Fact Sheet

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

City of Culdesac Wastewater Treatment Plant

EPA Proposes to Reissue the NPDES Permit

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 (FS) 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

CWA § 401 Certification

Since this facility discharges to tribal waters and the Tribe does not have Treatment as a State (TAS), EPA is the certifying authority for the permit. See FS Section VI.X. Comments regarding the intent to certify should be directed to the EPA technical contact listed above.

Clean Water Act §401(a)(2) Review

CWA Section 401(a)(2) requires that, upon receipt of an application and 401 certification, EPA notify a neighboring State or Tribe with TAS when EPA determines that the discharge may affect the quality of the neighboring State/Tribe's waters. As stated above, EPA is the certifying authority and is accepting comment regarding the intent to certify this permit. Once EPA reviews any comments received regarding the intent to certify and has signed a final certification, EPA will determine whether the discharge may affect a neighboring jurisdiction's waters. 33 U.S.C. § 1341(a)(2).

PUBLIC COMMENT

Persons wishing to comment on, or request a Public Hearing for, the draft permit 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 EPA as described below.

By the expiration date of the public comment period, all written comments and requests must be submitted to grafe.cyndi@epa.gov.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Water Division will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, 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, fact sheet and other information can be downloaded from the internet at https://www.epa.gov/npdes-permits/about-region-10s-npdes-permit-program.

The draft Administrative Record for this action contains any documents listed in the References section. The Administrative Record or documents from it are available electronically upon request by contacting Cyndi Grafe.

For technical questions regarding the Fact Sheet, contact Cyndi Grafe at (208) 378-5775 or grafe.cyndi@epa.gov. Services can be made available to persons with disabilities by contacting Audrey Washington at (206) 553-0523.

TABLE OF CONTENTS

LIST OF TABLES

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BOD_{5u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
$CBOD_5$	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor
FR	Federal Register
Gpd	Gallons per day
HUC	Hydrologic Unit Code

IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
mL	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
O&M	Operations and maintenance
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids

SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WD	Water Division
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. BACKGROUND INFORMATION

A. GENERAL INFORMATION

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

Table 1. General Facility Information

NPDES Permit #:	ID0024490
Applicant:	City of Culdesac City of Culdesac Wastewater Treatment Plant
Type of Ownership	Publicly Owned Treatment Works
Physical Address:	Intersection of Main Street and Canyon Road Culdesac, ID 83524
Mailing Address:	100 6th Street Culdesac, ID 83524
Facility Contact:	Herman Smith Supervisor, Public Works 208-843-5483 culdesaccityhall@idaho.net
Operator:	Jason Miller Operator, Public Works 208-843-5483 culdesaccityhall@idaho.net
Facility Location:	46.374111°N 116.681177°W
Receiving Water	Lapwai Creek
Facility Outfall	46.375437°N 116.681838°W

B. PERMIT HISTORY

The most recent NPDES permit for the City of Culdesac Wastewater Treatment Plant (WWTP) was issued on August 18, 2016, became effective on October 1, 2016, and expired on September 30, 2021. An NPDES application for permit issuance was submitted by the permittee on March 30, 2021. EPA determined that the application was timely and complete. Therefore, pursuant to Title 40 Code of Federal Regulations (CFR) 122.6, the permit has been administratively continued and remains fully effective and enforceable.

C. TRIBAL CONSULTATION

EPA consults on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Meaningful tribal consultation is an integral component of the federal government's general trust relationship with federally recognized tribes. The federal government recognizes the

right of each tribe to self-government, with sovereign powers over their members and their territory. Executive Order 13175 (November 2000) entitled "Consultation and Coordination with Indian Tribal Governments" requires federal agencies to have an accountable process to assure meaningful and timely input by tribal officials in the development of regulatory policies on matters that have tribal implications and to strengthen the government-to-government relationship with Indian tribes. In May 2011, EPA issued the "EPA Policy on Consultation and Coordination with Indian Tribes" which established national guidelines and institutional controls for consultation.

The Culdesac WWTP is located on the Nez Perce Reservation of the Nez Perce Tribe (Nez Perce or Tribe). Consistent with the Executive Order and the EPA tribal consultation policies, EPA coordinated with the Nez Perce during development of the draft permit and is inviting the Tribe to engage in formal tribal consultation.

II. FACILITY INFORMATION

A. TREATMENT PLANT DESCRIPTION

1. Service Area

City of Culdesac owns and operates the Culdesac WWTP located in Culdesac, ID. The collection system has no combined sewers. The facility serves a resident population of approximately 400. There are no major industries discharging to the facility.

2. Treatment Process

The design flow of the facility is 0.055 mgd. The reported actual flows from the facility range from 0.02 to 0.03 mgd (average monthly flow).

In December 2018, the City of Culdesac received funding to upgrade portions of the WWTP. Upgrades included decommissioning the intermittent sand filters and replacing them with two submerged aerated rock filter (SARF) beds, installing an ultraviolet light (UV) treatment system and decommissioning the chlorine treatment system, installing a new control box and pump for the headworks and new blowers for the aerated lagoons, replacing the lagoon liners and upgrading the SCADA control system. Consequently, the treatment process now consists of screening, two aerated treatment cell lagoons, two SARF beds, and UV for disinfection. A schematic of the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A**.** Because the design flow is less than 1 mgd, the facility is considered a minor facility.

B. OUTFALL DESCRIPTION

The treated effluent from the City of Culdesac WWTP continuously discharges from one outfall into Lapwai Creek. The City does not land apply treated wastewater. The outfall is not equipped with a diffuser, and the point of discharge in Lapwai Creek is located within the boundaries of the Nez Perce Indian Reservation.

C. EFFLUENT CHARACTERIZATION

To characterize the effluent, EPA evaluated the facility's application form, discharge monitoring report (DMR) data, and additional data provided by the Culdesac WWTP. The effluent quality is summarized in Table 2 Effluent Characterization 2017-2022. Data are provided in Appendix B.

Table 2 Effluent Characterization 2017-2022

Parameter	Minimum	Maximum	95th Percentile	Notes
BOD, 5-day, 20 deg C	2 mg/L	28.3 mg/L	16.9 mg/L	Monthly Average
	2 mg/L	58.2 mg/L	29.3 mg/L	Weekly Average
BOD, 5-day, % removal	73.9%	99.3%	98.9%	Monthly Minimum
Solids, Total Suspended	1.15 mg/L	23 mg/L	11.5 mg/L	Monthly Average
	2 mg/L	44 mg/L	22.5 mg/L	Weekly Average
Solids, Total Suspended, % removal	90%	99.4%	99.2%	Monthly Minimum
E. coli, MTEC-MF	0 /100mL	450 /100mL	96 /100mL	Monthly Geometric Mean
	0 /100mL	2420 /100mL	1255 /100mL	Instantaneous Maximum
pH	7.6 s.u.	8.9 s.u.	8.7 s.u.	Instantaneous Maximum
	6.9 s.u.	8.6 s.u.	8.4 s.u.	Instantaneous Minimum
Total Phosphorus as P	0	10.9 mg/L	8.8 mg/L	Monthly Average
Nitrogen, ammonia total [as N]	0	23.7 mg/L	22.3 mg/L	Daily Maximum - Annual
	0.02 mg/L	11.5 mg/L	10.5 mg/L	Monthly Average May - Sep
	0.02 mg/L	23.5 mg/L	18.1 mg/L	Daily Maximum May - Sep
	0.02 mg/L	23.3 mg/L	19.3 mg/L	Monthly Average Oct - Apr
	0.02 mg/L	23.7 mg/L	22.8 mg/L	Daily Maximum Oct - Apr
Temperature in degrees C	1.78	39.9	33.9	Daily Maximum
	-0.7	29.9	26.9	Daily Average
Source: Data submitted by Culdesac WWTP 2017-				

Because the City of Culdesac upgraded portions of its WWTP during its permit cycle, EPA also analyzed the effluent data starting December 2020, which was when the

treatment upgrades were finalized. The effluent quality after the WWTP upgrade is summarized in Table 3. These data are also located in Appendix B.

Table 3 Effluent Characterization Post WWTP Upgrade

Parameter	Minimum	Maximum	95th Percentile	Notes
BOD, 5-day, 20 deg C	2 mg/L	15.35 mg/L	9.8 mg/L	Monthly Average
	2 mg/L	27.3 mg/L	23 mg/L	Weekly Average
BOD, 5-day, % removal	87.2%	99.3%	99%	Monthly Minimum
Solids, Total Suspended	1.15 mg/L	10.2 mg/L	9.4 mg/L	Monthly Average
	2 mg/L	27.8 mg/L	20.5 mg/L	Weekly Average
Solids, Total Suspended % removal	92%	99.4%	99.4%	Monthly Minimum
E. coli, MTEC-MF	1 /100mL	12 /100mL	1 /100mL	Monthly Geometric Mean
	1 /100mL	816 /100mL	1 /100mL	Instantaneous Maximum
pH	7.6 s.u.	8.9 s.u.	8.6 s.u.	Instantaneous Maximum
	6.9 s.u.	8.4 s.u.	8.3 s.u.	Instantaneous Minimum
Total Phosphorus as P	0	9.1 mg/L	7.9 mg/L	Monthly Average
Nitrogen, ammonia total [as N]	0.01 mg/L	10.4 mg/L	6.2 mg/L	Daily Maximum - Annual
	0.02 mg/L	6.95 mg/L	6.7 mg/L	Monthly Average May - Sep
	0.02 mg/L	10.4 mg/L	8.4 mg/L	Daily Maximum May - Sep
	0.02 mg/L	0.12 mg/L	0.16 mg/L	Monthly Average Oct - Apr
	0.01 mg/L	0.68 mg/L	0.19 mg/L	Daily Maximum Oct - Apr
Temperature in degrees C	1.78	39.9	33.9	Daily Maximum
	-0.7	29.9	26.9	Daily Average

Source: Data submitted by Culdesac WWTP - Dec. 2020 – Sep. 2022. Weekly ammonia data provided by Culdesac WWTP on Feb. 23, 2023.

Figure 1 below illustrates the significant decrease in ammonia effluent concentrations after the City of Culdesac completed its WWTP upgrades in December 2020. Figure 2 shows a similar trend in temperature although not to the same degree as the ammonia downward trend. Table 1 and Table 2 indicate improvement post WWTP upgrades for all the reported parameters.

Figure 1 Ammonia Effluent DMR Data Daily Maximum and Monthly Average Results - Significant Downward Trend Post WWTP Upgrade

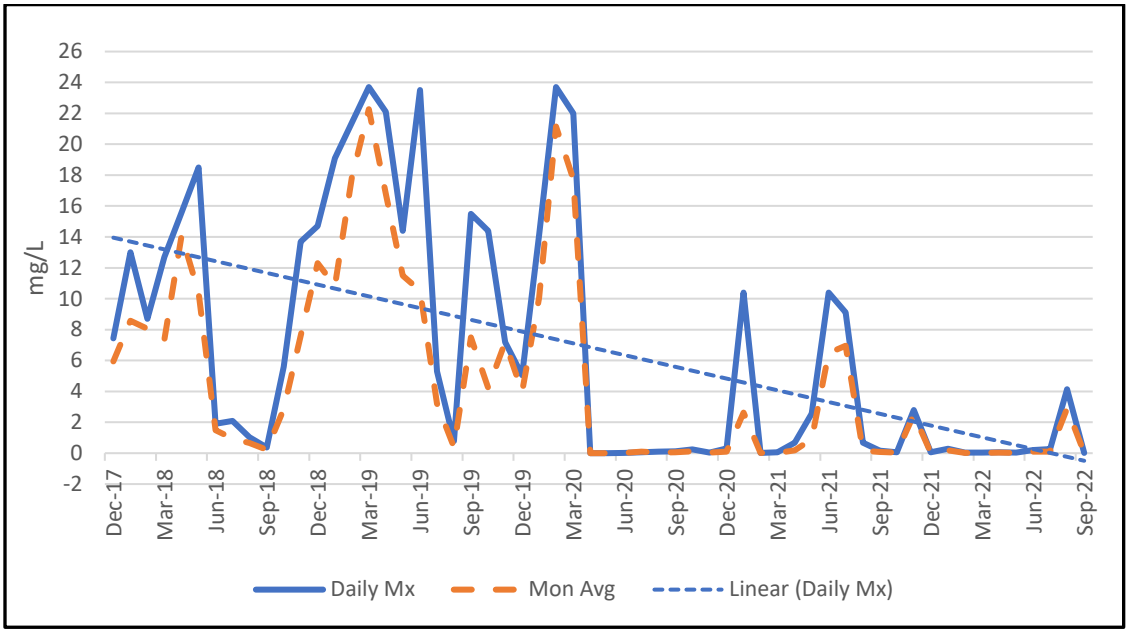
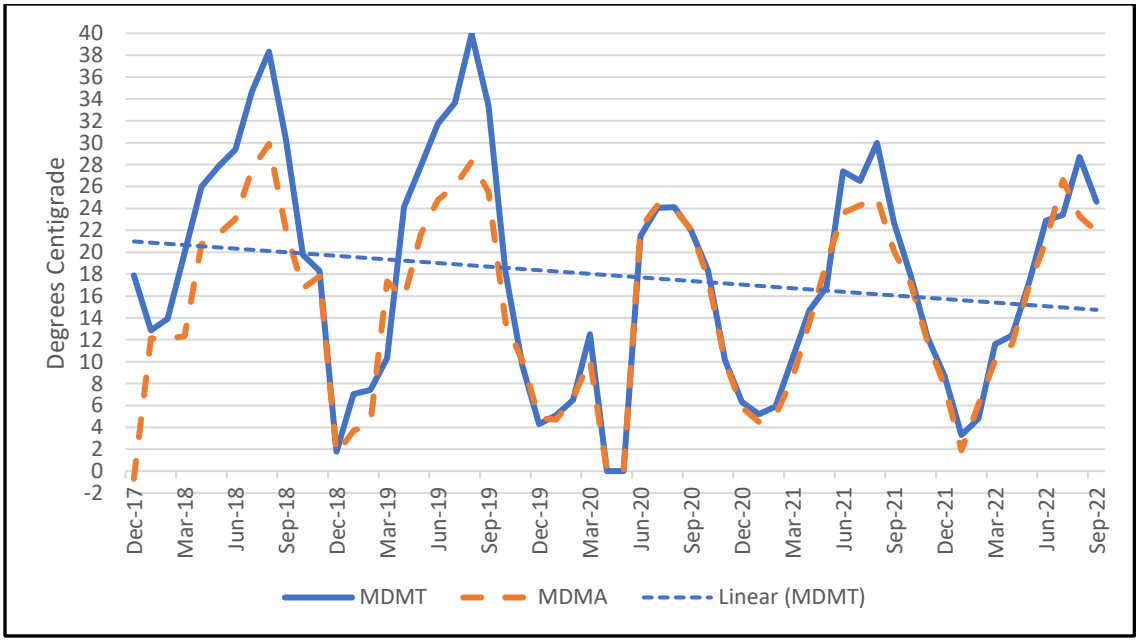


Figure 2 Temperature of Effluent from DMR Data Daily Maximum and Monthly Average Results – Downward Trend Post WWTP Upgrade



D. COMPLIANCE HISTORY

As noted in Section II.C above, the WWTP upgrades in 2020 resulted in decreased pollutant concentrations in most of the effluent parameters. Table 4 summarizes total effluent exceedances for the 2016 - 2021 permitting cycle.

Table 4. Summary of Effluent Violations

Parameter	Limit Type	Units	Number of Instances
Solids, suspended percent removal	Minimum % Removal	%	2
BOD, 5-day	20 deg. C, Weekly Average	mg/L	2
	Minimum % Removal	%	5
Nitrogen, ammonia total [as N]	Average Monthly May - Sep	mg/L	2
	Average Monthly Oct - Apr	mg/L	14
	Average Monthly Oct - Apr	lb/d	5
	Daily Maximum Oct - Apr	mg/L	7
E. coli, MTEC-MF	Monthly Geometric Mean	#/100mL	2
	Instantaneous Maximum	#/100mL	5
pH	Instantaneous Minimum	S.U.	2
Information accessed in ICIS/ECHO on 2/15/23			

EPA conducted an inspection of the facility on September 21, 2021. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, and the collection system. The 2021 inspection findings noted the facility had reported non-compliance in 12 months over 5 years. These were primarily exceedances of the instantaneous maximum of effluent *E. coli* bacteria. The report discussed that prior exceedances were largely due to complications associated with the facility's chlorine disinfection system which was replaced with UV technology as part of the facility's upgrades in 2020. Additionally, the inspection discovered that the facility's pH buffer solutions had an expiration date of December 2020. Expired buffer solutions might have impacted the pH monitor used in collecting compliance samples. Further, the report noted that the City incorrectly reported no discharges in the NetDMR during construction. This resulted in 124 effluent violations in April and May 2020.

Additional compliance information for this facility, including compliance with other environmental statutes, is available on Enforcement and Compliance History Online (ECHO). The ECHO web address for this facility is: https://echo.epa.gov/detailed-facility-report?fid=110039886371

III. RECEIVING WATER

In drafting permit conditions, EPA must analyze the effect of the facility's discharge on the receiving water. The details of that analysis are provided in the Water Quality-Based Effluent Limits (WQBEL) section below. This section summarizes characteristics of the receiving water that impact that analysis.

This facility discharges to Lapwai Creek, a tributary of the Clearwater River, in the City of Culdesac, ID at latitude 46.375437° North and longitude 116.681838° West. The outfall is located approximately 11 miles upstream of the Clearwater River and approximately 15 miles from the Idaho State/Nez Perce Tribal boundary. This places the outfall within the Clearwater Subbasin, HUC 17060306, of the Clearwater Basin, referenced in Idaho's Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02.120.08.).

A. WATER QUALITY STANDARDS (WQS)

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires that NPDES permits contain effluent limits necessary to meet water quality standards (WQS). A State/Tribe's WQS are composed of use classifications, numeric and/or narrative water quality criteria, and an antidegradation policy. The use classification system designates the beneficial uses (such as cold-water biota, contact recreation, etc.) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State/Tribe 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.

The Nez Perce Tribe has not applied for the status of Treatment as a State (TAS) from EPA for purposes of the Clean Water Act. If the Nez Perce Tribe is granted TAS, and it has WQS approved by EPA, those tribal WQS will be used for determining effluent limitations. In the meantime, the Idaho WQS were used as reference for setting permit limits, and to protect downstream uses in the State of Idaho.

1. Designated Beneficial Uses

This facility discharges to Lapwai Creek in the Clearwater Subbasin (HUC 17060306), Water Body Unit C-8. At the point of discharge, Lapwai Creek is protected for the following designated uses (IDAPA 58.01.02.120.08):

- cold water aquatic life
- primary contact recreation

In addition, WQS 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).

2. Existing Uses

Tier 1 protection under the Antidegradation Policy applies to all water bodies under the CWA. It requires the protection of existing uses and requires that the water quality necessary to protect those uses be maintained and protected. (See federal regulations at 40 CFR Section 131.12(a)(1)). Under the antidegradation regulations, the EPA must include permit conditions in the NPDES permit sufficient to protect and maintain the existing uses in that water body.

The 2016 NPDES permit determined salmonid spawning to be an existing use based on available data. Through discussions with the Nez Perce Tribe[1] and review of the *Geography and Timing of Salmonid Spawning in Idaho report*[2], salmonid spawning occurs year-round in the Lapwai Creek Watershed as shown in Table 5.

Table 5 Spawning and Incubation Periods in the Lapwai Creek Watershed

Salmonid Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Steelhead/ Rainbow Trout		✓	✓	✓	✓	✓	✓	✓				
Chinook Salmon	✓	✓	✓	✓	✓	✓						
Coho Salmon	✓	✓	✓	✓						✓	✓	✓
Bull Trout									✓	✓		

B. RECEIVING WATER QUALITY

The water quality for the receiving water is summarized in Table 6. EPA used different available data sources based on sample size and data quality. For temperature, EPA used a combination of sources including the United States Geological Service (station 13342450 located below Lapwai, ID), Nez Perce Tribe, Bureau of Reclamation, and City of Culdesac. Samples from this dataset were collected upstream and downstream of the WWTP. The sample sizes for this temperature dataset were n=471, n=255, and n=216 for annual, May – September, and October – April time periods, respectively. EPA determined using a larger temperature dataset was more appropriate, particularly when analyzing seasonality, because of the variable nature of temperature and small sample sizes of other available individual datasets.

EPA used pH data collected between 2008-2017 by the Nez Perce Tribe downstream of the WWTP because the City of Culdesac quarterly sampling resulted in a small sample size for analyzing seasonal pH values and the EPA 2021 inspection report noted that the pH buffer solution used for the City's monitor was expired, which potentially could have impacted sample results. Lastly, EPA used ammonia data collected by the City of Culdesac because it was closer to the WWTP than the USGS station approximately 9 miles downstream.

[1] Email correspondence "Lapwai Creek 2021 – raw data," Sierra Higheagle, Water Quality Program Coordinator, Water Resources Division, Nez Perce Tribe, and Cyndi Grafe, EPA R10 Permit Writer. January 4, 2023.
[2] BioAnalysts, Inc. 2014. Geography and Timing of Salmonid Spawning in Idaho. Prepared for the Idaho Department of Environmental Quality. April 25, 2014.

Table 6. Receiving Water Quality Data

Parameter	Percentile	May – Sep Value	Oct – Apr Value
Temperature	95th	22.2°C	11.5°C
pH	5th – 95th	7.4 – 8.4 s.u.	7.4 – 8.3 s.u.
Ammonia	90th	0.88 mg/L	0.05 mg/L
Source: EPA water quality database, STORage and RETrieval (STORET) and Water Quality Exchange accessed February 2, 2023. Data collected by City of Culdesac 2017-2022.			

1. Water Quality Limited Waters

The Idaho Department of Environmental Quality (IDEQ) 2022 Integrated Report states that this portion of the Clearwater River is Category 3T-waters, waters that are wholly or partially on Indian reservations and are not subject to the state's § 305(b)/§ 303(d) reporting requirements. Lapwai Creek has not been assessed by the State or the Nez Perce to determine whether beneficial uses are being attained or impaired.

2. Low Flow Conditions

Critical low flows for the receiving water are summarized in Table 7. Low flows are defined in Appendix D.

Table 7. Critical Flows in Receiving Water

Flows	Low Seasonal Flows (May 1 – Sep 30)	High Seasonal Flows (Oct 1– Apr 30)
1Q10	1.56	4.31
7Q10	1.76	4.77
30Q10	2.26	6.352
30Q5	3.14	8.17
Harmonic Mean	14.04	14.07
Source: USGS station 13342450 located downstream near Lapwai, Idaho		

IV. EFFLUENT LIMITATIONS AND MONITORING

Table 8, below, presents the existing effluent limits and monitoring requirements in the current permit. Table 9, below, presents the effluent limits and monitoring requirements proposed in the draft permit.

Table 8. Existing Permit - Effluent Limits and Monitoring Requirements Parameters With Effluent Limits

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Influent and Effluent	1/week	8-hour composite
	lbs/day	13.7	20.6	--			Calculation[1]
BOD_5 Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation[2]
Total Suspended Solids (TSS)	mg/L	30	45	--	Influent and Effluent	1/week	8-hour composite
	lbs/day	13.7	20.6	--			--
TSS Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation[2]
E. coli[3]	CFU/ 100 ml	126	--	406 (instan max)[4]	Effluent	5/month	Grab
Total Residual Chlorine	µg /L	9[4]	--	17[4,5]	Effluent	5/week[7]	Grab
	lbs/day	0.00414	--	0.0082[4,5]			Calculation[1]
pH	std units	Between 6.5 – 9.0			Effluent	5/week[7]	Grab
Total Ammonia (as N) May 1 – September 30[6]	mg /L	10.1	--	27	Effluent	1/week	Grab
	lbs/day	4.6	--	12			Calculation[1]
Total Ammonia (as N) October 1 – April 30[6]	mg /L	7.0	--	15.2	Effluent	1/week	Grab
	lbs/day	3.2	--	7.0			Calculation[1]
Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.2. of this permit				1/month	Visual Observation
Flow	mgd	Report	--	Report	Effluent	continuous	Meter
Temperature	°C	--	--	Report[9]	Effluent	continuous	Meter

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Total Phosphorus	mg /L	Report	Report	--	Effluent	1/month	Grab
Permit Application Effluent Testing Data[8]	--				Effluent	1/year	--

Notes

1. Loading (in lbs/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
2. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation:
   (average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration x 100. Influent and effluent samples must be taken over approximately the same time period.
3. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3 - 7 days within a calendar month. See Part VI of this permit for a definition of geometric mean.
4. The limits for chlorine are not quantifiable using EPA-approved analytical methods. The minimum level (ML) for chlorine is 50 µg/L for this parameter. The EPA will use 50 µg/L as the compliance evaluation level for this parameter. The permittee will be in compliance with the total residual chlorine limitations if the average monthly concentration limits are less than 50 µg/L and the average monthly mass discharge limit is less than 0.023 lbs/day.
5. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Paragraph I.B.3. and Part III.G. of this permit.
6. Limit to be achieved by July 1, 2021 (see Part I.D.).
7. Samples must be taken on different days.
8. Effluent Testing Data - See NPDES Permit Application Form 2A, Part B.6 for the list of pollutants to be included in this testing. The Permittee must use sufficiently sensitive analytical methods in accordance with Part I.B.7 of this permit.
9. Maximum daily maximum temperature and maximum daily average.

Table 9. Draft Permit - Effluent Limits and Monitoring Requirements

Parameter	Effluent Limitations			Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Biochemical Oxygen Demand[1,2] (BOD_5)	30 mg/L	45 mg/L	---	Influent[1] and Effluent	1/week	24-hour composite
	13.7 lbs/day	20.6 lbs/day	---			Calculation[2,3]
	85% Removal (Min.)[3]	---	---		1/month	
Total Suspended Solids[1,2] (TSS)	30 mg/L	45 mg/L	---	Influent[1] and Effluent	1/week	24-hour composite
	13.7 lbs/day	20.6 lbs/day	---			Calculation[2,3]
	85% Removal (Min.)[3]	---	---		1/month	
Enterococci Bacteria[4,5,6,7]	35/100 mL	---	130/100 mL	Effluent	5/month	Grab
E. coli Bacteria[4,5,6,7]	126/100 mL	---	410/100 mL	Effluent	5/month	Grab
pH[5], s.u.	Within the range of 6.5 and 9.0			Effluent	5/week	Grab
Total Ammonia (as N) May 1 –Sep 30	1.0 mg /L	--	4.8 mg /L	Effluent	1/week	Grab
	0.47 lbs/day	--	2.22 lbs/day			Calculation[2]
Total Ammonia (as N) Oct 1 – Apr 30	7.0 mg /L	--	15.2 mg /L	Effluent	1/week	Grab
	3.2 lbs/day	--	7.0 lbs/day			Calculation[2]
Floating, Suspended, or Submerged Matter	--	See Permit Part **Error! Reference source n ot found..Error! Reference source not found.**.			1/month	Visual Observation
Dissolved Oxygen in mg/L	Report minimum and average monthly value			Effluent	2/week	Grab
Flow, mgd	Report	---	Report	Effluent	continuous	Recording
Total Phosphorus[8] as P in mg/L	Report[8]	---	Report[7]	Effluent	1/month	24-hour composite
Temperature in degrees C[9]	Report	---	Report	Effluent	Continuous	Recording
NPDES Application Form 2A Effluent Testing Data[10] in mg/L	---	---	---	Effluent	1/year	---

1. Influent and effluent grab samples shall be collected during the same 8-hour period.
2. Loading is normally calculated by multiplying the concentration in mg/L by the average daily flow for the day of sampling in mgd and a conversion factor of 8.34. If the concentration is measured in µg/L, the conversion factor is 0.00834. For more information on calculating, averaging, and reporting loads and concentrations see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
3. Percent removal is calculated using the following equation: ((Average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration) x 100
4. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126/100 ml and the monthly enterococci bacteria counts must not exceed a geometric mean of 35/100 ml based on a minimum of five samples taken every 3 - 11 days within a calendar month. See Part VI of this permit for a definition of geometric mean.
5. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation.
6. *E. coli* and enterococci monthly limits are geometric means, the maximum daily limit is an instantaneous maximum.
7. The permittee is required to monitor for and meet the applicable limits for either *E. coli* or enterococci, but not both.
8. The maximum ML for the parameters is as follows: Total Ammonia is 0.05 mg/l, Total Phosphorus is 0.01 mg/l.
9. Maximum daily maximum temperature, maximum daily average, and maximum weekly average (seven-day running average of the daily instantaneous maximum).
10. Effluent Testing Data – See NPDES Permit Application Form 2A, Table B for the list of pollutants to be included in this testing. The Permittee must use sufficiently sensitive analytical methods in accordance with Part I.B.5 of this permit.

A. EFFLUENT LIMITATION CHANGES

The draft permit includes several changes to the effluent limitations and monitoring requirements, which are as follows:

- Introduction of an alternative enterococci bacteria limit to be sampled five times a month in accordance with Idaho WQS. This limit is not an additional bacteria limit to be implemented concurrently with the existing *E. coli* limit. Instead, the enterococci limit can serve as an alternative to the current *E. coli* standard. The proposed limit would consist of a geometric mean monthly limit of 35 enterococci organisms/100 ml of water and a maximum daily limit of 130 enterococci organisms/100 ml of water.
- Updated *E. coli* limits to current Idaho WQS. Maximum daily limit of 406 organisms/100 mL of water updated to 410 organisms/100 mL of water.
- Temperature ambient monitoring was changed from quarterly grab samples to continuous recording. Temperature reporting for effluent and ambient monitoring was changed to the salmonid spawning reference criteria of maximum weekly maximum in addition to maximum daily and maximum daily average.
- Chlorine effluent limits were removed because the City of Culdesac installed a UV treatment system in place of their previous chlorine disinfection system.
- Ammonia effluent limits for the low-flow season (May 1 – September 30) were decreased to an average monthly limit of 1.0 mg/L and a maximum daily limit of 4.8 mg/L.
- Phosphorus ambient monitoring was increased to monthly sampling to ensure an adequate data set for developing effluent limits.
- pH ambient monitoring was increased to monthly sampling to ensure an adequate data set for developing effluent limits.

- PFAS monitoring requirements to ensure an adequate data set for reasonable potential analysis in the next permit cycle.

B. BASIS FOR EFFLUENT LIMITS

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or WQBELs. TBELs are set according to the level of treatment that is achievable using available technology. A WQBEL is designed to ensure that the WQS applicable to a waterbody are being met and may be more stringent than TBELs.

1. Pollutants of Concern

Pollutants of concern are those that either have TBELs or may need WQBELs. EPA identifies pollutants of concern for the discharge based on those which:

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

The wastewater treatment process for this facility includes both primary and secondary treatment, as well as disinfection with UV. Pollutants expected in the discharge from a facility with this type of treatment, include but are not limited to: five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli* or enterococci bacteria, pH, ammonia, temperature, phosphorus, and dissolved oxygen (DO).

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

- BOD_5
- Dissolved Oxygen
- TSS
- *E. coli* bacteria
- Enterococci bacteria
- pH
- Temperature
- Ammonia
- Phosphorus
- Per- and polyfluoroalkyl substances (PFAS)

2. Technology-Based Effluent Limits (TBELs)

a. Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. CWA Section 301 established a required performance level, referred to as "secondary treatment," which POTWs were required to meet by July 1, 1977. EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These TBELs apply to certain municipal WWTPs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table 10. For additional information and background refer to Part 5.1 *Technology Based Effluent Limits for POTWs* in the Permit Writers Manual.

Table 10. Secondary Treatment Effluent Limits

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	--
pH	within the limits of 6.0 - 9.0 s.u.	
Source: 40 CFR 133.102		

b. Mass-Based Limits

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

Mass based limit = concentration limit (mg/L) × design flow (mgd) × 8.34[3]

Since the design flow for this facility is 0.055 mgd, the technology-based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.055 mgd × 8.34 = 13.7 lbs/day

Average Weekly Limit = 45 mg/L × 0.055 mgd × 8.34 = 20.6 lbs/day

3. Water Quality-Based Effluent Limits (WQBELs)

a. Statutory and Regulatory Basis

CWA Section 301(b)(1)(C) requires the development of limitations in permits necessary to meet WQS. Discharges to State or Tribal waters must also

[3] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

comply with conditions imposed by the State or Tribe as part of its certification of NPDES permits under CWA Section 401. 40 CFR 122.44(d)(1) implementing CWA Section 301(b)(1)(C) 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 WQS, including narrative criteria for water quality. Effluent limits must also meet the applicable water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (40 CFR 122.4(d), 122.44(d)(4), see also CWA § 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that WQS are met and must be consistent with any available wasteload allocation for the discharge in an approved TMDL. If there are no approved TMDLs that specify wasteload allocations for this discharge; all of the WQBELs are calculated directly from the applicable WQS.

b. Reasonable Potential Analysis and Need for WQBELs

EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, 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 WQBEL must be included in the permit.

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

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The proposed mixing zones are summarized in

Table 11. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.055 mgd.

Table 11. Mixing Zones

Seasonal Values	May – Sep (Low Flow)		Oct – Apr (High Flow)		
Criteria Type	**Critical Low Flow (cfs)**	**Dilution Factor**	**Critical Low Flow (cfs)**	**Dilution Factor**	**Mixing Zone (% of Critical Low Flow)**
Acute Aquatic Life	1.56	5.6	4.31	13.7	25%
Chronic Aquatic Life (except ammonia)	1.76	6.2	4.77	15.0	25%
Chronic Aquatic Life (ammonia)	2.26	7.6	6.35	19.7	25%

The reasonable potential analysis and WQBEL calculations for ammonia were based on mixing zones shown in

Table 11.

The equations used to conduct the reasonable potential analysis and calculate the WQBELs are provided in Appendix D. The relevant water quality standards are shown in Table 12, below.

Table 12. Applicable Water Quality Standards

Parameter	Relevant Standards		
E. coli	No greater than 126 organisms/100 mL (Geometric Mean) over a 45 day period, based on at least 5 samples every 3-11 days	OR	No greater than 410 organisms/100 mL in more than 10% of all samples over a 45 day period
Enterococci	No greater than 35 organisms/100 mL (Geometric Mean) over a 45 day period, based on at least 5 samples every 3-11 days	OR	No greater than 130 organisms/100 mL in more than 10% of all samples over a 45 day period
pH	Maintain constant level of pH values from 6.5 - 9 s.u		

Dissolved Oxygen	Greater than 6.0 mg/L at all times	6.0 mg/L (daily minimum, water column) 5.0 mg/L (daily minimum, intergravel)
Temperature	13 °C or less	Maximum daily average no greater than 9 °C
Ammonia	Not to exceed acute criteria for cold water or chronic criteria for cold water, early life stages present. (see **Error! Reference source not found.**s)	
Nutrients	No visible slime growths or other nuisance aquatic growths impairing designated beneficial uses due to excess nutrients	
Source: IDAPA 58.01.02 – Idaho Water Quality Standards		

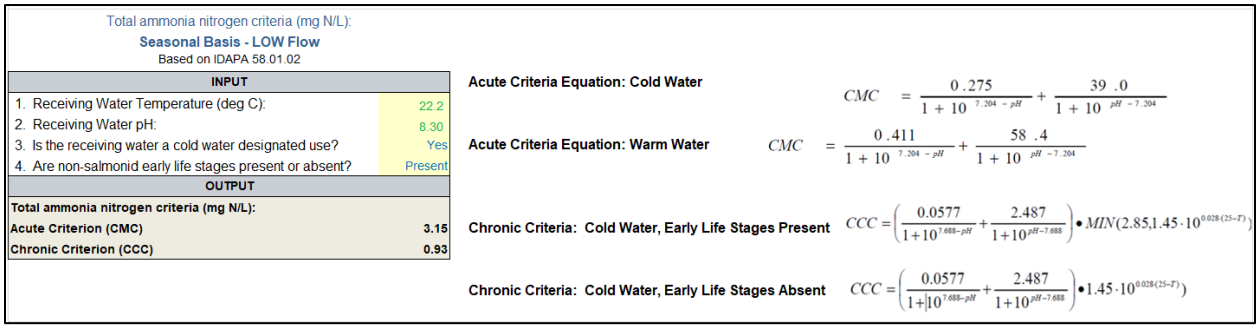
c. Reasonable Potential and WQBELs

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

Ammonia

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. Figure 3 and Figure 4, below, detail the equations used to determine water quality criteria for ammonia during the low- and high-flow seasons. The calculated ammonia criteria are 3.15 mg N/L acute and 0.93 mg N/L chronic for the low-flow season and 3.15 mg N/L acute and 1.52 mg N/L chronic for the high-flow season.

Figure 3. Ammonia Criteria – Low Flow (May 1 – September 30)



Total ammonia nitrogen criteria (mg N/L):
Seasonal Basis - LOW Flow
Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	22.2
2. Receiving Water pH:	8.30
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**3.15**
Chronic Criterion (CCC)	**0.93**

Acute Criteria Equation: Cold Water

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

Acute Criteria Equation: Warm Water

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

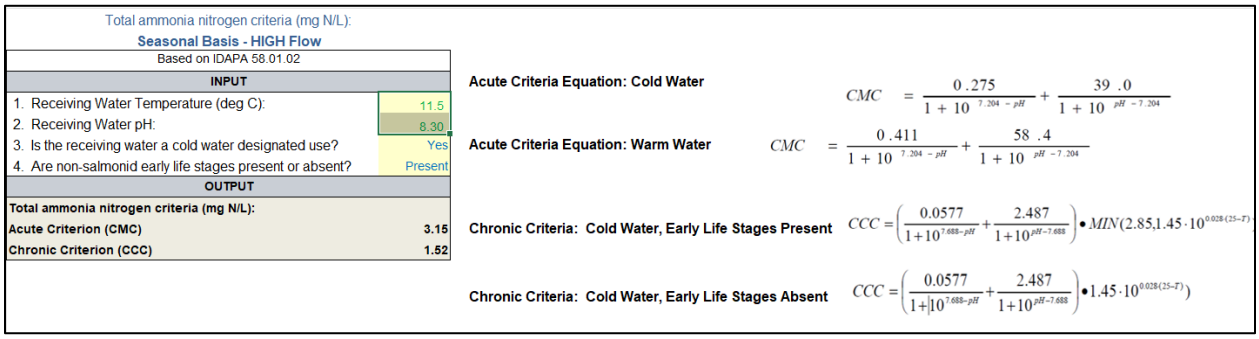
Chronic Criteria: Cold Water, Early Life Stages Present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

Chronic Criteria: Cold Water, Early Life Stages Absent

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

Figure 4. Ammonia Criteria – High Flow (October 1 – April 30)



Total ammonia nitrogen criteria (mg N/L):

Seasonal Basis - HIGH Flow

Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	11.5
2. Receiving Water pH:	8.30
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
OUTPUT	
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**3.15**
Chronic Criterion (CCC)	**1.52**

Acute Criteria Equation: Cold Water

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

Acute Criteria Equation: Warm Water

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

Chronic Criteria: Cold Water, Early Life Stages Present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

Chronic Criteria: Cold Water, Early Life Stages Absent

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

The maximum daily concentration of total ammonia as nitrogen in the effluent was 10.4 mg/L for the low-flow season (May 1 – September 30) and 0.682 mg/L for the high-flow season (October 1 – April 30). EPA calculated the maximum daily concentration after the treatment upgrades were finalized in December 2020 using weekly sample data provided by the City of Culdesac. A reasonable potential calculation showed that the City of Culdesac Wastewater Treatment Plant discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia during the low flow season (May 1 – September 30) but not during the high flow season (October 1 – April 30). Therefore, the draft permit contains more stringent WQBELs for ammonia during low flow and retains the limits from the existing permit during the high flow season**.** A review of the effluent data indicates that the WWTP should be able to comply with the more stringent effluent limits upon the effective date of the permit. The draft permit requires that the permittee monitor the receiving water for ammonia, pH, and temperature to determine the applicable ammonia criteria for the next permit reissuance. See Appendix D for reasonable potential and effluent limit calculations for ammonia.

Temperature

The Idaho Water Quality Standards at IDAPA 58.01.02.250.02(f) establish criteria for the protection of salmonid spawning, outlined below in Figure 2. The 95th percentile maximum receiving water temperature in Lapwai Creek is 18.3 ºC and the 95th percentile maximum effluent temperature from the discharge is 28.6 ºC. Preliminary analysis indicated that the WWTP discharge might cause or contribute to a violation of the water quality criteria for temperature. However, most of the available ambient temperature data was downstream at the USGS gaging station approximately nine miles away. The upstream ambient water samples were predominately the quarterly data collected by the City of Culdesac which did not provide enough data points to calculate necessary metrics and adequately analyze reasonable potential. Additionally, continuous surface water monitoring data collected by City of Culdesac were incomplete due to thermistor malfunctions and data downloading errors. Due to these data issues, EPA could not conduct an adequate reasonable potential analysis. To calculate the reasonable potential

more accurately in the next permit cycle, EPA has included monitoring provisions for effluent and ambient continuous recording.

Figure 5 Reasonable Potential Calculation for Temperature

Freshwater Temperature Reasonable Potential and Limit Calculation

ID 58.01.02 250

02.b	Cold Water	22.0 °C	*or less with maximum daily average temperature of*	19.0 °C	
02.f.	Salmonid Spawing	13.0 °C	*or less with maximum daily average temperature of*	9.0 °C	As determined by IDEQ "Water Body Assessment Guidance"
03.a.	Seasonal Cold	26.0 °C	*or less with maximum daily average temperature of*	23.0 °C	
04.a.	Warn Water	33.0 °C	*or less with maximum daily average temperature of*	29.0 °C	

INPUT	Cold Water Critera	Data Source
Chronic Dilution Factor at Mixing Zone Boundary	1.9	High River Flow
Ambient Temperature (T) (Upstream Background)	18.3 °C	95th Percentile based on permittee or USGS data
Effluent Temperature	28.6 °C	95th Percentile of **monthly daily max effluent** based on daily max per DMR data
Aquatic Life Temperature WQ Criterion in Fresh Water	9.0 °C	Lowest daily max criteria
OUTPUT		
Temperature at Chronic Mixing Zone Boundary:	23.8 °C	Mass balance
Incremental Temperature Increase or decrease:	5.5	WQS 401.c - allow for maximum of 0.3°C rise in receiving water temperature.

pH

The Idaho WQS 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 compared to the water quality criteria**.** The effluent pH values at the WWTP post treatment upgrades range from 6.9 to 8.9, within the Idaho water quality standards of 6.5 to 9.0. The draft permit retains the pH effluent limits.

Dissolved Oxygen (DO) and BOD_5

Natural decomposition of organic material in wastewater effluent impacts DO in the receiving water at distances far outside of the regulated mixing zone. The BOD_5 of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water.

DO monitoring was not required in the existing permit, however, EPA notes that the monthly average BOD_5 discharge for this facility, post treatment upgrades (after December 2020), was 4.8 mg/L with a 95th percentile value of 9.8 mg/L. The weekly average BOD_5 discharge during the same time period was 8.3 mg/L with a 95th percentile value of 23 mg/L. The effluent limits for BOD_5 are 30 mg/L and 45 mg/L, respectively, which are significantly above discharge concentrations from the facility. During the same time period, the minimum % removal of BOD_5 in the effluent was 87% with a 95th percentile value of 99%. The proposed permit addresses DO concerns by imposing BOD_5 limits, which the facility has met and can continue to meet. EPA concludes that this will be effective at controlling DO impacts from the facility. EPA has included effluent monitoring requirements in the next permit cycle.

Phosphorus

The Idaho WQS state that surface waters of the State of Idaho shall be free from excess nutrients, including phosphorus, that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses. The section of Lapwai Creek where the facility is discharging is designated as 3T tribal waters (waters that are wholly or partially on tribal lands and are not subject to state required reporting) and has not been assessed for any potential nutrient degradation.

However, preliminary analysis using limited available data indicates discharge from this facility might contribute to an exceedance of the narrative criteria. The monthly average concentration of total phosphorus in the effluent was 4.9 mg/L after WWTP upgrades. Ambient phosphorus samples (n=9) collected by the Nez Perce Tribe in 2016 and 2017 upstream of the WWTP result in an average concentration of 0.13 mg/L of total phosphorus in Lapwai Creek. Further, previous Nez Perce Tribe monitoring reports point out concerns with nutrient pollution in the Lapwai Creek watershed.[4] Accordingly, the proposed permit increases the phosphorus monitoring to adequately assess nutrient reasonable potential in the next permitting cycle.

Bacteria

IDAPA 58.01.02.251.02.a and b express both *E. coli* and enterococci bacteria as indicators of potential fecal contamination in waters that are designated for recreation. Either *E. coli* or enterococci may be monitored and used to determine the potential impact of the water quality on human health.

Waters that are designated for recreation are not to contain either *E. coli* bacteria in concentrations exceeding a geometric mean of 126 organisms/100 mL or enterococci bacteria in concentrations exceeding a geometric mean of 35 organisms/100 mL of water. Both criteria are based on a minimum of five samples taken every three to 11 days over a 45-day period. Further, IDAPA 58.01.02.251.02.c states that the averaging period for bacteria criteria within permits is to be 30 days or less based on a minimum of five samples.

The Idaho WQS also state that water samples cannot exceed a statistical threshold value of 410 E. coli organisms/100 mL or 130 enterococci organisms/100 mL in more than 10% of samples collected over a 45-day period (IDAPA 58.01.02.251.02. a. (2), IDAPA 58.01.02.251.02.b.ii.). These criteria have been conservatively implemented in the permit as maximum daily limits. Consistent with the criteria, either the E. coli or the enterococci limits and monitoring requirements must be met by the facility, not both.

40 CFR 122.45(d)(2) requires that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms “average monthly limit” and “average weekly limit” are defined in 40 CFR 122.2 as being arithmetic

[4] Clark, K. 2012. Lower Clearwater River Tributaries Water Quality Monitoring Report 2010-2011. Technical Results Summary KPC-LCT-11. Nez Perce Tribe Water Resources Division. December 2012. https://nptwaterresources.org/wp-content/uploads/2014/01/Lower-Clearwater-River-Tributaries-Water-Quality-Monitoring-Report-2010-2011.pdf

(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 the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. 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.

A mixing zone is not appropriate for bacteria for waters designated for contact recreation and further, IDAPA 58.01.02.060.01.d.vi prohibits mixing zones for *E. coli*. IDAPA 58.01.02.251.02.c states that the averaging period for bacteria criteria within permits is to be 30 days or less based on a minimum of five samples. Therefore, the draft permit requires either *E. coli* or enterococci to be sampled at least five times a month and contains a monthly geometric mean effluent limit of 126 organisms/100 mL for *E. coli* (IDAPA 58.01.02.251.02.a.i.) and 35 organisms/100 mL for enterococci (IDAPA 58.01.02.251.02.b.i.).

The goal of a WQBEL is to ensure a low probability that WQS will be exceeded in the receiving water because of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding the Instantaneous maximum limit indicates a likely exceedance of the geometric mean criterion, this limit, in addition to a monthly geometric mean limit, ensures that the discharge will have a low probability of exceeding WQS for *E. coli* and enterococci.

The previous permit imposed an E. coli limit of 406 organisms/100 mL as the Instantaneous maximum limit instead of 410 organisms/100 mL as the Instantaneous maximum limit. Therefore, the draft permit has a less stringent effluent limit than the previous permit. However, as explained above, Idaho has updated their bacteria criteria since the previous permit was issued. The draft permit limits are consistent with the current water quality criteria (See also the Antibacksliding discussion below).

Residues

The Idaho WQS 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.

d. Antibacksliding

CWA Section 402(o) and 40 CFR §122.44 (l) generally prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited

exceptions. For explanation of the antibacksliding exceptions refer to Chapter 7 of the Permit Writers Manual *Final Effluent Limitations and Anti-backsliding*.

Backsliding of a WQBEL is allowed as long as the provisions of CWA Section 303(d)(4) are met. Where the quality of the water meets or exceeds water quality standards, an effluent limit may be relaxed as long as the revision is consistent with the State's antidegradation policy. See CWA § 303(d)(4)(B).

The draft permit is proposing a less stringent effluent limit for *E. coli*. The existing 2016 permit has a maximum daily limit of 406 organisms/100 mL and the draft permit increases the maximum daily limit to 410 organisms/100 mL, <0.01% change. The limit in the draft permit is based on current Idaho WQS which were approved by EPA in February 2022. As explained above, EPA did not provide for a mixing zone. Thus, the effluent limits meet the *E. coli* water quality criteria at the end of pipe.

As explained in Appendix F, the permit is consistent with Idaho's antidegradation policy. Therefore, the provisions of CWA Section 303(d)(4) for this proposed action are met and the *E.coli* effluent limits can be relaxed.

V. MONITORING REQUIREMENTS

CWA Section 308 and 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

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

1. 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 EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

a. Monitoring Changes from the Previous Permit

Temperature

Temperature reporting for effluent monitoring was changed to the salmonid spawning reference criteria of maximum weekly maximum in addition to maximum daily maximum and maximum daily average.

Enterococci

The same monitoring requirements that are currently in place for *E. coli* will apply to enterococci.

PFAS Monitoring

Per- and polyfluoroalkyl substances (PFAS) are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Discharges of PFAS above certain levels may cause adverse effects to human health effects or aquatic life.[5,6]

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the draft permit requires that the permittee conduct quarterly influent, effluent, and sludge sampling for PFAS chemicals for two years. The monitoring requirements for PFAS chemicals are deferred until the third and fourth years of the permit term (beginning during the first complete quarter[7] of the third year). This will give the permittee time to plan for this new monitoring requirement (e.g., to obtain funding, train employees, and find a suitable contract laboratory).

The purpose of these monitoring and reporting requirements is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits. EPA is authorized to require this monitoring and reporting by CWA section 308(a). The permit conditions reflect EPA's commitments in the PFAS Strategic Roadmap, which directs the Office of Water to leverage NPDES permits to reduce PFAS discharges to waterways "at the source and obtain more comprehensive information through monitoring on the sources of PFAS and quantity of PFAS discharged by these sources."

EPA notes that there is currently not an analytical method approved in 40 CFR Part 136 for PFAS. As stated in 40 CFR 122.44(i)(1)(iv)(B), in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR Part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters. Therefore, the Permit specifies that until there is an analytical method approved in 40 CFR Part 136 for PFAS, monitoring shall be conducted using Draft Method 1633.

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[5] EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan,* EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

[6] EPA, *Fact Sheet: Draft 2022 Aquatic Life Ambient Water Quality Criteria for Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS).* Available at: https://www.epa.gov/system/files/documents/2022-04/pfoa-pfos-draft-factsheet-2022.pdf

[7] 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.

2. Surface Water Monitoring

In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant. In addition, surface water monitoring may be required for pollutants for which the water quality criteria are dependent and to collect data for TMDL development if the facility discharges to an impaired water body. Table 13 presents the proposed surface water monitoring requirements for the draft permit. Surface water monitoring results must be submitted with the DMR.

The City of Culdesac did not provide complete upstream continuous temperature data as required in the existing permit. Tribal upstream monitoring occurred in 2016-2017, but there were not enough samples (n=10) to calculate the necessary metrics associated with the salmonid spawning criteria. Consequently, the draft permit requires a continuous recording of upstream ambient temperature. Temperature is a key criterion of fish population viability and is identified as a vital attribute in bull trout, Chinook salmon, and steelhead recovery plans. As discussed previously, this discharge may have reasonable potential to violate the state WQS for temperature based on preliminary analysis. Complete continuous data will better inform future management and adequately assess temperature reasonable potential in the next permitting cycle.

Preliminary analysis of phosphorus effluent and limited ambient data indicated concerns. As a result, EPA has added phosphorus sampling in ambient water once a month downstream of the discharge. This will allow EPA to adequately assess nutrient reasonable potential in the next permitting cycle.

Table 13. Surface Water Monitoring in Draft Permit

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Upstream of outfall	quarterly[1]	measure
Temperature	°C	Upstream of outfall	continuous	recording
Phosphorus	mg/L	Downstream of outfall	monthly	grab

[1]Quarters are defined as January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31.

3. Electronic Submission of Discharge Monitoring Reports

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

Permit Part III.B. requires that the Permittee submit a copy of the DMR to WRD. Currently, the permittee may submit a copy to WRD in one of three ways: 1) a paper copy may be mailed; 2) the email address for WRD may be added to the electronic submittal through NetDMR; or 3) the permittee may provide WRD viewing rights through NetDMR.

VI. SLUDGE (BIOSOLIDS) REQUIREMENTS

EPA Region 10 separates wastewater and sludge permitting. EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. 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 City of Culdesac is required to update the quality assurance plan (QAP) within 180 days of the effective date of the final permit. The QAP 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 EPA and the Nez Perce upon request.

B. Operation and Maintenance Plan

The permit requires the City of Culdesac to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance are 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 of the effective date of the permit. The plan must be retained on site and made available to EPA and the Nez Perce upon request.

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

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

The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify 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 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 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 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

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

The City of Culdesac WWTP is located within or near a Census block group that is potentially overburdened based on environmental justice indexes for particulate matter, lead paint, and proximity to facilities with risk management plans. These hazards are unlikely to be associated with the discharge from the Culdesac WWTP.

Additionally, the Census block group near the Culdesac WWTP is overburdened due to demographics including the demographic index and people of color. In order to ensure

that individuals near the facility are able to participate meaningfully in the permit process, EPA will work collaboratively with the Tribe to conduct enhanced outreach activities such as posting the draft permit and fact sheet in public places, the Tribe's website, and other media the Tribe feels is necessary to ensure membership are able to participate in the review and comment period.

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

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

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 flow or loading exceeds 85% of the design criteria values for any two months in a twelve-month period. The design flow is 0.055 mgd; 85% of the design flow is 0.047 mgd. The facility monthly average flow, post treatment upgrades, ranged from 0.022 to 0.031. Flow did not exceed 85% of design criteria for any two months in a twelve-month period.

F. Pretreatment Requirements

The Nez Perce Tribe does not have an approved pretreatment program. Thus, EPA is the Approval Authority for POTWs located on tribal land. Since the City of Culdesac does not have an approved pretreatment program per 40 CFR 403.8, EPA is also the Control Authority for industrial users that might introduce pollutants into the City of Culdesac WWTP.

The Permittee may not authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program under 40 CFR 403.5(b).

Although, not a permit requirement, the Permittee may wish to consider developing the legal authority enforceable in Federal, State, or local courts which authorizes or enables the POTW to apply and to enforce the requirement of CWA Sections 307 (b) and (c) and 402(b)(8), as described in 40 CFR 403.8(f)(1). Where the POTW is a municipality, legal authority is typically through a sewer use ordinance, which is usually part of the city or county code. EPA has a Model Pretreatment Ordinance for use by municipalities operating POTWs that are required to develop pretreatment programs to regulate

industrial discharges to their systems (EPA, 2007). The model ordinance should also be useful for communities with POTWs that are not required to implement a pretreatment program in drafting local ordinances to control nondomestic dischargers within their jurisdictions.

G. Standard Permit Provisions

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

VIII. Other Legal Requirements

A. ENDANGERED SPECIES ACT

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

A review of the threatened and endangered species located in Idaho finds that bull trout (Salvelinus confluentus), Snake River fall-run Chinook salmon (Oncorhynchus tshawytscha), and Snake River Basin steelhead (Oncorhynchus mykiss) are threatened and have the potential to be impacted by the discharge of the Culdesac WWTP. Based on the following considerations EPA concludes that this permit has no effect on endangered or threatened species under the jurisdiction of NOAA or USFWS.

The U.S. Fish and Wildlife Service Draft Bull Trout Recovery Plan (USFWS 2002) identified causes of the bull trout listing. They are operation and maintenance of dams and other diversion structures, forest management practices, livestock grazing, agriculture, agricultural diversions, road construction and maintenance, mining, and introduction of nonnative species. No sewage treatment plant is identified as a contributing factor to the decline in bull trout. Similar factors have likely caused the decline of other salmonid species such as the fall Chinook salmon and the Snake River steelhead.

A similar conclusion was reached by the Biological Evaluation of the Reissuance of a National Pollutant Discharge Elimination System Permit for the Twin Falls, Idaho, Wastewater Treatment Plant (May 2009, LimnoTech) (BE). It cited the factors of decline for Bull Trout are hydroelectric development and operation; increase in concentration of nutrients, sediment and other pollutants reaching the river and competition with nonnative species. In general, this part of the Snake River basin and its tributaries are impacted by runoff from irrigated crop production, rangeland, pastureland, animal holding areas, feedlots, dredging, hydro-modification, and urban runoff.

The majority of sediment input to the streams in the Middle Snake River basin comes from nonpoint sources. The BE cited a study by the University of Idaho that stated that over a 13 month period from 1990 to 1991, irrigated agriculture contributed more than 21,000 tons of sediment to the river. During this same period major tributaries with

irrigated agriculture contributed more than 452,000 tons of sediment to the Middle Snake River. The Culdesac permit prohibits sediment discharges above 20.6 lbs/day, or over a 13-month period, four tons or about 0.0009 percent of the total loading of sediment. Sediment discharges will have no effect on listed species.

EPA has decreased the ammonia effluent limit during the low flow summer season which will provide greater protection. The other effluent limitations in the Culdesac permit ensure protection of the aquatic life standards in the Lapwai Creek. Therefore, the EPA determines the discharges from the Culdesac WWTP will have no effect on listed species.

IX. 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 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 EFH documents shows that the area of discharge is EFH for coho salmon and Chinook salmon (Snake River fall run). For the same reasons provided above, EPA concludes that the issuance of this permit will *not have an adverse effect* on EFH.

X. CWA § 401 Certification

Section 401 of the Clean Water Act (CWA) requires the State in which the discharge originates to certify that the discharge complies with the appropriate sections of the CWA, as well as any appropriate requirements of State law. See 33 USC § 1341(d). This includes water quality standards that have been approved for Tribes with TAS. Since this facility discharges to tribal waters and the Tribe has not been approved for TAS for purposes of the Clean Water Act, EPA is the certifying authority. EPA is taking comment on EPA's intent to certify this permit.

XI. Antidegradation

EPA has completed an antidegradation review which is shown in Appendix F.

XII. Permit Expiration

The permit will expire five years from the effective date.

XIII. REFERENCES

BioAnalysts, Inc. 2014. Geography and Timing of Salmonid Spawning in Idaho. Prepared for the Idaho Department of Environmental Quality. April 25, 2014.

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water. EPA/505/2-90-001. https://www3.epa.gov/npdes/pubs/owm0264.pdf.

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

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

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

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

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

Appendix A. **Facility Information**

Figure A- 1. Aerial view and outfall location of WWTP.

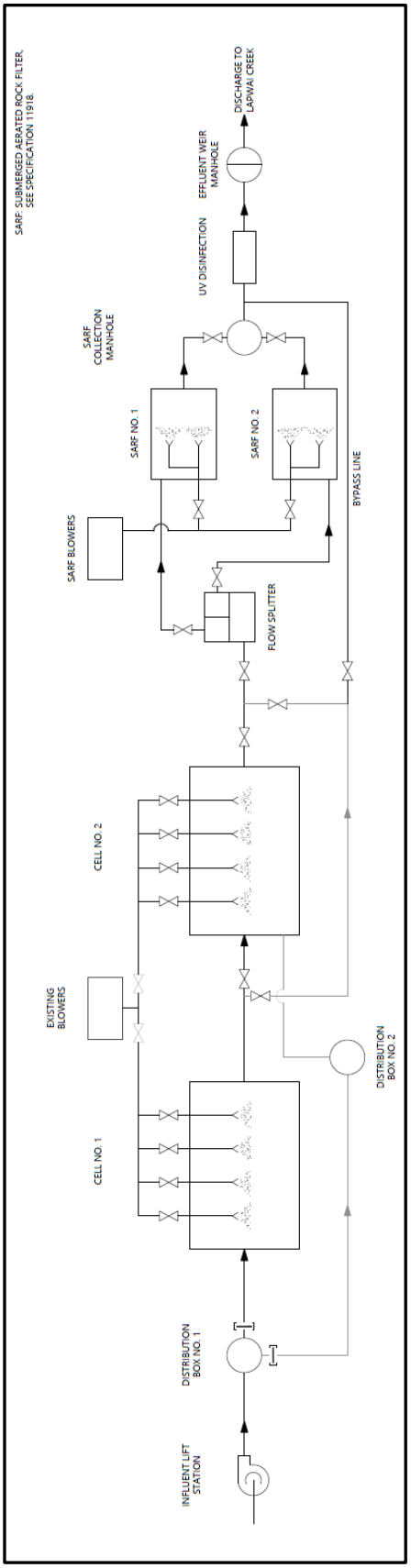
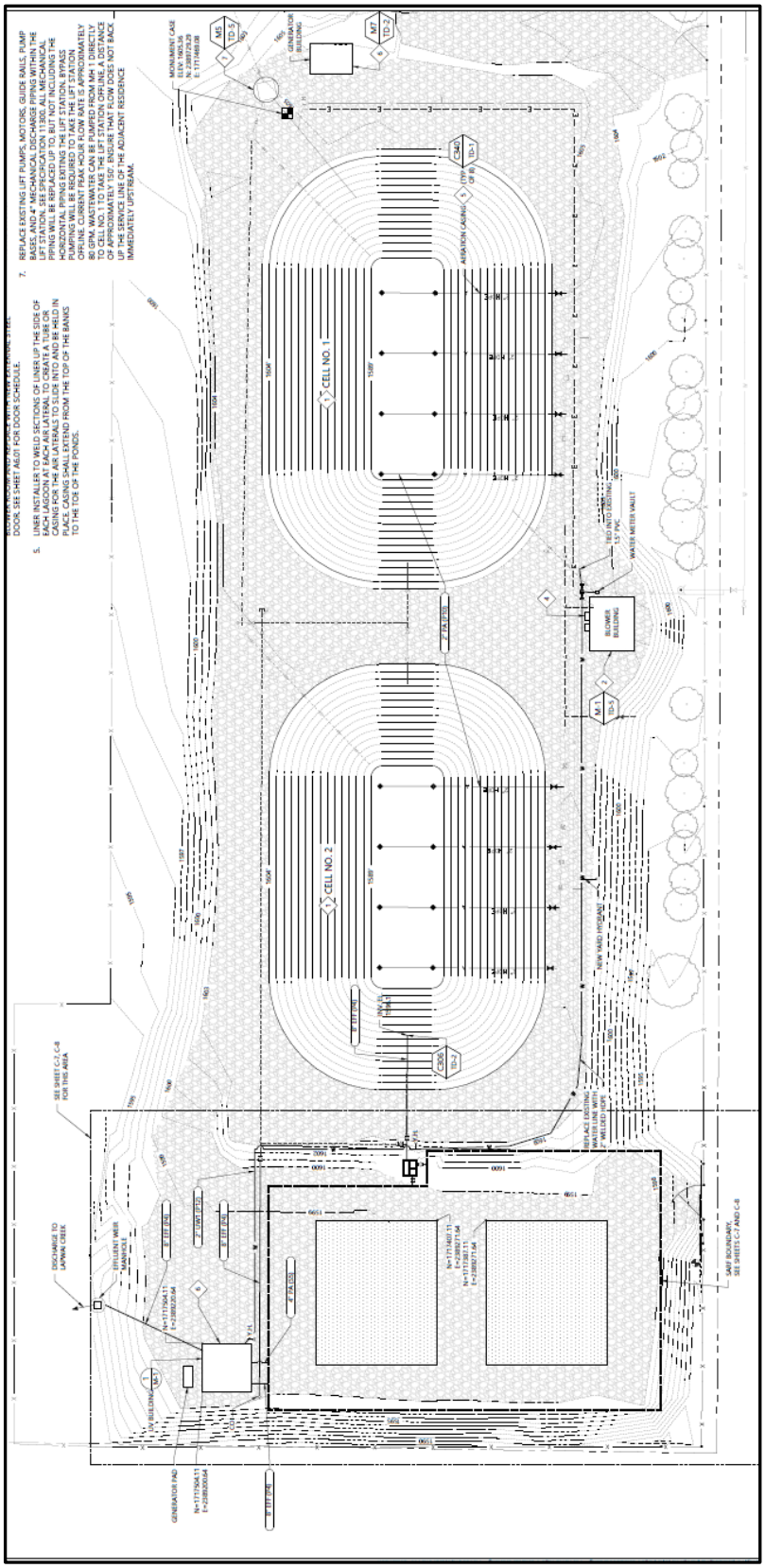


Figure A- 2 Culdesac WWTP Process Flow Diagram

Figure A- 3 Diagram of Culdesac WWTP New Treatment Upgrades



Appendix B. **Water Quality Data**

Table B- 1. Effluent Data - BOD, TSS, and Nitrogen (Ammonia Total as N). Note: No data recorded 4/30 - 5/31/2020 due to construction for treatment upgrade.

Parameter	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Solids, total suspended	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Percent Removal	Effluent Gross	Effluent Gross
Statistical Base	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MIN % RMV	MO AVG	MO AVG	WKLY AVG	WKLY AVG	MIN % RMV	MO AVG	DAILY MAX
Limit Units	mg/L	lb/d	mg/L	lb/d	%	mg/L	lb/d	mg/L	lb/d	%	mg/L	mg/L
Current Limit	30	13.7	45	20.6	85	30	13.7	45	20.6	85	NA	NA
Proposed Limit	30	13.7	45	20.6	85	30	13.7	45	20.6	85	NA	NA
12/31/2017	5.87	1.19	6.24	1.44	97.2	2	0.4	4	0.86	98.3	5.95	7.43
01/31/2018	11.65	2.47	23.9	6.67	89.9	6.4	1.36	14	2.93	92.9	8.57	13
02/28/2018	4.77	0.81	8.9	1.68	93.5	1.75	0.3	2	0.32	99.2	8.065	8.7
03/31/2018	15.32	2.61	20.9	4.09	95	6.25	1.06	16	3.13	97.9	7.35	12.7
04/30/2018	10.35	1.93	15.8	2.88	94.5	1.25	0.23	2	0.41	97.3	14.1	15.6
05/31/2018	22.8	4.01	46	6.85	84.4	7.2	1.27	22	3.27	91.2	10.39	18.5
06/30/2018	3.31	0.48	4.47	1.13	96	2.5	0.36	5	1.26	97.5	1.49	1.9
07/31/2018	2.64	0.25	3.12	0.48	98.2	2.25	0.21	4	0.48	98.7	0.94	2.08
08/31/2018	3.08	0.28	4.16	0.41	98.9	5	0.46	7	0.85	98.8	0.658	1.04
09/30/2018	2.5	0.34	4.02	0.36	98.7	2.5	0.34	6	0.54	98.6	0.221	0.368
10/31/2018	9.86	1.56	23.4	3.9	94.7	1.8	0.28	3	0.36	99.3	2.86	5.6
11/30/2018	13.2	1.88	15.4	2.17	95.1	6	0.85	10	1.69	96.3	7.59	13.7
12/31/2018	9.1	1.44	10.5	2.28	96.3	7.33	1.16	10	1.42	97.8	12.3	14.7
01/31/2019	14.8	2.47	19.8	3.34	92.7	9	1.5	10	1.97	97.1	10.83	19.1
02/28/2019	16.5	3.12	17.6	4	93.3	7.25	1.37	10	1.75	97.2	17.85	21.4
03/31/2019	11.27	1.95	13.3	2.17	94.9	5.5	0.95	8	1.28	97.2	22.27	23.7
04/30/2019	10.66	2.7	15.9	4.6	91.4	6.8	1.72	15.9	3.2	96.1	16.8	22.1
05/31/2019	6.06	0.83	10.4	1.14	96.5	2.75	0.38	5	0.54	98.5	11.5	14.4
06/30/2019	7.56	0.95	16.2	1.6	95.9	3.75	0.47	12	1.28	97.1	10.51	23.5
07/31/2019	4.58	0.44	6.87	0.59	97.8	3	0.29	4	0.45	99	3.215	5.31
08/31/2019	4.06	0.47	6.05	0.71	97.3	4	0.47	8	0.94	97.7	0.389	0.783
09/30/2019	16.9	4.95	33.8	9.07	91.1	12.2	3.57	15	3.22	96.9	7.49	15.5
10/31/2019	28.3	3.77	58.2	4.63	84.56	19	2.53	44	2.89	90	4.22	14.4
11/30/2019	15.1	1.64	15.1	1.64	95.6	23	2.5	23	2.5	95.5	7.19	7.19
12/31/2019	12.6	1.86	15.8	2.68	95.7	11	1.63	12	1.53	97.4	3.97	5.06
01/31/2020	10.67	2.01	12.05	2.26	93.2	10.05	1.89	12	1.86	96.2	10.04	14.1
02/29/2020	7.65	1.52	11.9	2.01	93.5	4.15	0.83	6	0.93	98.5	21.15	23.7
03/31/2020	17	5.02	22	6.39	90.3	11.25	3.32	14	5.16	95.8	17.72	22
04/30/2020												
05/31/2020												
06/30/2020	6.73	2.04	9.2	2.62	94.3	9.5	2.87	12	3.43	96	0.02	0.0213
07/31/2020	6	1.05	11.9	2.17	93	2.5	0.44	4	0.73	98.3	0.105	0.0496
08/31/2020	12.3	2.14	19.3	3.93	73.9	7.5	1.31	13	2.64	92.9	0.041	0.109
09/30/2020	7	1.58	17.7	3.72	88.8	5.2	1.17	8	1.88	96.5	0.0618	0.116
10/31/2020	2	0.48	2	0.59	98.8	9.91	2.41	20	3.81	92.4	0.116	0.238
11/30/2020	2	0.48	2	0.48	99.3	6.75	1.65	9	2.05	97	0.0301	0.0444
12/31/2020	2.13	0.46	2.5	0.53	99	10.2	2.2	21	4.48	92	0.092	0.298
01/31/2021	9.1	1.89	27.8	6.43	87.2	9.1	1.58	27.8	6.43	97.5	2.62	10.4
02/28/2021	3.7	0.93	7.81	1.99	96.5	5.8	1.47	7	1.67	97.8	0.017	0.02
03/31/2021	5.94	1.32	8.2	1.69	97.7	9.4	2.08	13	2.87	97	0.0274	0.0558
04/30/2021	4.35	0.91	4.95	1.07	98.2	8.1	1.7	16	2.97	95.2	0.185	0.682
05/31/2021	6.97	1.46	10.8	2.13	91.5	2.85	0.59	5.67	0.89	97.3	0.91	2.57
06/30/2021	15.35	3.14	23.8	5.89	89.4	9.4	1.92	11	5.49	93.3	6.48	10.4
07/31/2021	9.92	1.85	16	2.79	93.6	4.42	0.82	10.2	1.92	97	6.95	9.11
08/31/2021	4.28	0.88	10.8	1.96	95.6	5.15	1.05	8	1.45	97.3	0.17	0.685
09/30/2021	2.55	0.569	4	0.9	97.9	1.15	0.256	2	0.45	99.4	0.0798	0.163
10/31/2021	2.95	0.739	4	0.829	97.9	3.9	0.977	9	1.886	92.9	0.0359	0.0609
11/30/2021	2	0.53	2	0.65	99.3	2.5	0.67	2.8	0.91	99.4	2.5	2.8
12/31/2021	2.1	0.53	2.4	0.63	98.5	3.5	0.89	4.6	1.21	95.8	0.0298	0.0575
01/31/2022	3.4	0.87	5.6	1.5	96	4.1	1.05	6	1.51	96.9	0.1846	0.287
02/28/2022	3.3	0.73	4.7	1.03	97.7	3.3	0.73	5	1.1	98.7	0.015	0.0423
03/31/2022	2.1	0.49	2.5	0.63	97.9	3.1	0.72	7.5	2.04	96.1	0.0259	0.0467
04/30/2022	3.48	0.85	5.9	1.33	96.5	2.8	0.69	4.5	1.33	99.1	0.0283	0.0491
05/31/2022	3.68	0.93	5.21	1.73	96.2	7.73	0.95	11	3.06	95	0.0244	0.0422
06/30/2022	6.49	1.7	9.39	2.41	90.3	3.37	0.88	4	1.05	97.1	0.0953	0.209
07/31/2022	4.15	0.79	8.32	1.56	93	3.25	0.62	6.1	1.14	96.8	0.1001	0.269
08/31/2022	6.88	1.36	10.5	2.53	91.4	4.6	0.92	8	1.5	175	2.9	4.13
09/30/2022	6.4	1.41	14.8	3.12	94.7	2.7	0.6	3	0.63	98.3	0.02	0.02
Average	7.95375	1.518892857	12.78321429	2.464446429	94.29035714	6.012678571	1.159160714	10.05482143	1.920464286	98.07142857	4.812364286	6.973871429
Minimum	2	0.25	2	0.36	73.9	1.15	0.21	2	0.32	90	0.015	0.02
Maximum	28.3	5.02	58.2	9.07	99.3	23	3.57	44	6.43	175	22.27	23.7
Count	56	56	56	56	56	56	56	56	56	56	56	56
Std Dev	5.668549778	1.108502621	10.63500756	1.937506616	4.512855159	4.142159512	0.797882032	7.374378986	1.354242787	10.68890188	6.093286182	8.011811475
CV	0.712688955	0.729809621	0.831950973	0.786183296	0.047861259	0.688904198	0.688327358	0.733417201	0.705164265	0.108990988	1.266173095	1.14883269
95th Percentile	16.925	3.83	29.3	6.49	98.925	11.4875	2.615	22.25	4.65	99.325	17.7525	22.45

Table B- 2 Effluent Data - Seasonal Ammonia, and pH. Note: No data recorded 4/30 - 5/31/2020 due to construction for treatment upgrade.

	May 1 - Sep 30 (meet by Jul 1, 2021)				Oct 1 - Apr 30 (meet by Jul 1, 2021)					
Parameter	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	pH	pH
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross
Statistical Base	MO AVG	MO AVG	DAILY MAX	DAILY MAX	MO AVG	MO AVG	DAILY MAX	DAILY MAX	INST MAX	INST MIN
Limit Units	mg/L	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L	lb/d	SU	SU
Current Limit	10.1	4.6	27	12	7	3.2	15.2	7	9	6.5
Proposed Limit	6	3	17.6	8	7	3.2	15.2	7	9	6.5
12/31/2017					5.95	1.21	7.43	1.6	8.56	7.96
01/31/2018					8.57	1.82	13	3.24	8.3	7.87
02/28/2018					8.065	1.37	8.7	1.57	8.01	7.83
03/31/2018					7.35	1.25	12.7	1.87	8.11	7.87
04/30/2018					14.1	2.63	15.6	3	8.14	7.54
05/31/2018	10.39	1.83	18.5	2.75					7.83	7.5
06/30/2018	1.49	0.21	1.9	0.31					7.65	7.25
07/31/2018	0.94	0.003	2.08	0.14					7.68	7.21
08/31/2018	0.658	0.06	1.04	0.089					7.83	7.37
09/30/2018	0.221	0.03	0.368	0.058					7.82	7.5
10/31/2018					2.86	0.45	5.6	1.11	7.85	7.63
11/30/2018					7.59	1.08	13.7	1.61	8.48	7.52
12/31/2018					12.3	1.95	14.7	3.2	8.55	7.61
01/31/2019					10.83	1.81	19.1	3.22	8.76	7.86
02/28/2019					17.85	3.38	21.4	4.03	8.46	7.92
03/31/2019					22.27	3.85	23.7	4.23	8.34	7.87
04/30/2019					16.8	4.26	22.1	5.83	8.11	7.65
05/31/2019	11.5	1.59	14.4	2.46					7.88	7.47
06/30/2019	10.51	1.32	23.5	2.33					7.74	7.53
07/31/2019	3.215	0.31	5.31	0.41					7.69	7.13
08/31/2019	0.389	0.045	0.783	0.086					7.84	7.43
09/30/2019	7.49	2.19	15.5	3.16					7.89	7.52
10/31/2019					4.22	0.56	14.4	0.21	7.99	7.64
11/30/2019					7.19	0.78	7.19	0.78	8.28	7.68
12/31/2019					3.97	0.59	5.06	0.647	8.2	7.54
01/31/2020					10.04	1.89	14.1	2.61	8.11	7.52
02/29/2020					21.15	4.25	23.7	4.71	7.87	7.55
03/31/2020					17.72	5.23	22	6.95	8.41	7.6
04/30/2020										
05/31/2020										
06/30/2020	0.02	0.006	0.0213	0.006					8.55	8.35
07/31/2020	0.105	0.0087	0.0496	3019					8.57	8.2
08/31/2020	0.041	0.0071	0.109	0.022					8.62	8.07
09/30/2020	0.0618	0.014	0.116	0.022					8.67	8.47
10/31/2020					0.116	0.028	0.238	0.045	8.67	8.59
11/30/2020					0.0301	0.0048	0.0444	0.0087	8.66	8.53
12/31/2020					0.092	0.0199	0.298	0.61	8.59	8.3
01/31/2021					2.62	0.545	10.4	2.4	8.41	8.28
02/28/2021					0.017	0.0043	0.02	0.0051	8.47	8.37
03/31/2021					0.0274	0.006	0.0558	0.0122	8.38	8.1
04/30/2021					0.185	0.0389	0.682	0.1268	8.27	8.05
05/31/2021	0.91	0.1913	2.57	0.507					8.12	7.94
06/30/2021	6.48	1.328	10.4	2.09					8.01	7.74
07/31/2021	6.95	1.3	9.11	1.59					7.97	7.76
08/31/2021	0.17	0.0349	0.685	0.122					8.06	6.94
09/30/2021	0.0798	0.0178	0.163	0.0364					8.51	7.98
10/31/2021					0.0359	0.0089	0.0609	0.0126	8.5	8.12
11/30/2021					2.5	0.0068	2.8	0.0065	8.48	8.34
12/31/2021					0.0298	0.0076	0.0575	0.0147	8.51	8.19
01/31/2022					0.1846	0.0474	0.287	0.035	8.86	8.02
02/28/2022					0.015	0.0188	0.0423	0.0423	8.19	7.75
03/31/2022					0.0259	0.006	0.0467	0.0127	7.88	7.68
04/30/2022					0.0283	0.0069	0.0491	0.0166	7.74	7.59
05/31/2022	0.0244	0.0062	0.0422	0.0103					7.83	7.63
06/30/2022	0.0953	0.025	0.209	0.0528					7.71	7.57
07/31/2022	0.1001	0.0191	0.269	0.0505					7.83	7.57
08/31/2022	2.9	0.586	4.13	0.7476					7.61	7.39
09/30/2022	0.02	0.0044	0.02	0.0044					8.5	7.67
Average	2.69835	0.464020833	4.6364625	126.50225	6.397875	1.222165625	8.726928125	1.6801625	8.188392857	7.781428571
Minimum	0.02	0.003	0.02	0.0044	0.015	0.0043	0.02	0.0051	7.61	6.94
Maximum	11.5	2.19	23.5	3019	22.27	5.23	23.7	6.95	8.86	8.59
Count	24	24	24	24	32	32	32	32	56	56
Std Dev	3.876867945	0.69879344	6.85123268	616.1003025	6.976122229	1.510575843	8.464974588	1.924079656	0.343446578	0.364179918
CV	1.436755034	1.505952728	1.477685343	4.870271497	1.090381139	1.235982924	0.969983305	1.145174741	0.0419431	0.046801164
95th Percentile	10.492	1.794	18.05	3.0985	19.335	4.2545	22.82	5.214	8.67	8.395

Table B- 3 Effluent Data – *E.coli*, Flow, Temperature, and Phosphorus. Note: No data recorded 4/30 - 5/31/2020 due to construction for treatment upgrade.

Parameter	E. coli	E. coli	Flow	Flow	Temp	Temp	Temp	Phosphorus	Phosphorus
Monitoring Location	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Effluent Gross	Upstream	Effluent Gross	Effluent Gross
Statistical Base	MO GEOMN	INST MAX	MO AVG	DAILY MAX	MDMT	MDMA	INST	MO AVG	WKLY AVG
Limit Units	#/100mL	#/100mL	mgd	mgd	C	C	C	mg/L	mg/L
Current Limit	126	406	Report	Report	Report	Report	Report	Report	Report
Proposed Limit	126	410	Report	Report	Report	Report	Report	Report	Report
12/31/2017	5	28.8	0.02436	0.027778	17.9	-0.7		2.72	2.72
01/31/2018	22.2	866.4	0.025405	0.034552	12.85	12.13		2.95	2.95
02/28/2018	1.3	4.1	0.024041	0.030798	13.9	12.1		4.63	4.63
03/31/2018	1.3	4.1	0.020473	0.026998	19.91	12.32	4.1		
04/30/2018	11.9	214.2	0.022364	0.032487	25.99	20.71		9.25	9.25
05/31/2018	450.7	2419.6	0.021084	0.031193	27.83	21.66		5.61	5.61
06/30/2018	17.8	117.8	0.017478	0.0304	29.39	23.03	12.5	6.1	6.1
07/31/2018	37.5	325.5	0.01137	0.016666	34.7	27.6		0.396	0.396
08/31/2018	19.2	248.1	0.011098	0.01875	38.31	29.89		5.78	5.78
09/30/2018	6.9	19.9	0.016425	0.018283	30.27	22.05	12.8	5.49	5.49
10/31/2018	11.9	73.8	0.018978	0.024125	19.75	16.68		6.95	6.95
11/30/2018	5.3	172.3	0.017089	0.022935	18.3	17.81		3.84	3.84
12/31/2018	2.9	6.3	0.019076	0.026132	1.78	1.56	2.4	4.74	4.74
01/31/2019	6.5	27.5	0.020063	0.025446	7.04	3.68		4.73	4.73
02/28/2019	2.44	3	0.022728	27441	7.42	4.34		5.99	5.99
03/31/2019	4.1	17.5	0.020774	0.027014	10.3	17.32	3.1	5.93	5.93
04/30/2019	6.2	52.8	0.030444	0.050303	24.15	15.85		7.58	7.58
05/31/2019	52.5	83.6	0.016596	0.022381	27.9	21.7		6.05	6.05
06/30/2019	10.6	83.3	0.015183	0.02118	31.74	24.79	17.6	10.9	10.9
07/31/2019	9.4	38.4	0.011601	3020159	33.63	26.05		6.71	6.71
08/31/2019	5.59	19.5	0.014076	0.017037	39.94	28.26		4.37	4.37
09/30/2019	86.2	461	0.035154	0.07305	33.37	25.53	14.3	8.75	8.75
10/31/2019	344.9	2419.6	0.015972	0.03867	18.18	13.62		5.44	5.44
11/30/2019	0	0	0.015183	3017206	9.61	10.05		5.3	5.3
12/31/2019	125.7	2419.6	0.017769	302946	4.28	4.84	3.1	4.83	4.83
01/31/2020	7.9	165.88	0.022602	3029200	5.1	4.7		6.02	6.02
02/29/2020	1.4	6.3	0.0241	0.048872	6.49	6.66		5.26	5.26
03/31/2020	3.6	13.4	0.035447	0.251805	12.51	10.16	4	4.93	4.93
04/30/2020									
05/31/2020									
06/30/2020	1	1	0.03633	0.057472	21.48	22.25	17.6	5	5
07/31/2020	1	1	0.021164	0.025595	24.06	24.29		5.29	5.29
08/31/2020	1	1	0.020976	3024420	24.1	23.96		5.71	5.71
09/30/2020	1	1	0.027077	0.03164	21.97	22.08	18.7	5.46	5.46
10/31/2020	1	1	0.029215	0.33586	18.32	17.55		4.91	4.91
11/30/2020	1	1	0.029355	0.040267	10.15	10.02		4.7	4.7
12/31/2020	1	1	0.026898	0.029915	6.3	5.8	3.2	3.61	3.61
01/31/2021	1	1	0.024943	0.028801	5.2	4.5		4.99	4.99
02/28/2021	1	1	0.030375	0.036243	5.9	5.1		5.13	5.13
03/31/2021	1	1	0.026626	0.035984	10.3	8.5	4.5	9.06	9.06
04/30/2021	1	1	0.025235	0.029276	14.7	13.6		5.31	5.31
05/31/2021	1	1	0.025207	0.032654	16.8	19		7.52	7.52
06/30/2021	11.8	816.4	0.024574	0.031071	27.4	23.6	13.5	5.61	5.61
07/31/2021	1	1	0.02245	3027037	26.5	24.3		7.96	7.96
08/31/2021	1	1	0.024626	0.029871	30	25		5.71	5.71
09/30/2021	1	1	0.026794	0.033145	22.7	20.1	14.6	5.36	5.36
10/31/2021	1	1	0.030054	0.035704	17.8	17.1		4.52	4.52
11/30/2021	1	1	0.031142	0.040052	12.2	11.8		4.6	4.6
12/31/2021	1	1	0.03063	0.034741	8.7	7.8	5.2	0	0
01/31/2022	1	1	0.03082	0.037968	3.3	1.9		2.98	2.98
02/28/2022	1	1	0.026844	0.03343	4.8	6.1		3.9	3.9
03/31/2022	1	1	0.028045	0.04165	11.6	10.1	5.8	4.15	4.15
04/30/2022	1	1	0.029515	0.040625	12.4	11.6		4.66	4.66
05/31/2022	1	1	0.030543	0.0377	17.2	16.9		4.88	4.88
06/30/2022	1	1	0.031473	0.051218	22.9	21	12.9	5.18	5.18
07/31/2022	1	1	0.022959	0.036279	23.4	26.6		5.06	5.06
08/31/2022	1	1	0.023714	0.028918	28.7	23.3		3.56	3.56
09/30/2022	1	1	0.026439	0.044563	24.6	21.9	14.7	4.1	4.1
Average	23.20946429	199.2085714	0.023767071	275864.485	18.50035714	15.71678571	9.715789474	5.275745455	5.275745455
Minimum	0	0	0.011098	0.016666	1.78	-0.7	2.4	0	0
Maximum	450.7	2419.6	0.03633	3029200	39.94	29.89	18.7	10.9	10.9
Count	56	56	56	56	56	56	19	55	55
Std Dev	76.45163827	560.5494639	0.006152784	869083.9033	9.909205998	8.217878538	5.902566594	1.853697808	1.853697808
CV	3.293985476	2.813882253	0.258878507	3.150401559	0.535622416	0.522872723	0.607523106	0.351362253	0.351362253
95th Percentile	96.075	1254.7	0.03239325	3021224.25	33.8975	26.85	17.71	8.843	8.843

Table B- 4 Weekly Effluent Ammonia (mg/L) Data. Post Treatment Upgrade December 2020 – December 2022

Date	Ammonia - Daily mg/L	Ammonia - Monthly mg/L	May-Sep - Daily mg/L	May-Sep - Monthly mg/L	Oct-Apr Daily mg/L	Oct-Apr Monthly mg/L
Dec-20	0.021				0.021	
Dec-20	0.020				0.020	
Dec-20	0.020				0.020	
Dec-20	0.119				0.119	
Dec-20	0.298	0.096			0.298	0.096
Jan-21	0.043				0.043	
Jan-21	0.020				0.020	
Jan-21	0.020	0.028			0.020	0.028
Feb-21	0.008				0.008	
Feb-21	0.020				0.020	
Feb-21	0.020				0.020	
Feb-21	0.020	0.017			0.020	0.017
Mar-21	0.022				0.022	
Mar-21	0.020				0.020	
Mar-21	0.020				0.020	
Mar-21	0.056				0.056	
Mar-21	0.020	0.027			0.020	0.027
Apr-21	0.682				0.682	
Apr-21	0.020				0.020	
Apr-21	0.020				0.020	
Apr-21	0.020	0.186			0.020	0.186
May-21	0.138		0.138			
May-21	0.020		0.020			
May-21	0.020		0.020			
May-21	2.570	0.687	2.570	0.687		
Jun-21	3.100		3.100			
Jun-21	6.160		6.160			
Jun-21	6.900		6.900			
Jun-21	10.400		10.400			
Jun-21	5.880	6.488	5.880	6.488		
Jul-21	9.110		9.110			
Jul-21	8.640		8.640			
Jul-21	6.270		6.270			
Jul-21	3.800	6.955	3.800	6.955		
Aug-21	0.685		0.685			
Aug-21	0.105		0.105			
Aug-21	0.033		0.033			
Aug-21	0.025		0.025			
Aug-21	0.020	0.174	0.020	0.174		
Sep-21	0.055		0.055			
Sep-21	0.163		0.163			
Sep-21	0.042		0.042			
Sep-21	0.059	0.080	0.059	0.080		
Oct-21	0.043				0.043	

Date	Ammonia - Daily mg/L	Ammonia - Monthly mg/L	May-Sep - Daily mg/L	May-Sep - Monthly mg/L	Oct-Apr Daily mg/L	Oct-Apr Monthly mg/L
Oct-21	0.061				0.061	
Oct-21	0.020				0.020	
Oct-21	0.020	0.036			0.020	0.036
Nov-21	0.022				0.022	
Nov-21	0.020				0.020	
Nov-21	0.020				0.020	
Nov-21	0.020				0.020	
Nov-21	0.020	0.020			0.020	0.020
Dec-21	0.020				0.020	
Dec-21	0.058				0.058	
Dec-21	0.022				0.022	
Dec-21	0.020	0.030			0.020	0.030
Jan-22	0.287				0.287	
Jan-22	0.128				0.128	
Jan-22	0.139	0.144			0.139	0.144
Feb-22	0.020				0.020	
Feb-22	0.040				0.040	
Feb-22	0.201				0.201	
Feb-22	0.020				0.020	
Feb-22	0.015	0.059			0.015	0.059
Mar-22	0.047				0.047	
Mar-22	0.020				0.020	
Mar-22	0.020				0.020	
Mar-22	0.020				0.020	
Mar-22	0.023	0.026			0.023	0.026
Apr-22	0.020				0.020	
Apr-22	0.020				0.020	
Apr-22	0.024				0.024	
Apr-22	0.049	0.028			0.049	0.028
May-22	0.020		0.020			
May-22	0.042		0.042			
May-22	0.020		0.020			
May-22	0.020		0.020			
May-22	0.020	0.024	0.020	0.024		
Jun-22	0.020		0.020			
Jun-22	0.085		0.085			
Jun-22	0.067		0.067			
Jun-22	0.208	0.095	0.208	0.095		
Jul-22	0.269		0.269			
Jul-22	0.031		0.031			
Jul-22	0.036		0.036			
Jul-22	0.065	0.100	0.065	0.100		
Aug-22	1.160		1.160			
Aug-22	3.500		3.500			
Aug-22	4.130		4.130			
Aug-22	3.100		3.100			

Date	Ammonia - Daily mg/L	Ammonia - Monthly mg/L	May-Sep - Daily mg/L	May-Sep - Monthly mg/L	Oct-Apr Daily mg/L	Oct-Apr Monthly mg/L
Aug-22	2.560	2.890	2.560	2.890		
Sep-22	0.020		0.020			
Sep-22	0.020		0.020			
Sep-22	0.020		0.020			
Sep-22	0.020	0.020	0.020	0.020		
Oct-22	0.020				0.020	
Oct-22	0.020				0.020	
Oct-22	0.078				0.078	
Oct-22	0.020	0.034			0.020	0.034
Nov-22	0.041				0.041	
Nov-22	0.074				0.074	
Nov-22	0.020				0.020	
Nov-22	0.020	0.039			0.020	0.039
Dec-22	0.029				0.029	
Dec-22	0.020				0.020	
Dec-22	0.020				0.020	
Dec-22	0.039	0.027			0.039	0.027
Average	0.776	0.732	1.810	1.751	0.053	0.053
Minimum	0.008	0.017	0.020	0.020	0.008	0.017
Maximum	10.400	6.955	10.400	6.955	0.682	0.186
Count	107	25	44	10	63	15
Std Dev	2.037	1.893	2.891	2.762	0.098	0.050
CV	2.626	2.585	1.597	1.577	1.840	0.937
95th Percentile	6.076	5.768	8.379	6.745	0.195	0.156
90th Percentile	3.100	2.009	6.237	6.535	0.111	0.124

Table B- 5 Receiving Water Data

Date	Ammonia Inst Max mg/L	Ammonia Inst Max mg/L May - Sep	Ammonia Inst Max mg/L Oct-Apr	pH Inst Max Std Units	Temp Inst Max °C	Flow Inst Max mgd
12/31/2017						
01/31/2018						
02/28/2018						
03/31/2018	0.0421		0.0421	9.79	4.1	1.2
04/30/2018						
05/31/2018						
06/30/2018	0.02	0.02		8.38	12.5	6
07/31/2018						
08/31/2018						
09/30/2018	0.02	0.02		9.44	12.8	0.02
10/31/2018						
11/30/2018						
12/31/2018	0.02		0.02	9.48	2.4	6
01/31/2019						
02/28/2019						
03/31/2019	0.02		0.02	9.31	3.1	16
04/30/2019						
05/31/2019						
06/30/2019	0.02	0.02		9.33	17.6	18
07/31/2019						
08/31/2019						
09/30/2019	0.02	0.02		8.75	14.3	1.2
10/31/2019						
11/30/2019						
12/31/2019	0.02		0.02	9.03	3.1	3
01/31/2020						
02/29/2020						
03/31/2020	0.02		0.02	8.96	4	45
04/30/2020						
05/31/2020						
06/30/2020	0.2	0.2		8.89	17.6	3
07/31/2020						
08/31/2020						
09/30/2020	7.02	7.02		8.72	18.7	1.2
10/31/2020						
11/30/2020						
12/31/2020	0.098		0.098	8.72	3.2	2
01/31/2021						
02/28/2021						
03/31/2021	0.02		0.02	8.64	4.5	6.4
04/30/2021						
05/31/2021						
06/30/2021	0.02	0.02		8.65	13.5	6.5

Date	Ammonia Inst Max mg/L	Ammonia Inst Max mg/L May - Sep	Ammonia Inst Max mg/L Oct-Apr	pH Inst Max Std Units	Temp Inst Max ºC	Flow Inst Max mgd
07/31/2021						
08/31/2021						
09/30/2021	0.02	0.02		8.65	14.6	64
10/31/2021						
11/30/2021						
12/31/2021	0		0	8.33	5.2	3
01/31/2022						
02/28/2022						
03/31/2022	0.02		0.02	8.94	5.8	
04/30/2022						
05/31/2022						
06/30/2022	0.02	0.02		7.91	12.9	
07/31/2022						
08/31/2022						
09/30/2022	0.02	0.02		8.25	14.7	1.4
Average	0.40	0.74	0.03	8.85	9.72	10.82
Minimum	0	0.02	0	7.91	2.4	0.02
Maximum	7.02	7.02	0.098	9.79	18.7	64
Count	19	10	9	19	19	17
Std Dev	1.60	2.21	0.03	0.47	5.90	17.51
CV	3.99	2.99	0.97	0.05	0.61	1.62
95th Percentile	0.88	3.95	0.08	9.51	17.71	48.80
90th Percentile mg/L		0.88	0.05			
90th Percentile ug/L		882	53.28			

Appendix C. **Reasonable Potential and WQBEL Formulae**

A. Reasonable Potential Analysis

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, 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 WQBEL must be included in the permit.

1. Mass Balance

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

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

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:

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

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

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

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

Where:

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

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

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

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

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

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

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

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

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

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.

2. Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, 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) 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 cumula 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

3. Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

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

4. Reasonable Potential

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

B. WQBEL Calculations

1. Calculate the Wasteload Allocations (WLAs)

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

$$C_e = WLA = D \times (C_d - C_u) + C_u$$ *Equation 11*

Idaho's water quality criteria for some metals are expressed as the dissolved fraction, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, EPA must calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation __. As discussed in Appendix ___, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

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

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

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

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

where,

σ^2 = $\ln(CV^2 + 1)$

Z_{99} = 2.326 (z-score for the 99th percentile probability basis)

CV = coefficient of variation (standard deviation ÷ mean)

σ_4^2 = $\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

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

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

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

2. Derive the maximum daily and average monthly effluent limits

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

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

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

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

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

C. Critical Low Flow Conditions

The low flow conditions of a water body are used to determine WQBELs. In general, Idaho's WQS require criteria will 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.

Appendix D. **Reasonable Potential and WQBEL Calculations**

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

Facility Name	ID0024490 City of Culdesac
Facility Flow (mgd)	0.055
Facility Flow (cfs)	0.085

Critical River Flows (CFS)	(IDAPA 58.01.02 03.b)	Seasonal Low Flow: May - Sep	Seasonal High Flow: Oct-Sep
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1Q10	1.56	4.31
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	7Q10	1.76	4.77
Ammonia	30Q10 Seasonal	2.26	6.35

DF at defined percent of river flow allow 25%
DF at defined percent of river flow allow 25%

Receiving Water Data	Notes:	Seasonal Low Flow: May - Sep	Seasonal High Flow: Oct-Sep
Hardness, as mg/L $CaCO_3$ = 100 mg/L	5th % at critical flows		
Temperature, °C — Temperature, °C	90th Percentile (n=255, n=216)	22.2	11.5
pH, S.U. — pH, S.U.	95th percentile	8.3	8.3

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages present	AMMONIA, default: cold water, fish early life stages present
Effluent Data	Number of Samples in Data Set (n) - Post Treatment Upgrade		44	60
	Coefficient of Variation (CV) = Std. Dev./Mean - Post Treatment Upgrade		1.597	1.824
	Effluent Concentration, µg/L (Maximum) - (C_e) - Post Treatment Upgrade		10400	682
Receiving Water Data	90th Percentile Conc., µg/L - (C_u)		882	53
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	3,149	3,149
	Aquatic Life Criteria, µg/L	Chronic	929	1,524
Percent River Flow Default Value = 25%	Aquatic Life - Acute	1Q10	25%	25%
	Aquatic Life - Chronic	7Q10	25%	25%
		30Q10	25%	25%
Calculated Dilution Factors (DF)	Aquatic Life - Acute	1Q10	5.6	13.7
	Aquatic Life - Chronic	7Q10	6.2	15.0
	Aquatic Life - Chronic Ammonia	30Q10	7.6	19.7
Aquatic Life Reasonable Potential Analysis				
σ	$\sigma^2=\ln(CV^2+1)$		1.126	1.210
P_n	=(1-confidence level)$^{1/n}$, where confidence level =	99%	0.901	0.926
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	99%	3.2	2.9
Statistically projected critical discharge concentration (C_e)			33577	1976
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	6724	194
		Chronic (4-day)	6181	181
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic (30-day)	5169	151
Reasonable Potential to exceed Aquatic Life Criteria			YES	NO
Aquatic Life Effluent Limit Calculations				
Number of Compliance Samples Expected per month (n)			4	4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			30	--
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		1.597	--
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		1.597	--
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a-1)$	Acute	13,569	--
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_u \times (MZ_c-1)$	Chronic (4-day)	9,766	--
		Chronic (30-day)	1,239	--
Long Term Ave (LTA), ug/L	$WLAa \times \exp(0.5\sigma^2-z\sigma)$, Acute	99%	1,864	--
(99th % occurrence prob.)	$WLAc \times \exp(0.5\sigma^2-z\sigma)$; ammonia n=4, Chronic	99%	2,439	--
	$WLAc \times \exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	99%	664	--
Limiting LTA, ug/L	used as basis for limits calculation		664	--
Average Monthly Limit (AML), ug/L	where % occurrence prob =	95%	**1,019**	--
Maximum Daily Limit (MDL), ug/L	where % occurrence prob =	99%	**4,832.159**	--
Average Monthly Limit (AML), mg/L			**1.0**	--
Maximum Daily Limit (MDL), mg/L			**4.8**	--
Average Monthly Limit (AML), lb/day			**0.47**	--
Maximum Daily Limit (MDL), lb/day			**2.22**	--

References:

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

Appendix E. **CWA § 401 Certification**

Below is EPA's draft CWA § 401 Certification. EPA is taking comment on EPA's intent to certify this permit as described in Section VI.X.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

Clean Water Act (CWA) Section 401 Certification for Discharger Located within Tribal Boundaries

Facility: City of Culdesac Wastewater Treatment Plan
NPDES Permit Number: ID0024490
Location: Nez Perce
Receiving Water: Lapwai Creek
Facility Location: Intersection of Main Street and Canyon Road, Culdesac, ID 83524

EPA hereby certifies that the conditions in the National Pollutant Discharge Elimination System (NPDES) permit for the City of Culdesac wastewater treatment plant, are necessary to assure compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA. See CWA Section 401(a)(1), 33 U.S.C. 1341(a)(1); 40 CFR 124.53(e).

The State in which the discharge originates is responsible for issuing the CWA Section 401 certification pursuant to CWA Section 401(a)(1). When a NPDES permit is issued on Tribal Land, the Tribe is the certifying authority where the Tribe has been approved by EPA for Treatment as a State (TAS) pursuant to CWA Section 518(e) and 40 CFR § 131.8. Where a Tribe does not have TAS, EPA is the certifying authority. The Nez Perce does not have TAS for the reservation. Therefore, EPA is responsible for issuing the CWA Section 401 Certification for this permit.

Mathew J. Martinson
CAPT, USPHS
Branch Chief
Permits, Drinking Water, and Infrastructure

Appendix F. **Antidegradation Analysis**

The WQS contain an antidegradation policy providing Tier 1, Tier 2, and Tier 3 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 those water bodies where an outstanding resource water has been designated by the legislature, that water quality shall be maintained and protected from the impacts of point and nonpoint source activities (IDAPA 58.01.02.051.03).

EPA is employing a water body by water body approach in conducting the antidegradation analysis. 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 was used to determine support status and the Tier protection. (IDAPA 58.01.02.052.05).

According to the 2022 Integrated Report, Lapwai Creek in the vicinity of the discharge is designated as 3T waters and the water quality of the creek is unassessed. Because of this EPA has no evidence to suggest the river in not fully supporting beneficial uses. Therefore, EPA will provide a Tier 2 antidegradation analysis.

Pollutants with Limits in the Current and Proposed Permit

For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.06.a.i), and the future discharge quality is based on the proposed permit limits (IDAPA 58.01.02.052.06.a.ii). For this permit, this means determining the permit's effect on water quality based upon the limits for BOD_5, TSS, *E. coli*, total ammonia as nitrogen, and pH in the current and proposed permits. Table F-1 provides a summary of the changes between the current permit limits and the proposed reissued permit limits.

Table F- 1: Comparison of Proposed and Current Permit Limits

Parameters	Average Monthly Limit		Average Weekly Limit		Maximum Daily Limit	
	Draft Permit (2022)	Current Permit (2016)	Draft Permit (2022)	Current Permit (2011)	Draft Permit (2022)	Current Permit (2016)
E. coli[a,b]	126/100mL	126/100mL	----	126/100mL	406/100mL	410/100mL
Enterococci [a,b]	35/100mL	----	----	----	130/100mL	----

a. Either *E. coli* or Enterococci limits must be met and monitored, not both.

b. Bacteria measured as number of organisms per 100mL of water with the monthly average being a geometric mean.

Apart from *E. coli* and enterococci changes, the proposed permit limits are the same as the existing permit limits. The proposed enterococci limits are a new fecal indicator that may be used as an alternative to *E. coli* for determining compliance with fecal contamination. The proposed *E. coli* limit is consistent with Idaho WQS approved by EPA in February 2022. The bacteria criteria are applied at the end of pipe; thus, water quality standards will be met at the end of pipe and no degradation will occur. Since the effluent limits in the permit will ensure that water quality standards are met at the end of pipe, there will be no adverse change in water quality and no degradation will result from the discharge of these pollutants in the reissued permit and the quality of the receiving water is maintained and protected. Therefore, EPA concludes that the permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.06).