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 St. Maries Wastewater Treatment Plant
602 College Avenue
St. Maries, ID 83861

Public Comment Start Date: March 10, 2020
Public Comment Expiration Date: April 9, 2020

Technical Contact: Joseph Ziobro
206-553-2723
800-424-4372, ext. 2723
Ziobro.joseph@epa.gov

The EPA Proposes To Reissue the 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

401 Water Quality Certification
The EPA is requesting that the Coeur d'Alene Tribe certify the permit under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Attn: Scott Fields
Coeur d'Alene Tribe
Lake Management Department
850 A Street, P.O. Box 408
Plummer, Idaho 83851

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing 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 in writing and should 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 reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at: https://www.epa.gov/npdes-permits/npdes-permit-city-st-maries-wastewater-treatment-plant-idaho.

US EPA Region 10
Suite 155
1200 Sixth Avenue, WD-19-C04
Seattle, Washington 98101-3188
(206) 553-0523 or
Toll Free 1-800-424-4372

The fact sheet and draft permits are also available at:

United States Environmental Protection Agency
Idaho Operations Office
950 W. Bannock St., Suite 900
Boise, Idaho 83702
(208) 378-5746

Coeur d'Alene Tribe
Lake Management Department
410 Anne Antelope Road
Plummer, Idaho 83851
(208) 686-0252

Table of Contents

Tables

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
30Q10	30 day, 10 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BOD_{5u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
C BOD_5	Carbonaceous Biochemical Oxygen Demand
CDT	Coeur d'Alene Tribe
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor
FR	Federal Register
Gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
ml	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards

NTU	Nephelometric Turbidity Units
O&M	Operations and maintenance
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WD	Water Division
WET	Whole Effluent Toxicity
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 #:	ID0022799
Applicant:	City of St. Maries, Idaho
Type of Ownership	POTW
Physical Address:	1 Mile West of City of St. Maries St. Maries, Idaho
Mailing Address:	602 College Avenue St. Maries, Idaho 83861
Facility Contact:	Jesse Herndon HMH Engineering JHerndon@hmh-llc.com (208) 635-5825
Operator Name:	Paul Sifford Circuit Rider Idaho Rural Water Association psifford@idahoruralwater.com (208) 930-5575
Facility Location:	Latitude: 47.32889 Longitude: -116.5903
Receiving Water	St. Joe River
Facility Outfall	Latitude: 47.329469 Longitude: -116.591861

B. Permit History

The most recent NPDES permit for the City of St. Maries Wastewater Treatment Plant (SMWWTP) was issued on September 17, 2007, became effective on October 1, 2007, and expired on September 30, 2012. An NPDES application for permit reissuance was received by the EPA on March 27, 2012. 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. Because the SMWWTP is within the boundaries of the Coeur d'Alene Tribal Reservation, the Coeur d'Alene Tribe (CDT) is the certifying authority for the permit under Section 401 of the Clean Water Act. Consistent with the Executive Order and the EPA tribal consultation policies, the EPA coordinated with the CDT during development of the draft permit and is inviting the Tribe to engage in formal tribal consultation.

II. Idaho NPDES Authorization

On June 5, 2018, the EPA approved Idaho's application to administer and enforce the Idaho Pollutant Discharge Elimination System (IPDES) program. Because the SMWWTP discharges into the St. Joe River within the boundaries of the Coeur d'Alene Tribal Reservation, EPA Region 10, rather than Idaho, is the permitting authority for the facility.

III. Facility Information

A. Treatment Plant Description

Service Area

The City of St. Maries owns the SMWWTP located in St. Maries**,** ID. The facility is operated by Paul Sifford, Circuit Rider with Idaho Rural Water Network. According to the permit application, the collection system services the Cottonwood Sewer District, population 125, Benewah County, population 850, and the City of St. Maries, population 2652, with a total population of 3,627 served by the facility. There are no combined sewers. There are no major industries discharging to the facility. While the point of discharge is within the boundaries of the Coeur d'Alene Reservation, the facility is a Publicly Owned Treatment Works (POTW) owned by the City of St. Maries, a non-tribal entity.

Treatment Process

According to the facility's permit application, the design flow of the facility is 2.0 mgd. Facility data from 2007 to 2019 shows actual average monthly flows ranging from 0 mgd to 3.9 mgd, with an average flow of 1.8 mgd. The treatment process consists of primary treatment followed by secondary lagoon treatment. Chlorination is used for disinfection, followed by dechlorination. According to a November 9, 2016 EPA inspection report and an EPA site visit on July 23, 2019, the treatment works consists of two non-aerated lagoons (lagoons 1 and 2) connected in series. Each lagoon has approximately 27 million gallons of capacity and covers an area of approximately 12 acres. Effluent from lagoons 1 and 2 is then piped under the St. Joe River to a 39 million gallon polishing pond covering an area of approximately 24 acres. According to the facility, the overall wastewater residence time in the two lagoons and the polishing ponds is between 68 and 90 days. Disinfection occurs in a 59,000 gallon chlorine contact tank. The facility's NPDES permit authorizes the discharge from Outfall 001 to the St. Joe River between November 1 and June 30. The facility is separately permitted to land apply treated effluent from the wastewater plant during the growing season under an Idaho Department of Environmental Quality (IDEQ) Reuse Permit (DEQ #: M-012-03). A schematic of the wastewater treatment process and a map showing

the location of the treatment facility and outfall are included in Appendix A. Because the design flow is greater than 1 mgd, the facility is considered a major facility.

Outfall Description

The single outfall (001) for the facility is located 1 mile west of St. Maries on Shepherd Rd., Benewah County, ID (Latitude: 47.329469/Longitude: -116.591861), within the boundaries of the Coeur d'Alene Reservation. Proximal to the bank nearest the outfall, St. Joe River bathymetry shows depths of 5 - 10 feet, 30 foot depths near the opposite bank, and 25 foot depths in the center channel (CDT 2004). See Appendix A. The facility is permitted to discharge from Outfall 001 eight months each year from November 1 to June 30.

Effluent Characterization

To characterize the effluent, the EPA evaluated the facility's application form and discharge monitoring report (DMR) data. The effluent quality is summarized in Table 2. Data are provided in Appendix B.

Table 2 Effluent Characterization

Parameter	Minimum	Maximum	5th Percentile	95th Percentile
BOD_5 (Mo. avg., mg/L)	3.6	22	5.0	17.9
TSS (Mo. avg., mg/L)	5.0	41.8	5.0	23.1
E. coli (Mo. Geometric mean, No./100 ml)	1	740.8	1.0	8.9
pH (daily min., s.u.)	5.7	7.8	6.0	7.3
pH (daily max., s.u.)	6.4	10.3	6.7	8.5
Hardness as $CaCO_3$ (Mo. avg., mg/L)	<0.2	101	<0.2	60.3
Alkalinity as $CaCO_3$ (Mo. avg., mg/L)	<5.0	94.5	<5.0	84.0
Dissolved Oxygen (Mo. avg., mg/L)	1.4	15.4	2.3	12.6
Total P (Mo. avg., mg/L)	<0.01	3.9	0.4	2.1
Ortho-P (Mo. avg., mg/L)	<0.01	2.2	<0.01	1.9
TKN (Mo. avg., mg/L)	<0.2	11.9	1.8	9.8
Nitrite + Nitrate (Mo. avg., mg/L)	<0.1	3.7	<0.1	3.0
Temperature (Daily Max, deg. C)	3.0	23.0	4.1	22.2
Total Residual Chlorine (Mo. avg., mg/L)	<0.05	0.3	<0.05	0.2
Ammonia (Mo. avg., mg/L)	<0.05	9.2	0.3	9.1
Nickel (expanded effluent testing, µg/L)	<20.0	20.0	---	---
Zinc (expanded effluent testing, µg/L)	10.0	20.0	---	---
Copper (expanded effluent testing, µg/L)	<10.0	10.0	---	---
Toluene (expanded effluent testing, µg/L)	<0.5	1.1	---	---
Source: Facility DMR data 10/01/2007 to 5/01/2019 and Expanded Effluent Testing Results from Application				

Compliance History

A summary of effluent violations from 2014-2019 is presented in Table 3 below. 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=110011271541#.

Table 3. Summary of Effluent Violations 2014 – 2019 (ECHO data accessed 5/15/2019)

Parameter	Limit	Units	Number of Instances
pH	Daily Maximum	s.u	1
pH	Daily Minimum	s.u	1
E. coli	Instantaneous Max	#/100ml	2
E. coli	Monthly Geomean	#/100ml	1
Chlorine, total residual	Daily Max	lbs/day	1
BOD5	Percent Removal	%	9
TSS	Percent Removal	%	6

The EPA conducted a compliance inspection of the facility on September 26, 2016 and on September 21, 2018, issued an administrative compliance order on consent to address violations relating to monitoring and reporting and excursions from permit limits for pH, TRC, and BOD_5. The facility agreed to capital improvements to both the collection system and wastewater treatment facility and subsequent return to compliance with permit limits by November 30, 2021.

IV. 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 the St. Joe River in the City of St. Maries, ID within the boundary of the Coeur d'Alene Reservation. The outfall is located approximately six river miles upstream of Chatcolet Lake, and approximately 1.5 miles downstream from the confluence of the St. Joe and St. Maries Rivers.

B. Designated Beneficial Uses

The Coeur d'Alene Tribe received treatment in a manner similar to a state (TAS) status for administering WQS over portions of Lake Coeur d'Alene and the St. Joe River that lie within the boundaries of the Coeur d'Alene Reservation. These waters are referred to as "Reservation TAS Waters." Water Quality Standards for Approved Surface Waters of the Coeur D'Alene Tribe are in effect for CWA purposes, effective June 12, 2014[1]. This is the first issuance of an NPDES permit to the SMWWTP for which CDT WQS are in effect for CWA purposes. The CDT has adopted general water use classifications that apply to all of the Reservation TAS Waters. All TAS Waters shall be designated for the uses of industrial water supply, aesthetics, and wildlife habitat. Additionally, TAS Waters are classified for:

- Domestic Water Supply
- Agricultural Water Supply

[1] See *Water Quality Standards for Approved Surface Waters of the Coeur D'Alene Tribe* for a listing of standards approved, disapproved, or not acted on by the EPA. Available at https://www.epa.gov/wqs-tech/water-quality-standards-regulations-coeur-dalene-tribe-indians.

- Recreational and Cultural Use
- Bull Trout and Cutthroat Trout

The EPA used the CDT WQS in developing permit conditions and effluent limitations. The EPA also referenced Idaho WQS at IDAPA 58.01.02. in cases where TAS WQS are not in effect for Clean Water Act purposes. This will ensure that the permit conditions are protective of the downstream uses. Water quality standards are further discussed in Section V.D below.

C. Water Quality

The quality of the receiving water was assessed by analyzing data from the SMWWTP collected between 2012 to 2015 approximately 1.1 miles upstream of the discharge at the Aqua Park sampling location and 0.8 miles downstream at Cherry Bend. Data provided to EPA by the CDT and data from the U.S. Geological Survey (USGS) National Water Information System (NWIS) were also considered. CDT data were sampled from 2007 to 2018 at Site SJ1 (Latitude: 47.3579, Longitude: -116.6865), approximately six miles downstream from the discharge point. USGS data were sampled from 1998 to 2001 at the Calder station, approximately 25 river miles upstream of the outfall. Receiving water zinc data was estimated using 2009 - 2019 data from the Ramsdell NWIS station. To calculate critical statistics for temperature, dissolved oxygen, and pH, the three datasets were combined. The water quality for the receiving water is summarized in Table 4.

Table 4. Receiving Water Quality Data

Parameter	Units	Statistic	Value	Source
Temperature	°C	95th Percentile	16.0	CDT, SMWWTP, NWIS
Temperature (June only)	°C	95th Percentile	18.0	CDT, SMWWTP, NWIS
Dissolved Oxygen	mg/L	5th Percentile	9.2	CDT, SMWWTP, NWIS
pH maximum	s.u	95th Percentile	7.60	CDT, SMWWTP, NWIS
Hardness	mg/L	5th Percentile	13.7	SMWWTP
Ammonia	mg/L	95th Percentile	0.086	SMWWTP
Total Phosphorus	mg/L	95th Percentile	0.049	SMWWTP
Zinc (recoverable)	µg/L	90th Percentile	8.39	NWIS
Nickel	µg/L	N/A	0.00	Assumed due to lack of data

D. Water Quality Limited Waters

Idaho's 2016 305(b) Integrated Report identifies the 3.76 mile stretch of the St. Joe River receiving the discharge as Category 3, or lacking sufficient data to determine if any beneficial uses are being met (i.e., unassessed). St. Joe waters downstream between the point of discharge and Coeur d'Alene Lake are also unassessed. Coeur d'Alene Lake, approximately eight river miles downstream of the discharge, is not supporting (Category 5) cold water aquatic life criteria due to cadmium, lead, and zinc exceedances of water quality standards, though a TMDL has not been approved by the EPA. In 2009, The CDT and IDEQ collaboratively developed the 2009 Lake Management Plan with the goal "to protect and improve lake water quality by limiting basin-wide nutrient inputs that impair lake water quality conditions, which in turn influence the solubility of mining-related metals contamination contained in lake sediments" (CDT and IDEQ 2009). The Plan does not establish numeric nutrient criteria. An EPA-approved TMDL (Category 4a) for temperature

is in effect on the St. Joe (ID17010304PN027_05) approximately 1.5 river miles upstream of the discharge, which is not meeting ID cold water aquatic life uses, as well as an EPA-approved TMDL for temperature and sediment on the St. Maries approximately 1.5 miles upstream of the discharge where the St. Joe and St. Maries Rivers join (ID17010304PN007_05), which is also not supporting cold water aquatic life uses.

E. Low Flow Conditions

Critical low flows for the receiving water are summarized in Table 5. Critical Flows in Receiving Water. Statistics were computed with USGS's SW Toolbox Version 1.0.4. Given that at least 10 years of consecutive daily discharge data were not available at the USGS stream gage nearest the discharge point (St. Joe River at St. Maries, Site No. 12415070), data from two reference sites were used. Daily discharge data from St. Joe River at Calder (Site No. 12414500) and St. Maries River NR Santa (Site No. 12414900) from 1988 to 2019 were combined, not including data from periods where discharge is not authorized (July 1 to October 31). The first site is upstream on the St. Joe River and the second site is upstream on the St. Maries River, with both sites situated upstream of the confluence of the two rivers near the City of St. Maries. A drainage basin ratio of 1.33 was calculated by adding the drainage basin (in square mileage) of Calder and NR Santa, dividing the drainage basin at St. Maries by that number, and then multiplying by the combined discharge data, providing an estimation of daily discharge values at St. Maries, which were entered into SW Toolbox.

Table 5. Critical Flows in Receiving Water

Flows	Nov. 1 – Jun. 30 Flow (cfs)
1Q10	251
7Q10	340
30Q5	629
Harmonic Mean	1276
Source: USGS NWIS, Calder and NR Santa stations.	

Low flows are defined in C, Part C.

V. Effluent Limitations and Monitoring

Table 6 below presents the existing effluent limits and monitoring requirements in the 2007 permit. Table 7, below, presents the proposed effluent limits and monitoring requirements in the draft permit.

Table 6. Existing Permit Effluent Limits and Monitoring Requirements: Nov. 1 to Jun. 30

Parameter	Effluent Limitations				Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit[8]	Instantaneous Maximum Limit[8]	Sample Location	Sample Frequency[3]	Sample Type
Flow, mgd	Report	---	Report	---	Effluent	continuous	Recording
Biochemical Oxygen Demand[1,2] (BOD_5)	30 mg/L	45 mg/L	---	---	Influent and Effluent	1/week	24-hour composite
	500 lbs/day[1]	751 lbs/day[1]	---	---			Calculation[1,2]

	85% Removal (Min.) [2]	---	---	---			
Total Suspended Solids[1,2] (TSS)	30 mg/L	45 mg/L	---	---	Influent and Effluent	1/week	24-hour composite
	500 lbs/day[1]	751 lbs/day[1]	---	---			Calculation[1,2]
	85% Removal (Min.)[2]	---	---	---			
E. Coli Bacteria[4,8]	126/100 ml[4]	---	---	406/100 ml[8]	Effluent	5/month	Grab
pH	Within the range of 6.5 and 8.5				Effluent	5/week	Grab
Hardness as mg/L as $CaCO_3$	Report	---	Report	---	Effluent	1/bi- monthly	24-hour composite
Alkalinity as mg/L $CaCO_3$	Report	---	Report	---	Effluent	1/bi- monthly	24-hour composite
Dissolved Oxygen in mg/L	Report minimum and average monthly value				Effluent	1/month	Grab
Total Phosphorus as P in mg/L	Report[10]	---	Report[10]	---	Effluent	1/month	24-hour composite
Orthophosphate as P, mg/L	Report[11]	---	Report[11]	---	Effluent	2/year[11]	24-hour composite
Total Kjeldahl Nitrogen, mg/L	Report[10]	--	Report[10]	---	Effluent	1/month	24-hour composite
Nitrate-Nitrite as N, mg/L	Report[10]	---	Report[10]	---	Effluent	1/month	24-hour composite
Temperature in degrees C	Report	---	Report	---	Effluent	1/week	Grab
NPDES Application Form 2A Effluent Testing Data[5] in mg/L	See Part I.B.10.				Effluent	3x/5 years[5]	See Footnote 5
NPDES Application Form 2A Expanded Effluent Testing[6]	See Part I.B.10.				Effluent	3x/5 years[6]	See Footnote 6
NPDES Application Form 2A Toxicity Testing Data[7] in TUc	See Part I.C.				Effluent	4x/5 years[7]	See Footnote 7
Total Residual Chlorine (Final Limits, effective after 10/1/2010)	0.233 mg/L	---	0.305 mg/L[8]	---	Effluent	5/week	Grab
	3.89 lbs/day		5.09 lbs/day[8]				Calculation
Total Residual Chlorine[9] (Interim Limits, effective before 10/1/2010)	0.5 mg/L	0.75 mg/L	---	---	Effluent	5/week	Grab
	8.34 lbs/day	12.51 lbs/day					Calculation

Total Ammonia as N, mg/L	Report[10]	---	Report[10]	---	Effluent	1/week	24-hour composite

1. Loading is calculated by multiplying the concentration in mg/L by the average daily flow for the day of sampling in mgd and a conversion factor of 8.34. If the concentration is measured in µg/L, the conversion factor is 0.00834. For more information on calculating, averaging, and reporting loads and concentrations see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
2. Percent removal is calculated using the following equation:
   (Average monthly influent – average monthly effluent) / average monthly influent X 100.
3. Since discharge is only permitted from November 1 to June 30th, "bi-monthly" is defined as: November to December; January to February; March to April; and, May to June. "Monthly" is defined as once a month from November to June. "Weekly" is defined as once a week from November 1 to June 30.
4. Average Monthly Limit for E. coli: The permittee must report the geometric mean for e-coli concentration. If any value used to calculate the geometric mean is less than 1, the permittee must round that value up to 1 for purposes of calculating the geometric mean. Based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period. See Part VI for a definition of geometric mean.
5. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part B.6, and where each test is conducted in a separate permit year during the permitted discharge period for the first three years of the permit cycle.
6. For Expanded Effluent Testing, in accordance with instructions in NPDES Application Form 2A, Part D, and where each test is conducted in a separate permit year during the permitted discharge period for the first three years of the permit cycle.
7. For Toxicity Testing Data, in accordance with instructions in NPDES Application Form 2A, Part E, and where each test is conducted in a separate permit year during the permitted discharge period for the first four years of the permit cycle.
8. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Parts I.B.2. and III.G.
9. For Total Residual Chlorine interim effluent limits, also refer to II.C.
10. The maximum ML for the parameters are as follows: Total Ammonia is 0.05 mg/L, Total Phosphorus is 0.01mg/L, Total Kjeldahl Nitrogen is 0.05 mg/L, and Nitrate-Nitrate is 0.05 mg/L.
11. For Orthophosphate, the sampling frequency is twice annually in May and June.

Table 7. Draft Permit Effluent Limits and Monitoring Requirements: Nov. 1 to Jun. 30

Parameter[1]	Effluent Limitations				Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit[14]	Instantaneous Maximum Limit[14]	Sample Location	Sample Frequency[4]	Sample Type
Flow, mgd	Report	---	Report	---	Effluent	Continuous	Recorded
Flow, mgd	Report	---	---	---	Influent	Continuous	Recorded
Biochemical Oxygen Demand[1,2] (BOD_5)	30 mg/L	45 mg/L	---	---	Influent and Effluent	1/week	24-hour composite
	500 lbs/day[2]	751 lbs/day[2]	---	---			Calculation[2,3]
	85% Removal (Min.)[3]	---	---	---			
Total Suspended Solids[1,2] (TSS)	30 mg/L	45 mg/L	---	---	Influent and Effluent	1/week	24-hour composite
	500 lbs/day[2]	751 lbs/day[2]	---	---			Calculation[2,3]
	85% Removal (Min.)[3]	---	---	---			
E. Coli Bacteria	126/100 mL[5]	---	---	235/100 mL[14]	Effluent	5/monthly	Grab
pH	Within the range of 6.5 and 8.5 s.u.				Effluent	5/week	Grab
Total Residual Chlorine	0.160 mg/L	---	0.404 mg/L[14]	---	Effluent	5/week	Grab
	2.7 lbs/day[2]	---	6.7 lbs/day[2,14]				Calculation

Whole Effluent Toxicity (WET)[8]	13.6[6] TUc	---	44.4[7] TUc	---	Effluent	1/bi- monthly	24-hour Composite
Hardness as $CaCO_3$, mg/L	Report	---	Report	---	Effluent	1/bi-monthly	24-hour composite
Alkalinity as $CaCO_3$, mg/L	Report	---	Report	---	Effluent	1/bi-monthly	24-hour composite
Dissolved Oxygen, mg/L	Report minimum and average monthly value				Effluent	1/monthly	Grab
Total Phosphorus as P, mg/L	Report	---	Report	---	Effluent	1/monthly	24-hour composite
Orthophosphate as P, mg/L	Report	---	Report	---	Effluent	2/year[9]	24-hour composite
Total Kjeldahl Nitrogen, mg/L	Report	---	Report	---	Effluent	1/monthly	24-hour composite
Nitrate-Nitrite as N, mg/L	Report	---	Report	---	Effluent	1/monthly	24-hour composite
Temperature in degrees C	Report	---	Report	---	Effluent	1/week	Grab
Temperature in degrees C (June-only)	---	Report[10]	---	---	Effluent	Continuous from June 1 - June 30[11]	Recorded
Oil and Grease, mg/L	Report maximum daily and average daily value on NPDES Application Form 2A, Table B, See Part I.B.10. of the Permit				Effluent	3x/5 years[12]	24-hour composite
Total Dissolved Solids, mg/L	Report maximum daily and average daily value on NPDES Application Form 2A, Table B, See Part I.B.10. of the Permit				Effluent	3x/5 years[12]	24-hour composite
NPDES Application Form 2A Expanded Effluent Testing[10]	See Part I.B.10. of Permit				Effluent	3x/5 years[13]	See Footnote 13
Total Ammonia as N, mg/L	Report	---	Report	---	Effluent	1/week	24-hour composite
Copper, mg/L	Report	---	Report	---	Effluent	1/bi-monthly	24-hour composite
Zinc, mg/L	Report	---	Report	---	Effluent	1/bi-monthly	24-hour composite
Nickel, mg/L	Report	---	Report	---	Effluent	1/bi-monthly	24-hour composite
Turbidity, NTU	Report	---	Report	---	Effluent	1/monthly	24-hour composite

1. Minimum Level (MLs) for pollutants are specified in Appendix A of the Permit.
2. Loading (in lbs/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
3. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation:
   (average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration x 100.
   Influent and effluent samples must be taken over approximately the same time period.
4. Since discharge is only permitted from November 1 to June 30th, "bi-monthly" is defined as: November to December; January to February; March to April; and, May to June. "Monthly" is defined as once a month from November to June. "Weekly" is defined as once a week from November 1 to June 30.
5. Average Monthly Limit for E. coli: The permittee must report the geometric mean for e-coli concentration. If any value used to calculate the geometric mean is less than 1, the permittee must round that value up to 1 for purposes of calculating the geometric mean. Based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period. See Part VI for a definition of geometric mean. If discharge does not occur for a full month and the minimum 5 samples cannot be obtained, and/or timing between sampling is less than 3 days, include a note on the DMR explaining the circumstances.
6. The Average Monthly Limit is the highest allowable value for the average of daily discharges obtained over a calendar month. For WET, this is the average of individual WET test results for that calendar month.
7. The Maximum Daily Limit is interpreted as the maximum chronic WET result for a bi-monthly test.
8. See Section I.C of the permit for complete WET testing requirements.
9. For Orthophosphate, the sampling frequency is twice annually in May and June.
10. Report the 7-day average of daily max temperatures on the DMR.
11. Recording devices must be set to record at 60-minute intervals or more frequently for temperature. Report per I.B.3. Provide all data recorded by the device in an electronic tabular format with the January DMR.
12. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Items 3.10 to 3.26 and Table B, and where each test is conducted in a separate permit year during the permitted discharge period for the first three years of the permit cycle.
13. For Expanded Effluent Testing, in accordance with instructions in NPDES Application Form 2A, Items 3.10 to 3.26 and Tables A through E, and where each test is conducted in a separate permit year during the permitted discharge period for the first three years of the permit cycle.
14. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Paragraph I.B.5 and Part III.G of the permit.

The following new/modified effluent limitations are included in the draft permit.

- Total Residual Chlorine (modified)
- *E. coli* (modified)
- Whole Effluent Toxicity (new)

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 limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit 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 both primary and secondary treatment, as well as disinfection with chlorination. 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, total residual chlorine (TRC), pH, ammonia, temperature, phosphorus, and dissolved oxygen (DO).

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

- BOD_5
- TSS
- *E. coli* bacteria
- Total Residual Chlorine
- pH
- Temperature
- Ammonia
- Phosphorus
- Copper
- Zinc
- Nickel
- Toluene
- Turbidity
- Whole Effluent Toxicity

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 8. For additional information and background refer to Part 5.1 *Technology Based Effluent Limits for POTWs* in the Permit Writers Manual.

Table 8. 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 (lbs/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[2]

Since the design flow for this facility is 2.0 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 2.0 mgd × 8.34 = 500 lbs/day

Average Weekly Limit = 45 mg/L × 2.0 mgd × 8.34 = 751 lbs/day

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The SMWWTP uses chlorine for disinfection. A 0.5 mg/L average monthly limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L total residual chlorine limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. For technology-based effluent limits, the AWL is calculated to be 1.5 times the AML, consistent with the "secondary treatment" limits for BOD_5 and TSS. This results in an AWL for chlorine of 0.75 mg/L.

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

Monthly average Limit = 0.160 mg/L x 2.0 mgd x 8.34 = 2.7 lbs/day

Daily Maximum Limit = 0.404 mg/L x 2.0 mgd x 8.34 = 6.7 lbs/day

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,

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

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 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.

The proposed mixing zones are summarized in Table 9. The EPA also calculated dilution factors for seasonal critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 2.0 mgd.

Table 9. Mixing zones

Criteria Type	Critical Low Flow (cfs)	Mixing Zone (% of Critical Low Flow)	Dilution Factor
Acute Aquatic Life	251	25	21.3
Chronic Aquatic Life (except ammonia)	340	25	28.5
Human Health Noncarcinogen and Chronic Ammonia	629	25	51.8
Human Health Carcinogen	1276	25	104.1

The reasonable potential analysis and water quality-based effluent limit calculations were based on mixing zones and dilution factors shown in Table 9. Per Section 12(1)(c) of the CDT WQS, mixing zones are established in CWA Section 401 certifications. If the CDT revises the allowable mixing zone in its final certification of this permit, the reasonable

potential analysis and water quality-based effluent limit calculations will be revised accordingly.

The equations used to conduct the reasonable potential analysis and calculate the water quality-based effluent limits are provided in Appendix D.

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.

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. The equations used to determine water quality criteria for ammonia are below. The EPA disapproved the ammonia criteria at Provision 7(12) and the entry for ammonia in Provision 7(10) of the CDT WQS (i.e., not in effect for CWA purposes). As such, the ammonia criteria at IDAPA 58.01.02.250 were used as reference in evaluating reasonable potential for ammonia, which will ensure protection of Idaho downstream uses.

Table 10. Ammonia Criteria (IDAPA 58.01.02.250)

Total ammonia nitrogen criteria (mg N/L):
Annual Basis
Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	16.0
2. Receiving Water pH:	7.60
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)	**11.37**
Chronic Criterion (CCC)	**3.61**

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

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

The SMWWTP discharge does not have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia from November through June. Therefore, the draft permit does not contain water quality-based effluent limits for ammonia. The draft permit requires that the permittee monitor the receiving water for ammonia, pH, and temperature in order to determine the applicable ammonia criteria for the next permit reissuance. See Appendix D for reasonable potential calculations for ammonia.

pH

Sections 19(1), (2), and (4) of the CDT WQS establish pH criteria for three use classifications: Domestic Water Supply; Agricultural Water Supply; and Bull Trout and Cutthroat Trout. pH must be maintained within the range of 6.5 to 8.5, with a human caused variation within this range of less than 0.5 units over any 24-hour period. 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. The 2007 permit requires that pH be maintained within the range of 6.5 to 8.5, and the draft permit proposes the same limit.

Temperature

Section 19(4)(iii) of the CDT WQS establishes seasonal (Jun.1 – Sept. 30) temperature standards to protect the Bull Trout and Cutthroat Trout use classification. There are no CDT WQS in effect for Clean Water Act purposes between Oct. 1 and May 31. Thus, the WQS at IDAPA 58.01.02.250.02.b were used as a reference to evaluate reasonable potential for the entire discharge period (Nov. 1 – Jun. 30). The CDT WQS were considered separately in the month of June, the one month between Jun.1 and Sept. 30 that the facility is permitted to discharge.

IDAPA 58.01.02.250.02.b allows for: *"Water temperatures of twenty-two (22) degrees C or less with a maximum daily average of no greater than nineteen (19) degrees C"*. Using a critical receiving water temperature value of 16 °C (based on 95th percentile for combined Nov. - Jun. data) and a critical effluent temperature value of 22.9 °C (based on the 95th percentile of daily max DMR values), reasonable potential was not found, even under the assumption that ID standards applied at the point of discharge. The discharge would result in a temperature at the boundary of the chronic mixing zone of 16.2 °C, 2.8 °C below the standard. See Appendix D for reasonable potential results.

Section 19(4)(iii) of the CDT WQS establishes: *"From June 1, through September 30, the 7-day average of the daily maximum temperatures within the hypolimnion is not to exceed 16 °C. In thermally stratified TAS waters the hypolimnetic temperature shall be determined by natural conditions as defined in Section 19(4),(a),(ii),(A) and pursuant to Section 4 of these standards. In TAS waters greater than 15 meters this standard applies to the bottom 80 percent of the lake water column present below the metalimnion. In TAS waters less than 15 meters and greater than 8 meters this standard applies to only the bottom 50 percent of the water column present below the metalimnion. TAS waters exhibiting total water column depths less than 8 meters are not expected to maintain a stable stratified condition and are therefore exempt from this standard."*

CDT bathymetry data indicates that depths in the segment of the St. Joe River receiving the discharge exceed 8 meters (See Figure B in Appendix A), and deep rivers may be subject to thermal stratification processes. However, a reasonable potential analysis was not conducted due to a sparsity of June-only surface water data in the immediate vicinity of the discharge. The 2007 permit requires the facility to monitor temperature in the receiving water upstream of the discharge three times each year between Nov.1 and Jun. 30 in December, February, and May. As such, no facility-provided or otherwise available June-specific data is available in the immediate vicinity of the discharge. In lieu of using downstream CDT data or far-upstream Calder Station data as surrogates to conduct a reasonable potential analysis in June, the proposed permit requires continuous surface water monitoring upstream of the discharge, as well as continuous effluent temperature monitoring in the month of June. Data collected will be used in future permitting actions to evaluate whether the discharge has the potential to violate the 7-day average of the daily maximum temperature standard in the month of June. Of note, while the facility is permitted to discharge in June, according to DMR data, it has not discharged during June from 2015 to 2018. According to the facility, effluent has instead been land applied in accordance with their Idaho water reuse permit.

Dissolved Oxygen (DO) and BOD_5

Section 19(4)(ii) of the CDT WQS require that DO concentrations shall exceed 8 mg/L at all times in order to meet Aquatic Life uses. Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. 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 technology-based limits for BOD_5 will ensure that the discharge does not cause or contribute to a violation of dissolved oxygen criteria in TAS or downstream ID waters.

Phosphorus and Nitrogen (P and N)

Section 5(4) of the CDT WQS require that "*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*."

A July 2019 site visit did not reveal the presence of visible slime growths, nuisance aquatic growths, or objectionable algal densities in the St. Joe River. Reasonable potential was not found when evaluating Total P and N against the narrative criteria. The facility monitors Total P and orthophosphate in the effluent and total P in the receiving water. In-stream Total P and orthophosphate data were also available from the CDT downstream sampling site. The 95 percentile Total P level measured in the receiving water by the facility was 0.049 mg/L. Downstream CDT data show a similar 95^{th} percentile value of 0.045 mg/L. Such levels are generally below levels consistent with excessive algal/plant growth. As a monthly average, the facility's effluent contains 1.3 mg/L of Total P, with a 95^{th} percentile value of 2.1 mg/L. Monthly average facility effluent orthophosphate levels were 0.6 mg/L, with a 95^{th} percentile value of 1.9 mg/L. Phosphorus is generally the limiting nutrient (i.e., the nutrient that controls primary productivity) in freshwaters, and particularly in lakes and reservoirs. No effluent limits are proposed for nitrogen, including ammonia.

The draft permit requires the facility to continue monitoring for total phosphorus, orthophosphate, total Kjeldahl nitrogen, nitrate-nitrite, and ammonia (as nitrogen) given the Lake Management Plan's stated goal of limiting basin-wide nutrient inputs that impair lake water quality conditions. It is proposed that these monitoring requirements be retained in order to assess if limits may be required in future permitting actions.

E. coli

Section 19(3)(a)of the CDT WQS establishes E. coli standards for Recreational and Cultural water uses including contact recreation. Such waters shall not contain concentrations of *E. coli* bacteria exceeding a 30-day geometric mean of 126 per colonies/100 ml, based on a minimum of 5 samples. The CDT WQS further establish a single maximum sample limit of 235 colonies/100 ml. A mixing zone is not appropriate for bacteria for waters designated for contact recreation. Therefore, the draft permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml and a single maximum sample limit for *E. coli* of 235 organisms per 100 ml at the "end of pipe". The 2007 permit's single maximum

sample limit was set at 406 organisms per 100 ml, less stringent than the proposed limit based on CDT WQS. Facility DMR data from 2007 to 2019 shows an average instantaneous max value for E. coli of 45.9 organisms per 100 ml with a 95th percentile value of 136.8 organisms per 100 ml, indicating that the facility should be able to meet the lower proposed single maximum limit.

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.

Chlorine

The 2007 permit contained a compliance schedule for chlorine that included interim TRC limits and required the facility to meet the final TRC limits by October 1, 2010. Only DMR data generated after this date were used to evaluate reasonable potential for this proposed permit. Section 10 of the CDT WQS establishes an acute chlorine criterion of 19 µg /L, and a chronic criterion of 11 µg/L for the protection of aquatic life. An analysis shows that the discharge from the facility has the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. Therefore, the draft permit contains water quality-based chlorine effluent limits instead of technology-based limits. IDAPA 58.01.02.210 establishes the same chlorine criteria, thus, the limits will ensure that downstream uses are protected. See Appendix D for reasonable potential and effluent limit calculations for chlorine.

Effluent limit calculations resulted in a more stringent average monthly limit (AML) and less stringent maximum daily limit (MDL) than those in the 2007 permit (see Table 11). The limits changed based on the more recent data. A higher coefficient of variation (CV) was calculated for this analysis compared to the previous analysis (0.60 for the proposed permit vs. 0.19 in the 2007 permit). Further, effluent limit calculations reflect additional available dilution based on updated critical low flow statistics (dilution factors of 21.3 for acute and 28.5 for chronic compared to 18.0 and 23.0 in the 2007 permit). Effluent limit calculations are based on an expected 20 compliance samples each month (5 monitoring events per week). The AML and MDL must be developed so that they are consistent with each other and mandate the required level of wastewater treatment facility performance. Statistically, they are derived from the same limiting long term average (LTA) for the calculated chronic and acute wasteload allocations (WLAs), with MDLs and AMLs set at the 99th and 95th percentile values for the lognormal distribution, respectively. While the MDL is less stringent, because of the lower AML, the permit limits ensure that the revised MDL/AML will not degrade the water quality.

Section 402(o) of the Clean Water Act and antibacksliding regulations at 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. Because the discharge is into attainment waters (i.e., the receiving water is meeting the CDT WQS for chlorine) and an antidegradation analysis undertaken in accordance with the CDT WQS showed that the lower MDL would not result in degradation of the receiving water, backsliding is permissible under Section 303(d)(4)(B) of the Clean Water Act. See Section IX.D. and Appendix E for the complete antidegradation analysis.

Table 11: Total Residual Chlorine Limit Selection

Total Residual Chlorine Limitations from November 1 to June 30			
	Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**
Interim limits (effective before 10/1/2010)	0.50 mg/L	0.75 mg/L	---
	8.34 lbs/day	12.51 lbs/day	---
Final limits (effective 10/1/2010)	0.233 mg/L	---	0.305 mg/L
	3.89 lbs/day	---	5.09 lbs/day
Calculated water quality based effluent limits for draft permit	0.160 mg/L	---	0.404 mg/L
	2.70 lbs/day	---	6.70 lbs/day

Total Suspended Solids

Section 19(1)(b) of the CDT WQS establishes *"The concentration of total suspended solids is not to exceed an arithmetic mean of 75 mg/L during periods when the surface water is used as an agricultural water supply, based on a minimum of three samples."* The technology-based limits in the 2007 permit (30 mg/L as an average monthly limit and 45 mg/L as an average weekly limit) will ensure that CDT numeric and narrative criteria are met while also protecting downstream ID designated uses, and is retained in the proposed permit.

Toluene

The EPA did not take action on the human health criteria found in Section 7 of the CDT WQS (i.e., not in effect for CWA purposes). Therefore, toluene human health criteria in IDAPA 58.01.02.210 were used as a reference to evaluate reasonable potential. IDAPA 58.01.02.210 establishes human health criteria for toluene: 47 µg/L (0.047 mg/L) for water and organisms, and 170 µg/L (0.17 mg/L) for organisms only. Facility expanded effluent testing revealed detection of toluene. Of two lab analyses undertaken in 2009 and 2010 as part of expanded effluent testing, one analysis resulted in a detect at 1.1 µg/L. A reasonable potential analysis was conducted assuming that no toluene is present in the receiving water and no mixing zone is authorized. The discharge does not have a reasonable potential to exceed the referenced human health criteria, and no limits or monitoring requirements are proposed. See Appendix D for reasonable potential calculations for toluene.

Zinc

Section 7(10) of the CDT WQS sets both the acute and chronic aquatic life criteria for zinc at 120 µg/L (0.12 mg/L) assuming a receiving water hardness of 100 mg/L. Using the 5th

percentile hardness value from facility surface monitoring (13.7 mg/L), the hardness-dependent calculated acute and chronic aquatic life criteria are 21.7 and 21.9 µg/L, respectively. The EPA did not act on the human health criteria in Section 7 of the CDT WQS (i.e., not in effect for CWA purposes). As a reference, IDAPA 58.01.02.210 establishes human health criteria of 870 and 1,500 µg/L for water and organisms and organisms only, respectively. Facility expanded effluent testing revealed detection of zinc. Of two lab analyses undertaken in 2009 and 2010 as part of expanded effluent testing, two analyses resulted in detections at 10 and 20 µg/L. A reasonable potential analysis was conducted assuming a 25% mixing zone is authorized. Because no zinc data for the receiving water was available at the point of discharge, the instream concentration of zinc was estimated using the 90th percentile value of recoverable zinc measured between 2009 and 2019 downstream at the Ramsdell NWIS station (USGS 12415135) on the St. Joe River before Chatcolet Lake, assuming that estimated results are actual results, and that any reported less than values are half of the less than result (e.g., estimated 2 µg/L = 2 µg/L, and <2 µg/L = 1 µg/L). This resulted in an estimated receiving water concentration of 8.39 µg/L. The discharge does not have a reasonable potential to exceed either the CDT WQS or the referenced ID WQS, and no limit was included in the permit. However, the permit requires bi-monthly effluent monitoring and surface water monitoring for zinc three times a year. Data collected will allow the EPA to determine if a limit is needed in future permitting actions. See Appendix D for reasonable potential calculations for zinc.

Nickel

Section 7(10) of the CDT WQS sets acute and chronic aquatic life criteria for nickel at 470 µg/L (0.47 mg/L) and 52 µg/L (0.052 mg/L), respectively, assuming a receiving water hardness of 100 mg/L. Using the 5th percentile hardness value from facility surface monitoring (13.7 mg/L), the hardness-dependent calculated acute and chronic aquatic life criteria are 87.122 and 9.677 µg/L, respectively. The EPA did not act on the human health criteria in Section 7 of the CDT WQS (i.e., not in effect for CWA purposes). Therefore, human health criteria at IDAPA 58.01.02.210 were referenced. IDAPA 58.01.02.210 establishes water and organism and water only criteria of 58 and 100 µg/L, respectively. Facility expanded effluent testing revealed detection of nickel. Of two lab analyses undertaken in 2009 and 2010 as part of expanded effluent testing, one analysis resulted in a detect at 20 µg/L. A reasonable potential analysis was conducted assuming that a 25% mixing zone is authorized. Because only two fish tissue data points for nickel were available in the receiving water at the Calder station far upstream, the receiving water concentration was assumed to be zero (Ramsdell station data for nickel was not available). The discharge does not have a reasonable potential to exceed the CDT WQS for aquatic life or the referenced ID WQS for human health, and no limit was included in the permit. However, the permit requires bi-monthly effluent monitoring and surface water monitoring for nickel three times a year. Data collected will allow the EPA to determine if a limit is needed in future permitting actions. See Appendix D for reasonable potential calculations for nickel.

Copper

The EPA disapproved the acute and chronic copper aquatic life criteria in Section 7 the CDT WQS, and did not act on human health criteria. Therefore, there are no tribal WQS for copper that apply to the discharge.

On May 2, 2019, pursuant to Section 303(c)(3) of the CWA and 40 CFR Part 131, the EPA approved submitted changes at IDAPA 58.01.02.210, including revisions to Idaho's copper aquatic life criterion as provided in the table of numeric criteria for toxic substances at IDAPA 58.01.02.210.01, including part of footnote r to the table and new language at IDAPA 58.01.02.210.03.c.v, specifying the use of the copper Biotic Ligand Model (BLM) to derive aquatic life criteria for copper. To ensure that ID downstream waters are protected, the EPA is establishing monitoring provisions consistent with the BLM criteria to ensure that data is collected such that EPA can evaluate whether effluent limits will be required in the next permit issuance.

Facility expanded effluent testing revealed detection of copper. Of two lab analyses undertaken in 2009 and 2010 as part of expanded effluent testing, one analysis resulted in a detect at 10 µg/L. Due to the sparsity of data available, a reasonable potential analysis was not conducted. However, the draft permit requires bi-monthly effluent monitoring for copper, as well as monthly downstream surface water monitoring of four primary inputs (parameters) into the copper BLM: pH; hardness; copper (dissolved); and dissolved organic carbon (DOC).

Turbidity

The EPA partially disapproved the numeric turbidity criteria in Provisions 19(1)(a) and 19(4)(a)(iv) of the CDT WQS (i.e., not in effect for CWA purposes). However, Section 5(5) of the CDT WQS establishes a narrative criterion for turbidity: "*Turbidity shall not be at a level to impair designated uses or aquatic biota.*" No reasonable potential analysis was conducted, as no effluent or receiving water turbidity data were available. However, the draft permit includes effluent and receiving water monitoring requirements for turbidity so that reasonable potential may be assessed in future permitting actions.

Whole Effluent Toxicity

Per Section 7 of the CDT WQS, "*Toxic substances shall not be introduced into Reservation TAS Waters in concentrations which have the potential either singularly or cumulatively to adversely affect existing and designated water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the Department, except as allowed for under Mixing Zones.*"

In the absence of numeric criteria for toxicity, the EPA has interpreted the above narrative criteria using the 1991 *Technical Support Document for Water Quality-based Toxics Control (TSD). The TSD* recommends that to protect against short-term effects the acute criterion should be set at 0.3 acute toxic units (TUa), and to protect against long-term effects the chronic criterion should be set at 1.0 chronic TUc (EPA 1991). As required by the 2007 permit, the SMWWTP conducted four chronic whole effluent toxicity (WET) tests, and also completed an additional Ceriodaphnia dubia re-test in 2010 at the direction of the EPA. Chronic toxicity was found in three Ceriodaphnia dubia reproduction WET tests conducted in 2010 and 2011. Complete WET test data can be found in Appendix B. Chronic toxic units are represented by TUc and acute toxic units are represented by TUa. The TSD recommends using an acute to chronic ratio of 10 in the absence of data to develop an ACR. Acute TUs were calculated using an acute to chronic ratio (ACR) of 10. WET test results from 2009-2012 were analyzed against EPA's recommended WET criteria to determine if the discharge has the reasonable potential to exceed WQS. Applying a 25% mixing zone for WET and the

associated chronic dilution factor of 28.5, reasonable potential was found for the discharge to exceed both chronic and acute EPA recommended criteria. A water quality based effluent limitation for WET is proposed in the permit, as well as WET monitoring requirements and conditions related to accelerated WET testing in the event that monitoring reveals toxicity above permit limits. See Appendices C and D for reasonable potential and effluent limit calculations for WET.

The EPA's *Regions 8,9, and 10 Toxicity Training Tool* (EPA 2010) generally recommends a minimum of monthly WET testing for major facilities. Table 3-1 in the Tool also provides likelihoods of detecting at least one toxic event based on the number of tests, using assumed probabilities of occurrence. If the facility conducts bi-monthly testing (4 WET tests each year), the total number of tests over the five-year permit term is 20. At an assumed 20% probability of occurrence, the probability of detecting at least one toxic event is very high (0.99). Therefore, the draft permit proposes bi-monthly WET testing requirements, with reduced monitoring frequency if no toxicity is detected in the first two years of the permit.

Given the WET monitoring requirements in place to assess WET limit compliance, the facility does not need to conduct separate WET testing for the purposes of completing NPDES Application Form 2A, Table E when reapplying for permit coverage, and may instead provide WET test results from routine WET compliance monitoring.

Narrative Criteria

Section 5 of the CDT WQS includes the following narrative criteria, which have been incorporated as limitations in the proposed permit.

Floating Solids, Oil and Grease. All waters shall be free from visible oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature resulting from anthropogenic causes.

Color. True color-producing materials resulting from anthropogenic causes shall not create an aesthetically undesirable condition; nor should color inhibit photosynthesis or otherwise impair the existing and designated uses of the water.

E. Antibacksliding

Section 402(o) of the Clean Water Act and federal regulations at 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. For explanation of the antibacksliding exceptions refer to Chapter 7 of the Permit Writers Manual *Final Effluent Limitations and Anti-backsliding*.

All permit limits in the draft permit are at least as stringent as those in the current permit, with the exception of the proposed maximum daily limit for total residual chlorine. However, the EPA has determined that the inclusion of the higher limit is allowable consistent with Section 303(d)(4)(B) of the Clean Water Act. See Section V.D. of this Fact Sheet for an antibacksliding analysis with respect to TRC.

VI. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 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 the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permit also requires the permittee to perform effluent monitoring required by parts B.6 and D 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 136) or as specified in the permit. The sampling location must be after the last treatment unit and prior to discharge to the receiving water.

Effluent and Influent Monitoring Changes from the Previous Permit

The following new effluent and influent monitoring requirements are included in the draft permit. All other monitoring requirements are unchanged.

- Influent flow monitoring consistent with Facility Planning Requirement
- Copper monitoring bi-monthly due to detection in expanded effluent testing
- Zinc monitoring bi-monthly due to detection in expanded effluent testing
- Nickel monitoring bi-monthly due to detection in expanded effluent testing
- Turbidity monitoring monthly to evaluate RP against CDT WQS narrative criterion
- WET monitoring bi-monthly to evaluate compliance with new WET limit
- Continuous temperature monitoring in June only due to TMDL and species concerns
- Oil and Grease monitoring 3x/5 years for reapplication in accordance with Application Form 2A, Table B
- Total Dissolved Solids monitoring 3x/5 years for reapplication in accordance with Application Form 2A, Table B

Of note, the 2007 permit required monitoring for parameters to be included in a permit reapplication in accordance with NPDES Application Form 2A, Table B. Because the facility is otherwise required to monitor for all Table B parameters except oil and grease and total dissolved solids, the general monitoring requirement from the 2007 permit was removed and oil and grease and total dissolved solids were added as separate parameters that must be monitored for, though with the same monitoring frequency. See I.B.10 of the permit.

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.

Table 12. Surface Water Monitoring in Draft Permit

Parameter	Units	Frequency[2]	Sample Locations	Minimum Level[3] (ML)
pH	s.u.	3/year[2]	Upstream	---
Temperature	°C	3/year[2]	Upstream	+/- 0.2 °C
Temperature (June-only)	°C	Continuous from June 1 to June 30[4]	Upstream	+/- 0.2 °C
Total Ammonia as N	mg/L	3/year[2]	Upstream	0.05 mg/L
Hardness as $CaCO_3$	mg/L	3/year[2]	Upstream	0.2 mg/L as $CaCO_3$
Alkalinity as $CaCO_3$	mg/L	3/year[2]	Upstream	5 mg/L as $CaCO_3$
Dissolved Oxygen	mg/L	3/year[2]	Upstream & Downstream	+/- 0.2 mg/L
Total Phosphorus as P	mg/L	3/year[2]	Upstream & Downstream	0.01 mg/L
Nickel (dissolved)[5]	mg/L	3/year[2]	Upstream	0.0005 mg/L
Zinc (dissolved)[5]	mg/L	3/year[2]	Upstream	0.0025 mg/L
Turbidity	NTU	3/year[2]	Upstream	---
Copper BLM Parameters				
pH	s.u.	Monthly	Downstream	---
Hardness as $CaCO_3$	mg/L	Monthly	Downstream	0.2 mg/L as $CaCO_3$
Copper (dissolved)[5]	mg/L	Monthly	Downstream	0.002 mg/L
Dissolved Organic Carbon (DOC)	mg/L	Monthly	Downstream	1 mg/L

Footnotes:
1. The sampling type is by grab sampling for all parameters listed in table, except for continuous June temperature monitoring.
2. 3/year sampling frequency is defined as December, February, and May of each year.
3. The Minimum Level must be no greater than listed.
4. Continuous means measurements recorded at least once every 60 minutes except for brief lengths of time for calibration, power failure, or unanticipated equipment repair or maintenance. Provide all data recorded by the device in an electronic tabular or text format with the Surface Water Monitoring Report with the January DMR.
5. Per CDT and ID WQS, aquatic life criteria for metals are expressed in terms of dissolved metals in the water. Under 40 CFR 136, Table II, footnote 7, grab samples for dissolved metals must be filtered within 15 minutes of collection and before adding preservatives.

Surface Water Monitoring Changes from the Previous Permit

The following new surface monitoring requirements are included in the draft permit. All other monitoring requirements are unchanged.

- Monthly downstream monitoring for four copper BLM inputs: pH; hardness; copper; and dissolved organic carbon
- Continuous upstream temperature monitoring in June
- Nickel monitoring 3/year
- Zinc monitoring 3/year
- Turbidity monitoring 3/year

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.4 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.

VII. 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.

VIII. Other Permit Conditions

A. Compliance Schedules

Compliance schedules are authorized by federal NPDES regulations at 40 CFR 122.47 and Idaho WQS at IDAPA 58.01.02.400.03. Compliance schedules allow a discharger to phase in, over time, compliance with water quality-based effluent limitations when limitations are in the permit for the first time. No compliance schedules are included in the draft permit.

B. Quality Assurance Plan

The City of St. Maries Wastewater Treatment Plant is required to update the Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan 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. Operation and Maintenance Plan

The permit requires the City of St. Maries Wastewater Treatment Plant 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.

D. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

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 (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by 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.

E. 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.

Within a 2-mile buffer of the WWTP, approximately 2591 people reside, with 5% among minority population. Almost all environmental justice environmental indicators are below threshold, except the Waste Water Discharge indicator which is at the 85th percentile. Demographic factors indicate that Hispanic members make up 3% of the population where 1% of the population are linguistically isolated and do not speak English in the home. Within the two-mile radius of the outfall reside four K-12 schools, along with minority populations which are concentrated geographically in the southwestern section of the 2-mile buffer. Vulnerable populations also include those who are over age 65 which are in the 84th percentile in general. Low income community members earning less than $50,000 make up 62% of the population. Among the total population 7% are unemployed. In order to ensure that individuals near the facility are able to participate meaningfully in the permit process, the EPA is conducting the following enhanced outreach activity: During the public comment period, a copy of the draft permit and Fact Sheet will be made available for review at the St. Maries Public Library.

Regardless of whether a WWTP 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*.

F. 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 exceeds 85% of the design criteria value for any two months in a twelve-month period. An influent flow monitoring requirement has been included in the permit.

G. Pretreatment Requirements

Since the SMWWTP does not have an approved POTW pretreatment program per 40 CFR 403.8, and the discharge occurs within the boundary of the Coeur d'Alene tribal reservation, the EPA is both the Approval and Control Authority of industrial users that might introduce pollutants into the SMWWTP.

Special Condition C 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).

H. 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.

IX. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. The USFWS Information for Planning and Consultation (IPaC) system (https://ecos.fws.gov/ipac/location/index) identified the presence of the "Threatened" Bull

Trout (Salvelinus confluentus) and critical habitat for the Bull Trout in the receiving water (Critical Habitat Unit #29). IPaC also revealed the presence of the proposed threatened North American Wolverine in the action area. The NOAA Fisheries Protected Resource App (https://www.webapps.nwfsc.noaa.gov/portal/apps/webappviewer/index.html?id=7514c715b8594944a6e468dd25aaacc9) did not reveal the presence of ESA-listed salmon or steelhead in the action area, or the presence of critical habitat for salmon or steelhead. According to the app, no other NOAA ESA-species occur in the action area.

The EPA has prepared a Biological Evaluation for the action, and will be seeking concurrence from USFWS on the EPA's determination that the action will have no effect on the wolverine, and is not likely to adversely affect bull trout or bull trout critical habitat.

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). A review of the action area in NOAA's Essential Fish Habitat Mapper (https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper) showed no EFH in the action area.

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. Because there is no EFH in the action area, the EPA has determined that reissuance of the NPDES permit will not adversely affect EFH.

C. State Certification

Section 401 of the CWA requires the EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation. Since this facility discharges to Coeur d'Alene tribal waters and the Tribe has been approved for TAS from the EPA for purposes of the Clean Water Act, the Coeur d'Alene Tribe is the certifying authority.

The EPA had preliminary discussions with the Coeur d'Alene Tribe regarding the 401 certification during development of the draft permit. The EPA is sending a request for final 401 certification to the Tribe. Based upon the preliminary discussions with the Tribe, the EPA does not anticipate changes to the permit resulting from the final 401 certification.

D. Antidegradation

The EPA has conducted a preliminary antidegradation analysis for the draft permit to characterize the potential impact of the point source discharge into Reservation TAS waters in consideration of the Tribe's Antidegradation Policy. The Tribe may reference EPA's preliminary analysis in their final Antidegradation Review to be provided with the final CWA Section 401 certification of the permit. See Appendix E.

E. Permit Expiration

The permit will expire five years from the effective date.

X. References

CDT. 2004. *Bathymetry for the Coeur d'Alene River Basin, Idaho*. Retrieved from Inside Idaho, Interactive Numeric & Spatial Information Data Engine in July 2019. http://cloud.insideidaho.org/webApps/metadataViewer/default.aspx?path=%5c%5cintranet.rocket.net%5cinsideprod%5cdata%5canonymous%5ccdatribe%5cbathymetry_cdabasin_cdatribe.shp.xml

CDT and IDEQ. 2009. *Coeur d'Alene Lake Management Plan*. https://www.deq.idaho.gov/regional-offices-issues/coeur-dalene/coeur-dalene-lake-management/

CDT. 2010 and 2014. *Technical Support Document for Action on the Water Quality Standards for Approved Surface Waters of the Coeur d'Alene Tribe*. https://www.epa.gov/sites/production/files/2017-02/documents/wqs-coeurdalene.pdf

CDT and EPA. 2017. *Water Quality Standards for Approved Surface Waters of the Coeur D'Alene Tribe*. https://www.epa.gov/sites/production/files/2017-02/documents/wqs-coeurdalene.pdf

CDT. 2019. *St. Joe River Profile Data and St. Joe River Chemistries*. Provided to the EPA June 18, 2019.

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

https://www3.epa.gov/npdes/pubs/owm0264.pdf

Water Pollution Control Federation. Subcommittee on Chlorination of Wastewater. *Chlorination of Wastewater*. Water Pollution Control Federation. Washington, D.C. 1976.

EPA. 2010. *NPDES Permit Writers' Manual.* Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001. September 2010. https://www3.epa.gov/npdes/pubs/pwm_2010.pdf

EPA. 2007. *EPA Model Pretreatment Ordinance*, Office of Wastewater Management/Permits Division, January 2007.

EPA. 2010. EPA Regions 8, 9, and 10 Toxicity Training Tool. Available at https://www.epa.gov/sites/production/files/documents/ToxTrainingTool10Jan2010.pdf

EPA. 2011. *Introduction to the National Pretreatment Program*, Office of Wastewater Management, EPA 833-B-11-011, June 2011.

EPA. 2013. *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013*. https://www.epa.gov/sites/production/files/2015-08/documents/aquatic-life-ambient-water-quality-criteria-for-ammonia-freshwater-2013.pdf

EPA. 2014. *Water Quality Standards Handbook Chapter 5: General Policies*. Environmental Protection Agency. Office of Water. EPA 820-B-14-004. September 2014. https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf

IDEQ. 2003. *St. Maries River Subbasin Assessment and Total Maximum Daily Loads*. http://www.deq.idaho.gov/st-joe-river-subbasin

IDEQ. 2011. *Addendum to the St. Joe River Subbasin Assessment and Total Maximum Daily Loads and St. Maries River Subbasin Assessment and Total Maximum Daily Loads*. http://www.deq.idaho.gov/st-joe-river-subbasin

IDEQ. 2014. *Idaho's 2016 Integrated Report*. https://www.deq.idaho.gov/media/60182296/idaho-integrated-report-2016.pdf

IDEQ. 2017. *Implementation Guidance for the Idaho Copper Criteria for Aquatic Life*. Available at http://www.deq.idaho.gov/media/60180619/58-0102-1502-implementation-guidance-copper-criteria-0817.pdf

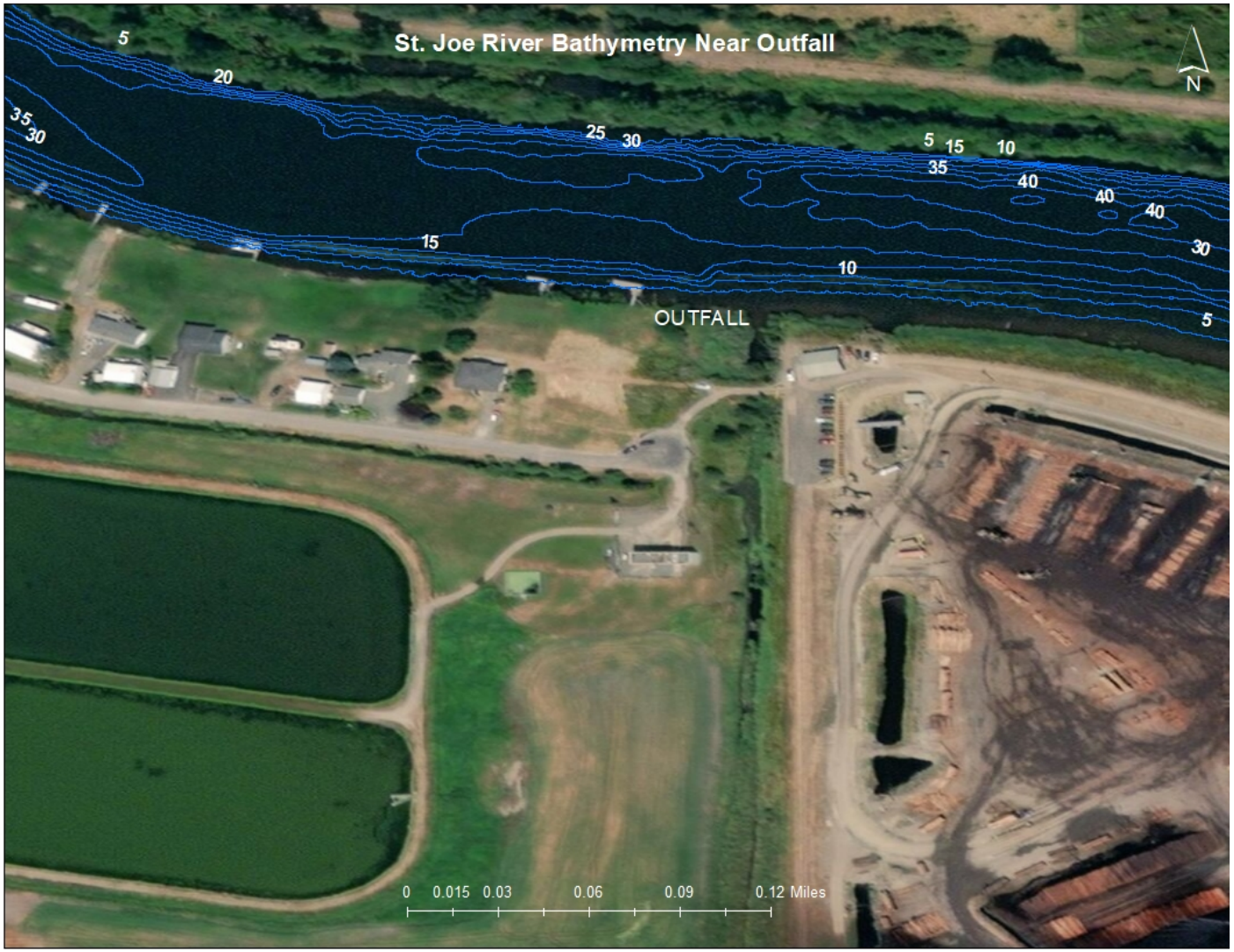
IDEQ and EPA. 2019. *IDAPA 58.01.02: Idaho Water Quality Standards.* https://www.epa.gov/sites/production/files/2014-12/documents/idwqs.pdf

USGS. 2019. *National Water Information System: Mapper*. St Joe River at Calder, ID (12414500), St Maries River NR Santa, ID (12414900), and St. Joe River Ramsdell (12415135) Stations. Accessed June 2019.

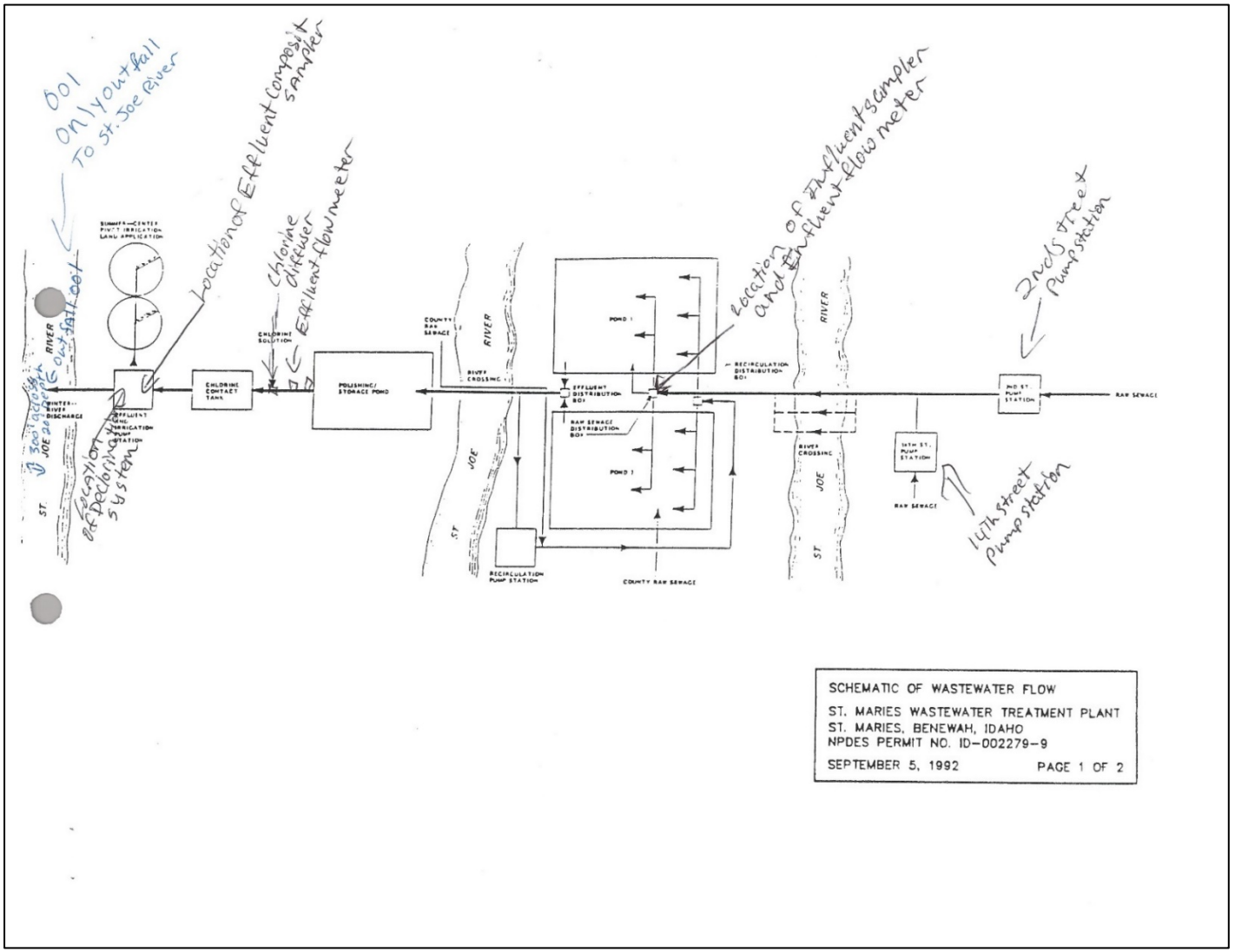
Appendix A. Facility Information

A. Facility and Receiving Water Map

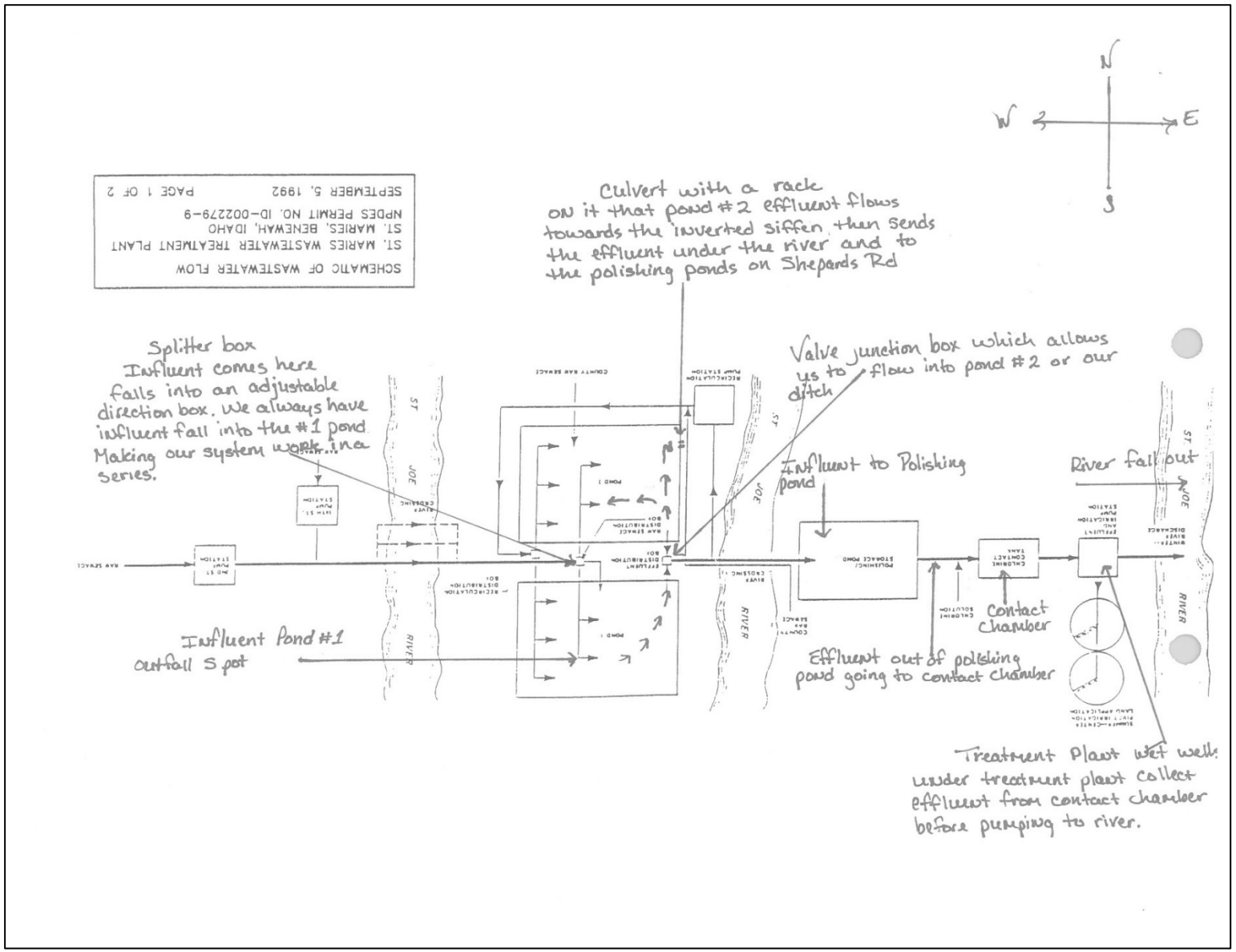
B. St. Joe River Bathymetry



C. Facility Map and Process Flow Schematic (1)



D. Facility Map and Process Flow Schematic (2)



Appendix B. Water Quality Data

A. Treatment Plant Effluent Data (2012-2019)

	Influent	Influent	Influent	Influent	% Removal	% Removal	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
	TSS	**TSS**	**BOD5**	**BOD5**	**BOD5**	**TSS**	**Flow**	**Flow**	**BOD5**	**BOD5**	**BOD5**	**BOD5**	**TSS**	**TSS**	**TSS**	**TSS**
	Mg/L	lbs/day	Mg/L	lbs/day	Percent	Percent	MGD	MGD	Mg/L	Mg/L	lbs.day	lbs.day	Mg/L	Mg/L	lbs.day	lbs.day
	MO AVG	***MO AVG***	***MO AVG***	***MO AVG***	***MINIMUM***	***MINIMUM***	***DAILY MX***	***MO AVG***	***MO AVG***	***WKLY AVG***	***MO AVG***	***WKLY AVG***	***MO AVG***	***WKLY AVG***	***MO AVG***	***WKLY AVG***
1/1/2014	61	894.28	109	1394.89	89	81	1.879	1.879	15.8	14.5	377.77	240.7	16	13	326.23	248.46
2/1/2014	112	2401.7	112.2	1908.65	88	89	3.758	2.34	13.05	16.3	262.09	460.72	11.25	13	223.3	376.1
3/1/2014	46	707.15	74.6	978.17	85	81	3.758	2.89	11.15	12.8	219.39	357.29	8.63	34.5	158.66	227.22
4/1/2014	73.5	816.55	86.52	961.56	81	68	1.83	1.38	16.45	22.4	257.78	351.02	23.25	36	364.34	376.1
5/1/2014	92.25	1063.99	98	1129.25	88	92	1.032	0.9765	11	16.6	172.37	260.13	6.5	9	101.86	141.03
6/1/2014	268.67	2664.2	211	2254.29	96	97	1.753	1.17	7.37	15.5	115.44	242.89	5.67	7	88.8	109.69
11/1/2014	224	190	271	230	98	98	1.83	0.0486	5.6	7.3	2.3	1.37	5	5	2	8
12/1/2014	281.75	3617.87	285.84	3251.16	97	99	1.81	1.3	8.93	9.4	106.49	134.42	7.75	9	92.29	135.93
1/1/2015	141	1293	134	1195	91	96	2.5	1.825	8.2	11.9	125	232	5.5	6	83	117
2/1/2015	244	1626	236	1936	98	98	2.31	0.799	4.9	8.6	33	13	5.75	8	38	12
3/1/2015	894	11038.67	670	5495.6	98	98	2.012	1.763	10.85	19.7	163.53	282.59	9.25	14	140.02	222.36
4/1/2015	468	3352	353	2532	97	99	1.88	1.7	11	18.2	155	282	5	6	71	75
11/1/2015	130.75	2633.44	221.5	4157.82	94	97	3.758	2.415	11.7	17.5	235	352	5	5	100.7	100.7
12/1/2015	225	3002	173	2309	95	98	2.9	1.8	7.5	11.3	113	102	5	5	75	45
1/1/2016	558	11172	238.5	4773.8	96	99	3.1	2	8.57	13.3	149	200	5	5	87	108
2/1/2016	476.5	5166.2	209.8	2274.8	91	98	3.2	1.7	12.07	13.2	182.9	143.1	7.75	9	109.9	180.1
3/1/2016	574	11489.18	215.36	4310	96	98	3.536	1.935	10.7	12.4	169.5	258.54	7.35	12.4	116.46	258.54
4/1/2016	457.17	51.85	257	2927	88	92	3.2	2.1	19	25.6	331	683	23.3	31	406	318
10/1/2016	4293	35982	282	2363.6	92	99	2.584	1.794	22	22	184.4	311.9	5	5	41.9	70.89
11/1/2016	524.5	5686.62	187.33	2177.89	90	98	2.913	2.193	12.4	18.3	207.7	418.18	5	5	87.57	120.93
12/1/2016	142	767	121	655	95	96	0.722	0.648	5	6	27	36	5	5	27	30
1/1/2017	662.13	5025.16	249.2	1891.27	92	98	2.08	1.51	11.2	12.9	141.04	137.71	5	5	62.96	114.25
2/1/2017	607	17718	268.17	6076.5	96	99	3.2	1.6	13.8	17.3	230.2	461.7	5.3	6	87.7	141.4
3/1/2017	118.25	5000.05	71.05	3007.81	91	96	3.8	2.7	11.25	16.5	253.1	399.06	8.75	14	197.03	361.95
4/1/2017	442.75	4061.78	138.18	1267.66	76	93	3.9	2.3	15.6	20.7	299.23	310.74	14	27	268.54	698.05
5/1/2017	152	1369.09	145.25	1308.29	85	94	3.02	1.8	12.82	20.7	192.45	521.36	5	5	75.06	125.93
11/1/2017	469.67	2616.6	122.1	680.23	67	96	3.2	2.3	11.53	14.3	221.16	310.08	5	5	95.91	133.44
12/1/2017	126	746	126	746	80	85	2.8	2.6	6.8	6.8	147.45	158.7	5	5	108.42	116.76
1/1/2018	88.5	1033.3	57.53	671.72	85	93	3.2	2.5	8.32	10.2	173.05	272.2	6	8	125.1	213.5
2/1/2018	120	1401.1	70.65	824.9	82	94	2.2	1.6	13.05	14.3	174.13	94.93	5	10	66.72	66.38
3/1/2018	282.5	2827.26	139.2	1393.1	88	94	3.34	2.04	17	17.3	289.2	438.6	17.5	18	291.9	450.36
4/1/2018	162.5	1599.2	101.8	1001.8	83	89	3.2	2.17	16.4	26.2	296.8	383.3	16.75	30	303.1	450.36
5/1/2018	143	995.8	89.65	624.3	91	96	1.99	1.3	7.9	9	85.65	142.6	5	5	54.21	79.23
11/1/2018	156	3252.6	145.5	3033.7	94	97	2.6	2.5	7.3	7.4	152.2	160.5	5	5	104.3	108.4
12/1/2018	22	348.6	53.35	401.3	79	77	2.9	1.9	5.2	5.7	82.39	137.9	5	5	79.2	120.9
1/1/2019	151.4	1515	111.88	1119.7	85	89	2.9	1.5	13.86	15	173.4	212.67	13.6	17	170	241
2/1/2019	88	264	63	191	0.797	0.803	2.9	1.7	13	16	315	387	17	20	411	483
3/1/2019	36.33	454.5	58.77	735.2	79	60	3.3	2.3	12.17	16.8	233.4	430.1	14.66	23	281.3	588.8
4/1/2019	302.53	4289	141.2	2001	93	97	3	2.2	9.09	11.9	167	298	7.66	13	141	326
5/1/2019	159.5	1636	101.1	1037	93	97	2.9	1.75	7.3	8.1	107	115	5.5	6	80.1	85.1
COUNT	90.0	90.0	90.0	90.0	90.0	90.0	90.0	89.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
AVERAGE	201.4	2108.3	115.0	1197.4	83.6	84.7	2.4	1.8	11.3	15.0	197.3	270.9	9.9	13.1	173.3	241.5
MIN	22.0	30.0	19.0	46.0	0.8	0.8	0.7	0.0	3.6	4.6	2.3	1.4	5.0	5.0	2.0	8.0
MAX	4293.0	35982.0	670.0	6076.5	98.0	99.0	4.0	3.9	22.0	43.6	815.0	815.0	41.8	46.0	824.1	1300.1
STD DEV	467.9	4559.7	91.1	1167.7	13.5	17.3	0.8	0.6	3.9	6.0	110.7	149.1	6.4	9.4	136.7	226.3
CV	2.3	2.2	0.8	1.0	0.2	0.2	0.3	0.4	0.3	0.4	0.6	0.6	0.6	0.7	0.8	0.9
5th	33.3	257.6	41.6	272.6	64.1	50.1	1.7	0.7	5.0	6.1	58.1	75.7	5.0	5.0	46.4	56.8
90th	469.5	4928.9	238.3	2887.5	96.0	98.0	3.8	2.6	16.7	22.0	330.1	461.6	18.3	29.9	325.2	465.9
95th	588.9	11098.7	276.0	4226.3	97.0	99.0	3.9	3.0	17.9	25.8	377.2	552.1	23.1	32.8	454.7	638.0

	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
	E. coli	**E. coli**	**TRC**	**TRC**	**TRC**	**TRC**	**TRC**	**TRC**	**TRC**	**TRC**	**pH**	**pH**	**Alkalinity,**	**Alkalinity,**	**Hardness,**	**Hardness,**
	#/100mL	#/100mL	Mg/L	lbs.day	Mg/L	lbs.day	Mg/L	lbs.day	Mg/L	lbs.day	s.u.	s.u	Mg/L	Mg/L	Mg/L	Mg/L
	INST	***MO GEO***	***MO AVG***	***MO AVG***	***WKLY AVG***	***WKLY AVG***	***MO AVG***	***MO AVG***	***DAILY***	***DAILY***	***DAILY***	***DAILY***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***
1/1/2014	2	2					0.0215	0.647	0.11	3.62	7.07	7.44				
2/1/2014	2	2					0.0385	0.767	0.11	2.19	6.18	7.6				
3/1/2014	2	2					0.048	0.545	0.08	2.19	6.5	7.68	64.4	64.4	40.05	40.05
4/1/2014	2	2.75					0.069	0.683	0.15	2.35	6.65	8.48	49.7	49.7	41.9	41.9
5/1/2014	2	2					0.0476	0.526	0.07	1.09	6.69	7.31				
6/1/2014	13	6					0.023	0.369	0.08	1.25	6.95	7.94	65.9	65.9	54.1	54.1
11/1/2014	2	2					0.056	0.23	0.13	0.15	7.48	8.33				
12/1/2014	2	2					0.08	0.97	0.23	3.16	7.78	8.16	69.9	69.9	50.6	50.6
1/1/2015	2	2					0.096	1.44	0.13	1.36	7.4	8.4	0	0	0	0
2/1/2015	2	2					0.078	0.51	0.17	1.7	7.2	7.8	64.9	55.4	46	46
3/1/2015	2	2					0.094	1.38	0.14	2.07	6.86	7.83				
4/1/2015	2	2					0.082	1.16	0.17	2.52	6.8	8.5	59.4	59.4	49.6	49.6
11/1/2015	2	2					0.09	2.97	0.24	4.83	6.56	7.78	0	0	0	0
12/1/2015	2	2					0.1	1.5	0.3	4.25	6.93	7.34	83.8	83.8	101	101
1/1/2016	2	2					0.07	1.16	0.13	1.95	6.88	7.19				
2/1/2016	8	2.6					0.12	1.7	0.24	3.8	6.5	7.86	75.7	75.7	45.4	45.4
3/1/2016	13	3					0.09	1.4	0.14	2.21	7.01	8.22				
4/1/2016	2	2					0.17	0.194	0.25	0.83	6.9	8.1	70.4	70.4	46.8	46.8
10/1/2016	2	2					0.154	2.29	0.24	5.004	6.68	6.88	0	0	0	0
11/1/2016	2	2					0.16	2.926	0.28	6.802	6.5	7.36	75.7	75.7	56	56
12/1/2016	2	2					0.102	0.55	0.21	1.26	6.61	7.25	0	0	0	0
1/1/2017	1600	10					0.08	0.89	0.12	1.06	6.69	7.35	94.5	94.5	54.3	54.3
2/1/2017	1600	740.8					0.101	2.69	0.29	5.07	6.5	7.1				
3/1/2017	8	4.3					0.1	2.25	0.3	4.25	6.63	8.43	68.1	68.1	51.2	51.2
4/1/2017	4	5.65					0.13	2.49	0.3	5	7.82	9.75	68.1	68.1	0	0
5/1/2017	2	2					0.07	1.05	0.13	1.51	6.58	8.36	40	40	49.8	49.8
11/1/2017	2	2					0.12	2.3	0.19	5.07	6.6	7.27	71.7	71.7	63.1	63.1
12/1/2017	2	2					0.09	1.9	0.12	2.9	6.7	6.99	0	0	0	0
1/1/2018	2	2					0.05	1.04	0.1	2.25	6.65	7.34	73	73	53.6	53.6
2/1/2018	2	2					0.04	0.53	0.1	1.8	7.11	7.49	0	0	0	0
3/1/2018	2	2					0.07	1.16	0.09	2.17	6.9	8.5	48	48	53.1	53.1
4/1/2018	2	2					0.08	1.44	0.23	4.16	7.05	8.4	0	0	0	0
5/1/2018	2	2					0.07	0.76	0.301	4.02	6.97	7.08	57.7	57.7	57.7	57.7
11/1/2018	2	2					0.04	0.834	0.07	1.51	6.6	7.2	0	0	0	0
12/1/2018	2	2					0.04	0.63	0.08	1.66	6.6	7.5	0	0	0	0
1/1/2019	2	2					0.17	2.12	0.27	4.3	6.9	7.9	54.4	54.4	55.8	55.8
2/1/2019	2	2					0.08	1.13	0.12	2.9	6.7	7.7	0	0	0	0
3/1/2019	2	2					0.06	1.15	0.11	3.02	6.8	7.53	65.7	65.7	56.8	56.8
4/1/2019	350	1					0.06	1.1	0.13	3.25	6.94	7.33	0	0	0	0
5/1/2019	6	1					0.04	0.6	0.19	4.6	6.8	7.8	57.8	57.8	57.9	57.9
COUNT	90.0	90.0	24.0	24.0	24.0	24.0	66.0	66.0	66.0	66.0	90.0	90.0	57.0	57.0	57.0	57.0
AVERAGE	45.9	12.2	0.4	6.3	0.4	6.5	0.1	1.2	0.2	2.5	6.6	7.5	52.9	52.8	39.3	39.3
MIN	1.0	1.0	0.2	3.8	0.1	2.1	0.0	0.2	0.1	0.2	5.7	6.4	0.0	0.0	0.0	0.0
MAX	1600.0	740.8	0.5	9.0	0.6	9.0	0.3	5.0	0.4	6.8	7.8	10.3	94.5	94.5	101.0	101.0
STD DEV	239.4	78.0	0.1	1.4	0.1	1.5	0.0	0.8	0.1	1.5	0.4	0.7	28.3	28.3	23.1	23.1
CV	5.2	6.4	0.2	0.2	0.3	0.2	0.6	0.7	0.5	0.6	0.1	0.1	0.5	0.5	0.6	0.6
5th	1.0	1.0	0.2	4.0	0.1	2.7	0.0	0.3	0.1	0.8	6.0	6.7	0.0	0.0	0.0	0.0
90th	13.0	6.0	0.5	8.4	0.5	8.3	0.1	2.3	0.3	5.0	7.1	8.4	82.2	82.2	57.5	57.5
95th	136.8	8.9	0.5	8.8	0.5	8.9	0.2	2.8	0.3	5.2	7.3	8.5	84.0	84.0	60.3	60.3

	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
	DO	**DO**	**Nitrite plus**	**Nitrite plus**	**Ammonia as**	**Ammonia as**	**TKN**	**TKN**	**Total P**	**Total P**	**Ortho-P**	**Ortho-P**	**Temp**	**Temp**
	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Degrees C	Degrees C
	DAILY MN	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***
1/1/2014	5.32	5.32	0.585	0.585	2	1.833	5.79	5.79	0.678	0.678			6.4	4.8
2/1/2014	5.79	5.79	0.8	0.8	3.6	2.867	6.83	6.83	0.86	0.86			5	3.68

	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
	DO	**DO**	**Nitrite plus**	**Nitrite plus**	**Ammonia as**	**Ammonia as**	**TKN**	**TKN**	**Total P**	**Total P**	**Ortho-P**	**Ortho-P**	**Temp**	**Temp**
	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Mg/L	Degrees C	Degrees C
	DAILY MN	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***	***DAILY MX***	***MO AVG***
3/1/2014	4.8	4.8	0.539	0.539	4.3	3.79	7.34	7.34	0.74	0.74				8.6
4/1/2014	7.23	7.23	0.86	0.86	1.46	0.902	7.11	7.11	1.08	1.08			11.9	10.48
5/1/2014	2.6	2.6	0.668	0.668	2.96	2.29	3.84	3.84	1.19	1.19	1.05	1.05	18.4	15.6
6/1/2014	3.11	3.11	0.487	0.487	2.95	1.11	4.91	4.91	1.96	1.96	1.88	1.88	21.1	18.56
11/1/2014	8.3	8.3	0.567	0.567	5.78	3	4.93	4.93	2.86	2.86			10.3	6.2
12/1/2014	14.4	14.4	0.568	0.568	3	2.53	4.82	4.82	1.99	1.99			7.9	5.45
1/1/2015	15	15	0.391	0.391	4.57	4.2	7.2	7.2	1.67	1.67	0	0	6	2.8
2/1/2015	7.89	9.8	0.363	0.363	4.21	3.9	6.5	6.5	1.53	1.53			9	4.8
3/1/2015	10.63	10.63	0.526	0.526	4.25	3.18	7.14	7.14	1.1	1.1			12.6	8.02
4/1/2015	6.2	6.2	0.963	0.963	3.66	3.19	5.01	5.01	0.98	0.98			23	9.1
11/1/2015	6.59	6.59	0.3	0.3	8.01	6.91	7.95	7.95	2.82	2.82	0	0	10	8.73
12/1/2015	9.68	10.18	2.02	2.02	20.7	9.194	7.54	7.54	0.8	0.8	0.772	0.772	9.1	7.2
1/1/2016	7.47	9.46	0.457	0.457	9.93	7.89	9.03	9.03	1.88	1.88			9.1	7.54
2/1/2016	12.97	13.04	0.274	0.274	6.42	5.42	7.94	7.94	1.54	1.54	0	0	9.9	8.2
3/1/2016	11.75	12.18	1.62	1.62	4.05	2.5	5.89	5.89	0.96	0.96	0.576	0.576	11.2	9.8
4/1/2016	10.4	10.95	1.34	1.34	1.08	0.495	5.59	5.59	1.24	1.24	0.913	0.913	18.9	14.57
10/1/2016	6.28	6.43	0	0	3.11	3.11	0	0	0	0	0	0	12.1	11.74
11/1/2016	6.54	7.15	0.372	0.372	4.52	4.52	5.87	5.87	1.85	1.85	2.21	2.21	12	9.96
12/1/2016	8.31	8.37	0.48	0.48	7.25	4.9	8.71	8.71	1.7	1.7	0	0	6.2	4.41
1/1/2017	10.02	10.02	0.467	0.467	9.54	8.87	10.3	10.3	2.06	2.06	0	0	7	6.13
2/1/2017	3.37	3.73	0.05	0.05	9.49	8.71	11.9	11.9	1.8	1.8			10.5	7.74
3/1/2017	5.93	9.5	0.399	0.399	5.9	3.99	6.85	6.85	1.16	1.16	0.783	0.783	10.9	8.54
4/1/2017	7.82	8.9	0.723	0.723	0.459	0.206	1.79	1.79	0.872	0.872	0	0	13.5	11.33
5/1/2017	3.13	4	0	0	1.97	1.4	2.23	2.23	0.684	0.684	0	0	22.11	18.41
11/1/2017	7.74	8.6	0.679	0.679	3.2	2.72	4.67	4.67	1.8	1.8	1.54	1.54	8.6	6.61
12/1/2017	7.24	8.5	0.84	0.84	5.07	4.72	4.32	4.32	1.68	1.68	0	0	9.1	7.46
1/1/2018	6.02	8.26	0.54	0.54	6.94	6.63	8.18	8.18	1.67	1.67	0	0	9.4	8.27
2/1/2018	10.18	11.3	1.09	1.09	4.13	3.49	5.65	5.65	0.78	0.78	0	0	11	9.46
3/1/2018	11.05	12.12	2.49	2.49	1.295	1.295	3.17	3.17	0.814	0.814	0	0	12.4	10.59
4/1/2018	7.13	9.4	1.32	1.32	0.729	0.472	3.36	3.36	0.755	0.755	0.134	0.134	17.6	13.5
5/1/2018	5.5	6.2	0.357	0.357	2.51	2.45	4.46	4.46	1.12	1.12	0	0	21.1	19.66
11/1/2018	6.66	8.07	0.382	0.382	0	0	5.04	5.04	1.95	1.95	0	0	14.2	10.07
12/1/2018	8.42	10.53	0	0	4.3	4.3	0	0	0	0	0	0	8.3	6.17
1/1/2019	10.8	12.3	1.36	1.36	5.74	4.84	8.56	8.56	1.41	1.3	0.881	0.881	9	7.15
2/1/2019	11	12	1.96	1.96	3.9	3.7	5.9	5.9	0.8	0.8	0	0	8.8	7.64
3/1/2019	6.2	10.19	1.7	1.7	5.49	4.85	7.06	7.06	1.17	1.17	0.467	0.467	13.8	10.19
4/1/2019	5.5	5.5	1.12	1.12	6.52	4.85	6.34	6.34	1	1	0.824	0.824	17.5	14.88
5/1/2019	6.45	7.62	2.11	2.11	4.62	4.14	6.03	6.03	1.19	1.19	0	0	20.4	18.96
COUNT	90.0	90.0	90.0	90.0	89.0	89.0	90.0	90.0	90.0	90.0	40.0	40.0	89.0	90.0
AVERAGE	6.8	7.1	1.0	1.0	4.1	3.3	5.5	5.5	1.3	1.3	0.6	0.6	11.0	8.8
MIN	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.2
MAX	15.4	15.4	3.7	3.7	20.7	9.2	11.9	11.9	3.9	3.9	2.2	2.2	23.0	20.8
STD DEV	3.1	3.3	0.9	0.9	3.0	2.3	2.4	2.4	0.6	0.6	0.7	0.7	5.7	4.9
CV	0.4	0.5	0.9	0.9	0.7	0.7	0.4	0.4	0.5	0.5	1.1	1.1	0.5	0.6
5th	2.3	2.3	0.0	0.0	0.5	0.3	1.8	1.8	0.4	0.4	0.0	0.0	4.1	3.0
90th	10.8	11.3	2.3	2.3	7.3	6.5	8.6	8.6	2.0	2.0	1.8	1.8	21.1	17.9
95th	12.3	12.6	3.0	3.0	9.5	8.1	9.8	9.8	2.1	2.1	1.9	1.9	22.2	18.8

B. Facility Whole Effluent Toxicity Data

Year	Test Type	NOEC (%)	LOEC (%)	IC25 (%)	TUc	Calculated TUa[1]
2009	Fathead minnow survival	100	>100	>100	1	0.1
2009	Fathead minnow growth	100	>100	>100	1	0.1
2009	Ceriodaphnia dubia reproduction	100	>100	>100	1	0.1

2009	Ceriodaphnia dubia survival	100	>100	>100	1	0.1
2010 (T1)[2]	Fathead minnow survival	100	>100	>100	1	0.1
2010 (T1)	Fathead minnow growth	100	>100	>100	1	0.1
2010 (T1)	Ceriodaphnia dubia reproduction	<1.11	1.11	59.45	1.68	0.168
2010 (T1)	Ceriodaphnia dubia survival	100	100	>100	1	0.1
2010 (T2)	Ceriodaphnia dubia reproduction	<1.11	1.11	1.16	86.0	8.6
2010 (T2)	Ceriodaphnia dubia survival	100	>100	>100	1	0.1
2011	Ceriodaphnia dubia reproduction	2.21	4.42	8.34	11.9	1.19
2011	Ceriodaphnia dubia survival	100	100	>100	1	0.1
2012	Fathead minnow survival	100	>100	>100	1	0.1
2012	Fathead minnow growth	100	>100	>100	1	0.1
2012	Ceriodaphnia dubia reproduction	100	>100	>100	1	0.1
2012	Ceriodaphnia dubia survival	100	>100	>100	1	0.1
COUNT					16.0	16.0
MIN					1.0	0.1
MAX					86.0	8.6
STDEV					21.2	2.1
CV					3.0	3.0

1. Calculated using a default acute-to-chronic ratio (ACR) of 10 per EPA's *Technical Support Document for Water Quality-based Toxics Control*.

2. T1 and T2 (test 1 and test 2)

C. Receiving Water Data - City of St. Maries WWTP Provided Data (2008-2015)

Date Sampled	Site	Calcium (mg/L)	Magnesium (mg/L)	Hardness [as CaCO3] (mg/L)	Ammonia as N (mg/L)	Alkalinity (mg/L)[1]	Phosphorus (mg/L)	pH (su)	DO (mg/L)	Temp (C)
12/17/2008	Upriver Aqua Park			24.000	0.034	25.000	0.013	7.190	10.070	2.100
12/17/2008	Downriver Cherry Bend						0.018	7.260	10.260	2.100
4/23/2009	Upriver Aqua Park			16.000	0.041	20.000	0.035	7.110	10.720	7.700
4/23/2009	Downriver Cherry Bend				<0.030		0.044	7.190	10.060	7.700
6/17/2009	Upriver Aqua Park			16.000	<0.030	28.400	0.013	7.560	8.990	10.000
6/17/2009	Downriver Cherry Bend				<0.030		0.015	7.410	10.840	10.000
1/20/2010	Upriver Aqua Park	5.490	1.440	19.600	<0.030	20.200	0.020	6.750	9.500	0.800
1/20/2010	Downriver Cherry Bend	5.450	1.480	19.700	0.003	20.500	0.030	6.910	9.450	0.900
3/24/2010	Upriver Aqua Park	5.950	1.600	21.400	<0.030	87.100	0.020	6.250	14.410	5.600

Date Sampled	Site	Calcium (mg/L)	Magnesium (mg/L)	Hardness [as CaCO3] (mg/L)	Ammonia as N (mg/L)	Alkalinity (mg/L)[1]	Phosphorus (mg/L)	pH (su)	DO (mg/L)	Temp (C)
3/24/2010	Downriver Cherry Bend	6.050	1.600	21.700	<0.030	44.400	0.020	6.420	16.290	5.400
5/19/2010	Upriver Aqua Park	4.210	0.994	14.600	<0.030	16.000	0.010	6.190	13.350	8.600
5/19/2010	Downriver Cherry Bend	4.240	0.990	14.700	<0.030	15.900	0.010	6.090	12.850	8.900
1/26/2011	Upriver Aqua Park	4.420	1.170	15.900	0.030	16.400	0.028	6.490	8.130	2.700
1/26/2011	Downriver Cherry Bend	4.660	1.200	16.600	0.041	17.000	0.020	6.330	8.450	2.600
4/20/2011	Upriver Aqua Park	4.880	1.210	17.200	0.036	21.100	0.011	6.120	7.360	4.500
4/20/2011	Downriver Cherry Bend	5.210	1.250	18.200	0.039	21.900	0.010	6.150	7.520	4.400
6/8/2011	Upriver Aqua Park	4.100	0.922	14.000	<0.030	16.100	0.016	5.760	6.840	8.800
6/8/2011	Downriver Cherry Bend	4.090	0.930	14.000	<0.030	16.000	0.011	5.850	6.920	8.500
12/21/2011	Upriver Aqua Park	8.300	1.880	28.500	0.030	32.900	<0.010	5.490	1.510	0.060
12/21/2011	Downriver Cherry Bend	7.940	1.860	27.500	0.086	31.700	0.012	5.540	1.230	0.070
2/16/2012	Upriver Aqua Park	6.940	1.730	24.500	0.068	27.600	0.018	5.230	2.830	1.200
2/16/2012	Downriver Cherry Bend	6.860	1.730	24.300	0.057	27.100	0.022	5.620	2.420	0.500
5/16/2012	Upriver Aqua Park	4.070	0.919	13.900	<0.030	15.600	<0.010	5.800	4.140	9.200
5/16/2012	Downriver Cherry Bend	4.110	0.930	14.100	0.004	15.600	<0.010	6.060	4.310	9.400
12/19/2012	Upriver Aqua Park	5.860	1.380	20.300	0.030	25.800	0.010	4.940	2.940	1.400
12/19/2012	Downriver Cherry Bend	6.140	1.440	21.200	<0.030	25.700	0.011	4.580	2.910	1.300
3/20/2013	Upriver Aqua Park	5.050	1.280	17.900	<0.030	20.400	<0.010	5.670	3.460	3.100
3/20/2013	Downriver Cherry Bend	4.860	1.220	17.200	<0.030	20.100	<0.010	4.880	3.440	2.900
5/30/2013	Upriver Aqua Park	4.830	1.110	16.600	0.030	17.900	<0.010	6.510	7.550	9.900
5/30/2013	Downriver Cherry Bend	4.720	1.090	16.300	<0.030	18.100	<0.010	5.670	7.340	10.000
12/22/2014	Upriver Aqua Park	5.160	1.320	18.300	0.037	20.600	0.031	7.610	13.200	3.500
12/22/2014	Downriver Cherry Bend	5.110	1.400	18.500	0.057	20.000	0.041	8.080	13.300	3.500
3/27/2014	Upriver Aqua Park	5.310	1.270	18.500	<0.030	22.300	<0.010	7.390	5.820	5.000
3/27/2014	Downriver Cherry Bend	5.560	1.320	19.300	<0.030	23.100	0.017	7.650	5.510	4.500
6/4/2014	Upriver Aqua Park	4.100	0.896	13.900	0.050	15.000	<0.010	5.390	3.810	9.900
6/4/2014	Downriver Cherry Bend	4.010	0.892	13.700	0.059	15.200	<0.010	5.010	3.280	10.300
2/11/2015	Upriver Aqua Park	3.660	1.030	13.400	<0.030	13.500	0.041	7.240	11.740	5.200
2/11/2015	Downriver Cherry Bend	4.010	1.110	14.600	0.032	13.900	0.045	6.880	11.680	4.900
5/13/2015	Upriver Aqua Park	6.000	1.320	20.400	<0.030	23.300	0.053	7.070	9.870	11.200
5/13/2015	Downriver Cherry Bend	6.100	1.310	20.600	<0.030	23.500	<0.010	7.070	9.270	12.000
12/30/2015	Upriver Aqua Park	6.460	1.640	22.900	<0.030	25.700	<0.010	7.890	13.000	4.000
12/30/2015	Downriver Cherry Bend	6.480	1.650	23.000	<0.030	25.300	<0.010	7.650	13.200	3.500
COUNT		36.0	36.0	39.0	19.0	39.0	29.000	42.0	42.0	42.0
MEAN		5.3	1.3	18.5	0.0	23.2	0.022	6.4	8.1	5.4
MIN		3.7	0.9	13.4	0.0	13.5	0.010	4.6	1.2	0.1
MAX		8.3	1.9	28.5	0.1	87.1	0.053	8.1	16.3	12.0
STDEV		1.1	0.3	3.9	0.0	12.2	0.013	0.9	4.0	3.6
CV		0.3	0.3	0.3	6.2	0.9	1.254	0.2	3.3	59.8
5th PERCENTILE		4.0	0.9	13.7	0.0	13.9	0.010	4.9	1.6	0.1
95th PERCENTILE		8.0	1.9	27.5	0.1	44.4	0.049	7.9	14.3	11.1
90th PERCENTILE		6.9	1.7	24.3	0.1	31.7	0.044	7.6	13.3	10.0

1. Section 19(1)(c) of the CDT WQS establishes *"Alkalinity should generally be maintained within the range of 50 to 120 mg/L. Variations outside this range are to be avoided where practical alternatives exist."* DMR data indicate that the facility generally maintains alkalinity within this range, with an arithmetic mean of 52.8 mg/L and a median of 58.5 mg/L.

D. Receiving Water Data - Coeur d'Alene Provided Data (2012-2019)

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
1409	3/12/2014	1	3.36	7.91	13.18
1410	3/12/2014	1.5	3.35	7.68	13.21
1411	3/12/2014	2.1	3.37	7.52	13.22
1412	3/12/2014	2.8	3.38	7.25	13.22
1413	3/12/2014	3.8	3.38	7.07	13.20
1414	3/12/2014	4	3.38	7.01	13.18
1415	4/16/2014	0.4	6.19	6.29	12.47
1416	4/16/2014	1	6.18	6.54	12.44
1417	4/16/2014	2	6.18	6.61	12.50
1418	4/16/2014	3	6.16	6.67	12.35
1419	4/16/2014	4	6.16	6.75	12.36
1420	4/16/2014	5	6.16	6.82	12.31
1421	4/16/2014	5.7	6.16	6.90	12.28
1422	4/16/2014	7	6.17	6.98	12.33
1423	4/16/2014	9	6.15	7.00	12.33
1424	4/16/2014	10.9	6.15	7.03	12.30
1425	4/16/2014	12.9	6.15	7.06	12.29
1426	4/16/2014	14.9	6.15	7.08	12.29
1427	4/16/2014	16.3	6.15	7.10	12.29
1428	4/16/2014	18.3	6.15	7.10	12.31
1429	4/16/2014	20.4	6.16	7.12	12.32
1430	5/20/2014	0.7	7.58	7.13	12.19
1431	5/20/2014	1.4	7.57	7.10	12.17
1432	5/20/2014	2	7.56	7.06	12.17
1433	5/20/2014	2.7	7.58	7.08	12.16
1434	5/20/2014	3.3	7.59	7.08	12.23
1435	5/20/2014	4	7.59	7.09	12.24
1436	5/20/2014	4.5	7.56	7.10	12.20
1437	5/20/2014	6.2	7.54	7.08	12.21
1438	5/20/2014	7	7.51	7.08	12.16
1439	5/20/2014	7.4	7.58	7.09	12.24
1440	6/23/2014	0.5	12.43	7.09	10.82
1441	6/23/2014	1.0	12.36	7.09	10.86
1442	6/23/2014	2.0	12.33	7.11	10.84
1443	6/23/2014	3.1	12.38	7.11	10.87
1444	6/23/2014	4.0	12.20	7.1	10.82
1445	6/23/2014	5.1	12.15	7.15	10.84
1446	6/23/2014	6.0	12.15	7.11	10.78
1447	6/23/2014	7.0	12.12	7.11	10.75
1448	6/23/2014	8.0	12.14	7.12	10.77
1449	6/23/2014	9.1	12.13	7.12	10.76
1450	6/23/2014	10.0	12.09	7.12	10.76
1451	6/23/2014	11.0	12.12	7.13	10.71
1452	6/23/2014	12.0	12.11	7.13	10.76
1453	6/23/2014	13.0	12.08	7.14	10.73
1454	6/23/2014	14.0	12.06	7.14	10.76
1455	6/23/2014	15.0	12.08	7.15	10.79
1456	6/23/2014	16.0	12.08	7.15	10.76
1457	6/23/2014	17.0	12.08	7.15	10.82
1458	6/23/2014	18.0	12.09	7.15	10.85
1459	6/23/2014	19.1	12.09	7.16	10.84
1460	6/23/2014	20.0	12.09	7.15	10.79
1461	6/23/2014	20.1	12.10	7.14	10.79

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
1462	6/23/2014	21.0	12.09	7.15	10.84
1463	6/30/2014	0.5	11.97	7.04	9.75
1464	6/30/2014	1.0	12.02	7.04	9.70
1465	6/30/2014	2.0	11.92	7.04	9.70
1466	6/30/2014	3.0	11.72	7.15	9.76
1467	6/30/2014	4.0	11.85	7.11	9.78
1468	6/30/2014	5.0	11.79	7.19	9.76
1469	6/30/2014	6.0	11.73	7.17	9.78
1470	6/30/2014	7.0	11.70	7.18	9.77
1471	6/30/2014	8.0	11.57	7.17	9.79
1472	6/30/2014	9.0	11.53	7.15	9.79
1473	6/30/2014	10.0	11.60	7.18	9.75
1474	6/30/2014	11.0	11.77	7.04	9.73
1475	6/30/2014	12.0	11.71	7.05	9.72
1476	6/30/2014	13.1	11.47	7.16	9.83
1477	6/30/2014	14.0	11.56	7.17	9.78
1478	6/30/2014	15.1	11.34	7.16	9.89
1479	6/30/2014	16.0	11.52	7.16	9.79
1480	6/30/2014	17.0	11.70	7.04	9.71
1481	6/30/2014	17.1	11.34	7.17	9.89
1482	6/30/2014	18.0	11.52	7.16	9.82
1483	6/30/2014	19.0	11.33	7.19	9.87
1658	11/12/2014	0.6	6.48	8.12	11.59
1659	11/12/2014	1.1	6.49	7.89	11.59
1660	11/12/2014	2.1	6.46	7.85	11.57
1661	11/12/2014	3.1	6.44	7.8	11.57
1662	11/12/2014	4.1	6.44	7.77	11.55
1663	11/12/2014	5.0	6.45	7.74	11.58
1664	11/12/2014	6.0	6.43	7.7	11.57
1665	11/12/2014	7.0	6.43	7.7	11.58
1666	11/12/2014	8.0	6.40	7.65	11.56
1667	11/12/2014	9.0	6.40	7.63	11.54
1668	11/12/2014	10.0	6.33	7.62	11.57
1669	11/12/2014	12.1	6.34	7.61	11.56
1670	11/12/2014	13.0	6.33	7.59	11.56
1671	11/12/2014	14.1	6.33	7.59	11.56
1672	11/12/2014	15.1	6.32	7.59	11.54
1673	11/12/2014	16.0	6.30	7.58	11.61
1674	11/12/2014	17.0	6.23	7.58	11.57
1675	11/12/2014	18.0	6.19	7.57	11.55
1676	11/12/2014	19.0	6.19	7.56	11.60
1677	11/12/2014	20.0	6.17	7.55	11.54
1678	11/12/2014	21.1	6.17	7.54	11.58
1679	11/25/2014	1.0	1.78	7.68	13.31
1680	11/25/2014	2.0	1.77	7.65	13.35
1681	11/25/2014	3.0	1.78	7.63	13.34
1682	11/25/2014	3.1	1.78	7.64	13.35
1683	11/25/2014	4.0	1.78	7.64	13.36
1684	11/25/2014	5.0	1.83	7.6	13.27
1685	11/25/2014	6.0	1.86	7.59	13.18
1686	11/25/2014	7.0	1.87	7.59	13.23
1687	11/25/2014	8.0	1.87	7.58	13.17
1688	11/25/2014	9.0	1.87	7.58	13.19
1689	11/25/2014	10.0	1.89	7.57	13.16
1690	11/25/2014	11.0	1.88	7.57	13.15
1691	11/25/2014	12.0	1.89	7.56	13.18
1692	11/25/2014	13.0	1.95	7.56	13.09
1693	11/25/2014	14.0	1.96	7.56	13.10
1694	11/25/2014	15.0	1.97	7.56	13.08

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
1695	11/25/2014	16.0	1.97	7.56	13.07
1696	11/25/2014	17.0	2.01	7.55	13.06
1697	11/25/2014	18.1	2.02	7.56	13.03
1698	2/11/2015	0.5	4.9	7.6	12.9
1699	2/11/2015	1.1	4.9	7.6	12.9
1700	2/11/2015	1.2	4.9	7.6	12.9
1701	2/11/2015	2.6	4.9	7.5	12.9
1702	2/11/2015	3.9	4.9	7.5	12.9
1703	3/24/2015	0.5	5.4	7.5	12.5
1704	3/24/2015	1.1	5.4	7.5	12.5
1705	3/24/2015	2.1	5.4	7.5	12.5
1706	3/24/2015	3.1	5.4	7.5	12.5
1707	3/24/2015	4.1	5.4	7.5	12.5
1708	3/24/2015	5	5.4	7.5	12.5
1709	3/24/2015	6.1	5.4	7.5	12.5
1710	3/24/2015	7	5.4	7.5	12.5
1711	3/24/2015	8	5.4	7.5	12.5
1712	3/24/2015	9	5.4	7.5	12.5
1713	3/24/2015	10	5.4	7.5	12.5
1714	3/24/2015	11.1	5.4	7.5	12.4
1715	3/24/2015	12	5.4	7.5	12.5
1716	3/24/2015	13	5.4	7.5	12.4
1717	3/24/2015	14.1	5.4	7.5	12.4
1718	3/24/2015	15.1	5.4	7.5	12.4
1719	3/24/2015	16	5.4	7.5	12.4
1720	3/24/2015	17	5.4	7.5	12.4
1721	3/24/2015	18.1	5.4	7.5	12.4
1722	3/24/2015	19.1	5.4	7.5	12.4
1723	3/24/2015	20.1	5.4	7.5	12.4
1724	5/19/2015	0.5	12.3	6.9	10.7
1725	5/19/2015	1	12.4	7.0	10.7
1726	5/19/2015	2	12.1	7.0	10.7
1727	5/19/2015	3	12.1	7.1	10.7
1728	5/19/2015	4	12.1	7.1	10.7
1729	5/19/2015	5	12.1	7.1	10.7
1730	5/19/2015	6	12.0	7.1	10.7
1731	5/19/2015	7	12.0	7.1	10.7
1732	5/19/2015	8	12.0	7.1	10.7
1733	5/19/2015	9	12.0	7.1	10.8
1734	5/19/2015	10	12.0	7.2	10.7
1735	5/19/2015	11	12.0	7.2	10.7
1736	5/19/2015	12	11.9	7.2	10.7
1737	5/19/2015	13	11.9	7.2	10.7
1738	5/19/2015	14	11.9	7.3	10.7
1739	5/19/2015	15	11.9	7.3	10.7
1740	5/19/2015	16	11.9	7.3	10.7
1741	5/19/2015	17	11.9	7.3	10.8
1742	5/19/2015	17.9	11.9	7.3	10.8
1743	5/19/2015	19	11.9	7.3	10.7
1744	5/19/2015	20	11.9	7.3	10.8
1745	5/19/2015	21	11.9	7.3	10.8
1746	6/10/2015	0.5	20.16	7.26	9.89
1747	6/10/2015	1.0	20.03	7.26	9.83
1748	6/10/2015	2.0	19.72	7.24	9.85
1749	6/10/2015	3.0	18.83	7.21	9.94
1750	6/10/2015	4.0	17.95	7.2	9.90
1751	6/10/2015	5.0	17.84	7.18	9.85
1752	6/10/2015	6.0	17.35	7.17	9.86
1753	6/10/2015	7.0	17.18	7.16	9.88

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
1754	6/10/2015	8.0	17.03	7.16	9.88
1755	6/10/2015	9.1	16.76	7.14	9.84
1756	6/10/2015	10.1	16.72	7.13	9.79
1757	6/10/2015	11.0	16.68	7.13	9.75
1758	6/10/2015	12.0	16.63	7.13	9.76
1759	6/10/2015	13.0	16.45	7.12	9.78
1760	6/10/2015	14.0	16.37	7.11	9.75
1761	6/10/2015	15.0	16.31	7.1	9.68
1762	6/10/2015	16.0	16.25	7.1	9.65
1763	6/10/2015	17.0	16.16	7.07	9.52
1764	6/10/2015	18.0	16.14	7.05	9.46
1765	6/10/2015	19.1	16.08	7.01	9.22
1766	6/10/2015	20.0	16.04	6.98	9.10
1767	6/10/2015	20.1	16.04	6.98	9.09
1768	6/10/2015	21.1	16.01	6.94	8.83
1769	6/22/2015	0.5	20.71	7.38	9.30
1770	6/22/2015	1.1	20.51	7.36	9.29
1771	6/22/2015	2.0	20.34	7.37	9.30
1772	6/22/2015	3.0	20.19	7.39	9.32
1773	6/22/2015	4.0	20.12	7.34	9.10
1774	6/22/2015	5.0	20.04	7.32	8.99
1775	6/22/2015	6.1	19.97	7.3	8.95
1776	6/22/2015	7.0	19.89	7.27	8.83
1777	6/22/2015	8.1	19.78	7.25	8.77
1778	6/22/2015	9.1	19.76	7.25	8.74
1779	6/22/2015	10.0	19.73	7.24	8.69
1780	6/22/2015	11.0	19.66	7.23	8.71
1781	6/22/2015	12.0	19.47	7.21	8.63
1782	6/22/2015	13.1	16.58	7.07	7.85
1783	6/22/2015	14.0	16.23	6.92	6.93
1784	6/22/2015	15.0	16.13	6.85	6.36
1785	6/22/2015	16.0	15.98	6.81	6.09
1786	6/22/2015	17.1	15.92	6.77	5.75
1787	6/22/2015	18.1	15.79	6.68	4.73
1788	6/22/2015	19.1	15.66	6.61	3.31
1789	6/22/2015	20.1	15.65	6.57	3.05
1955	11/24/2015	0.5	3.57	7.27	12.54
1956	11/24/2015	1.0	3.57	7.21	12.53
1957	11/24/2015	1.1	3.57	7.18	12.53
1958	11/24/2015	2.0	3.58	7.18	12.53
1959	11/24/2015	3.1	3.56	7.17	12.51
1960	11/24/2015	4.0	3.56	7.16	12.58
1961	11/24/2015	5.1	3.57	7.17	12.56
1962	11/24/2015	6.1	3.57	7.16	12.57
1963	11/24/2015	7.1	3.58	7.17	12.51
1964	11/24/2015	8.1	3.58	7.17	12.51
1965	11/24/2015	9.0	3.57	7.17	12.54
1966	11/24/2015	10.1	3.58	7.16	12.52
1967	11/24/2015	11.0	3.58	7.16	12.52
1968	11/24/2015	12.0	3.59	7.16	12.50
1969	11/24/2015	13.0	3.60	7.17	12.49
1970	11/24/2015	14.1	3.59	7.15	12.49
1971	11/24/2015	15.1	3.61	7.15	12.51
1972	11/24/2015	16.0	3.62	7.15	12.48
1973	11/24/2015	17.0	3.64	7.15	12.41
1974	11/24/2015	18.1	3.63	7.15	12.41
1975	11/24/2015	19.1	3.63	7.14	12.42
1976	11/24/2015	20.0	3.63	7.13	12.44
1977	11/24/2015	20.1	3.63	7.13	12.44

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
1978	11/24/2015	21.0	3.63	7.13	12.41
1979	4/5/2016	0.6	6.4	7.3	12.0
1980	4/5/2016	1	6.4	7.2	12.1
1981	4/5/2016	2.1	6.2	7.1	12.1
1982	4/5/2016	3	6.4	7.1	12.1
1983	4/5/2016	4	6.4	7.1	12.0
1984	4/5/2016	5	6.4	7.1	12.1
1985	4/5/2016	6	6.4	7.0	12.1
1986	4/5/2016	7	6.3	7.0	12.1
1987	4/5/2016	7.9	6.3	6.9	12.1
1988	4/5/2016	9.6	6.2	7.0	12.1
1989	4/5/2016	10.8	6.3	7.0	12.1
1990	4/5/2016	11.4	6.3	7.0	12.1
1991	4/5/2016	12	6.3	7.0	12.1
1992	4/5/2016	13	6.4	7.0	12.1
1993	4/5/2016	14	6.4	7.0	12.1
1994	4/5/2016	14.9	6.4	7.0	12.1
1995	4/5/2016	15.9	6.4	7.0	12.1
1996	4/5/2016	16	6.4	7.0	12.1
1997	4/5/2016	16.5	6.3	7.0	12.1
1998	5/16/2016	0.5	10.5	6.2	11.4
1999	5/16/2016	1	10.5	6.3	11.2
2000	5/16/2016	2	10.4	6.4	11.1
2001	5/16/2016	3	10.5	6.4	11.1
2002	5/16/2016	4	10.5	6.5	11.1
2003	5/16/2016	5	10.5	6.5	11.0
2004	5/16/2016	6	10.5	6.5	11.0
2005	5/16/2016	7	10.5	6.5	11.0
2006	5/16/2016	8	10.5	6.5	11.0
2007	5/16/2016	9	10.5	6.5	11.0
2008	5/16/2016	10	10.4	6.4	11.0
2009	5/16/2016	11	10.4	6.5	11.0
2010	5/16/2016	12	10.4	6.5	11.0
2011	5/16/2016	13	10.4	6.5	11.0
2012	5/16/2016	14	10.4	6.5	11.1
2013	5/16/2016	15.1	10.4	6.5	11.0
2014	5/16/2016	16	10.5	6.5	11.0
2015	5/16/2016	17	10.5	6.5	11.0
2016	5/16/2016	18	10.5	6.5	11.0
2017	5/16/2016	19	10.5	6.5	11.0
2018	5/16/2016	20	10.5	6.5	11.0
2019	5/16/2016	21	10.5	6.6	10.9
2020	5/16/2016	22.1	10.5	6.5	11.0
2021	6/7/2016	0.6	17.7	6.9	10.2
2022	6/7/2016	1	17.7	6.9	10.2
2023	6/7/2016	2	17.5	6.8	10.2
2024	6/7/2016	3	17.2	6.8	10.2
2025	6/7/2016	4	17.1	6.9	10.2
2026	6/7/2016	5	16.4	6.9	10.2
2027	6/7/2016	6	16.2	6.9	10.2
2028	6/7/2016	7	16.2	6.8	10.2
2029	6/7/2016	8	16.1	6.8	10.2
2030	6/7/2016	9	16.1	6.8	10.2
2031	6/7/2016	10	16.1	6.8	10.2
2032	6/7/2016	11	16.1	6.8	10.2
2033	6/7/2016	12	16.1	6.8	10.1
2034	6/7/2016	13	16.0	6.8	10.2
2035	6/7/2016	14	16.0	6.7	10.1
2036	6/7/2016	15	16.0	6.7	10.1

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
2037	6/7/2016	16	15.9	6.7	10.1
2038	6/7/2016	17	15.9	6.7	10.1
2039	6/7/2016	18	15.9	6.7	10.1
2040	6/7/2016	19.1	15.9	6.7	10.1
2041	6/21/2016	0.5	14.1	7.1	11.1
2042	6/21/2016	1	14.0	7.1	11.1
2043	6/21/2016	2	13.8	7.0	11.0
2044	6/21/2016	2.9	13.8	7.0	11.0
2045	6/21/2016	4	13.8	7.0	11.0
2046	6/21/2016	5	13.4	7.0	11.1
2047	6/21/2016	6	13.4	7.0	11.0
2048	6/21/2016	7	13.2	6.9	11.0
2049	6/21/2016	8.1	13.1	6.9	11.0
2050	6/21/2016	9.1	13.1	6.9	11.1
2051	6/21/2016	10.1	13.1	6.9	11.1
2052	6/21/2016	11	13.1	6.9	11.0
2053	6/21/2016	12.1	13.2	6.9	11.0
2054	6/21/2016	13	13.1	6.9	11.1
2055	6/21/2016	14.1	13.1	6.9	11.1
2056	6/21/2016	15	13.0	6.9	11.1
2057	6/21/2016	16.1	12.9	6.9	11.1
2058	6/21/2016	17	13.0	6.9	11.1
2059	6/21/2016	18.1	12.9	6.8	11.1
2233	11/16/2016	0.5	6.1	7.7	12.1
2234	11/16/2016	1	6.1	7.6	12.0
2235	11/16/2016	2	6.1	7.5	12.0
2236	11/16/2016	3	6.0	7.5	12.0
2237	11/16/2016	4	6.0	7.4	11.9
2238	11/16/2016	5.1	6.0	7.4	12.0
2239	11/16/2016	6	6.0	7.4	11.9
2240	11/16/2016	7	6.0	7.3	12.0
2241	11/16/2016	8	6.1	7.3	12.0
2242	11/16/2016	9	6.1	7.3	12.0
2243	11/16/2016	10	6.1	7.3	12.0
2244	11/16/2016	11	6.1	7.3	11.9
2245	11/16/2016	12.1	6.1	7.3	11.9
2246	11/16/2016	13	6.1	7.3	12.0
2247	11/16/2016	14.1	6.1	7.3	12.0
2248	11/16/2016	15.1	6.1	7.3	12.0
2249	11/16/2016	16	6.1	7.3	12.0
2250	11/16/2016	17	6.1	7.3	11.9
2251	11/16/2016	18	6.1	7.3	11.9
2252	11/16/2016	19	6.1	7.3	11.9
2253	11/16/2016	20.1	6.1	7.3	11.9
2254	11/29/2016	0.5	4.2	7.5	12.4
2255	11/29/2016	1	4.2	7.4	12.4
2256	11/29/2016	2	4.2	7.4	12.4
2257	11/29/2016	2.9	4.2	7.4	12.4
2258	11/29/2016	3.9	4.2	7.4	12.4
2259	11/29/2016	5	4.2	7.3	12.4
2260	11/29/2016	6	4.2	7.3	12.4
2261	11/29/2016	7	4.2	7.3	12.4
2262	11/29/2016	8	4.2	7.3	12.3
2263	11/29/2016	9	4.3	7.2	12.5
2264	11/29/2016	10	4.2	7.2	12.4
2265	11/29/2016	11	4.3	7.3	12.4
2266	11/29/2016	11.9	4.3	7.3	12.4
2267	11/29/2016	12.9	4.3	7.3	12.4
2268	11/29/2016	14	4.2	7.2	12.4

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
2269	11/29/2016	15	4.3	7.3	12.4
2270	11/29/2016	15.9	4.3	7.3	12.4
2271	11/29/2016	17.1	4.2	7.2	12.4
2272	11/29/2016	18.1	4.2	7.2	12.4
2273	11/29/2016	19.1	4.2	7.2	12.4
2274	11/29/2016	20	4.2	7.2	12.4
2275	3/20/2017	0.5	4.48		
2276	3/20/2017	1	4.48		
2277	3/20/2017	3	4.48		
2278	3/20/2017	5	4.48		
2279	3/20/2017	7	4.50		
2280	3/20/2017	10	4.49		
2281	3/20/2017	15	4.49		
2282	4/19/2017	0.5	5.99	7.02	12.19
2283	4/19/2017	1.1	5.99	7.03	12.17
2284	4/19/2017	2	6.00	7.04	12.18
2285	4/19/2017	3.2	6.00	7.05	12.16
2286	4/19/2017	4	5.99	7.05	12.14
2287	4/19/2017	5.1	6.00	7.07	12.16
2288	4/19/2017	6.1	6.00	7.07	12.15
2289	4/19/2017	6.3	5.97	7.08	12.20
2290	4/19/2017	6.4	5.97	7.08	12.21
2291	4/19/2017	7	6.00	7.10	12.19
2292	4/19/2017	7.7	5.99	7.11	12.18
2293	4/19/2017	9	5.98	7.10	12.13
2294	4/19/2017	9.9	5.98	7.12	12.17
2295	4/19/2017	11.3	5.98	7.12	12.16
2296	4/19/2017	13.1	5.96	7.13	12.16
2297	4/19/2017	14.5	5.96	7.12	12.17
2298	4/19/2017	14.6	5.94	7.13	12.16
2299	4/19/2017	15.3	5.95	7.14	12.19
2300	4/19/2017	16.8	5.95	7.13	12.16
2301	4/19/2017	17.5	5.95	7.13	12.15
2302	5/22/2017	0.5	9.23	6.66	11.60
2303	5/22/2017	1.1	9.21	6.73	11.64
2304	5/22/2017	2	9.20	6.78	11.63
2305	5/22/2017	3.1	9.18	6.82	11.65
2306	5/22/2017	4	9.17	6.87	11.65
2307	5/22/2017	5	9.20	6.91	11.61
2308	5/22/2017	6	9.17	6.92	11.64
2309	5/22/2017	7	9.16	6.96	11.62
2310	5/22/2017	8.1	9.15	6.97	11.62
2311	5/22/2017	9	9.18	6.97	11.65
2312	5/22/2017	10	9.18	7.00	11.63
2313	5/22/2017	11.1	9.18	7.04	11.64
2314	5/22/2017	12	9.17	7.05	11.58
2315	5/22/2017	13.1	9.15	7.06	11.60
2316	5/22/2017	14	9.15	7.07	11.58
2317	5/22/2017	15	9.15	7.07	11.63
2318	5/22/2017	16	9.15	7.09	11.58
2319	5/22/2017	17.1	9.14	7.08	11.60
2320	5/22/2017	18	9.17	7.10	11.60
2321	5/22/2017	18.9	9.17	7.09	11.59
2322	5/22/2017	20	9.17	7.11	11.61
2323	5/22/2017	21	9.17	7.12	11.63
2324	5/22/2017	22.1	9.18	7.13	11.62
2325	6/8/2017	0.5	11.51	7.61	11.05
2326	6/8/2017	1	11.50	7.54	10.99
2327	6/8/2017	2	11.52	7.49	10.98

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
2328	6/8/2017	3	11.50	7.46	10.97
2329	6/8/2017	4	11.51	7.44	10.96
2330	6/8/2017	5	11.49	7.42	10.94
2331	6/8/2017	6	11.49	7.41	10.95
2332	6/8/2017	7	11.47	7.40	10.93
2333	6/8/2017	8.1	11.46	7.38	10.93
2334	6/8/2017	9	11.46	7.36	10.94
2335	6/8/2017	10	11.44	7.35	10.94
2336	6/8/2017	11	11.43	7.34	10.91
2337	6/8/2017	12	11.39	7.31	10.76
2338	6/8/2017	13	11.45	7.30	10.80
2339	6/8/2017	14	11.42	7.31	10.90
2340	6/8/2017	15	11.39	7.30	10.85
2341	6/8/2017	16	11.39	7.31	10.79
2342	6/8/2017	17	11.42	7.30	10.79
2343	6/8/2017	18	11.43	7.30	10.84
2344	6/8/2017	19	11.45	7.30	10.85
2345	6/8/2017	20.1	11.46	7.30	10.88
2346	6/8/2017	21	11.44	7.30	10.85
2347	6/19/2017	0.5	11.81	7.67	11.02
2348	6/19/2017	1	11.67	7.59	11.00
2349	6/19/2017	2	11.46	7.57	11.02
2350	6/19/2017	3	11.41	7.52	10.98
2351	6/19/2017	4.1	11.39	7.49	10.98
2352	6/19/2017	5	11.39	7.47	10.98
2353	6/19/2017	6	11.36	7.45	10.99
2354	6/19/2017	7.1	11.36	7.45	10.97
2355	6/19/2017	8	11.35	7.43	10.96
2356	6/19/2017	9	11.37	7.42	10.97
2357	6/19/2017	10.1	11.29	7.40	10.96
2358	6/19/2017	11	11.30	7.40	10.95
2359	6/19/2017	12	11.33	7.38	10.92
2360	6/19/2017	13.1	11.29	7.38	10.96
2361	6/19/2017	14	11.27	7.38	10.91
2362	6/19/2017	15	11.26	7.38	10.92
2363	6/19/2017	16	11.26	7.37	10.92
2364	6/19/2017	17	11.28	7.36	10.91
2365	6/19/2017	18	11.28	7.36	10.89
2366	6/19/2017	19	11.28	7.35	10.93
2367	6/19/2017	20	11.28	7.35	10.90
2535	11/20/2017	0.7	3.87	6.42	12.51
2536	11/20/2017	1.1	3.87	6.34	12.47
2537	11/20/2017	2	3.86	6.36	12.51
2538	11/20/2017	3	3.86	6.33	12.51
2539	11/20/2017	4	3.86	6.28	12.50
2540	11/20/2017	5	3.86	6.27	12.48
2541	11/20/2017	6	3.86	6.26	12.50
2542	11/20/2017	7.1	3.86	6.28	12.51
2543	11/20/2017	8.1	3.86	6.28	12.48
2544	11/20/2017	9	3.87	6.27	12.51
2545	11/20/2017	10	3.86	6.30	12.49
2546	11/20/2017	11	3.86	6.30	12.50
2547	11/20/2017	12	3.87	6.30	12.44
2548	11/20/2017	13.1	3.86	6.30	12.50
2549	11/20/2017	14	3.87	6.31	12.48
2550	11/20/2017	15.1	3.86	6.31	12.47
2551	11/20/2017	16	3.87	6.32	12.51
2552	11/27/2017	0.5	4.67	6.90	12.73
2553	11/27/2017	1	4.67	6.94	12.77

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
2554	11/27/2017	2.1	4.67	6.92	12.74
2555	11/27/2017	3	4.67	6.91	12.75
2556	11/27/2017	4.1	4.67	6.92	12.74
2557	11/27/2017	5	4.67	6.91	12.72
2558	11/27/2017	6.1	4.67	6.92	12.79
2559	11/27/2017	7.1	4.67	6.94	12.77
2560	11/27/2017	8.1	4.67	6.94	12.72
2561	11/27/2017	9.1	4.67	6.95	12.72
2562	11/27/2017	10.1	4.67	6.95	12.74
2563	11/27/2017	11	4.67	6.95	12.72
2564	11/27/2017	12.1	4.67	6.97	12.76
2565	11/27/2017	13	4.67	6.96	12.72
2566	11/27/2017	14	4.67	6.97	12.68
2567	11/27/2017	15	4.67	7.02	12.74
2568	11/27/2017	15.2	4.67	7.01	12.72
2569	11/27/2017	16.1	4.67	7.01	12.74
2570	11/27/2017	17	4.67	7.00	12.74
2571	11/27/2017	18.1	4.66	7.00	12.71
2572	11/27/2017	19	4.66	7.01	12.71
2573	11/27/2017	20	4.66	7.01	12.71
2574	11/27/2017	21	4.66	7.01	12.73
2575	11/27/2017	22	4.67	7.02	12.71
2576	3/27/2018	0.5	3.5	7.3	13.3
2577	3/27/2018	1	3.5	7.2	13.3
2578	3/27/2018	2	3.5	7.2	13.3
2579	3/27/2018	3	3.5	7.2	13.3
2580	3/27/2018	4	3.5	7.2	13.4
2581	3/27/2018	5	3.5	7.2	13.4
2582	3/27/2018	6	3.5	7.2	13.4
2583	3/27/2018	7	3.5	7.2	13.4
2584	3/27/2018	8	3.5	7.2	13.4
2585	3/27/2018	9	3.5	7.2	13.3
2586	3/27/2018	10	3.5	7.2	13.4
2587	3/27/2018	11	3.5	7.2	13.4
2588	3/27/2018	12	3.5	7.2	13.4
2589	3/27/2018	13	3.5	7.2	13.5
2590	3/27/2018	14	3.5	7.2	13.5
2591	3/27/2018	15	3.5	7.2	13.6
2592	3/27/2018	16	3.5	7.2	13.5
2593	3/27/2018	17.1	3.5	7.2	13.5
2594	3/27/2018	18	3.5	7.2	13.5
2595	3/27/2018	19	3.5	7.2	13.6
2596	4/23/2018	0.5	6.9	7.3	12.2
2597	4/23/2018	1	6.8	7.2	12.2
2598	4/23/2018	3	6.8	7.2	12.3
2599	4/23/2018	5.1	6.8	7.1	12.3
2600	4/23/2018	8	6.8	7.1	12.2
2601	4/23/2018	12.1	6.8	7.1	12.3
2602	4/23/2018	15	6.8	7.1	12.3
2603	4/23/2018	18	6.8	7.1	12.2
2604	5/22/2018	0.5	9.3	7.4	11.6
2605	5/22/2018	1	9.3	7.1	11.6
2606	5/22/2018	2	9.3	7.1	11.6
2607	5/22/2018	2.9	9.3	7.1	11.6
2608	5/22/2018	3.9	9.3	7.0	11.6
2609	5/22/2018	5	9.3	7.0	11.5
2610	6/13/2018	0.5	10.9	7.4	11.2
2611	6/13/2018	1.1	10.8	7.3	11.3
2612	6/13/2018	3	10.8	7.3	11.3

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
2613	6/13/2018	5	10.7	7.3	11.3
2614	6/13/2018	7	10.6	7.2	11.2
2615	6/13/2018	9	10.6	7.2	11.1
2616	6/13/2018	11	10.6	7.2	11.2
2617	6/13/2018	12.9	10.6	7.2	11.2
2618	6/13/2018	15.1	10.6	7.2	11.2
2619	6/13/2018	17	10.6	7.2	11.2
2620	6/13/2018	19	10.6	7.2	11.3
2621	6/21/2018	0.5	13.0	7.1	10.8
2622	6/21/2018	1	13.0	7.1	10.8
2623	6/21/2018	2	13.0	7.1	10.7
2624	6/21/2018	3	12.9	7.1	10.8
2625	6/21/2018	4	12.9	7.1	10.8
2626	6/21/2018	5	12.9	7.1	10.7
2627	6/21/2018	6	12.8	7.1	10.7
2628	6/21/2018	7	12.8	7.1	10.7
2629	6/21/2018	8	12.8	7.1	10.7
2630	6/21/2018	9	12.7	7.1	10.7
2631	6/21/2018	10	12.7	7.1	10.7
2632	6/21/2018	11	12.7	7.1	10.7
2633	6/21/2018	12	12.7	7.0	10.7
2634	6/21/2018	13	12.7	7.1	10.6
2635	6/21/2018	14	12.7	7.0	10.7
2636	6/21/2018	15.1	12.7	7.0	10.7
2637	6/21/2018	16	12.7	7.1	10.7
2638	6/21/2018	17	12.7	7.1	10.6
2639	6/21/2018	18	12.7	7.1	10.6
2640	6/21/2018	19	12.7	7.1	10.6
2783	11/1/2018	0.5	7.2	7.1	11.9
2784	11/1/2018	1	7.2	7.0	11.9
2785	11/1/2018	2	7.2	7.0	11.9
2786	11/1/2018	3	7.2	7.0	11.8
2787	11/1/2018	4	7.2	6.9	11.8
2788	11/1/2018	5	7.2	6.9	11.9
2789	11/1/2018	6	7.2	6.9	11.9
2790	11/1/2018	7	7.2	6.9	11.9
2791	11/1/2018	8	7.2	6.9	11.8
2792	11/1/2018	9	7.2	6.9	11.9
2793	11/1/2018	10	7.2	6.9	11.9
2794	11/1/2018	11	7.2	6.8	11.9
2795	11/1/2018	12	7.2	6.8	11.9
2796	11/1/2018	13.1	7.2	6.9	11.9
2797	11/1/2018	14	7.2	6.9	11.9
2798	11/1/2018	15	7.2	6.8	11.9
2799	11/1/2018	16	7.2	6.8	11.9
2800	11/1/2018	17	7.2	6.8	11.9
2801	11/1/2018	18	7.2	6.8	11.9
2802	11/1/2018	19	7.2	6.9	11.9
2803	11/1/2018	20	7.2	6.9	11.9
2804	11/16/2018	0.5	5.1	6.5	11.7
2805	11/16/2018	1	5.1	6.5	11.7
2806	11/16/2018	2	4.8	6.6	11.7
2807	11/16/2018	3	4.8	6.6	11.7
2808	11/16/2018	4	4.8	6.6	11.7
2809	11/16/2018	5	4.8	6.6	11.7
2810	11/16/2018	6.1	4.7	6.6	11.7
2811	11/16/2018	7	4.7	6.6	11.7
2812	11/16/2018	8.1	4.8	6.6	11.7
2813	11/16/2018	9	4.8	6.6	11.7

Unique#	Date	Depth (m)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
2814	11/16/2018	10	4.8	6.6	11.7
2815	11/16/2018	11	4.8	6.6	11.7
2816	11/16/2018	12	4.7	6.6	11.7
2817	11/16/2018	13	4.7	6.6	11.7
2818	11/16/2018	14	4.7	6.6	11.7
2819	11/16/2018	15	4.7	6.6	11.7
2820	11/16/2018	16	4.7	6.6	11.7
2821	11/16/2018	17	4.7	6.6	11.7
2822	11/16/2018	18	4.7	6.6	11.7
2823	11/16/2018	19	4.7	6.6	11.7
2824	11/16/2018	20	4.7	6.6	11.7
2825	11/16/2018	21	4.7	6.6	11.6
2826	11/26/2018	0.5	2.2	7.3	13.4
2827	11/26/2018	1	2.2	7.2	13.4
2828	11/26/2018	2.1	2.2	7.1	13.4
2829	11/26/2018	3.1	2.2	7.1	13.4
2830	11/26/2018	4	2.2	7.0	13.4
2831	11/26/2018	5	2.2	7.0	13.4
2832	11/26/2018	6	2.3	7.0	13.3
2833	11/26/2018	7	2.3	6.9	13.3
2834	11/26/2018	8	2.3	6.9	13.3
2835	11/26/2018	9	2.3	6.9	13.4
2836	11/26/2018	10	2.3	6.9	13.4
2837	11/26/2018	11	2.3	6.8	13.4
2838	11/26/2018	12	2.3	6.8	13.4
2839	11/26/2018	13	2.3	6.8	13.3
2840	11/26/2018	14	2.3	6.8	13.4
2841	11/26/2018	15	2.3	6.8	13.3
2842	11/26/2018	16	2.4	6.8	13.3
2843	11/26/2018	17.1	2.3	6.8	13.4
2844	11/26/2018	18.1	2.3	6.8	13.3
MIN			0.0	5.9	3.1
MAX			20.7	8.1	13.6
5th Percentile			1.6	6.5	9.3
95th Percentile			16.1	7.6	13.1

Appendix C. Reasonable Potential and Water Quality-Based Effluent Limit 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) 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:

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

Section 7(6) of the CDT WQS establishes that criteria for metals shall be applied as dissolved values, except lead and selenium which are represented as total recoverable, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, the EPA must calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation 12. The criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = WLA = \frac{D \times (C_d - C_u) + C_u}{CT} \quad \text{Equation 12}$$

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):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\sigma)} \quad \text{Equation 13}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \quad \text{Equation 14}$$

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:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \quad \text{Equation 15}$$

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 MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \quad \text{Equation 16}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)} \quad \text{Equation 17}$$

where σ, and σ^2 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. Section 12(2) of the CDT WQS establishes critical flows upon which mixing zones and limits shall be based, as shown below. Idaho's water quality standards require criteria be evaluated in accordance with IDAPA 58.01.02.210.03.

Acute aquatic life	1Q10
Chronic aquatic life	7Q10
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia[3]	30B3
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.	

[3] The EPA disapproved Provision 12(2)(E) of the CDT WQS (i.e., the 30B4 flow for ammonia), so the 30B3 was used in accordance with IDAPA 58.01.02.210.03.

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.

Appendix D. Reasonable Potential and Water Quality-Based Effluent Limit Calculations

A. Reasonable Potential Calculations for Ammonia, Chlorine, Toluene, Zinc, and Nickel

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

Facility Name	City of St. Maries WWTP
Facility Flow (mgd)	2.00
Facility Flow (cfs)	3.09

Critical River Flows (CFS) (IDAPA 58.01.02 03. b)		Annual Crit. Flows	Seasonal Low Flow	Seasonal High Flow	Annual Crit. Flows	Annual Crit. Flows	Annual Crit. Flows	Annual Crit. Flows
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1Q10	251			251	251	251	251
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	7Q10 or 4B3	340			340	340	340	340
Ammonia	30B3 or 30Q10/30Q5 (seasonal)	629			629	629	629	629
Human Health - Non-Carcinogen	Harmonic Mean Flow	1276			1276	1276	1276	1276
Human Health - carcinogen	Harmonic Mean Flow	1276			1276	1276	1276	1276

DF at defined percent of river flow allow	25%	21.3	Note: Acute and Chronic dilution factors used for mixed hardness and pH mix.
DF at defined percent of river flow allow	25%	28.5	

Receiving Water Data		Notes:	Annual Crit. Flows	Seasonal Low Flow	Seasonal High Flow
Hardness, as mg/L $CaCO_3$	= 13.7 mg/L	5th % at critical flows			
Temperature, °C	Temperature, °C	95th percentile	16		
pH, S.U.	pH, S.U.	95th percentile	7.6		

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages present	AMMONIA, default: cold water, fish early life stages present	AMMONIA, default: cold water, fish early life stages present	CHLORINE (Total Residual)	TOLUENE	ZINC - SEE Toxic BiOp	NICKEL - SEE Toxic BiOp
Effluent Data	Number of Samples in Data Set (n)		89			62	2	2	2
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		0.7			0.6	0.6	0.6	0.6
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		8,100			200	1.1	20	20
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only								
Receiving Water Data	90th Percentile Conc., µg/L - (C_u)		86			0	0	8.39	0
	Geometric Mean, µg/L, Human Health Criteria Only						0	1.69	0
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	11,375	--	--	19.	--	21.747	87.122
	Aquatic Life Criteria, µg/L	Chronic	3,614	--	--	11.	--	21.925	9.677
	Human Health Water and Organism, µg/L		--	--	--	--	47.	870.	58.
	Human Health, Organism Only, µg/L		--	--	--	--	170.	1,500.	100.
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute				--	--	.978	.998
		Chronic				--	--	.986	.997
	Carcinogen (Y/N), Human Health Criteria Only		--	--	--	--	N	N	N
Percent River Flow Default Value = 25%	Aquatic Life - Acute	1Q10	25%	--	--	25%	0%	25%	25%
	Aquatic Life - Chronic	7Q10 or 4B3				25%	0%	10%	25%
		30B3 or 30Q10/30Q5				25%	0%	25%	25%
	Human Health - Non-Carcinogen	Harmonic Mean	25%	--	--	25%	0%	25%	25%
	Human Health - Carcinogen	Harmonic Mean				25%	0%	25%	25%
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	21.3	--	--	21.3	1.0	21.3	21.3
	Aquatic Life - Chronic	7Q10 or 4B3				28.5	1.0	12.0	28.5
	Aquatic Life - Chronic Ammonia	30B3 or 30Q10/30Q5	51.8	--	--	51.8	1.0	51.8	51.8
	Human Health - Non-Carcinogen	Harmonic Mean				104.1	1.0	104.1	104.1
	Human Health - Carcinogen	Harmonic Mean				104.1	1.0	104.1	104.1
Aquatic Life Reasonable Potential Analysis									
σ	$\sigma^2=\ln(CV^2+1)$		0.631	--	--	0.555	0.555	0.555	0.555
P_n	=(1-confidence level)$^{1/n}$, where confidence level =	99%	0.950	--	--	0.928	0.100	0.100	0.100
Multiplier (TSD p. 57)	=exp(zσ-0.5σ²)/exp[normsinv(P_n)σ-0.5σ²], where	99%	1.5	--	--	1.6	7.4	7.4	7.4
Statistically projected critical discharge concentration (C_e)			12489	--	--	322.61	8.13	147.87	147.87
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	669	--	--	15.16	8.13	14.79	6.93
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	325	--	--	11.33	8.13	19.85	5.18
Reasonable Potential to exceed Aquatic Life Criteria			NO	--	--	YES	NA	NO	NO
Aquatic Life Effluent Limit Calculations									
Number of Compliance Samples Expected per month (n)						20			
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			--	--	--	20	--	--	--
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		--	--	--	0.600	--	--	--
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		--	--	--	0.600	--	--	--
Acute WLA, ug/L	C_e = (Acute Criteria x MZ_a) - C_u x (MZ_a-1)	Acute	--	--	--	404.3	--	--	--
Chronic WLA, ug/L	C_e = (Chronic Criteria x MZ_c) - $C_{u\,x}$ (MZ_c-1)	Chronic	--	--	--	313.2	--	--	--
Long Term Ave (LTA), ug/L	WLAa x exp(0.5σ²-zσ), Acute	99%	--	--	--	129.8	--	--	--
(99th % occurrence prob.)	WLAc x exp(0.5σ²-zσ); ammonia n=30, Chronic	99%	--	--	--	165.2	--	--	--
Limiting LTA, ug/L	used as basis for limits calculation		--	--	--	129.8	--	--	--
Applicable Metals Criteria Translator (metals limits as total recoverable)						--	--	--	--
Average Monthly Limit (AML), ug/L	, where % occurrence prob =	95%	--	--	--	160	--	--	--
Maximum Daily Limit (MDL), ug/L	, where % occurrence prob =	99%	--	--	--	404	--	--	--
Average Monthly Limit (AML), mg/L			--	--	--	0.160	--	--	--
Maximum Daily Limit (MDL), mg/L			--	--	--	0.404	--	--	--
Average Monthly Limit (AML), lb/day			--	--	--	2.7	--	--	--
Maximum Daily Limit (MDL), lb/day			--	--	--	6.7	--	--	--
Human Health Reasonable Potential Analysis									
σ	$\sigma^2=\ln(CV^2+1)$						0.555	0.555	0.555
P_n	=(1-confidence level)$^{1/n}$ where confidence level =	95%					0.224	0.224	0.224
Multiplier	=exp(2.326σ-0.5σ²)/exp[invnorm(P_n)σ-0.5σ²], prob. =	50%					1.524	1.524	1.524
Dilution Factor (for Human Health Criteria)							1.0	104.1	104.1
Max Conc. at edge of Chronic Zone, ug/L (C_e)							1.677	1.967	0.293
Reasonable Potential to exceed HH Water & Organism							NO	NO	NO
Reasonable Potential to exceed HH Organism Only							NO	NO	NO
Human Health, Water + Organism, Effluent Limit Calculations									
Number of Compliance Samples Expected per month (n)									
Average Monthly Effluent Limit, ug/L	equals wasteload allocation						--	--	--
Maximum Daily Effluent Limit, ug/L	TSD Multiplier, Table 5-3, using 99th and 95th %						--	--	--
Average Monthly Limit (AML), lb/day							--	--	--
Maximum Daily Limit (MDL), lb/day							--	--	--
Human Health, Organism Only, Effluent Limit Calculations									
Number of Compliance Samples Expected per month (n)									
Average Monthly Effluent Limit, ug/L	equals wasteload allocation						--	--	--
Maximum Daily Effluent Limit, ug/L	TSD Multiplier, Table 5-3, using 99th and 95th %						--	--	--
Average Monthly Limit (AML), lb/day							--	--	--
Maximum Daily Limit (MDL), lb/day							--	--	--

References: Idaho Water Quality Standards http://adminrules.idaho.gov/rules/current/58/0102.pdf
Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001 http://www.epa.gov/npdes/pubs/owm0264.pdf

Filename: C:\Users\Jzjobro\Environmental Protection Agency (EPA)\Region 10 NPDES Permits Unit - Permit Documents Under Review **Version Date:**

B. Reasonable Potential Analysis For Temperature

Nov. 1 – Jun. 30 Reasonable Potential Considering ID WQS:

INPUT		Data Source
Chronic Dilution Factor at Mixing Zone Boundary	28.5	High River Flow
Ambient Temperature (T) (Upstream Background)	16.0 °C	95th Percentile based on permittee or USGS data
Effluent Temperature	22.2 °C	95th Percentile of **monthly daily max effluent** based on daily max per DMR data
Aquatic Life Temperature WQ Criterion in Fresh Water	19.0 °C	Lowest daily max criteria
OUTPUT		
Temperature at Chronic Mixing Zone Boundary:	16.2 °C	Mass balance
Incremental Temperature Increase or decrease:	0.2 °C	WQS 401.c - allow for maximum of 0.3ºC rise in receiving water temperature.

The mass balance equation for RP analysis is: Temperature at the chronic mixing zone boundary = (critical effluent temperature + (chronic dilution factor at boundary of mixing zone – 1) X upstream background temperature) / chronic dilution factor at boundary of mixing zone.

C. Reasonable Potential Analysis for Whole Effluent Toxicity

WET RP Analysis	**Ce (max WET test result in TUs)**	**TSD Multiplier (99th Percentile)**	**Max Ce (max WET result * TSD multiplier)**	**Cs (instream WET concentration, assumed 0)**	**Sa (dilution factors)**	**Cr, (resultant magnitude or predicted concentration at edge of MZ)**	**CCC (EPA recommended criteria)**	**Reasonable Potential if Cr>CCC (YES or NO)**
Chronic	86.0	12.3	1054.6	0	28.5	37.0	1	YES
Acute	8.6	12.3	105.5	0	21.3	5.0	0.3	YES
$Cr = \frac{Ce + [Cs(Sa-1)]}{Sa}$ Cr = resultant magnitudes								

D. Whole Effluent Toxicity Limit Calculations

Acute-Chronic Ratio (ACR)	**CV**	**σ**	**σ2**	**σn2**	**σn**	**σ42**	**n (# of compliance samples)**	**z 99th**	**z 95th**	**WLA**	**Multiplier**	**LTA**	**MDL Multiplier (95th)**	**AML Multiplier (95th)**	**MDL (TU)**	**AML (TU)**
	3.0			1.18	1.09	1.18	4	2.33	1.65	28.5	0.144	4.11	10.8	3.31	44.4	13.6
10	3.0	1.52	2.30					2.33	1.65	63.9	0.093	5.92				

Appendix E. Antidegradation Analysis

The EPA has prepared a preliminary antidegradation analysis, which characterizes the potential impact of the point source discharge into Reservation TAS waters in consideration of the Tribe's Antidegradation Policy. The Tribe's final Antidegradation Review will be provided with the final CWA Section 401 certification of the permit.

The purposes of the Coeur d'Alene Tribe's Antidegradation Policy as outlined in Section 7 of *Water Quality Standards for Approved Surface Waters of the Coeur D'Alene Tribe*, effective June 12, 2014, are bulleted below. Tier levels indicate the level of protection required under the Antidegradation Policy.

- Maintain and protect water quality necessary to protect existing uses (Tier 1)
- Outline conditions under which the Tribe may allow for lower water quality to accommodate important social or economic development; Assure that the highest statutory/regulatory requirements for new and existing point sources are achieved (Tier 2)
- Outline criteria for designating Outstanding Tribal Resource Waters (OTRWs) and maintain the water quality and uses of OTRWs (Tier 3)

The Coeur d'Alene Tribe's Antidegradation Policy, in conjunction with their CWA Section 401 certification authority, authorizes the Tribe to review any activity involving a point source discharge into Reservation TAS waters to ensure that existing uses are protected and that any degradation of water quality occurs in an approved manner. This is known as an Antidegradation Review.

Per Section 7 of the Coeur d'Alene Tribe WQS, *Antidegradation Implementation Methods and Related Review* 5.3.1, all parameters in Reservation TAS waters will receive at least Tier 1 protection. Under 5.2.2, Tier 2 shall apply when the water quality for a parameter is better than criteria established in the Coeur d'Alene Tribe WQS to maintain and protect the "fishable and swimmable" goals of Section 101(a)(2) of the CWA. Under Section 6(3)(a)-(d) the following waters shall be considered for Tier 3 protection: Outstanding national or tribal resources; documented critical habitat for threatened/endangered species; Waters of exceptional recreational, ceremonial, cultural, or ecological significance; and Waters supporting priority species as determined by the Tribe. Under the Antidegradation Policy 5.2.3, unless a water body is not meeting Tier 1 protections, or has been designated as OTRW, Tier 2 will apply to all discharge parameters.

Because the St. Joe River at the point of discharge is designated by USFWS as critical habitat for Bull Trout, the receiving water must be provided Tier 3 protection. The SMWWTP is not a new point source discharge and is not proposing expansions that would result in increased pollutant loadings to Reservation TAS Waters. Therefore, the permit action will not violate any of the Tier 3 prohibitions outlined in the Antidegradation Policy 6.1.1.1. Because all Reservation TAS waters must be provided Tier 1 protection at a minimum, the EPA performed a Tier 2 level analysis for the action.

Existing Pollutant Limits

As shown in Tables 6 and 7 of the Fact Sheet, all proposed limits in the permit are at least as stringent as those in the previous permit, with the one exception of the maximum daily limit

(MDL) for total residual chlorine. All other effluent limitations for pollutants in the current permit have either been retained at the same level or made more stringent in the proposed permit. A new effluent limitation has also been proposed for an additional parameter.

More Stringent Limits

Reasonable potential and effluent limit calculations resulted in the inclusion of the following two more stringent effluent limitations for parameters already controlled in the 2007 permit:

- Average monthly limit for Total Residual Chlorine: 0.233 mg/L → 0.160 mg/L
- Instantaneous max limit for *E. coli*: 406/100 mL → 235/100 mL

New Limit

Reasonable potential and effluent limit calculations resulted in the inclusion of the following new effluent limitation for a parameter not controlled in the 2007 permit:

- Whole Effluent Toxicity AML and MDL of 13.66 and 44.47 TUc, respectively

Less Stringent Limits

The only limit in the proposed permit that is less stringent than the current permit is the maximum daily limit (MDL) for total residual chlorine. As discussed in the "Chlorine" section in V.D of the Fact Sheet, the new calculated MDL has increased from 0.305 to 0.404 mg/L while the average monthly limit (AML) has decreased from 0.233 mg/L to 0.160 mg/L (i.e., is more stringent). Because of the new compliance target set by the more stringent AML, the EPA has determined that the increased MDL will not result in degradation of Reservation TAS Waters.

As discussed in Section IV.D. of the Fact Sheet, there are no known water quality impairments in or EPA-approved Total Maximum Daily Loads (TMDLs) for the St. Joe River at the point of discharge. However, the section of the St. Joe River receiving the discharge is unassessed for Idaho 303(d) purposes (i.e., insufficient data is available to determine whether beneficial uses are being met). The EPA searched for total residual chlorine impairments upstream and/or downstream the point of discharge that have been assessed and identified in Idaho's 2016 305(b) Integrated Report. A review of the St. Joe River between Coeur d'Alene Lake and St. Joe City did not reveal any impairments or TMDLs for total residual chlorine. Because the ID and Coeur d'Alene Tribe numeric freshwater aquatic life criteria for total residual chlorine are identical, the EPA has determined that the receiving water is attaining Coeur d'Alene Tribal water quality standards for total residual chlorine. As there are no known impairments for total residual chlorine and the higher MDL will not degrade water quality or impact existing uses, the inclusion of a less stringent MDL for total residual chlorine is permissible in accordance with Section 303(d)(4)(B) of the Clean Water Act. Therefore, the EPA concludes that no adverse change in water quality and no degradation will result from the discharge of this pollutant in accordance with the reissued permit, and that this discharge complies with the of the Coeur d'Alene Tribe's Antidegradation Policy.

Summary

In sum, for the following reasons, the EPA concludes that no adverse change in water quality and no degradation will result from the discharge of these pollutants in accordance with the reissued permit, and that this discharge complies with the of the Coeur d'Alene Tribe's Antidegradation Policy.

- The EPA conducted reasonable potential analyses based upon the assimilative capacity of the receiving water on a parameter-by-parameter basis and included effluent limitations necessary to ensure that Coeur d'Alene Tribe WQS criteria are not violated by the discharge, in accordance with the Tribe's Antidegradation Policy Tier 2 requirements and Tribal mixing zone policies;
- More stringent controls for previously-controlled parameters have been proposed in the permit;
- In the one case where a less stringent MDL is proposed, water quality will not be degraded on account of a more stringent AML; and
- A new effluent limitation has been proposed for a parameter not previously controlled.

Appendix F. CWA 401 Certification