o)(2)(E) states:

> *"the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitation in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification)."*

The facility has installed and properly maintained its up-flow sand filtration system designed for phosphorus removal and therefore meets the listed exception given at 402(o)(2)(E). Even though an exception is met, the revision must comply with effluent guidelines and standards including antidegradation procedures. As stated in Section II.A, the most recent inspection of the facility took place in March 2016. The inspection report did not mention improper maintenance of the up-flow sand filtration sytem, but did note that I/I was a likely cause of exceedances of all effluent limits. In November 2019, the facility completed the construction of an equalization basin in order to address I/I issues. Since completion of the equalization basin, the facility has not reported any violations in effluent limits, including phosphorus effluent limits (See Appendix B for November and December 2019 Supplemental Effluent Data). However, data are limited on whether the facility will be able to consistently achieve average monthly phosphorus limits below 50 µg/L, since the basin was recently constructed. The DMR data over the last five years show an average phosphorus concentration of 65 µg/L and consistent violations year-round, with more frequent violations in the winter months. Therefore, the facility satisfies CWA Section 402(o)(2).

The seasonal phosphorus limits from December 1st – March 31st meet the antidegradation procedures as discussed in Section VIII.D. The seasonal phosphorus limits from April 1st – November 30th do not meet antidegradation procedures as discussed in Section VIII.D and therefore the effluent limits found in the current permit are maintained for those months.

Since the proposed seasonal phosphorus limits from December 1st – March 31st meet the anti-backsliding requirements set forth in CWA Sections 402(o)(2) and are consistent with applicable antidegradation policy, the draft permit contains seasonal average weekly and average monthly concentration and mass-based phosphorus

limits from December 1st – March 31st of each year that are less stringent than the limits in the previous permit.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and 40 CFR § 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by part B.6 of the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

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

Table 11. Effluent Monitoring Changes from the Previous Permit

Parameter	Existing Monitoring Requirement	Draft Permit Monitoring Requirement	Reason for Change
DO	1/month	No monitoring	The WQBEL for BOD_5 ensures there is no oxygen sag in Plummer Creek, it is only necessary to monitor the effluent for BOD_5.
Oil and Grease	1/quarter	No monitoring	The permittee is required to visually monitor for oil and grease as part of the floating solids narrative limit (Part I.B.2 of the draft permit).
TDS	1/quarter	No monitoring	There is no reasonable potential to cause or contribute to an exceedance of water quality standards (Section IV.D).
Nitrite + Nitrate	1/quarter	No monitoring	The primary pollutant of concern downstream of the point of discharge is phosphorus, not nitrogen. Because the

Parameter	Existing Monitoring Requirement	Draft Permit Monitoring Requirement	Reason for Change
TKN	1/quarter	No monitoring	facility is not authorized a mixing zone, the Ammonia and Phosphorus end-of-pipe effluent limitations are adequate to protect water quality standards for nutrients (Section IV.D).

C. Surface Water Monitoring

In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant. In addition, surface water monitoring may be required for pollutants for which the water quality criteria are dependent and to collect data for TMDL development if the facility discharges to an impaired water body. Table 12 presents the proposed surface water monitoring requirements for the draft permit. Surface water monitoring results must be submitted with the DMR.

The EPA proposes to discontinue the surface water monitoring for BOD_5 and DO as required in the previous permit. Because the critical low flow of the receiving water is too low to consistently provide significant dilution of the effluent, the water quality-based effluent limits for BOD_5 apply water quality criteria at the end-of-pipe. These WQBELs ensure there is no oxygen sag in Plummer Creek. It is therefore, no longer necessary to monitor the receiving water concentration of BOD_5 and DO.

The amount of data on receiving water temperature is not sufficient to determine the effluent's impact. Therefore, the draft permit requires twice a month sampling of temperature and flow within Plummer Creek. Upstream and downstream sample locations must be established and monitoring must occur at both locations and for both parameters on the same day and as close to the same time as practicable. Furthermore, temperature should be sampled during the time of day when Plummer Creek is expected to be hottest in order to maintain consistency between samples and to evaluate the creek at its critical temperature.

Table 12. Surface Water Monitoring in Draft Permit

Parameter	Units	Frequency[1]	Sample Type	Sample Location
Temperature	°C	2/month	grab	upstream and downstream
Flow	cfs	2/month	measurement	upstream and downstream

Notes:
1. Monitoring must take place twice during each of the following months: May, June, July, August, September, and October.

D. Electronic Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: https://netdmr.epa.gov. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

Part III.B of the permit requires that the permittee submit a copy of the DMR to the Coeur d'Alene Tribe. Currently, the permittee may submit a copy to the Coeur d'Alene Tribe by one of three ways: 1. a paper copy may be mailed. 2. The email address for the Coeur d'Alene Tribe may be added to the electronic submittal through NetDMR, or 3. The permittee may provide the Coeur d'Alene Tribe viewing rights through NetDMR.

VI. Sludge (Biosolids) Requirements

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

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

VII. Other Permit Conditions

A. Operation and Maintenance Plan

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

B. Quality Assurance Plan

The permittee is required to update the Quality Assurance Plan (QAP) within 180 days of the effective date of the final permit. The QAP must include of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the Coeur d'Alene Tribe upon request.

C. SSOs and Proper Operation and Maintenance of the Collection System

Sanitary Sewer Overflows (SSOs) are not authorized under this permit. The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system.

The following specific permit conditions apply:

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

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

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

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

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

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

D. Environmental Justice

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities.

"Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The facility is located within or near a Census block group that is potentially overburdened because of Wastewater Discharge.

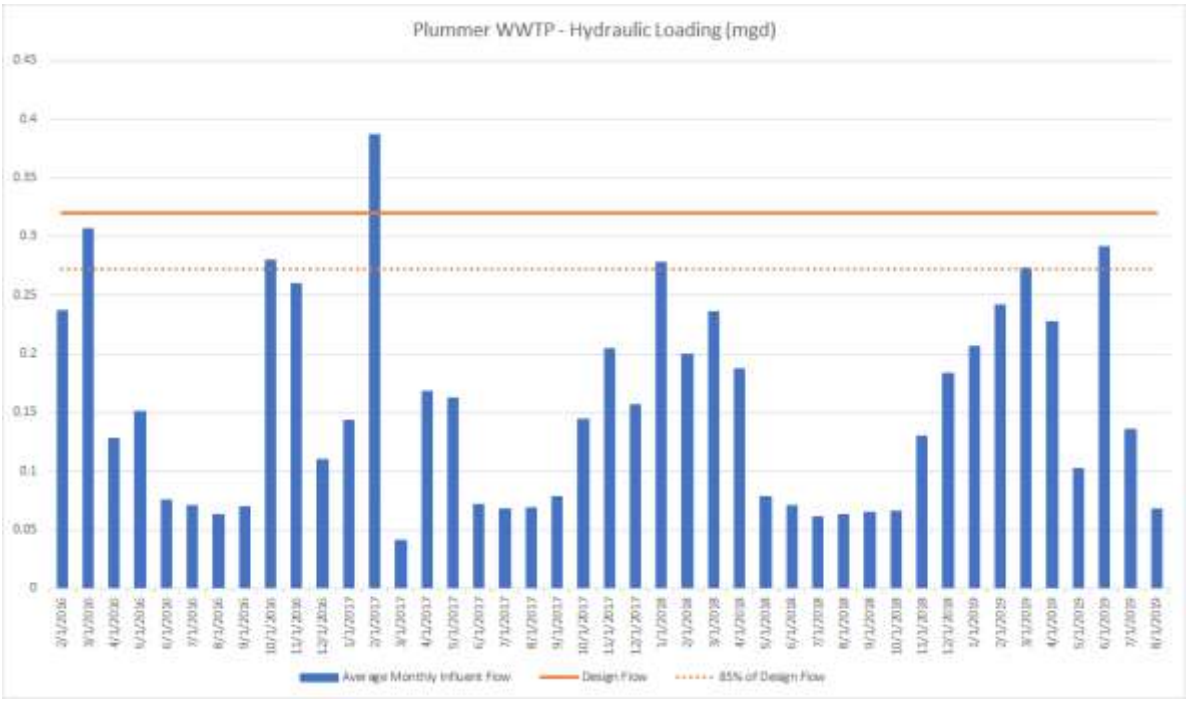
Regardless of whether a facility is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/d/2013-10945). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

For more information, please visit https://www.epa.gov/environmentaljustice and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

E. Design Criteria

The permit includes design criteria requirements. This provision requires the permittee to compare influent flow to the facility's design flow and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the flow or loading exceeds 85% of the design criteria values for any two months in a 12 month period. For the permittee, the trigger for developing a facility plan is 0.272 mgd average monthly flow for any two months in a 12 month period.

The figure below illustrates the hydraulic loading approximated by measurements taken at the influent of the facility between January 2016 and September 2019. The figure shows that the facility generally discharges below its design flow.



F. Pretreatment Requirements

The permittee does not have an approved pretreatment program per 40 CFR 403.10, thus, the EPA is the Approval Authority for POTWs within the exterior boundaries of the Coeur d'Alene Reservation. Since the permittee does not have an approved POTW pretreatment program per 40 CFR 403.8, the EPA is also the Control Authority of industrial users that might introduce pollutants into the City of Plummer WWTP.

Special Condition II.E of the permit reminds the permittee that it cannot authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program.

Although, not a permit requirement, the permittee may wish to consider developing the legal authority enforceable in Federal, State or local courts which authorizes or enables the POTW to apply and to enforce the requirement of sections 307 (b) and (c) and 402(b)(8) of the Clean Water Act, as described in 40 CFR 403.8(f)(1). Where the POTW is a municipality, legal authority is typically through a sewer use ordinance, which is usually part of the city or county code. The EPA has a Model Pretreatment Ordinance for use by municipalities operating POTWs that are required to develop pretreatment programs to regulate industrial discharges to their systems (EPA, 2007). The model ordinance should also be useful for communities with POTWs that are not required to implement a pretreatment program in drafting local ordinances to control nondomestic dischargers within their jurisdictions.

Background on the pretreatment program may be found at Introduction to the National Pretreatment Program (EPA, 2011).

G. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such

as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. A review of the threatened and endangered species located in Benewah and Kootenai Counties, Idaho, designated by the USFWS (as 12/19/2019), include the following species:

- Bull Trout
- North American Wolverine

There are no ESA species listed by NOAA Fisheries in the vicinity of the discharge.

The EPA has determined that the discharge will have no effect on threatened or endangered species located in the vicinity of Plummer Creek in Plummer, Idaho. https://ecos.fws.gov/ipac (see Appendix E).

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH).

The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

There is no EFH in the vicinity of the discharge, therefore consultation is not required for this action.

C. 401 Certification

Section 401 of the CWA requires the State in which the discharge originates to certify that the discharge complies with the appropriate sections of the CWA, as well as any appropriate requirements of State Law (See 33 USC § 1341(d)). This includes water quality standards that have been approved for Tribes with TAS. Since this facility discharges to tribal waters and the Tribe has not been approved for TAS, for these waters, from the EPA for purposes of the Clean Water Act, the EPA is the certifying authority. The EPA is taking comment on the EPA's intent to certify this permit.

D. Antidegradation

The EPA is required under Section 301(b)(1)(C) of the CWA and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure protection of State or Tribal water quality standards, including downstream State or Tribal water quality standards, and including antidegradation requirements. The EPA has prepared an antidegradation analysis consistent with the Tribe's antidegradation policy found in section 6 of the Reservation TAS WQS and the corresponding Antidegradation Implementation Methods and Related Review procedures. The same antidegradation policy is found in section 6 of the unapproved Reservation WQS. Furthermore, the EPA referred to Idaho's antidegradation policy and implementation procedures (IDAPA 58.01.02.051 and IDAPA 58.01.02.052) for this analysis.

The draft City of Plummer WWTP NPDES permit is as stringent as necessary to ensure compliance with all applicable WQS, including the Coeur d'Alene Tribe's and the state of Idaho's antidegradation policies (section 6 of both the Reservation and Reservation TAS WQS and IDAPA 58.01.02.051). The level of antidegradation protection applicable to a waterbody depends upon whether the waterbody is high quality and the quality of the waters exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water (see section 6, paragraph 2 of both the Reservation and Reservation TAS WQS and IDAPA 58.01.02.051.02). If the waterbody is high quality, the receiving water receives Tier II antidegradation protection in addition to Tier I protection. All waters receive Tier I protection (see the Reservation and TAS WQS at section 6, paragraph 1 and Idaho WQS at IDAPA 58.01.02.052.01). A Tier I analysis involves analyzing whether the permit ensures that "the existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" consistent with the requirements of 40 CFR 131.12(a)(1), section 6, paragraph 1 of the Reservation and Reservation TAS WQS, and IDAPA 58.01.02.051.01 of the Idaho WQS. Both the Reservation TAS and Idaho antidegradation procedures evaluate the effect on water quality for each pollutant when determining the appropriate level of protection. As explained below, Plummer Creek warrants a Tier I analysis for all parameters.

The antidegradation policy for outstanding resource waters, or Tier III, is inapplicable for this permit because no waters of the Coeur d'Alene Tribe and no waters of Idaho are designated as "outstanding resource waters" (Reservation and Reservation TAS WQS Section 6 paragraph 3 and IDAPA 58.01.02.051.03).

Neither the Coeur d'Alene Tribe nor the State of Idaho has listed Plummer Creek as impaired for any water quality parameters. The EPA assessed the waterbody using a parameter by parameter approach in the Fact Sheet of the previous permit and determined that Plummer Creek receives Tier I protection. The previous Fact Sheet states, "Because water quality data for DO, pH, TSS, TN, and TP indicate that Plummer Creek does not consistently meet the Tribe's numeric and narrative water quality criteria for these parameters, the EPA believes that the water quality of Plummer Creek does not exceed levels necessary to support propagation of fish and wildlife. Therefore, Plummer Creek receives only Tier I protection for aquatic life uses." The EPA also determined that the water quality of Plummer Creek does not exceed levels necessary to support recreation in and on the water (due to elevated nutrient and sediment concentrations) and therefore, Plummer Creek receives only Tier I protection for recreation uses.

Seasonal phosphorus limits (from December 1st – March 31st of each year) in the proposed permit are less stringent than those found in the current permit. The current permit's phosphorus limits are based on the Tribe's narrative criterion for nutrients and the recommendations in *Quality Criteria for Water 1986*, which states that, "to prevent the development of biological nuisances and to control accelerated or cultural eutrophication, total phosphates as phosphorus should not exceed 50 µg/L in any stream at the point where it enters any lake or reservoir…" The proposed phosphorus limits are also based on *Quality Criteria for Water 1986*, which also states that, "A desired goal for the prevention of plant nuisances in streams or other flowing waters not discharging directly to lakes or impoundments is 100 µg/L total phosphorus (Mackenthun, 1973)." Because the point of discharge is several miles upstream of the point where Plummer Creek enters Lake Coeur d'Alene, the facility's flow and annual phosphorus load are 0.008% and 0.03% of Lake Coeur d'Alene's flow and annual load, respectively (as discussed in Section IV.D), the St. Joe River flood waters flush out Chatcolet Lake thereby protecting it from increased eutrophic conditions, and the proposed effluent limits for phosphorus are at a level that is protective of existing designated uses for Plummer Creek, no degradation will result from the proposed effluent limits.

In the Reservation WQS, Plummer Creek is designated for agricultural water supply, recreational and cultural use, and aquatic life uses including cutthroat trout (see the Reservation WQS at Section 21). In addition, all Reservation waters are designated for the uses of Cold Water Biota, Industrial Water Supply, Aesthetics, and Wildlife Habitat (See Reservation WQS at Section 20).

The Reservation TAS WQS designate Lake Couer d'Alene, downstream from the point of discharge, as protected for domestic water supply, recreational and cultural uses, and aquatic life uses including bull trout and cutthroat trout (See Reservation TAS WQS at Section 21). In addition, all Reservation TAS waters are designated for industrial water supply, aesthetics, and wildlife habitat uses (See Reservation TAS WQS at Section 20).

The Idaho WQS designate waters, downstream of the point of discharge, as protected for cold water communities, salmonid spawning, primary contact recreation, and domestic water supply (See IDAPA 58.01.02.100.10). Furthermore, all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats, and aesthetics (See IDAPA 58.01.02100.03-05).

The EPA is proposing to retain the current Total Phosphorus limit of 50 µg/L from April 1st – November 30th. A less stringent limit during these months would cause degredation of downstream existing uses in Chatcolet Lake and Lake Coeur d'Alene. Since degradation can occur and designated beneficial uses would not be met, the Total Phosphorus limit from April 1st – November 30th does not meet antidegredation policy and therefore does not meet the antibacksliding requirements.

The numeric and narrative water quality criteria are set at levels that ensure protection of the designated uses found in the Reservation WQS, Reservation TAS WQS, and Idaho WQS. As there is no information indicating the presence of existing beneficial uses in Plummer Creek or Lake Coeur d'Alene other than those that are designated, the draft permit ensures a level of water quality necessary to protect the designated uses and, in compliance with section 6,

paragraph 1 of the Reservation and TAS WQS and IDAPA 58.01.02.051.01, also ensures that the level of water quality necessary to protect existing uses is maintained and protected.

If the EPA receives information during the public comment period demonstrating that there are existing uses in Plummer Creek or Lake Coeur d'Alene for which these waters are not designated, the EPA will consider this information before issuing a final permit and will establish additional or more stringent permit conditions if necessary to ensure protection of existing uses.

Effluent limits for all parameters are set at a level that will protect and maintain designated and existing uses and comply with Section 6, paragraph 2 of the Tribe's Reservation and Reservation TAS WQS as well as IDAPA 58.01.02.052.08.

E. Permit Expiration

The permit will expire five years from the effective date.

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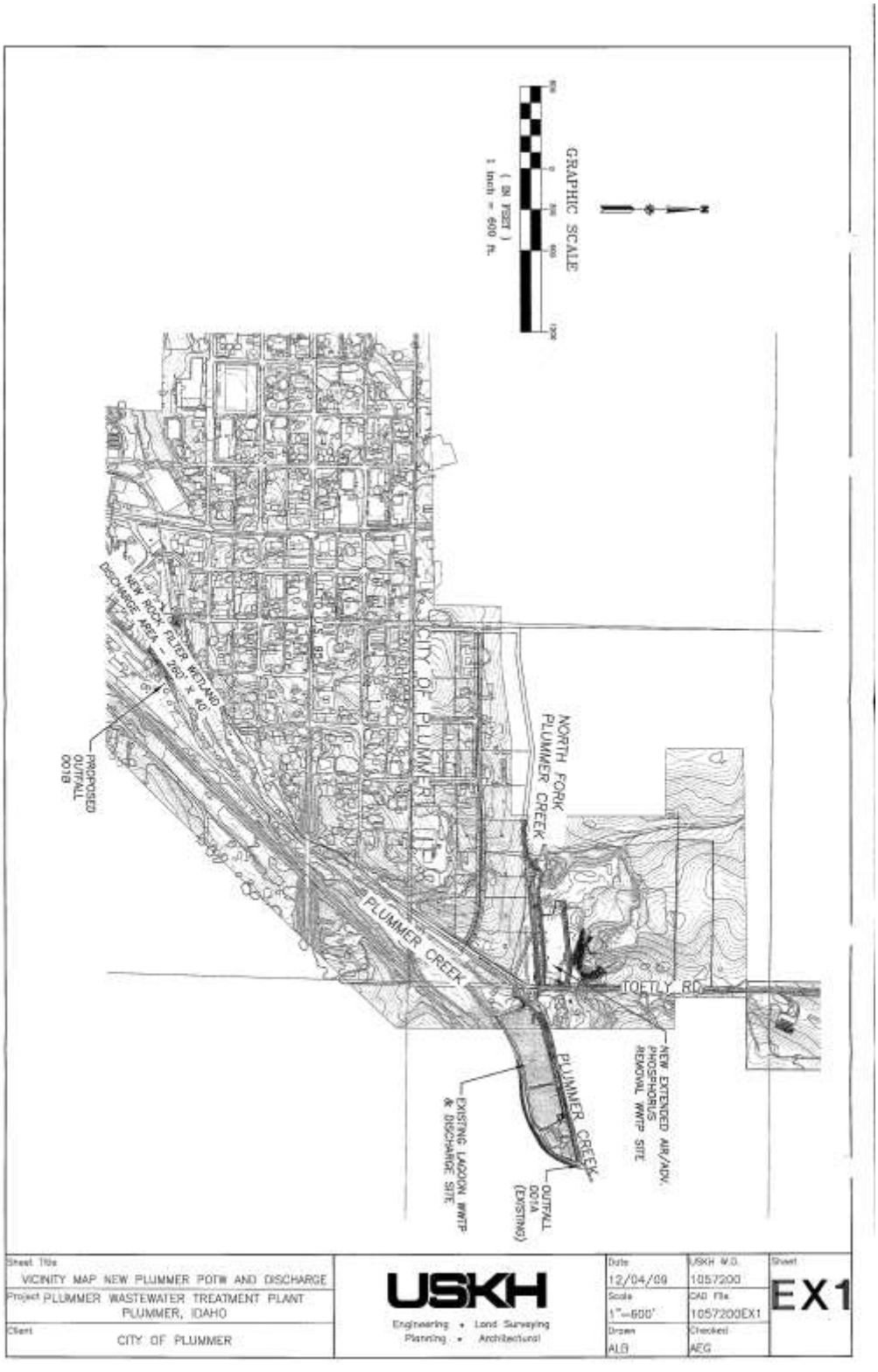
Appendix A. Facility Information



Appendix B. Water Quality Data

A. Treatment Plant Effluent Data

Parameter	Flow, in conduit or thru treatment plant	Flow, in conduit or thru treatment plant	BOD, 5-day, 20 deg. C	Solids, total suspended	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, percent removal
Monitoring Location	Effluent Gross	Effluent Gross	Raw Sewage Influent	Raw Sewage Influent	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal
Statistical Base	DAILY MX	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MINIMUM
Units	MGD	MGD	mg/L	mg/L	mg/L	lb/d	mg/L	lb/d	%
9/1/2014	0.0764		968.25	968.25	2	1.2009	2	1.2743	98.5
10/1/2014	0.1384		437	2891	2	1.5082	2	2.3085	97.6
11/1/2014	0.2604		112.5	340.75	3.75	3.3964	9	14.59	88.7
12/1/2014	0.6568		270.5	246.5	2.42	3.21	4	5.31	91.1
1/1/2015	0.7677		41.025	151.75	7.025	12.59	12	16.89	65.5
2/1/2015	0.6935		58	202	4	8	5	10	79
3/1/2015	0.5969		61	341	4	7.701	4	6.745	89.8
4/1/2015	0.2726		61	1364	2.1	2.68	2.5	2	94.7
5/1/2015	0.0939		504	1957	2	1.1242	2	1.2876	97
6/1/2015	0.1098		168	675	3	2	5	3	96.5
7/1/2015	0.0933		200	632	10.5	6.515	13	19.07	90
8/1/2015	0.2229		125	369.5	2.5	1.3364	4	1.871	96.9
9/1/2015	0.0797		344.8	436.8	2	1.074	2	1.13	96
10/1/2015	0.2455		142.25	187.25	4	2.37	9	5.16	90
11/1/2015	0.0992		112	274	4	3	7	4	97
12/1/2015	0.3676		90.8	518.4	5.3	6.08	6.3	17.98	86
1/1/2016	0.5556		41	154	14	40	33	143	65.9
2/1/2016	0.5565	0.2373	46	164	6	9	7	8.68	89
3/1/2016	0.5919	0.3062	62	121	5	12	6	21	93
4/1/2016	0.1838	0.128	112	650	3.7	4.3	4.7	6.6	96
5/1/2016	0.407	0.151	193	3482	3.3	3.5	4.7	4.6	98
6/1/2016	0.1437	0.075	190	650	4.1	2.5	9.6	5.9	97
7/1/2016	0.0893	0.0709	237	537	2	1.22	2	1.3	99
8/1/2016	0.115	0.063	147	289	2	1.1	2	1.3	98
9/1/2016	0.08	0.07	140	284	2	1.1	2	1.1	99
10/1/2016	1.39	0.28	125	268.75	2	2.07	2	1.85	98.4
11/1/2016	0.61	0.26	69.8	208.8	2	3.68	2	6.29	97
12/1/2016	0.28	0.11	162.5	1674	2	2	2	3.3	98.8
1/1/2017	0.3067	0.143	78	962	3.45	3	7.8	6.8	95
2/1/2017	0.9664	0.3872	66	339	2.7	5.3	4.9	6.32	95
3/1/2017	0.9128	0.041	55	143	1.13	6.77	4.3	26.6	97
4/1/2017	0.3876	0.1676	162	799	2.8	4.3	5.3	2.59	98
5/1/2017	0.7839	0.1625	112	260	2.62	0.16	3.8	0.35	97
6/1/2017	0.0867	0.0718	165	391	2.1	1.37	2.3	1.65	98
7/1/2017	0.1329	0.068	128	255	2	1.3	2	2.2	98
8/1/2017	0.0824	0.069	596	1201	2	1.21	2	1.37	98
9/1/2017	0.1543	0.078	1056	1247	2.1	1.6	2.2	1.7	99
10/1/2017	0.5939	0.144	640	2246	2	1.3	2	1.5	98
11/1/2017	0.6526	0.2048	122	365	2	0.23	2	6.5	98
12/1/2017	0.5988	0.1565	89.5	397	2	3.57	2	7.71	97
1/1/2018	0.5615	0.2779	81	172	2.1	5.8	2.3	8.9	97
2/1/2018	0.4888	0.2	116	410	2	2.65	2	3.76	96
3/1/2018	0.612	0.2355	28	143	2	5.31	2	6.77	92
4/1/2018	0.4918	0.187	196	252	2	1.84	2	2.08	97
5/1/2018	0.167	0.0784	215	445	2	1.34	2	1.53	99
6/1/2018	0.1386	0.0704	232	950	2	0.99	2	1.18	98
7/1/2018	0.0773	0.0607	440	1010	2	1.1	2	1.28	98
8/1/2018	0.0987	0.0627	320	510	2	0.91	2	1.15	99
9/1/2018	0.0987	0.0648	155	715	2	1.29	2	1.42	98
10/1/2018	0.0745	0.0661	380	675	2	1.08	2	1.12	98
11/1/2018	0.5549	0.1295	80	173	2	1.8	2	2.3	97
12/1/2018		0.1832	130	258	2	2.6	2	3.1	98
1/1/2019	0.5767	0.2061	81	159	2	4.36	2	6.75	97
2/1/2019	0.5585	0.2414	207	293	2	2.2	2	2.8	98
3/1/2019	0.6085	0.2736	113	237	2	2.15	2	2.68	98
4/1/2019	0.5416	0.2272	128	260	2.1	3.7	2.1	4.3	96
5/1/2019	0.2487	0.102	330	583	2.5	3.2	3	3.7	98
6/1/2019	0.5996	0.2918	150	161.5	2	1.4	2	1.61	98
7/1/2019	0.2805	0.1355	290	268	2	1.09	2	1.07	99
8/1/2019	0.1742	0.0678	142	171	2	4	2	6.8	98
Average	0.38	0.15	205.08	608.14	2.94	3.75	4.13	7.45	95.01
Minimum	0.07	0.04	28.00	121.00	1.13	0.16	2.00	0.35	65.50
Maximum	1.39	0.39	1056.00	3482.00	14.00	40.00	33.00	143.00	99.00
Count	59	43	60	60	60	60	60	60	60
Std Dev	0.28	0.09	201.64	662.10	2.09	5.44	4.62	18.62	6.63
CV	0.74	0.57	0.98	1.09	0.71	1.45	1.12	2.50	0.07
95th Percentile	0.80	0.29	598.20	1971.45	6.05	9.15	9.72	19.17	99.00
Median	0.28	0.14	141.00	353.00	2.00	2.29	2.00	3.05	97.00
5th Percentile	0.08	0.06	45.75	151.31	2.00	0.99	2.00	1.12	85.65

Parameter	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, suspended percent removal	E. coli	E. coli	pH	pH
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
Statistical Base	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MINIMUM	INST MAX	MO GEO	INST MAX	INST MIN
Units	mg/L	lb/d	mg/L	lb/d	%	#/100mL	#/100mL	SU	SU
9/1/2014	6.5	3.9031	20	10.9754	99.6	1	1	7.27	6.86
10/1/2014	1.4	1.055	2	1.4027	99.6	7.5	2.279	7.01	6.57
11/1/2014	6	5.4343	19	31.86	85.03	2420	41.61	7.25	6.89
12/1/2014	4.25		9		92.9	13.4	1.93	7.13	6.7
1/1/2015	6.5	11.64	12	16.89	91	16.1	3.329	7.5	6.51
2/1/2015	13	24	22	28	92	2420	18.97	7.7	6.7
3/1/2015	8	15.4	14	13.89	90.1	1	1	7.42	6.71
4/1/2015	2.4	3.06	4	5.14	98.8	32.8	3.32	7.11	6.61
5/1/2015	7.5	21.09	9	5.7946	93	9.8	2.465	6.94	6.63
6/1/2015	6	3	9	6	97.7	14	2.107	7.26	6.78
7/1/2015	7	5	9	6	96	649	3.65	7.11	6.67
8/1/2015	2.25	1.169	4	2.07	99.2	1	1	7.21	6.73
9/1/2015	1.2	0.0644	2	1.119	99	7.8	2.41	7.15	6.89
10/1/2015	4	4.14	7	4.25	98	1.8	1.422	7.9	6.7
11/1/2015	5	4	8	6	96	2	2	8.3	6.8
12/1/2015	5	5.736	9	22.8	97	4.5	2.2	7.14	6.55
1/1/2016	21	60	5	4	86.4	79	9	7.12	6.59
2/1/2016	3		6		98.1	2	2	6.99	5.84
3/1/2016	7	16	18	31	95	22	3.5	7.8	6
4/1/2016	3	3	5	4.9	99	1.8	1.12	6.71	6.3
5/1/2016	3	17	6	6.8	99	1	1	6.89	6.53
6/1/2016	3	1.7	4	1.85	99	2.18	1.16	6.96	6.5
7/1/2016	1.7	1	3	1.9	99	27.9	2.2	6.69	6.55
8/1/2016	1.2	0.66	2	1.1	99	1	1	6.7	6.6
9/1/2016	1.75	0.98	1.75	0.99	99	1	1	6.87	6.56
10/1/2016	1	1.04	1	0.93	99.6	4.1	1.78	6.97	6.68
11/1/2016	1.8	2.86	4	5	99	7.4	1.71	6.71	6.52
12/1/2016	1	1.02	1	1.7	99.9	1	1	7	6.8
1/1/2017	6.6	5.6	21	18.3	99	345	3.21	7	6.6
2/1/2017	1.75	3.79	4	8.03	99	2420	4.7	6.86	6.55
3/1/2017	3.75	15.4	7	10.2	97	16	1.89	6.89	6.58
4/1/2017	3.5	4.8	6	8.1	99	12	1.8	6.84	6.5
5/1/2017	2.6	2.03	6	4.36	99	7.5	1.49	6.87	6.53
6/1/2017	2	1.3	4	2.8	99	1	1	6.87	6.54
7/1/2017	4.25	2.8	7	5.5	98	6.3	1.6	6.86	6.617
8/1/2017	3.6	2.13	8	4.78	98	12.2	6.1	6.78	6.53
9/1/2017	3.3	2.6	4	3.2	98	63.1	5.04	6.54	6.51
10/1/2017	4	2.5	6	3.8	99	2	1.3	6.51	6.67
11/1/2017	2	4.2	3	9.8	99	1	1	6.53	6.51
12/1/2017	4.8	9.3	6	23	98	1730	4.5	7.52	6.52
1/1/2018	9.8	27.5	30	72	94	24.6	2.8	7.11	6.67
2/1/2018	2	2.65	2	3.76	99	1	1	7.41	6.55
3/1/2018	2.5	7	3	10.16	98	10.9	2.2	6.52	6.87
4/1/2018	1	0.92	1	1.04	99	1	1	6.66	6.52
5/1/2018	1	0.67	1	0.767	99	4.1	1.32	6.89	6.52
6/1/2018	1	0.5	1	0.6	99	1	1	6.82	6.53
7/1/2018	2	1.11	2	1.29	99	1	1	6.67	6.61
8/1/2018	2	1.13	3	1.73	99	1	1	7.1	6.62
9/1/2018	2.5	1.29	3	1.42	99	1	1	6.52	7.16
10/1/2018	2.3	1.2	2.5	1.3	99	1	1	6.62	6.52
11/1/2018	8.7	9.1	15.3	17	94	1	1	6.91	6.53
12/1/2018	3	3.6	4	4.2	98	1	1	7.73	6.67
1/1/2019	3	4.2	5	4.9	98	1	1	7.5	6.99
2/1/2019	2.5	2.9	3	4.2	98	1	1	7.57	6.93
3/1/2019	1.5	1.49	2	1.68	99	1	1	7.33	7.22
4/1/2019	3.5	7	5	10.7	97	1	1	7.82	7.6
5/1/2019	2.5	4.6	3	3.7	99	2420	120	7.6	7.3
6/1/2019	1	0.72	1	0.81	99	1	1	6.7	7
7/1/2019	1	0.6	1	0.5	99	1	1	7.05	6.58
8/1/2019	2	5.4	3	10	98	1	1	7.8	7
Average	3.86	6.10	6.48	8.21	97.36	214	5	7.09	6.66
Minimum	1.00	0.06	1.00	0.50	85.03	1	1	6.51	5.84
Maximum	21.00	60.00	30.00	72.00	99.90	2420	120	8.30	7.60
Count	60	58	60	58	60	60	60	60	60
Std Dev	3.35	9.41	6.11	11.46	3.11	641	16	0.40	0.27
CV	0.87	1.54	0.94	1.40	0.03	3	3	0.06	0.04
95th Percentile	8.76	21.53	20.05	28.45	99.60	2420	9	7.80	7.16
Median	3.00	3.00	4.00	4.57	99.00	2	1	7.00	6.61
5th Percentile	1.00	0.65	1.00	0.80	90.96	1	1	6.53	6.49

Parameter	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Phosphorus, total [as P]	Phosphorus, total [as P]	Phosphorus, total [as P]	Phosphorus, total [as P]
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
Statistical Base	DAILY MX	DAILY MX	MO AVG	MO AVG	MO AVG	MO AVG	WKLY AVG	WKLY AVG
Units	mg/L	lbs/d	mg/L	lbs/d	ug/L	lb/d	ug/L	lb/d
9/1/2014	0.08	0.0509	0.08	0.048	28	0.0168	31	0.0192
10/1/2014	2	1.2843	0.3214	0.2423	31.2	0.1176	39	0.05
11/1/2014	15.4	13.9481	6.48	5.869	161.75	0.1465	406	0.6809
12/1/2014	10.7	8.08	4.898	6.497	161	0.2135	89	0.0672
1/1/2015	12	16.89	8.995	16.12	378	0.6774	179	0.2519
2/1/2015	13	15.8	7.1	13.01	106.25	0.194	199	0.37
3/1/2015	20.7	19.12	8.62	16.59	85.5	0.1646	148	0.1367
4/1/2015	10.4	7.52	8.8	11.23	42.8	0.0546	58	0.0419
5/1/2015	0.4	0.2	0.2	0.2	41	0.1124	47	0.022
6/1/2015	0.135	0.1	0.1	0.046	38.5	0.018	50	0.03
7/1/2015	0.2	1	0.16	0.1	58.2	0.036	58.2	0.045
8/1/2015	4.71	2.44	1.26	0.6735	44.5	0.0237	80	0.0415
9/1/2015	0.139	0.0795	0.1124	0.9374	45	0.0349	65	0.036
10/1/2015	0.1274	0.0718	0.1037	0.0614	57.25	0.0338	86	0.0484
11/1/2015	5.3	3.45	1.8	1.21	95	0.06	127	0.1
12/1/2015	7.46	4.423	4.36	5.002	24	0.055	121	0.032
1/1/2016	22	63	11	32	220	0.63	87	0.38
2/1/2016	0.2	0.248	0.1395	0.248	126	0.188	82	0.1186
3/1/2016	3.51	2.41	1.19	0.86	35	0.114	63	0.035
4/1/2016	1.9	2	1	1.2	24	0.026	28	0.03
5/1/2016	0.11	0.13	0.11	0.13	24	0.02	36	0.04
6/1/2016	2.18	1.01	0.61	0.3	24	0.013	27	0.016
7/1/2016	0.101	0.06	0.08	0.05	22	0.01	30	0.02
8/1/2016	0.11	0.06	0.87	0.15	27	0.01	35	0.02
9/1/2016	4.48	2.5	1.18	0.66	20.25	0.011	20.25	0.011
10/1/2016	0.09	0.11	0.08	0.07	15.25	0.01	16.4	0.02
11/1/2016	0.08	0.32	0.08	0.19	38	0.056	70	0.096
12/1/2016	0.08	0.13	0.08	0.081	82	0.08	119	0.12
1/1/2017	14.6	12.7	3.48	3	173	0.154	412	0.36
2/1/2017	0.603	0.2	0.21	0.13	58	0.33	104	0.67
3/1/2017	0.34	0.88	0.2	0.53	65	0.225	85	0.52
4/1/2017	17.3	35	4.4	8.8	140	0.19	206	0.33
5/1/2017	16.9	12	3.8	2.8	150	0.162	325	0.358
6/1/2017	0.229	1.13	0.54	0.37	149	0.096	271	0.156
7/1/2017	0.35	0.16	0.19	0.11	50	0.09	66	0.27
8/1/2017	0.19	0.109	0.118	0.071	44	0.026	68	0.038
9/1/2017	5.5	4.1	1.5	1.1	28	0.02	37	0.027
10/1/2017	0.1	0.07	0.1	0.66	47	0.032	121	0.089
11/1/2017	0.14	0.45	0.11	0.23	23	0.047	36	0.088
12/1/2017	1.58	6.09	0.47	1.6	100	0.31	295	1.13
1/1/2018	0.1	0.45	0.1	0.29	106	0.285	390	0.93
2/1/2018	0.059	0.18	0.089	0.1	88	0.092	133	0.133
3/1/2018	0.06	0.17	0.05	0.11	19	0.04	25	0.06
4/1/2018	0.5	0.4	0.16	0.16	16	0.017	16	0.027
5/1/2018	0.47	0.26	0.25	0.14	17	0.01	17	0.01
6/1/2018	0.07	0.04	0.05	0.03	16	0.005	16	0.01
7/1/2018	4.23	2.27	1.13	0.61	16	0.02	16	0.01
8/1/2018	11.2	6.7	5.3	3	0.18	0.01	0.21	0.01
9/1/2018	14.8	8.63	4.5	2.76	25	0.015	47	0.027
10/1/2018	1.01	0.43	0.3	0.14	16	0.01	16	0.01
11/1/2018	2.1	6.8	0.8	1.8	19	0.03	27	0.07
12/1/2018	0.08	0.15	0.07	0.18	16	0.04	16	0.08
1/1/2019	4.9	21	1.1	4.3	71	0.18	404	0.62
2/1/2019	0.07	0.07	0.06	0.06	87	0.1	190	0.07
3/1/2019	1.29	5.9	0.51	1.68	70	0.271	209	0.955
4/1/2019	4.5	6.9	1.2	1.8	27	0.03	46	0.06
5/1/2019	9	11.1	2	2.7	111	1.61	134	3.5
6/1/2019	2	1.3	1.6	0.37	11	0.09	367	0.29
7/1/2019	0.241	0.17	0.17	0.1	98	0.06	38	0.13
8/1/2019	0.26	0.5	0.18	0.2	10	0.06	14	0.04
Average	4.21	5.21	1.74	2.56	65.36	0.13	109.07	0.23
Minimum	0.06	0.04	0.05	0.03	0.18	0.01	0.21	0.01
Maximum	22.00	63.00	11.00	32.00	378.00	1.61	412.00	3.50
Count	60	60	60	60	60	60	60	60
Std Dev	5.97	10.10	2.69	5.40	64.25	0.24	113.13	0.50
CV	1.42	1.94	1.54	2.11	0.98	1.81	1.04	2.14
95th Percentile	16.92	19.21	8.63	13.17	162.31	0.34	390.70	0.93
Median	0.81	1.01	0.40	0.37	43.40	0.06	65.50	0.06
5th Percentile	0.07	0.06	0.07	0.05	15.04	0.01	16.00	0.01

Parameter	Temperature, water deg. centigrade	Temperature, water deg. centigrade	Oxygen, dissolved [DO]	Oil and grease	Solids, total dissolved	Nitrogen, Kjeldahl, total [as N]	Nitrite + Nitrate total [as N]
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
Statistical Base	DAILY MX	MO AVG	DAILY MN	DAILY MX	DAILY MX	DAILY MX	DAILY MX
Units	deg C	deg C	mg/L	mg/L	mg/L	mg/L	mg/L
9/1/2014	18.2	17.44	0.76		385		
10/1/2014	16.9	15.6	0.72				
11/1/2014	16.06	12.56	0.45				
12/1/2014	11.2	9.7	0.71	1	349	14.1	7.68
1/1/2015	9.9	7.39	0.5				
2/1/2015	10.1	8.86	0.47				
3/1/2015	10.8	10.2	0.43	1.1	188	22.4	1.96
4/1/2015	13.1	9.62	0.55				
5/1/2015	17.2	14.9	1.26				
6/1/2015	21.2	18.9	3.06	1.1	326	1.12	1
7/1/2015	21.4	19.89	1.79				
8/1/2015	21.4	19.9	1.59				
9/1/2015	18.1	17.44	2.13	1	331	0.861	0.5
10/1/2015	19.1	15.8	1.34				
11/1/2015	14.6	12.06	0.86				
12/1/2015	10.2	9.7	0.57	1	320	9.01	0.5
1/1/2016	9.04	8.02	1.03				
2/1/2016	9.6	8.43	0.71				
3/1/2016	10.6	9.5	5.5	1.16	172	4.09	0.5
4/1/2016	14.1	12.3	6.47				
5/1/2016	16.4	15	5.42				
6/1/2016	19.9	17.5	6.57	1.7	261	0.38	11.2
7/1/2016	20.6	19.2	5.5				
8/1/2016	20.6	19.9	5.4				
9/1/2016	17.5	17.2	5.95	1.7	387	0.89	2.6
10/1/2016	16.2	15.1	5.68				
11/1/2016	12.1	10.9	6.21				
12/1/2016	10.6	10.1	6.57	1.7	387	0.65	4.38
1/1/2017	6.5	6.8	8.61				
2/1/2017	9.4	8	6.65				
3/1/2017	8.4	7.2	8.6	1.7	225	0.812	5.13
4/1/2017	12.7	11.5	9.54				
5/1/2017	28.1	15.7	5.18				
6/1/2017	23.3	21.5	6.67	1.2	324	0.816	7.88
7/1/2017	20.1	19.8	6.98				
8/1/2017	21.1	20.2	6.56				
9/1/2017	20.1	15.6	7.3	1.2	367	0.838	1.85
10/1/2017	26.3	20.6	6.75				
11/1/2017	27.5	19.2	6.42				
12/1/2017	17.7	16.3	6.97	1.2	331	0.06	13.2
1/1/2018	10.4	9.6	8.1				
2/1/2018	10.3	9.5	8.1				
3/1/2018	11.6	9.75	7.09	0.74	253	0.449	5.41
4/1/2018	17.2	13.5	6.67				
5/1/2018	21.3	19.42	5.54				
6/1/2018	20.7	19.3	6.81	0.74	253	32.4	19.9
7/1/2018	23.8	20.66	6.04				
8/1/2018	25.6	22.3	5.34				
9/1/2018	26.9	22.9	6.94	0.74	368	0.823	1.1
10/1/2018	23.1	18.9	6.62				
11/1/2018	16.1	15.1	5.9				
12/1/2018	23.7	15.7	7	0.74	425	0.09	16.2
1/1/2019	9.8	9.5	6.69				
2/1/2019	10.6	9.05	7.3				
3/1/2019	11.8	10.2	7.66	0.74	223	0.623	5.07
4/1/2019	16.3	12.6	7.52				
5/1/2019	15.4	10.4	7				
6/1/2019	19.7	18.6	7.5	0.74	2	0.09	29.3
7/1/2019	18.2	16.8	7.57				
8/1/2019	18	16.5	6.5				
Average	16.64	14.43	5.04	1.12	293.85	4.76	7.12
Minimum	6.50	6.80	0.43	0.74	2.00	0.06	0.50
Maximum	28.10	22.90	9.54	1.70	425.00	32.40	29.30
Count	60	60	60	19	20	19	19
Std Dev	5.53	4.61	2.78	0.36	99.35	8.89	7.78
CV	0.33	0.32	0.55	0.32	0.34	1.87	1.09
95th Percentile	26.33	20.70	8.13	1.70	388.90	23.40	20.84
Median	17.05	15.10	6.32	1.10	325.00	0.82	5.07
5th Percentile	9.38	7.97	0.50	0.74	163.50	0.09	0.50

Reference

Discharge Monitoring Reports 9/1/2014 – 8/1/2019. Some data have been removed due to incorrect reporting.

B. Supplemental Effluent Data

Parameter	Statistical Base	Limit Unit Desc	Monitoring Period Start Date	DMR Value	Limit Value
BOD, 5-day, 20 deg. C	MO AVG	lbs/d	11/1/2019	1.8	27
		mg/L	11/1/2019	2	10
	WKLY AVG	mg/L	11/1/2019	2	15
		lbs/d	11/1/2019	2.3	40
BOD, 5-day, percent removal	MINIMUM	%	11/1/2019	99	85
Solids, total suspended	MO AVG	mg/L	11/1/2019	2	17
		lbs/d	11/1/2019	2.1	45
	WKLY AVG	mg/L	11/1/2019	3	25
		lbs/d	11/1/2019	3.5	67
Solids, suspended percent removal	MINIMUM	%	11/1/2019	98	85
pH	INST MAX	s.u.	11/1/2019	7.6	8.5
	INST MIN	s.u.	11/1/2019	6.6	6.5
Nitrogen, ammonia total [as N]	DAILY MX	mg/L	11/1/2019	0.057	7.8
		lbs/d	11/1/2019	0.08	20.8
	MO AVG	lbs/d	11/1/2019	0.05	6.67
		mg/L	11/1/2019	0.053	2.5
Phosphorus, total [as P]	MO AVG	lbs/d	11/1/2019	0.01	0.133
		ug/L	11/1/2019	16	50
	WKLY AVG	lbs/d	11/1/2019	0.02	0.35
		ug/L	11/1/2019	24	131
E. coli	INST MAX	#/100mL	11/1/2019	1	235
	MO GEO	#/100mL	11/1/2019	1	126
BOD, 5-day, 20 deg. C	MO AVG	mg/L	12/1/2019	2	10
		lbs/d	12/1/2019	2.6	27
	WKLY AVG	mg/L	12/1/2019	2	15
		lbs/d	12/1/2019	2.7	40
BOD, 5-day, percent removal	MINIMUM	%	12/1/2019	99.6	85
Solids, total suspended	MO AVG	mg/L	12/1/2019	2	17
		lbs/d	12/1/2019	2.6	45
	WKLY AVG	mg/L	12/1/2019	3	25
		lbs/d	12/1/2019	4.1	67
Solids, suspended percent removal	MINIMUM	%	12/1/2019	99.7	85
pH	INST MAX	s.u.	12/1/2019	7.5	8.5
	INST MIN	s.u.	12/1/2019	7.1	6.5
Nitrogen, ammonia total [as N]	DAILY MX	mg/L	12/1/2019	0.06	7.8
		lbs/d	12/1/2019	0.08	20.8
	MO AVG	mg/L	12/1/2019	0.05	2.5
		lbs/d	12/1/2019	0.07	6.67
Phosphorus, total [as P]	MO AVG	lbs/d	12/1/2019	0.03	0.133
		ug/L	12/1/2019	18	50
	WKLY AVG	lbs/d	12/1/2019	0.04	0.35
		ug/L	12/1/2019	29	131
E. coli	INST MAX	#/100mL	12/1/2019	1	235
	MO GEO	#/100mL	12/1/2019	1	126

Reference
Discharge Monitoring Reports 11/1/2019 – 12/31/2019.

C. Supplemental Nutrient Effluent Data

Parameter Monitoring Location Units	Ammonia Raw Sewage In mg/L	Ammonia Effluent Gross mg/L	Phosphorus Raw Sewage In mg/L	Phosphorus Effluent Gross mg/L
1/8/2014	36.2	4.23	8.78	0.075
1/15/2014	33.8	2.98	5.34	0.018
1/22/2014	48.1	3.73	7.46	0.03
1/29/2014	42	6.68	9.6	0.084
2/5/2014	28.5	8.84	5.1	0.102
2/12/2014	15.7	12.2	4.78	0.178
2/19/2014	9.84		3.7	
2/26/2014	22.7	5.66	8.12	0.189
3/5/2014	3	4.24	1.73	0.902
3/12/2014	7.5	0.08	2.94	0.015
3/18/2014	9.96	0.08	5.56	0.013
3/26/2014	21.6	0.08	6.28	0.016
4/2/2014	15.7	0.08	5.12	0.014
4/9/2014	21.5	0.08	5.5	0.016
4/16/2014	12	0.111	2.3	0.025
4/23/2014	7.44	0.087	2.14	0.017
4/30/2014	25.8	10.1	4.75	0.056
5/7/2014	19	0.083	4.15	0.035
5/14/2014	21.7	0.08	3.56	0.019
5/21/2014	22	0.08	4.92	0.039
5/28/2014	29	0.099	8.4	0.03
6/4/2014	31.7	0.08	8.72	0.028
6/11/2014	32.4	0.156	6.64	0.156
6/18/2014	20.8	0.08	4.8	0.022
6/25/2014	51.2	0.08	10.5	0.025
7/2/2014	52.2	0.08	11.4	0.024
7/9/2014	42.1	0.115	12.7	0.115
7/16/2014	35.2	0.08	10.2	0.022
7/23/2014	41.9	0.08	7.62	0.023
7/30/2014	30.8	0.08	11.9	0.024
8/6/2014	43.6	0.09	10.4	0.026
8/13/2014	37	0.08	6.63	0.019
8/20/2014	45	0.08	10.6	0.02
8/27/2014	59.3	0.08	7.91	0.025
9/3/2014	28.1	0.08	5.52	0.028
9/10/2014	36.9	0.08	18.1	0.026
9/17/2014	34.1	0.08	8.32	0.027
9/24/2014	39.5	0.08	17	0.031
10/1/2014	55.2	0.08	8.63	0.025
10/8/2014	49.9	0.08	15.9	0.029
10/15/2014	49.4	0.122	32.6	0.029
10/22/2014	82	0.08	92.7	0.034
10/29/2014	36.5	0.147	7.59	0.039
11/5/2014	38.9	0.08	12.2	0.028
11/12/2014	33.4	0.168	5.81	0.035
11/19/2014	35.5	10.3	11.8	0.178
11/25/2014	19.6	15.4	4.58	0.406
12/3/2014	26	10.7	4.86	0.089
12/10/2014	16.6	0.366	3.67	0.02
12/17/2014	36.4	0.688	7.54	0.018
12/23/2014	9.22	7.84	2.37	0.034
1/7/2015	9.28	4.39	1.66	0.064
1/14/2015	14.4	11.7	3.59	0.035
1/21/2015	14.4	7.89	3.38	0.1
1/28/2015	20.8	12	14.6	0.179
2/4/2015	11.5	11.5	6.32	0.199
2/11/2015	4.86	4.16	1.98	0.056
2/18/2015	21.4	12.5	5.58	0.127
2/25/2015	26	4.58	5.81	0.043
3/4/2015	33.5	7.62	13.1	0.064
3/11/2015	36.1	20.7	8.18	0.148
3/18/2015	16.9	2.16	3.98	0.112
3/25/2015	9.26	4.02	1.76	0.018
4/1/2015	16.6	5.2	3.72	0.022
4/8/2015	10.2	9.13	2.24	0.033
4/15/2015	14.8	10.3	5.82	0.055
4/22/2015	14.9	9.12	4.6	0.046
5/6/2015	40.9	0.332	8.3	0.045
5/13/2015	30.4	0.114	7.87	0.034
5/20/2015	34.4	0.138	9.91	0.047
5/27/2015	49.9	0.102	11.3	0.036
6/3/2015	64.8	0.085	27.3	0.054
6/10/2015	45.2	0.135	13.4	0.031
6/17/2015	35	0.093	9.21	0.034
6/24/2015	49.7	0.08	12.1	0.039
7/1/2015	52.1	0.122	11.9	0.07
7/8/2015	53.1	0.118	10.8	0.068
7/15/2015	36.4	0.122	10.4	0.052
7/22/2015	37.5	0.097	9.21	0.044
7/29/2015	33.2	0.101	6.9	0.065
8/5/2015	60.3	4.71	15.2	0.08
8/12/2015	43.9	0.175	14.1	0.04
8/19/2015	48.4	0.097	9.16	0.032
8/26/2015	62	0.091	11	0.026
9/2/2015	69.2	0.08	14.5	0.027
9/9/2015	42.4	0.123	10.1	0.036
9/16/2015	54.9	0.104	13.2	0.041
9/23/2015	40.8	0.116	9.04	0.065
9/30/2015	47.4	0.139	8.7	0.056
10/7/2015	51.9	0.086	8.24	0.053
10/14/2015	23.2	0.096	5.2	0.068
10/21/2015	36.6	0.106	6.64	0.062
10/28/2015	38.4	0.127	9.2	0.086
11/4/2015	41.9	0.106	8.64	0.088
11/10/2015	33.9	0.095	24.6	0.098
11/17/2015	33.2	1.95	8.16	0.069
11/24/2015	50	5.33	10.4	0.127
12/2/2015	39.8	7.46	12.5	0.15
12/9/2015	14.2	6.17	4.2	0.031
12/15/2015	18.6	0.182	4.32	0.019
12/23/2015	12.2	0.148	3.55	0.022
12/30/2015	25.8	7.85	4.84	0.048
1/6/2016	31.7	14.8	5.39	0.056
1/13/2016	7.8	21.6	7.8	0.087
1/20/2016	4.6	4.8	1.6	0.011
1/27/2016	6.38	0.154	2.21	0.066
2/3/2016	9.26	0.146	2.56	0.011
2/10/2016	12.4	0.172	3.31	0.082
2/17/2016	10.8	0.103	2.85	0.023
2/24/2016	13.9	0.137	4.31	0.01
3/2/2016	10.9	0.159	4.52	0.026
3/9/2016	8.34	2.14	6.22	0.022
3/16/2016	9.66	0.08	3.84	0.022
3/23/2016	5.83	3.51	1.66	0.044
3/30/2016	10.5	0.0905	2.94	0.063
4/6/2016	19.8	0.166	4.95	0.016
4/13/2016	23.8	1.65	6.56	0.024
4/19/2016	21.4	0.081	10.7	0.028
4/26/2016	24.2	1.94	6.1	0.028
5/3/2016	41.2	0.113	14.4	0.028
5/10/2016	38	0.08	6.75	0.03
5/17/2016	35.8	0.0875	9.38	0.036
5/24/2016	18.7	0.08	3.72	0.012
5/31/2016	38	0.08	11.6	0.015
6/7/2016	32.1	0.08	14	0.027
6/14/2016		0.102		0.025
6/21/2016	38.1	2.18	7.42	0.023
6/28/2016	43.4	0.08	8.88	0.022
7/5/2016	42.2	0.08	9.94	0.017
7/12/2016	45.4	0.08	11.2	0.017
7/19/2016	32.7	0.101	12.7	0.03
7/26/2016	36.9	0.08	8.99	0.024
8/2/2016	39.1	0.08	7.25	0.025
8/9/2016	36.3	0.089	7.58	0.035
8/16/2016	37.1	0.08	11.5	0.026
8/23/2016	53.9	0.11	13.1	0.026
8/30/2016	55.6	0.08	9.7	0.021
10/4/2016	40	0.08	12.5	0.02
10/11/2016	28.8	0.08	5.68	0.013
10/18/2016	16.2	0.088	3.22	0.014
10/25/2016	20.9	0.08	5.5	0.014
11/2/2016	14.5	0.08	4.62	0.02
11/8/2016	24.3	0.08	5.64	0.04
11/15/2016	5.77	0.08	4.19	0.016
11/22/2016	20	0.08	6.26	0.043
11/29/2016	14.1	0.08	3.98	0.07
12/7/2016	27.8	0.08	6.21	0.119
12/13/2016	33.3	0.08	10.2	0.074
12/21/2016	26.8	0.08	22.8	0.072
12/28/2016	33.7	0.08	14.1	0.066
1/4/2017	21.9	2.56	7.35	0.166
1/11/2017	18.5	14.6	8.38	0.412
1/17/2017	20.7	0.08	5.5	0.154
1/25/2017	11.2	0.08	5	0.088
1/31/2017	19.4	0.08	3.75	0.045
2/8/2017	8.76	0.08	2.94	0.104
2/15/2017	8.96	0.08	3.14	0.054
2/22/2017	4.34	0.08	1.72	0.036
2/28/2017	12.7	0.603	4.76	0.04
3/7/2017	7.3	0.208	1.88	0.031
3/15/2017	2.75	0.08	1.23	0.085
3/21/2017	11.2	0.188	3.59	0.077
3/28/2017	7.65	0.347	2.3	0.069
4/5/2017	20.1	0.1	5.11	0.033
4/12/2017	13.5	0.1	7.88	0.206
4/19/2017	25.8	0.1	7.99	0.15
4/26/2017	6.03	17.3	3.32	0.165
5/3/2017	24.1	16.9	7.76	0.325
5/10/2017	28.4	7.92	8.6	0.12
5/17/2017	7.75	0.1	2.33	0.137
5/24/2017	15.8	0.1	5.16	0.082
5/31/2017	28.2	0.162	6.76	0.0915
6/7/2017	37.4	1.6	7.9	0.215
6/14/2017	32.8	0.187	6.91	1.271
6/20/2017	39.6	0.229	17.9	0.082
6/28/2017	39.6	0.178	7	0.031

Parameter	Ammonia	Ammonia	Phosphorus	Phosphorus
Monitoring Location	Raw Sewage In	Effluent Gross	Raw Sewage In	Effluent Gross
Units	mg/L	mg/L	mg/L	mg/L
7/5/2017	32.6	0.18	9.72	0.028
7/12/2017	39.8	0.112	8.06	0.066
7/19/2017	37	0.137	7.19	0.048
7/26/2017	38	0.354	7.05	0.06
8/2/2017	24.3	0.1	6.36	0.029
8/9/2017	33.1	0.14	6.28	0.039
8/16/2017	45.6	0.1	6.96	0.039
8/23/2017	42.2	0.1	9.59	0.068
8/30/2017	33.9	0.1	6.72	0.048
9/6/2017	40.4	0.1	11	0.029
9/13/2017	33	0.1	6.46	0.03
9/20/2017	22.5	5.48	5.09	0.037
9/26/2017	34	0.253	6.78	0.018
10/4/2017	36.1	0.1	6.28	0.024
10/11/2017	35.1	0.1	7.24	0.021
10/18/2017	38.4	0.1	6.52	0.032
10/25/2017	30	0.1	4.82	0.121
10/31/2017	40	0.1	11.2	0.04
11/8/2017	29.4	0.1	5.94	0.036
11/15/2017	28.6	0.1	16.6	0.014
11/21/2017	11.2	0.137	2.15	0.027
11/29/2017	7.73	0.1	1.88	0.018
12/6/2017	31	0.1	7.37	0.03
12/13/2017	41.2	0.1	7.78	0.059
12/20/2017	4.78	1.58	1.47	0.295
12/27/2017	33.9	0.1	7.58	0.026
1/3/2018	22.5	0.1	4.67	0.045
1/9/2018	4.01	0.1	2.06	0.057
1/17/2018	6.74	0.1	1.67	0.39
1/23/2018	9.76	0.1	2.56	0.022
1/30/2018	14.4	0.1	4.11	0.02
2/6/2018	7.74	0.1	2.22	0.51
2/13/2018	33.3	0.1	7.07	0.1
2/21/2018	23.8	0.1	5	0.33
2/28/2018	24.4	0.0595	4.81	0.071
3/7/2018	14.1	0.065	2.5	0.025
3/14/2018	6.65	0.05	2.43	0.018
3/20/2018	9.97	0.054	2.24	0.018
3/27/2018	10.6	0.05	4.04	0.016
4/4/2018	26.6	0.05	5.72	0.016
4/11/2018	15.1	0.5	5.4	0.016
4/18/2018	14	0.056	3.64	0.016
4/24/2018	24.6	0.05	4.72	0.016

Parameter	Ammonia	Ammonia	Phosphorus	Phosphorus
Monitoring Location	Raw Sewage In	Effluent Gross	Raw Sewage In	Effluent Gross
Units	mg/L	mg/L	mg/L	mg/L
5/2/2018	36.2	0.071	7.58	0.016
5/8/2018	36.2	0.363	6.95	0.016
5/15/2018	37.1	0.26	7.98	0.016
5/22/2018	29.3	0.469	6.04	0.016
5/30/2018	36.9	0.063	7.662	0.17
6/6/2018	43.8	0.05	8.94	0.016
6/13/2018	36	0.05	6.34	0.016
6/19/2018	31.4	0.074	8.56	0.016
6/27/2018	45.2	0.052	9	0.016
7/5/2018	44.2	0.108	9.28	0.016
7/11/2018	44.8	0.05	9.07	0.016
7/17/2018	41.2	0.099	9.32	0.016
7/25/2018	51.2	1.2	7.25	0.016
7/31/2018	37.6	4.23	7.69	0.016
8/7/2018	60.9	0.593	10.5	0.016
8/15/2018	48.4	0.074	8.72	0.016
8/22/2018	43.8	11.2	9.4	0.02
8/29/2018	33.4	9.13	6.04	0.021
9/5/2018	34	3.02	6.06	0.02
9/12/2018	61.5	14.8	20	0.047
9/19/2018	43.5	0.118	8.36	0.016
10/2/2018	53.6	0.095	14.4	0.016
10/10/2018	46.2	0.127	10.2	0.016
10/17/2018	46	0.136	8.09	0.016
10/24/2018	62.4	1.01	8.84	0.016
10/31/2018	37.2	0.148	6.55	0.016
11/7/2018	19.5	0.106	3.29	0.016
11/14/2018	40.1	0.525	5.88	0.027
11/20/2018	44.1	0.128	7.05	0.016
11/28/2018	9.86	2.05	2.1	0.02
12/4/2018	30.2	0.077	6.64	0.016
12/11/2018	33.4	0.05	8.68	0.016
12/18/2018	2.62	0.078	1.44	0.016
12/26/2018	19.6	0.0605	4.88	0.016
Average	29.4	1.8	7.8	0.1
Minimum	2.62	0.05	1.23	0.01
Maximum	82	21.6	92.7	1.271
Count	252	252	252	252
Standard Deviation	15.3	4.0	6.9	0.1
Coefficient of Variation	0.52	2.15	0.89	1.79
95th Percentile	53.74	11.34	14.55	0.184
Median	31.7	0.1	6.84	0.031
5th Percentile	6.6995	0.061875	2.024	0.016

Reference

Email correspondence with permittee, 6/19/2019.

D. Receiving Water Data

Upstream of Discharge	BOD5	DO	Temperature
	mg/L	mg/L	°C
6/14/2016	0	5.64	13.8
7/12/2016	3.2	5.71	13.9
8/9/2016	5.1	4.43	10.3
9/13/2016	0	6.97	10.3
6/20/2017	0	6.92	16.8
7/26/2017	0	6.09	15.9
9/26/2017	2.2	3.01	13
6/27/2018	5.5	6	
8/15/2018	11	8.37	16.5
Average	3	5.9	13.8
Minimum	0	3.01	10.3
Maximum	11	8.37	16.8
Count	9	9	8
Std Dev	3.73	1.54	2.56
CV	1.24	0.26	0.19

Downstream of Discharge	BOD5	DO	Temperature
	mg/L	mg/L	°C
6/14/2016	0	6.57	13.8
7/12/2016	3	6.19	
8/9/2016	2	5.49	
9/13/2016	0	5.9	
6/20/2017	0	8.1	16.8
7/26/2017	0	8.04	
9/26/2017	0	7.87	13
6/27/2018	2.1	6.95	
8/15/2018	0	5.87	16.5
Average	0.8	6.8	15.0
Minimum	0	5.49	13
Maximum	3	8.1	16.8
Count	9	9	4
Std Dev	1.21	1.01	1.91
CV	1.54	0.15	0.13

Reference
Email correspondence with permittee, 4/15/2019 and 5/13/2019.

Appendix C. Reasonable Potential and WQBEL Formulae

A. Reasonable Potential Analysis

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit.

Mass Balance

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

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

where,

- C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
- C_e = Maximum projected effluent concentration
- C_u = 95th percentile measured receiving water upstream concentration
- Q_d = Receiving water flow rate downstream of the effluent discharge = Q_e+Q_u
- Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
- Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

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

$$C_d = \frac{C_e \times Q_e + C_u \times Q_u}{Q_e + Q_u} \qquad \text{Equation 2}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with 100% of the receiving stream.

If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)} \qquad \text{Equation 3}$$

Where:

% MZ = the percentage of the receiving water flow available for mixing.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{Equation 4}$$

A dilution factor (D) can be introduced to describe the allowable mixing. Where the dilution factor is expressed as:

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e} \qquad \text{Equation 5}$$

After the dilution factor simplification, the mass balance equation becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{Equation 6}$$

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as follows:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u \qquad \text{Equation 7}$$

Where C_e is expressed as total recoverable metal, C_u and C_d are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

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

Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's Technical Support Document for Water Quality-based Toxics Controls (TSD, 1991) recommends using the maximum projected effluent concentration (Ce) in the mass balance calculation (see equation 3, page C-5). To determine the maximum projected effluent concentration (Ce) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration (Ce) can be calculated using the following equations:

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

$$p_n = (1 - \text{confidence level})^{1/n} \qquad \text{Equation 8}$$

where,

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

and

$$RPM = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}} \qquad \text{Equation 9}$$

Where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile)
Z_{Pn} = z-score for the P_n percentile (inverse of the normal cumulative distribution function at a given percentile)
CV = coefficient of variation (standard deviation ÷ mean)

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

$$C_e = (RPM)(MRC) \qquad \text{Equation 10}$$

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

Once the maximum projected effluent concentration is calculated, the maximum projected effluent concentration at the edge of the acute and chronic mixing zones is calculated using the mass balance equations presented previously.

Reasonable Potential

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

B. WQBEL Calculations

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis. To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation 6 is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{Equation 11}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\sigma)} \qquad \text{Equation 12}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \qquad \text{Equation 13}$$

where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile probability basis)
CV = coefficient of variation (standard deviation ÷ mean)
σ_4^2 = $\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \qquad \text{Equation 14}$$

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below.

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the Maximum Daily Limit (MDL) and Average Monthly Limit (AML) effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \quad \text{Equation 15}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)} \quad \text{Equation 16}$$

where σ, and σ² are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1$

z_a = 1.645 (z-score for the 95th percentile probability basis)

z_m = 2.326 (z-score for the 99th percentile probability basis)

n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 30.

C. Critical Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. Critical low flows are defined below:

Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3 or 30Q10

1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years.
2. The 1B3 is biologically based and indicates an allowable exceedance of once every 3 years.
3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.
4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.
5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.
6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.
7. 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.

MOVE 2 Analysis

When there are stream flow data available at or near the point of discharge, but not enough to calculate the recommended critical low flows directly and there is a long-term gauging station in the same watershed with contemporaneous data that correlates well with the flow data for the point of discharge, then the limited data for the point of discharge can be correlated with the data from the long-term station. Critical low flows for the long-term station can be used to estimate the critical low flows of the limited-data station. The higher the correlation coefficient and the longer the period of contemporaneous data, the more accurate the estimated critical flows will be. When there are multiple long-term stations in the same watershed with contemporaneous data, the station with the greatest correlation coefficient and most similar period of contemporaneous data should be used to estimate critical flows.

As described in "A Comparison of Four Streamflow Record Extension Techniques" by R. Hirsch, The Maintenance of Variance Extension (MOVE) method can be used to correlate flow data. There are two "types" of the MOVE method, MOVE 1 and MOVE 2. Hirsch states that the differences in performance "…show MOVE 2 to have slightly more desirable properties than MOVE 1." Both MOVE 1 and MOVE 2 were found to have the same correlation coefficient for the analyzed flow data.

The nearest USGS stream gauge station to the facility's point of discharge is downstream several miles on Plummer Creek near its mouth. This station has limited flow data from 1991 – 1992. There are several nearby long-term USGS stream gauge stations with contemporaneous data. Four (4) flow data sets from nearby stations were compared to the limited data found at USGS gauge station #12415250 PLUMMR CREEK NR PLUMMER ID. The MOVE 2 analysis was performed to compare correlation coefficients between each station and the station near the mouth of Plummer Creek. Station #12415350 WOLF LODGE CREEK NR COEUR D ALENE ID was found to have the greatest correlation and was used to estimate low flows at station #12415250. The MOVE 2 analysis is summarized in the tables below.

Table 13. Correlation Coefficients of USGS Stations

Station #	Record Start Date	Record End Date	Waterbody	Correlation Coefficient
12415250	1/1/1991	12/31/1992	Plummer Creek	--
12415350	12/17/1985	2/28/1995	Wolf Lodge Creek	0.89
12416000	4/1/1948	5/14/1997	Hayden Creek	0.83
12413140	10/30/1967	4/30/2000	Placer Creek	0.64
12414900	10/1/1965	6/5/2019	St. Maries River	0.87

Table 14. Estimated Low Flows Using MOVE 2

Calculated Low Flows (cfs) at Wolf Lodge Creek Station #12415350*		Estimated Low Flows (cfs) at Plummer Creek Station #12415250	
1B3	3.54	1Q10	0.18
4B3	3.74	7Q10	0.20
30B3	4.44	30B3	0.27
30Q5	4.42	30Q5	0.27
Harmonic Mean	12.95	Harmonic Mean	1.59
* Low flows for Station #12415350 were calculated using the USGS Surface Water Toolbox.			

References

Hirsch R.M., 1982. *A Comparison of Four Streamflow Record Extension Techniques*. U.S. Geological Survey, Reston, Virginia 22092. Water Resources Research Vol. 18, No. 4, Pages 1081-1088. August 1982.

Appendix D. Reasonable Potential and WQBEL Calculations

Pollutants of Concern			**AMMONIA,** default: cold water, fish early life stages
Effluent Data	**Number of Samples in Data Set (n)**		252
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		2.15
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		11,300
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	8,107
	Aquatic Life Criteria, µg/L	Chronic	2,136
Percent River Flow Default Value = **0%**	**Aquatic Life - Acute**	**1Q10**	0%
	Aquatic Life - Chronic	7Q10 or 4B3	
		30B3 or 30Q10	
Calculated Dilution Factors (DF)	Aquatic Life - Acute	1Q10	1.0
	Aquatic Life - Chronic	7Q10 or 4B3	
		30B3 or 30Q10	
Aquatic Life Reasonable Potential Analysis			
σ	$\sigma^2=\ln(CV^2+1)$		1.314
P_n	$=(1\text{-confidence level})^{1/n}$, where confidence level =	**99%**	0.982
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	**99%**	1.4
Statistically projected critical discharge concentration (C_e)			15325
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	15325
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	15325
Reasonable Potential to exceed Aquatic Life Criteria			**YES**
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)		2.150
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		2.150
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a\text{-}1)$	Acute	8,107
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_{u\,x} \times (MZ_c\text{-}1)$	Chronic	2,136
Long Term Ave (LTA), ug/L	$WLAc \times \exp(0.5\sigma^2\text{-}z\sigma)$, Acute	**99%**	904
(99th % occurrence prob.)	$WLAa \times \exp(0.5\sigma^2\text{-}z\sigma)$; ammonia n=30, Chronic	**99%**	951
Limiting LTA, ug/L	used as basis for limits calculation		904
Applicable Metals Criteria Translator (metals limits as total recoverable)			1.0
Average Monthly Limit (AML), ug/L , where % occurrence prob =		**95%**	**2,603**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		**99%**	**8,107**
Average Monthly Limit (AML), mg/L			**2.6**
Maximum Daily Limit (MDL), mg/L			**8.1**
Average Monthly Limit (AML), lb/day			**7**
Maximum Daily Limit (MDL), lb/day			**22**

References

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

EPA. 1999a. *1999 Update of Ambient Water Quality Criteria for Ammonia*. EPA-822-R-99-014. December 1999.

IDAPA 58.01.02. *Idaho water quality standards and wastewater treatment requirements.*

Appendix E. Endangered Species Act

A. Overview

As discussed in Section VIII.A of this fact sheet, Section 7 of the Endangered Species Act requires federal agencies to consult with NOAA Fisheries and USFWS if there are potential affects a federal action may have on threatened and endangered species. The EPA has determined there is no effect on North American wolverine, bull trout, or bull trout critical habitat resulting from discharges from the City of Plummer WWTP.

B. Species List

USFWS Species and Critical Habitat

- North American Wolverine (*Gulo gulo luscus*) proposed threatened
- Bull Trout (*Salvelinus confluentus*) listed threatened
- Bull Trout Critical Habitat

NOAA Fisheries Species and Critical Habitat

There are no NOAA Fisheries listed endangered and threatened species and no critical habitat in the vicinity of the discharge.

C. Potential Impacts from the Discharge on Listed Species

North American Wolverine

The primary causes of the North American wolverine's decline are habitat destruction (including due to climate change), reduced snow pack and earlier spring runoff, and dispersed recreational activities. (UFWS 2013). Issuance of an NPDES permit to the City of Plummer WWTP will have no effect on any of the factors causing the decline of the North American wolverine. The North American wolverine is a terrestrial species, which are generally not susceptible to the water quality impacts that may result from the issuance of an NPDES permit. Therefore, the issuance of this permit will have no effect on the North American Wolverine.

Bull Trout & Bull Trout Critical Habitat

The U.S. Fish and Wildlife Service Bull Trout Recover Plan identified causes of the bull trout listing. They are historical habitat loss and fragmentation, interaction with nonnative species, fish passage issues, drought and wildfire impacts, and invasive predatory fish species (USFWS 2015). No sewage treatment plant is identified as a contributing factor to the decline in bull trout.

In addition, there are site-specific factors supporting EPA's no effect determination. Plummer Creek is not designated for bull trout use in the Coeur d'Alene Tribe's water quality standards. The treatment plant is an extended aeration activated sludge facility with biological phosphorus removal and filtration, which is expected to produce a high quality effluent. The facility is required to meet water quality criteria for ammonia, phosphorus, *E. coli*, and pH at the end-of-pipe. The facility has ultraviolet disinfection, and the permit prohibits the use of chlorine for disinfection or elsewhere in the treatment process. Therefore, the facility is not expected to

discharge chlorine in significant amounts. Furthermore, the water quality-based effluent limits will ensure compliance with water quality standards for dissolved oxygen.

Chatcolet Lake and Lake Coeur d'Alene, which are downstream from Plummer Creek and the discharge, are designated critical habitat for bull trout (USFWS 2010). Plummer Creek is not designated critical habitat for bull trout. The discharge will not affect downstream critical habitat because of the stringent effluent limits applicable to this discharge described above.

The facility will produce a very high-quality effluent, with pollutant concentrations either expected or required to ensure compliance with water quality standards at the end-of-pipe. Therefore, threatened and endangered species will not be exposed to elevated pollutant concentrations as a result of the discharge, and the discharge will have no effect on bull trout or bull trout critical habitat.

D. Conclusion

Species/Critical Habitat	Determination
North American Wolverine	No effect
Bull Trout	No effect
Bull Trout Critical Habitat	No effect

E. References

U.S. Fish and Wildlife Service. 2010. Revised Designation of Critical Habitat for bull Trout in the Coterminous United States. Federal Register Vol. 75 No. 200. Pages 63898 – 64070.

U.S. Fish and Wildlife Service. 2013. Threatened Status for the Distinct Population Segment of the North American Wolverine Occuring in the Contiguous United States; Proposed Rules. Federal Register Vol. 78 No. 23. Pages 7863 – 7890.

U.S. Fish and Wildlife Service. 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.