Fact Sheet

The United States (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:

The City of Grace
Wastewater Treatment Plant

Public Comment Start Date: June 13, 2014
Public Comment Expiration Date: July 14, 2014

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

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

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

Idaho Department of Environmental Quality
444 Hospital Way #300
Pocatello, Idaho 83201
(208) 236-6160
Toll free: (888) 655-6160

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 Idaho, 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

Idaho Department of Environmental Quality
444 Hospital Way #300
Pocatello, Idaho 83201
(208) 236-6160
Toll free: (888) 655-6160

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
AML	Average Monthly Limit
AWL	Average Weekly Limit
BE	Biological Evaluation
BOD_5	Biochemical oxygen demand, five-day
BOD_{5u}	Biochemical oxygen demand, ultimate
BPT	Best Practicable
°C	Degrees Celsius
C BOD_5	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
gpd	Gallons per day
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
IDAPA	Idaho Administrative Procedure Act
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow

LA	Load Allocation
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TB	Total Phosphorus
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
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
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 Grace, Idaho
Wastewater Treatment Plant
NPDES Permit #ID0023825

Physical Address:
385 North 5th Street
Grace, ID 83241

Mailing Address:
P.O. Box 288
Grace, ID 83241

Contact:
Wayne Bredehoft, City Superintendent (208) 221-7142

B. Permit History

The most recent NPDES permit for the City of Grace Wastewater Treatment Plant (WWTP) was issued on January 29, 2004, became effective on February 1, 2004, and expired on January 31, 2009. An NPDES application for permit issuance was submitted by the permittee on July 30, 2008. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively extended and remains fully effective and enforceable.

II. Facility Information

A. Treatment Plant Description

The City of Grace owns, operates, and maintains the Grace WWTP located in Grace, Idaho. The secondary treatment plant discharges treated municipal wastewater into the Grace Dam Impoundment on the Bear River Reservoir. The treatment consists of an oxidation ditch and disinfection by chlorination for the effluent. The collection system has no combined sewers. The facility serves a resident population of 990. The design flow of the facility is 0.435 million gallons per day (mgd).

Recent actual flow data

	2010	**2011**	**2012**	**2013**
Annual average daily flow rate	0.06 mgd	0.06.mgd	0.07 mgd	0.06 mgd
Maximum daily flow rate	0.15 mgd	0.15 mgd	0.13 mgd	0.14 mgd

Flow enters the plant from the City of Grace's collection system at the headworks through a Parshall flume influent flow meter. The influent is sampled and flows through a sewage grinder. Screw pumps lift the wastewater to the oxidation ditch.

After aerobic treatment in the oxidation ditch, the flow is transferred to the clarifiers. Overflow from the clarifiers flows to the chlorine contact basin and is injected with chlorine for disinfection. The treated wastewater then flows to the effluent pump station where it is pumped to the Bear River Reservoir outfall.

Underflow from the clarifiers flows to the sludge return structure. Return activated sludge flows to the headworks where it mixes with the influent. Waste activated sludge is diverted to the sludge pumping station where it is pumped to the sludge bagging facility. Filtrate from the dewatering process is returned to the headworks. After dewatering, the bags with dewatered sludge are hauled to the Caribou County landfill for disposal. If necessary, the bags are temporarily stored in the sludge drying beds before being hauled to the landfill. The sludge drying beds are also occasionally used to store solids or wastewater during upset conditions.

Flow diagrams and maps showing the location of the treatment facility and discharge are included in Appendix A.

B. Outfall Description

The outfall pipe is submerged under the receiving water in the Grace Dam Impoundment on the Bear River Reservoir. The pipe was designed to be submerged for the June 19, 1980 reservoir water level. The diameter of the outfall pipe is 10 inches at the outfall. There is no diffuser on the pipe. The outfall pipe is upturned at a 90 degree elbow.

C. Compliance History

The City of Grace's previous permit became effective on February 1, 2004, and expired on January 31, 2009. The permit was administratively extended until reissuance.

The EPA reviewed the discharge monitoring report (DMR) data for the duration of the permit from the issuance date until November 2012.

Overall, the City of Grace had a good compliance record. There were discharge violations on two dates. Compliance records show that on 3/31/2012, there were violations for both the monthly average and weekly average of total residual chlorine. On 5/31/2011, there was a violation of the E. coli limit (Monthly Geo Mean).

III. Receiving Water

This facility discharges to the Grace Dam impoundment on the Bear River Reservoir in the Bear River Basin watershed. The State Management/River Basin is the Middle Bear River Basin and the United States Geological Survey 8-digit hydrologic unit code (HUC) is #16010202. The outfall is located in the City of Grace in Caribou County, Idaho, at the Latitude of 42.5883 and the Longitude of 111.7289 decimal degrees.

A. Low Flow Conditions

The low flow conditions of a water body are used to assess the need for and develop water quality-based effluent limits. The receiving water is Grace Dam which is a controlled water system operated by PacifiCorp. The EPA used 65 CFS as the low flow for 1Q10, 7Q10, and

30Q10, because PacifiCorp is required to maintain a minimum flow of 65 CFS of water, according to their license from the Federal Energy Regulatory Commission.

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 to the receiving water, the EPA must account for the amount of the pollutant already present in the receiving water. In situations where some of the pollutant is 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.

Table 1 summarizes the receiving water data used to evaluate the need for and develop water quality based effluent limits. See Appendix B for additional information on the receiving water quality.

Table 1: Receiving Water Quality Data

Parameter	Units	Percentile	Value	Source
Temperature	Celsius	95th	20.1	IDEQ
pH	Standard Unit	95th	8.3	IDEQ
Ammonia	mg/L	Maximum	0.09	IDEQ
Dissolved Oxygen	mg/L	Minimum	3.16	IDEQ
Source: IDEQ Tri-State monitoring data for Hacks Hole (2006 -2013) & IDEQ Upstream data from Grace (2004 – 2009)				

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 Grace Dam Impoundment on the Bear River Reservoir in the Bear River Basin watershed. (HUC 16010202). At the point of discharge, the Bear River is protected for the following designated uses (Idaho Administrative Procedure Act, IDAPA 58.01.02.160.):

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

In addition, Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats, and aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

Surface Water Quality Criteria

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

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

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

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

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

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

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

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft Clean Water Act 401 certification for this permit. See Appendix G for the State's draft 401 water quality certification. The EPA has reviewed this antidegradation review and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification including the antidegradation review can 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 2010 Integrated Report lists the Bear River Reservoir, from Alexander Reservoir Dam to Densmore Creek, as impaired for Total Phosphorus and Total Suspended Solids.

Total Suspended Solids

The 2006 TMDL established a WLA for TSS of 1409 kg/year (see table 1-3 of 2006 TMDL). The 2013 TMDL Addendum did not change the TSS Waste Load Allocation.

Total Phosphorus

In February of 2013 the IDEQ, Pocatello Regional Office revised the report on the Bear River Basin Total Maximum Daily Load. This report is called "The Bear River Basin Addendum to the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204" (*2013 TMDL Addendum*).

On September 13, 2013, the EPA approved the 2013 TMDL Addendum, The *2013 TMDL Addendum* was developed to address the water bodies in the Bear River Basin that are on Idaho's §303(d) list and that were not addressed in the original Bear River Basin TMDL approved in June 2006. Additionally, it included an evaluation of current main stem Bear River water quality and included revised wasteload allocations for the six municipal point source dischargers in the Basin, including the City of Grace WWTP. As part of the state review, the current (generally the past 5 years) available data from discharge monitoring reports (DMRs), the Tri-State Water Quality Monitoring program, and municipalities were analyzed in order to revise wasteload allocations. Based on Bear and Cub River data, the water bodies are generally meeting TMDL Total Phosphorus (TP) targets. Wastewater treatment plant discharges to these water bodies are not presently impacting water quality to an extent that reductions are required. Present wasteloads from Grace's wastewater treatment plant were recommended as target wasteload allocations.

Grace WWTP – Growing season TP loads at Grace indicate the TP target is being met downstream of the WWTP under the present discharge regime. Therefore, the *2013 TMDL Addendum* established a TP WLA for the Grace WWTP at current levels. Future growth must be accommodated by improvements to the WWTP, with concentration reductions maintaining this TP load. The WLA for the Grace WWTP is 2.36 pounds per day (lbs/day) expressed as an annual average (see Page 29 and Table 26 of the *2013 TMDL*). The EPA will use 2.36 lbs/day to represent the annual average in developing the effluent limits for the Grace WWTP.

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 Appendices C, D, and E.

Proposed Effluent Limitations

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

1. 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.
2. Removal Requirements for BOD_5 and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, 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. Influent and effluent samples must be taken over approximately the same time period.
3. pH: pH must be within the range of 6.5 – 9.0 standard units.

Table 1 below presents the proposed numeric effluent limits for BOD_5, TSS, *E. coli*, and chlorine, phosphorus and ammonia.

Table 1: Proposed Effluent Limits

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	-
	lb/day	109	163	-
BOD_5 Removal	percent	85 % minimum		-
Total Suspended Solids (TSS)	mg/L	30	45	-
	lb/day	32.1	48.2	-
TSS Removal	percent	85 % minimum	-	-
E. coli	#/100 ml	126 (geometric mean)	-	406
Total Residual Chlorine[1]	µg/L	163	-	473
	lb/day	0.598	-	1.74
Total Phosphorus as TP	lb/day	5.77	8.66	
Total Ammonia (as N)	mg/L	32.0	-	71.4
	lb/day	118	-	262

A. Comparing Effluent Limits in the Previous Permit to the Draft Permit

Table 2 illustrates the changes in effluent limits from the existing permit.

Table 2. Comparing Permit Effluent Limits

Parameter	Existing Permit	Draft Permit
Five-Day BOD	30 /45 mg/L	No change
Five-Day BOD	109/ 163 lbs/day	No change
BOD Removal	85 % minimum	No change
TSS Removal	85 % minimum	No change
TSS	30/45 mg/L	No change
TSS	109/163 lbs/day	32.1/48.2 lbs/day – based on TMDL IDEQ 2006
E.coli	126/406	No change
Total Residual Chlorine	500/750 ug/L	163/473 ug/L – based on TSD
Total Phosphorus as TP	No limits, monitoring	5.77/8.66 lbs/day – based on TMDL IDEQ 2011
Total Ammonia as N	No limits, monitoring	32.0/71.4 mg/L and 118/262 lbs/day – based on TSD

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permit also requires the permittee to perform effluent monitoring required by parts B.6 of the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) and 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 3, below, presents the proposed effluent monitoring requirements for the City of Grace. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge.

If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR. Monitoring frequencies for all parameters are the same as the previous permit.

Table 3: Effluent Monitoring Requirements				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow	Mgd	Effluent	Continuous	recording
BOD_5	mg/L	Influent & Effluent[3]	1/month	8-hour composite
	lb/day			calculation[1]
	% Removal	--	--	calculation[2]
TSS	mg/L	Influent & Effluent[3]	1/month	8-hour composite
	lb/day			calculation[1]
	% Removal	--	--	calculation[2]
pH	standard units	Effluent	1/week	grab
E. Coli	#/100 ml	Effluent	5/month	grab
Total Residual Chlorine	µg/L	Effluent	1/week	grab
	lb/day	Effluent		calculation[1]
Total Ammonia as N	mg/L	Effluent	1/month	8-hour composite
	lb/day	Effluent		calculation[1]
	lb/day	Effluent		calculation[1]
Total Phosphorus	mg/L	Effluent	1/month	8-hour composite
NPDES Permit Application Form 2A Effluent Testing – Part B.6	---	Effluent	3x/4.5 years	---

Notes:
1. Loading is calculated by multiplying the concentration in mg/L by the flow in mgd and a conversion factor of 8.34.
2. 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, i.e.:.
   (average monthly influent – average monthly effluent) ÷ average monthly influent.
3. Influent and effluent samples must be taken over approximately the same time period.

Monitoring Changes from the Previous Permit

Monitoring frequencies for certain parameters have been revised, relative to the previous permit. Table 4, below, summarizes the changes in monitoring frequency.

Table 4: Changes in Effluent Monitoring Requirement

Parameter	Existing Permit	Draft
Total Phosphorus (TP)	1/month starting in January 2006 and lasting for one year.	1/month for the duration of the permit.
Total Ammonia as N	1/month starting in January 2006 and lasting for one year.	1/month for the duration of the permit.

Total Phosphorus and Total Ammonia will continue to be monitored once per month, but the limitation to 12 samples is removed in the draft permit. Having data for the entire duration of the

permit is necessary to determine compliance with effluent limits for Total Phosphorus and Total Ammonia. These data will also aid in data analysis at the time of the next permit reissuance.

C. Surface Water Monitoring

Table 5 presents the proposed surface water monitoring requirements for the draft permit. The Permittee must establish a monitoring station in Grace Dam impoundment on the Bear River Reservoir upstream of the facility's discharge. In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant. In addition, surface water monitoring may be required for pollutants on which the water quality criteria are dependent, and to collect data for TMDL development if the facility discharges to an impaired water body. Surface water monitoring results must be submitted with the DMR.

In the previous permit, surface water monitoring was required for 4 years. In this permit, surface water monitoring will continue for the duration of the permit. Previously, temperature, pH, Total Ammonia and Total Phosphorus were sampled. In this permit, flow, total Ammonia, Total Phosphorus, Temperature and pH monitoring will be required.

Table 5 Surface Water Monitoring Requirements

Parameter	Units	Frequency[1]	Sample Type
Flow	mgd	Quarterly	Recording
Total Ammonia as N	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab
Temperature	°C	Quarterly	Grab
pH	standard units	Quarterly	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.

D. Monitoring and Reporting

The draft permit includes new provisions to allow the permittee the option to submit DMR data electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR 122.41 and 403.12. The permittee may use NetDMR after requesting and receiving permission from the EPA Region 10.

Under NetDMR, all reports required under the permit are submitted to the 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 the EPA and IDEQ.

The EPA encourages permittees to sign up for NetDMR, and 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.

VI. Sludge (Biosolids) Requirements

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

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

VII. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The City of Grace is required to update the Quality Assurance Plan for the City of Grace within 180 days of the effective date of the final permit. The Quality Assurance Plan must include standard operating procedures the permittee will follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the IDEQ upon request.

B. Operation and Maintenance Plan

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

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

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

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

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

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

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

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

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

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

D. Environmental Justice

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

overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/ .

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

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

Regardless of whether a WWTP is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

E. Design Criteria

The permit includes design criteria requirements. This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds 85% of the design criteria values for three consecutive months.

F. Industrial Waste Management Requirements

EPA implements and enforces the National Pretreatment Program regulations of 40 CFR 403, per authority from sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b, 405, and 501(a) of the Federal Water Pollutant Control Act as amended by the CWA of 1977. Because Idaho does not have an approved state pretreatment program per 40 CFR 403.10, EPA is the Approval Authority for Idaho POTWs. Because the City of Grace does not have an approved POTW pretreatment program per 40 CFR 403.8, the EPA is also the Control Authority of industrial users that might introduce pollutants into the Grace WWTP.

Per 40 CFR 122.44(j)(1), all POTWs need to identify, in terms of character and volume of pollutants, any significant industrial users (SIUs) discharging into the POTW. This condition is included as Special Condition D.1 of the draft permit with a due date 180 days following the effective date of the POTW permit.

Since the City of Grace does not have an approved pretreatment program, Special Condition D.2 of the permit reminds the City that it cannot authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program, which are applicable to all industrial users introducing pollutants into a publicly owned treatment works (40 CFR 403.5(b)).

Consequently, Special Condition D.6 requires that the Permittee to develop legal authority enforceable in Federal, State or local courts which authorizes or enables the POTW to apply and to enforce the requirement of sections 307 (b) and (c) and 402(b)(8) of the Clean Water Act, as described in 40 CFR 403.8(f)(1). The draft legal authority shall be submitted to EPA for review and comment, and then shall be adopted and enforced by the POTW.

G. Standard Permit Provisions

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

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. A review of the threatened and endangered species located in Idaho finds that there are no threatened and endangered aquatic species listed for Caribou County. The EPA has determined that the issuance of this draft permit will have no effect on threatened or endangered species. Therefore, consultation is not required for this action.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). A review of the Essential Fish Habitat map shows that the discharge from the City of Grace will not likely affect any EFH species in the vicinity of the discharge; therefore, the issuance of this permit will have no effect on EFH.

C. State Certification

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

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.* U.S. Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

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

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

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

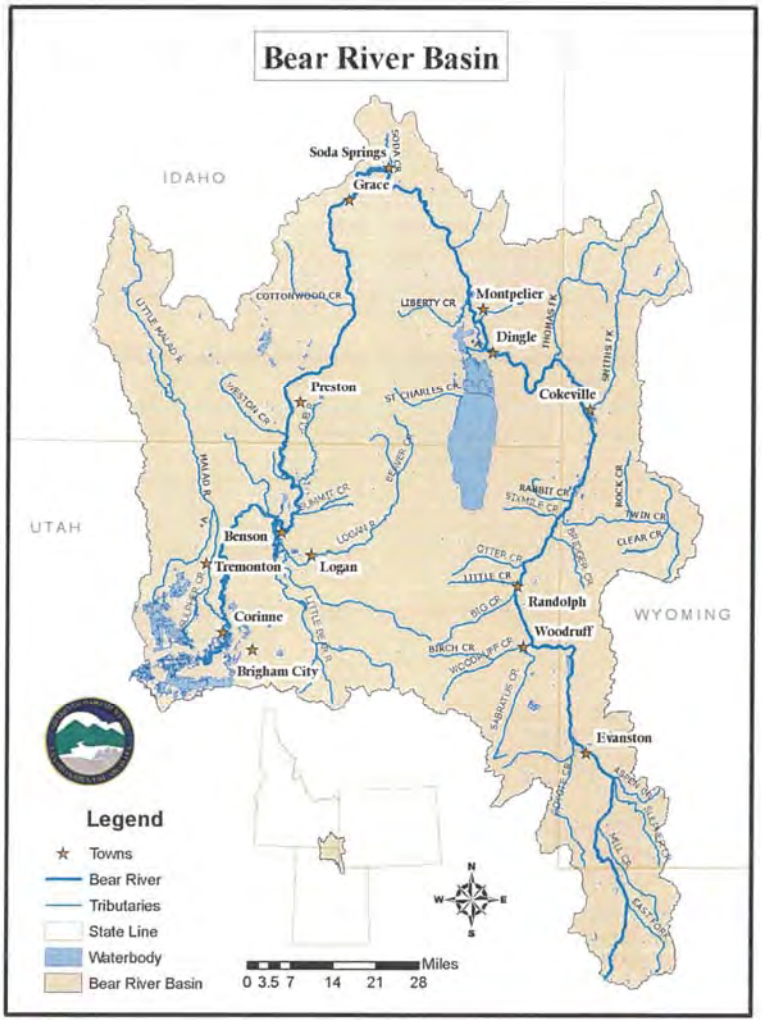
Idaho Department of Environment Quality. August of 2011. 2010 Integrated Report.

Idaho Department of Environmental Quality. July 2011, revised February 2013, Bear River Basin Addendum to the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201,16010202, 16010204.

Appendix A: Facility Information

General Information	
NPDES ID Number:	ID0023825
Physical Address:	385 North 5th Street Grace, ID 83241
Mailing Address:	P.O. Box 288 Grace, Idaho 83241
Facility Background:	The most recent NPDES permit for this facility was issued on January 29, 2004, became effective on February 1, 2004, and expired on January 31, 2009. An NPDES application for permit reissuance was submitted by the permittee on July 30, 2008. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively extended and remains fully effective and enforceable.
Facility Information	
Type of Facility:	Wastewater Treatment Plant (WWTP)
Treatment Train:	The secondary treatment plant discharges treated municipal wastewater into the Grace Dam impoundment on the Bear River Reservoir. The treatment consists of an oxidation ditch and disinfection by chlorination for the effluent. The collection system has no combined sewers. The facility serves a resident population of 990.
Flow:	Design flow is 0.435 mgd
Outfall Location:	Latitude of 42.5883 and Longitude of 111.7289
Receiving Water Information	
Receiving Water:	Grace Dam impoundment on the Bear River Reservoir
Watershed:	Bear River Basin watershed (HUC # 16010202)
Beneficial Uses:	Cold water aquatic life, primary contact recreation, salmonid spawning

Maps and Diagram for the City of Grace



Source: IDEQ TMDL document for Bear River Basin, Addendum July 2011, Revised February 2013.

LEGEND

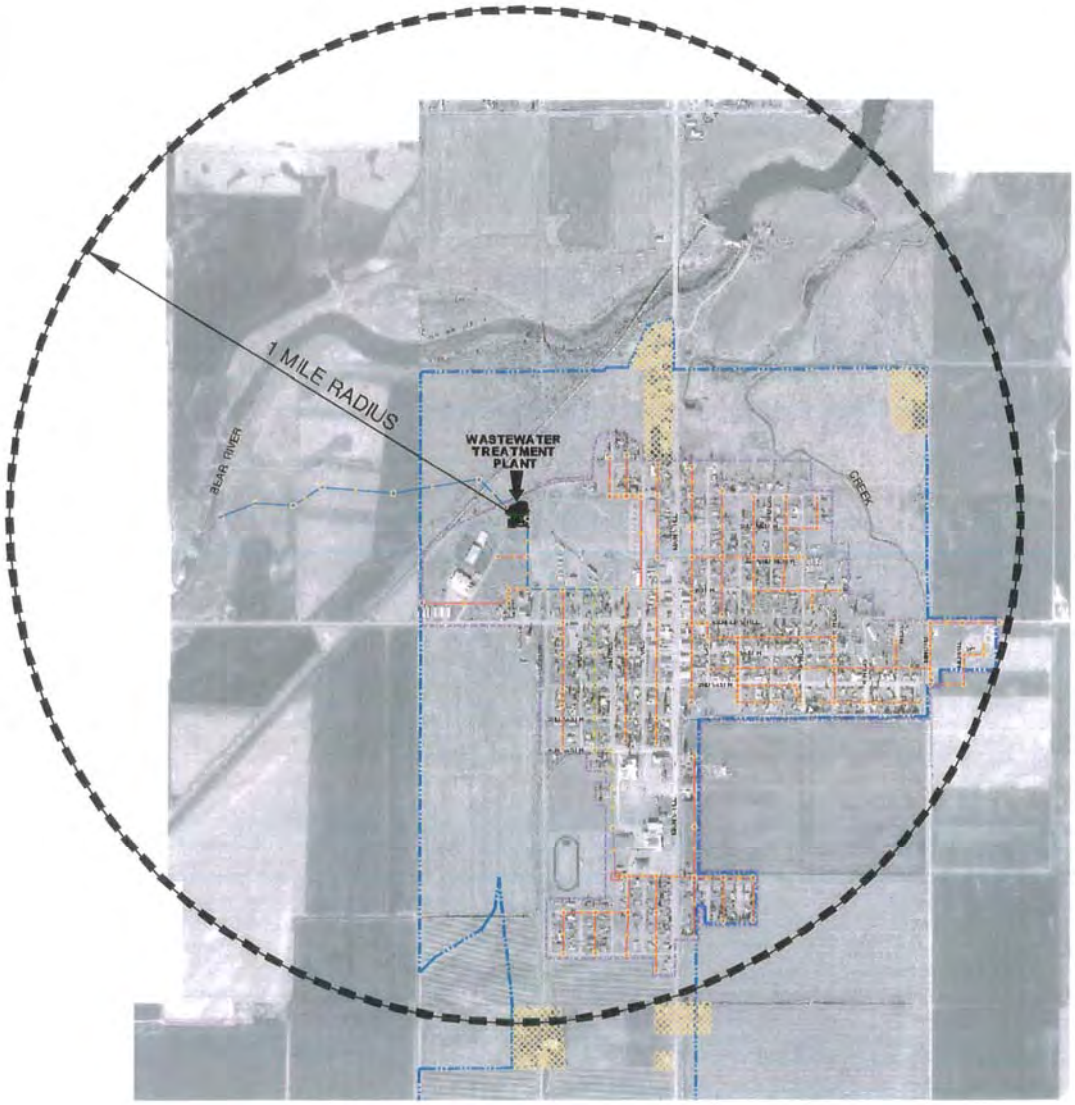
N

0 200 400
SCALE: 1" =400'

8"
10"
12"
15"
MANHOLE

FLOW ARROW
CURRENT SEWER SERVICE AREA
CITY LIMITS
AREA SERVED BY SEPTIC SYSTEMS

SHEET	DATE: 7-28-08 SCALE: AS SHOWN	WASTEWATER SYSTEM CITY OF GRACE VICINITY MAP FOR WWTP (1/4 MILE RADIUS)		J-U-B ENGINEERS, Inc. 275 S. 5th Avenue, Suite 220 Pocatello, Idaho 83201	JUB



LEGEND

8" — FLOW ARROW

10" — CURRENT SEWER SERVICE AREA

12" — CITY LIMITS

15" — AREA SERVED BY SEPTIC SYSTEMS

MANHOLE

N

0 750 1500

SCALE: 1"=1500'

SHEET

DATE: 7-28-08

SCALE: AS SHOWN

WASTEWATER SYSTEM
CITY OF GRACE

VICINITY MAP FOR WWTP (1 MILE RADIUS)

J-U-B ENGINEERS, Inc.
275 S. 5th Avenue, Suite 220
Pocatello, Idaho 83201
Phone: 208.232.1313 Fax: 208.232.1489
www.j-ub.com

J-U-B

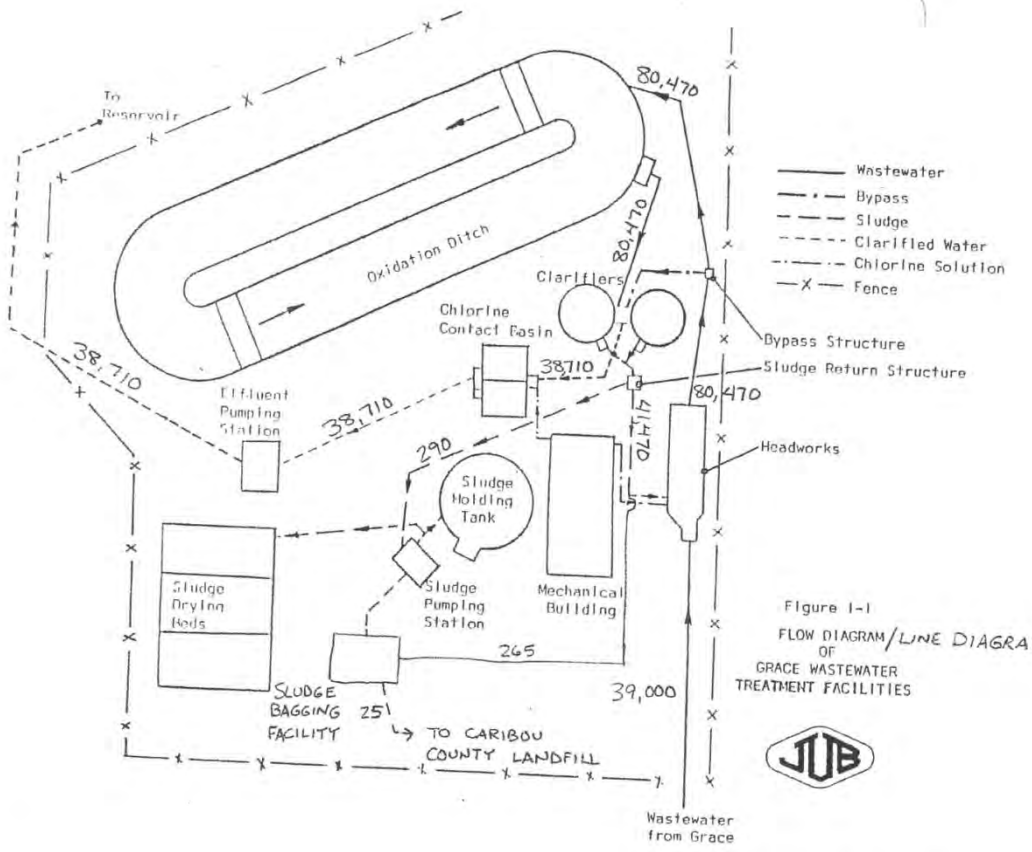


Figure 1-1
FLOW DIAGRAM/LINE DIAGRAM
OF
GRACE WASTEWATER
TREATMENT FACILITIES

JUB

Flow values for water balance are shown in units of gals per day

Appendix B: Water Quality Criteria Summary

This appendix provides a summary of water quality criteria applicable to the Grace Dam impoundment of the Bear River Reservoir in the Bear River Basin watershed.

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 Grace Dam impoundment on the Bear River Reservoir in the Bear River Basin watershed. This determination was based on (1) the applicable beneficial uses of the river (cold water aquatic life, primary contact recreation, and salmonid spawning), (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 Grace Dam impoundment of the Bear River Reservoir.

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
Chlorine (Total Residual)

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

1. pH: Within the range of 6.5 to 9.0

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

3. Dissolved Oxygen: Exceed 6 mg/L at all times.

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

5. Ammonia:

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

The IDEQ collected pH data in the Bear River upstream and downstream of the facility from 7/18/2006 to 11/6/2012. Temperature data were collected upstream of the facility from 7/18/2006 to 11/6/2012. 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 95% percentile of the pH and temperature data for the calculations which are 8.3 for pH and 20.1°C for temperature.

Table B-1: Water Quality Criteria for Ammonia

	Acute Criterion	**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:	3,150 µg/l	1060 µg/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.

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

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

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

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

b. Use of Single Sample Values: This section states that that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.). for 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 receiving water is Grace Dam which is a controlled water system. The EPA used 65 CFS as the low flow for 1Q10, 7Q10, and 30Q10, because PacifiCorp is required to release 65 CFS of water, according to their license from the Federal Energy Regulatory Commission.

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.

The IDEQ proposes to authorize **25%** mixing zone for ammonia and chlorine. The EPA calculated dilution factors for **year round** critical low flow conditions (65 cfs). The dilution factor and the effluent flow rate are set equal to the design flow of 0.44 mgd. The resulting dilution factor is 24.9. The following formula is used to calculate a dilution factor based on the allowed mixing.

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

$$D = \frac{Q_e + Q_u(\%MZ)}{Q_e} = 58$$

D = Dilution Ratio

Q_e = Effluent flow rate (set equal to the design flow of the WWTP) = 0.44

Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3) = 65 cfs = 42 mgd

%MZ = is the fraction of the receiving water flow available for dilution = 0.25

Qe = maximum effluent flow = 0.44 mgd

Q_u = 1Q10 = upstream acute critical low flow = 65 CFS = 42 mgd

$$\text{Dilution Ratio} = \frac{0.44 + 42(0.25)}{0.44} = 24.9$$

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.	

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:

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

Since the design flow for this facility as listed in the previous permit is 0.435 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.435 mgd × 8.34 = 109 lbs/day
Average Weekly Limit = 45 mg/L × 0.435 mgd × 8.34 = 163 lbs/day

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

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The City of Grace Wastewater Treatment Plant uses chlorine disinfection.

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

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, the technology based mass limits for chlorine are calculated as follows:

Monthly average Limit= 0.5 mg/L x 0.435 mgd x 8.34 = 1.81 lbs/day

Weekly average Limit = 0.75 mg/L x 0.435 mgd x 8.34 = 2.72 lbs/day

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.

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 IDEQ.

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

Procedure for Deriving Water Quality-based Effluent Limits

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

1. TMDL-Based Wasteload Allocation

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

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

   According to the Bear River Basin Total Maximum Daily Load Plan, the Waste load allocation for Grace for TP is 2.36 pounds per day. This waste load allocation is an annual average. The NPDES permit limits for Total Phosphorus were based on this waste load allocation.

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.

3. Criterion as the Wasteload Allocation

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

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

Summary - Water Quality-based Effluent Limits

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

Ammonia

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

pH

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were collected at the facility from 12/31/2007 to 11/30/12, and a total of 59 samples were collected. The data ranged from 7.4 – 8.3 standard units. The pH range of the effluent is well within the State's water quality criterion of 6.5 – 9.0 standard units.

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.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 406 organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

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

Chlorine The Idaho 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 chlorine for the protection of aquatic life. A reasonable potential calculation showed that the discharge from the facility would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. Therefore, the draft permit contains a water quality-based effluent limit (see Table D-2).

TSS The *Bear River/Malad River Subbasin Assessment and Total Maximum Daily Load Plan (2006 TMDL)* established a WLA for TSS of 1,409 kg/yr. The 2013 TMDL Addendum did not change the TSS WLA. The permit includes TSS loading limits based on the *2006 TMDL* (see Appendix E).

Floating, suspended or submerged matter/oil and grease

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 CWA and 40 CFR 122.44(l) 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 existing permit, unless certain exceptions are met.

All effluent limits in this permit are either identical to or more stringent than those in the existing permit. For example, the permit limits were calculated using the design flow of 0.435 mg/L, because the previous permit limits were based on the design flow of 0.435mg/L.

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.

D. Antidegradation

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

E. Facility Specific Limits

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

Table 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		Technology Based
	lb/day	109	163		
BOD_5 Removal	percent	85 minimum			
Total Suspended Solids (TSS)	mg/L	30	45	60	Water Quality (TMDL)
	lb/day	32.1	48.2		
TSS Removal	percent	85 minimum			
E. coli	#/100 ml	126 (geometric mean)			Water Quality
Total Residual Chlorine[1]	µg/L	163		473	Water Quality
	lb/day	0.598		1.74	
Total Phosphorus (as TP)	lb/day	5.77	8.66		Water Quality (TMDL)
Total Ammonia (as N)	mg/L	32.0		71.4	Water Quality
	lb/day	118		262	

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

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)}$$ 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,

$$C_d = C_e$$ Equation 4

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

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

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

$$C_d = \frac{C_e - C_u}{D} + C_u$$ 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:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u$$ 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

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 both chlorine and ammonia have 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 draft permit includes WQBELs for *E coli*, Total Residual Chlorine, Total Phosphorus, Total Suspended Solids, and Total Ammonia.

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated for ammonia and chlorine.

Table E-1: Reasonable Potential and Permit Limit Calculations

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

Facility Name	City of Grace WWTP
Design Flow (MGD)	0.44

Dilution Factors (IDAPA 58.01.02 03. b)

		Annual
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1Q10	**24.9**
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	7Q10 or 4B3	**24.9**
Ammonia	30B3/30Q10 (seasonal)	**24.9**

Receiving Water Data

Notes:

			Annual
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***		
Temperature, °C		5th % at critical flows 95th percentile	20.1
pH, S.U.		95th percentile	8.3

Pollutants of Concern			AMMONIA (mg N/L), default: cold water, fish early life stages present	CHLORINE (Total Residual)
Effluent Data	**Number of Samples in Data Set (n)**		12	59
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.73	1.54
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		5,000	2200
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only			
Dilution Factors	Aquatic Life - Acute	1Q10	24.9	24.9
	Aquatic Life - Chronic	7Q10 or 4B3	-	24.9
	Ammonia	30B3 or 30Q10	24.9	-
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		290	
Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	3,149	19
		Chronic	1,063	11

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.177	1.102
P_n	$=(1\text{-confidence level})^{1/n}$ where convidence level =	**99%**	0.681	0.925
Multiplier (TSD p. 57)	$=\exp(2.326\sigma-0.5\sigma^2)/\exp[\text{invnorm}(P_N)\sigma-0.5\sigma^2]$, prob. =	**99%**	8.9	2.7
Predicted max. conc.(ug/L), End-of-Pipe		Acute	27934.08	50.54
		Chronic	9432.96	29.26
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone (C_d)		Acute	2061.49	235.27
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	2061.49	235.27
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)			1	4
n used to calcuate AML (minimum n=4 if chronic LTA limiting, TSD p. 107) (ammonia if chronic LTA min then min=30			1	4
LTA Coeff. Var. (CV), decimal			1.730	1.540
Permit Limit Coeff. Var. (CV), decimal use CV from data set or default = 0.6			1.730	1.540
Acute WLA, ug/L	C_d = (Acute Criteria x MZ_a) - C_u x (MZ_a-1)	Acute	71,404.6	472.6
Chronic WLA, ug/L	C_d = (Chronic Criteria x MZ_c) - C_u x (MZ_c-1)	Chronic	19,527.0	273.6
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-2.326\sigma)$	Acute	9,241.7	66.8
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-2.326\sigma)$; ammonia n=30	Chronic	9,994.8	70.6
Limiting LTA, ug/L	used as basis for limits calculation		9,241.7	66.8
Average Monthly Limit (AML), ug/L , where % occurrence prob =		**95%**	**32037**	**163**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		**99%**	**71434**	**473**
Average Monthly Limit (AML), mg/L			**32.0**	**0.163**
Maximum Daily Limit (MDL), mgL			**71.4**	**0.473**
Average Monthly Limit (AML), lb/day			**118**	**0.597**
Maximum Daily Limit (MDL), lb/day			**262**	**1.735**

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

Version Date: April 18, 2014

IDEQ data from Hack's Hole was used because these data are representative of the receiving water. EPA is required by Section 301(b)(1)(C) of the Clean Water Act to include water quality-based effluent limits in NPDES permits. The regulation 40 CFR 122.44(d)(1)(i) states that NPDES permits must contain water quality-based effluent limits for all pollutants or pollutant parameters which the Director determines 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 water quality standard, including narrative criteria for water quality. The regulation 40 CFR 122.44(d)(1)(ii) requires that, when determining whether a discharge causes, has the reasonable

potential to cause, or contribute to an excursion above water quality standards, the permitting authority shall use procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, and, where appropriate, the dilution of the effluent in the receiving water.

The State of Idaho does not have numeric criteria for nutrients, including total phosphorus. When the State water quality standards do not contain numeric criteria for a given pollutant, EPA may calculate a numeric water quality criterion for the pollutant which will attain and maintain the narrative water quality criteria and fully protect designated uses (40 CFR 122.44(d)(1)(vi)). In this case, EPA has used the total phosphorus load allocation of 2.36 pounds/day from the *Bear River Basin TMDL* to interpret Idaho's narrative criteria for nutrients for the purposes of determining reasonable potential and calculating effluent limits for total phosphorus. The TMDL provides the WLA for Total Phosphorus. The EPA established water quality based effluent limits from the WLA of 2.36 pounds per day. EPA believes this approach is reasonable because the analysis performed for that TMDL demonstrated that wasteload allocations are based on meeting in-stream targets year around, including during the critical growing season. Attainment of beneficial uses in the Bear River could be restored if the concentration of phosphorus at the City of Grace discharge was 2.36 pounds/day.

Phosphorus

NPDES regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits unless impracticable. EPA has set the average monthly limit equal to the 5.77 pounds per day wasteload allocation. This means the effluent concentration of total phosphorus could be greater than 5.77 pounds per day for short periods of time within a calendar month, but such excursions will be of such a short duration and small magnitude that they will be negligible in terms of their effect on phosphorus concentrations in the main stem Bear River.

The purpose of a water quality-based effluent limit is to require the permittee to achieve a long term average level of performance that will ensure a low probability of exceeding the wasteload allocation. Since effluents are not constant, the average weekly discharge limitation is numerically greater than the average monthly discharge limitation. EPA has calculated an average weekly limit of 8.66 pounds per day by using the same ratio of the average weekly limit to the average monthly limit as used in the "secondary treatment" technology-based limits for BOD and TSS (1.5:1). The average weekly limit was calculated in this manner because facility specific effluent data are not available, and EPA determined in the analysis supporting the secondary treatment effluent limits that the 1.5:1 ratio is representative of typical effluent variability for POTWs.

While EPA believes a concentration limit for phosphorus is necessary in this case to prevent the discharge from contributing to an excursion above water quality standards, the federal regulation 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, and allows limits to be expressed in terms of other units of measurements in addition to mass. Therefore the permit contains both mass and concentration limits, and the permittee is required to comply with both the mass and concentration limits. Mass limits were calculated from the concentration limits based on the maximum month design flow of the WWTP, consistent with 40 CFR 122.45(b)(1).

Calculate the Total Phosphorus Effluent Limits using the Wasteload Allocations (WLAs)

The wasteload allocation for Total Phosphorus is based on meeting in-stream Total Phosphorus targets year around, including during the critical growing season. Wasteload allocations are annual averages. NPDES permit limits based on the waste load allocations should be expressed in the permits in a manner consistent with these averaging periods. The point source wasteload allocation from the Bear River Basin TMDL for Grace for Total Phosphorus is 2.36 pounds per day.

(1) Average Monthly Limit

The long-term average (LTA) has been established as 2.36 pounds per day. The formula for calculating an average monthly effluent limit (AML) is as follows (see the Technical Support Document for Water Quality-based Toxics Control at Table 5-2).

Average monthly limit = long-term average × $\exp(z_a\sigma_n - 0.5\sigma_n^2)$

AML = LTA × $\exp(z_a\sigma_n - 0.5\sigma_n^2)$

Where:
$\sigma_n^2 = \ln(CV^2/n + 1)$
$\sigma_n = \sqrt{\sigma_n^2}$
z_a = 2.326 for 99th percentile probability basis
n = number of sampling events required per month (1 in this case)

The coefficient of variation (CV) is the standard deviation of the data set divided by the mean. In this case it is:

0.25 ÷ 1.85 = 0.14

Thus, the long-term average of 2.36 pounds per day yields the following performance-based average monthly effluent limit:

$\sigma_n^2 = \ln(0.14^2/1 + 1) = 0.179$
$\sigma_n = 0.423$
AML = 2.36 lb/day × exp (2.326 × 0.423 - 0.5 × 0.179)
AML = 5.77 lb/day

(2) Average Weekly Limit

Average weekly limit (AWL) = AML x 1.5

AWL = 5.77 x 1.5
AWL = 8.66 pounds per day

Calculate the Total Suspended Solids Effluent Limits using the Wasteload Allocations (WLAs)

The wasteload allocation for Total Suspended Solids is based on meeting in-stream Total Suspended Solids targets year around, including during the critical growing season. Wasteload

allocations are annual averages. NPDES permit limits based on the waste load allocations should be expressed in the permits in a manner consistent with these averaging periods. The point source wasteload allocation for Grace from the Bear River Basin TMDL for Total Suspended Solids is 8.49 pounds per day.

(1) Average Monthly Limit

The long-term average (LTA) has been established as 8.49 pounds per day. The formula for calculating an average monthly effluent limit (AML) is as follows (see the Technical Support Document for Water Quality-based Toxics Control at Table 5-2).

Average monthly limit = long-term average × $\exp(z_a\sigma_n - 0.5\sigma_n^2)$

AML = LTA. × $\exp(z_a\sigma_n - 0.5\sigma_n^2)$

Where:
$\sigma_n^2 = \ln(CV^2/n + 1)$
$\sigma_n = \sqrt{\sigma_n^2}$
z_a = 2.326 for 99th percentile probability basis
n = number of sampling events required per month (1 in this case)

The coefficient of variation (CV) is the standard deviation of the data set divided by the mean. In this case it is:

4.14 ÷ 5.55 = 0.75

Thus, the long-term average of 8.49 pounds per day yields the following performance-based average monthly effluent limit:

$\sigma_n^2 = \ln(0.75^2/1 + 1) = 0.446$
$\sigma_n = 0.668$
AML = 8.49 lb/day × exp (2.326 × 0.668 - 0.5 × 0.446)
AML = 32.1 lb/day

(2) Average Weekly Limit

Average weekly limit (AWL) = AML x 1.5

AWL = 32.1 x 1.5
AWL = 48.2 pounds per day

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

All water bodies used by anadromous salmon throughout Idaho must be considered for EFH identification. According to NOAA Fisheries, the Grace Dam impoundment on the Bear River Reservoir in the Bear River Basin watershed is a migrational corridor for sockeye, coho, chum, and pink salmon.

B. Description of the Facility and Discharge Location

The activities and sources of wastewater at the Grace waste water treatment facility 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 water body, 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 the City of Grace'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 Grace Dam impoundment on the Bear River Reservoir in the Bear River Basin watershed in accordance with the Idaho water quality standards, the EPA has determined that issuance of this permit is not likely to adversely affect 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 final issuance of this permit.

Appendix G: Draft Clean Water Act Section 401 Certification from the Idaho Department of Environmental Quality

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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

C. L. "Butch" Otter, Gov mor
Curt Fr n en, Director

9 June 2014

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

RE: Draft 401 Certification for the City of Grace Wastewater Treatment Facility, NPDES Permit No. ID-0023825.

Dear Mr. Lidgard:

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

Attached under this cover please find the draft 401 water quality certification for NPDES Permit No. ID-0023825. Please call me at 208-236-6160 to discuss any concerns or questions regarding this draft document.

Sincerely,

Lynn Van Every
Regional Water Quality Manager

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Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

June 9, 2014

NPDES Permit Number(s): ID-0023825, City of Grace

Receiving Water Body: Bear River at the Grace Forebay

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 Grace discharges the following pollutants of concern: BOD_5, total suspended solids, *E. coli*, total residual chlorine, pH, total ammonia and total phosphorus. Effluent limits have been developed for this list of pollutants.

Receiving Water Body Level of Protection

The City of Grace discharges to the Bear River within the Middle Bear River Subbasin assessment unit (AU) ID16010202BR009_06 (Bear River – Alexander Reservoir Dam to Densmore Creek). This AU has the following designated beneficial uses: cold water aquatic life, salmonid spawning and primary contact recreation. There is no available information indicating the presence of any existing beneficial use aside from those that are already designated.

The cold water aquatic life use in this Bear RiverAU is not fully supported due to excess temperature (2010 Integrated Report Category 5), and TMDL's have been written and approved for previous impairment listings for total suspended solids and total phosphorus (2010 Integrated Report Category 4a). The primary contact recreation beneficial use is fully supported. As such, DEQ will provide Tier 1 protection only for the aquatic life use and Tier 2 protection, in addition to Tier 1, for the recreation beneficial use (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 Grace permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

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

In the absence of a TMDL and depending upon the priority status for development of a TMDL, the WQS stipulate that either there be no further impairment of the designated or existing beneficial uses or that the total load of the impairing pollutant remains constant or decreases (IDAPA 58.01.02.055.04 and 58.01.02.055.05). Discharge permits must comply with these provisions of Idaho WQS.

The EPA-approved *Bear River/Malad River Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204 (March 2006) and Bear River Basin Total Maximum Daily Load Addendum to the Bear River/Malad Subbasin Assessment and Total Maximum Daily Load Plan for HUCs 16010102, 16010201, 16010202, 16010204* (February 2013 revision) establishes wasteload allocations for total suspended solids and total phosphorus. DEQ completed, and EPA approved, TMDL's for sediment and phosphorus in 2006 (reflected in category 4a of the 2010 Integrated Report). Subsequent to the 2006 TMDL for total phosphorus, DEQ revised the total phosphorus TMDL for the Alexander to Densmore Creek Bear River assessment unit in 2013 meeting with EPA approval on 13 September 2013. The 2013 TMDL addendum included a revision of the 2006 total phosphorus wasteload allocation for the City of Grace. This newly approved TMDL wasteload allocation is reflected in the effluent limit for total phosphorus in this permit and certification. These wasteload allocations are designed to ensure the Bear River will achieve the water quality necessary to support its existing and designated aquatic life beneficial uses and comply with the applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the City of Grace permit are set at levels that comply with these wasteload allocations.

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

High-Quality Waters (Tier 2 Protection)

The Bear River is considered high quality for primary contact recreation. As such, the water quality relevant to primary contact recreation uses of the Bear 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 primary contact recreation uses of the Bear River (IDAPA 58.01.02.052.05). The pollutant relevant to primary contact recreation in this reach of Bear River is *E. coli.* Effluent limits are set in the proposed and existing permit for this pollutant.

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). For *E. coli*, the permit limits remain unchanged, ensuring no degradation.

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

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

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 25% of the critical flow volumes of this the Bear River for chlorine and total ammonia.

Other Conditions

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

Right to Appeal Final Certification

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

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

DRAFT

Bruce Olenick
Regional Administrator
Pocatello Regional Office