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 Lewiston Wastewater Treatment Plant
P.O. Box 617
Lewiston, Idaho 83501

Public Comment Start Date: July 10, 2015
Public Comment Expiration Date: August 10, 2015

Technical Contact: Kai Shum
(206) 553-0060
800-424-4372, ext. 0060 (within Alaska, Idaho, Oregon and Washington)
Shum.Kai@epa.gov

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:

State of Idaho Department of Environmental Quality
Lewiston Regional Office
1118 F Street
Lewiston, ID 83501

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

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

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://EPA.gov/r10earth/waterpermits.htm."

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

The fact sheet and draft permits are also available at:

EPA Idaho Operations Office
950 W. Bannock, Suite 900
Boise, ID 83702
(208) 378-5746

IDEQ
Lewiston Regional Office
1118 F Street
Lewiston, ID 83501
(208) 799-4370

The draft permit and fact sheet can also be found by visiting the Region 10 website at http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/DraftPermitsID.

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

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

NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
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
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit

WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

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

City of Lewiston Wastewater Treatment Plant
NPDES Permit # ID0022055

Physical Address:
900 7th Avenue North
Lewiston, ID 83501

Mailing Address:
P.O. Box 617
Lewiston, ID 83501

Contact:
Bryan Lacy
City of Lewiston Water and Wastewater Systems Manager, (208) 746-1316

B. Permit History

The most recent NPDES permit for the City of Lewiston (City) Wastewater Treatment Plant (WWTP) was issued on November 26, 2001, became effective on December 31, 2001, and expired on January 2, 2007. An NPDES permit application was submitted by the permittee on June 23, 2006. The EPA determined that the application was timely and complete in a letter dated November 9, 2006. Thus, pursuant to 40 CFR 122.6, the permit has been administratively extended and remains fully effective and enforceable until the permit has been reissued.

II. Facility Information

A. Treatment Plant Description

Service Area

The WWTP is owned and operated by the City and located in Lewiston**,** Idaho. The collection system has no combined sewers. According to the Permit Application, the WWTP serves a population of 30,949. In addition to serving the City, with a population of approximately 14,773, the facility also serves approximately 16,176 people at Central Orchards and Lewiston Orchard. The facility receives wastewater from domestic and non-domestic sources. According to the Permit Application, the WWTP services two Non-categorical Significant Industrial Users, and three Categorical Industrial Users.

Treatment Process

The design flow of the facility is 5.71 mgd, which is unchanged from the previous permit cycle. The treatment process consists of primary treatment, activated sludge, and ultraviolet disinfection. Wastewater received at the headworks is screened, pre-aerated, and screened

wastewater is directed to two primary clarifiers operated in parallel. The facility provides activated sludge treatment through two aeration basins and then through two secondary clarifiers operating in parallel to remove solids after aeration. Secondary effluent is disinfected using ultraviolet disinfection. The clarifier underflow solids are collected in a thickener and then pumped to three anaerobic digesters. The solids out of the digesters are held in a sludge-holding tank prior to being withdrawn periodically and processed through either a 1-meter or a 2-meter belt press. The facility uses a Dissolved Air Flotation (DAF) unit on the solids from the underflow of the final clarifiers. The filtered solids are collected in a dump truck and hauled off-site to a contract compost facility (Clearwater Composting, in Lewiston, Idaho). Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A. Because of the facility's design capacity, the facility is considered a major facility. Similar to the previous permit cycle, chlorine disinfection is retained only for backup purposes.

Outfall Description

The facility discharges to the Clearwater River at the head of the Clearwater Arm of Lower Granite Dam Pool in the City of Lewiston, Idaho. Outfall 001 is located at latitude 46° 25′ 38″ North and longitude 117° 01′ 16″ West. The outfall is a multi-port diffuser that extends approximately 150 feet into the water from the north bank of the Lower Granite Dam Pool. At the point of discharge, there is significant river current across the diffuser which results in complete mixing as the effluent leaves the diffuser. The confluence of the Clearwater River and the Snake River occurs approximately 0.75 miles downstream. The distance downstream from the diffuser to the Idaho-Washington State boundary is approximately 0.86 miles. Due to significant discharge contribution from the Snake River, stream flow mixing and dilution occurs downstream in the State of Washington.

B. Background Information

Effluent Characterization

In order to determine pollutants of concern for further analysis, EPA evaluated the application form, additional discharge data, and the nature of the discharge. The wastewater treatment process for this facility includes both primary and secondary treatment, as well as ultraviolet disinfection, with disinfection using chlorination as a back-up system. Pollutants typical of a sewage treatment plant would be expected in the discharge, including five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), E. coli bacteria, total residual chlorine (TRC), pH, ammonia, temperature, phosphorus, and dissolved oxygen (DO). Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- E. coli bacteria
- TRC
- pH
- Temperature
- Ammonia
- Nitrogen
- Nitrate-Nitrite

- Phosphorus
- Orthophosphorus
- DO
- Metals

The concentrations of pollutants in the discharge were reported in discharge monitoring reports (DMRs) and were used in determining reasonable potential for several parameters (see Appendix E).

Compliance History

The EPA reviewed the last five years of effluent monitoring data (2008 – 2013) from the DMRs. The data are summarized below.

Table 1: Summary of Existing (2001 Permit) Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From November 2008 to October 2013)		
		Monthly Average	Weekly Average	Daily Maximum	Highest Monthly Average Discharge	Highest Weekly Average Discharge	Highest Daily Discharge
Flow	MGD	---	—	—	4.2	—	—
pH	standard units	—	—	6.5 – 9.0 [1]	—	—	6.66 – 8.14
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—	19.2	23.4	—
	lb/day	1430	2145	—	666	811	—
Minimum BOD_5 Percent Removal	%	85	—	—	91.1 [2]	—	—
Total Suspended Solids (TSS)	mg/L	30	45	—	16.3	24.5	—
	lb/day	1430	2145	—	557	850	—
Minimum TSS Percent Removal	%	85	—	—	98.4 [3]	—	—
Fecal Coliform	MPN/100 ml		200	—	65.4	—	—
E. coli Bacteria	MPN/100 ml	126 [4]	—	406 [5]	24.3	—	178
Total Residual Chlorine	µg/L	340	—	700	No Data [6]	—	No Data [6]
	lb/day	14.29	—	33.33	No Data [6]	—	No Data [6]
Phosphorus	mg/l	---	---	---	---	3.52	---
Total Ammonia (as N)	mg/l	---	---	---	---	11.6	---
Nitrite-Nitrate nitrogen	mg/l	---	---	---	---	28.9	---
Dissolved Oxygen	mg/l	---	---	---	---	Minimum 5.4	---
Temperature	ºC	---	---	---	22.5	23.4	23.6

[1] Represents the instantaneous minimum and maximum pH limitations, respectively.
[2] Represents the lowest reported value of the minimum monthly average percent removal of BOD.
[3] Represents the lowest reported value of the minimum monthly average percent removal of TSS.
[4] Expressed as a geometric mean, based on a minimum of not less than five samples taken every three to five days over a 30-day period.

5	Expressed as a maximum single sample value.
6	Residual chlorine monitoring is required only when the chlorination system is in use.

Overall, the facility has had a good compliance record; a review of the DMR data submitted during the period from November 2008 through October 2013 indicates that the facility has complied with permit limits.

The Idaho Department of Environmental Quality (IDEQ) contracted by EPA conducted an inspection of the facility on September 9, 2013. The IDEQ Inspection Report states that IDEQ did not identify any areas of concern, and the facility appeared to be well maintained.

III. Receiving Water

This facility discharges to Clearwater River at the head of the Clearwater Arm of Lower Granite Dam Pool in the City of Lewiston, Idaho. The outfall's diffuser is located at approximately 0.75 miles to the confluence of the Snake River, and is approximately 0.86 miles to the Idaho-Washington State boundary.

A. Low Flow Conditions

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

Because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the 30B3 for the chronic ammonia criterion instead of the 7Q10. The 30B3 is a biologically-based flow rate designed to ensure an excursion frequency of no more than once every three years for a 30-day average flow rate. For human health criteria, the Idaho WQS recommend the 30Q5 flow rate for non-carcinogens, and the harmonic mean flow rate for carcinogens. (see Appendix C of this fact sheet for additional information on flows).

The EPA used ambient flow data collected at the Station 13342500 (Spalding, Idaho) for the period from 1974 through 2014 and the algorithms based on EPA's DFLOW 3.1b model to calculate the low flow conditions for the Clearwater River at Spalding. Table 1 presents the low flow values at USGS Station at Spalding.

The critical flow levels for the receiving water are as follows:

Table 2. Low Flows in the Clearwater River from USGS Station at Spalding, Idaho

1Q10 (cfs)	2250
7Q10 (cfs)	2470
30B3 (cfs)	2950
30Q10 (cfs)	2660
30Q5 (cfs)	2740
Harmonic Mean (cfs)	7510

B. Receiving Water Quality

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

Receiving water data were available from an upstream USGS Station at Spalding, and from the permittee's ambient monitoring results. The permittee was required to monitor monthly for 2 years, the Clearwater River at a location above the influence of the facility's discharge and a location below the facility's discharge point, representative of where the effluent and Clearwater River are completely mixed. Table 2 summarizes the receiving water data used to evaluate the need for and develop water quality based effluent limits. See Appendix C for additional information on the receiving water quality.

Table 3. Receiving Water Quality Data

Parameter	Units	Percentile	Value	
			Upstream	Downstream
Temperature	°C	95th	16.02	16.78
pH	Standard units	5th – 95th	5.833 – 9.262	N/A
Hardness	mg/l	5th – 95th	6.275 – 23.91	6.2 – 48.76
Alkalinity	mg/l	5th – 95th	10.85 – 31.13	10.91 – 64.27
Dissolved Oxygen	mg/l	Minimum	9.42	8.85
Ammonia Nitrogen	mg/l	Maximum	0.18	0.17
Total Kjeldahl Nitrogen	mg/l	5th – 95th	0.1 – 0.4115	0.109 – 0.401
Nitrite-Nitrate Nitrogen	mg/l	5th – 95th	0.02 – 1.04	0.03 – 1.015
Phosphorus, Total	mg/l	5th – 95th	0.018 – 0.258	0.0206 – 0.199
Orthophosphate	mg/l	5th – 95th	0.0058 – 0.196	0.0059 – 0.167

C. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

Designated Beneficial Uses

This facility discharges to the Clearwater River at the head of the Clearwater Arm of Lower Granite Dam Pool in the Clearwater Subbasin (HUC 17060306), Water Body Unit S-1. At

the point of discharge, the Clearwater Arm of Lower Granite Dam Pool is protected for the following designated uses (IDAPA 58.01.02.120.08):

- COLD – cold water aquatic life
- PCR – primary contact recreation
- DWS – 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).

In addition, Washington Water Quality Standards are met at the state line, as shown in Appendix G, and all beneficial uses in Washington State are not impaired by this discharge.

Surface Water Quality Criteria

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

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

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

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

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

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

The numeric and narrative water quality criteria applicable to Clearwater River at the point of discharge are provided in Appendix B of this fact sheet. The proposed permit is protective of beneficial uses in both Idaho and Washington State (see Appendix G).

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix H for the State's draft 401 water quality certification. IDEQ concluded "that this discharge permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.08)". The EPA has reviewed this antidegradation review and finds that it is consistent with the State's

401 certification requirements and the State's antidegradation implementation procedures. IDEQ Comments on the 401 certification including the antidegradation review should be submitted to the IDEQ as set forth above (see State Certification).

D. Water Quality Limited Waters

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

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

The State of Idaho's 2012 Integrated Report Section 5 (section 303(d)) did not list this segment (ID17060306CL002_07) of the Clearwater River as being impaired, indicating that there are no impairments. The 2012 Integrated Report however delisted this segment for "Dissolved Gas Supersaturation".

The Washington State Department of Ecology (Ecology) has listed three parameters as Category 5 pollutants at the Snake-Clearwater River confluence downstream from the facility. These Category 5 listings are for pH (Listing #11155), temperature (Listing #16929), and dissolved oxygen (listing #16927). Ecology's placement of parameters in Category 5 means that Ecology has data showing that the water quality standards have been violated, but there is no TMDL or pollution control plan that is currently in place. EPA will include additional effluent limitations as necessary, if and when a WLA has been established, or, if additional or more stringent limitations are required to protect water quality.

Further downstream, past the confluence of the Snake-Clearwater River, here are two TMDLs that addresses the waterbody downstream in Washington State: A TMDL for total dissolved gas (TDG) for the Snake River was approved by EPA on September 30, 2003; and, a TMDL for dioxin in the Columbia River Basin was finalized by EPA on February 25, 1991 (entitled, "TMDL to Limit Discharges of 2,3,7,8-TCDD (Dioxin) to the Columbia River Basin"). Even though downstream waters are impaired for TDG and Dioxin, neither of these two TMDLs are applicable to this WWTP, as explained below.

Washington State's TMDL entitled, "Total Maximum Daily Load, Lower Snake River, Total Dissolved Gases, August 2003", addresses TDG in the mainstem

Snake River from its confluence with the Clearwater River to its mouth at the Columbia River. Washington's TDG TMDL regards the entire reach to be impaired for TDG. Elevated TDG levels are caused by spill events at four hydroelectric projects on the Lower Snake River, and high TDG can cause chronic or acutely lethal effects in fish. The TMDL states that "Wasteload allocations in this TMDL are zero, because there are no NPDES-

permitted point sources that contribute to elevated TDG in the Lower Snake River." (Washington Department of Ecology 2003, p. 63: https://fortress.wa.gov/ecy/publications/publications/0303020.pdf

Accordingly, EPA concludes that the high levels of TDG in Washington's waters are not caused by this WWTP's discharge.

EPA's TMDL for dioxin in the Columbia River Basin identified the main sources of dioxin as chlorine bleach pulp mills, and accordingly established WLAs for individual chlorine bleach pulp mills in the Columbia River Basin.

This facility is a municipal wastewater treatment plant which does not discharge dioxin. The discharge from this WWTP is not from a pulp mill which is the source of dioxin in the Columbia River Basin. Therefore, EPA concludes that the dioxin impairment is not caused by the WWTP's discharge.

IV. Effluent Limitations

A. Basis for Effluent Limitations

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

B. Proposed Effluent Limitations

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

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

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

Numeric Limitations

Table 4 below presents the proposed effluent limits for BOD_5, TSS, *E. coli*, and chlorine.

Table 4. Proposed Permit Effluent Limits

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—
	lb/day	1,430	2,145	—
BOD_5 Removal	percent	85 minimum	—	—
Total Suspended Solids (TSS)	mg/L	30	45	—
	lb/day	1,430	2,145	—

Table 4. Proposed Permit Effluent Limits

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
TSS Removal	percent	85 minimum	—	—
pH	Standard units	Between 6.5 – 9.0		
E. coli	#/100 ml	126 (geometric mean)	—	406
Total Residual Chlorine	µg/L	340	—	700
	lb/day	14.29	—	33.33

C. Changes in Effluent Limits From the Existing Permit

Table 5 illustrates the changes in effluent limits from the existing permit. The only change is the elimination of effluent limitations for Fecal Coliform bacteria because the effluent limitations for E. coli bacteria is sufficient to be ensure that the receiving water is protected from the excessive release of bacteria.

Table 5. Changes in Permit Effluent Limits

Parameter	Proposed Permit		Existing Permit	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Fecal Coliform, #/100 ml	None	None	200	None

Notes:
[1] The monthly geometric mean concentration of *E.* coli must not exceed 126 organisms per 100 ml. Further, no single sample may exceed 406 organisms per 100 ml (instantaneous maximum limit)

Statutory Prohibitions on Backsliding

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

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). In accordance with the U.S. EPA NPDES Permit Writers' Manual (EPA-833-B-96-003), EPA generally views the 402(o)(2) exceptions as independent of the requirements of 303(d)(4). Therefore, it may be appropriate to relax effluent limits as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied. However, EPA did not relax any effluent limits in the proposed permit. EPA believes that the replacement of the

fecal coliform effluent limits with E. coli limits is compliant with Section 303(d)(4) of the CWA.

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

Basis for Changing Fecal Coliform Effluent Limits to E. coli Limits

EPA has replaced the fecal coliform effluent limits that were in the 2001 permit for this facility with effluent limits for *E. coli*. When the 2001 permit was issued, fecal coliform criteria had been used to protect the beneficial uses of primary and secondary contact recreation. Since the 2001 permit was issued, the State of Idaho has adopted, and EPA has approved, water quality criteria for *E. coli* to protect these uses. In addition, IDEQ's August 4, 2011 letter to EPA stated that NPDES permits should only contain E.coli limits. Therefore, EPA has included effluent limits for *E. coli*, rather than fecal coliform, to protect the use of primary contact recreation in the receiving water.

The Clearwater Arm, Lower Granite Dam Pool has not been listed on Idaho's "303(d) list" as not attaining or not being expected to attain water quality standards for bacteria. When water quality standards for the relevant pollutant are being attained, Section 303(d)(4)(B) of the Act states that water quality-based effluent limits may be revised if the revision is consistent with the State's antidegradation policy.

The draft permit, like the 2001 permit, includes "criteria end-of-pipe" effluent limits for bacteria, in order to protect contact recreation beneficial uses in the receiving water. The new water quality criteria and effluent limits simply use a different indicator organism to provide the same level of protection for the beneficial use of primary contact recreation as was provided by the 2001 effluent limits. EPA does not believe that the change from fecal coliform limits to *E. coli* limits will result in degradation of the receiving water or have any effect whatsoever on beneficial uses. Therefore, EPA believes that the replacement of fecal coliform effluent limits with *E. coli* limits is compliant with Section 303(d)(4)(B) of the Act. Because the *E. coli* limits apply current water quality criteria at the end-of-pipe, a discharge in compliance with the effluent limits will not cause or contribute to excursions above water quality standards for *E. coli*. The revised limits therefore comply with the requirements of Section 402(o)(3) of the Act.

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 including parts B.6 and D so that these data will be available when the permittee applies for a renewal of its NPDES permit.

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

B. Effluent Monitoring

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

Table 6, below, presents the proposed effluent monitoring requirements in the draft permit. The sampling location for the final effluent must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 6. Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	Continuous	Meter
BOD_5	mg/l	Influent & Effluent	5/week	24-hour composite
	lb/day	Influent & Effluent	5/week	Calculation[1]
	% Removal	--	1/month	Calculation[2]
TSS	mg/l	Influent & Effluent	5/week	24-hour composite
	lb/day	Influent & Effluent	5/week	Calculation[1]
	% Removal	--	1/month	Calculation[2]
pH	standard units	Effluent	5/week	Grab
E. Coli	#/100 ml	Effluent	5/month	Grab
Total Residual Chlorine (when chlorine is used for disinfection)	µg/l	Effluent	1/day	Grab
	lb/day			Calculation[1]
Total Ammonia as N	mg/l	Effluent	1/month	24-hour composite
	lb/day			Calculation[1]
Total Phosphorus	mg/l	Effluent	1/month	24-hour composite
Total Kjeldahl Nitrogen	mg/l	Effluent	1/month	24-hour composite
Nitrate + Nitrite Nitrogen	mg/l	Effluent	1/month	24-hour composite
Dissolved Oxygen	mg/l	Effluent	1/week	Grab
Temperature	°C	Effluent	1/week	Grab
Floating, Suspended, or Submerged Matter	See Paragraph I.B.4 of permit	Effluent	1/month	Visual Observation
NPDES Application Form 2A Effluent Testing Data, and, Expanded Effluent Testing Data[3]	---	Effluent	2/year	---
NPDES Application Form 2A, Toxicity Testing Data[4]		Effluent	2/year	24-hour composite

Table 6. Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type

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. Effluent Testing Data and Expanded Effluent Testing – See NPDES Permit Application Form 2A, Parts B.6 and D for the list of pollutants to be included in this testing. Testing must be conducted at least twice per year. The Effluent Testing Data and Expended Effluent Testing must occur on the same day as the whole effluent toxicity testing. The Permittee must use sufficiently sensitive analytical methods in accordance with Part I.B.6. of the permit.
4. Toxicity Testing Data – See NPDES Permit Application Form 2A, Part E. Chronic Whole Effluent Toxicity (WET) testing must be conducted at least twice per year, once during the period from October 1 through June 30, and once during the period from July 1 through September 30.
5. All parameters, including Effluent Testing, Expanded Effluent Testing, and Toxicity Testing, must continue for the duration of the permit, including during a potential period when the permit is administratively extended.

Effluent Monitoring Changes from the Previous Permit

Effluent limitations and monitoring requirements for fecal coliform have been replaced with corresponding requirements for *E. coli*, as explained in section IV.C, above.

Effluent Testing Data and Expanded Effluent Testing (NPDES Permit Application Form 2A, Parts B.6, and D) – Testing is proposed to be conducted twice per year, instead of three times per permit cycle as required in the permit application. Monitoring is proposed to be increased because there was insufficient information from the previous permit cycle.

C. Surface Water Monitoring

Table 7 presents the proposed surface water monitoring requirements for the draft permit. The City of Lewiston should continue receiving water monitoring at the upstream location. The previous permit required ambient monitoring to commence 90 days after the permit effective date and continue monthly for 24 months. The draft permit proposes the WWTP conduct ambient monitoring quarterly for the duration of the permit. Surface water monitoring results for the previous calendar year must be submitted in an annual report to EPA and IDEQ and a final compilation of the surface water monitoring results with its application for renewal of this NPDES permit. In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant.

Table 7. Surface Water Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Temperature	°C	Upstream of the point of discharge as described in Part I.D of the permit and location as approved by IDEQ	1/Quarter	Grab
pH	standard units		1/Quarter	Grab
Hardness as $CaCO_3$	mg/L		1/Quarter	Grab
Alkalinity	mg/L		1/Quarter	Grab
Dissolved Oxygen	mg/L		1/Quarter	Grab
Total Ammonia as N	mg/L		1/Quarter	Grab
Nitrate + Nitrite Nitrogen	mg/L		1/Quarter	Grab
Total Kjeldahl Nitrogen	mg/L		1/Quarter	Grab
Total Phosphorus	mg/L		1/Quarter	Grab
Orthophosphate	mg/L		1/Quarter	Grab

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

Surface Water Monitoring Changes from the Previous Permit

EPA proposes to change the sampling frequency from monthly for the first 24 months in the existing permit, to a quarterly schedule for the duration of the proposed permit cycle. EPA believes that this change in monitoring frequency would yield results that are more representative of changing background conditions. EPA also proposes to only require monitoring at the upstream location instead of both upstream and downstream locations because downstream concentrations can be projected mathematically.

D. Electronic Submission of Discharge Monitoring Reports

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

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

VI. Sludge (Biosolids) Requirements

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

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-

implementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions

A. Quality Assurance Plan

In order to ensure compliance with the federal regulation at 40 CFR 122.41(e) for proper operation and maintenance, the draft permit requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The WWTP is required to update the Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan must include 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 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 review, update, and implement an operation and maintenance plan for their facility within 180 days of the effective date of the final permit. The plan must be retained on site and made available to the EPA and the IDEQ upon request.

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

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

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

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

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

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

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

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

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

D. Pretreatment

The proposed permit contains requirements that the WWTP control industrial dischargers, pursuant to 40 CFR 403. Indirect dischargers to the treatment plant must comply with the applicable requirements of 40 CFR 403, any categorical pretreatment standards promulgated by the EPA, and any additional or more stringent requirements imposed by the WWTP as part of its approved pretreatment program or sewer use ordinance (e.g., local limits).

E. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

F. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving

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

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The facility 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 facility is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/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.

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. On May 9, 2014 (personal communication; email from David Mabe, NOAA Fisheries, to Ann La Duca, Tetra Tech Inc., May 9, 2014), the NOAA Fisheries provided the following inventory of threatened and endangered species under its jurisdiction in the area of the discharge:

Listed Species:	Chinook Salmon *(Oncorhynchus tshawytscha)*
	Snake River Fall-run (T)
	Snake River Spring/Summer-run (T)
	Sockeye Salmon *(Oncorhynchus nerka)*
	Snake River (E)

	Steelhead *(Oncorhynchus mykiss)*
	Upper Columbia River (E)
	Snake River Basin (T)
	Middle Columbia River (T)
T = threatened	
E = endangered	

On June 4, 2014 (personal communication; email from Bryon Holt, USFWS, to Ann La Duca, Tetra Tech Inc., June 4, 2014), the USFWS provided the following inventory of threatened and endangered species under its jurisdiction in the area of the discharge:

Listed Species:	Bull Trout *(Salvelinus confluentus)* (T)
T = threatened	

Based on information collected, EPA has determined that this permit would have no effect on endangered or threatened species based on the large dilution ratios in the combined Snake and Clearwater Rivers, the protectiveness of the permit limits, and the nature of the discharge. EPA has prepared a draft Biological Evaluation (BE) concerning possible impacts to species of concern.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). On June 4, 2014 (personal communication), USFWS indicated that bull trout are known to seasonally occupy, and bull trout critical habitat has been designated in the reach of the Clearwater River in the vicinity of the discharge. Further, Lewiston, Idaho is located in designated critical habitat for Snake River chinook and sockeye salmon, and within designated critical habitat for Snake River steelhead. Lewiston is upstream from designated critical habitat for upper Columbia River and middle Columbia River steelhead.

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

The EPA has determined that issuance of this permit has No Effect on EFH in the vicinity of the discharge. The EPA has provided NOAA Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from NOAA Fisheries regarding EFH will be considered prior to reissuance of this permit.

C. State Certification

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

water quality standards, or treatment standards established pursuant to any State law or regulation.

D. Permit Expiration

The permit will expire five years from the effective date.

IX. References

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

EPA. 2002. *Biological Evaluation for Reissuance of City of Lewiston Wastewater Treatment Facility NPDES Permit*. Prepared for National Marine Fisheries Service and U.S. Fish and Wildlife Service by EPA Region 10.

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

Holt, B. 2014, June 4. Email from Bryon Holt, U.S. Fish and Wildlife Service, to Ann LaDuca, Tetra Tech Inc., regarding Request for Listings and Critical Habitat for the City of Lewiston WWTP.

Mabe, D. 2014, May 9. Email from David Mabe, National Marine Fisheries Service, to Ann LaDuca, Tetra Tech Inc., regarding Request for Listings and Critical Habitat for the City of Lewiston WWTP.

Washington Department of Ecology. August 2003. *Total Maximum Daily Load for Lower Snake River Total Dissolved Gas*. Publication No. 03-03-020. Washington State Department of Ecology, Environmental Assessment Program, Olympia, Washington.

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

Appendix A: Facility Information

General Information

NPDES ID Number:	ID0022055
Physical Location:	900 7th Avenue North Lewiston, ID 83501
Mailing Address:	P.O. Box 617 Lewiston, ID 83501
Facility Background:	The permit became effective on December 31, 2001 and expired on January 2, 2007. A permit renewal application was received on June 24, 2006. The permit has been administratively extended.

Facility Information

Type of Facility:	Publicly Owned Treatment Works (POTW)
Treatment Train:	Preliminary Treatment • Flow measurement and recording • Solids removal (screening) • Pre-aeration/grit removal Primary Treatment • Primary clarification Secondary Treatment • Activated sludge (aeration basins) • Secondary clarification • Ultraviolet disinfection • Flow measurement
Sludge (biosolids) Handling:	Anaerobic digestion, belt filter press, and aerated static pile composting
Flow:	Design flow is 5.71 mgd.
Outfall Location:	Latitude 46° 25′ 38″ North and longitude 117° 01′ 16″ West

Receiving Water Information

Idaho Receiving Water:	Clearwater River at the head of the Clearwater Arm of Lower Granite Dam Pool

Idaho Beneficial Uses: Idaho: Cold water aquatic life, primary contact recreation, domestic water supply, industrial and agricultural water supply, wildlife habitats, and aesthetics.

Washington State Water Quality Standards

The downstream receiving water at the Washington State border is in the Snake River. The applicable Washington State designated uses and surface water criteria for this waterbody is described in Table 602 of WAC 173-201A. Summarized below is Washington State's designated uses and surface water quality criteria, and, the recreational uses and associated criteria.

Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. The tables included below summarize the criteria applicable to the receiving water's designated uses.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

Freshwater Aquatic Life Uses and Associated Criteria

Salmonid Spawning, Rearing, and Migration	
Temperature Criteria [a] – Highest 7-DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	8.0 mg/L
Turbidity Criteria	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.
a	*Temperature shall not exceed a 1-DMax of 20.0°C due to human activities. When natural conditions exceed a 1-DMax of 20.0°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed $t = 34/(T + 9)$

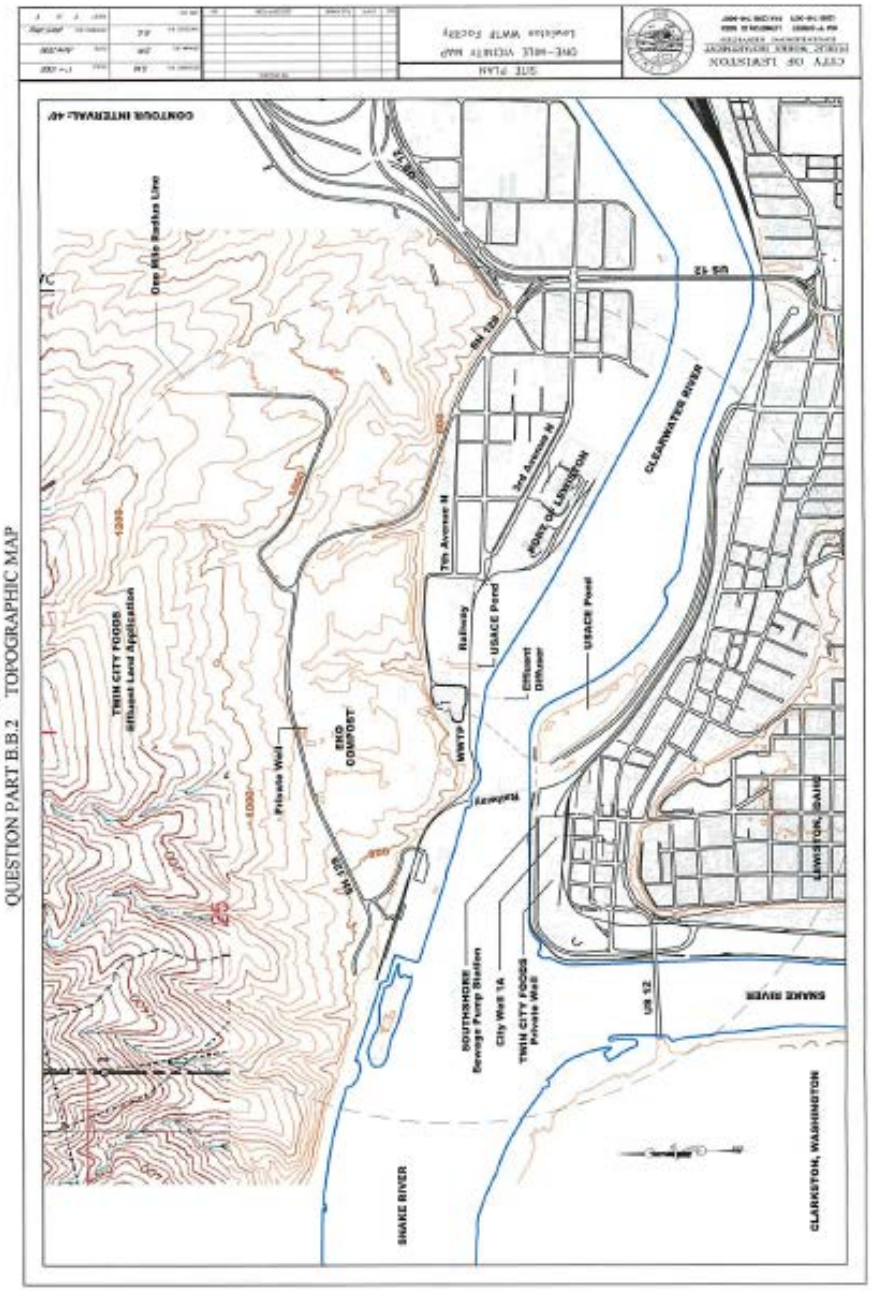
- The *recreational uses* for this receiving water are identified below.

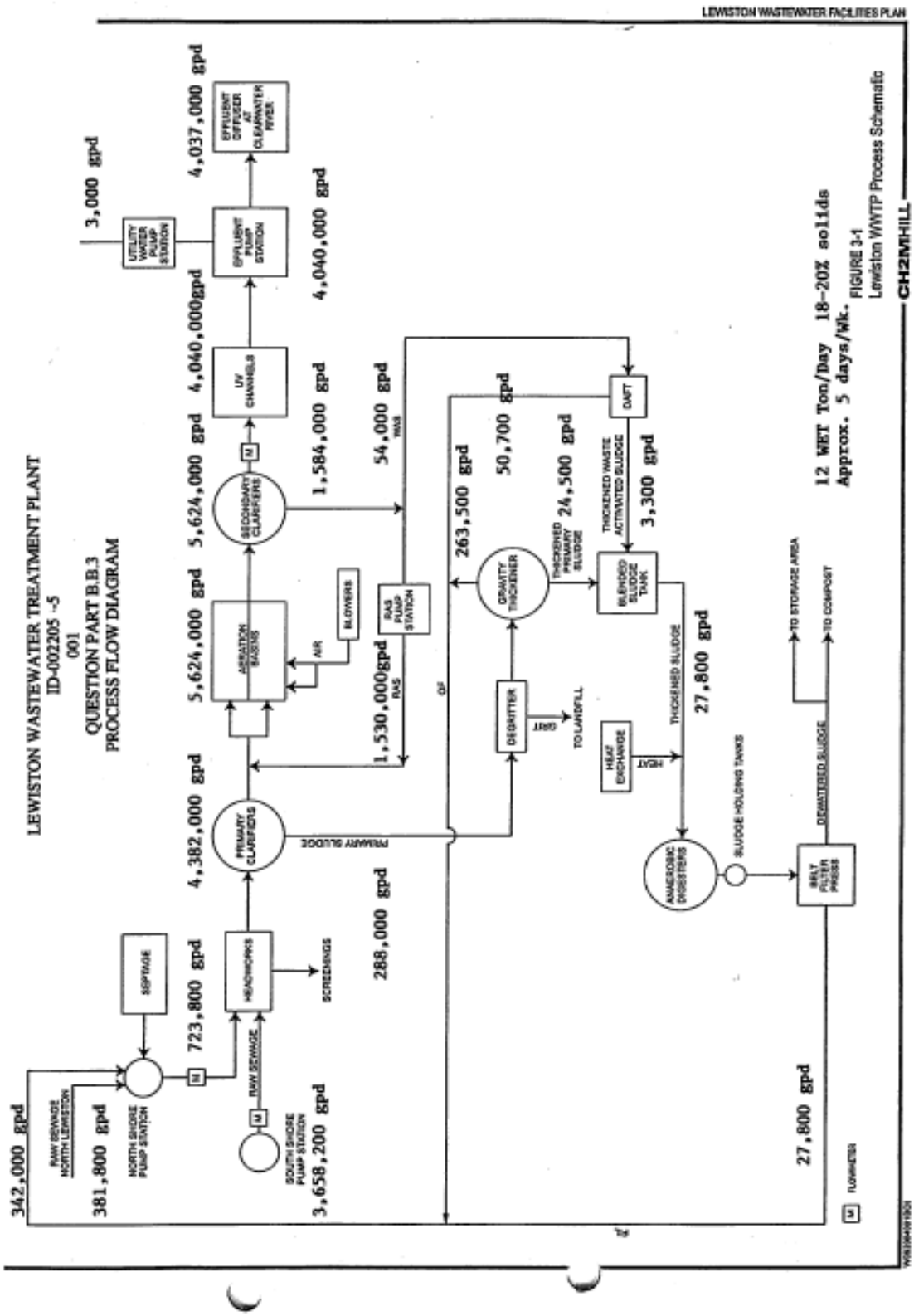
Recreational Uses and Associated Criteria

Recreational Use	**Criteria**
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL.

- The *water supply uses* are domestic, agricultural, industrial, and stock watering.
- The *miscellaneous freshwater uses* are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

LEWISTON WASTEWATER TREATMENT PLANT
ID-002205-5
QUESTION PART B.B.2 TOPOGRAPHIC MAP




LEWISTON WASTEWATER FACILITIES PLAN
LEWISTON WASTEWATER TREATMENT PLANT
ID-002205 -5
001
QUESTION PART B.B.3
PROCESS FLOW DIAGRAM
342,000 gpd
381,800 gpd
3,658,200 gpd
723,800 gpd
4,382,000 gpd
5,624,000 gpd
5,624,000 gpd
4,040,000gpd
4,040,000 gpd
4,037,000 gpd
3,000 gpd
1,584,000 gpd
54,000 gpd
1,530,000gpd
288,000 gpd
263,500 gpd
50,700 gpd
24,500 gpd
3,300 gpd
27,800 gpd
27,800 gpd
12 WET Ton/Day 18-20% solids
Approx. 5 days/wk.
FIGURE 3-1
Lewiston WWTP Process Schematic
CH2MHILL

Appendix B: Water Quality Criteria Summary

This appendix provides a summary of water quality criteria applicable to the Clearwater Arm of Lower Granite Dam Pool. The proposed permit complies with Idaho water quality standards. In addition, the proposed permit ensures that Washington water quality standards are met at the ID-WA state line. See Appendix G.

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

A. General Criteria (IDAPA 58.01.02.200)

Surface waters of the state shall be free from:

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

Surface water level shall not exceed allowable level for:

- radioactive materials, or
- sediments

B. Numeric Criteria for Toxics (IDAPA 58.01.02.210)

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

Refer to Appendix E for the numeric criteria used to evaluate the reasonable potential for the effluent to cause or contribute to a violation of the WQS.

Metals criteria are a function of hardness. Per Idaho's Water Quality Standards at IDAPA 58.01.02.210.03.c.ii: "The hardness values used for calculating aquatic life criteria for metals at design discharge conditions shall be representative of the ambient hardnesses for a receiving water that occur at the design discharge conditions given in Subsection 210.03.b." The reference to 210.03.b provides the 1Q10/1B3 and 7Q10/4B3 design conditions for aquatic life criteria.

Aquatic life criteria for certain metals are hardness-dependent. The receiving water hardness reported by the permittee was 6.2 mg/L. In accordance with IDAPA 58.01.02.210(03)(c)(i), the aquatic life criteria for metals (other than cadmium) were calculated based on a minimum hardness of 25 mg/L, as calcium carbonate. For metals other than cadmium, for purposes of calculating hardness-dependent aquatic life criteria, the minimum hardness allowed for use in the calculations shall not be less than 25 mg/L, as calcium carbonate, even if the actual ambient hardness is less than 25 mg/L, as calcium carbonate.

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

1. pH: Within the range of 6.5 to 9.0

2. Total Dissolved Gas: <110% saturation at atm. pressure.

3. Dissolved Oxygen: Idaho: Exceed 6 mg/l at all times. Washington: Exceed 8 mg/l. If natural conditions are less than criteria, then human actions considered cumulatively may not cause the dissolved oxygen of that water body to decrease more than 0.2 mg/l.

4. Temperature:

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

For clarification purposes because Washington State temperature standards are described differently, the following is a summary of the downstream state's standard. Per Washington (WAC Chapter 173-201A): Snake River below Clearwater River: Temperature shall not exceed a 1-DMax of 20°C due to human activities, and a highest 7-DAD MAX of 17.5°C. When natural conditions exceed 20°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C, nor shall such temperature increases at any time, exceed t=34/(T+9) where "t" represents the maximum permissible temperature increase measured at the mixing zone boundary; and "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge.

5. Ammonia:

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. The table below details the equations used to determine water quality criteria for ammonia.

The permittee has collected temperature data in the Clearwater Arm of Lower Granite Dam Pool upstream and downstream of the facility from June 2002 through April 2004. EPA also obtained pH data from the USGS station near Spalding, Idaho. These data were used to determine the appropriate pH and temperature values to calculate the ammonia criteria.

As with any natural water body the pH and temperature of the water will vary over time. Therefore, to protect water quality criteria it is important to develop the criteria based on pH and temperature values that will be protective of aquatic life at all times. The EPA used the 95th percentile of the pH and temperature data for the calculations, which were calculated to be 7.74 standard units (at USGS Station near Spalding) and 16.02 °C (upstream ambient data, 95th percentile). Calculations based on Cold Water Aquatics, and Salmonids Early Life Stages Present.

Table B-1: Water Quality Criteria for Ammonia		
	Acute Criterion[1]	**Chronic Criterion**
Equations:	$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85,1.45\times10^{0.028\times(25-T)}\right)$
Results:	9.0 mg/l	3.1 mg/l

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

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

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

b. Use of Single Sample Values: This section states that that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.). for primary and contact recreation.

Appendix C: Low Flow Conditions and Dilution

A. Low Flow Conditions

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

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

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

The EPA determined critical low flows upstream of the discharge from the following USGS Station: Clearwater River at Spalding (13342500).

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

Table C-1. Low Flows in the Clearwater River

1Q10 (cfs)	2250
7Q10 (cfs)	2470
30B3 (cfs)	2950
30Q10 (cfs)	2660
30Q5 (cfs)	2740
Harmonic (cfs)	7510

B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality standards may be exceeded as long as acutely toxic conditions are prevented (the EPA, 1994).

The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances."

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The policy allows the IDEQ to authorize a mixing zone for a point source discharge after a biological, chemical, and physical appraisal of the receiving water and the proposed discharge. The IDEQ considers the following principles in limiting the size of a mixing zone in flowing receiving waters (IDAPA 58.01.02.060.01.e):

i. The cumulative width of adjacent mixing zones when measured across the receiving water is not to exceed 50% of the total width of the receiving water at that point;

ii. The width of a mixing zone is not to exceed 25% of the stream width or 300 meters plus the horizontal length of the diffuser as measured perpendicularly to the stream flow, whichever is less;

iii. The mixing zone is to be no closer to the 10 year, 7 day low-flow shoreline than 15% of the stream width;

iv. The mixing zone is not to include more than 25% of the volume of the stream flow.

In the State 401 Certification, the IDEQ proposes to authorize a mixing zone of 25% of the stream flow volume for metals and chlorine.

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

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

Where:

D = Dilution Factor
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (, 7Q10, 30B3, etc)
%MZ = Percent Mixing Zone

The EPA calculated dilution factors for year round critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 5.71 mgd. The dilution factors are listed in Table C-2.

Table C-2: Dilution Factors

Flows	Dilution Factor
1Q10	64.7
7Q10	70.9
30B3	84.5

Appendix D: Basis for Effluent Limits

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

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants 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 D-1.

Table D-1: Secondary Treatment Effluent Limits (40 CFR 133.102)

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

The EPA has determined that the secondary treatment BOD_5 and TSS effluent limits are adequately stringent to protect water quality in the Clearwater Arm of Lower Granite Dam Pool at all times; therefore, the BOD_5 and TSS effluent limits in the draft permit are the secondary treatment limits.

The EPA has determined that the secondary treatment pH effluent limits are not stringent enough to protect water quality in the Clearwater Arm of Lower Granite Dam Pool; therefore, more stringent water quality-based pH effluent limits apply.

Mass-Based Limits

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

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

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

Since the design flow for this facility is 5.71 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 5.71 mgd × 8.34 = 1,430 lbs/day

Average Weekly Limit = 1,430 lbs/day x 1.5 = 2,145 lbs/day

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The WWTP uses chlorine disinfection only as a backup to the ultraviolet disinfection system. No chlorine has been used for disinfection at the WWTP since 1998, and no chlorine was used for disinfection during the last permit cycle.

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

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

Monthly average Limit= 0.5 mg/L x 5.71 mgd x 8.34 = 24 lbs/day

Weekly average Limit = 0.75 mg/L x 5.71 mgd x 8.34 = 36 lbs/day

The EPA has determined during the last permit cycle that the technology-based effluent limits for chlorine are not stringent enough to ensure compliance with water quality standards. Therefore, the draft permit proposes more stringent water quality-based effluent limits for chlorine. The proposed permit retains the same chlorine limitations from the previous permit because no chlorine was utilized during last permit cycle for disinfection purposes, and there is no changes to the operation, and no changes to the capacity of the WWTP.

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

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, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

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

Reasonable Potential Analysis

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

Mixing Zones

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

The reasonable potential analysis for the WWTP was based on a mixing zone of 25%. If IDEQ revises the allowable mixing zone in its final certification of this permit, reasonable potential analysis will be revised accordingly.

Procedure for Deriving Water Quality-based Effluent Limits

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

1. TMDL-Based Wasteload Allocation

   Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a

determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

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

2. Mixing zone based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant. The WLAs for all parameters were derived using a mixing zone.

3. Criterion as the Wasteload Allocation

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

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

Summary - Water Quality-based Effluent Limits

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

Ammonia

A reasonable potential calculation showed that the 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 water quality-based effluent limit for ammonia. The draft permit continues the requirement that the permittee monitor the effluent and receiving water for ammonia, pH and temperature.

pH

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were collected daily at the facility from November 2008 through October 2013, a total of 122 samples were collected. The data ranged from 6.66 – 8.14 standard units. The pH range of the effluent is well within the State's water quality criterion of 6.5 – 9.0 standard units, therefore no mixing zone is necessary for this discharge, and there has not been a violation of Idaho Water Quality Standards for pH.

Dissolved Oxygen and BOD_5

The reasonable potential to cause or contribute to violations of the dissolved oxygen criteria of 6 mg/L can be evaluated using the Streeter-Phelps model. The Streeter-Phelps equation (also known as the "dissolved oxygen sag" equation) is based on a mass balance which is affected by two processes. One is that oxygen is removed from water by the degradation of organic materials. In other words, the biochemical oxygen demand of an organic waste is satisfied by oxygen taken from the water. The second process is "reaeration" by oxygen transfer into the water from the atmosphere.

The Idaho water quality standards at IDAPA 58.01.02.250.02(a), require concentrations of dissolved oxygen in waters designated for cold water aquatic life to exceed 6 mg/L at all times. The applicable standard in Washington for Class A waters is a minimum of 8.0 mg/L. Further, Washington's standards allow a cumulative dissolved oxygen decrease of 0.2 mg/L due to human activity, based on the assumption that 0.2 mg/L is an insignificant decrease.

For the far-field analysis: Based on a Streeter-Phelps analysis of critical dissolved sag model, the expected concentration of oxygen in the receiving water is at least 8.44 mg/l using conservative assumptions of low flows and the lowest concentration of oxygen in the effluent and the highest recorded temperature during the last permit cycle. The model shows that under critical conditions, the concentration of dissolved oxygen meets both the Idaho WQS (of a minimum of 6.0 mg/l), and Washington WQS (of a minimum of 8.0 mg/l). Therefore, EPA concludes that there is no reasonable potential for the effluent from the WWTP to exceed both Idaho and Washington's WQS for dissolved oxygen.

Far-Field Analysis: Streeter-Phelps Analysis of Critical Dissolved Oxygen Sag

INPUT	
1. EFFLUENT CHARACTERISTICS	
Discharge (cfs):	8.83337
CBOD5 (mg/L):	25
NBOD (mg/L):	2.5
Dissolved Oxygen (mg/L):	5.4
Temperature (deg C):	23.6
2. RECEIVING WATER CHARACTERISTICS	
Upstream Discharge (cfs):	2470
Upstream CBOD5 (mg/L):	1.5
Upstream NBOD (mg/L):	0.2
Upstream Dissolved Oxygen (mg/L):	9.42

Upstream Temperature (deg C):			16.02
Elevation (ft NGVD):			2200
Downstream Average Channel Slope (ft/ft):			0.00088
Downstream Average Channel Depth (ft):			20
Downstream Average Channel Velocity (fps):			10
3. REAERATION RATE (Base e) at 20 deg C (day^-1):			3.57
Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	0.72
O'Connor and Dobbins	0.1 - 1.5	2 - 50	0.46
Owens	0.1 - 6	1 - 2	0.40
Tsivoglou-Wallace	0.1 - 6	0.1 - 2	36.47
4. BOD DECAY RATE (Base e) AT 20 deg C (day^-1):			2.51
(Suggested value = 2.51, *Wright and McDonnell, 1979*)			
OUTPUT			
1. INITIAL MIXED RIVER CONDITION			
CBOD5 (mg/L):			1.6
NBOD (mg/L):			0.2
Dissolved Oxygen (mg/L):			9.4
Temperature (deg C):			16.0
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)			
Reaeration (day^-1):			3.25
BOD Decay (day^-1):			2.09
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU			
Initial Mixed CBODU (mg/L):			2.3
Initial Mixed Total BODU (CBODU + NBOD, mg/L):			2.5
4. INITIAL DISSOLVED OXYGEN DEFICIT			
Saturation Dissolved Oxygen (mg/L):			9.090
Initial Deficit (mg/L):			-0.32
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):			0.44
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):			71.64
7. CRITICAL DO DEFICIT (mg/L):			0.65
8. CRITICAL DO CONCENTRATION (mg/L):			**8.44**

For the near-field analysis: Using a simple mixing model, the DO concentration at the edge of the chronic mixing zone is 9.36 mg/l with a change of 0.06 mg/l, using conservative assumptions of the minimum ambient DO concentration (DMR), and the minimum effluent DO concentration (DMR). Based on the near-field analysis, at the Critical DO concentration of 9.36 mg/l, there is no reasonable potential to violate Idaho's WQS for DO of a minimum of 6 mg/l. Similarly, there is also no reasonable potential to violate Washington's WQS for DO of a minimum of 8 mg/l with a change of no more than 0.2 mg/l.

	Near Field Analysis: Calculation of Dissolved Oxygen at Chronic Mixing Zone		
	INPUT		
	Chronic Dilution Factor		70.9
	Ambient DO Concentration, mg/L		9.42
	Effluent DO Concentration, mg/L		5.4
	Effluent Immediate DO Demand, mg/L		
	Surface Water Criteria, mg/L		*6*
	OUTPUT		
	DO at Mixing Zone Boundary, mg/L		**9.36**
	DO decrease caused by effluent at chronic boundary, mg/L		**0.06**
	Conclusion: At design flow, the discharge has no reasonable potential to violate water quality standards for dissolved oxygen.		
	References: EPA/600/6-85/002b and EPA/430/9-82-011		
ID 58.01.02 250			
02.a	Cold Water	6 mg/L at all times. Exceptions for lakes and reservoirs.	
02.f.	Salmonid Spawing	1-day min. 5.0 mg/L intergravel DO, 6.0 7-day average	
03.a.	Seasonal Cold	6 mg/L at all times. Exceptions for lakes and reservoirs.	
04.a.	Warn Water	5 mg/L at all times. Exceptions for lakes and reservoirs.	

E. coli

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

The Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.).

To comply with Idaho Water Quality Standards, EPA has proposed end-of-pipe effluent discharge limitations that *E.coli* not to exceed 126 organisms per 100ml for the Average Monthly Limit based on the geometric mean, and, an Instantaneous Maximum of 406 organisms/100ml. The proposed effluent limitations for *E.coli* are at the end-of-pipe, which does not require the State to certify a mixing zone because as in this case, EPA does not normally permit a mixing zone for discharges of bacteria from WWTPs.

Chlorine

The Idaho state water quality standards at IDAPA 58.01.02.210 establish an acute criterion of 19 µg /L, and a chronic criterion of 11 µg/L for the protection of aquatic life. As of 1998, the

WWTP uses UV disinfection but maintains a chlorine disinfection system on-site as a backup system. The proposed permit continues the need for an effluent limit for chlorine because there is the potential for a discharge containing chlorine when the backup system is used. However, there are no current discharge monitoring data for chlorine available to develop new effluent limits; therefore, the effluent limits for chlorine remain unchanged from the previous permit.

Residues

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

C. Anti-backsliding Provisions

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)), but in this case, the effluent limits being revised are water quality-based effluent limits (WQBELs).

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

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

Anti-backsliding analysis was done for each parameter below:

For BOD5 and TSS, the effluent limitations for BOD5 and TSS are unchanged from the last permit. Because the concentration limits, loading limits, and minimum percent removal requirements are retained; therefore, the proposed permit is in compliance with anti-backsliding provisions for both BOD5 and TSS.

For total residual chlorine, both the effluent and concentration limits are retained from the last permit, therefore there is no backsliding for total residual chlorine.

For pH, the effluent limits are unchanged from the previous permit; therefore, the proposed permit is in compliance with anti-backsliding provisions for pH.

For bacteria, the end of pipe *E.coli* effluent limits are retained from the last permit. The previous permit also has effluent limits for fecal coliform has been deleted because they are no longer necessary. When the 2001 permit was issued, fecal coliform criteria had been used to protect the beneficial uses of primary and secondary contact recreation. Since the 2001 permit was issued, the State of Idaho has adopted, and EPA has approved, water quality criteria for *E. coli* to protect these uses. Therefore, EPA has included effluent limits for *E. coli*, rather than fecal coliform, to protect the use of primary contact recreation in the receiving water. Additionally, the draft permit, like the 2001 permit, includes "criteria end-of-pipe" effluent limits for bacteria, in order to protect contact recreation beneficial uses in the receiving water. The new water quality criteria and effluent limits simply use a different indicator organism to provide the same level of protection for the beneficial use of primary contact recreation as was provided by the 2001 effluent limits. EPA does not believe that the change from fecal coliform limits to *E. coli* limits will result in degradation of the receiving water or have any effect whatsoever on beneficial uses. Therefore, EPA believes that the replacement of fecal coliform effluent limits with E. coli limits is compliant with Section 303(d)(4)(B) of the Act. Because the *E. coli* limits apply current water quality criteria at the end-of-pipe, a discharge in compliance with the effluent limits will not cause or contribute to excursions above water quality standards for *E. coli*. The revised limits therefore comply with the requirements of Section 402(o)(3) of the Act. In addition, the Clearwater Arm, Lower Granite Dam Pool has not been listed on Idaho's "303(d) list" as not attaining or not being expected to attain water quality standards for bacteria. When water quality standards for the relevant pollutant are being attained, Section 303(d)(4)(B) of the Act states that water quality-based effluent limits may be revised if the revision is consistent with the State's antidegradation policy. Because the unchanged *E.coli* limits are sufficient to provide an indication of an approved level bacteria in the effluent, therefore, there is no backsliding for bacteria.

D. Antidegradation

The proposed issuance of an NPDES permit triggers the need to ensure that the conditions in the permit ensure that Tier 1, 2, and 3 of the State's antidegradation policy are met. An anti-degradation analysis was conducted by the IDEQ as part of the State's CWA Section 401 certification dated June 15, 2015 (see Appendix H). IDEQ concluded "that this discharge permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.08)".

E. Facility Specific Limits

Table D-2 summarizes the numeric effluent limits that are in the proposed permit. The final limits are the more stringent of technology treatment requirements, water quality based limits or limits retained as the result of anti-backsliding analysis or to meet the State's anti-degradation policy.

Table D-2: Proposed Effluent Limits

Parameter	Units	Effluent Limits			Basis for Effluent Limits
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Federal secondary treatment standards at
	lb/day	1,430	2,145	--	

Table D-2: Proposed Effluent Limits					
Parameter	**Units**	**Effluent Limits**			**Basis for Effluent Limits**
		Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**	
BOD_5 Removal	percent	85 minimum	--	--	CWA Section 301(b)(1)(B), 40 CFR 133 (technology-based)
Total Suspended Solids (TSS)	mg/L	30	45	--	Federal secondary treatment standards at CWA Section 301(b)(1)(B), 40 CFR 133 (technology-based)
	lb/day	1,430	2,145	--	
TSS Removal	percent	85 minimum	--	--	
E. coli	#/100 ml	126 (geometric mean)	--	406	CWA Sections 301(b)(1)(C) and 402(o), 40 CFR 122.44(d), IDAPA 58.01.02.251.01 (water quality-based and anti-backsliding)
Total Residual Chlorine	µg/L	370	--	700	CWA Section 301(b)(1)(C), 40 CFR 122.44(d), IDAPA 58.01.02.210 (water quality-based)
	lb/day	14.29	--	33.33	
pH	standard units	6.5 – 9.0			CWA Section 301(b)(1)(C), 40 CFR 122.44(d), IDAPA 58.01.02.250.01 (water quality-based)

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

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

A. Reasonable Potential Analysis

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

Mass Balance

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

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

where,

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

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

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

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

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

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

Where:

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

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

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

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

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

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

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

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

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

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

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

Maximum Projected Effluent Concentration

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

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

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

where,

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

and

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

Where,

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

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

$C_e = (RPM)(MRC)$ Equation 10

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

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

Reasonable Potential

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

Results of Reasonable Potential Calculations

It was determined that there is no reasonable potential to cause or contribute to an exceedance of water quality criteria at the edge of the mixing zone. The results of the calculations are presented in Table E-1 of this appendix.

B. WQBEL Calculations

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated. The draft permit does not include new WQBELs because there is no reasonable potential to exceed water quality standards. The following discussion presents the general equations used to calculate the water quality-based effluent limits.

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis (Equations 3 and 6). 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 11 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 7. As discussed in Appendix B, 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 metals, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

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

where,

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

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

Derive the maximum daily and average monthly effluent limits

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

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

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

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

$\sigma_n^2 = \ln(CV^2/n + 1)$

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

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

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

Table E-1: Reasonable Potential Analysis (RPA)

Facility Name	Lewiston WWTP
Design Flow (MGD)	5.71
Waterbody Type	Freshwater

Dilution Factors (IDAPA 58.01.02 03. b)

		Annual
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	**1Q10**	**64.7**
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	**7Q10 or 4B3**	**70.9**
Ammonia	**30B3/30Q10** (seasonal)	**84.5**
Human Health - Non-Carcinogen	**30Q5**	**78.5**
Human Health - carcinogen	**Harmonic Mean Flow**	**213.5**

Receiving Water Data

Notes: 5th % at critical flows

			Annual	
Hardness, as mg/L $CaCO_3$	= 25 mg/L			
Temperature, °C	**Temperature, °C**	95th percentile	16.3	USGS (1/1990 - 5/2012)
pH, S.U.	**pH, S.U.**	95th percentile	7.74	USGS (1/1990 - 9/1995)

	Pollutants of Concern		AMMONIA, default: cold water, fish early life stages present	MERCURY	SILVER	ARSENIC (dissolved)	CADMIUM	CHROMIUM(TRI)	COPPER	NICKEL	LEAD	ZINC	CYANIDE - criteria expresses as WAD
Effluent Data	**Number of Samples in Data Set (n)**		60	120	123	123	123	123	123	123	123	123	123
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		0.7	3.39	1.156	0.518	2.53	0.862	0.405	0.7286	0.5926	0.262	1.222
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		6,600	0.015	3.1	3	0.3	3	19.81	7.959	4	49.19	42.9
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only			0.01	0.2	1.26	0.05	1	11	2.3	2	36.5	8.88
Dilution Factors	Aquatic Life - Acute	1Q10	64.679	64.679	64.679	64.679	64.679	64.679	64.679	64.679	64.679	64.679	64.679
	Aquatic Life - Chronic	7Q10 or 4B3	-	70.905	70.905	70.905	70.905	70.905	70.905	70.905	70.905	70.905	70.905
	Ammonia	30B3 or 30Q10	84.490	-	-	-	-	-	-	-	-	-	-
	Human Health - Non-Carcinogen	30Q5	-	78.547	78.547	78.547	78.547	78.547	78.547	78.547	78.547	78.547	78.547
	Human Health - carcinogen	Harmonic Mean	-	213.546	213.546	213.546	213.546	213.546	213.546	213.546	213.546	213.546	213.546
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		180	0	0	0	0	2	3	1.6	0	11.8	0
	Geometric Mean, µg/L, Human Health Criteria Only			0				0.714	1.32	0.73	0	5.03	
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	9,006	2.10	0.32	340	0	183	5	145	14	36	22
	Aquatic Life Criteria, µg/L	Chronic	3,048	0.012	--	150	0	24	3	16	0.54	36	5
	Human Health Water and Organism, µg/L		--	--	--	10	Narrative	Narrative	--	610	Narrative	7400	140
	Human Health, Organism Only, µg/L		--	--	--	10	Narrative	Narrative	--	4600	Narrative	26000	140
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	--	0.000	0.850	0.000	1.002	0.316	0.960	0.998	0.993	0.978	0.000
		Chronic	--	0.000	na	0.000	0.967	0.860	0.960	0.997	0.993	0.986	0.000
	Carcinogen (Y/N), Human Health Criteria Only		--	N	N	Y	N	N	N	N	N	N	N

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		0.631	1.589	0.921	0.488	1.415	0.745	0.390	0.653	0.549	0.258	0.956
P_n	$=(1\text{-confidence level})^{1/n}$ where confidence level =	**99%**	0.926	0.962	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963
Multiplier (TSD p. 57)	$=\exp(2.326\sigma-0.5\sigma^2)/\exp[\text{invnorm}(P_N)\sigma-0.5\sigma^2]$, prob. =	**99%**	1.7	2.4	1.6	1.3	2.1	1.5	1.2	1.4	1.3	1.1	1.7
Statistically projected critical discharge concentration (C_d)			11496.74	0.04	5.08	3.90	0.64	4.48	24.42	11.30	5.37	56.48	71.65
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	354.97	0.00	0.07	0.06	0.01	1.99	3.32	1.75	0.08	12.47	1.11
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	313.94	0.00	--	0.05	0.01	2.03	3.29	1.74	0.08	12.42	1.01
Reasonable Potential to exceed Aquatic Life Criteria			**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

1 Aquatic life criteria for certain metals are hardness-dependent. The receiving water hardness reported by the permittee was 6.2 mg/L. In accordance with IDAPA 58.01.02.210(03)(c)(i), the aquatic life criteria for silver were calculated based on a minimum hardness of 25 mg/L, as calcium carbonate. For metals other than cadmium, for purposes of calculating hardness-dependent aquatic life criteria, the minimum hardness allowed for use in the calculations shall not be less than 25 mg/L, as calcium carbonate, even if the actual ambient hardness is less than 25 mg/L, as calcium carbonate.

2 Assumes 15% of the most stringent aquatic life and human health criteria. Since there are no ambient monitoring data since 1992/1995 and the data that we do have are comprised of many non-detects, an assumed background concentration 15% of the most stringent criterion (aquatic life and human health) was used. In the absence of recent data, this approach has been implemented in other regions/states.

3 Samples results include adjusted values, which are assumed to be 50% of the reported "Less Than" value and 100% for any detected results. The adjusted values are used for calculating the average, 95th percentile value, 50th percentile value, standard deviation, and CV that is used.

4 The highest upstream ambient ammonia value was used, 0.18 mg/l. This data was obtained from page 4 of City of Lewiston, Ambient Monitoring Report, dated September 2004.

Whole Effluent Toxicity

Federal regulations at 40 CFR §122.44(d) (1) require NPDES permits to contain limits on whole effluent toxicity (WET) when a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a State's numeric or narrative water quality criteria for toxicity. In Idaho, the relevant water quality standards for toxicity states that surface waters of the State shall be free from toxic substances in concentrations that impair designated beneficial uses. Since Idaho does not have numeric water quality criteria for toxicity, the EPA Region 10 uses the Toxic Units (TU) approach for acute (0.3 TUa) and chronic criteria (1 TUc). The use of TU as a mechanism for quantifying instream toxicity when a State lacks numeric criteria is described in Sections 2 and 3 of the 1991 Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001) (TSD).

EPA conducted reasonable potential analysis using valid WET testing data from March, 2007, through August, 2014. Valid test results were analyzed using the procedures in Section 3 of the TSD. After review and analysis of the data, and consideration of the dilution allocation for WET (43:1), EPA has determined there is no reasonable potential to violate Idaho WQS for toxicity. As a result, the proposed permit will not contain effluent limitation for WET. WET monitoring will continue to be required. As a result, the proposed permit will not contain an effluent limitation for WET. WET monitoring will continue to be required. A WET trigger will also continue to be required to ensure the protection of Idaho's WQS for WET. The WET trigger will only be exceeded in the event toxicity exceeds the allowance provided for in the dilution allocation. A discussion of the data reviewed and the summary data used for the reasonable potential calculation are provided below.

Results of 2007—2014 WET Testing

The previous permit required the WWTP to perform bi-annual chronic toxicity tests on the water flea *Ceriodaphia dubia* and the fathead minnow, *Pimephales promelas*. Between August 2008 and April 2011 four WET tests indicated toxicity above the trigger level established in the prior permit (43 TU_c), however, the results from each of these tests were considered invalid for use in determining reasonable potential for the following reasons.

The August, 2008, WET test resulted in 182 TU_c. This test is considered anomalous and invalid. The only test concentration which produced a statistically significant difference in response (in reproduction) from the control was the 1.1% effluent concentration. Concentrations above and below 1.1% effluent (0.55, 2.2, 25, and 50%) showed no statistically significant difference in response from the control. In addition, the test did not meet test acceptability criteria for neonate husbandry, as outlined in the EPA WET testing methods manual (EPA-821-R-02-013, Section 13.10.2.3), which states, "neonates must be taken from adults in individual cultures that have eight or more young in their third or subsequent brood." The laboratory which performed the August 2008 test did not use neonates from the third brood, invalidating the test.

The July, 2010, WET test resulted in 91 TU_c. This test is considered invalid. The laboratory performing the July 2010 WET test did not test at the dilutions specified in the permit, the age/husbandry of the test organisms was questionable, and the dose-response curve was interrupted as with the August 2008 test, with considerable intra-treatment variability.

The March, 2011, test resulted in 182 TU_c. This test is considered invalid. The same issues occurred with improper test dilutions and questionable neonate husbandry as the August 2008 and July 2010 tests. In addition, the test was terminated prematurely and used neonates of questionable quality.

The April, 2011, test resulted in 182 TU_c. This test is considered invalid. The same issue occurred with improper test dilutions and questionable neonate husbandry. There was also an interrupted dose response curve, as well as substantial intra-treatment variability.

In June, 2011, the City of Lewiston hired a new contract laboratory to perform their WET testing. With the exception of one test conducted in August, 2011, all tests conducted by the new laboratory have been reviewed and are considered valid. It is these tests that were used in determining whether or not the facility has reasonable potential to cause or contribute to an excursion above Idaho's WQS for toxicity.

The highest WET testing results since June 2011 was 20 TU_c, and occurred in August of 2011 and 2014.

Using this value in the reasonable potential calculation (Section 3.5 of the TSD) indicated the effluent has no reasonable potential to cause or contribute to an excursion above WET criteria after dilution. The reasonable potential calculations used 15% of the 7Q10 and 10% of the 1Q10 for chronic and acute toxicity, respectively. The steps and calculations performed are summarized below:

Step 1: Determine the number of total observations ("n") for a particular data set, and determine the highest value from that data set.

There are 18 samples, and the maximum value of the sample results is $20TU_c$.

Step 2: Determine the coefficient of variation (CV) for the data set. The CV is calculated by dividing the standard deviation by the mean.

Mean TU_c	5.3
TU_c Standard Deviation	6.2
Sample Size (N)	18
CV	1.169

Step 3: Determine the appropriation reasonable potential multiplying factor (RPMF) from Table 3-2 of the TSD.

With 18 pieces of data and a CV of 1.169, the RPMF is 1.8.

Step 4: Calculate the chronic and acute maximum values. The maximum chronic value is the RPMF multiplied by the maximum TU_c. Since no acute tests were run, the acute maximum value is the chronic maximum value divided by 10.

$$\text{Chronic: } 20TUc \times 1.8 = 36TUc$$

$$\text{Acute: } 36TUc \div 10 = 3.6TUa,c$$

Step 5: Calculate the critical effluent value, or dilution allocation/ratio. The dilution allocation for acute and chronic toxicity is determined using the 1Q10 and 7Q10 low flow values of the receiving water, respectively, and the percentage of those flows authorized for dilution by Idaho DEQ. Pursuant to Idaho's WQS for mixing zones, a mixing zone may not use more than 25% of the low flow/volume of a receiving water for dilution. EPA assumed 15% of the 7Q10 and 10% of the 1Q10 would be authorized for dilution of chronic and acute toxicity, respectively. Using 15% of the 7Q10 (chronic) results in a dilution ratio of 43:1 for chronic toxicity. EPA believes these dilution allocations are protective values for acute and chronic toxicity, respectively, and consistent with Idaho's WQS for allocating dilution. If IDEQ determines a smaller or larger dilution allocation is appropriate EPA will revisit the reasonable potential calculations to incorporate those dilutions. Using 10% of the 1Q10 (acute) results in a dilution ratio of 27:1 for acute toxicity. These are the dilution ratios used to determine reasonable potential in Step 6, below.

Where:

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

D = Dilution Factor
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)= (5.7mgd)
Q_u = Receiving water low flow rate upstream of the discharge= (1Q10=1454.1mgd; 7Q10=1596.2mgd)
%MZ = Percent Mixing Zone (15% chronic; 10% acute)

$$Chronic\ D = \frac{5.7 + 1596.2 \times 0.15}{5.7} = 43$$

$$Acute\ D = \frac{5.7 + 1454.1 \times 0.10}{5.7} = 27$$

Chronic WET Dilution Ratio: 43:1

Acute WET Dilution Ratio: 27:1

Step 6: Determine RP. Chronic RP is calculated by dividing the chronic maximum value by the chronic dilution ratio (there is RP is the value is ≥1). Acute RP is calculated by dividing the acute maximum value by the acute dilution ratio (there is RP if the value is ≥0.3).

Chronic: $36TUc \div 43 = 0.84;\ 0.84 \leq 1 = No\ reasonable\ potential$

Acute: $3.6TUa, c\ \div 27 = 0.13;\ 0.13 \leq 0.3 = No\ reasonalbe\ potential$

Bi-annual chronic WET monitoring will continue to be included in the new permit. Rather than testing once every six months, as in the previous permit, the proposed new permit will require one test during the period from October 1 to June 30, and one test during the period from July 1 through September 30. EPA believes this testing regimen better reflects the dry (July 1—September 30) and wet (October 1—June 30) seasons in Lewiston than simply testing every six months. Toxicity triggers will also continue to be included in the new permit. Toxicity triggers will also continue to be included in the new permit to ensure Idaho's WQS for toxicity are protected in the event toxicity exceeds the value authorized by the dilution allocation. The toxicity trigger is determined by calculating the critical effluent concentration, which is provided in the mass balance equation below:

$C_d \times Q_d = (C_e \times Q_e) + (C_u \times Q_u)$

C_d = criterion not to be exceeded in the water body = 1 TU_C

Q_d = receiving water flow downstream of the effluent discharge = Qu + Qe = 1596.2+5.7=1601.9mgd

C_e = allowable effluent concentration (critical effluent concentration)

Q_e = maximum effluent flow = 5.7 mgd
Cu = upstream concentration of pollutant = 0
Qu = upstream flow = 7Q10=1596.2 mgd
MZ = 15% =0.15

When the above equation is solved for C_e, it becomes:

$$Ce = \frac{(Cd \times Qd) - (\mathrm{Cu} \times \mathrm{Qu})}{Qe} = \frac{\left(1 \times \left((1596.2 \times 0.15) + 5.7\right)\right) - (1596.2 \times 0.15 \times 0)}{5.7} = 43TUc$$

Using $43TU_C$ results in a receiving water concentrations of 2.3% effluent (100/43=2.3).

A chronic toxicity trigger of $43TU_C$ (corresponding to a receiving water concentration of 2.3% effluent) will be included in the proposed permit. Any test result above this value will result in increased testing and a potential TIE/TRE if necessary.

Appendix F: Essential Fish Habitat Assessment

Pursuant to the requirements for Essential Fish Habitat (EFH) assessments, this appendix contains the following information:

- Listing of EFH Species in the Facility Area
- Description of the Facility and Discharge Location
- The EPA's Evaluation of Potential Effects to EFH

A. Listing of EFH Species in the Facility Area

According to personal communication **(**email from David Mabe, National Marine Fisheries Service, to Ann La Duca, Tetra Tech Inc., May 9, 2014) received May 9, 2014 from NOAA Fisheries, the receiving water is a migrational corridor for chinook and sockeye salmon and steelhead trout. According to personal communication (email from Bryon Holt, U.S. Fish and Wildlife Service, to Ann La Duca, Tetra Tech Inc., June 4, 2014) received June 4, 2014 from the USFWS, bull trout are present in the Clearwater River in the vicinity of Lewiston, Idaho.

According to NOAA Fisheries, the receiving water is a migrational corridor for chinook and sockeye salmon and steelhead trout. Based on USFWS on June 4, 2014, bull trout are present in the Clearwater River in the vicinity of Lewiston, Idaho.

B. Description of the Facility and Discharge Location

The activities and sources of wastewater at the WWTP are described in detail in Part II and Appendix A of this fact sheet. The location of the outfall is described in Part III ("Receiving Water").

C. The EPA's Evaluation of Potential Effects to EFH

Water quality is an important component of aquatic life habitat. NPDES permits are developed to protect water quality in accordance with state water quality standards. The standards protect the beneficial uses of the waterbody, including all life stages of aquatic life. The development of permit limits for an NPDES discharger includes the basic elements of ecological risk analysis. The underlying technical process leading to NPDES permit requirements incorporates the following elements of risk analysis:

Effluent Characterization

Characterization of WWTP's effluent was accomplished using a variety of sources, including:

- Permit application monitoring
- Permit compliance monitoring
- Statistical evaluation of effluent variability
- Quality assurance plans and evaluations

Identification of Pollutants of Concern and Threshold Concentrations

The pollutants of concern include pollutants with aquatic life criteria in the Idaho Water Quality Standards. Threshold concentrations are equal to the numeric water quality criteria for the protection of aquatic life. No other pollutants of concern were identified by NMFS.

Exposure and Wasteload Allocation

Analysis of the transport of pollutants near the discharge point with respect to the following:

- Mixing zone policies in the Idaho Water Quality Standards
- Dilution modeling and analysis
- Exposure considerations (e.g., prevention of lethality to passing organisms)
- Consideration of multiple sources and background concentrations

Statistical Evaluation for Permit Limit Development

Calculation of permit limits using statistical procedures addressing the following:

- Effluent variability and non-continuous sampling
- Fate/transport variability
- Duration and frequency thresholds identified in the water quality criteria

Monitoring Programs

Development of monitoring requirements, including:

- Compliance monitoring of the effluent
- Ambient monitoring

Protection of Aquatic Life in NPDES Permitting

The EPA's approach to aquatic life protection is outlined in detail in the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, March 1991). The EPA and states evaluate toxicological information from a wide range of species and life stages in establishing water quality criteria for the protection of aquatic life.

The NPDES program evaluates a wide range of chemical constituents (as well as whole effluent toxicity testing results) to identify pollutants of concern with respect to the criteria values. When a facility discharges a pollutant at a level that has a "reasonable potential" to exceed, or to contribute to an exceedance of, the water quality criteria, permit limits are established to prevent exceedances of the criteria in the receiving water (outside any authorized mixing zone).

Effects Determination

Since the proposed permit has been developed to protect aquatic life species in the receiving water in accordance with the Idaho Water Quality Standards, the EPA has determined that issuance of this permit has NO EFFECT on any EFH in the vicinity of the discharge. The EPA will provide NMFS with copies of the draft permit and fact sheet during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to reissuance of this permit.

Appendix G: Reasonable Potential Analysis at State Line

Compliance with Washington State's Water Quality Standards
Downstream from the facility, the receiving water in the Clearwater River in Idaho enters the Snake River near the WA-ID state line. For the downstream waterbody, Washington State's designated uses and surface water quality criteria can be found in Appendix A. The EPA concluded that the discharge from the facility would not violate Washington State's WQS at the WA-ID state line boundary. This is because EPA determined that the facility's discharge had no reasonable potential to violate Idaho's WQS; in addition, the Snake River flow rate at the State boundary is 5.5 times higher than at the Clearwater River where the outfall discharges. To arrive at this conclusion, EPA estimated the flow rate of the Snake River at the state boundary by adding the low flows from the Clearwater River with the low flows from the Snake River upstream of the Snake-Clearwater River confluence; and, calculated the reasonable potential to exceed Washington's WQS at the state line. These calculations are shown below:

The EPA combined the flows from the Clearwater River (USGS Gauge: near Spalding) with the flows in Snake River from the Idaho side (USGS Gauge: McDuff Rapids near China Gardens), to estimate the flow of the Snake River on the Washington border:

7Q10 - Clearwater River at Spalding = 2,470 cfs;
7Q10 - Snake River at McDuff Rapids near China Gardens = 11,200 cfs
Analysis:
Combined Snake River (WA) 7Q10 = 2,470 cfs + 11,200 cfs = 13,670 cfs
Combined Snake River (WA) 7Q10 is 5.53 times more flow than the 7Q10 on the Clearwater River.
Contribution from Clearwater River (ID) = 18% of combined flow at the state line

Analysis and Conclusion: The Clearwater River is a tributary of the Snake River. The Clearwater River also contributes a significantly smaller water volume compared with the Snake River on the Washington side of the border. The calculations show that flow contribution from the Clearwater River approximates 18% of the Snake River at the state line.

Idaho WQS are not identical to Washington WQS, but have close similarity for the parameters of concern. Since there is no Reasonable Potential to violate Idaho WQS based on the much smaller flows in the Clearwater River, there is also no reasonable potential to violate Washington's WQS at the state line when the flow in the Snake River is 5.5 times the flow of the Clearwater River. To show numerically that there is no reasonable potential to violate Washington's WQS, EPA projected the concentration of pollutants of concern from the outfall at the state-line, and compared those projected concentrations to Washington State's Acute and Chronic criteria. EPA concluded that there is no potential to violate Washington's WQS as shown below, Analysis of Downstream Impacts. Therefore, the impact from the discharge from the City also complies with Washington WQS in Washington State.

Table G1: Calculation of Corresponding Washington State Water Quality Criteria

Facility	Lewiston WWTP, Idaho
Water Body Type	Freshwater
Rec. Water Hardness	10 mg/L

Aquatic Life	40	388
Human Health Carcinogenic		1
Human Health Non-Carcinogenic		1

Pollutant, CAS No. & NPDES Application Ref. No.			AMMONIA, Criteria as Total NH3	ARSENIC (dissolved) 7440382 2M	ARSENIC (inorganic)	CADMIUM - 7440439 4M Hardness dependent	CHROMIUM(TRI) -16065831 5M Hardness dependent	COPPER - 744058 6M Hardness dependent	CYANIDE 57125 14M	LEAD - 7439921 7M Dependent on hardness	MERCURY 7439976 8M	NICKEL - 7440020 9M - Dependent on hardness	SILVER - 7740224 11M dependent on hardness.
Effluent Data	# of Samples (n)												
	Coeff of Variation (Cv)		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)												
	Calculated 50th percentile Effluent Conc. (when n>10)												
Receiving Water Data	90th Percentile Conc., ug/L												
	Geo Mean, ug/L												
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	9,006	360	-	0.30387	83.24634	1.943856	22	4.90532	2.1	201.781	0.06574
		Chronic	1,836	190	-	0.18699	27.00425	1.586828	5.2	0.19115	0.012	22.4094	-
	WQ Criteria for Protection of Human Health, ug/L		-	-	0.018	-	-	1300	700	-	0.14	610	-
	Metal Criteria Translator, decimal	Acute	-	1	-	0.943	0.316	0.996	-	0.466	0.85	0.998	0.85
		Chronic	-	1	-	0.943	0.86	0.996	-	0.466	-	0.997	-
	Carcinogen?		N	Y	Y	N	N	N	N	N	N	N	N

Pollutant, CAS No. & NPDES Application Ref. No.			ZINC- 7440666 13M hardness dependent
Effluent Data	# of Samples (n)		
	Coeff of Variation (Cv)		0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)		
	Calculated 50th percentile Effluent Conc. (when n>10)		
Receiving Water Data	90th Percentile Conc., ug/L		
	Geo Mean, ug/L		
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	16.2669
		Chronic	14.8542
	WQ Criteria for Protection of Human Health, ug/L		-
	Metal Criteria Translator, decimal	Acute	0.996
		Chronic	0.996
	Carcinogen?		N

Table G2: Reasonable Potential Based On Washington Water Quality Criteria at State Line

Analysis for Downstream Impacts										
Clearwater River	7Q10 (cfs)	2470								
Snake River	7Q10 (cfs)	11200								
Ratio		5.53								
assumes negligible concentration of pollutants in Snake River, and 25% of Clearwater River flow for mixing										
	Idaho	**Idaho**	**Idaho**	**Idaho**	**ID-WA**	**ID-WA**	**Washington**	**Washington**		
	Water Quality Criterion	**Water Quality Criterion**	**Concentration at edge of MZ**	**Concentration at edge of MZ**	**Concentration State Line**	**Concentration State Line**	**Water Quality Criterion**	**Water Quality Criterion**	**RPA at State Line**	**RPA at State Line**
Pollutants of Concern	**Acute**	**Chronic**	**Acute**	**Chronic**	**Acute**	**Chronic**	**Acute**	**Chronic**	**Acute**	**Chronic**
AMMONIA	9005.54	3048.23	354.97	313.94	64.138	56.725	9006.00	1836.00	No	No
ARSENIC (dissolved)	340.00	150.00	0.06	0.05	0.011	0.010	360.00	190.00	No	No
CADMIUM	0.42	0.25	0.01	0.01	0.002	0.002	0.30	0.19	No	No
CHLORINE (TRC)	19.00	11.00	19.00	11.00	3.433	1.988	19.00	11.00	No	No
CHROMIUM(TRI)	183.07	23.81	1.99	2.03	0.360	0.366	83.25	27.00	No	No
COPPER	4.61	3.47	3.32	3.29	0.599	0.594	1.94	1.59	No	No
CYANIDE	22.00	5.20	1.11	1.01	0.200	0.183	22.00	5.20	No	No
LEAD	13.88	0.54	0.08	0.08	0.015	0.014	4.91	0.19	No	No
MERCURY	2.10	0.01	0.00	0.00	0.000	0.000	2.10	0.01	No	No
METHYLMERCURY			--	--			na	na	No	No
NICKEL	144.92	16.10	1.75	1.74	0.316	0.314	201.78	22.41	No	No
SILVER	0.32		0.07	--	0.012		0.07		No	No
ZINC	36.20	36.50	12.47	12.42	2.253	2.244	16.27	14.85	No	No

Appendix H: Draft Clean Water Act Section 401 Certification

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1118 F Street • Lewiston, Idaho 83501 • (208) 799-4370
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
Curt Fransen, Director

June 18, 2015

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

Subject: DRAFT 401 Water Quality Certification for the City of Lewiston Wastewater Treatment Facility, ID0022055

Dear Mr. Lidgard:

The Lewiston Regional Office of the Department of Environmental Quality (DEQ) has reviewed the above-referenced permit for the City of Lewiston Wastewater Treatment Facility. 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, the 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) 799-4370 to discuss any questions or concerns regarding the content of this certification.

Sincerely,

John Cardwell
Regional Administrator
Lewiston Regional Office

c: Kai Shum, EPA Region 10
Stephen Berry, DEQ State Office

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

June 18, 2015

NPDES Permit Number(s): City of Lewiston Wastewater Treatment Facility, ID0022055

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

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

Pollutants of Concern

The City of Lewiston Wastewater Treatment Facility discharges the following pollutants of concern: biochemical oxygen demand (BOD_5), total suspended solids (TSS), *Escherichia coli* (*E. coli*), total residual chlorine, pH, total ammonia, total phosphorus, dissolved oxygen, total Kjeldahl nitrogen, nitrate plus nitrite, and temperature. Effluent limits have been developed for biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli*, total residual chlorine, and pH. No effluent limits are proposed for total ammonia, total phosphorus, dissolved oxygen, total Kjeldahl nitrogen, nitrate plus nitrite, and temperature.

Receiving Water Body Level of Protection

The City of Lewiston Wastewater Treatment Facility discharges to the Clearwater River within the Clearwater Subbasin assessment unit (AU) ID17060306CL001_07 (Lower Granite Dam pool). This AU has the following designated beneficial uses: cold water aquatic life, primary contact recreation and domestic water supply. In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

According to DEQ's 2012 Integrated Report, this receiving water body AU is fully supporting the cold water aquatic life and primary contact recreation designated beneficial uses (IDAPA 58.01.02.052.05.a). As such, DEQ will provide Tier 2 protection in addition to Tier 1 for this water body (IDAPA 58.01.02.051.02; 58.01.02.051.01).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

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

Table 1. Comparison of current and proposed permit limits for pollutants of concern relevant to uses receiving Tier 2 protection.

Pollutant	Units	Current Permit			Proposed Permit			Change[a]
		Average Monthly Limit	Average Weekly Limit	Single Sample Limit	Average Monthly Limit	Average Weekly Limit	Single Sample Limit	
Pollutants with limits in both the current and proposed permit								
BOD_5	mg/L	30	45	—	30	45	—	NC
	lb/day	1430	2145	—	1430	2145	—	
	% removal	—	—	—	85%	—	—	
TSS	mg/L	30	45	—	30	45	—	NC
	lb/day	1430	2145	—	1430	2145	—	
	% removal	—	—	—	85%	—	—	
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
Fecal coliform[b]	no./100 mL	—	200	—	—	—	—	—
Total Residual Chlorine (final)	µg/L	340	—	700	340	—	700	NC
	lb/day	14.29	—	33.33	14.29	—	33.33	
Pollutants with no limits in both the current and proposed permit								
Total Ammonia	mg/L	—	—	—	Report	—	Report	NC
	lbs/day							
Total Phosphorus	mg/L	—	—	—	Report	—	Report	NC
	lbs/day							
Dissolved Oxygen	mg/L	—	—	—	Report	—	Report	NC
Total Kjeldahl Nitrogen	mg/L	—	—	—	Report	—	Report	
Nitrate + Nitrite	mg/L	—	—	—	Report	—	Report	NC
Temperature	°C	—	—	—	—	Report	Report	NC

[a] NC = no change, I = increase, D = decrease.
[b] DEQ is requesting that EPA remove the fecal coliform limits. See discussion below.

The existing permit for the City of Lewiston Wastewater Treatment Facility contains effluent limits for fecal coliform and *E. coli*. In 1986, EPA updated its criteria to protect recreational use of water by recommending an *E. coli* criterion as a better indicator of the pathogenic bacteria at levels that may cause gastrointestinal distress in swimmers. In 2000, DEQ changed its bacteria criterion from fecal coliform to *E. coli.* The *E. coli* limits are in the existing permit to reflect the bacteria criterion that DEQ adopted to protect the contact recreation beneficial use (IDAPA 58.01.02.251.01).

The fecal coliform limit is in the current permit because the permit was issued before the Idaho WQS established a disinfection requirement for sewage wastewater treatment plant effluent. The Idaho WQS were revised in 2002 to reflect the change in the bacteria criterion from fecal coliform to *E. coli* for the disinfection requirement. The current *E. coli* limits are as or more protective of water quality than the former fecal coliform limit. Omission of the fecal coliform limit from the permit will not cause or contribute to a violation of Idaho's WQS criteria. The proposed final permit contains *E. coli* effluent limits that comply with current numeric "end-of-pipe" criteria. Thus, removal of the fecal coliform limits complies with both the Tier 1 and Tier 2 components of Idaho's antidegradation policy.

The proposed permit limits for other pollutants of concern that have limits in Table 1, biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli*, total residual chlorine, and pH, are the same as, or more stringent than, those in the current permit ("NC" or

High-Quality Waters (Tier 2 Protection)

The Clearwater River is considered high quality for the cold water aquatic life and contact recreation. As such, the water quality relevant to the cold water aquatic life and contact recreation uses of the Clearwater 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 the cold water aquatic life and contact recreation uses of the Clearwater River (IDAPA 58.01.02.052.05). The pollutants relevant to the aquatic life use include the following: biochemical oxygen demand (BOD_5), total suspended solids (TSS), total residual chlorine, pH, total ammonia, total phosphorus, dissolved oxygen, total Kjeldahl nitrogen, nitrate plus nitrite, and temperature. Effluent limits are set in the proposed and existing permit for all these pollutants except total ammonia, total phosphorus, dissolved oxygen, total Kjeldahl nitrogen, nitrate plus nitrite, and temperature. *E. coli* bacteria is the only pollutant relevant to the contact recreation beneficial use

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 Lewiston Wastewater Treatment Facility permit, this means determining the permit's effect on water quality based upon the limits for biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli*, total residual chlorine 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.

"D" in change column). Therefore, no adverse change in water quality and no degradation will result from the discharge of these pollutants.

Pollutants with No Limits

The pollutants of concern with no limits are total ammonia, total phosphorus, dissolved oxygen, total Kjeldahl nitrogen, nitrate plus nitrite, and temperature and may be relevant to Tier 2 protection of aquatic life and recreation beneficial uses (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 total ammonia, total phosphorus, dissolved oxygen, total Kjeldahl nitrogen, nitrate plus nitrite, and temperature, 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 the fact that there have been no changes in the design flow, influent quality, or treatment processes that would likely result in an increased discharge of these pollutants. 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 the Clearwater River.

In sum, DEQ concludes that this discharge permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.08).

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

Mixing Zones

The Lewiston WWTF uses chlorine disinfection only as a backup for the ultraviolet disinfection system. No chlorine has been used for disinfection at the WWTF since 1998, and no chlorine was used for disinfection during the last permit cycle. However, in the event there is a failure with the ultraviolet disinfection system and chlorine disinfection needs to be used, DEQ authorizes a mixing zone that utilizes 25% of the critical flow volumes of the Clearwater River for chlorine (IDAPA 58.01.02.060).

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 Sujata Connell, Lewiston Regional Office at 208-799-4370 or Sujata.Connell@deq.idaho.gov.

DRAFT

John Cardwell
Regional Administrator
Lewiston Regional Office