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 Horseshoe Bend
Wastewater Treatment Plant

Public Comment Start Date: November 6, 2017
Public Comment Expiration Date: December 6, 2017

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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
The EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Idaho Department of Environmental Quality
Boise Regional Office
1445 North Orchard Street
Boise, Idaho 83706
208-373-0550

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."

US EPA Region 10
Suite 900
1200 Sixth Avenue, OWW-191
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 West Bannock Street, Suite 900
Boise, Idaho 83702

Idaho DEQ Boise Regional Office
1445 North Orchard Street
Boise, Idaho 83706

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
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BOD_5	Biochemical oxygen demand, five-day
BOD_{5u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
C BOD_5	Carbonaceous Biochemical Oxygen Demand
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

ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
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
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids

SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TBEL	Technology-Based Effluent Limit
TN	Total Nitrogen
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TRC	Total Residual Chlorine
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Background Information

A. General Information

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

Table 1. General Facility Information	
NPDES Permit #	ID0021024
Applicant	City of Horseshoe Bend Wastewater Treatment Plant
Type of Ownership	Publicly Owned Treatment Works (POTW)
Physical Address	Lagoon Drive Horseshoe Bend, Idaho 83629
Mailing Address	P.O. Box 246 Horseshoe Bend, Idaho 83629
Facility Contact	Mr. Phil Tschida Public Works Supervisor (208) 793-2219
Facility Location	Latitude: 43.912196 Longitude: -116.201674
Receiving Water	Payette River, Idaho
Facility Outfall	Latitude: 43.912283 Longitude: -116.203117

B. Permit History

The most recent NPDES permit for the City of Horseshoe Bend (Horseshoe Bend) was issued on November 17, 2003, became effective on November 24, 2003, and expired on November 24, 2008. An NPDES application for permit issuance was submitted by the permittee on October 24, 2008. The EPA determined that the application was timely and 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

Horseshoe Bend owns and operates the City of Horseshoe Bend Wastewater Treatment Plant (WWTP) located in Horseshoe Bend, Idaho. The collection system has no combined sewers. The facility serves a resident population of 824. There are no major industries discharging to the facility. A photograph showing the WWTP and an overview of the service area is included in Appendix A (Figure A-1).

Treatment Process

The average daily design flow of the facility is 0.175 mgd. The actual average daily flow of the facility is 0.062 mgd. The treatment process consists of covered waste stabilization ponds and disinfection using ultraviolet radiation. Influent enters the treatment facility through a 12-inch pipe where it is then directed through two wet wells. It then passes through a screen before being routed to two aerated treatment lagoons which have a membrane liner. The final step of the treatment process is UV disinfection. Schematics of the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A (Figures A-2 through A-4). Because the design flow is less than 1 mgd, the facility is considered a minor facility.

Outfall Description

The facility continuously discharges to the Payette River through Outfall 001, which is an open pipe along the river bank. Outfall 001 is located on the west side of Horseshoe Bend.

Effluent Characterization

To characterize the effluent, the EPA evaluated the facility's application form, discharge monitoring report (DMR) data from 2009 through 2016, and additional data provided by Horseshoe Bend. The effluent quality is summarized in Table 2. Data are provided in Appendix B.

Table 2. Effluent Characterization based on application data and DMR data from January 2009 to December 2016.

Parameter	Maximum	Minimum	Average	Sample Size	CV
Flow[1]	0.540 mgd	0.028 mgd	0.062 mgd	83	--
Ammonia (as N)[3]	23.3 mg/L	<0.04 mg/L	1.23 mg/L	93	3.30
Biochemical Oxygen Demand (BOD_5)[1]	33.0 mg/L	3.0 mg/L	7.3 mg/L	83	0.75
	17 lb/day	0.9 lb/day	3.6 lb/day	83	0.82
BOD_5 % Removal[1]	99 %	88%	97%	83	--
Dissolved Oxygen[2]	11.0 mg/L	--	7 mg/L	5	--
E. Coli[1]	10 cfu/100mL	<1 cfu/100mL	1 cfu/100mL	83	0.90
Nitrate Plus Nitrite Nitrogen[2]	25.2 mg/L	--	21.2 mg/L	3	--
Oil and grease[2]	<7 mg/L	--	<5.6 mg/L	3	--
Phosphorus[3] (Total, May-Sept)	6.74 mg/L	2.66 mg/L	4.72 mg/L	37	0.23
pH[1]	8.77 s.u.	4.87 s.u.	6.49 s.u.	83	--
Temperature[2] (Winter)	13.8 °C	--	10.5 °C	90	--
Temperature[2] (Summer)	22.4 °C	--	21.0 °C	60	--
Total Kjeldahl Nitrogen[2]	2.87 mg/L	--	2.39 mg/L	3	--
Total Suspended Solids (TSS)[1]	44 mg/L	3 mg/L	9 mg/L	83	0.59
	22 lb/day	0.9 lb/day	4.2 lb/day	83	--
TSS % Removal	99%	83%	97%	83	--

Source: [1]DMR data. [2] Renewal application. [3]Submitted by the City as a separate dataset. "--" = not available.

Compliance History

Since the permit was issued, there have been periodic exceedances of the *Escherichia coli* (*E. coli*), total suspended solids (TSS), and five-day biological oxygen demand (BOD_5) limits, as well as regular excursions of the lower pH limit of 6.5. In January 2009, the facility began adding 1 mg/L magnesium hydroxide to its influent as a neutralizing agent. On June 23, 2009, the EPA issued a notice of violation letter that cited more than 93 violations of the pH limit between June 2004 and April 2009. The facility attributed the pH violations to illicit indirect organic solvent discharges to the collection system. In 2009, Horseshoe Bend passed a pretreatment ordinance. In 2016, Horseshoe Bend switched to dispensing caustic soda via a drip line between Lagoon 2 and the UV building to neutralize its effluent. Although Horseshoe Bend is not aware of any current illicit indirect dischargers and is still neutralizing its effluent, low pH values in the effluent is a recurring problem. Horseshoe Bend believes the low pH values are associated with an operational issue and is planning to retrofit its aeration system and change the style of lagoon cover to allow for easier maintenance of the aeration system (personal comm. 2016).

The EPA reviewed the effluent monitoring data from the DMR since the facility began neutralization (January 2009 – December 2016) (Table 2) and the effluent violations over the same period (Table 3). Out of approximately 83 samples collected since January 2009, there have been single exceedances for several parameters and 30 samples less than the pH limit

6.5. Low pH values were typically reported in consecutive months but there does not appear to be a seasonal pattern.

Table 3. Summary of Effluent Violations (January 1, 2009 to December 28, 2016).		
Parameter	**Limit**	**Number of Instances**
BOD_5	Monthly Average (30 mg/L)	1
TSS	Monthly Average (30 mg/L)	1
TSS % Removal	Minimum % Removal (85%)	1
pH	Instantaneous Minimum (6.5 s.u.)	30

The most recent permit compliance inspection was conducted by IDEQ August 12, 2014. The inspection report noted deficiencies in the calibration, maintenance, and reporting associated with the continuous pH meter and with the Quality Assurance Plan not meeting the minimum requirements. The facility has since updated its Quality Assurance Plan. Additional compliance information for this facility, including compliance with other environmental statutes, is available on Enforcement and Compliance History Online:

https://echo.epa.gov/detailed-facility-report?fid=110039969399

III. Receiving Water

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

A. Receiving Water

This facility discharges to the Payette River in Horseshoe Bend, Idaho. The outfall is located on the west side of town, approximately 15 miles upstream of Black Canyon Reservoir.

B. Designated Beneficial Uses

This facility discharges to the Payette River in the Payette Subbasin (HUC 17050122), Water Body Unit SW-3. At the point of discharge, the Payette River is protected for the following designated uses (IDAPA 58.01.02.140.16):

- cold water aquatic life
- salmonid spawning
- primary contact recreation
- domestic water supply

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).

C. Water Quality

Horseshoe Bend initiated quarterly sampling of the Payette River upstream of Outfall 001 in 2004 to meet requirements of the 2004 Permit and was required to monitor for four years. To date, Horseshoe Bend continues to conduct quarterly riverine sampling. Horseshoe Bend's sampling location was originally located approximately 0.2 miles upstream of the outfall, but, in 2009, Horseshoe Bend moved the sampling location 1.4 miles upstream of the outfall for safety reasons. In total, Horseshoe Bend has conducted approximately 52 sampling events. The EPA water quality database, STORage and RETrieval and Water Quality eXchange (STORET), was queried for Payette River data in the vicinity of the outfall since permit issuance in 2003, and there was only one site upstream and relatively close (i.e., 4.5 miles) to the outfall. The water quality for the receiving water is summarized in Table 4.

Table 4. Receiving Water Quality Data for the Payette River.

Parameter	Units	Percentile	Value	Sample Size	Source
Temperature	°C	95th	21.2	39	HSB, STORET/WQX
pH	Standard units	95th	8.0	42	STORET/WQX
Hardness	mg/L	Minimum (due to small sample size)	13.5	7	HSB, STORET/WQX
Ammonia	mg/L	90th	0.02	57	HSB, STORET/WQX
Total Phosphorus (May-September)	mg/L	95th	0.21	28	HSB

Source: HSB sampling data from 2004 to 2016 and STORET data from Jan. 1, 2003 to Sept. 1 2016. STORET sample dates ranged from Jan. 2, 2003 to Jan. 6, 2016. HUC 17050122. Data Retrieved Sept. 7, 2016.

D. Water Quality Limited Waters

The State of Idaho's 2014 Integrated Report Section 5 (section 303(d)) does *not* list the Payette River, from the confluence of the North and South Forks to the Black Canyon Reservoir (i.e., segment SW003_06), as impaired. The State of Idaho's 2014 Integrated Report Section 5 lists Black Canyon Reservoir (i.e., segment SW002_06) as fully supporting its beneficial uses but lists the lower Payette River downstream of Black Canyon Reservoir (i.e., segment SW001_06) as impaired for bacteria (*E. coli*) and temperature. No TMDL has been completed for temperature. The Lower Payette River TMDL for bacteria was approved by the EPA on May 31, 2000. The *E. coli* TMDL concluded point sources were a small contributor to the impairment (i.e., 0.005%) and, as a result, did not include a wasteload allocation (WLA) for any point sources, including the Horseshoe Bend WWTP.

On September 9, 2004, the EPA approved the Snake River-Hells Canyon TMDL for nutrients. In that TMDL, the Payette River at the mouth received a total phosphorus (TP) load allocation of 469 kg/day (based on meeting a water quality target of 0.07 mg/L from May through September). No WLAs were established for point sources on the Payette River as part of the TMDL, but IDEQ indicated it plans to develop a Payette River TP TMDL as part of the Implementation Plan for the Snake River-Hells Canyon TMDL.

E. Low Flow Conditions

Based on 110 years of data (1906 – 2016) at the USGS gage Payette River near Horseshoe Bend (#13247500), critical flows in the Payette River range from 434 cubic feet per second (cfs) for the lowest one-day flow with an average recurrence frequency of once in 10 years (1Q10) and 1722 cfs for the long-term average (harmonic mean). Critical low flows for the receiving water, which were calculated using the USGS tool SW Toolbox, are summarized in Table 5. The low flows are slightly less than those used in the 2003 permit, which contained effluent limits based on a 1Q10 flow of 468 cfs and a 7Q10 flow of 571 cfs.

Table 5. Critical Flows in the Payette River.

Flows	Annual Flow (cfs)
1Q10	434
7Q10	512
30B3	865
Harmonic Mean	1722

Source: USGS station 13247500, located approx. 2.5 miles upstream of the City of Horseshoe Bend, ID.

Low flows are defined in Appendix DC, Part C.

IV. Effluent Limitations and Monitoring

Table 6 presents the existing effluent limits and monitoring requirements in the ID0021024 Permit. Table 7 presents the proposed effluent monitoring requirements in the draft permit. A brief summary of proposed effluent limit changes is listed below. The basis for the changes is discussed on a parameter-specific basis within this section of the Fact Sheet.

- Decreases in the average monthly and average weekly mass limits for BOD_5 and TSS
- Addition of an average monthly effluent limit for TP

Table 6: Existing Permit - Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations			Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Instantaneous Maximum Limit	Sample Location	Sample Frequency	Sample Type
Flow, mgd	---	---	---	Effluent	continuous	Recording
Biochemical Oxygen Demand (BOD_5)	30 mg/l	45 mg/l	---	Influent and Effluent	1/month	8-hour composite
	50 lbs/day	75 lbs/day	---			
BOD_5 and TSS Percent Removal	%	85 (minimum)	--	Influent and Effluent	1/month	Calculation
TSS	30 mg/l	45 mg/l	---	Influent and Effluent	1/month	8-hour composite
	50 lbs/day	75 lbs/day	---			
E. Coli Bacteria	126/100 ml	---	406/100 ml	Effluent	5/month	Grab
Total Phosphorus[1] as P, mg/L	---	---	---	Effluent	1/month	8-hour composite
Total Ammonia[1] as N, mg/L	---	---	---	Effluent	1/month	8-hour composite
pH std units	Between 6.5 – 9.0			Effluent	1/week	Grab

1. Monitoring shall be conducted once per month starting in January 2006 and lasting for one year.

Table 7. Draft Permit – Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Influent and Effluent	1/month	8-hour composite
	lbs/day	44	66	--			Calculation[1]
BOD_5 Percent Removal	%	85 (minimum)	--	--	Influent and Effluent	1/month	Calculation[2]
Total Suspended Solids (TSS)	mg/L	30	45	--	Influent and Effluent	1/month	8-hour composite
	lbs/day	44	66	--			Calculation[1]
TSS Percent Removal	%	85 (minimum)	--	--	Influent and Effluent	1/month	Calculation[2]
E. coli[3]	CFU/ 100 ml	126	--	406 (instant. max)[4]	Effluent	5/month	Grab
pH	std units	Between 6.5 – 9.0			Effluent	5/week	Grab
Total Phosphorus (as P)[5]	lbs/day	9.8	--	--	Effluent	1/month	8-hour composite
Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.2 of this permit				1/month	Visual Observation

Table 7. Draft Permit – Effluent Limits and Monitoring Requirements

Report Parameters							
Total Ammonia (as N)	mg/L	--		Report	Effluent	Semi-annual	8-hour composite
Flow	mgd	Report	--	Report	Effluent	Continuous	Recording
NPDES Application Form 2A (Part B.6) Effluent Testing	mg/L	--	--	Report	Effluent	1 time in 2nd, 3rd, and 4th year of permit	According to application requirements

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.2 and Part III.G of this permit.
5. The effluent limit and monitoring requirements apply May 1 through September 30.

A. Basis for Effluent Limits

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

B. Pollutants of Concern

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

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

The wastewater treatment process for this facility includes both primary and secondary treatment, as well as disinfection with UV radiation. Pollutants typical of a sewage treatment plant treating with UV disinfection include BOD_5, TSS, *E. coli* bacteria, pH, ammonia, TP, total nitrogen (TN), and dissolved oxygen (DO). As discussed in Section III.D., there are no TMDL-based WLAs, but the lower Payette River has an *E. coli* TMDL, is on the 2014

303(d) List for temperature impairment, and has a gross allocation for phosphorus as part of the Snake River – Hells Canyon Nutrient TMDL.

Based on the factors listed above, pollutants of concern are as follows:

- BOD_5
- DO
- TSS
- pH
- Ammonia
- *E. coli* bacteria
- Temperature
- Total phosphorus
- Total nitrogen

C. Technology-Based Effluent Limits (TBELs)

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 TBELs apply to certain municipal WWTPs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table 8. For additional information and background refer to Part 5.1 *Technology Based Effluent Limits for POTWs* in the Permit Writers Manual (EPA 2010).

Table 8. Secondary Treatment Effluent Limits

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

Source: 40 CFR 133.102

Mass-Based Limits

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:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[1]

Since the design flow for this facility is 0.175 mgd, the technology-based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit (AML) = 30 mg/L × 0.175 mgd × 8.34 = 44 lbs/day

Average Weekly Limit (AWL) = 45 mg/L × 0.175 mgd × 8.34 = 66 lbs/day

The proposed average weekly and average monthly pounds per day limits are slightly less than the current permit (i.e., AML = 50 lbs/day, AWL = 75 lbs/day) because the latest permit application indicated the average daily design flow of the facility is 0.175 mgd, instead of the 0.2 mgd, which previous mass-based permit limits were based on. The facility completed an upgrade in 2004 and the average daily design flow for the upgrade was specified as 0.175 mgd.

D. Water Quality-Based Effluent Limits (WQBELs)

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 WLA for the discharge in an approved TMDL. If there are no approved TMDLs that specify WLAs for this discharge, all of the WQBELs are calculated directly from the applicable water quality standards.

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

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) (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

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

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 WQBEL must be included in the permit.

In some cases, a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and within which certain water quality criteria to be exceeded (EPA, 2014). While the criteria may be exceeded within the mixing zone, the use and size of the mixing zone must be limited such that the waterbody as a whole will not be impaired, all designated uses are maintained, and acutely toxic conditions are prevented.

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges and its implementation procedures are detailed in the Idaho Mixing Zone Implementation Guidance (IDEQ 2016). In the State 401 Certification, the IDEQ proposes to authorize mixing zones. The only proposed mixing zones are for ammonia, and are the minimum mixing zones that result in no reasonable potential to violate Idaho's water quality standards for ammonia. The proposed mixing zones and dilution factors for ammonia are summarized in Table 9. 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 0.175 mgd.

Table 9. Proposed mixing zones for ammonia and associated dilution factors.

Criteria Type	Critical Low Flow (cfs)	Mixing Zone (% of Critical Low Flow)	Dilution Factor
Acute Aquatic Life	434 (1Q10)	2	33.1
Chronic Aquatic Life	865 (30B3)	2	64.9

The reasonable potential analysis and water quality based effluent limit calculations were based on mixing zones shown in Table 9. If IDEQ revises the allowable mixing zone in its final certification of this permit, reasonable potential analysis and WQBEL calculations will be revised accordingly.

The equations used to conduct the reasonable potential analysis and calculate the WQBELs are provided in Appendix C.

Reasonable Potential Analysis and Water Quality-Based Effluent Limits

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

BOD_5 and DO

Natural decomposition of organic material in wastewater effluent influences DO concentrations 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. There is no Idaho water quality standard for BOD_5, but the standard

for DO is 6 mg/L. Based on all effluent samples meeting the DO water quality standard and the BOD_5 concentration in Horseshoe Bend's effluent, meeting the TBEL for BOD_5 will result in attainment of Idaho's water quality standard and no WQBELs are necessary for DO or BOD_5.

TSS

Idaho's general surface water quality criteria state that surface waters must be free from quantities of sediment that impair beneficial uses (IDAPA 58.01.02.200.08) and "floating, suspended, or submerged matter or any kind in concentrations causing nuisance or objectionable conditions that may impair designated beneficial uses (IDAPA 58.01.02.200.05). Based on the concentration of the secondary treatment standards for TSS, the typical effluent quality at Horseshoe Bend (i.e., average = 9 mg/L TSS), and the dilution factor, the EPA has determined that the TBELs are protective of Idaho's water quality standards and no WQBEL is necessary for TSS. However, because wastewater may contain residues and other solids that are not suspended sediment, the draft permit does contain a narrative limitation based on Idaho's general surface water criteria that prohibits the discharge of floating, suspended, or submerged matter that may impair designated beneficial uses.

pH

As discussed earlier in the Fact Sheet, reported pH values in the effluent have ranged from 4.87 to 8.77 s.u. since January 2009, with 30 out of 83 samples falling below the existing lower effluent limit of 6.5. 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. Because the water quality standard is more stringent than the lower bound of the TBEL of 6.0 and mixing zones are generally not granted for pH, a WQBEL is necessary. The WQBEL will be based on meeting the Idaho water quality standard of 6.5 to 9.0 at the end of pipe.

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. Using the 95th percentile of pH and temperature data from the Payette River (Table 4), the equations in Table 9 were used to determine the applicable water quality criteria for ammonia.

Table 9. Ammonia Water Quality Criteria

	Equation	Criterion
Cold Water Acute	$\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}$	5,615 µg/L
Cold Water Chronic	$\left(\frac{0.275}{1+10^{7.688-pH}}+\frac{39.0}{1+10^{pH-7.688}}\right)\times \text{MIN}\,(2.85, 1.45\times 10^{0.028(25-temp\,°F)})$	1,581 µg/L

A reasonable potential calculation showed that the Horseshoe Bend WWTP discharge would not have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia**.** Therefore, the draft permit does not contain a WQBEL for ammonia**.** The draft permit requires that the permittee continue to monitor ammonia in the effluent and ammonia, pH, and temperature in the receiving water to determine applicable ammonia criteria and assess reasonable potential for the next permit reissuance, however, the monitoring frequency will be decreased. See Appendix D for the reasonable potential calculation for ammonia**.**

E. coli

The Idaho water quality standards state that waters 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. Idaho's mixing zone policy (IDAPA 58.01.02.060.01.d.vi.) does not allow mixing for E. coli. 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 exceeding 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.).

The goal of a WQBEL 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 406 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 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding 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.

Temperature

A coarse reasonable potential analysis was conducted for temperature based on the 95th percentile of 39 riverine samples and 70 effluent samples, and 25 percent mixing at the 7Q10 flow. Under these conditions, the dilution factor is 474:1, and the effluent does not change the temperature of the receiving water. Therefore, there is no reasonable potential for temperature. Because of the dilution ratio, the distance to the impaired segment is

approximately 16 miles, and the Idaho 2014 303(d) List attributes the impairment to reservoirs in the watershed, no additional monitoring will be required beyond that needed to determine the applicable ammonia criteria in the receiving water.

Total Phosphorus

TP WQBELs are included in the permit because the Snake River-Hells Canyon TP TMDL (IDEQ and Oregon DEQ, 2004) contains an allocation for the Payette River at the mouth and the TMDL states that IDEQ plans to issue a TMDL for the Payette River. Using the 95th percentile concentration from effluent sampling between May and September (see Table 2), the design capacity, and assuming TP is conservative (i.e., not taken up or chemically transformed), the existing load of 4.5 kg/day would make up approximately 0.9% of the allocation at the mouth and would not change the concentration in the receiving water. Based on these factors and in the absence of TMDL WLAs, the WQBEL will be based on the WWTP's long term average concentration and design capacity. The average monthly limit is 9.8 lbs/day. Due to the low variability in effluent TP concentrations (CV = 0.23) over a long period of record, the volume of the discharge, and that phosphorus is not a toxic pollutant, EPA has determined that an AML is the most practicable limit expression for TP for Horseshoe Bend. See Appendix D for the effluent limit calculation for TP.

Although this permit is capping Horseshoe Bend at a load based on its current effluent TP concentration, future activities may drive the need for lower phosphorus WQBELs, such as a TMDL for the Payette River, a revised Snake River-Hells Canyon TP TMDL, or development of numeric nutrient criteria. Infrastructure upgrades to improve treatment capability can be very costly, and recent case studies of POTWs making low-cost operational changes to improve nutrient removal have shown encouraging results (EPA, 2015). However, less research has been done on wastewater lagoons, and the reduction potential varies by facility. Therefore, this permit requires Horseshoe Bend to conduct a nutrient reduction study. See Part VII. C for additional details.

Total Nitrogen

The Payette River has no impairment listings for TN. Although the Snake River downstream is listed as impaired for nutrients, the Snake River-Hells Canyon TMDL (IDEQ and Oregon DEQ, 2004) identified phosphorus as the limiting nutrient and cause of the impairment. Therefore, no WQBELs are necessary and no additional monitoring beyond the application requirements in in Table 7 will be required.

E. Anti-backsliding

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. For explanation of the anti-backsliding exceptions refer to Chapter 7 of the Permit Writers Manual Final Effluent Limitations and Anti-backsliding.

An anti-backsliding analysis was done for all parameters and all effluent limits in this permit are either identical to or more stringent than those in the existing permit. Therefore, there is no backsliding in this permit.

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 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.

Monitoring Changes from the Previous Permit

The prohibition of floating, suspended, or submerged matter is not new in the draft permit but a monthly visual observation for floating, suspended, or submerged matter has been added as a way of documenting compliance with that portion of the permit. Otherwise, the draft permit does not include effluent monitoring for any new parameter or pollutant that is not present in the current permit; however, there are several changes in monitoring frequency:

- Monthly TP monitoring requirement extended from one year to the entire permit term but changed from entire year to seasonally (May – September) to reflect effluent limits
- pH monitoring frequency increased from once per week to five times per week because of recurring compliance issues
- Ammonia monitoring frequency decreased from quarterly to semiannually because there is currently no reasonable potential but some additional data are needed for future reasonable potential evaluations because ammonia is a pollutant of concern

C. Surface Water Monitoring

In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant. In addition, surface water monitoring may be required for pollutants for which the water quality criteria are dependent and to collect data for TMDL development if the facility discharges to an impaired water

body. Table 10 presents the proposed surface water monitoring requirements for the permit. Surface water monitoring results must be submitted annually with the January DMR.

Monitoring for TP is being continued to assist with future TMDL development, and monitoring for ammonia, temperature, and pH are being continued to provide necessary supporting data for ammonia reasonable potential analysis during the next permit renewal. Because there is a nearby USGS gage, flow will not be a surface water monitoring requirement. To the extent practicable, surface water monitoring shall occur the same day as effluent sample collection.

Table 10. Surface Water Monitoring in Draft Permit

Parameter	Units	Frequency[1]	Sample Type
Total Phosphorus	mg/L	Once in 2nd quarter (between May 1- June 30) and once in 3rd quarter (July 1 – September 30)	Grab
Total Ammonia as N	mg/L	Semi-annual	Grab
Temperature	°C	Semi-annual	Grab
pH	standard units	Semi-annual	Grab
Notes: 1. Samples shall be taken at least 28 calendar days apart.			

D. Electronic Submission of Discharge Monitoring Reports

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

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: https://netdmr.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

The Horseshoe Bend WWTP is required to update its Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan must include all of

the 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 Horseshoe Bend 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 its 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. Nutrient Reduction Study

The permit requires Horseshoe Bend WWTP to evaluate current facility operations to achieve improvements in nutrient removal using existing infrastructure and analyze other cost-effective methods of achieving nutrient load reductions. The potential to reduce both phosphorus and nitrogen should be evaluated. Possible options to include in the scope of the study are facility operation and maintenance, reuse, recharge, feasibility of nutrient trading within the watershed, and land application. Changes to facility operations resulting from the analysis carried out as above are only intended to be refinements to the wastewater treatment system already in place. Therefore, the permit requirement is limited to evaluation of options that:

1. Address changes to facility operation and maintenance and do not include structural changes; and

2. Would not result in rate increases or substantial investment

The nutrient reduction study must be completed within three years of the effective date after the final permit.

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

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

The following specific permit conditions apply:

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

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

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human

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

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

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

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

E. Environmental Justice

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The City of Horseshoe Bend 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.

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

F. Pretreatment Requirements

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 Horseshoe Bend 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 Horseshoe Bend WWTP**.**

Special Condition D of the permit reminds the permittee that it cannot authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program. To help ensure the POTW is aware of any industrial users (i.e., non-domestic sources of indirect discharges), including Significant Industrial Users, Special Condition 3.D requires Horseshoe Bend to develop and maintain a list of industrial users in its service area within two years following the effective date of the permit.

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. An official species list was requested from the USFWS via the IPaC website (https://ecos.fws.gov/ipac/) on July 20, 2017, and the response stated that there are no threatened, endangered, or candidate species, or critical habitats within the vicinity of the Horseshoe Bend WWTP. Therefore, the EPA concludes that this permitting action will have no effect on any threatened or endangered species.

B. Essential Fish Habitat (EFH)

EFH is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). A review of EFH habitat using the NOAA EFH Mapper website (http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html) on July 21, 2017 shows that there is no EFH habitat within the vicinity of the Horseshoe Bend WWTP. Therefore, the EPA concludes that this permitting action will have no effect on EFH.

C. State Certification

Section 401 of the CWA requires the EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality

standards, or treatment standards established pursuant to any State law or regulation. A copy of the draft 401 certification is provided in Appendix E.

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

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

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

EPA, 2015. *Case Studies on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants*. Draft, August 2015, EPA-841-R-15-004.

IDEQ, 2015. *Idaho Draft Mixing Zone Implementation Guidance*. Water Quality Division, Boise, Idaho. July 2015.

IDEQ, 1999. *Lower Payette River Subbasin Assessment and Total Maximum Daily Load*. Boise, Idaho. December 1999.

IDEQ and Oregon DEQ, 2004. *Snake River – Hells Canyon Total Maximum Daily Load*. Boise, Idaho and Pendleton, Oregon. Revised June 2004.

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

Appendix A. Facility Information

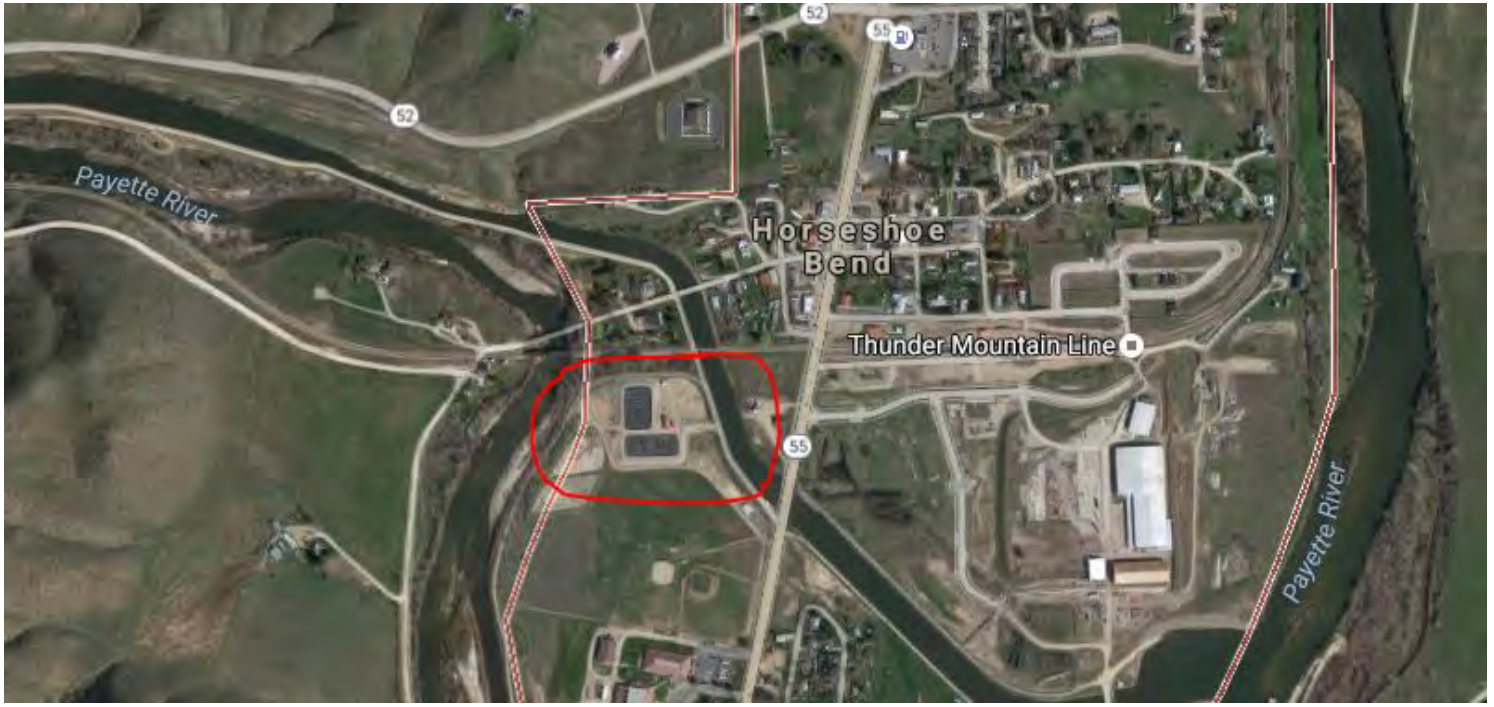

Figure A-1. Aerial overview of the service area with the Horseshoe Bend WWTP circled in red.

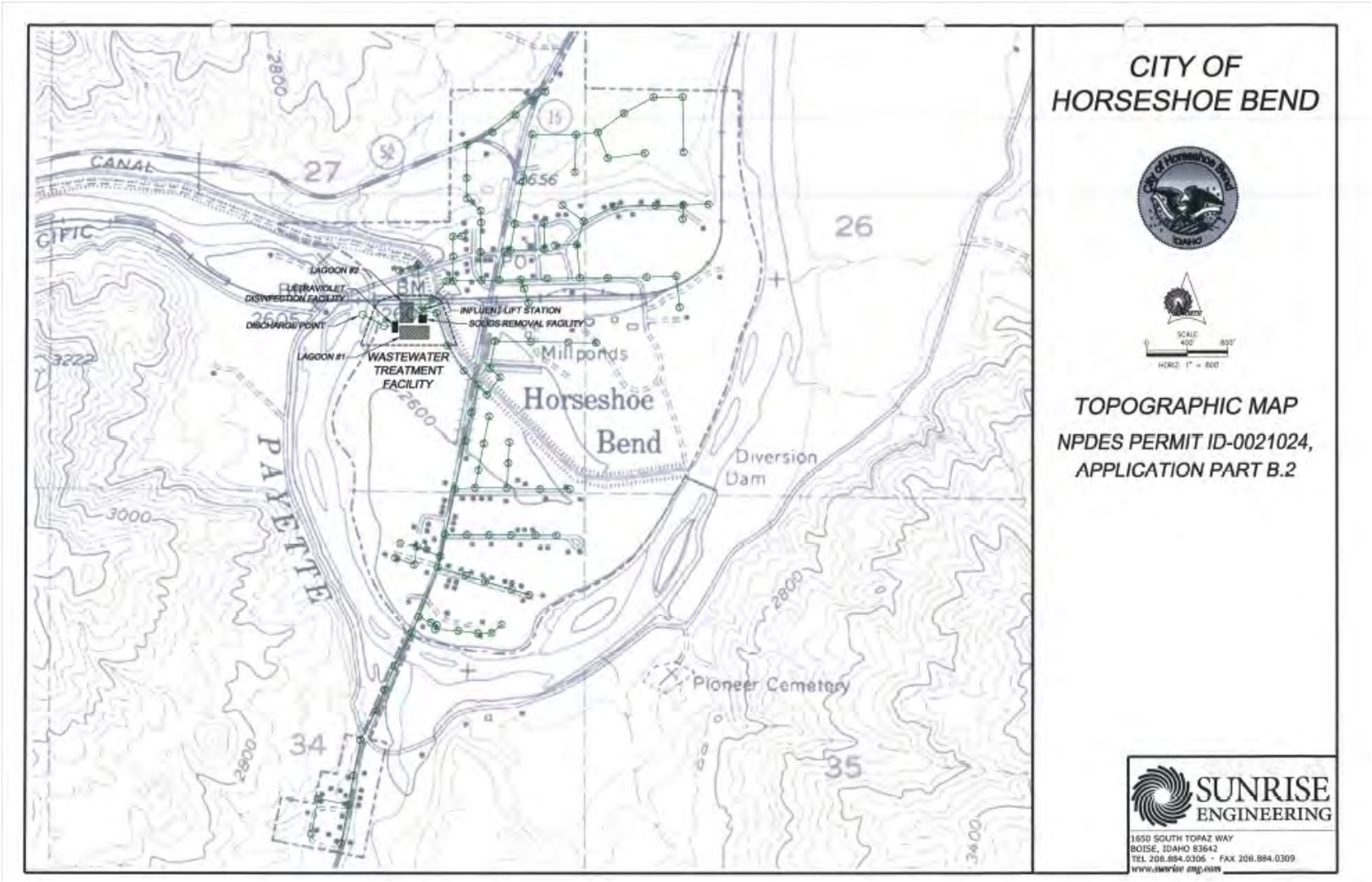

Figure A-2. Topographic map showing the Horseshoe Bend WWTP layout and discharge location for Outfall 001.

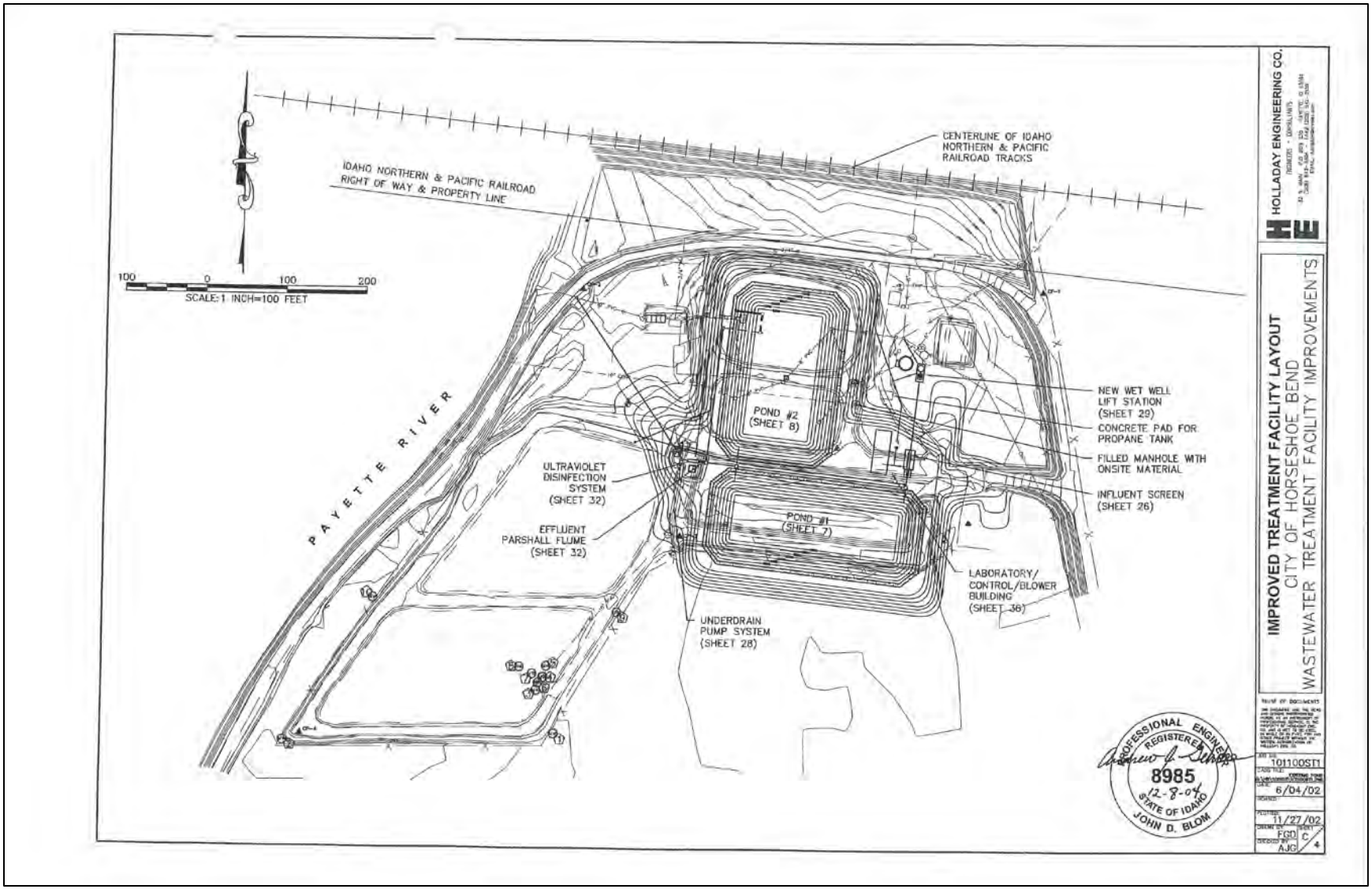

Figure A-3. Detailed layout of Horseshoe Bend WWTP.

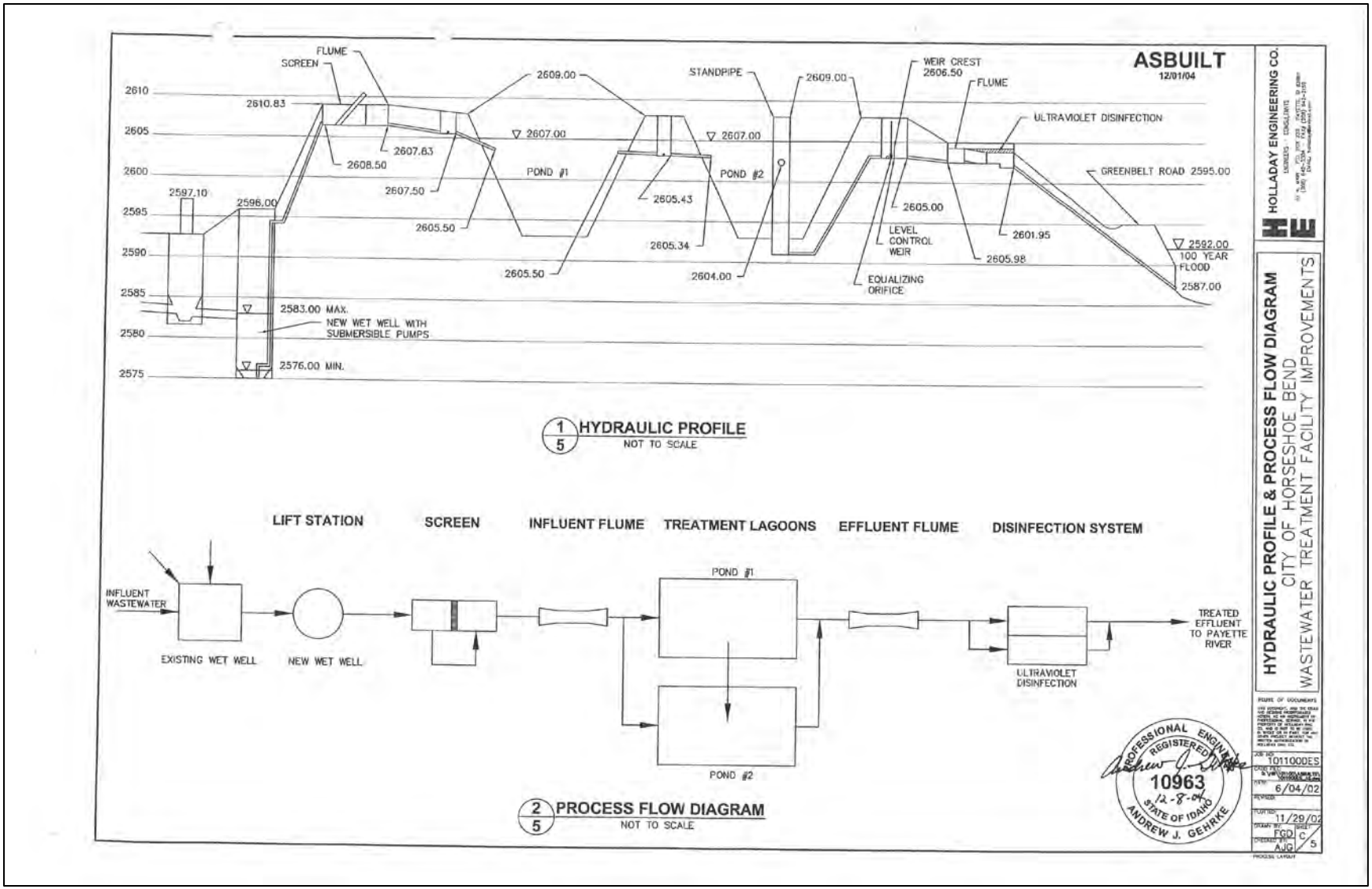

Figure A-4. Hydraulic profile and process flow diagram for Horseshoe Bend WWTP.

Appendix B. Water Quality Data

A. Treatment Plant Effluent Data

	BOD5	BOD5	BOD5	E. coli	E. coli	Effluent Flow	pH Effluent	pH Effluent	TSS % Removal	TSS	TSS	TSS	TSS
	30 mg/L C2 MO AVG	45 mg/L C3 WKLY AVG	50 lb/d Q1 MO AVG	126 #/100mL C3 MO GEO	406 #/100mL C3 DAILY MX	Req. Mon. MGD Q1 MO AVG	6.5 SU C1 INST MIN	9 SU C3 INST MAX	85 % C1 MN % RMV	30 mg/L C2 MO AVG	45 mg/L C3 WKLY AVG	50 lb/d Q1 MO AVG	75 lb/d Q2 WKLY AVG
12/31/2009	7.0000	7.0000	4.0000	1.0000	1.0000	0.0609	6.6400	7.2700	94.0000	12.0000	12.0000	6.1000	9.1000
01/31/2010	11.0000	11.0000	6.0000	1.0000	1.0000	0.0606	6.3800	6.9900	95.0000	10.0000	10.0000	5.0000	6.0000
02/28/2010	18.0000	18.0000	8.7000	1.0000	1.0000	0.0579	6.3000	6.7700	97.0000	12.0000	12.0000	5.8000	6.4000
03/31/2010	9.0000	9.0000	4.1000	1.0000	1.0000	0.0549	6.5800	6.9100	97.0000	8.0000	8.0000	3.7000	4.4000
04/30/2010	10.0000	10.0000	4.4000	1.0000	1.0000	0.0534	6.7100	7.0500	98.0000	4.0000	4.0000	1.8000	2.1000
05/31/2010	10.0000	10.0000	4.8000	1.0000	1.0000	0.0578	6.7900	7.2200	98.0000	9.0000	9.0000	4.3000	6.6000
06/30/2010	8.0000	8.0000	4.9000	2.0000	4.0000	0.0727	6.7800	7.2500	99.0000	6.0000	6.0000	3.6000	3.9000
07/31/2010	11.0000	11.0000	6.0000	1.0000	1.0000	0.0653	6.8200	7.1300	97.0000	6.0000	6.0000	3.3000	3.6000
08/31/2010	11.0000	11.0000	5.3000	3.0000	3.0000	0.0580	6.4800	7.1500	98.0000	4.0000	4.0000	1.9000	2.2000
09/30/2010	12.0000	12.0000	5.0000	1.0000	1.0000	0.0449	6.5100	7.0400	98.0000	8.0000	8.0000	3.0000	4.0000
10/31/2010	5.0000	5.0000	2.0000	1.0000	1.0000	0.0435	6.2700	6.7200	99.0000	3.0000	3.0000	1.1000	1.6000
11/30/2010	10.0000	10.0000	5.0000	1.0000	1.0000	0.0493	6.2200	6.7900	99.0000	8.0000	8.0000	3.3000	4.4000
12/31/2010	23.0000	23.0000	12.7000	1.0000	1.0000	0.0664	6.3000	7.0000	92.0000	17.0000	17.0000	9.4000	13.9000
01/31/2011	10.0000	10.0000	5.9000	1.0000	1.0000	0.0706	6.5700	6.9100	98.0000	6.0000	6.0000	3.5000	4.9000
02/28/2011	11.0000	11.0000	5.5000	1.0000	1.0000	0.0595	6.7000	6.8000	98.0000	10.0000	10.0000	5.0000	5.7000
03/31/2011	33.0000	33.0000	17.0000	1.0000	1.0000	0.0630	6.8300	7.3300	99.0000	5.0000	5.0000	3.0000	3.0000
04/30/2011	10.0000	10.0000	5.0000	1.0000	1.0000	0.0650	6.5800	7.3200	90.0000	16.0000	16.0000	9.0000	10.0000
05/31/2011	10.0000	10.0000	6.0000	1.0000	1.0000	0.0755	6.6400	6.9400	94.0000	14.0000	14.0000	9.0000	15.0000
06/30/2011	11.0000	11.0000	7.0000	1.0000	1.0000	0.0726	6.6400	7.1700	86.0000	21.0000	21.0000	13.0000	15.0000
07/31/2011	11.0000	11.0000	7.0000	1.0000	1.0000	0.0786	6.6100	7.2000	99.0000	5.0000	5.0000	3.3000	4.1000
08/31/2011	11.0000	11.0000	6.0000	1.0000	1.0000	0.0657	7.1000	7.4500	99.0000	5.0000	5.0000	3.0000	3.0000
09/30/2011	12.0000	12.0000	5.0000	1.0000	1.0000	0.0518	7.1600	7.3700	92.0000	10.0000	10.0000	4.0000	5.0000
10/31/2011	12.0000	12.0000	4.0000	1.0000	1.0000	0.0425	6.7200	7.3800	92.0000	10.0000	10.0000	4.0000	5.0000
11/30/2011	12.0000	12.0000	4.0000	1.0000	1.0000	0.0373	6.9900	7.3900	99.0000	7.0000	7.0000	2.0000	3.0000
12/31/2011	9.0000	9.0000	3.0000	2.0000	5.0000	0.0342	6.8100	7.4200	99.0000	3.0000	3.0000	0.9000	1.1000
01/31/2012	11.0000	11.0000	5.0000	1.0000	1.0000	0.0459	6.8800	7.5000	98.0000	7.0000	7.0000	3.0000	7.0000
02/29/2012	11.0000	11.0000	5.0000	1.0000	1.0000	0.0456	6.8700	7.4000	96.0000	14.0000	14.0000	5.0000	7.0000
03/31/2012	7.0000	7.0000	2.5000	1.0000	1.0000	0.0426	7.1100	7.2800	98.0000	9.0000	9.0000	3.2000	4.1000
04/30/2012	10.0000	10.0000	4.0000	1.0000	1.0000	0.0520	6.6800	7.9500	96.0000	10.0000	10.0000	4.0000	5.0000
05/31/2012	4.0000	4.0000	2.0000	1.0000	1.0000	0.0660	4.8800	6.4800	95.0000	9.0000	9.0000	5.0000	6.0000
06/30/2012	11.0000	11.0000	6.0000	1.0000	1.0000	0.0619	6.2400	6.5300	97.0000	11.0000	11.0000	6.0000	7.0000
07/31/2012													
08/31/2012	3.0000	3.0000	2.0000	1.0000	1.0000	0.0461	5.4500	6.4900	99.0000	8.0000	8.0000	3.0000	4.0000
09/30/2012	4.0000	4.0000	1.0000	1.0000	1.0000	0.0287	6.3100	6.8300	97.0000	5.0000	5.0000	1.2000	1.6000
10/31/2012	4.0000	4.0000	2.0000	1.0000	1.0000	0.0371	6.6000	7.0200	99.0000	9.0000	9.0000	3.0000	3.0000
11/30/2012	4.0000	4.0000	2.0000	1.0000	1.0000	0.0424	6.5600	6.7800	96.0000	8.0000	8.0000	3.0000	4.0000
12/31/2012	4.0000	4.0000	1.0000	2.0000	13.0000	0.0362	6.6900	6.9100	93.0000	14.0000	14.0000	4.0000	6.0000
01/31/2013	3.0000	3.0000	1.0000	1.0000	1.0000	0.0394	6.4500	6.8900	95.0000	12.0000	12.0000	4.0000	5.2000
02/28/2013	8.0000	8.0000	2.3000	1.0000	1.0000	0.0348	6.3600	7.0800	97.0000	15.0000	15.0000	4.2000	5.1000
03/31/2013	4.0000	4.0000	1.2000	1.0000	1.0000	0.0362	6.5500	7.1400	98.0000	5.0000	5.0000	1.5000	1.8000
04/30/2013	4.0000	4.0000	1.3000	1.0000	1.0000	0.0390	6.1700	6.5400	99.0000	9.0000	9.0000	2.9000	3.6000
05/31/2013	3.0000	3.0000	2.0000	1.0000	1.0000	0.0459	6.0200	6.4600	98.0000	9.0000	9.0000	3.0000	4.0000
06/30/2013	10.0000	10.0000	4.0000	1.0000	1.0000	0.0458	5.7300	6.4200	99.0000	5.0000	5.0000	2.0000	2.0000
07/31/2013	4.0000	4.0000	2.0000	1.0000	1.0000	0.0410	6.4400	6.8200	96.0000	16.0000	16.0000	6.0000	6.0000
08/31/2013	4.0000	4.0000	2.0000	1.0000	1.0000	0.0361	6.8100	6.9500	99.0000	5.0000	5.0000	2.0000	2.0000
09/30/2013	4.0000	4.0000	1.3000	1.0000	1.0000	0.0385	6.8200	7.0600	99.0000	5.0000	5.0000	1.6100	2.7200
10/31/2013	4.0000	4.0000	2.0000	1.0000	6.0000	0.0390	6.8200	7.1700	99.0000	3.0000	3.0000	1.0000	2.0000
11/30/2013	4.0000	4.0000	2.0000	1.0000	1.0000	0.0384	7.0700	7.3300	99.0000	8.0000	8.0000	3.0000	4.0000
12/31/2013	5.0000	5.0000	1.5000	1.0000	1.0000	0.0362	7.1000	7.4700	99.0000	11.0000	11.0000	3.3000	4.0000
01/31/2014	3.0000	3.0000	2.0000	1.0000	1.0000	0.0415	6.8400	7.2800	97.0000	9.0000	9.0000	3.1000	4.2000
02/28/2014	5.0000	5.0000	2.0000	2.0000	10.0000	0.0492	6.6600	6.9600	97.0000	14.0000	14.0000	6.0000	8.0000
03/31/2014	9.0000	9.0000	4.0000	1.0000	1.0000	0.0516	6.8400	7.0200	98.0000	9.0000	9.0000	4.0000	5.0000
04/30/2014	7.0000	7.0000	3.0000	1.0000	1.0000	0.0472	6.9300	8.7700	97.0000	14.0000	14.0000	6.0000	7.0000
05/31/2014	4.0000	4.0000	2.0000	1.0000	1.0000	0.0484	6.5500	6.9700	96.0000	10.0000	10.0000	4.0000	5.0000
06/30/2014	3.0000	3.0000	2.0000	1.0000	1.0000	0.0503	5.9300	6.4200	99.0000	6.0000	6.0000	3.0000	3.0000
07/31/2014	4.0000	4.0000	2.0000	1.0000	1.0000	0.0440	5.9900	6.2500	99.0000	7.0000	7.0000	3.0000	3.0000
08/31/2014	4.0000	4.0000	2.0000	1.0000	1.0000	0.0430	5.9600	7.4300	99.0000	5.0000	5.0000	2.0000	2.0000
09/30/2014	4.0000	4.0000	2.0000	1.0000	1.0000	0.0359	6.7900	7.3900	99.0000	5.0000	5.0000	2.0000	3.0000
10/31/2014	3.0000	3.0000	1.0000	1.0000	1.0000	0.0374	6.7300	7.8800	99.0000	4.0000	4.0000	1.0000	2.0000
11/30/2014	4.0000	4.0000	2.0000	1.0000	1.0000	0.0402	6.7100	6.9800	99.0000	6.0000	6.0000	2.0000	3.0000
12/31/2014	4.0000	4.0000	2.0000	1.0000	1.0000	0.0487	6.6600	6.7600	98.0000	11.0000	11.0000	5.0000	8.0000
01/31/2015	4.0000	4.0000	2.0000	1.0000	1.0000	0.0485	6.6900	6.8900	99.0000	8.0000	8.0000	3.0000	4.0000
02/28/2015	4.0000	4.0000	2.0000	1.0000	1.0000	0.5400	6.7500	6.9100	99.0000	10.0000	10.0000	4.5000	5.8000
03/31/2015	5.0000	5.0000	2.2000	1.0000	1.0000	0.0533	6.8500	7.0900	98.0000	6.0000	6.0000	2.7000	3.4000
04/30/2015	4.0000	4.0000	1.7000	1.0000	1.0000	0.0502	7.2100	7.3000	99.0000	3.0000	3.0000	2.0000	2.0000
05/31/2015	4.0000	4.0000	2.0000	1.0000	1.0000	0.0597	6.9300	7.3200	97.0000	11.0000	11.0000	6.0000	7.0000
06/30/2015	4.0000	4.0000	2.0000	5.0000	5.0000	0.0528	6.7100	7.2600	99.0000	9.0000	9.0000	4.0000	5.0000
07/31/2015	4.0000	4.0000	2.0000	1.0000	1.0000	0.0521	6.3200	6.6900	97.0000	8.0000	8.0000	4.0000	5.0000
08/31/2015	4.0000	4.0000	2.0000	1.0000	1.0000	0.0505	6.3700	6.7000	99.0000	6.0000	6.0000	2.5000	2.7000
09/30/2015	3.0000	3.0000	1.0000	1.0000	1.0000	0.0394	6.4900	7.1100	98.0000	8.0000	8.0000	2.6000	3.6000
10/31/2015	10.0000	10.0000	4.0000	1.0000	1.0000	0.0418	6.9700	7.2200	99.0000	5.0000	5.0000	2.0000	2.0000
11/30/2015	3.0000	3.0000	1.0000	1.0000	1.0000	0.0405	6.9200	7.1500	97.0000	8.0000	8.0000	3.0000	4.0000
12/31/2015	3.0000	3.0000	2.0000	1.0000	1.0000	0.0464	7.0900	7.2300	96.0000	13.0000	13.0000	5.0000	6.0000
01/31/2016	30.0000	30.0000	11.0000	1.0000	1.0000	0.0447	6.7800	7.1900	98.0000	6.0000	6.0000	2.0000	3.0000
02/29/2016	4.0000	4.0000	14.0000	1.0000	1.0000	0.4217	6.3300	6.8300	99.0000	4.0000	4.0000	14.0000	18.0000
03/31/2016	6.0000	6.0000	2.0000	10.0000	10.0000	0.0485	6.3300	6.6900	94.0000	14.0000	14.0000	6.0000	8.0000
04/30/2016	5.0000	5.0000	2.0000	1.0000	1.0000	0.0517	6.5500	6.8300	99.0000	8.0000	8.0000	4.0000	4.0000
05/31/2016	3.0000	3.0000	2.0000	1.0000	1.0000	0.0594	6.5700	6.8900	99.0000	7.0000	7.0000	4.0000	4.0000
06/30/2016	6.0000	6.0000	2.9000	1.0000	1.0000	0.0586	6.3300	6.8300	95.0000	44.0000	44.0000	22.0000	24.0000
07/31/2016	3.0000	3.0000	2.0000	1.0000	1.0000	0.0516	6.3100	6.9600	99.0000	9.0000	9.0000	4.0000	6.0000
08/31/2016	4.0000	4.0000	1.2000	2.0000	6.0000	0.0359	6.1600	7.9500	83.0000	9.0000	9.0000	2.7000	3.1000
09/30/2016	3.0000	3.0000	8.0000	1.0000	1.0000	0.2939	5.3400	6.9100	97.0000	5.0000	5.0000	13.0000	16.0000
10/31/2016	3.0000	3.0000	1.0000	1.0000	1.0000	0.0388	5.1300	8.7400	99.0000	8.0000	8.0000	3.0000	4.0000
11/30/2016	3.0000	3.0000	0.9000	1.0000	1.0000	0.0350	4.8700	7.1000	97.0000	9.0000	9.0000	2.6000	3.2000

Note: Effluent limit violations are denoted in red

B. Receiving Water Data

Org Name	Sampling Site	Sampling Date	Latitude	Longitude	Ammonia (mg/L)	TP (mg/L)	Field pH (s.u.)	Temperature (°C)
HSB	u/s of outfall 001 nr dam	12/14/2016	43.908756	-116.191581	<0.04	0.08		
HSB	u/s of outfall 001 nr dam	10/11/2016	43.908756	-116.191581	<0.04	0.10	6.63	17.0
HSB	u/s of outfall 001 nr dam	9/8/2016	43.908756	-116.191581	<0.04	<0.05	6.73	19.2
HSB	u/s of outfall 001 nr dam	7/7/2016	43.908756	-116.191581	<0.04	0.06	6.89	20.0
HSB	u/s of outfall 001 nr dam	4/5/2016	43.908756	-116.191581	<0.04	0.09	6.60	10.7
HSB	u/s of outfall 001 nr dam	1/12/2016	43.908756	-116.191581	<0.04	0.06	7.66	8.1
HSB	u/s of outfall 001 nr dam	12/7/2015	43.908756	-116.191581	<0.04	0.29	7.69	7.9
HSB	u/s of outfall 001 nr dam	9/2/2015	43.908756	-116.191581	<0.04	<0.05	6.63	19.5
HSB	u/s of outfall 001 nr dam	6/3/2015	43.908756	-116.191581	<0.04	0.21	7.02	17.0
HSB	u/s of outfall 001 nr dam	3/19/2015	43.908756	-116.191581	<0.04	0.07	7.64	11.1
HSB	u/s of outfall 001 nr dam	2/4/2015	43.908756	-116.191581	<0.04	<0.05	7.54	12.4
HSB	u/s of outfall 001 nr dam	12/4/2014	43.908756	-116.191581	<0.04	0.07	7.64	5.0
HSB	u/s of outfall 001 nr dam	9/4/2014	43.908756	-116.191581	<0.04	0.06	7.39	17.4
HSB	u/s of outfall 001 nr dam	7/9/2014	43.908756	-116.191581	<0.04	0.06	7.13	20.7
HSB	u/s of outfall 001 nr dam	6/4/2014	43.908756	-116.191581	<0.04	0.20	7.24	13.8
HSB	u/s of outfall 001 nr dam	3/11/2014	43.908756	-116.191581	<0.04	0.20	7.35	6.3
HSB	u/s of outfall 001 nr dam	12/5/2013	43.908756	-116.191581	<0.04	0.56	7.40	2.8
HSB	u/s of outfall 001 nr dam	9/11/2013	43.908756	-116.191581	<0.04	<0.05	7.78	20.1
HSB	u/s of outfall 001 nr dam	6/5/2013	43.908756	-116.191581	<0.04	0.20	7.15	17.6
HSB	u/s of outfall 001 nr dam	3/6/2013	43.908756	-116.191581	<0.04	<0.05	8.00	12.1
HSB	u/s of outfall 001 nr dam	12/6/2012	43.908756	-116.191581	<0.04	0.07		
HSB	u/s of outfall 001 nr dam	9/4/2012	43.908756	-116.191581	<0.04	0.09	7.45	21.8
HSB	u/s of outfall 001 nr dam	6/12/2012	43.908756	-116.191581	<0.04	<0.05	6.85	14.0
HSB	u/s of outfall 001 nr dam	3/8/2012	43.908756	-116.191581	<0.04	<0.05	7.57	5.2
HSB	u/s of outfall 001 nr dam	12/6/2011	43.908756	-116.191581	<0.04	<0.05	7.34	8.4
HSB	u/s of outfall 001 nr dam	9/7/2011	43.908756	-116.191581	<0.04	<0.05	17.60	7.5
HSB	u/s of outfall 001 nr dam	6/6/2011	43.908756	-116.191581	0.04	1.08		
HSB	u/s of outfall 001 nr dam	3/7/2011	43.908756	-116.191581	<0.04	<0.05		
HSB	u/s of outfall 001 nr dam	12/7/2010	43.908756	-116.191581	0.13	<0.05		
HSB	u/s of outfall 001 nr dam	9/9/2010	43.908756	-116.191581	<0.04	<0.05	7.25	
HSB	u/s of outfall 001 nr dam	6/1/2010	43.908756	-116.191581	<0.04	0.09	7.65	
HSB	u/s of outfall 001 nr dam	3/4/2010	43.908756	-116.191581	<0.04	<0.05	6.95	
HSB	u/s of outfall 001 nr dam	12/9/2009	43.908756	-116.191581	<0.04	<0.05	7.50	7.5
HSB	u/s of outfall 001 nr dam	9/24/2009	43.908756	-116.191581	<0.04	<0.05		
HSB	u/s of outfall 001 nr dam	6/11/2009	43.908756	-116.191581	<0.04	0.12		
HSB	u/s of outfall 001 nr dam	3/4/2009	43.908756	-116.191581	<0.04	<0.05		
HSB	0.25 mi u/s of outfall 001	3/7/2008	43.909403	-116.204357	<0.04	<0.05	7.57	7.3
HSB	0.25 mi u/s of outfall 001	6/5/2008	43.909403	-116.204357	<0.04	<0.05	6.29	11.9
HSB	0.25 mi u/s of outfall 001	12/4/2008	43.909403	-116.204357	<0.04	<0.05		
HSB	0.25 mi u/s of outfall 001	12/6/2007	43.909403	-116.204357	<0.04	<0.05	8.10	7.7
HSB	0.25 mi u/s of outfall 001	9/27/2007	43.909403	-116.204357	<0.04	<0.05	7.30	13.5
HSB	0.25 mi u/s of outfall 001	6/8/2007	43.909403	-116.204357	<0.04	<0.05	7.24	14.4
HSB	0.25 mi u/s of outfall 001	3/13/2007	43.909403	-116.204357	<0.04	0.07	6.80	12.2
HSB	0.25 mi u/s of outfall 001	12/19/2006	43.909403	-116.204357	<0.04	<0.05	7.15	5.3
HSB	0.25 mi u/s of outfall 001	6/8/2006	43.909403	-116.204357	<0.04	<0.05	7.20	15.7
HSB	0.25 mi u/s of outfall 001	3/24/2006	43.909403	-116.204357	<0.04	<0.05	7.70	10.1
HSB	0.25 mi u/s of outfall 001	8/10/2005	43.909403	-116.204357	<0.04	<0.05	7.60	22.0
HSB	0.25 mi u/s of outfall 001	1/26/2005	43.909403	-116.204357	<0.04	<0.05	7.70	3.3
HSB	0.25 mi u/s of outfall 001	11/23/2004	43.909403	-116.204357	<0.04	<0.05	7.00	2.2
HSB	0.25 mi u/s of outfall 001	8/6/2004	43.909403	-116.204357	<0.04	<0.05	7.40	21.0
HSB	0.25 mi u/s of outfall 001	5/11/2004	43.909403	-116.204357	<0.04	0.14		
HSB	0.25 mi u/s of outfall 001	2/19/2004	43.909403	-116.204357	<0.04	<0.05		
BOR	GAR002	4/27/2004	43.942500	-116.195833	0.01	0.030	8.00	21.12
BOR	GAR002	5/24/2004	43.942500	-116.195833	0.02	0.050		
BOR	GAR002	7/21/2004	43.942500	-116.195833	< 0.01	0.036		
BOR	GAR002	8/25/2004	43.942500	-116.195833	< 0.01	0.022		
BOR	GAR002	9/23/2004	43.942500	-116.195833	0.02	0.019		

Note: Green highlighting denotes sampling from May 1 through September 30

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

A. Reasonable Potential Analysis

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

Mass Balance

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

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

where,

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

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

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

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

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

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

Where:

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

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

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

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

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

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

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

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

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

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

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

Maximum Projected Effluent Concentration

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

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

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

where,

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

and

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

Where,

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

CV = coefficient of variation (standard deviation ÷ mean)

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

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

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

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

Reasonable Potential

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B. WQBEL Calculations

Calculate the Wasteload Allocations (WLAs)

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

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

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 __. As discussed in Appendix ___, 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,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

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

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

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

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

where σ, and σ^2 are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1)$
z_a = 1.645 (z-score for the 95th percentile probability basis)
z_m = 2.326 (z-score for the 99th percentile probability basis)
n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 30.

C. Critical Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. 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.

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

Ammonia

Facility Name	City of Horseshoe Bend, Idaho			
Facility Flow (mgd)	0.18			
Facility Flow (cfs)	0.27			
				Annual
Critical River Flows			(IDAPA 58.01.02 03. b)	**Crit. Flows**
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)			**1Q10**	434
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)			**7Q10 or 4B3**	512
Ammonia			**30B3/30Q10** (seasonal)	865
Human Health - Non-Carcinogen			**30Q5**	810
Human Health - carcinogen			**Harmonic Mean Flow**	1722
Receiving Water Data			Notes:	**Annual**
Hardness, as mg/L $CaCO_3$	14.5		5^{th} % at critical flows	**Crit. Flows**
Temperature, °C		Temperature, °C	95^{th} percentile	21.2
pH, S.U.		pH, S.U.	95^{th} percentile	8

Pollutants of Concern			**AMMONIA,** default: cold water, fish early life stages
Effluent Data	**Number of Samples in Data Set (n)**		93
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		3.3
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		23,300
	Calculated 50^{th} % Effluent Conc. (when n>10), Human Health Only		
Receiving Water Data	**90^{th} Percentile Conc., µg/L - (C_u)**		20
	Geometric Mean, µg/L, Human Health Criteria Only		
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	5,615.107
	Aquatic Life Criteria, µg/L	Chronic	1,581.864
	Human Health Water and Organism, µg/L		--
	Human Health, Organism Only, µg/L		--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	
		Chronic	
	Carcinogen (Y/N), Human Health Criteria Only		--
Percent River Flow	**Aquatic Life - Acute**	**1Q10**	2%
	Aquatic Life - Chronic	7Q10 or 4B3	--
	Ammonia	30B3 or 30Q10	2%
	Human Health - Non-Carcinogen	30Q5	--
	Human Health - carcinogen	Harmonic Mean	--
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	33.1
	Aquatic Life - Chronic	7Q10 or 4B3	--
	Ammonia	30B3 or 30Q10	64.9
	Human Health - Non-Carcinogen	30Q5	--
	Human Health - carcinogen	Harmonic Mean	--

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.573
P_n	$=(1\text{-confidence level})^{1/n}$, where confidence level =	**99%**	0.952
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)-0.5\sigma^2]$, where	**99%**	2.8
Statistically projected critical discharge concentration (C_e)			66329.38
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	2025.60
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	1041.68
Reasonable Potential to exceed Aquatic Life Criteria			**NO**

Total Phosphorus

Since the effluent limit for total phosphorus is performance-based, the long term average (LTA) is equal to the average concentration from effluent monthly monitoring conducted from May 2006 through September 2016. Because the downstream TMDL is seasonal from May 1 – September 30, only samples from those months were included in the analysis. The table below summarizes the calculations performed to develop the average monthly limit (AML) for TP following procedures in the TSD (see Equation 17 in Appendix C).

Equation 17 (from Appendix C and the TSD): $AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)}$

Where:

σ_n^2	=	$\ln (CV^2/n + 1) = \ln (0.23^2/1 + 1) = 0.0515$
σ_n	=	$\sqrt{\sigma_n^2} = 0.227$
z_a	=	1.645 (z-score for the 95th percentile probability basis)
$e^{(z_a\sigma_n - 0.5\sigma_n^2)}$	=	AML multiplier = 1.42

AML mass limit = AML concentration * Design flow (0.175 mgd) * 8.34 conversion factor

samples/month	n	1		
Coefficient of Variation	CV	0.230		
LTA		4720.0		
AML Multiplier		1.42	95%	TSD, Table 5-2, Average Monthly Limit
AML, Concentration		6682	µg/L	
AML, Concentration		**6.68**	mg/L	
AML, Mass		**9.8**	lb/day	

Appendix E. CWA 401 State Certification

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550
www.deq.idaho.gov

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

October 23, 2017

Karen Burgess
Acting Manager, NPDES Permits Unit
EPA Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

Subject: Draft 401 Water Quality Certification for the City of Horseshoe Bend Wastewater Treatment Facility (WWTF), ID-0021024

Dear Ms. Burgess:

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

This letter is to inform you that DEQ is issuing the attached draft 401 certification subject to the terms and conditions contained therein.

Please contact me directly at (208) 373-0420 or via email at Aaron.Scheff@deq.idaho.gov to discuss any questions or concerns regarding the content of this draft certification.

Sincerely,

Aaron Scheff
Regional Administrator
Boise Regional Office

c: Susan Poulsom, EPA Region 10

ec: Nicole Deinarowicz, DEQ State Office

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

October 23, 2017

NPDES Permit Number(s): ID-0021024, City of Horseshoe Bend Wastewater Treatment Facility (WWTF)

Receiving Water Body: Payette River

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 I 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 I review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier II 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 III 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 I protection for that use, unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The City of Horseshoe Bend WWTF discharges the following pollutants of concern: five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH, ammonia, *E. coli* bacteria, thermal load (temperature), total phosphorus (TP), and total nitrogen (TN). Effluent limits have been developed for BOD_5, TSS, *E. coli,* pH, TP, and floating/suspended or submerged matter. No effluent limits are proposed for ammonia, temperature, and TN.

Receiving Water Body Level of Protection

The City of Horseshoe Bend WWTF discharges to the Payette River within the Payette Subbasin assessment unit (AU) 17050122SW003_06 (Payette River-NF/SF Confluence to Black Canyon Reservoir). This AU has the following designated beneficial uses: Salmonid Spawning, Cold Water Aquatic Life, and Primary 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 2014 Integrated Report, this receiving water body AU is fully supporting its assessed uses (IDAPA 58.01.02.052.05.a). As such, DEQ will provide Tier II protection in addition to Tier I for this water body (IDAPA 58.01.02.051.02; 58.01.02.051.01).

Protection and Maintenance of Existing Uses (Tier I Protection)

A Tier I review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing and designated uses and the level of water quality necessary to protect existing and designated uses shall be maintained and protected. In order to protect and maintain existing and designated beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. 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 Horseshoe Bend WWTF 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 *Snake River-Hells Canyon TMDL* (2004) established a wasteload allocation at the mouth of the Payette River for nutrients. Although Horseshoe Bend WWTF does not discharge to an impaired waterbody with an approved TMDL, as mentioned above, the mouth of the Payette River received a TP load allocation of 469 kg/day (based on meeting a water quality target of 0.07 mg/L from May-September). No WLAs were established for point sources on the Payette River as part of the TMDL. However, effluent limitations for TP and an associated Nutrient Reduction Study required in the City of Horseshoe Bend WWTF permit are set at levels to limit or reduce TP inputs into the Payette, and thus ultimately the Snake River.

In sum, the effluent limitations and associated requirements contained in the City of Horseshoe Bend WWTF permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the *Snake River-Hells Canyon TMDL*. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the Payette River in compliance with the Tier I provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

High-Quality Waters (Tier II Protection)

The Payette River is considered high quality for Salmonid Spawning, Cold Water Aquatic Life, and Primary Contact Recreation. As such, the water quality relevant to Salmonid Spawning, Cold Water Aquatic Life, and Primary Contact Recreation uses of the Payette River 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 Salmonid Spawning, Cold Water Aquatic Life, and Primary Contact Recreation uses of the Payette River (IDAPA 58.01.02.052.05). These include the following: BOD_5, TSS, pH, ammonia, *E. coli,* thermal load (temperature), TP, and TN. Effluent limits are set in the proposed and existing permit for all these pollutants except ammonia, temperature, and TN.

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

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 Horseshoe Bend WWTF permit, this means determining the permit's effect on water quality based upon the limits for BOD_5, TSS, *E. coli,*

and pH in the current and proposed permits. Table 1 provides a summary of the current permit limits and the proposed or reissued permit limits.

Table 1. Comparison of current and proposed permit limits for pollutants of concern relevant to uses receiving Tier II 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								
pH	standard units	6.5–9.0 all times			6.5–9.0 all times			NC
E. coli	no./100 mL	126		406	126		406	NC
Pollutants with new limits in the proposed permit								
BOD_5	mg/L	30	45	—	30	45	—	DL
	lb/day	50	75	—	44	66	—	
	% removal	85%	—	—	85%	—	—	
TSS	mg/L	30	45	—	30	45		DL
	lb/day	50	75	—	44	66		
	% removal	85%	—	—	85%	—		
TP	lb/day (May–Sept)	—	—	Report	9.8	—		DL
Pollutants with no limits in both the current and proposed permit								
Total Ammonia	mg/L	—	—	Report	—	—	Report	NC
Temperature	ºC	—	—	—	—	—	—	NC
TN	lb/day	—	—	—	—	—	—	NC

[a] NC = no change, DL = decrease in limit.

The proposed permit limits for other pollutants of concern that have limits in Table 1, pH, *E.coli, BOD*$_5$, and TSS are the same as, or more stringent than, those in the current permit ("NC" or "DL" 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

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 Horseshoe Bend WWTF includes a new limit for TP (Table 1). This limit was included in the permit to be consistent with the wasteload allocation at the mouth of the Payette River in the approved *Snake River-Hells Canyon TMDL* (2004). The TP limit in the proposed permit reflects a maintenance or improvement in water quality from current conditions. Therefore, no adverse change in water quality and no degradation will occur with respect to TP.

Pollutants with No Limits

There are three pollutants of concern (TN, temperature, and ammonia) relevant to Tier II protection of aquatic life that currently are not limited, and for which the proposed permit also contains no limit (Table 1). For such pollutants, 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). With respect to TN, temperature, and ammonia, there is no reason to believe these pollutants will be discharged in quantities greater than those discharged under the current permit. This conclusion is based upon information included within the fact sheet that there has been slight decreases in the design flow, and no changes in the influent quality, or treatment processes that would likely result in an increased discharge of these pollutants. Because the proposed permit does not allow for any increased water quality impact from these pollutants, DEQ has concluded that the proposed permit should not cause a lowering of water quality for the pollutants with no limit. As such, the proposed permit should maintain the existing high water quality in Payette River.

In sum, DEQ concludes that this discharge permit complies with the Tier II 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

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 2% of the critical low flow volumes of Payette River for ammonia.

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 Kati Carberry, DEQ Boise Regional Office at 208.373.0434 or Kati.Carberry@deq.idaho.gov.

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Draft

Aaron Scheff
Regional Administrator
Boise Regional Office