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 Preston
Wastewater Treatment Plant

Public Comment Start Date: November 9, 2016
Public Comment Expiration Date: December 9, 2016

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

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

State Certification
Upon EPA's request, the Idaho Department of Environmental Quality (IDEQ) has provided a draft certification of the permit for this facility under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Administrator, State of Idaho
Idaho Department of Environmental Quality
Pocatello Regional Office
444 Hospital Way, #300
Pocatello, Idaho 83201

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 Office of Water and Watersheds 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 "http://EPA.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

EPA Idaho Operations Office
950 W. Bannock Street, Suite 900
Boise, ID 83702
(206) 378-5746

Idaho Department of Environmental Quality
Pocatello Regional Office
444 Hospital Way, #300
Pocatello, Idaho 83201

Preston City Office
70 West Oneida Street
Preston, Idaho 83263
(206) 852-1817

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
AML	Average Monthly Limit
AWL	Average Weekly Limit
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
°C	Degrees Celsius
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
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
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
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
N	Nitrogen
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
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 (EPA/505/2-90-001)
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
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
Water Quality Standards	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

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

City of Preston
Wastewater Treatment Plant
NPDES Permit # ID0020214

Physical Address:
1004 East 8 South
Preston, Idaho 83263

Mailing Address:
70 West Oneida
Preston, Idaho 83263

Contact:
Dustin Hollingsworth
(208) 852-2930

B. Permit History

The most recent NPDES permit for the City of Preston Wastewater Treatment Plant (WWTP) was issued on May 31, 2005, became effective on August 1, 2005, and expired on July 31, 2010. An NPDES application for permit issuance was submitted by the permittee on February 3, 2010. EPA requested additional information on March 5, 2010. EPA received the requested additional information on July 3, 2010 and determined that the application was complete. Therefore, pursuant to 40 CFR 122.6., the permit has been administratively extended and remains fully effective and enforceable.

II. Facility Information

A. Treatment Plant Description

Service Area

The City of Preston owns and operates the City of Preston WWTP located in Preston**,** Idaho. The collection system has no combined sewers. The facility serves a resident population of 5,204. A plastics manufacturing facility discharges wastewater to the City of Preston WWTP.

Treatment Process

The design flow of the facility is 1.2 million gallons per day (mgd). The treatment process consists of bar screens, grit removal system, oxidation ditch with aerated and anoxic zones,

clarifier, and UV disinfection. Solids treatment includes a sludge thickener and screw press after being collected from the clarifier underflow. Chlorine disinfection is used when needed as a backup to UV disinfection. Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A. Because the facility design flow is greater than 1.0 mgd, the facility is considered a major facility. Recent flows as reported on their DMRs for the previous five years are summarized in Table 1.

Table 1. Average and Maximum Daily Flow Rates by Year

	2010	2011	2012	2013	2014	2015
Annual average daily flow rate	0.74 mgd	1.09 mgd	0.63 mgd	0.62 mgd	0.70 mgd	0.71 mgd
Maximum daily flow rate	1.21 mgd	1.9 mgd	0.73 mgd	0.76 mgd	0.86 mgd	1.16 mgd

Outfall Description

Outfall 001 is located at latitude 42º 04' 27" N and longitude 111º 50' 59" W. Effluent flows approximately 40 ft from the facility via an underground 8" pipe before discharging directly into Worm Creek.

B. Background Information

Effluent Characterization

In order to determine pollutants of concern for further analysis, EPA evaluated the application form, additional discharge data, and the nature of the discharge. The wastewater treatment process for this facility includes both primary and secondary treatment, as well as disinfection with UV with chlorine as a backup disinfectant. Pollutants expected in the discharge from a facility with this type of treatment include, but are not limited to, five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), E. coli bacteria, pH, ammonia, phosphorus, chlorine, and dissolved oxygen (DO). Additionally, the expanded effluent testing submitted with the application showed levels of ammonia present in the effluent, and detectable levels of antimony, arsenic, chromium, copper, nickel, and zinc. Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- E. coli bacteria
- pH
- Ammonia
- Phosphorus
- Chlorine
- DO
- Antimony
- Arsenic
- Chromium
- Copper
- Nickel
- Zinc

The concentrations of pollutants in the discharge were reported in the NPDES application and in DMRs and were used in determining reasonable potential for several parameters (see Appendix G).

Compliance History

The EPA reviewed the last five years of effluent monitoring data (2010 – 2015) from the discharge monitoring report (DMR). The data are presented in Appendix D and summarized below.

Overall, the facility had a good compliance record in meeting permit limits, but had multiple issues with plan submittals that were noted during inspections in 2013 and 2009. A summary of effluent violations from permit issuance in 2005 through 2015 is provided in Table 2.

Table 2. Effluent Limit Violations from 2005 – 2015.

Parameter	Limit	Units	Number of Instances
Solids, Total Suspended	Weekly Average	mg/L	3
BOD, 5-day	Monthly Average	mg/L	3
Nitrogen, Ammonia	Monthly Average	lb/day	1
Nitrogen, Ammonia	Monthly Average	mg/L	3
Oxygen, Dissolved	Daily Minimum	mg/L	6
pH	Instantaneous Minimum	SU	1

III. Receiving Water

A. Location

This facility discharges to Worm Creek in the City of Preston, Idaho. The outfall is located in the Bear River Basin, approximately 15 miles upstream of Cub River in Cache County, Utah. During the irrigation season, much of Worm Creek is diverted for agricultural purposes.

B. Low Flow Conditions

The Technical Support Document for Water Quality-Based Toxics Control (hereafter referred to as the TSD) (EPA, 1991) and the Idaho Water Quality Standards (WQS) recommend the flow conditions for use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the Idaho WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria.

Because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the 30Q5 for the chronic ammonia criterion instead of the 7Q10. For human health criteria, the Idaho WQS recommend the 30Q5 flow rate for non-carcinogens, and the harmonic mean flow rate for carcinogens. (see Appendix E of this fact sheet for additional information on flows).

Because there was no USGS gauge station with stream flow data for Worm Creek, the EPA calculated low flow conditions using data collected by the City of Preston WWTP. Table 3 presents the low flow values measured upstream of the facility.

Table 3. Low Flows in Worm Creek at the Point of Discharge

Flows	cfs
Harmonic Mean	1.33
30Q5	0.87
7Q10	0.79
1Q10	0.56

C. Receiving Water Quality

The EPA reviews receiving water quality data when assessing the need for and developing water quality based effluent limits. In granting assimilative capacity of the receiving water, the EPA must account for the amount of the pollutant already present in the receiving water. In situations where some of the pollutant is actually present in the upstream waters, an assumption of "zero background" concentration overestimates the available assimilative capacity of the receiving water and could result in limits that are not protective of applicable water quality standards.

Receiving water data were available from 2010 through 2015. Table 4 summarizes the receiving water data used to evaluate the need for and develop water quality based effluent limits. See Appendix C for additional information on the receiving water quality.

Table 4. Receiving Water Quality Data

Parameter	Units	Percentile	Value	Source
Temperature	°C	95th	16.7	DMRs
pH	Standard units	5th – 95th	6.94 – 7.38	DMRs
Hardness	mg/L	Minimum - Maximum	190 - 330	USGS
Ammonia	mg/L	Maximum	1.34	DMRs
Dissolved Oxygen	mg/L	Minimum	6.82	DMRs
Sources: City of Preston WWTP Discharge Monitoring Reports for Quarterly Receiving Water Sampling (2010-2015) and USGS Gauging Station Site No. 10098800 Worm Creek near Fairview, ID				

D. Water Quality Standards

Overview

Section 301(b)(1)(C) of the CWA requires that NPDES permits include any effluent limitations necessary to meet water quality standards. Federal regulations found at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards including narrative criteria for water quality for the receiving water and downstream waters of any affected State. A state or tribe's water quality standards are comprised of three parts: designated uses, numeric and/or narrative water quality criteria and an anti-degradation policy.

The first part of a state's water quality standards is a use classification system for water bodies based on the expected uses that each water body is expected to achieve, such as public water supply, recreation in and on the water, and propagation of fish. The uses in this system

are called *designated uses*. States must also consider and ensure the attainment and maintenance of the water quality standards of downstream waters when establishing designated uses [40 CFR 131.10(b)].

The overall objective of CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 101(a)(2) of the CWA states that water quality should provide for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable. This provision is sometimes referred to as the "fishable/swimmable" goal of the CWA. Consistent with this goal, states are required to designate all waters of the U.S. within the state with fishable/swimmable use designations unless the state can meet the requirements found at 40 CFR 131.10 to remove or "downgrade" the fishable/swimmable uses through a use attainability analysis (UAA).

The second part of a state's water quality standards are the water quality criteria sufficient to support the designated uses of each water body.

The third part of the state's water quality standards is its antidegradation policy. Each state or tribe is required to adopt an antidegradation policy consistent with EPA's antidegradation regulations at 40 CFR Part 131.12. A state's antidegradation policy specifies the framework to be used in making decisions about proposed activities that will result in changes in water quality.

A state's antidegradation policy provides three levels of protection from degradation of existing water quality. Tier 1 of antidegradation protection applies to all water bodies under the CWA and requires that existing uses and the water quality necessary to protect those uses be maintained and protected. Tier II protection applies to any water bodies considered to be high quality waters (where the water quality exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water) and provides that water quality will be maintained and protected unless allowing for lower water quality is deemed by the state as necessary to accommodate important economic or social development in the area. In allowing any lowering of water quality, the state must ensure adequate water quality to protect existing uses fully and must assure that there will be achieved the highest statutory and regulatory requirements for all new and existing point sources. Tier III protection applies to water bodies that have been designated by the state as outstanding national resource waters and provides that water quality is to be maintained and protected.

In addition to the three required components of water quality standards, states may, at their discretion, include in their standards policies that generally affect how the standards are applied or implemented.

Designated Beneficial Uses

This facility discharges to Worm Creek in the Middle Bear Subbasin (HUC #16010202), Water Body Unit B-5. At the point of discharge, Worm Creek is protected for the following designated uses (IDAPA 58.01.02.160.03):

- cold water aquatic life
- secondary contact recreation

In addition, Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats and aesthetics (IDAPA

58.01.02.100.03.b and c, 100.04 and 100.05).

Surface Water Quality Criteria

The criteria are found in the following sections of the Idaho Water Quality Standards:

- The narrative criteria applicable to all surface waters of the State are found at IDAPA 58.01.02.200 (General Surface Water Quality Criteria).

- The numeric criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at IDAPA 58.01.02.210 (Numeric Criteria for Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use).

- Additional numeric criteria necessary for the protection of aquatic life can be found at IDAPA 58.01.02.250 (Surface Water Quality Criteria for Aquatic Life Use Designations).

- Numeric criteria necessary for the protection of recreation uses can be found at IDAPA 58.01.02.251 (Surface Water Quality Criteria for Recreation Use Designations).

- Water quality criteria for agricultural water supply can be found in the EPA's *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA R3-73-033) (See IDAPA 58.01.02.252.02)

The numeric and narrative water quality criteria applicable to Worm Creek at the point of discharge are provided in Appendix B of this fact sheet.

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix H for the State's draft 401 water quality certification. The EPA has reviewed this antidegradation review and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification including the antidegradation review should be submitted to the IDEQ as set forth above (see State Certification).

Downstream Impacts

Under CWA Sction 401(a)(2) when a discharge may affect the quality of the waters of another state, EPA must provide the downstream state with notice of the permit to allow the State to determine whether the discharge will affect the quality of the downstream state's waters.

The City of Preston WWTP discharge is located 15 miles upstream from the Idaho and Utah state border. The City of Preston WWTP does not require a mixing zone for water-quality based effluent limits and has been given end of pipe limits, limiting the potential for impacts to the receiving water. A review of Utah's water-quality standards show that meeting

Idaho's water-quality standards will allow the discharge to meet Utah's water-quality standards. Worm Creek is not listed in Utah's Water Quality Standards. Utah Rule R17-2-13.13 states Unclassified Waters in Utah are presumptively classified 2B, 3D.

Utah has an instream water-quality standard of 5 mg/L BOD. Given the 15 miles of stream flow from the City of Preston WWTP's outfall and the requirement to meet technology-based effluent limits, it has been determined there will be no impact to this standard. Utah's standard for pH is 6.5-9.0, less strict than the proposed limit. E. coli has standards of 206 (mean) and 668 (maximum), less strict that the proposed limits.

Therefore, the EPA believes downstream water quality in Utah will not be affected, and that the proposed limits are protective of downstream waters.

E. Water Quality Limited Waters

Any waterbody for which the water quality does not, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment."

Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

The State of Idaho's 2012 Integrated Report Section 5 (section 303(d)) lists Worm Creek (lower), from Glendale Reservoir to the Border, as impaired for Total Phosphorus (TP) and Sedimentation/Siltation.

Total Phosphorus

A TMDL for Phosphorus (Total) has been developed for Worm Creek. In June 2006, the EPA approved the IDEQ's Bear River Basin TMDL, Subbasin Assessment, Total Maximum Daily Load (*2006 TMDL*). In February of 2013 the IDEQ, Pocatello Regional Office revised the report on the Bear River Basin TMDL. This report is called "The Bear River Basin Addendum to the Bear River/Malad Subbasin Assessment and Total maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204," (*2013 TMDL Addendum*). The *2013 TMDL Addendum* addressed five water bodies which were not originally addressed in the original Bear River Basin TMDL due to lack of data and was approved by EPA in 2013.

The *2013 TMDL Addendum* stated that Worm Creek regularly exceeds TMDL TP targets above and below Preston's WWTP, noting that DMR data collected upstream and downstream of the WWTP indicate TP concentrations increase significantly downstream of the WWTP. Therefore, the *2013 TMDL Addendum* established a TP WLA for the City of Preston WWTP based on the TMDL target of 0.075 mg/L TP. The WLA for the City of

Preston WWTP is 0.48 pounds per day (lbs/day) expressed as an annual average (see Page 29 and Table 26 of the *2013 TMDL Addendum)*. The EPA will use 0.48 lbs/day to represent the annual average in developing the TP effluent limits for the City of Preston WWTP.

Total Suspended Solids

The *2006 TMDL* established a WLA for TSS of 30,142 kg/year (see table 1-3 of *2006 TMDL*). The *2013 TMDL Addendum* did not change the TSS WLA.

No reduction in suspended solids is required at this time (pg 29 of *2006 TMDL*).

The TSS WLA of 30,142 kg/yr can be expressed as 182 lbs/day (see below for calculation). The EPA will use 182 lbs/day to represent the annual average in developing the TSS effluent limits for the City of Preston WWTP.

Calculation to convert 30,142 kg/yr to lbs/day:

$$\frac{30{,}142\ kg}{\text{yr}} * \frac{1\ yr}{365.25\ days} * \frac{2.20462\ lbs}{1\ kg} = 182\ lbs/day$$

IV. Effluent Limitations

A. Basis for Effluent Limitations

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. The basis for the effluent limits proposed in the draft permit is provided in Appendix F.

B. Proposed Effluent Limitations

The following summarizes the proposed effluent limits that are in the draft permit.

Narrative Limitations to Implement Idaho's Narrative Criteria for Floating, Suspended or Submerged Matter

The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

Numeric Limitations

Table 5 below presents the proposed effluent limits for BOD_5, TSS, *E. coli*, Total Residual Chlorine (TRC), pH, Total Phosphorus, and Ammonia.

Table 5. Proposed Effluent Limits.

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--
	lbs/day	300	450	--

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
BOD_5 Removal	%	85 (minimum)	--	--
Total Suspended Solids (TSS)	mg/L	30	45	
	lbs/day	283	450	--
	lbs/day	Annual Average = 182 lbs/day		
TSS Removal	%	85 (minimum)	--	--
E. coli	#/100 ml	126 (geometric mean)	--	576 (instant max)
Total Residual Chlorine (TRC)	µg/L	7		18
	lbs/day	0.07		0.18
pH	std units	Between 6.5 – 9.0		
Total Ammonia (as N)	mg/L	2	--	4.1
	lbs/day	20.5	--	41.1
Total Phosphorus (as P)	lbs/day	0.75	1.5	--
	lbs/day	Annual Average = 0.48 lbs/day		
Total Phosphorus (as P) Interim Limit	lbs/day	13.6	27.3	--

C. Changes in Limits From the Existing Permit

Table 6 below illustrates the changes in effluent limits from the existing permit. For discussion on the removal of dissolved oxygen see Appendix F, Summary of Water Quality-based Effluent Limits - Dissolved Oxygen and Biological Oxygen Demand.

Table 6. Changes in Permit Effluent Limits

Parameter	Existing Permit	Draft Permit
DO	6 mg/L	--
TSS Average Monthly Limit	300 lbs/day	283 lbs/day
TSS Average Annual Limit	--	182 lbs/day
Total Residual Chlorine (TRC) Average Monthly Limit	--	7 µg/L
Total Residual Chlorine (TRC) Average Monthly Limit	--	0.07 lbs/day
Total Residual Chlorine (TRC) Maximum Daily Limit	--	18 µg/L
Total Residual Chlorine (TRC) Maximum Daily Limit	--	0.18 lbs/day
Total Phosphorus (as P) Average Weekly Limit	--	1.5 lbs/day
Total Phosphorus (as P) Average Monthly Limit	--	0.75 lbs/day

Total Phosphorus (as P) Average Annual Limit	--	0.48 lbs/day
Total Phosphorus (as P) Interim Limit Average Weekly Limit	--	27.3 lbs/day
Total Phosphorus (as P) Interim Limit Average Monthly Limit	--	13.6 lbs/day

D. Compliance Schedules

Compliance schedules are authorized by federal NPDES regulations at 400 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.

The EPA has found that a compliance schedule is appropriate for TP. The compliance schedule for TP is included in Part II.C. of the draft permit. The justification for a compliance schedule for TP is discussed below.

Justification

In order to grant a compliance schedule the permitting authority must make a reasonable finding that the discharger cannot immediately comply with the water quality-based effluent limit upon the effective date of the permit and that a compliance schedule is appropriate (see 40 CFR 122.47 (a). The new limit will require an approximate 93% reduction in TP compared with the current loads. The permittee cannot comply with the new effluent limit for TP on the effective date of the permit, therefore a compliance schedule is appropriate.

Additionally, the federal regulations at 40 CFR 122.47 require that the compliance schedules require compliance with effluent limitations as soon as possible. An 8 year 6 month Compliance Schedule is proposed. This will allow the facility to optimize and plan facility upgrades, if necessary, in order to come into compliance with the final effluent limitations.

In addition, the regulations require that when the compliance schedule is longer than 1 year, the schedule shall set forth interim requirements and the dates for their achievement. The time between the interim dates shall generally not exceed 1 year, and when the time necessary to complete any interim requirement is more than one year, the schedule shall require reports on progress toward completion of these interim requirements.

An interim limit is designed to hold the facility to its current discharge levels so that the discharge does not contribute to further degradation of the impaired water as the facility is working toward coming into compliance with its final effluent limit. Interim TP loading limits of 13.6 lbs/day Average Monthly Limit and 27.3 lbs/day Average Weekly Limit have been added to the Effluent Limits Requirements. This is based on the 95th percentile TP lbs/day Average Monthly loading in City of Preston WWTP's effluent from 2010 - 2015. An Average Weekly Limit was calculated from this value using the TSD (TSD page 106, Multiplier to Calculate AWL from AML).

V. 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 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.

Table 8, below, presents the proposed effluent monitoring requirements in the draft permit. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 8. Effluent Monitoring Requirements.

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Parameters With Effluent Limits				
BOD_5	mg/L	Influent & Effluent	1/week	24-hour composite
	lbs/day			Calculation[1]
BOD_5 Percent Removal	%	--	1/month	Calculation[2]
TSS	mg/L	Influent & Effluent	1/week	24-hour composite
	lbs/day			Calculation[1]
TSS Percent Removal	%	--	1/month	Calculation[2]
E. coli[3]	#/100 ml	Effluent	5/month	Grab
TRC[5]	µg/L	Effluent	5/week[6]	Grab
pH[10]	standard units	Effluent	5/week[6]	Grab
Total Ammonia as N	mg/L	Effluent	1/week	24-hour composite
	lbs/day			Calculation[1]
Total Phosphorus	mg/L	Effluent	1/week	24-hour composite
	lbs/day			Calculation[1]
Floating, Suspended, or Submerged Matter	--	Downstream	1/month	Visual Observation
Report Parameters				
Flow	mgd	Effluent	continuous	Meter
Temperature	ºC	Effluent	5/week[6]	Grab
Total Hardness[10]	mg/L as $CaCO_3$	Effluent	2x/year	24-hour composite

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Dissolved Organic Carbon[10]	mg/L	Effluent	2x/year	24-hour composite
Conductivity[10]	umhos/cm	Effluent	2x/year	Meter
Antimony, Total Recoverable	µg/L	Effluent	2x/year	24-hour composite
Arsenic, Total Recoverable	µg/L	Effluent	2x/year	24-hour composite
Chromium VI, Dissolved	µg/L	Effluent	2x/year	24-hour composite
Copper, Total Recoverable[10]	µg/L	Effluent	2x/year	24-hour composite
Mercury, Total Recoverable	µg/L	Effluent	2x/year	24-hour composite
Nickel, Total Recoverable	µg/L	Effluent	2x/year	24-hour composite
Zinc, Total Recoverable	µg/L	Effluent	2x/year	24-hour composite
Whole Effluent Toxicity (WET)	--	Effluent	1/year[7]	24-hour composite
Effluent Testing for Permit Renewal				
Permit Application Effluent Testing Data[8]	--	Effluent	Annual	--
Permit Application Expanded Effluent Testing[9]	--	Effluent	Annual	--

Notes

1. 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).
2. 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.
3. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3 - 7 days within a calendar month. See Part VI of this permit for a definition of geometric mean.
4. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Paragraph I.B.1.3 and Part III.G of this permit.
5. Monitoring for Total Residual Chlorine is only required when the facility disinfects using chlorine. The average monthly and maximum daily concentration limits for chlorine are not quantifiable using EPA approved test methods. The permittee will be in compliance with the average monthly and maximum daily effluent limits for chlorine provided the total chlorine residual level is at or below the compliance evaluation of 50 ug/L, with an average monthly and maximum daily loading at or below 0.5 lbs/day (See Appendix G).
6. Samples must be taken on different days.
7. See monitoring described in Paragraph I.C of this permit.
8. Effluent Testing Data - See NPDES Permit Application Form 2A, Part B.6 for the list of pollutants to be included in this testing. The Permittee must use sufficiently sensitive analytical methods in accordance with I.B.7 of this permit.
9. Expanded Effluent Testing - See NPDES Permit Application Form 2A, Part D for the list of pollutants to be included in this testing. Testing must be conducted annually during alternating quarters. The expanded effluent testing must occur on the same day as a whole effluent toxicity testing. Quarters are defined as: January 1 to March 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31. The Permittee must use sufficiently sensitive analytical methods in accordance with Part I.B.7 of this permit.
10. Samples for dissolved organic carbon, pH, hardness, conductivity, and copper must be collected on the same day.

Effluent Monitoring Changes from the Previous Permit

Twice weekly DO monitoring has been removed; the draft permit requires annual DO monitoring as part of the annual Form 2A permit application monitoring. No other monitoring frequencies have been reduced for this permit term.

Monitoring for the following metals which were reported at quantifiable levels in the application have had their monitoring increased to 2x/year in order to gather additional data:

Total Recoverable Antimony, Total Recoverable Arsenic, Total Recoverable Chromium VI Dissolved, Total Recoverable Copper, Total Recoverable Nickel, and Total Recoverable Zinc. 2x/year Mercury, Total Recoverable has been added to assist in determining reasonable potential in the next permit reissuance.

C. Surface Water Monitoring

Table 10 presents the proposed surface water monitoring requirements for the draft permit. City of Preston WWTP should continue receiving water monitoring at the established locations. Surface water monitoring results must be submitted with the DMR.

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 10. Surface Water Monitoring Requirements

Parameter	Units	Frequency	Sample Type	Sample Location
Flow	mgd	1/quarter	Grab	Upstream
Total Ammonia as N	mg/L	1/quarter	Grab	Upstream & Downstream
Temperature	°C	1/quarter	Grab	Upstream & Downstream
pH	standard units	1/quarter	Grab	Upstream & Downstream
Total Hardness as CaCO3	mg/L	Annual	Grab	Upstream
Antimony	µg/L	Annual	Grab	Upstream
Arsenic (Total)	µg/L	Annual	Grab	Upstream
Copper	µg/L	Annual	Grab	Upstream
Nickel	µg/L	Annual	Grab	Upstream
Zinc	µg/L	Annual	Grab	Upstream
Dissolved Organic Carbon (DOC)	mg/L	Annual	Grab	Upstream
Conductivity	umhos/cm	Annual	Grab	Upstream

Notes:

1. For quarterly monitoring frequency, quarters are defined as: January 1 to Mach 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31.

Receiving Water Monitoring Changes from the Previous Permit

The monitoring frequencies for Total Ammonia as N, Flow, pH, and Temperature are the same as the previous permit.

Monitoring for BOD_5, Dissolved Oxygen, *E. Coli* Bacteria, and Total Phosphorus have been removed. BOD_5 and *E. Coli* Bacteria have end of pipe limits. Compliance with end of pipe

limits for BOD_5 is protective of Dissolved Oxygen in the receiving water. The draft permit has Total Phosphorus limits that are consistent with the WLA in the *2013 TMDL Addendum;* receiving water monitoring for Total Phosphorus is unnecessary.

New monitoring has been added for the following parameters: Total Hardness as CaCO3, Antimony, Total Arsenic, Copper, Nickel, Zinc, Dissolved Organic Carbon (DOC), and Conductivity. Monitoring was added for metals which were reported at quantifiable levels in the application in order to calculate assimilative capacity in the receiving water. Total Hardness as CaCO3, Dissolved Organic Carbon, and Conductivity are required in order to evaluate Copper in the receiving water, including copper criteria under the biotic ligand model.

D. Electronic Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR beginning with the November 2016 DMR. DMRs submitted between the effective date of the permit and the November 2016 DMR may submit monitoring data and other reports in paper form, or must report electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR 122.41 and 403.12. Under NetDMR, all reports required under the permit are submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to EPA.

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.zendesk.com. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

VI. Sludge (Biosolids) Requirements

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

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

VII. Other Permit Conditions

A. Quality Assurance Plan

In order to ensure compliance with the federal regulation at 40 CFR 122.41(e) for proper operation and maintenance, the draft permit requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The City of Preston WWTP 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 IDEQ upon request.

B. Operation and Maintenance Plan

The permit requires the City of Preston WWTP 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 IDEQ upon request.

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

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet the EPA-approved state water quality standards.

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.

D. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." The EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, the EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/ .

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. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The City of Preston WWTP is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

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/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-

104). 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.

E. Design Criteria

The permit includes design criteria requirements (Permit Section II.D). This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds the design criteria values for any two months during a 12-month period.

F. Industrial Waste Management Requirements

Discharges from both industrial and commercial sources can cause problems at POTWs and can have detrimental effects on the water quality of the receiving waterbody. The undesirable effects of those discharges can be prevented by using treatment techniques or management practices to reduce or eliminate the discharge of the contaminants. The act of treating wastewater before discharge to a POTW is commonly referred to as pretreatment. The National Pretreatment Program, published in 40 CFR Part 403, provides the regulatory basis to require nondomestic dischargers to comply with pretreatment standards to ensure that the goals of the CWA are attained.

Idaho does not have an approved state pretreatment program per 40 CFR 403.10, thus, EPA is the Approval Authority for Idaho POTWs. Since the City of Preston WWTP does not have an approved POTW pretreatment program per 40 CFR 403.8, the EPA is also the Control Authority of industrial users that might introduce pollutants into the City of Preston WWTP.

The General Pretreatment regulations apply to all nondomestic sources introducing pollutants into a POTW (*See* 40 CFR 403.5(b)). These sources of indirect discharges are more commonly referred to as Industrial Users (IUs). All IUs, regardless of whether they are subject to any other national, state, or local pretreatment requirements, are subject to the general and specific prohibitions identified in 40 CFR 403.5(a) and (b), respectively. General prohibitions forbid the introduction of any pollutant(s) to a POTW that cause pass through or interference. Pass through and interference are terms with very specific meaning in the regulations. Pass through is defined as the following: *a discharge that exits the POTW into waters of the United States in quantities or concentrations that, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's* NPDES permit.

Interference is defined as: *a discharge that, alone or in conjunction with a discharge or discharges from other sources, both (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal and (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit.*

Specific prohibitions in 40 CFR 403.5(b) forbid the following eight categories of pollutant discharges:

- *Discharges containing pollutants that create a fire or explosion hazard in the POTW, including wastestreams with a closed-cup flashpoint of less than 140 °F (60 °C) using the test methods specified in 40 CFR 261.21*
- *Discharges containing pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges*
- *Discharges containing pollutants in amounts causing obstruction to the flow in the POTW resulting in interference*
- *Discharges of any pollutants released at a flow rate or concentration that will cause interference with the POTW*
- *Discharges of heat in amounts that will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104 °F (40 °C) unless the Approval Authority, at the POTW's request, approves alternative temperature limits*
- *Discharges of petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through*
- *Discharges that result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that could cause acute worker health and safety problems*
- *Discharges of trucked or hauled pollutants, except at discharge points designated by the POTW.*

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

Because an IU can be as simple as an automated, coin-operated car wash or as complex as an automobile manufacturing plant or a synthetic organic chemical producer, EPA developed four criteria that define a significant IU (SIU). Many of the General Pretreatment Regulations apply to SIUs as opposed to IUs.

Per 40 CFR 122.44(j)(1) of the NPDES regulations and 40 CFR Part 403.8(f)(2) of the general pretreatment regulations, all POTWs need to identify and locate all possible industrial users subject to the pretreatment program, i.e. SIUs, and to identify the volume and character of pollutants discharged by these users. An SIU is defined in 40 CFR 403.3(v) as any of the following:

- An IU subject to federal categorical pretreatment standards
- An IU that discharges an average of 25,000 gallons per day (gpd) or more of process wastewater to the POTW
- An IU that contributes a process wastestream making up 5 percent or more of the average dry-weather hydraulic or organic capacity of the POTW treatment plant
- An IU designated by the POTW or the EPA as such because of its reasonable potential to adversely affect the POTW's operation or violate any pretreatment standard or requirement.

To enable the permittee to determine which industries have the potential to impact the POTW and to establish local limits if necessary to protect both the treatment plant and receiving water body, EPA is requiring the permittee to develop a master list of industrial users and obtain information specific to each industry's wastewater discharge characteristics. (See Special Conditions *Industrial Waste Management* in the permit.) This process is commonly referred to as an IU Survey. Procedures for designing, implementing, and documenting an IU survey may be found Chapter 2, *Industrial Waste Survey* in the following document: *Guidance Manual for POTW Pretreatment Program Development*, EPA October, 1983.

Special Condition II.E.6. requires that the Permittee to develop 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). The legal authority must be adopted and enforced by the POTW. 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).

G. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. A review of the threatened and endangered species listed in Idaho by the USFWS (as of 02/13/2016) and NOAA finds that none of the listed endangered species for Idaho are located in the vicinity of Worm Creek or near Preston, Idaho. Therefore, it is determined that issuance of this permit will have no effect on any endangered species in the vicinity of this discharge.

B. Essential Fish Habitat

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

The EPA has determined that issuance of this permit is not likely to adversely affect EFH in the vicinity of the discharge. The EPA has provided NOAA Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from NOAA Fisheries regarding EFH will be considered prior to reissuance of this permit.

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.

D. Permit Expiration

The permit will expire five years from the effective date.

IX. References

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

EPA. 1996. *Interim Guidance for Performance – Based Reductions of NPDES Permit Monitoring Frequencies.* Office of Water, EPA.

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

EPA. 2010. *NPDES Permit Writers' Manual.* Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001.

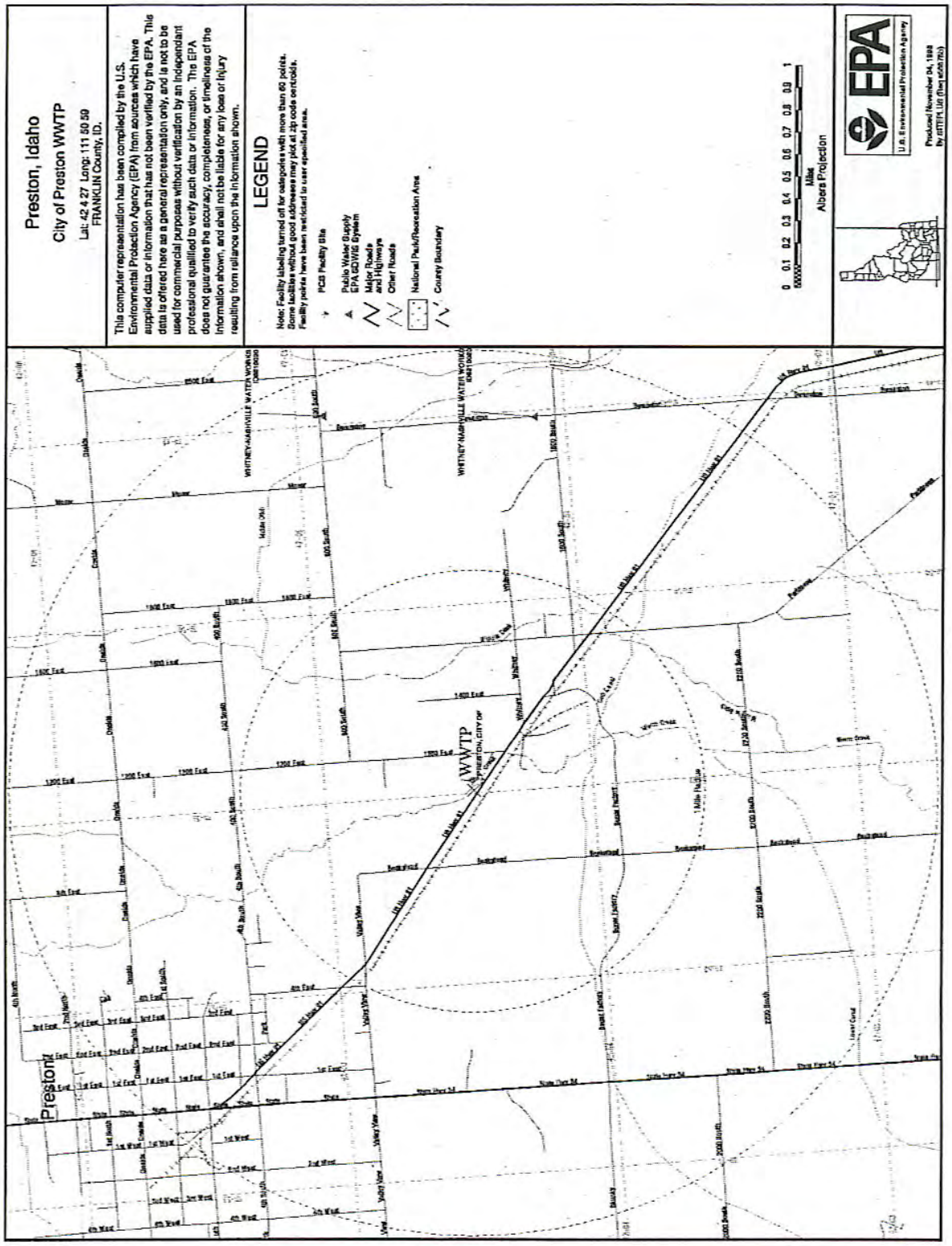
IDEQ. 2006. *Bear River/Malad River Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204.* Pocatello Regional Office, Idaho Department of Environmental Quality.

IDEQ. 2013. *Bear River Basin: Addendum to the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204.* Pocatello Regional Office, Idaho Department of Environmental Quality.

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

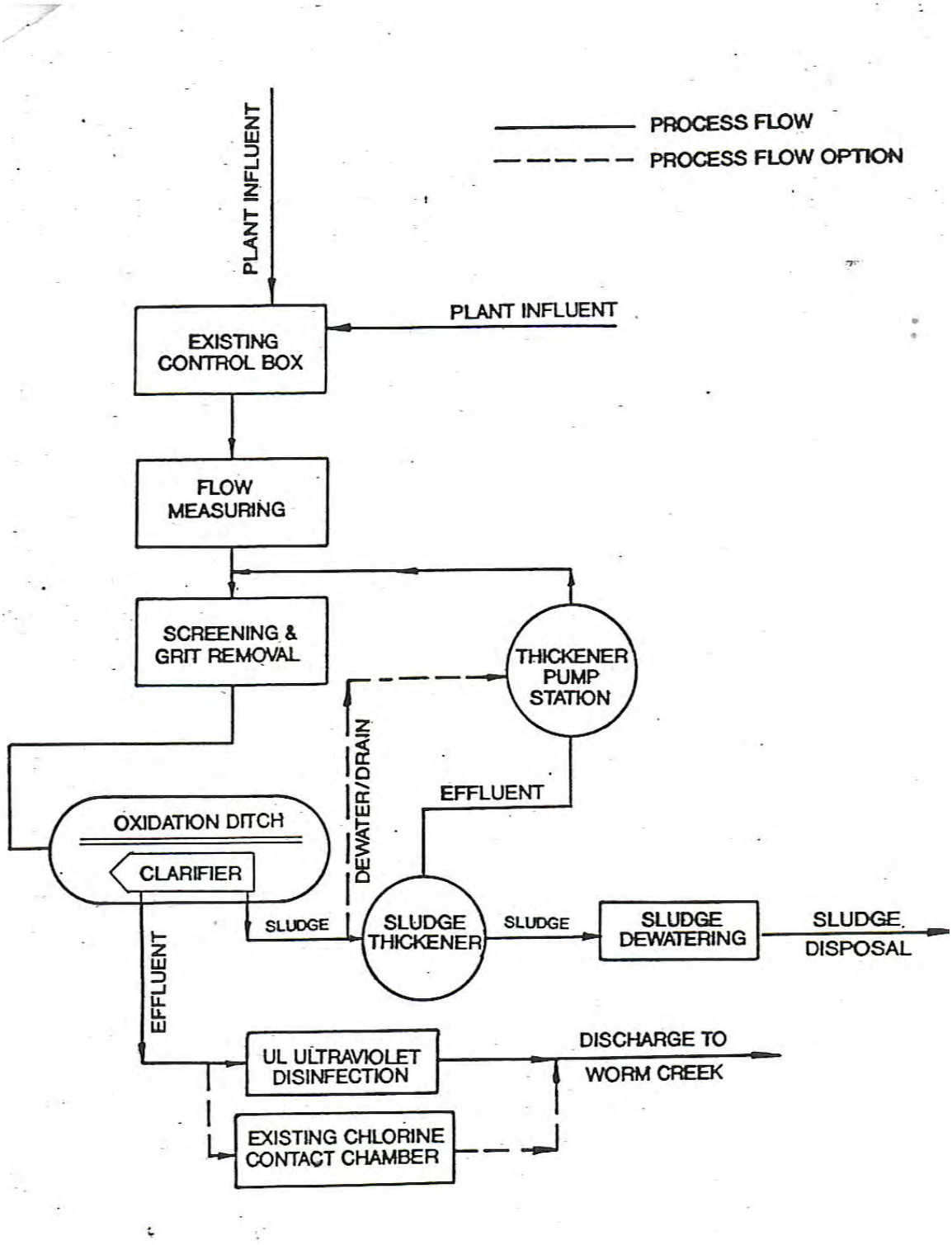
Appendix A: Facility Information

Facility Location Map



B-1

Facility Process Map



Appendix B: Water Quality Criteria Summary

This appendix provides a summary of water quality criteria applicable to Worm Creek.

Idaho water quality standards include criteria necessary to protect designated beneficial uses. The standards are divided into three sections: General Water Quality Criteria, Surface Water Quality Criteria for Use Classifications, and Site-Specific Surface Water Quality Criteria. The EPA has determined that the criteria listed below are applicable to Worm Creek. This determination was based on (1) the applicable beneficial uses of the river: cold water aquatic life, secondary contact recreation, agricultural water supply, industrial water supply, wildlife habitats, and aesthetics, (2) the type of facility, (3) a review of the application materials submitted by the permittee, and (4) the quality of the water in Worm Creek.

A. General Criteria (IDAPA 58.01.02.200)

Surface waters of the state shall be free from:

- hazardous materials,
- toxic substances in concentrations that impair designated beneficial uses,
- deleterious materials,
- radioactive materials,
- floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses,
- excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses,
- oxygen demanding materials in concentrations that would result in an anaerobic water condition

Surface water level shall not exceed allowable level for:

- radioactive materials, or
- sediments

B. Numeric Criteria for Toxics (IDAPA 58.01.02.210)

This section of the Idaho Water Quality Standards provides the numeric criteria for toxic substances for waters designated for aquatic life, recreation, or domestic water supply use. Monitoring of the effluent has shown that the following toxic pollutants have been present at detectable levels in the effluent: ammonia.

C. Surface Water Criteria To Protect Aquatic Life Uses (IDAPA 58.01.02.250)

1. pH: Within the range of 6.5 to 9.0
2. Total Dissolved Gas: <110% saturation at atm. pressure.
3. Dissolved Oxygen: Exceed 6 mg/L at all times.

4. Temperature: Water temperatures of 22°C or less with a maximum daily average of no greater than 19°C.

5. 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 table below details the equations used to determine water quality criteria for ammonia.

The City of Preston WWTP has collected pH data quarterly in Worm Creek upstream of the facility from 03/31/2010 – 09/30/2015. Temperature data were collected quarterly upstream and downstream of the facility from 03/31/2010 – 09/30/2015. These data were used to determine the appropriate pH and temperature values to calculate the ammonia criteria.

As with any natural water body the pH and temperature of the water will vary over time. Therefore, to protect water quality criteria it is important to develop the criteria based on pH and temperature values that will be protective of aquatic life at all times. The EPA used the 95th percentile of the upstream pH and downstream temperature data for the calculations, which were calculated to be 7.38 su and 17.25° C respectively.

Table B-1: Water Quality Criteria for Ammonia

	Acute Criterion[1]	Chronic Criterion
Equations:	$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85,1.45\times10^{0.028\times(25-T)}\right)$
Results:	15,767 µg/L	4,029 µg/L

1. No seasonal variation was assumed for pH, therefore, there is no seasonal variation in the acute criterion (which is a function of pH only).

6. Turbidity: Turbidity below any applicable mixing zone set by the Department shall not exceed background turbidity by more than 50 NTU instantaneously or more than 25 NTU for more than ten (10) consecutive days.

7. Salmonid spawning: Waters designated for salmon spawning are to exhibit the following characteristics during the spawning period and incubation for the particular species inhabiting those waters:

ii. Water temperatures of 13°C or less with a maximum daily average no greater than 9°C.

D. Surface Water Quality Criteria For Recreational Use Designation (IDAPA 58.01.02.251)

a. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain *E. coli* in concentrations exceeding a geometric mean of 126 *E. coli* organisms per 100 ml based on a minimum of 5 samples taken every 3 to 7 days over a 30 day period.

b. Use of Single Sample Values: This section states that that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml

(IDAPA 58.01.02.251.01.b.ii.). For waters designated for secondary contact recreation, the "single sample maximum" value is 576 organisms per 100 ml (IDAPA 58.01.02.251.01.b.i.).

Appendix C: Receiving Water Quality Data

Max of DMR Value										
	Downstream Monitoring	Downstream Monitoring	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring	Upstream Monitoring
	Phosphorus, total [as P]	Temperature, water deg. centigrade	BOD, 5-day, 20 deg. C	E. coli, MTEC-MF	Flow, in conduit or thru treatment plant	Nitrogen, ammonia total [as N]	Oxygen, dissolved [DO]	pH	Phosphorus, total [as P]	Temperature, water deg. centigrade
	INST MAX	INST MAX	INST MAX	INST MAX	INST MAX	INST MAX	INST MAX	INST MAX	INST MAX	INST MAX
Row Labels	mg/L	deg C	mg/L	#/100mL	MGD	mg/L	mg/L	SU	mg/L	deg C
03/31/2010	2.75	5.4	11.6	12	0.64	0.07	8.18	7.39	1.3	4.4
06/30/2010	1.36	15.9	20.16	13	0.42	0.56	8.09	7.3	1.23	14.9
09/30/2010	2.6	14.1	14.5	20	0.65	0.07	8.98	7.04	1.02	11.7
12/31/2010	2.55	5.1	12.8	18	0.79	0.24	10.35	7.04	1.65	3.1
03/31/2011	2.17	4.2	2.35	16	1.94	0.13	7.92	6.87	1.53	4.1
06/30/2011	3.72	10.6	6	17	1.2	0.86	8.71	6.87	3.6	10.3
09/30/2011	1.27	15.6	10	12	1.24	0.06	7.46	7.09	0.9	15.6
12/31/2011	2.13	3.4	4.8	24	0.36	0.06	9.35	7.07	5.23	1.3
03/31/2012	0.6	4.9	6.4	12	1.55	0.083	8.95	7	0.64	4.9
06/30/2012	2.74	10.9	5.31	14	0.74	0.74	8.64	6.94	2.61	10.3
09/30/2012	1.21	16.8	10.15	13	1.19	0.07	7.32	7.18	0.84	16.8
12/31/2012	1.7	3.2	5.45	4	0.45	0.06	8.4	6.98	0.61	1.2
03/31/2013	0.72	5.4	6.89	14	1.62	0.102	7.62	7.04	0.84	5.4
06/30/2013	4.32	11.4	715.17	21	1.12	1.04	7.02	7.02	4.21	11.8
09/30/2013	1.31	15.9	11.2	13	1.22	0.07	7.34	7.09	0.96	15.9
12/31/2013	2.41	4.48	6.25	20	0.48	0.12	8.2	7.07	5.12	2.38
03/31/2014	1.04	8.9	6.9	50	1.24	0.11	10.73	7.11	0.53	7.4
06/30/2014	0.76	17.3	1.4	2	1.07	0.16	7.6	7.06	0.87	16.5
09/30/2014	0.67	15.1	0.45	10	1.64	0.303	6.82	7.14	1.47	15
12/31/2014	2.31	3.97	6.14	30	1.52	0.43	8.17	7.01	4.95	2.41
03/31/2015	0.81	9.2	6.74	40	0.94	0.09	9.87	7.04	0.74	7.8
06/30/2015	1.78	18.2	1.2	20	1.2	0.09	7.85	7.39	0.86	16.4
09/30/2015	0.95	16.8	4.4	10	1.56	0.05	7.64	7.04	1.08	16.7
Average	1.82	10.29	38.10	17.61	1.08	0.24	8.31	7.08	1.86	9.40
Minimum	0.6	3.2	0.45	2	0.36	0.05	6.82	6.87	0.53	1.2
Maximum	4.32	18.2	715.17	50	1.94	1.04	10.73	7.39	5.23	16.8
Count	23	23	23	23	23	23	23	23	23	23
Std Dev	1.00	5.40	147.67	10.67	0.45	0.29	1.02	0.13	1.58	5.76
CV	0.55	0.52	3.88	0.61	0.42	1.18	0.12	0.02	0.85	0.61
95th Percentile	3.62	17.25	19.59	39.00	1.64	0.85	10.30	7.38	5.10	16.68
5th Percentile	0.675	3.457	1.22	4.6	0.423	0.06	7.05	6.877	0.613	1.408

Appendix D: Effluent Water Quality Data

	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	E. coli, MTEC-MF	E. coli, MTEC-MF	Flow, in conduit or thru treatment plant	Flow, in conduit or thru treatment plant	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Oxygen, dissolved [DO]
	MO AVG	MO AVG	GEO MEAN	INST MAX	DAILY MX	MO AVG	DAILY MX	DAILY MX	MO AVG	MO AVG	DAILY MN
	lb/d	mg/L	#/100mL	#/100mL	MGD	MGD	lb/d	mg/L	lb/d	mg/L	mg/L
01/31/2010	72.28	17.14	79	120	0.55	0.51	8.07	1.86	6.03	0.82	6.01
02/28/2010	55.06	13.26	83	130	0.55	0.51	8.7	2.22	4.77	1.13	6.01
03/31/2010	57.54	10.9	80	120	0.75	0.66	0.98	0.19	0.64	0.12	6.01
04/30/2010	57.71	10.84	84	130	0.87	0.64	0.9	0.18	0.74	0.14	6.01
05/31/2010	58.08	12.43	81.2	130	0.66	0.57	0.75	0.17	0.62	0.13	6.01
06/30/2010	53.32	11.06	90	140	0.7	0.6	0.84	0.19	0.63	0.13	6.01
07/31/2010	30.4	6.83	64	120	0.61	0.54	1.06	0.23	0.93	0.21	6.01
08/31/2010	17.58	3.49	67	120	0.7	0.6	0.89	0.18	0.83	0.16	6.01
09/30/2010	66.52	13.48	71.1	120	0.66	0.58	1.4	0.3	1.09	0.23	6.01
10/31/2010	39.08	7.93	68	100	0.86	0.6	1.51	0.31	1.44	0.27	6.01
11/30/2010	66.26	12.03	77	110	0.72	0.62	1.49	0.28	1.38	0.25	6.01
12/31/2010	91.24	13.44	83	120	1.21	0.86	15.76	2.25	8.71	1.13	6.01
01/31/2011	83.8	10.96	83.1	100	1.32	0.91	18.51	2.21	15.42	1.97	6.01
02/28/2011	108.17	16.85	92	140	0.85	0.77	25.74	3.82	23.37	3.62	6.01
03/31/2011	106.1	10.42	81	110	1.84	1.38	6.4	0.65	4.06	0.38	6.01
04/30/2011	69.8	5.65	80	110	1.9	1.48	6.16	0.44	3.36	0.25	6.01
05/31/2011	80.12	8.48	73	110	1.51	1.13	4.9	0.6	3.47	0.36	6.01
06/30/2011	69.87	9.41	79	120	1.13	0.89	3.44	0.49	3.25	0.45	6.01
07/31/2011	34.51	5.43	79	120	0.82	0.74	3.86	0.67	3.44	0.56	6.01
08/31/2011	43.71	6.8	90	130	1.12	0.73	3.55	0.38	1.57	0.22	6.01
09/30/2011	41.91	7.95	78.4	90	0.76	0.63	1.16	0.21	1.04	0.19	6.01
10/31/2011	71.7	13.5	93.94	130	0.78	0.62	2.4	0.45	1.9	0.37	6.01
11/30/2011	58.52	13.48	78	90	0.57	0.52	1.42	0.31	1.14	0.26	6.02
12/31/2011	68.21	16.65	95	120	0.51	0.49	2	0.51	1.61	0.4	6.09
01/31/2012	57.35	14.38	92	110	0.73	0.52	13.68	2.51	8.78	1.83	6.04
02/29/2012	64.59	14.1	77	90	0.58	0.54	12.45	2.87	9.8	2.19	6.05
03/31/2012	41.04	8.9	79	110	0.71	0.57	11.31	2.38	9.65	2	6.02
04/30/2012	55.83	13.27	75	110	0.64	0.54	8.59	1.98	7.97	1.84	6.02
05/31/2012	40.23	9.34	80	110	0.57	0.53	8.75	1.98	5.13	1.17	6.09
06/30/2012	39.58	9.43	76.12	100	0.55	0.53	7.08	1.6	3.85	0.86	6.07
07/31/2012	48.66	8.62	72	80	0.68	0.61	2.42	0.49	1.53	0.31	6.1
08/31/2012	35.81	7.15	80	110	0.65	0.6	0.68	0.13	0.64	0.12	6.01
09/30/2012	41.01	8.98	88.75	110	0.59	0.54	0.99	0.21	0.87	0.19	6.07
10/31/2012	11.33	46	92	110	0.63	0.52	2.15	0.41	1.61	0.35	6.06
11/30/2012	66.51	16.35	89.4	130	0.56	0.49	1.48	0.35	1.11	0.26	6.06
12/31/2012	57.52	12.98	74.16	110	0.65	0.52	5	1.2	3.48	0.82	6.05
01/31/2013	61.82	14.43	79.11	100	0.56	0.51	7.95	1.8	5.79	1.34	6.07
02/28/2013	37.65	8.32	93	140	0.57	0.53	9.54	2.2	7.27	1.62	6.06
03/31/2013	48.89	8.72	81	100	0.76	0.66	11.54	1.87	9.78	1.78	6.04
04/30/2013	33.01	6.39	85	110	0.7	0.67	1.96	0.34	0.99	0.18	6.08
05/31/2013	52.22	12.06	70	110	0.59	0.54	8.63	1.99	7.62	1.75	6.04
06/30/2013	57.66	13.26	90	63.61	0.57	0.53	5.38	1.29	5.17	1.16	6.05
07/31/2013	59.3	12.9	76.82		0.61	0.56	8.73	1.87	6.54	1.39	6.06
08/31/2013	83.94	16.71	55.02	100	0.65	0.61	3.77	0.73	3.13	0.63	6.04
09/30/2013	75.05	14.46	77.73	120	0.7	0.61	11.44	1.96	6.52	1.2	6.02
10/31/2013	69.51	15.45	46.86	90	0.58	0.53	4.89	1.01	2.27	0.5	6.03
11/30/2013	73.43	17.49	54.02	90	0.57	0.52	1.24	0.31	1.11	0.27	6.07
12/31/2013	95.04	22.41	62.6	110	0.56	0.49	0.55	0.13	0.33	0.08	6.05
01/31/2014	94.17	22.67	67.92	100	0.53	0.5	0.5	0.11	0.44	0.08	6.1
02/28/2014	71.08	15.23	27.05	100	0.73	0.57	0.62	0.126	0.24	0.19	6.02
03/31/2014	23.8	3.89	39	130	0.86	0.69	6.45	1.09	3.14	0.54	5.99
04/30/2014	18.72	3.49	66.28	160	0.69	0.63	8.02	1.48	5.82	1.1	5.94
05/31/2014	36.29	6.56	31.16	60	0.78	0.63	20.55	3.85	15.57	2.9	5.98
06/30/2014	49.94	10.65	68	220	0.78	0.59	7.43	1.47	6.22	1.28	5.98
07/31/2014	58.05	11.6	54.44	100	0.6	0.58	0.58	0.12	0.46	0.1	6
08/31/2014	26.14	4.96	27.25	80	0.8	0.61	6.7	1	2.54	0.41	6.01
09/30/2014	10.69	49.12	49.9	120	0.8	0.57	6.04	1.27	4.32	0.87	6.03
10/31/2014	60.35	11.51	48.76	100	0.71	0.59	4.63	1	4	0.85	6
11/30/2014	23.69	5.51	26.66	70	0.55	0.51	6.5	1.47	3.85	0.9	6.02
12/31/2014	51.83	12.37	70	26.18	0.54	0.51	0.73	0.18	0.46	0.11	6
01/31/2015	23.87	5.46	70	35.32	0.58	0.5	0.9	0.19	0.42	0.09	6.86
02/28/2015	47.46	10.95	80	24.21	0.6	0.52	1.04	0.23	0.56	0.13	6.87
03/31/2015	41.03	9.63	64.46	130	0.62	0.49	0.41	0.09	0.3	0.07	5.95
04/30/2015	48.2	11.98	49.25	90	0.54	0.48	0.29	0.07	0.25	0.06	5.86
05/31/2015	57	9.21	50.9	130	0.9	0.68	0.36	0.06	0.28	0.05	6.03
06/30/2015	73.75	14.53	35.02	140	0.78	0.62	0.69	0.12	0.41	0.08	6.02
07/31/2015	44.68	9.44	53	130	0.6	0.56	5.35	1.07	3.61	0.76	6.04
08/31/2015	10.3	2.13	85.02	170	0.65	0.58	2.66	0.49	1.08	0.2	6.02
09/30/2015	66.84	12.41	57.45	120	1.16	0.63	0.56	0.12	0.2	0.04	6.01
10/31/2015	30.71	6.19	28	80	0.68	0.59	1	0.2	0.49	0.1	6.03
11/30/2015	25.24	5.75	42.53	80	0.69	0.54	4.03	0.93	2	0.46	6.05
Average	53.55352113	11.91197183	69.9771831	109.1331429	0.747605634	0.62	5.044084507	0.949943662	3.648450704	0.689577465	6.047746479
Minimum	10.3	2.13	26.66	24.21	0.51	0.48	0.29	0.06	0.2	0.04	5.86
Maximum	108.17	49.12	95	220	1.9	1.48	25.74	3.85	23.37	3.62	6.87
Count	71	71	71	70	71	71	71	71	71	71	71
Std Dev	21.99057351	7.418646319	18.22235183	29.5282351	0.271479885	0.177200451	5.198975882	0.920733991	4.168044985	0.734923585	0.144797368
CV	0.410627967	0.622789109	0.260404192	0.270570739	0.363132476	0.28580718	1.03070753	0.969251155	1.142415048	1.065759284	0.023942367
95th Percentile	92.705	19.95	92	140	1.265	0.9	14.72	2.445	9.79	1.985	6.095
5th Percentile	18.15	4.425	29.58	61.6245	0.545	0.49	0.525	0.115	0.29	0.075	5.98

	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross
	pH	pH	Phosphorus, total [as P]	Phosphorus, total [as P]	Phosphorus, total [as P]	Phosphorus, total [as P]	Solids, total suspended	Solids, total suspended	Temperature, water deg. centigrade	Temperature, water deg. centigrade	BOD, 5-day, percent removal	Solids, suspended percent removal
	INST MAX	INST MIN	DAILY MX	DAILY MX	MO AVG	MO AVG	MO AVG	MO AVG	DAILY MX	MO AVG	MN % RMV	MN % RMV
	SU	SU	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	deg C	deg C	%	%
01/31/2010	7.34	7.2	4.72	1.11	3.8	0.88	48.93	11.5	8.4	7.78	89	95
02/28/2010	7.39	7.2	13.44	3.04	9.07	2.07	53.51	12.88	8.5	7.7	91	92
03/31/2010	7.47	7.21	6.56	1.21	5.69	1.08	61.99	11.7	9.5	8.61	92	92
04/30/2010	7.42	7.18	6.46	1.16	5.76	1.03	56.02	11	12.6	10.79	92	93
05/31/2010	7.47	7.21	5.75	1.23	5.3	1.11	64.27	13.75	15.1	12.82	92	93
06/30/2010	7.48	7.29	7.78	1.58	6.9	1.38	53.43	10.8	17.4	15.48	93	94
07/31/2010	7.68	7.32	5.66	1.28	3.62	0.81	53.45	12	20	18.31	94	90
08/31/2010	7.68	6.82	7.05	1.33	4.15	0.78	52.18	10.45	20.1	19.47	97	93
09/30/2010	7.43	7.09	20.96	4.41	13.26	2.75	67.92	14.1	18.7	17.86	92	94
10/31/2010	7.26	6.98	12.41	1.84	9.63	1.78	45.37	9.38	18	16.26	95	95
11/30/2010	7.21	6.98	17.27	3.33	10.54	1.97	52.84	9.75	14.6	12.92	94	95
12/31/2010	7.29	7	31.93	3.19	15.11	1.83	112.76	15.4	11.1	10.34	92	93
01/31/2011	7.38	6.97	17	2.37	10.29	1.34	122.83	16	9	8.39	92	91
02/28/2011	7.43	6.99	17.41	2.9	13.66	2.14	97.68	15	8.8	7.83	90	91
03/31/2011	7.21	6.9	3.62	0.33	2.85	0.26	167.67	15.2	9.5	8.71	91	90
04/30/2011	7.4	6.9	7.43	0.53	5.29	0.39	80.54	7.13	10.6	10	92	93
05/31/2011	7.64	6.93	9.28	1	6.87	0.72	124.44	13.13	13.1	11.99	92	90
06/30/2011	7.17	6.68	36.58	5.1	13.58	1.89	101.31	13.7	16.4	14.58	93	92
07/31/2011	6.92	6.73	8.83	1.47	6.62	1.1	97.41	15.5	19	18.09	96	92
08/31/2011	7.23	6.7	9.43	1.23	6.17	0.93	52.33	8	20.1	19.32	96	93
09/30/2011	7.34	6.94	8.42	1.53	6.67	1.23	82.86	14.9	19.4	18.72	95	92
10/31/2011	7.4	7	11.03	2.28	8.26	1.61	86.6	16.2	18.5	15.9	91	92
11/30/2011	7.08	6.91	6.2	1.43	4.68	1.07	60.4	13.7	13.8	11.7	92	94
12/31/2011	7	6.9	16.96	4.15	9.8	2.51	52.8	14.38	9.5	8.25	91	93
01/31/2012	7.04	6.94	30.2	5.23	14.18	2.98	66.04	16.13	8.1	7.38	92	92
02/29/2012	7.08	6.95	14.83	3.42	9.28	2.08	85.55	18.9	8.1	7.82	92	91
03/31/2012	7.1	6.91	5.89	1.24	3.52	0.073	97.66	20.88	11	9.65	94	90
04/30/2012	7.06	6.91	6.59	1.49	5.06	1.16	93.35	22	14.1	12.03	92	89
05/31/2012	7.16	6.88	12.21	2.87	7.91	1.81	61.84	14.2	15.5	14.31	94	93
06/30/2012	7.4	7.01	8.81	2.09	6.98	1.59	59.74	13.63	18.2	16.63	94	92
07/31/2012	7.26	7.06	16.78	3.41	13.35	2.64	77.65	14.25	21.9	20.17	95	92
08/31/2012	8.2	6.87	4.29	0.84	3.99	0.8	47.31	9.5	21.7	20.9	95	92
09/30/2012	7.88	6.92	7.15	1.56	5.87	1.27	60.65	13.37	20.1	19.1	94	93
10/31/2012	7.64	6.9	15.34	2.92	12.64	2.31	68.68	16.4	16.3	15.5	93	90
11/30/2012	7.99	6.99	8.67	2.08	6.63	1.59	40.42	9.75	14.9	13.6	89.5	93
12/31/2012	7.78	6.98	18.84	4.52	11.87	2.82	53.56	11.5	12.1	10	92.5	95.25
01/31/2013	7.21	6.92	25.93	6.22	16.51	3.84	45.66	10.7	9	7.6	90	93
02/28/2013	7.15	6.96	13.59	2.86	8.82	1.95	47.13	10.5	8.6	7.31	95	92
03/31/2013	7.4	6.95	5.32	1.14	3.84	0.72	41.92	7.75	10.3	8.64	94	95
04/30/2013	7.54	6.97	2.67	0.5	1.99	0.37	49.17	9.38	12.5	11.37	91	92
05/31/2013	7.21	6.88	11.17	2.48	8.64	1.98	48.85	11.25	15	13.95	93	91
06/30/2013	7.23	6.97	14.05	3.24	13	2.92	39.61	9.13	18	16.32	91	93
07/31/2013	7.68	6.97	20.35	4.28	13.34	2.86	47.33	10.3	21.2	19.4	92	92
08/31/2013	8.1	7.07	6.41	1.22	4.61	0.92	54.17	10.75	21.8	20.8	90	94
09/30/2013	7.75	6.99	8.93	1.53	6.65	1.22	52.1	10	21.3	19.6	91	92
10/31/2013	8	7.13	9.32	2.28	6.98	1.58	52.39	11.7	17.6	15.7	91	93
11/30/2013	7.42	6.93	5.72	1.43	4.62	1.13	48.02	11.5	14.2	12.26	90	94
12/31/2013	7.48	6.94	5.15	1.26	3.87	0.95	49.95	11.75	11.4	8.66	87	95
01/31/2014	7.77	7.01	3.64	0.84	3.23	0.76	48.22	11.6	9.1	8.71	86	95
02/28/2014	7.16	6.38	4.58	0.92	2.97	0.66	13.08	2.38	9.8	8.42	92	99
03/31/2014	7.22	6.77	5.27	0.89	3.02	0.54	107.94	19.13	9.9	9.09	98	93
04/30/2014	7.46	6.79	7.04	1.26	4.57	0.85	66.92	12.4	12.9	10.86	98	92
05/31/2014	7.69	6.91	1.38	7.37	0.88	4.74	28.19	5.38	15.6	13.33	96	98.5
06/30/2014	7.26	6.81	8.36	1.79	4.64	0.96	33.25	7.13	19.7	16.9	94	96
07/31/2014	7.25	6.96	5.18	1.07	3.93	0.82	13.7	2.8	20.4	19.4	98	95
08/31/2014	7.13	6.9	9.54	1.43	5.4	0.97	24.69	4.75	20.7	20.06	97	95
09/30/2014	7.14	6.94	9.14	1.49	5.14	1.01	35.05	7.45	19.1	18.63	94	92
10/31/2014	7.26	6.97	7.7	1.74	6.1	1.3	39.96	8.3	16	17.1	94	96
11/30/2014	7.07	6.94	6.28	1.42	5.1	1.2	33.43	7.75	15.3	12.5	97	93
12/31/2014	7.08	6.91	7.59	1.75	4.51	1.06	55.22	13.1	11.9	10.55	93	93
01/31/2015	7.11	6.93	6	1.41	4.95	1.12	51.59	11.75	10.2	9.27	96	94
02/28/2015	7.06	6.94	4.6	0.96	3.21	0.71	45.42	10.63	10.6	9.77	93.94	96
03/31/2015	7.08	6.94	8.11	1.8	6.18	1.47	67.27	16	11.9	10.34	95	91
04/30/2015	7.06	6.96	0.88	3.67	0.73	2.97	44.89	10.9	12.9	12.2	93	96
05/31/2015	7.51	6.83	7.21	1.62	6.47	1.16	108.55	18	15.3	14.59	92	93
06/30/2015	7.87	7.41	13.88	2.6	8.89	1.67	70.34	14.5	18.9	17.15	91	94
07/31/2015	7.86	7.1	14.96	2.99	9.61	2.01	50.42	10.63	20.9	18.12	94	94
08/31/2015	7.34	6.97	6.81	1.36	5.22	1.03	48.1	10	20.9	20.1	99	95
09/30/2015	7.67	6.5	6.61	1.25	5.65	1.15	112.85	19.9	20.3	18.96	92	89
10/31/2015	7.76	7.1	12.31	2.46	10.12	2.03	104.17	21	18.9	17.37	97	93
11/30/2015	7.29	7.06	8.14	1.74	7.32	1.65	64.03	14.63	16.2	13.97	97	92
Average	7.396901408	6.958591549	10.36056338	2.154507042	7.036056338	1.49384507	63.45873239	12.26591549	14.95774648	13.63253521	93.14	93.02464789
Minimum	6.92	6.38	0.88	0.33	0.73	0.073	13.08	2.38	8.1	7.31	86	89
Maximum	8.2	7.41	36.58	7.37	16.51	4.74	167.67	22	21.9	20.9	99	99
Count	71	71	71	71	71	71	71	71	71	71	71	71
Std Dev	0.290396731	0.159931197	6.879744781	1.373427193	3.611611227	0.846872729	27.84769013	3.987460193	4.394140968	4.313083325	2.571803147	1.946679834
CV	0.03925924	0.022983271	0.664031919	0.637467024	0.513300499	0.566908005	0.438831491	0.325084597	0.293770253	0.316381602	0.02761223	0.020926495
95th Percentile	7.935	7.21	23.445	4.81	13.62	2.945	112.805	19.515	21.25	20.08	97.5	96
5th Percentile	7.06	6.715	3.63	0.84	2.91	0.465	30.72	6.255	8.55	7.74	89.75	90

Appendix E: Low Flow Conditions and Dilution

A. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho's water quality standards require criteria be evaluated at the following low flow receiving water conditions (See IDAPA 58.01.02.210.03) as defined below:

Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3 or 30Q10
1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years. 2. The 1B3 is biologically based and indicates an allowable exceedence of once every 3 years. 3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years. 4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years. 5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years. 6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years. 7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.	

Idaho's water quality standards do not specify a low flow to use for acute and chronic ammonia criteria, however, the EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia; Notice* (64 FR 719769 December 22, 1999) identifies the appropriate flows to be used.

The EPA determined critical low flows upstream of the discharge from the City of Preston WWTP's quarterly flow monitoring of Worm Creek. Samples were taken upstream of the facility.

The estimated low flows for the station are presented in Table E-1.

Table E-1. Low Flows in Worm Creek at the Point of Discharge.

Flows	cfs
Harmonic Mean	1.33
30Q5	0.87
7Q10	0.79
1Q10	0.56

B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality

standards may be exceeded as long as acutely toxic conditions are prevented (the EPA, 1994). The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances."

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges.

In the State 401 Certification, the IDEQ proposes to authorize a mixing zone of 0% of the stream flow volume.

The following formula is used to calculate a dilution factor based on the allowed mixing zone.

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$

Where:

D = Dilution Factor
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, 30B3, etc)
%MZ = Percent Mixing Zone

The EPA calculated dilution factors for year round critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 1.2 mgd. The dilution factors are listed in Table E-2.

Table E-2. Dilution Factors.

Flows	Dilution Factor
1Q10	1.0
7Q10	1.0
30B3	1.0
30Q5	1.0
Harmonic Mean	N/A

Appendix F: Basis for Effluent Limits

The following discussion explains in more detail the derivation of the technology- and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, Part C discusses anti-backsliding provisions, Part D discusses the effluent limits imposed due to the State's anti-degradation policy, and Part E presents a summary of the facility-specific limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which 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 C-1.

Table F-1. Secondary Treatment Effluent Limits (40 CFR 133.102).

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.	

EPA has additionally established effluent limitations (40 CFR 133.105) that are considered "equivalent to secondary treatment" which apply to facilities meeting certain conditions established under 40 CFR 133.101(g). The permittee does not fit these requirements and so must meet secondary treatment standards.

Mass-Based Limits

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

$$\textit{Mass based limit (lb/day)} = \textit{concentration limit (mg/L)} \times \textit{design flow (mgd)} \times 8.34^{[1]}$$

[1] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

Since the design flow for this facility is 1.2 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 1.2 mgd × 8.34 = 300 lbs/day

Average Weekly Limit = 45 mg/L × 1.2 mgd × 8.34 = 450 lbs/day

The City of Preston WWTP also received a WQBEL for TSS. The calculated WQBEL AML for TSS was stricter than the TBEL AML for TSS, therefore the WQBEL AML for TSS applies (see Appendix G for calculations).

Chlorine

The City of Preston WWTP does not use chlorine for disinfection on a regular basis. Chlorine disinfection would only be used as a backup if the UV system malfunctioned. In the case chlorine is used and discharged, Technology-Based Effluent Limits are required.

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.

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

Monthly average Limit = 0.5 mg/L x 1.2 mgd x 8.34 = 5 lbs/day

Weekly average Limit = 0.75 mg/L x 1.2 mgd x 8.34 = 7.5 lbs/day

EPA has determined that more-stringent water quality-based effluent limits are necessary for chlorine (see Appendix G for calculations). The more-stringent limits are listed as the effluent limits for chlorine in the draft permit.

B. 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. The NPDES regulation 40 CFR 122.44(d)(1) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality. Effluent limits must also meet the applicable water quality

requirements of affected States other than the State in which the discharge originates, which may include downstream States (40 CFR 122.4(d), 122.44(d)(4), see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation for the discharge in an approved TMDL. All of the water quality-based effluent limits are calculated directly from the applicable water quality standards and from the 2013 TMDL Addendum.

Reasonable Potential Analysis

When evaluating the effluent to determine if the pollutant parameters in the effluent 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/Tribal water quality criterion, the EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State.

The reasonable potential analysis for City of Preston WWTP were based on a mixing zone of 0% based on the IDEQ's draft certification. If IDEQ revises the allowable mixing zone in its final certification of this permit, reasonable potential analysis will be revised accordingly.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based Wasteload Allocation

   Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

A TMDL has been developed for the Bear River Basin. This TMDL is entitled "The Bear River Basin Addendum to the Bear River/Malad Subbasin Assessment and Total maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204" (*2013 TMDL Addendum*). The *2013 TMDL Addendum* assigned the City of Preston WWTP a WLA of 0.48 lbs/day as an annual average. The NPDES permit limits were based on this WLA.

2. Mixing zone based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant. The WLA for TP was not derived using a mixing zone.

3. Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an exceedance of the criteria. The WLA for TP was derived using this method.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

Summary - Water Quality-based Effluent Limits

The water quality based effluent limits in the draft permit are summarized below.

Ammonia

A reasonable potential calculation showed that the City of Preston WWTP discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit contains a water quality-based effluent limit for ammonia. The draft permit requires that the permittee monitor the receiving water for ammonia, pH, and temperature. See Appendixes B and G for reasonable potential and effluent limit calculations for ammonia.

pH

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. 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. Effluent pH data were collected daily at the facility from 1/31/2010 to 11/30/2015, a total of 71 samples were collected. The data ranged from 6.38 – 8.2 standard units. Except for a single pH sample of 6.38 in 2014, the pH range of the effluent has been well within the State's water quality criterion of 6.5 – 9.0 standard units, therefore no mixing zone is necessary for this discharge.

Dissolved Oxygen and Biological Oxygen Demand

Idaho water quality standards state a minimum level of 6 mg/L DO (IDAPA 58.01.02.250). 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. In WWTP's the BOD_5 is regulated by technology-based effluent limits (TBELs). Compliance with the BOD_5 TBELs will be protective of minimum DO levels in the receiving water.

Phosphorus

A Water Quality-based Effluent Limit is used to implement the TMDL. In this case, the *2013 TMDL Addendum* recommended a WLA of 0.48 lbs/day for the City of Preston WWTP. See Appendix G for calculations on developing Average Monthly and Average Weekly Limits for TP from the *2013 TMDL Addendum* WLA.

Total Suspended Solids

A Water Quality-based Effluent Limit is used to implement the TMDL. In this case, the *2006 TMDL* recommended a WLA of 31,142 kg/yr for the City of Preston WWTP. See Appendix G for calculations on developing Average Monthly and Average Weekly Limits for TSS from the 2006 TMDL.

E. coli

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

The Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for secondary contact recreation, the "single sample maximum" value is 576 organisms per 100 ml (IDAPA 58.01.02.251.01.b.i.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 576

organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 576 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. 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

EPA evaluated whether the technology-based effluent limits for chlorine are sufficient comply with the water quality standards. EPA performed a reasonable potential analysis for chlorine using the technology-based average weekly effluent limit of 0.75 mg/L as the maximum projected effluent concentration. Results of the reasonable potential analysis showed that the discharge from the facility would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. Therefore, the draft permit contains a water quality-based effluent limit (see Draft Permit, Part I.B.).

Residues

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

Arsenic

The Idaho state water quality standards at Idaho IDAPA 58.01.02.210 establish arsenic criteria for the protection of human health of 10 µg/L for both consumption of water and fish and water only. These criteria were approved by EPA in 2010 (hereinafter referred to as the 2010 arsenic criteria).

On June 7, 2016 EPA entered into a Consent Decree with Northwest Environmental Advocates (NWEA) addressing EPA's approval of the 2010 arsenic criteria (2016 NWEA CD). The 2016 NWEA CD remands EPA's 2010 approval of the 2010 arsenic criteria. It requires EPA to take a new action to approve or disapprove the 2010 arsenic criteria by September 15, 2016. If EPA's action is to disapprove the 2010 arsenic criteria, and Idaho does not adopt replacement criteria that EPA approves by November 15, 2018, EPA must propose new human health arsenic criteria for Idaho by November 15, 2018. If Idaho does not adopt replacement criteria that EPA approves by July 15, 2019, EPA must promulgate final arsenic criteria by July 15, 2019. (See NWEA CD, 2016).

In conjunction with the 2016 NWEA CD, EPA also entered into a Settlement Agreement with NWEA (NWEA SA). In the NWEA SA, EPA agreed that if EPA disapproves the 2010 arsenic criteria, then between the date of the disapproval and the date of final action, EPA will use Idaho's 1994 arsenic criteria when interpreting the narrative toxics criteria. These criteria are 6.2 µg/L to protect consumption of organisms only and 0.02 µg/L to protect consumption of water and organisms.

Because the City of Preston WWTP has detectable concentrations of arsenic, EPA evaluated the detected concentrations of arsenic against both the 2010 arsenic criteria and the 1994 criteria for arsenic. Since Worm Creek is not designated as a drinking water source, nor is it an existing use, when analyzing reasonable potential using the 1994 criteria, EPA considers 6.2 µg/L to be protective of human health. In either case, the facility did not have reasonable potential to exceed the criteria.

C. Anti-backsliding Provisions

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. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)), but in this case, the effluent limits being revised are water quality-based effluent limits (WQBELs).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the EPA NPDES Permit Writers' Manual (EPA-833-K-10-001) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4). Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

An anti-backsliding analysis was done for ammonia. As a result of the analysis the limitations in the previous permit for ammonia are being retained in the proposed permit. The anti-backsliding analysis for each limit or condition is discussed in more detail below.

Ammonia

A WQBEL for ammonia was calculated based on existing data and was calculated to be less stringent than the current existing limits. Under antibacksliding provisions, less stringent limits are allowed if the newly computed limits comply with Idaho Water Quality Standards, including

antidegradation. However, a review of historical data from the City of Preston WWTP from 2010 – 2015 demonstrated that the facility is currently capable of meeting its ammonia limits and has no recent exceedances for ammonia. Therefore, because the permittee is currently meeting existing limits, these limits are being carried forward in the new permit.

The previous permit for the City of Preston WWTP had the following limits for Ammonia, which are being carried forward in the draft permit: Average Monthly Limits of 2 mg/L and 20.5 lbs/day, and Maximum Daily Limits of 4.1 mg/L and 41.1 lbs/day.

The dissolved limit was removed since BOD_5 is sufficient to evaluate the effect of the dissolved on dissolved oxygen.

D. Antidegradation

The proposed issuance of an NPDES permit triggers the need to ensure that the conditions in the permit ensure that Tier I, II, and III of the State's antidegradation policy are met. An anti-degradation analysis was conducted by the IDEQ as part of the State's CWA Section 401 certification (see Appendix I).

E. Facility Specific Limits

Table B-5 summarizes the numeric effluent limits that are in the proposed permit. The final limits are the more stringent of technology treatment requirements, water quality based limits or limits retained as the result of anti-backsliding analysis or to meet the State's anti-degradation policy.

Table B-5. Proposed Effluent Limits.

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--
	lbs/day	300	450	--
BOD_5 Removal	percent	85 (minimum)	--	--
Total Suspended Solids (TSS)	mg/L	30	45	
	lbs/day	283	450	--
	lbs/day	Annual Average = 182 lbs/day		
TSS Removal	percent	85 (minimum)	--	--
E. coli	#/100 ml	126 (geometric mean)	--	576 (instant max)
Total Residual Chlorine (TRC)	µg/L	7		18
	lbs/day	0.07		0.18
pH	std units	6.5 – 9.0		
Total Ammonia (as N)	mg/L	2	--	4.1
	lbs/day	20.5	--	41.1
Total Phosphorus (as P)	lbs/day	0.75	1.5	--
	lbs/day	Annual Average = 0.48 lbs/day		
Total Phosphorus (as P) Interim Limit	lbs/day	13.6	27.3	--

Appendix G: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Part A of this appendix explains the process the EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. Part B demonstrates how the water quality-based effluent limits (WQBELs) in the draft permit were calculated.

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. This following section discusses how the maximum projected receiving water concentration is determined

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.

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

where,

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

and

$$RPM = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}}$$ 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.

Results of Reasonable Potential Calculations

It was determined that ammonia has reasonable potential to cause or contribute to an exceedance of water quality criteria at the edge of the mixing zone. The results of the calculations are presented in Table G-1 of this appendix.

B. WQBEL Calculations

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated. The draft permit includes WQBELs for ammonia and Total Phosphorus. The following discussion presents the general equations used to calculate the water quality-based effluent limits. The calculations for all WQBELs are summarized in Table F-1.

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 (Equations 9 and 10). 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 10 is rearranged to solve for the WLA, becoming:

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

Idaho's water quality criteria for some metals are expressed as the dissolved fraction, 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.

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

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):

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

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

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,

$\sigma_{30}^2 = \ln(CV^2/30 + 1)$

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.

Table G-1, below, details the calculations for water quality-based effluent limits.

Table G-1. Reasonable Potential and Permit Limit Calculations.

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages	ANTIMONY (INORGANIC)	ARSENIC (dissolved) - SEE Toxic BiOp	ARSENIC (inorganic) - SEE Toxic BiOp	CHROMIUM (TRI)	COPPER - SEE Toxic BiOp	NICKEL - SEE Toxic BiOp	ZINC - SEE Toxic BiOp	CHLORINE (Total Residual)
Effluent Data	Number of Samples in Data Set (n)		71	2	2	2	2	2	2	2	4
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		0.97	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		2,445	0.01	0.02	0.02	0.387	0.747	0.197	0.04	750
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only										
Receiving Water Data	90th Percentile Conc., µg/L - (C_u)		700								
	Geometric Mean, µg/L, Human Health Criteria Only										
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	15,766.953	--	340.	--	963.815	31.153	805.917	201.857	19.
	Aquatic Life Criteria, µg/L	Chronic	4,028.962	--	150.	--	125.373	19.644	89.512	203.508	11.
	Human Health Water and Organism, µg/L		--	5.6	10.	--	Narrative	--	610.	7,400.	--
	Human Health, Organism Only, µg/L		--	640	10.	--	Narrative	--	4,600.	26,000.	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute		--	--	--	.316	.96	.998	.978	--
		Chronic		--	--	--	.86	.96	.997	.986	--
	Carcinogen (Y/N), Human Health Criteria Only		--	N	Y	Y	N	N	N	N	N
Percent River Flow Default Value = 0%	Aquatic Life - Acute	1Q10	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Aquatic Life - Chronic	7Q10 or 4B3	--	0%	0%	0%	0%	0%	0%	0%	0%
	Ammonia	30B3 or 30Q10	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Human Health - Non-Carcinogen	30Q5	--	0%	0%	0%	0%	0%	0%	0%	0%
	Human Health - carcinogen	Harmonic Mean	--	0%	0%	0%	0%	0%	0%	0%	0%
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Aquatic Life - Chronic	7Q10 or 4B3	--	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Ammonia	30B3 or 30Q10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Human Health - Non-Carcinogen	30Q5	--	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Human Health - carcinogen	Harmonic Mean	--	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Aquatic Life Reasonable Potential Analysis											
σ	$\sigma^2=\ln(CV^2+1)$		0.814	0.555	0.555	0.555	0.555	0.555	0.555	0.555	0.555
P_n	=(1-confidence level)^n, where confidence	99%	0.937	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.316
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	99%	1.9	7.4	7.4	7.4	7.4	7.4	7.4	7.4	4.7
Statistically projected critical discharge concentration (C_s)			4670.14	0.07	0.15	0.15	2.86	5.52	1.46	0.39	3552.02
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	4670.14	0.00	0.00	0.00	0.90	5.30	1.45	0.29	0.00
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	4670.14	0.07	0.15	0.15	2.46	5.30	1.45	0.29	3552.02
Reasonable Potential to exceed Aquatic Life Criteria			YES	NA	NO	NA	NO	NO	NO	NO	YES
Aquatic Life Effluent Limit Calculations											
Number of Compliance Samples Expected per month (n)			4	4	4	4	4	4	4	4	20
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			30	--	--	--	--	--	--	--	20
LTA Coeff. Var. (CV), decimal (Use CV of data set or default = 0.6)			0.970	--	--	--	--	--	--	--	0.600
Permit Limit Coeff. Var. (CV), decimal (Use CV from data set or default = 0.6)			0.970	--	--	--	--	--	--	--	0.600
Acute WLA, ug/L	C_a = (Acute Criteria x MZ_a) - C_u x (MZ_a-1)	Acute	15,767.0	--	--	--	--	--	--	--	19.0
Chronic WLA, ug/L	C_a = (Chronic Criteria x MZ_c) - $C_{u\,x}$ (MZ_c-1)	Chronic	4,029.0	--	--	--	--	--	--	--	11.0
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-z\sigma)$, Acute	99%	3,303.7	--	--	--	--	--	--	--	6.1
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	99%	2,718.7	--	--	--	--	--	--	--	5.8
Limiting LTA, ug/L	used as basis for limits calculation		2,718.7	--	--	--	--	--	--	--	5.8
Applicable Metals Criteria Translator (metals limits as total recoverable)			--	--	--	--	--	--	--	--	--
Average Monthly Limit (AML), ug/L , where % occurrence prob =		95%	**3,574**	--	--	--	--	--	--	--	**7**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		99%	**12,975**	--	--	--	--	--	--	--	**18**
Average Monthly Limit (AML), mg/L			**3.6**	--	--	--	--	--	--	--	**0.007**
Maximum Daily Limit (MDL), mg/L			**13.0**	--	--	--	--	--	--	--	**0.018**
Average Monthly Limit (AML), lb/day			**36**	--	--	--	--	--	--	--	**0.072**
Maximum Daily Limit (MDL), lb/day			**130**	--	--	--	--	--	--	--	**0.181**
Human Health Reasonable Potential Analysis											
σ	$\sigma^2=\ln(CV^2+1)$			0.555	0.555	0.555	0.555	0.555	0.555	0.555	0.555
P_n	=(1-confidence level)^n, where confidence	95%		0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.473
Multiplier	$=\exp(2.326\sigma-0.5\sigma^2)/\exp[\text{invnorm}(P_N)\sigma-0.5\sigma^2]$,	50%		1.524	1.524	1.524	1.524	1.524	1.524	1.524	1.038
Dilution Factor (for Human Health Criteria)				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Max Conc. at edge of Chronic Zone, ug/L (C_e)				0.015	0.030	0.030	0.590	1.139	0.300	0.061	778.844
Reasonable Potential to exceed HH Water & Organism				NO	NO	NO	NO	NO	NO	NO	NO
Reasonable Potential to exceed HH Organism Only				NO	NO	NO	NO	NO	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

Filename: G:\july 5\City of Preston, ID\Data and Calculations\[Preston - Idaho Calcs - 6.23.xlsm]RP and 2/12/2016

Background ammonia data in Worm Creek, upstream of the City of Preston WWTP discharge, were collected by the City of Preston WWTP from 2010 – 2015.

Phosphorus

The *2013 TMDL Addendum* provided the Preston WWTP a WLA for 0.48 lbs/day TP.

The WLA for the City of Preston WWTP is 0.48 pounds per day (lbs/day) expressed as an annual average (see Page 29 and Table 26 of the *2013 TMDL Addendum*). The NPDES regulations require that NPDES permits include effluent limits consistent with the assumptions and requirements of any WLA assigned to the discharge as part of an approved TMDL (See 40 CFR122.44(d)(1)(vii)(B)). To be consistent with the averaging period, EPA is expressing setting the annual average to be equal to the long term average in the water quality based effluent limit calculations.

(1) Average Monthly Limit

The long-term average (LTA) is set equal to the annual average WLA of 0.48 lbs/day. n = 4 with weekly sampling for TP. CV = 0.6, the default CV set by the Technical Support Document for Water Quality-Based Toxics Control (*TSD*). The formula for calculating an average monthly effluent limit (AML) is as follows (see the *TSD* at Table 5-2, page 106):

Multiplier to Calculate Permit Limits from LTA

Number of Samples per Month (n)			**4**
Coefficient of Variation (CV) = Std. Dev./Mean			**0.6**
σ = std deviation	$\sigma^2=\ln(CV^2+1)$		0.555
Average Monthly Limit (AML),	$\exp(z\sigma_n-0.5z\sigma_n^2)$; where % probability basis =	**95%**	**1.55**

Calculation:	**LTA, Limiting**	**x**	**Multiplier**	**= Limit**
AML = LTA, limiting x Multiplier	0.48	x	1.55	= 0.75

The NPDES regulations require that the limit be expressed also as an average weekly effluent limit (AWL) which is calculated below.

(2) Average Weekly Limit

n = 4 with weekly sampling for TP. CV = 0.6 , the default CV set by the *TSD*. The formula for calculating an AWL is as follows (see the *TSD* page 106):

Multiplier to Calculate Average Weekly Limit (AWL) from Average Monthly Limit

Number of Samples per Month Set (n) **Number of Samples per Week Set (n/4)**			**4** **1**
Coefficient of Variation (CV) = Std. Dev./Mean			**0.6**
σ = std deviation	$\sigma^2=\ln(CV^2+1)$		0.555

Average Monthly Limit (AML),	$\exp(z\sigma_n - 0.5z\sigma_n^2)$; where % probability basis =	**95%**	1.55
Average Weekly Limit (AWL),	$\exp(z\sigma_{n/4} - 0.5z\sigma_{n/4}^2)$; where % probability basis =	**99%**	3.12
Ratio AWL/AML			**2.01**

Calculation:	**AML**	**x**	**Multiplier**	**=**	**AWL**
AWL = AML x Multiplier	0.774	x	2.01	=	1.5

Total Suspended Solids

The TSS WLA for the City of Preston WWTP is 30,142 kg/yr (see Table 1-3 of the *2006 TMDL*) which can be expressed as 182 lbs/day as an annual average using the following calculation:

$$\frac{30{,}142\ kg}{\text{yr}} * \frac{1\ yr}{365.25\ days} * \frac{2.20462\ lbs}{1\ kg} = 182\ lbs/day$$

The NPDES regulations require that NPDES permits include effluent limits consistent with the assumptions and requirements of any WLA assigned to the discharge as part of an approved TMDL (See 40 CFR122.44(d)(1)(vii)(B)). To be consistent with the averaging period, EPA is expressing setting the annual average to be equal to the long term average in the water quality based effluent limit calculations.

(1) Average Monthly Limit

The long-term average (LTA) is set equal to the annual average WLA of 182 lbs/day. n = 4 with weekly sampling for TSS. CV = 0.6, the default CV set by the Technical Support Document for Water Quality-Based Toxics Control (*TSD*). The formula for calculating an average monthly effluent limit (AML) is as follows (see the *TSD* at Table 5-2, page 106):

Multiplier to Calculate Permit Limits from LTA

Number of Samples per Month (n)			**4**
Coefficient of Variation (CV) = Std. Dev./Mean			**0.6**
σ = std deviation	$\sigma^2 = \ln(CV^2+1)$		0.555
Average Monthly Limit (AML),	$\exp(z\sigma_n - 0.5z\sigma_n^2)$; where % probability basis =	**95%**	**1.55**

Calculation:	**LTA, Limiting**	**x**	**Multiplier**	**=**	**Limit**
AML = LTA, limiting x Multiplier	182	x	1.55	=	283

The limit must be expressed also as an average weekly effluent limit (AWL) which is calculated below.

(2) Average Weekly Limit

n = 4 with weekly sampling for TSS. CV = 0. , the default CV set by the *TSD*. The formula for calculating an AWL is as follows (see the *TSD* page 106):

Multiplier to Calculate Average Weekly Limit (AWL) from Average Monthly Limit

Number of Samples per Month Set (n)			**4**
Number of Samples per Week Set (n/4)			**1**
Coefficient of Variation (CV) = Std. Dev./Mean			**0.6**
σ = std deviation	$\sigma^2=\ln(CV^2+1)$		0.555
Average Monthly Limit (AML),	$\exp(z\sigma_n-0.5z\sigma_n^2)$; where % probability basis =	**95%**	1.55
Average Weekly Limit (AWL),	$\exp(z\sigma_{n/4}-0.5z\sigma_{n/4}^2)$; where % probability basis =	**99%**	3.12
Ratio AWL/AML			**2.01**

Calculation:	**AML**	**x**	**Multiplier**	**= AWL**
AWL = AML x Multiplier	283	x	2.01	= 567

Chlorine

The City of Preston WWTP uses chlorine as a backup disinfectant for their discharge. UV is the primary disinfectant. EPA analyzed if the City of Preston WWTP's discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine.

Using the technology based limit of 0.75 mg/L as the maximum projected effluent concentration, the facility would have reasonable potential to exceed criteria. See the calculations in Table G-1. The facility is only required to monitor for chlorine when the facility is using chlorine.

EPA requires the minimum level (ML) for chlorine tests to be 50 µg/L. The permittee will be in compliance with the AML and MDL concentration limits for chlorine provided the chlorine result is at or below the compliance evaluation level of 50 µg/L, with an AML and MDL loading at or below 0.5 lbs/day. EPA calculated the loading associated with the ML as follows:

Loading = 0.05 mg/L x 1.2 mgd x 8.34 = 0.5 lbs/day

The permittee will be in compliance with the mass-based limits of 0.07 lbs/day AML and 0.18 lbs/day MDL provided the calculated load is at or below 0.5 lbs/day.

Appendix H: Idaho DEQ Draft 401 Water Quality Certification

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Pocatello Regional Office, 444 Hospital Way #300 • Pocatello, ID 83201 • (208) 236-6160

C. L. "Butch" Otter, Governor
John H. Tippets, Director

October 4, 2016

Michael J. Lidgard
NPDES Permits Unit Manager
EPA Region 10
1200 Sixth Avenue, Suite 900
Seattle WA 98101-3140

RE: Draft 401 Certification for the City of Preston Wastewater Treatment Facility, NPDES Permit No. ID0020214

Dear Mr. Lidgard:

The Pocatello Regional Office of the Idaho Department of Environmental Quality has reviewed the draft NPDES permit for the City of Preston Wastewater Treatment Facility. Section 401 of the Federal Clean Water Act requires that states issue certifications for activities which are authorized by a Federal permit and that may result in a discharge to surface waters. In Idaho, the Department of Environmental Quality (DEQ) is responsible for reviewing these activities and evaluating whether the activity will comply with Idaho Water Quality Standards, including any applicable water quality management plans (e.g., total maximum daily loads). A federal permit cannot be issued until DEQ has provided a certification or waived certification either expressly or by taking no action.

Attached under this cover please find the draft 401 water quality certification for NPDES Permit No. ID0020214. Please call me at 208-236-6160 to discuss any concerns or questions regarding this draft document.

Sincerely,

Lynn Van Every
Regional Water Quality Manager

Cc: Bruce Olenick, Regional Administrator, Pocatello
Nicole Deinarowicz, 401 Program Coordinator, Boise

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

October 3, 2016

NPDES Permit Number(s): ID0020214, City of Preston Wastewater Treatment Plant

Receiving Water Body: Worm Creek

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheet, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The City of Preston Wastewater Treatment Plant (WWTP) discharges the following pollutants of concern: BOD_5, TSS, *E. coli*, pH, ammonia, phosphorus, chlorine, DO, antimony, arsenic, chromium, copper, nickel, zinc, and mercury. Effluent limits have been developed for BOD_5, TSS, *E. coli*, Total Residual Chlorine (TRC), pH, Total Ammonia, and Total Phosphorus (TP). No effluent limits are proposed for DO, antimony, arsenic, chromium, copper, nickel, and mercury, however monitoring is required. Although the metals (antimony, arsenic, chromium, copper, nickel and zinc) are present in detectable amounts, none of the pollutants have reasonable potential to exceed WQS.

Receiving Water Body Level of Protection

The City of Preston WWTP discharges to Worm Creek within the Middle Bear River Subbasin assessment unit (AU) ID16010202BR005_02b (Worm Creek (lower) – Glendale Reservoir to Border). This AU has the following designated beneficial uses: coldwater aquatic life and secondary contact recreation. In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

According to DEQ's 2012 Integrated Report, this AU is not fully supporting one or more of its assessed uses. The cold water aquatic life use is not fully supported. Causes of impairment include sediment and total phosphorus. The contact recreation beneficial use is fully supported. As such, DEQ will provide Tier 1 protection (IDAPA 58.01.02.051.01) for the aquatic life use and Tier 2 protection (IDAPA 58.01.02.051.02) in addition to Tier 1 for the contact recreation use (IDAPA 58.01.02.052.05.c).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of existing and designated beneficial uses. The effluent limitations and associated requirements contained in the City of Preston WWTP permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

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

Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04).

The EPA-approved *Bear River/Malad River Subbasin Assessment and Total Maximum Daily Load Plan (2006) and the Bear River Basin Addendum to the 2006 TMDL* (original TMDL approved by EPA June 2006, Addendum approved by EPA September 2013) establishes wasteload allocations for sediment (TSS) and total phosphorus (Table 1). These wasteload allocations are designed to ensure Worm Creek will achieve the water quality necessary to support its existing and designated aquatic life beneficial uses and comply with the applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the City of Preston WWTP permit are set at levels that comply with these wasteload allocations.

Table 1. Pollutants with New Limits in the Proposed Permit.

Pollutant	Units	Current Permit			Proposed Permit			Change[a]
		Average Monthly Limit	Average Weekly Limit	Single Sample Limit	Average Monthly Limit	Average Weekly Limit	Single Sample Limit	
Total Phosphorus	lbs/day	—	—	Report	Ave. Month Limit	Ave. Weekly Limit	Ave. Annual Limit	New, TMDL
					0.75	1.5	0.48	
Total Phosphorus Interim Limit	lbs/day	—	—	—	13.6	27.3	—	

[a] NC = no change, I = increase, D = decrease.

In sum, the effluent limitations and associated requirements contained in the City of Preston WWTP permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the *Bear River TMDL and Addendum*. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in Worm Creek in compliance with the Tier 1 provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

High-Quality Waters (Tier 2 Protection)

The water quality relevant to secondary contact recreation use of Worm Creek must be maintained and protected, unless a lowering of water quality is deemed necessary to accommodate important social or economic development.

To determine whether degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to secondary contact recreation use of Worm Creek (IDAPA 58.01.02.052.05). These include the following: *E. coli*, TP, mercury, antimony, arsenic, chromium, copper, nickel, and zinc. Effluent limits are set in the proposed and existing permit for only *E. coli*. In the proposed permit, TP is given a new limit which decreases

the phosphorus load and will improve recreational water quality. Arsenic, chromium, copper, nickel, zinc, and mercury are required to be monitored and reported.

For a reissued permit or license, the effect on water quality is determined by looking at the difference in water quality that would result from the activity or discharge as authorized in the current permit and the water quality that would result from the activity or discharge as proposed in the reissued permit or license (IDAPA 58.01.02.052.06.a). For a new permit or license, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit or license (IDAPA 58.01.02.052.06.a).

Pollutants with Limits in the Current and Proposed Permit- *E. coli*

For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.06.a.i), and the future discharge quality is based on the proposed permit limits (IDAPA 58.01.02.052.06.a.ii). For the City of Preston WWTP permit, this means determining the permit's effect on water quality based upon the limits for *E. coli* in the current and proposed permits. Table 2 provides a summary of current permit limits and the proposed or reissued permit limits that pertain only to Tier 2 protections (secondary contact recreation).

Table 2. Comparison of current and proposed permit limits for pollutants of concern relevant to uses receiving Tier 2 protection.

Pollutant	Units	Current Permit			Proposed Permit			Change[a]
		Average Monthly Limit	Average Weekly Limit	Single Sample Limit	Average Monthly Limit	Average Weekly Limit	Single Sample Limit	
Pollutants with limits in both the current and proposed permit								
E. coli	no./100 mL	126		576	126		576	NC
Pollutants with no limits in both the current and proposed permit								
Arsenic	mg/L	—	—	—	2x/yr	—	Report	NC
Chromium	mg/L	—	—	—	2x/yr	—	Report	NC
Copper	mg/L	—	—	—	2x/yr	—	Report	NC
Mercury	µg/L	—	—	—	2x/yr	—	Report	NC
Nickel	mg/L	—	—	—	2x/yr	—	Report	NC
Zinc	mg/L	—	—	—	2x/yr	—	Report	NC

[a] NC = no change, I = increase, D = decrease.

The proposed permit limits for these pollutants of concern in Table 2 (*E. coli*) are the same as, or more stringent than, those in the current permit ("nc" or "D" in change column). Therefore, no adverse change in water quality and no degradation will result from the discharge of these pollutants.

New Permit Limits for Pollutants Currently Discharged-TP

When new limits are proposed in a reissued permit for pollutants in the existing discharge, the effect on water quality is based upon the current discharge quality and the proposed discharge quality resulting from the new limits. Current discharge quality for pollutants that are not currently limited is based upon available discharge quality data (IDAPA 58.01.02.052.06.a.i). Future discharge quality is based upon proposed permit limits (IDAPA 58.01.02.052.06.a.ii).

The proposed permit for City of Preston WWTP includes new limits for total phosphorus (Table 1). These limits were included in the permit to be consistent with the wasteload allocations in the approved *Bear River/Malad River Subbasin Assessment and Total Maximum Daily Load Plan (2006) and the Bear River Basin Addendum to the 2006 TMDL*. The total phosphorus limits in the proposed permit reflect a reduction in the amount of TP discharged and an improvement in water quality from current conditions. Therefore, no adverse change in water quality and no degradation will occur with respect to this pollutant.

Pollutants with No Limits- Arsenic, Chromium, Copper, Mercury, Nickel, Zinc

There are six pollutants of concern relevant to Tier 2 protection of recreation that currently are not limited and for which the proposed permit also contains no limits: arsenic, chromium, copper, mercury, nickel, and zinc. (Table 2). For such pollutants without effluent limits, a change in water quality is determined by reviewing whether changes in production, treatment, or operation that will increase the discharge of these pollutants are likely (IDAPA 58.01.02.052.06.a.ii). Monitoring for these metals which were reported at quantifiable levels in the application have had their monitoring increased to 2x/year in order to gather additional information. Mercury monitoring has been added to assist in determining reasonable potential in the next permit reissuance. With respect to these pollutants, there is no reason to believe they will be discharged in quantities greater than those discharged under the current permit. This conclusion is based upon the fact that there have been no changes in the design flow, influent quality, or treatment processes that would likely result in an increased discharge of these pollutants. Based on the above, DEQ has concluded that the proposed permit should not cause a lowering of water quality for the pollutants with no limits. As such, the proposed permit should maintain the existing water quality in Worm Creek.

In sum, DEQ concludes that this discharge permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.06).

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Compliance Schedule

Pursuant to IDAPA 58.01.02.400.03, DEQ may authorize compliance schedules for water quality–based effluent limits issued in a permit for the first time. City of Preston WWTP cannot immediately achieve compliance with the effluent limits for total phosphorus; therefore, DEQ authorizes a compliance schedule and interim requirements as set forth in the Permit. This compliance schedule provides the permittee a reasonable amount of time to achieve the final effluent limits as specified in the permit. At the same time, the schedule ensures that compliance with the final effluent limits is accomplished by 8 years and 6 months from the permit effective date.

DEQ authorizes the compliance schedule to meet the total phosphorus effluent limit as detailed in Part II.C. of the draft NPDES permit found on pages 15 and 16.

Pollutant Trading

Pursuant to IDAPA 58.01.02.055.06, DEQ authorizes pollutant trading for total phosphorus. Trading must be conducted in a manner that is consistent with the most recent version of DEQ's *Water Quality Pollutant Trading Guidance*, available at: http://www.deq.idaho.gov/media/488798-water_quality_pollutant_trading_guidance_0710.pdf.

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to **Lynn Van Every, Pocatello Regional Office, at 208-236-6160 or via email at Lynn.vanevery@deq.idaho.gov.**

DRAFT

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