

Fact Sheet for IPDES Permit No. ID0023167

01/07/2020

Idaho Department of Environmental Quality (DEQ) proposes to reissue an Idaho Pollutant Discharge Elimination System (IPDES) Permit to discharge pollutants pursuant to the provisions of IDAPA 58.01.25 to:

City of Cascade
880 South Main Street
Cascade, ID 83611

Public Comment Start Date: 09/05/2019
Public Comment Expiration Date: 10/04/2019
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Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Idaho Department of Environmental Quality (DEQ) made in writing the Idaho Pollutant Discharge Elimination System (IPDES) permit for the City of Cascade.

This fact sheet complies with IDAPA 58.01.25.108.02, which requires DEQ to prepare a permit and accompanying fact sheet for public evaluation before issuing an IPDES permit.

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Acronyms

| | |
|-------------------|--|
| 1Q10 | 1 day, 10 year low flow |
| 1B3 | Biologically-based and indicates an allowable exceedance of once every 3 years. |
| 4B3 | Biologically-based and indicates an allowable exceedance for 4 consecutive days once every 3 years. |
| 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. |
| 30Q5 | 30-day, 5 year low flow |
| 30Q10 | 30-day, 10 year low flow |
| AML | Average Monthly Limit |
| BOD ₅ | Biochemical Oxygen Demand, five-day |
| BMP | Best Management Practices |
| °C | Degrees Celsius |
| CBOD ₅ | Carbonaceous Biochemical Oxygen Demand, five-day |
| CFR | Code of Federal Regulations |
| CFS | Cubic Feet per Second |
| CV | Coefficient of Variation |
| CWA | Clean Water Act |
| DEQ | Idaho Department of Environmental Quality |
| DMR | Discharge Monitoring Report |
| EPA | U.S. Environmental Protection Agency |
| IDAPA | Refers to citations of Idaho administrative rules |
| IDWR | Idaho Department of Water Resources |
| I/I | Inflow and Infiltration |
| IPDES | Idaho Pollutant Discharge Elimination System |
| lb/day | Pounds per day |
| LD ₅₀ | Dose at which 50% of test organisms die in a specified time period |
| LTA | Long Term Average |
| MDL | Maximum Daily Limit or Method Detection Limit |
| mgd | Million gallons per day |
| mg/L | Milligrams per liter |
| mL | Milliliters |

| | |
|-----------------|---|
| O&M | Operations and maintenance |
| POC | Pollutant(s) of Concern |
| POTW | Publicly Owned Treatment Works |
| QAPP | Quality Assurance Project Plan |
| RIBs | Rapid Infiltration Basins |
| RPA | Reasonable Potential Analysis |
| RPMF | Reasonable Potential Multiplication Factor |
| RPTE | Reasonable Potential To Exceed |
| SIU | Significant Industrial User |
| s.u. | Standard Units |
| TBEL | Technology Based Effluent Limits |
| TMDL | Total Maximum Daily Load |
| 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 _c | Toxic Units, Chronic |
| WET | Whole Effluent Toxicity |
| USGS | United States Geological Survey |
| WLA | Wasteload allocation |
| WQBEL | Water quality-based effluent limit |
| WQC | Water Quality Criteria |
| WQS | Water Quality Standards |

1 Introduction

This fact sheet provides information on the Idaho Department of Environmental Quality (DEQ) Idaho Pollutant Discharge Elimination System (IPDES) permit for the City of Cascade. This fact sheet complies with the Rules Regulating the Idaho Pollutant Discharge Elimination System Program (IDAPA 58.01.25), which requires DEQ to prepare a permit and accompanying fact sheet for public evaluation before issuing an IPDES permit. This permit also addresses releases of effluent to the hyporheic zone in compliance with the Ground Water Quality Rules (IDAPA 58.01.11.006, 58.01.11.150.03, and 58.01.11.400.01.c).

DEQ proposes to reissue the IPDES permit for the City of Cascade publicly owned treatment works (POTW) to ensure protection of water quality and human health. The permit places conditions on the type, volume, and concentration of pollutants discharged from the facility to waters of the United States. This permit also limits discharges to Idaho's ground water that have potential to impact surface water beneficial uses as authorized in the Ground Water Quality Rules. This fact sheet includes:

- a map and description of the discharge location;
- a listing of effluent limits and other conditions the facility must comply with;
- documentation supporting the effluent limits and conditions necessary for compliance;
- technical material supporting the conditions in the permit; and
- information on public comment, public hearing, and appeal procedures.

Terms used in this fact sheet are defined in Section 5, Definitions, of the permit.

Public Comment

The permit application, permit, and fact sheet describing the terms and conditions applicable to the permit are available for public review and comment during a public comment period. The public is provided at least 30 days to provide comments to DEQ. Persons wishing to request a public meeting for this facility's permit must do so in writing within 14 calendar days of public notice being published that a permit has been prepared; requests for public meetings must be submitted to DEQ by 09/19/2019. Requests for extending a public comment period must be provided to DEQ in writing before the last day of the comment period. For more details on preparing and filing comments about these documents, please see the IPDES guidance *Public Participation in the Permitting Process* at "<http://www.deq.idaho.gov/media/60178029/ipdes-public-participation-permitting-process-0216.pdf>". For more information, please contact the permit writer.

After the close of the public comment period, DEQ considers information provided by the public, prepares a document summarizing the public comments received, and may make changes to the permit in response to the public comments. DEQ will include the summary and responses to comments in Appendix D of the final fact sheet. After the public comment period and prior to issuing the final permit decision, DEQ will provide the applicant an opportunity to submit additional information to respond to public comments. DEQ may request more information from the applicant in order to respond to public comments (IDAPA 58.01.25.109.02.h.).

DEQ will assess the public comment in conjunction with any additional information received from the applicant and develop a proposed permit. The Environmental Protection Agency (EPA)

may take up to 90 days from the publication of public notice of the permit to develop and document specific grounds for objections to a proposed permit. If EPA objects to a proposed permit DEQ must satisfactorily address the objections within the time period specified in the memorandum of agreement between EPA and DEQ (40 CFR 123.44). Otherwise, EPA may issue a permit that is in accordance with 40 CFR Parts 121, 122, and 124. If EPA issues the permit, any state, interstate agency, or interested person may request EPA hold a public hearing regarding the objection.

Permit Issuance

Following the public comment period(s) on a draft permit and after receipt of any comments on the proposed permit from EPA, DEQ will issue a final permit decision, the final permit, and the fact sheet. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit (IDAPA 58.01.25.107.04.). The final permit and final fact sheet will be posted on the DEQ webpage. Response to comments will be located in the final fact sheet as an appendix.

The public has access to a permit appeals process (IDAPA 58.01.25.204). Appeal of a final IPDES permit decision begins by filing a petition for review with DEQ's hearing coordinator within 28 days after DEQ serves notice of the final permit decision. The permit holder or applicant and any person or entity who filed comments or who participated in the public meeting on the draft permit may file a petition for review. Ultimately, any person aggrieved by a final IPDES action or determination has a right to judicial review by filing a petition for review as described in IDAPA 58.01.25.204.26.

Documents are Available for Review

The draft IPDES permit and fact sheet can be reviewed or obtained by visiting or contacting the DEQ State office between 8:00 a.m. and 5:00 p.m., Monday through Friday at the address below. The permit and fact sheet can also be found by visiting the DEQ website at "<http://www.deq.idaho.gov/news-public-comments-events/>".

DEQ
1410 N. Hilton St.
Boise, ID 83706
208-373-0502

The fact sheet and permit are also available at the DEQ Regional Office:

Boise Regional Office
1445 N. Orchard St.
Boise, ID 83706
208-373-0550

Disability Reasonable Accommodation Notice

For technical questions regarding the permit or fact sheet, contact the permit writer at the phone number or e-mail address at the beginning of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 (ask to be connected to the permit writer at the above phone number). Additional services can be made available to a person with disabilities by contacting the permit writer.

2 Background Information

2.1 Facility Description

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

Table 1. Facility Information.

| | | |
|--|--|--|
| Permittee | City of Cascade | |
| Facility Physical Address | City of Cascade Publicly Owned Treatment Works 880 South Main Street Cascade, ID 83611 | |
| Facility Mailing Address | PO Box 649 Cascade, Idaho 83611 | |
| Facility Contact | Steve Yamamoto Public Works Superintendent 208.382.4279 spyamamoto10@gmail.com | |
| Certifying Official | Judy Nissula Mayor 208.315.1962 | |
| Facility Location | Latitude: 44.506722 Longitude: -116.028488 | |
| Receiving Water Name | North Fork Payette River | |
| Outfall 001 Location | Latitude: 44.504734 Longitude -116.021452 | |
| Internal Discharge 001 Location ^a | #1 | Latitude: 44.505970 Longitude -116.023699 |
| | #2 | Latitude: 44.505724 Longitude -116.023924 |
| | #3 | Latitude: 44.505488 Longitude -116.024149 |
| | #4 | Latitude: 44.505251 Longitude -116.024381 |
| Outfall 002 | Latitude: 44.505208 Longitude -116.023441 | |
| Ground Water Monitoring Well 001 (GMMW 001) | TBD | |
| Permit Status | | |
| Application Submittal Date | December 30 th , 2008 (updated April 8 th , 2018) | |
| Date Application Deemed Complete | March 2 nd , 2009 | |

- a. Four distinct outlet valves from cell #3 are present that correspond to a particular RIB. DEQ makes no distinction between these four valves and will consider any effluent leaving cell #3, and into any RIB, a discharge from Internal Discharge 001.

The City of Cascade owns and operates the POTW located in Cascade, Idaho that discharges year-round to the North Fork of the Payette River (N.F. Payette River). The collection system

has no combined sewers. The facility serves a resident population of 1,000 based on their permit application and there are no major industries discharging to the facility.

2.1.1 Facility Information

The city operates four lift stations in the collection system. Influent enters the facility at the headworks and proceeds through a treatment process consisting of three non-aerated facultative lagoons in series, with lagoon #3 discharging on a rotational basis to one of four rapid infiltration basins (RIBs) for total suspended solids (TSS) control, nutrient removal, temperature reduction and disinfection. The treated wastewater then percolates through the soils underneath the RIBs, which provides further treatment. An underdrain located beneath the RIBs discharges to the N.F. Payette River during high flow events. This underdrain is an underground pipe containing holes in the bottom and sides; though the underdrain is normally above the hyporheic flow, when ground water rises it occasionally reaches these holes, introducing into the pipe a mixture of ground water and treated effluent from the RIBs. The last reported occurrence of flow out of the underdrain was April of 2010 as reported on the DMR.

Cascade's POTW is situated on the inside of a U shaped bend in the river essentially surrounding the facility on three sides. Effluent discharged from the facility to the RIBs infiltrates the N.F. Payette River's hyporheic zone; this is the porous space beneath and alongside the river bed where surface water mixes with ground water or RIB discharge. Another relevant hydrologic component is Kangas type soil confined by clay lens that affects the mixing of surface water and ground water in the local area.

The facility is considered a minor facility because the facility's design flow is 0.72 mgd which is below the 1.0 mgd threshold for classifying major POTWs. The facility is operated as a flow through system and only monitors flow at the headworks. Effluent flow is considered to be equal to influent flow. Additional details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A.

In 2017, the city's contracted engineering firm drafted an engineering report describing the current facility and detailing a future upgrade scenario to increase capacity and reliability. The city has considered adding aeration to the lagoons, but no commitments to this end have been made. In March 2017, the city ceased the acceptance of truck hauled septage in an effort to free up capacity for future potential sewer hook ups.

A major sewer line replacement project completed during the last permit cycle has significantly reduced inflow and infiltration (I/I) into the facility. The current application states that low lying manholes are still responsible for some I/I.

2.1.2 Permit History

The most recent NPDES permit for the facility was issued on November 17, 2003, became effective on January 1, 2004, with an expiration date of January 1, 2009. An application for permit issuance was submitted to EPA by the permittee on December 30, 2008. EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit was administratively extended and remains fully effective and enforceable. The city provided an updated application on April 8th, 2018 as requested by DEQ.

2.1.3 Compliance History

DEQ conducted an inspection of the facility in August 12, 2014. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, and the collection system. Overall, the facility was found to be well maintained and operated at the time of inspection. However, the inspector noted “My concern is that at the time of the inspection, the minimum requirements for an acceptable QAPP were not contained in the QAPP provided by the city.”

Between January 1, 2004 and April 26, 2018, effluent violations were recorded and consisted of the following:

- Effluent Limit Violations
 - a) April, 2006, *E. coli* (Monthly Geometric Mean)
 - b) July, 2006, TSS (Average Monthly)
 - c) April, 2010, pH (Maximum Daily)

It should be noted that these violations were observed from samples collected before additional treatment in the RIBs (as required by the effective permit). Further treatment for TSS and *E.coli* in the RIBs prior to impacting the river is potentially significant. 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=110039969683>.

2.1.4 Sludge/Biosolids

The EPA Region 10, under the authority of the CWA, issues separate sludge-only permits for the purpose of regulating biosolids. Permits for sludge management and disposal are independent of IPDES discharge permits and must be obtained from EPA. The IPDES program will take over permitting of sludge/biosolids in July 2021. In addition, sludge management plans must be submitted to DEQ and must follow the procedures in IDAPA 58.01.16.

Currently sludge is accumulating in the POTW lagoon. This permit requires the facility to develop a sludge management plan and assess the sludge level accumulated in lagoons. This sludge depth information must be reported through the IPDES E-Permitting System as required in section 2.1.3 of the permit.

2.1.5 Outfall Description

The Cascade POTW has the potential of discharging a mixture of ground water and effluent from the RIB underdrain. This discharge point is labeled Outfall 001. IDAPA 58.01.25.300.10.a requires all samples be representative of the monitored activity. To assess the likelihood of permit compliance, all monitoring samples will be collected at one of cell #3's discharge points before entering the RIBs. This is the last place in treatment train where it is possible to sample effluent before mixing with other waters and is, therefore, representative of the permitted activity, as required. This is also the compliance sampling point for Outfall 001 in the currently effective permit. These samples, while taken prior to the final treatment process at the POTW, will indicate whether or not the effluent meets the permit limits prior to being discharged to the RIBs. This sampling point is labeled Internal Discharge 001. Cell #3 has four (4) distinct outlet

valves that correspond to a particular RIB. DEQ makes no distinction between these four (4) valves and will consider any effluent leaving cell #3 and into any RIB a discharge from Internal Discharge 001.

Any discharge from Outfall 001 is dependent on high water flows, elevated flows in the adjacent river, and is historically rare. This permit will require the facility to maintain a log recording twice a day observations of the underdrain to monitor whether a discharge is occurring.

The facility does not have the capability to continuously monitor when a discharge is occurring from Outfall 001. Therefore, any month with an observed discharge event from Outfall 001 will be considered a discharge month and effluent limits in Table 8 will apply for that month. The permit requires monthly monitoring of all permit limited parameters at Internal Discharge 001 regardless of whether a discharge is occurring at Outfall 001. During discharge months the permittee will use the monthly monitoring data collected from Internal Discharge 001 to assess compliance with permit limits for Outfall 001.

The Cascade POTW has a second outfall that transports the effluent ground water mixture to the hyporheic zone after treatment in RIBs. This outfall point is labelled Outfall 002 and consists of the effluent percolating through the RIBs. The local geology describes porous soil types and a shallow clay lens confining the effluent ground water mixture. Idaho's Ground Water Quality Rule at IDAPA 58.01.11.006.02 and 58.01.11.150.03 explains that ground water that is interconnected with surface water shall not degrade beneficial uses of surface water. Therefore, this permit sets site-specific ground water quality levels as described in IDAPA 58.01.11.400.05. These levels will reflect Idaho Water Quality Standards (IDAPA 58.01.02) to assure protection of the interconnected surface water and are included in the permit as IPDES limits. The compliance point for Outfall 002 will be a ground water monitoring well located downgradient of the RIBs as determined by a gradient study, approved by DEQ, and assured to provide representative samples of the effluent ground water mixture in the hyporheic zone before entering the main river channel. This sampling point is labelled Ground Water Monitoring Well 001 (GWMW 001) in the permit. Compliance monitoring is required for Outfall 002 anytime effluent is discharged to or is present in the RIBs.

2.1.6 Wastewater Characterization

The previous NPDES permit cycle did not generate influent, effluent, or facility performance data on a regular basis. The city has voluntarily collected monitoring data starting in 2016 for use during the current permit development process.

The city ceased accepting septage on 2/17/2017 which significantly reduced the amount of BOD and TSS contained in the influent. The 2017 Schiess & Associates, City of Cascade Preliminary Engineering Report determined that septage loading for the city can result in as much as 50 pounds of BOD per day in the summer months. It is the opinion of DEQ that only data after the acceptance of septage ceased is representative of current conditions, because the relatively large impact the load can have on a small facility. In an effort to use only the most relevant data, all data before the cessation of septage acceptance was excluded. To account for residence time of that last septage loading, one month of buffer time was added to allow time for the system to adjust, which results in the first data point used as April 2017.

2.1.7 Influent Characterization

During the last permit cycle the city completed major sewer upgrades to reduce inflow and infiltration (I/I) hydraulic loading on the system. The city still experiences increased loadings during the spring runoff events and attributes this to below grade manholes.

Table 2. Wastewater Influent Characterization.

| Parameter | Units | # of Samples | Average Value | Maximum Value | Data Source |
|------------------|-------|--------------|---------------|---------------|-------------|
| BOD ₅ | mg/L | 20 | 151.5 | 351 | 2017 – 2018 |
| TSS | mg/L | 20 | 120.9 | 284 | 2017 – 2018 |

2.1.8 Effluent Characterization

The City of Cascade reported the effluent pollutant concentrations from voluntary monitoring and results are characterized in Table 3. The tabulated data represents the quality of the effluent discharged from cell #3 before entering the RIBs, from 2017 - 2018.

Table 3. Wastewater Effluent Characterization.

| Parameter | Units | # of Samples | Average Values | Maximum Values | Data Source |
|------------------|----------------|--------------|--------------------------|-----------------------|-------------|
| BOD ₅ | mg/L | 20 | 18 | 32 | 2017 - 2018 |
| TSS | mg/L | 20 | 31 | 52 | 2017 - 2018 |
| Ammonia (as N) | mg/L | 23 | 5.05 | 19.9 | 2017 - 2019 |
| Parameter | Units | # of Samples | Average of Monthly Value | Maximum Monthly Value | |
| <i>E. coli</i> | MPN | 17 | >53 ^a | >2,400 ^a | 2017 - 2018 |
| Parameter | Units | # of Samples | Minimum Value | Maximum Value | |
| pH | standard units | 15 | 7.0 | 9.7 | 2017 - 2018 |

a. The data used to calculate the average includes 3 data points of greater than 2,400 (>2,400).

2.2 Description of Receiving Water

The City of Cascade discharges to the N.F. Payette River, Valley County in the North Fork Payette subbasin (HUC 17050123) Water Body Unit ID17050123SW001_06. At the point of discharge, the N.F. Payette River is protected for the following designated uses (IDAPA 58.01.02.140.17):

- cold water aquatic life
- salmonid spawning

- primary contact recreation
- domestic water supply

The facility is located approximately 1.8 miles downstream of Cascade Dam which was constructed in 1948 by the Bureau of Reclamation.

The ambient background data used for this permit is from the city's 2016 – 2018 voluntary monitoring, and temperature data was provided by Idaho Power's monitoring station directly below Cascade Dam.

Table 4. Ambient Background Data.

| Parameter | Units | Percentile | Value |
|-------------------------|----------------|------------------------------------|----------|
| Temperature | °C | 95 th | 21.2 |
| pH | Standard units | 5 th ; 95 th | 6.1; 8.3 |
| Ammonia | mg/L | 90 th | 0.21 |
| Total Phosphorus (as P) | mg/L | Maximum | 0.13 |

2.2.1 Water Quality Impairments

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

The State of Idaho's 2016 Integrated Report Section 5 (section 303(d)) lists the N.F. Payette as not supporting its cold water aquatic life beneficial uses due to low flow alterations, and sedimentation/siltation. A TMDL for sedimentation was published in July 2005. According to the TMDL "Suspended sediment is not impairing beneficial uses, but the effects of bedload sediment entering that reach from the Cascade to Clear Creek reach is impairing beneficial uses. A TMDL for sediment with an allocation based on bank erosion was determined for this reach." The facility is not limited for sediment by the TMDL because the report found that the issue would best be addressed by focusing on bedload sediment (bank stability) and not suspended sediment (point sources). While the TMDL has not placed additional restrictions for sediment on Cascade's POTW, it is important to note that the use of RIBs in the city's treatment train substantially reduces, or effectively eliminates, the sediment in its discharge from reaching surface water (EPA 2006).

The TMDL also found that more information on temperature is necessary, but that warm water release from Cascade Dam is the likely cause of elevated temperatures in the N.F. Payette River. In this permit the permittee is required to monitor temperature upstream and downstream of the discharge to provide needed data.

Table 5. TMDL Restrictions for City of Cascade POTW.

| Parameter | Category | Units | Restrictions |
|----------------------|----------|--------|--------------|
| Sedimentation | 4a | lb/day | None |
| Low flow alterations | 4c | cfs | None |

2.2.2 Critical Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho's water quality standards require criteria be evaluated at the low flow design conditions (See IDAPA 58.01.02.210.03) defined in Table 6. The 1Q10 represents the lowest one day flow with a recurrence frequency of once in 10 years. The 7Q10 represents lowest average consecutive seven day flow with a recurrence frequency of once in ten years. The 30Q5 represents the lowest average consecutive 30 day flow with a recurrence frequency of once in five years. 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. 30B3 is the biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.

Table 6. Low Flow Design Conditions.

| Criteria | Flow Condition | Critical Flow (cfs) |
|--|--------------------|---------------------|
| Acute aquatic life | 1Q10 | 131.4 |
| Chronic aquatic life | 7Q10 | 164.6 |
| Non-carcinogenic human health criteria | 30Q5 | 188.6 |
| Carcinogenic human health criteria | Harmonic mean flow | 364.5 |
| Ammonia | 30B3 | 191.0 |

An active USGS gage is located approximately 1.5 miles upstream from the discharge (USGS 13245000 North Fork of the Payette at Cascade Dam). Daily discharge data are available from this gage beginning in 1941. There are no point source dischargers or major impoundments between the outfall and the gage. Therefore, DEQ determined that this gage's data was suitable for calculating critical low flows.

Gage data were pulled from January, 1988 through December, 2017 to provide flow data for the last 30 years. Provisional data were removed, and the dataset was run through SWTOOLBOX (DFLOW) for the proposed annual discharge critical flow values. The calculated critical flow values are presented in Table 6.

2.3 Pollutants of Concern

DEQ may identify pollutants of concern (POCs) for the discharge based on, but not limited to, those which:

- Have technology-based effluent limits (TBELs)
- Had a water quality-based effluent limit (WQBEL) in the previous permit
- Have been given a waste load allocation (WLA) as part of a total maximum daily load (TMDL) study
- Are identified as present in effluent through monitoring

- Are otherwise expected to be present; or
- Are impairing the beneficial uses of the receiving water

To characterize the effluent and determine POCs, DEQ evaluated all pertinent and available information from the facility's permit application, DMR data, and additional data provided by the facility via its contracted lab (Analytical Laboratories, Inc.). POCs for this facility are:

- Five-day biochemical oxygen demand (BOD₅)
- Total suspended solids (TSS)
- *E. coli*
- pH
- Ammonia
- Total phosphorus (TP)
- Total nitrogen (TN); and
- Temperature

3 Effluent Limits and Monitoring

Table 7 presents the effluent limits and monitoring requirements in the 2004 permit. Table 8 presents the effluent limits and monitoring requirements in the 2020 permit for Outfall 001, as monitored at Internal Discharge 001. Table 9 presents the effluent limits and monitoring requirements in the 2020 permit for Outfall 002, as monitored at GWMW 001.

Table 7. 2004 Permit - Effluent Limits and Monitoring Requirements.

| Parameter | Effluent Limits | | | | Monitoring Requirements | | |
|--------------------------|-----------------------|----------------------|---------------------|-----------------------------|-------------------------|------------------|------------------|
| | Average Monthly Limit | Average Weekly Limit | Maximum Daily Limit | Instantaneous Maximum Limit | Sample Location | Sample Frequency | Sample Type |
| BOD5 | 30 mg/L | 45 mg/L | --- | --- | Influent and Effluent | 1/month | 8-hour composite |
| | 180 lb/day | 270 lb/day | --- | --- | | | |
| TSS | 30 mg/L | 45 mg/L | --- | --- | Influent and Effluent | 1/month | 8-hour composite |
| | 180 lb/day | 270 lb/day | --- | --- | | | |
| <i>E. coli</i> (a,b) | 126/100 mL | --- | --- | 406/100 mL | Effluent | 5/month | Grab |
| BOD5 % removal | 85% | --- | --- | --- | Effluent | 1/month | Calculated |
| TSS % removal | 85% | --- | --- | --- | Effluent | 1/month | Calculated |
| pH | Between 6.5 – 9.0 SU | | | | Effluent | 5/week | Grab |
| Temperature(c) | --- | | | | Effluent | 5/week | Grab |
| Total Phosphorus as P(c) | --- | | | | Effluent | 1/month | 8-hour composite |
| Total Ammonia as N(c) | --- | | | | Effluent | 1/month | 8-hour composite |

- The average monthly *E. coli* counts must not exceed a geometric mean of 126/100mL based on a minimum of five samples taken every 3-5 days within a calendar month.
- Reporting is required within 24 hours of an instantaneous maximum limit violation.
- Monitoring shall be conducted once a month starting in January 2006 and lasting for one year.

Table 8. 2020 Permit – Outfall 001 (at Internal Discharge 001) Effluent Limits and Monitoring Requirements.

| Parameter | Units | Effluent Limits | | | | Monitoring Requirements | | Reporting Frequency (DMR Months) |
|-----------------------------------|---------------------|-----------------|-----------------|------------------------|----------------|--------------------------|-------------------------------|----------------------------------|
| | | Average Monthly | Average Weekly | Monthly Geometric Mean | Maximum Daily | Sample Type | Sample Frequency | |
| Biochemical Oxygen Demand (BOD5) | mg/L | 30 | 45 | — | — | 8-hour composite | 2/month (Influent & Effluent) | Monthly Reporting |
| | lb/day ^b | 180 | 270 | — | — | Calculation | | |
| BOD5 Percent Removal | % | 85 (minimum) | — | — | — | Calculation ^c | — | |
| Total Suspended Solids (TSS) | mg/L | 30 | 45 | — | — | 8-hour composite | 2/month (Influent & Effluent) | Monthly Reporting |
| | lb/day ^b | 180 | 270 | — | — | Calculation | | |
| TSS Percent Removal | % | 85 (minimum) | — | — | — | Calculation ^c | — | |
| <i>E. coli</i> ^a | #/ 100 ml | — | — | 126 ^d | — ^e | Grab ^f | 5/month ^d | Monthly Reporting |
| pH ^a | std. units | — | Between 6.5–9.0 | | | Grab ^f | 5 /week | Monthly Reporting |
| Total Ammonia (as N) ^a | mg/L | 13.5 | — | — | 50.3 | 8-hr composite | 2/month | Monthly Reporting |
| | lb/day ^b | 81.1 | — | — | 302.1 | Calculation | | |
| Total Phosphorus | mg/L | Report | — | — | Report | 8-hr composite | 1/month | Monthly Reporting |
| Nitrate + Nitrite | mg/L | Report | — | — | Report | 8-hr composite | 1/month | Monthly Reporting |
| Total Kjeldahl Nitrogen (TKN) | mg/L | Report | — | — | Report | 8-hr composite | 1/month | Monthly Reporting |

- a. Exceedance of a maximum daily limit, instantaneous maximum limit, or instantaneous minimum limit, for this parameter requires 24-hour reporting in accordance with 2.2.7 of the permit. For *E. coli*, the maximum daily threshold that triggers 24-hour reporting is 406 organisms/100ml. Please see section 2.2.7 of the permit for additional 24-hour reporting requirements.
- b. Loading (in lb/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling by 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).

- c. 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: $(\text{average monthly influent concentration} - \text{average monthly effluent concentration}) \div \text{average monthly influent concentration} \times 100$. Influent and effluent samples must be taken over approximately the same time period.
- d. Geometric mean of five or more samples collected 3-7 days apart over a 30-day period.
- e. Idaho's water quality standards for primary contact recreation include a single sample value of 406 organisms/100 mL. Exceedance of this value indicates likely exceedance of the 126 organisms/100 mL average monthly effluent limit; however, it is not an enforceable limit for a daily value, nor is exceeding this value a violation of water quality standards. If this value is exceeded at any point within the month, the facility should consider collecting more than the 5 samples per month required in this permit to determine compliance with the monthly geometric mean according to IDAPA 58.01.02.251.01.a.
- f. A grab sample is an individual sample collected over a 15-minute period or less.

Table 9. 2020 Permit - Outfall 002 (at GMMW 001) Effluent Limits and Monitoring Requirements.

| Parameter | Units | Effluent Limits | | | | Monitoring Requirements | | Reporting Frequency (DMR Months) |
|-----------------------------------|---------------------|-----------------|-----------------|------------------------|----------------|--------------------------|-------------------------------|----------------------------------|
| | | Average Monthly | Average Weekly | Monthly Geometric Mean | Maximum Daily | Sample Type | Sample Frequency | |
| Biochemical Oxygen Demand (BOD5) | mg/L | 30 | 45 | — | — | Grab ^f | 2/month (Influent & Effluent) | Monthly Reporting |
| | lb/day ^b | 180 | 270 | — | — | Calculation | | |
| BOD5 Percent Removal | % | 85 (minimum) | — | — | — | Calculation ^c | — | |
| Total Suspended Solids (TSS) | mg/L | 30 | 45 | — | — | Grab ^f | 2/month (Influent & Effluent) | Monthly Reporting |
| | lb/day ^b | 180 | 270 | — | — | Calculation | | |
| TSS Percent Removal | % | 85 (minimum) | — | — | — | Calculation ^c | — | |
| <i>E. coli</i> ^a | #/100 ml | — | — | 126 ^d | — ^e | Grab ^f | 5/month ^d | Monthly Reporting |
| pH ^a | std. units | — | Between 6.5–9.0 | | | Grab ^f | 5/month | Monthly Reporting |
| Total Ammonia (as N) ^a | mg/L | 13.5 | — | — | 50.3 | Grab ^f | 2/month | Monthly Reporting |
| | lb/day ^b | 81.1 | — | — | 302.1 | Calculation | | |
| Total Phosphorus | mg/L | Report | — | — | Report | Grab ^f | 1/month | Monthly Reporting |
| Nitrate + Nitrite | mg/L | Report | — | — | — | Grab ^f | 1/month | Monthly Reporting |
| Total Kjeldahl Nitrogen (TKN) | mg/L | Report | — | — | — | Grab ^f | 1/month | Monthly Reporting |

- a. Exceedance of a maximum daily limit, instantaneous maximum limit, or instantaneous minimum limit, for this parameter requires 24-hour reporting in accordance with 2.2.7 of the permit. For *E. coli*, the maximum daily threshold that triggers 24-hour reporting is 406 organisms/100 mL. Please see section 2.2.7 of the permit for additional 24-hour reporting requirements.
- b. Loading (in lb/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling by 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).

- c. 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: $(\text{average monthly influent concentration} - \text{average monthly effluent concentration}) \div \text{average monthly influent concentration} \times 100$. Influent and effluent samples must be taken over approximately the same time period.
- d. Geometric mean of five or more samples collected 3-7 days apart over a 30-day period.
- e. Idaho's water quality standards for primary contact recreation include a single sample value of 406 organisms/100 mL. Exceedance of this value indicates likely exceedance of the 126 organisms/100 mL average monthly effluent limit; however, it is not an enforceable limit for a daily value, nor is exceeding this value a violation of water quality standards. If this value is exceeded at any point within the month, the facility should consider collecting more than the 5 samples per month required in this permit to determine compliance with the monthly geometric mean according to IDAPA 58.01.02.251.01.a.
- f. A grab sample is an individual sample collected over a 15-minute period or less.

3.1 Basis for effluent limits

Regulations require that effluent limits in an IPDES permit must be either technology-based or water quality-based.

TBELs are set according to the level of treatment that is achievable using available technology. TBELs are based upon the treatment processes used to reduce specific pollutants. TBELs are set by the EPA and published as a regulation. DEQ may develop a TBEL on a case-by-case basis (40 CFR 125.3, IDAPA 58.01.25.302, and IDAPA 58.01.25.303).

WQBELs are calculated so the effluent will comply with the Surface Water Quality Standards (IDAPA 58.1.02) or the National Toxics Rule (40 CFR 131.36) applicable to the receiving water.

DEQ must apply the most stringent of these limits to each POC. These limits are described below.

3.2 Technology-Based Effluent Limits

IDAPA 58.01.25.302 requires that IPDES permits include applicable TBELs and standards, while 40 CFR 125.3(a)(1) states that TBELs for POTWs must be based on secondary treatment standards or as specified in 40 CFR 133. The following section explains secondary treatment effluent limits for the conventional pollutants discharged by POTWs: 5-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH. These effluent limits are given in 40 CFR 133 and are outlined in Table 10.

Table 10. Secondary Treatment Effluent Limits (40 CFR 133.102).

| Parameter | 30-day average | 7-day average |
|--|-------------------------------------|---------------|
| BOD ₅ | 30 mg/L | 45 mg/L |
| cBOD ₅ | 25 mg/L | 40 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. | |

In addition, Idaho rules and federal regulations include special considerations to allow treatment equivalent to secondary (TES) for treatment facilities with waste stabilization ponds (lagoons) and trickling filters. These provisions allow alternative limits for BOD₅ and TSS for such facilities provided the following requirements are met (40 CFR 133.101(g) and 40 CFR 133.105(d)):

There are three requirements a facility needs to meet to qualify for equivalent to secondary treatment standards listed under 40 CFR 133.101(g) which states:

“Treatment works shall be eligible for consideration for effluent limitations described for treatment equivalent to secondary treatment (Section 133.105), if:

- (1) The BOD_5 and SS effluent concentrations consistently achievable through proper operation and maintenance (Section 133.101(f)) of the treatment works exceed the minimum level of the effluent quality set forth in Sections 133.102(a) and 133.102(b),
- (2) A trickling filter or waste stabilization pond is used as the principal process, and
- (3) The treatment works provide significant biological treatment of municipal wastewater. Significant biological treatment (§133.101(k)) is defined as the use of an aerobic or anaerobic biological treatment process in a treatment works to consistently achieve a 30-day average of at least 65 percent removal of BOD_5

The least stringent effluent limits for equivalent to secondary treatment from 40 CFR 133.105(a) and 40 CFR 133.105(b) are listed in Table 11.

Table 11. Equivalent to Secondary Treatment Effluent Limits (40 CFR 133.105).

| Parameter | 30-day average | 7-day average |
|--|-------------------------------------|---------------|
| BOD_5 | 45 mg/L | 65 mg/L |
| c BOD_5 | 40 mg/L | 60 mg/L |
| TSS | 45 mg/L | 65 mg/L |
| Removal for BOD_5 /c BOD_5 and TSS (concentration) | 65% (minimum) | --- |
| pH | within the limits of 6.0 - 9.0 s.u. | |

Cascade's POTW voluntarily collected data since 2016. The data revealed that the facility may be eligible for TES effluent limits for TSS. Because the data available is limited to once a month grab samples, and because only samples collected after accepting hauled septage ceased are representative of current operations, accessing eligibility for TES will rely on the monitoring required in this permit to generate adequate data.

Mass-Based Limits

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

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/l)} \times \text{design flow (mgd)} \times 8.34^i$$

Since the design flow for this facility is 0.72 mgd, the technology based mass limits for:

BOD_5 :

$$\text{Average Monthly Limit} = 30 \text{ mg/l} \times 0.72 \text{ mgd} \times 8.34 = 180 \text{ lb/day}$$

$$\text{Average Weekly Limit} = 45 \text{ mg/l} \times 0.72 \text{ mgd} \times 8.34 = 270 \text{ lb/day}$$

TSS:

ⁱ 8.34 is a conversion factor with units (lb × L)/(mg × gallon × 10⁶)

Average Monthly Limit = $30 \text{ mg/l} \times 0.72 \text{ mgd} \times 8.34 = 180 \text{ lb/day}$

Average Weekly Limit = $45 \text{ mg/l} \times 0.72 \text{ mgd} \times 8.34 = 270 \text{ lb/day}$

Ammonia:

Average Monthly Limit = $13.5 \text{ mg/l} \times 0.72 \text{ mgd} \times 8.34 = 81.1 \text{ lb/day}$

Average Weekly Limit = $50.3 \text{ mg/l} \times 0.72 \text{ mgd} \times 8.34 = 302.1 \text{ lb/day}$

3.3 Water Quality-Based Effluent Limits

3.3.1 Statutory and Regulatory Basis

Section 301(b) (1) (C) of the Clean Water Act (CWA) requires the development of limits in permits necessary to meet WQS. The IPDES regulation IDAPA 58.01.25.302.06 implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters that are or may be discharged at a level that 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 (IDAPA 58.01.25.103.03, IDAPA 58.01.25.302.06.c, see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures that account for existing controls on point and non-point 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 TMDL WLA for the discharge. There are no approved TMDLs that specify WLAs for this discharge; so, all of the WQBELs are calculated directly from the applicable WQS.

3.3.2 Reasonable Potential Analysis (RPA) and Need for Water Quality-Based Effluent Limits

DEQ uses the process described in the *Effluent Limit Development Guidance* (DEQ 2017) 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 (WQC) for a given pollutant, DEQ compares the maximum projected receiving water concentration to the WQC 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 (IDAPA 58.01.02.060). 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, acutely toxic conditions are prevented and all applicable water quality criteria are met at the edge.

The mixing zones for this facility's pollutants are summarized in Table 12. DEQ also calculated dilution factors for critical low flow conditions with the effluent flow rate set equal to the design flow of 0.72 mgd (IDAPA 58.01.02.060.01.c). The calculated mixing zones do not impede receiving water beneficial uses. However, permit limits have been included because at the mixing zone percentages below, there is reasonable potential to cause or contribute to an exceedance of WQS. The reasonable potential analysis (RPA) and WQBEL calculations were based on mixing zones shown in Table 12.

Table 12. Mixing zones.

| Pollutant | Discharge Period | Authorized Mixing Zone (% of Critical Low Flow) | |
|-----------|--------------------|--|-------------------|
| | | Aquatic Life | |
| | | Acute (1Q10) | Chronic (30B3) |
| Ammonia | January - December | 14.1% of 131.5 cfs | 25% of 191.0 cfs |

A WQBEL is designed to ensure that the WQS applicable to a waterbody are being met. WQBELs may be more stringent than TBELs. The RPA calculations using the authorizing mixing zones in the draft permit are provided in section B of Appendix B.

The equations used to conduct the RPA and calculate the WQBELs are provided in Appendix B.

3.3.3 Reasonable Potential and Water Quality-Based Effluent Limits

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

3.3.3.1 Ammonia

Ammonia criteria are based on a formula that 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, the criteria become more stringent as pH and temperature increase. Table 13 below details the equations used to determine WQC for ammonia.

A reasonable potential calculation showed that the facility's discharge would have the reasonable potential to cause or contribute to a violation of the WQC for ammonia (as a toxic) therefore; the permit does contain a WQBEL for ammonia. The facility data used in this calculation was from once a month grab samples the facility collected voluntarily from cell #3 and were not associated with a discharge from Outfall 001. The proposed permit will require monthly composite samples from Internal Discharge 001 and grab samples from Outfall 002 to better access this parameter.

Table 13. Ammonia criteria.

| Total ammonia nitrogen criteria (mg N/L): Annual Basis Based on IDAPA 58.01.02 | |
|--|---------|
| INPUT | |
| 1. Receiving Water Temperature (deg C): | 21.2 |
| 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) | 0.99 |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | |

| | |
|--|--|
| <p>Acute Criteria Equation: Cold Water</p> $CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$ | <p>Acute Criteria Equation: Warm Water</p> $CMC = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$ |
| <p>Chronic Criteria: Cold Water, Early Life Stages Present</p> $CCC = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \cdot MIN(2.85, 1.45 \cdot 10^{0.028(25 - T)})$ | <p>Chronic Criteria: Cold Water, Early Life Stages Absent</p> $CCC = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \cdot 1.45 \cdot 10^{0.028(25 - T)}$ |

See Appendix B for reasonable potential and effluent limit calculations for ammonia.

DEQ’s *Effluent Limit Development Guidance* states that DEQ will use the 90th to 95th percentile of the ambient upstream receiving water temperature and pH to calculate ammonia criteria. Because the N.F. Payette River is impaired due to low flow alterations, 95th percentile pH and temperature data were used. The temperature data used in this equation is from Idaho Power’s monitoring station located immediately downstream of the Cascade Dam. This station records daily temperature data. The 95th percentile of the last five complete years of data was used for this equation. The facility was not required by the last permit to consistently monitor the receiving water so this is the best data available. The pH data of the receiving water was voluntarily collected by the city from 2017 to 2018. The 95th percentile pH value of the receiving water was used in this equation. The results of the reasonable potential analysis reveal there is reasonable potential for discharge to cause or contribute to a violation of the WQC for ammonia; therefore, the permit does contain a WQBEL for ammonia.

The treatment of ammonia in infiltration systems is well documented in the literature. In one example Cha et al. (2005) reported 76.42% and 59.04% removal efficiencies for influent concentrations of 12.3 mg/L and 8.30 mg/L respectively using poorly graded sands in laboratory scale systems. The process of removing ammonia during infiltration through soil begins with adsorption into soils during the wetting process followed by subsequent nitrification during the drying process (Velasquez 2016). The ammonia data used in the RPA calculations were collected at Internal Discharge 001 before treatment in the RIBs and is expected to overestimate the impact the effluent discharge will have on the surface water. Based on this information a mixing zone is authorized for this discharge.

The City of Cascade POTW voluntarily collected once a month grab samples from Internal Discharge 001 starting in January 2016. Based on this data it appears the facility will be able to comply with new ammonia limit without the need for additional treatment. The maximum value recorded in the data set is 19.9 mg/L, which is well below the daily maximum value of 50.3mg/L. This maximum value was sampled prior to ceasing the acceptance of hauled septage. After the facility stopped accepting hauled septage the 90th percentile ammonia value is 11.1 mg/L below the monthly average limit of 13.5 mg/L. It is also important to note, that the facility did not discharge from Outfall 001 during this period of collection, and it is only when discharging from Outfall 001 that the facility will be required to meet limits at Internal Discharge

001. The ammonia limit for Outfall 002 is identical to the limit for Outfall 001; however, Outfall 002 will be monitored after additional treatment in the RIBs, which is expected to be substantial.

3.3.3.2 *E. coli*

The Idaho WQS states that waters of the State of Idaho that are designated for recreation are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a 30-day period. A mixing zone is not appropriate for bacteria. Therefore, the permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho WQS also state that a water sample that exceeds certain “single sample maximum” values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of WQS. For waters designated for primary contact recreation, the “single sample maximum” value is 406 organisms per 100 mL (IDAPA 58.01.02.251.01.b.ii.). For waters designated only for secondary contact recreation the “single sample maximum” value is 576 organisms per 100 mL (IDAPA 58.01.02.251.01.b.i.). When a single sample maximum, is exceeded, additional samples should be taken to assess compliance with the geometric mean criterion.

Monitoring of the effluent five times per month, spaced three to seven days apart, will ensure compliance with the criterion can be assessed. If the single sample maximum is exceeded, the permittee may choose to monitor more frequently than the permit requires to adequately assess disinfection and compliance with permit effluent limits.

Regulations at IDAPA 58.01.25.303.04 require that effluent limits 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 IDAPA 58.01.25.010.06 and 07 respectively as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. Therefore, the permit monthly effluent limit is a geometric mean for *E. coli* of 126 organisms per 100 ml.

The city’s current treatment for disinfection is stated in EPA’s 2004 fact sheet as “Lagoon with disinfection through soil column”. The EPA has shown that RIBs can be an effective disinfection treatment; though quantifying the results can be challenging. An in-lab study performed by the EPA used a 12 foot column of soil to simulate the soil profile of a RIB. The study was designed to better understand where and to what extent in the soil profile do certain treatment processes take place. The findings revealed that “the column removed 95% of the total and fecal coliforms applied within the first 0.23 meters (9 inches) of the silt loam layer.”(EPA 1979). In the book *Land Treatment Systems for Municipal and Industrial Wastes* the authors explain that disinfection in a RIB is accomplished through adsorption, desiccation, radiation, filtration, predation, and exposure to other adverse conditions. They also describe the efficiency of RIBs as “The RI (*Rapid Infiltration*) process typically can remove two to three logs of fecal coliforms within a depth of a few feet” (Crites et al., 2000).

The 2004 permit required compliance monitoring at Internal Discharge 001 before treatment in the RIBs as this is the last point in the treatment train to collect samples that represent the permitted activity, before potentially mixing with other water. Therefore, the city was required to meet the *E. coli* limits before utilizing their most effective disinfection treatment process. Since 2004 the city has only discharged from Outfall 001 during 6 out of 172 months and was out of compliance for *E. coli* one of those months based on samples from Internal Discharge 001 data. From the limited current data available it appears that 54% of the time the lagoons alone are meeting the required limit before the RIBs. This is based on the average of once a month grab samples, and not the monthly geometric mean that the permit requires. It is likely that increased monitoring frequency at Internal Discharge 001 to calculate the geometric mean will provide an increasingly accurate picture of the facility's compliance rate with the limit.

Once the effluent saturates the substrate below the RIBs it is ground water that may impact the N.F. Payette River. Idaho's Ground Water Quality Rule at IDAPA 58.01.11.006.02 and 58.01.11.150.03 explains that ground water that is interconnected with surface water shall not degrade beneficial uses of surface water. The permit will require the permittee to meet site specific ground water quality levels for *E. coli* and all other parameters that are protective of the river's beneficial uses. This monitoring will require the city to design and implement a gradient study (see special conditions section) that will accurately assess the path that effluent travels in the substrate after exiting the RIBs. The City is required to collect data from the gradient study, interpret the data, and seek DEQ approval to construct a compliance monitoring well as a point of compliance for limits in this permit. Samples from the approved well will be required to meet a site specific ground water quality level (IDAPA 58.01.11.400.05) that will ensure protection of the surface water beneficial uses (IDAPA 58.01.11.150.03). This site specific ground water quality level will be set at the WQS of a monthly geometric mean for *E. coli* of 126 organisms per 100 ml and the point of compliance will be the DEQ approved compliance/monitoring well labelled Ground Water Monitoring Well 001 (GWMW 001). Results from samples from this compliance well may be entered into the DMR to comply with limits in the IPDES permit for Outfall 002.

Because Outfall 002 is in the permit for the first time and requires compliance with limits a compliance schedule is included to supply adequate time to construct necessary components as allowed in IDAPA 58.01.02.400.03 and 58.01.25.305. Upon completion of the ground water monitoring well study and the associated construction of a compliance monitoring well(s) at the DEQ approved location(s) the permit requires monitoring to occur at the DEQ approved GWMW 001 point of compliance to be used for assessing compliance with the IPDES *E. coli* limit for Outfall 002.

3.3.3.3 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. Monitoring of this parameter is required for discharges from Outfall 001 and 002.

3.3.3.4 Total Phosphorus

Total phosphorus has no numeric criteria; however, dischargers are required to meet narrative criteria in IDAPA 58.01.02.200. Phosphorus is a POC based on its presence in the data supplied

by the city. DEQ has no reason to believe that the concentration of phosphorus in the facility's effluent will contribute to a violation of the WQC. Total phosphorus monitoring is required in the permit to assess the facility's nutrient contributions to N.F. Payette River. Monitoring of this parameter is required for discharges from Outfall 001 and 002 at their corresponding monitoring locations.

3.3.3.5 Nitrogen

Total nitrogen has no numeric criteria; however, dischargers are required to meet narrative criteria in IDAPA 58.01.02.200. Nitrogen is a POC based on its presence in the data supplied by the city. DEQ has no reason to believe that the concentration of nitrogen in the facility's effluent will contribute to a violation of the WQC. However, due to eutrophication concerns in the N.F. Payette River nitrogen monitoring is required in the permit to assess the facility's nutrient contributions. Monitoring of this parameter is required for discharges from Outfall 001 and 002 at their corresponding monitoring locations.

Nitrogen monitoring will include both Nitrate + Nitrite and Total Kjeldahl Nitrogen (TKN), which provide total nitrogen levels when combined. The receiving water is designated for domestic water supply and this data will be used to assess protection of this use.

3.3.3.6 TSS

The 2005 N.F. Payette River Subbasin Assessment and TMDL addressed impairment of beneficial uses caused by sediment loads in the N.F. Payette River. The Cascade POTW is not limited for sediment by the TMDL because the report found that the issue would best be addressed by focusing on bedload sediment (bank stability) and not suspended sediment (point sources). Thus, the required TBEL and additional treatment provided by the RIBs should eliminate the facility's suspended sediment impact on the N.F. Payette River. Monitoring of this parameter is required for discharges from Outfall 001 and 002 at their corresponding monitoring locations.

3.3.3.7 Temperature

Infiltration through the soil column is an effective heat sink (Rose et al. 2011), and is a commonly used best management practice (BMP) for thermal control of storm water. Due to infiltration of the effluent from the RIBs there is no reasonable potential for the effluent to cause or contribute to a violation of the WQC for temperature; therefore, the permit does not contain a WQBEL for temperature.

DEQ believes that measuring effluent temperature discharged to the RIBs is insufficiently useful in assessing thermal degradation of the surface water. By the time the discharge has an opportunity to impact beneficial uses of surface water any potential thermal pollution will be attenuated by the soil column and subsurface flow. Because this is a unique situation the permit requires upstream and downstream continuous temperature monitoring of the receiving water to ensure beneficial uses are protected, in place of effluent temperature monitoring.

3.4 Narrative Criteria

DEQ must consider the narrative criteria described in IDAPA 58.01.02.200 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic attributes, or adversely affect human health.

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 permit contains a narrative limitation prohibiting the discharge of such materials.

Additionally, discharges to the RIBs inherently filter out many of these POCs that are limited by the WQS's narrative criteria. The use of RIBs in this instance assures that the N.F. Payette River is sufficiently protected from narrative criteria exceedances.

3.5 Antidegradation

DEQ's antidegradation policy provides three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier I of antidegradation protection is designed to ensure that existing uses and the water quality necessary to protect those uses is maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). A Tier I review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier II protection applies to any water bodies considered to be high quality waters (where the water quality exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water) and provides that water quality will be maintained and protected unless allowing for lower water quality is deemed by the state as necessary to accommodate important economic or social development in the area. In allowing any lowering of water quality DEQ must ensure adequate water quality to protect existing uses fully and must assure that there will be achieved the highest statutory and regulatory requirements for all new and existing point sources (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier III protection applies to water bodies that have been designated by the Idaho Legislature as outstanding national resource waters and provides that water quality shall be maintained and protected (IDAPA 58.01.02.051.03; 58.01.02.052.09).

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

3.5.1 Protection and Maintenance of Existing Uses (Tier I Protection)

A Tier I review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing and designated uses and the level of water quality necessary to protect existing and designated uses shall be maintained and protected. In order to protect and maintain existing and designated beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters.

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

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

The effluent limits and associated requirements contained in the City of Cascade permit are set at levels designed to ensure compliance with the narrative and numeric criteria in the WQS; which were developed to ensure that existing uses and the water quality necessary to protect those uses is maintained. BOD and TSS limits are TBELs as required by IDAPA 58.01.25.302, and the *E.coli*, pH, and ammonia limits are WQBELs specifically designed to protect beneficial uses. Additionally all appropriate POCs underwent a reasonable potential to exceed (RPTE) water quality criteria analysis as described in section 3.3. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the N.F. Payette River in compliance with the Tier I provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

3.5.2 High-Quality Waters (Tier II Protection)

The N.F. Payette River is considered high quality for primary contact recreation. As such, the water quality relevant to recreation for N.F. Payette River must be maintained and protected, unless a lowering of water quality is deemed necessary to accommodate important social or economic development.

To determine whether degradation will occur, DEQ must evaluate how the discharge will affect water quality for each pollutant that is relevant to the primary contact recreation use of the N.F. Payette River (IDAPA 58.01.02.52.05). In general, this pertains to *E. coli*, any other toxic pollutant concentrations that may impact recreational uses such as fishing, and nutrients that may facilitate algal blooms. In this permit the parameters specific to recreational uses are *E. coli*, TSS, ammonia, and nutrients.

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

permit's effect on water quality based on the limits for the relevant pollutants. Table 14 provides a comparison between what is currently authorized and what is proposed in this permit.

The new permit will not alter the limits as authorized in the current permit for *E. coli* and TSS, includes no new limits for non-toxic nutrients, there is no increase in the facility's design flow from the previous permit, and no changes in treatment have occurred at the facility. However a reduction in the BOD and TSS loading due to the facility's refusal to accept hauled septage has occurred during the last permit cycle. Another requirement of the new permit is that the RIBs are required to be operated in a way that maximizes disinfection by optimizing the RIB loading cycles (see special conditions section). Thus, DEQ finds that this permit does not authorize water quality degradation that would impact the primary contact recreation beneficial use.

The new ammonia limit pertains to the cold water aquatic life beneficial use that is not currently supported and does not require Tier II protection.

Table 14. Comparison of 2004 and 2020 effluent limits

| Pollutant | Units | 2004 Permit | | | 2020 Permit | | | Change ^a |
|--|----------------|-----------------------|----------------------|---------------------|-----------------------|----------------------|---------------------|---------------------|
| | | Average Monthly Limit | Average Weekly Limit | Single Sample Limit | Average Monthly Limit | Average Weekly Limit | Single Sample Limit | |
| Pollutants with limits in both the 2004 and 2020 permit | | | | | | | | |
| Five-Day BOD | mg/L | 30 | 45 | --- | 30 | 45 | --- | NC |
| | lb/day | 180 | 270 | --- | 180 | 270 | --- | |
| | % removal | 85 | --- | --- | 85 | --- | --- | |
| TSS | mg/L | 30 | 45 | --- | 30 | 45 | --- | NC |
| | lb/day | 180 | 270 | --- | 180 | 270 | --- | |
| | % removal | 85 | --- | --- | 85 | --- | --- | |
| pH | standard units | 6.5–9.0 all times | | | 6.5–9.0 all times | | | NC |
| <i>E. coli</i> | no./100 mL | 126 | --- | 406 | 126 | --- | --- | NC |
| Pollutants with no limits in the 2004 permit, and new limits in the 2020 permit | | | | | | | | |
| Total Ammonia (as N) | mg/L | --- | --- | --- | 13.5 | --- | 50.3 | D |
| | lb/day | --- | --- | --- | 81.1 | --- | 302.1 | D |
| Pollutants with no limits in both the 2004 and 2020 permit | | | | | | | | |
| Total Phosphorus (as P) | mg/L | --- | --- | --- | Report | --- | Report | --- |
| Nitrate + Nitrite | mg/L | --- | --- | --- | Report | --- | --- | --- |

| | | | | | | | | |
|-------------------------------|------|-----|-----|-----|--------|-----|-----|-----|
| Total Kjeldahl Nitrogen (TKN) | mg/L | --- | --- | --- | Report | --- | --- | --- |
|-------------------------------|------|-----|-----|-----|--------|-----|-----|-----|

^aD = Decrease in pollutant load or concentration, I = Increase in pollutant load or concentration, NC = No change

3.6 Antibacksliding

Section 402(o) and 303(d)(4) of the CWA and regulations at IDAPA 58.01.25.200 generally prohibit the renewal, reissuance, or modification of an existing IPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the existing permit (i.e., antibacksliding) but provides exceptions. For explanation of the antibacksliding exceptions refer to section 4.1 of the Effluent Limit Development Guidance (DEQ 2017).

DEQ compared the effluent limits in the 2004 permit with the 2020 permit in Table 14.

3.6.1 *E. coli*

The 2005 permit contains a maximum daily limit (i.e. single sample limit) of 406 organisms per 100 mL. This limit has been removed in the permit as per IDAPA 58.01.02.251.01.b. The Water Quality Standards include the 406 organisms per 100 mL threshold as a trigger value for additional testing and not an effluent limit. This limit removal is allowed under antibacksliding exceptions in IDAPA 58.01.25.200.03 since

- The use is attained (i.e. the receiving water is not impaired for *E. coli*); and
- The resulting water quality effects comport with the state's anti-degradation policy.

The existing discharge proposes no change in the discharge and is therefore considered a non-degrading discharge.

4 Monitoring Requirements

Idaho regulations IDAPA 58.01.02 and 58.01.25 require that monitoring be included in permits to determine compliance with effluent limits and other permit restrictions. Monitoring may also be required to gather data to assess the need for future effluent limitations or to monitor effluent impacts on receiving water quality. Permittees are responsible for conducting the monitoring and reporting the results on monthly DMRs and in annual reports.

4.1 Influent Monitoring

Flow, TSS and BOD monitoring requirements are listed below in Table 15. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 15. Influent Monitoring Requirements.

| Parameter | Monitoring Period | Units | Sample Frequency | Sample Type | Report | Reporting Frequency (DMR Months) |
|------------------|-------------------|-------|------------------|------------------|------------------------------------|----------------------------------|
| Flow | 01/01 to 12/31 | mgd | Continuous | Recording | Average Monthly, Max Daily Average | Monthly |
| BOD ₅ | 01/01 to 12/31 | mg/L | 1/Week | 8-Hour Composite | Average Monthly | Monthly |
| TSS | 01/01 to 12/31 | mg/L | 1/Week | 8-Hour Composite | Average Monthly | Monthly |

4.2 Effluent Monitoring

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

Table 16 presents the effluent monitoring requirements in the permit. The sampling location must be prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. To this end all monitoring of effluent for discharges from Outfall 001 will take place at Internal Discharge 001, and all monitoring of effluent for discharges from Outfall 002 will take place at GWMW 001. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 16. Effluent Monitoring Requirements.

| Parameter | Units | Sample Frequency | Sample Type | Report | Location | Reporting Frequency (DMR Months) |
|-----------------------------------|-----------|----------------------|-------------------------|--|--------------------------|----------------------------------|
| BOD ₅ | mg/L | 2/month | 8-hr composite | Average monthly, Average weekly, % removal | Outfall 001, Outfall 002 | Monthly |
| | lb/day | 2/month | Calculated ^a | | Outfall 001, Outfall 002 | |
| | % removal | ---- | Calculated ^b | | Outfall 001, Outfall 002 | |
| TSS | mg/L | 2/month | 8-hr composite | Average monthly, Average weekly, % removal | Outfall 001, Outfall 002 | Monthly |
| | lb/day | 2/month | Calculated ^a | | Outfall 001, Outfall 002 | |
| | % removal | ----- | Calculated ^b | | Outfall 001, Outfall 002 | |
| E.coli | #/100mL | 5/month ^c | Grab | Geometric mean, Max daily | Outfall 001, Outfall 002 | Monthly |
| pH | SU | 5/week | Grab | Minimum and maximum values | Outfall 001 | Monthly |
| Total Ammonia ^d (as N) | mg/L | 1/month | 8-Hour Composite | Average monthly, Max daily | Outfall 001, | Monthly |
| Total Phosphorus (as P) | mg/L | 1/month | 8-Hour Composite | Average monthly | Outfall 001, | Monthly |
| Nitrate + Nitrite | mg/L | 1/month | Grab | Average monthly | Outfall 001 | Monthly |
| Total Kjeldahl Nitrogen (TKN) | mg/L | 1/month | Grab | Average monthly | Outfall 001 | Monthly |
| pH | SU | 5/month | Grab | Minimum and maximum values | Outfall 002 | Monthly |
| Total Ammonia ^d (as N) | mg/L | 2/month | Grab | Average monthly, Max daily | Outfall 002 | Monthly |
| Total Phosphorus (as P) | mg/L | 1/month | Grab | Average monthly | Outfall 002 | Monthly |
| Nitrate + Nitrite | mg/L | 1/month | Grab | Average monthly | Outfall 002 | Monthly |
| Total Kjeldahl Nitrogen (TKN) | mg/L | 1/month | Grab | Average monthly | Outfall 002 | Monthly |

a. Loading rates (lb/day) are calculated by multiplying the effluent concentration (mg/L) by the effluent flow (mgd) for the day of sampling and a conversion factor (8.43). For more information see Equation 1 in the ELDG.

- b. Percent Removal = (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.
- c. This frequency complies with State of Idaho Water Quality Standards for *E. coli* (e.g. minimum of 5 samples taken every 3 to 7 days over a 30-day period).
- d. Ammonia samples must be taken concurrently with pH and temperature samples.

4.2.1 Effluent Monitoring Changes from the 2004 Permit

Table 17. Changes in Effluent Monitoring Frequency from 2004 Permit for Outfall 001.

| Parameter | 2004 Permit | 2020 Permit |
|-------------------------------|-----------------------|-----------------------|
| Flow | Continuous (influent) | Continuous (influent) |
| BOD ₅ | 1/month | 2/month |
| TSS | 1/month | 2/month |
| pH | 5/week | 5/week |
| Temperature | 5/week | Moved to instream |
| <i>E. coli</i> | 5/month | 5/month |
| Total Ammonia (as N) | 1/month | 2/month |
| Phosphorus, Total (as P) | 1/month | 1/month |
| Nitrate + Nitrite | --- | 1/month |
| Total Kjeldahl Nitrogen (TKN) | --- | 1/month |

The previous permit only required monitoring when the facility was discharging from Outfall 001, which as noted above is infrequent. The proposed permit will require monitoring of effluent on a regular basis when the facility is operational, regardless of whether there is discharge from the underdrain. Therefore, this permit will require significantly more monitoring in general.

The Internal Discharge 001 has two roles in the permit. The first is as the designated compliance sampling point for Outfall 001 when a discharge has occurred from the underdrain during a month. The second role is as a monitoring location for various parameters (see Table 16) to consistently assess the pollution concentrations of the permitted activity's effluent before mixing with other waters. During months when no discharge occurs at Outfall 001, monitoring samples from Internal Discharge 001 will be required as per Table 8 for Outfall 001. When a discharge event occurs during a month samples collected at Internal Discharge 001 as required for monitoring in Table 16 may be used for compliance purposes for Outfall 001 as required in Table 8.

In this permit, the effluent monitoring frequency of BOD₅, TSS, and ammonia will be increased from once a month to twice per month. This is necessary to get a more accurate assessment of the facility's removal efficiency for these pollutants. Phosphorus monitoring will continue at 1/month.

Temperature monitoring of the effluent from Internal Discharge 001 has been replaced with upstream and downstream monitoring of the receiving water to account for thermal loss in the RIBs and to more accurately assess potential impact in the N.F. Payette River.

Total Kjeldahl nitrogen and nitrate + nitrite monitoring is required on a monthly basis to determine the facility's contribution to the N.F. Payette River during this permit cycle.

4.3 Receiving Water Monitoring

Table 18 presents the receiving water monitoring requirements for the permit. The City of Cascade is required to establish receiving water monitoring at the identified locations. Receiving water monitoring results must be submitted with the DMR.

In order to accommodate the facility's use of the RIBs as an alternative to traditional disinfection DEQ feels it is necessary to monitor *E. coli* upstream and downstream of the POTW. Temperature monitoring in the receiving water is also required in the permit. This data will be used to assure that beneficial uses are being protected and any impact the facility is having on the N.F. Payette River is minimal. Because temperature and *E. coli* are believed to undergo substantial treatment in the RIBs it is necessary to include this instream monitoring to better assess this treatment impact. All other parameters will be best assessed for potential impacts at the required monitoring locations that represent the permitted activity.

Table 18. Receiving Water Monitoring Requirements.

| Parameter | Units | location | Frequency | Report | Sample Type | Report |
|------------------|-----------------------|----------------------|-------------------------|--|-------------|---------|
| pH ^a | Standard units (s.u.) | Upstream | 5/month | Maximum and minimum value | Grab | Monthly |
| <i>E. coli</i> | # / 100mL | Upstream, Downstream | 5/month | Geomean | Grab | Monthly |
| Temperature | °C | Upstream, Downstream | Continuous ^b | Maximum daily value, and monthly average | Recorded | Monthly |
| Total Ammonia | mg/L | Upstream | 1/month | Monthly average | Grab | Monthly |
| Total phosphorus | mg/L | Upstream | 1/month | Monthly average | Grab | Monthly |

- a. pH must be analyzed within 15 minutes of sample collection.
- b. Continuous temperature monitoring must begin 11/01/2020. Until that time, 1 per month grab samples are acceptable.

4.3.1 Receiving Water Monitoring Changes from the 2004 Permit

Instream monitoring that was required in the previous permit will remain in the proposed permit and additional monitoring is required to account for the uncertainty involved in utilizing RIBs in the treatment process and quantifying the treatment benefits. pH monitoring frequency has been increased to match the *E. coli* frequency. Temperature monitoring will be necessary to better assess the RIBs efficiency at diminishing thermal impacts. The increased pH monitoring will better assess receiving water quality as very little pH data was gathered in the last permit cycle. Total phosphorus and ammonia monitoring is required based on the elevated nutrients found in the N.F. Payette River system.

4.4 Monitoring Required for Permit Renewal

When applying for an IPDES permit IDAPA 58.01.25.105.11.f.ii requires an applicant that operates a facility with a design flow of greater than 0.1 MGD to supply additional effluent monitoring data. The monitoring proposed in this permit will cover some of this data but the city will need to supply data for Total Kjeldahl Nitrogen (TKN), Nitrate plus Nitrite Nitrogen, Oil and Grease and Total Dissolved Solids (TDS). Three pollutant scans at a minimum are required and cannot be more than 4.5 years old.

5 Special Conditions

5.1 Rapid Infiltration Basins in the Treatment Train

RIBs in the City of Cascade's POTW treatment train have potential to provide benefits to the N.F. Payette River and the City. To ensure the entire treatment process is protective of the river's beneficial uses, DEQ believes it necessary to require the City to conduct some additional monitoring and update facility operations. The focus of the additional requirements is on optimizing disinfection in the RIBs and developing a site specific ground water quality level and compliance point (IDAPA 58.01.11.400.05).

5.1.1 Developing Optimal Hydraulic Cycling of Basins

The facility is required to operate the RIBs as described in their operations and maintenance manual (O&M) ensuring that the wetting period is an appropriate length and that the drying period allows for adequate renewal of biological treatment capability of the media. EPA has provided guidance on this topic in its 1981 guidance document "*Process Design Manual - Land Treatment of Municipal Wastewater*".

5.2 Nondomestic Waste Management

The permittee has nonsignificant, nondomestic (industrial / commercial) users, which are not subject to the pretreatment standards in 40 CFR 405 through 471, nor meet any of the criteria of a Significant Industrial User specified in 40 CFR 403.3(v); therefore, DEQ does not require an authorized pretreatment program. The permittee must ensure that pollutants from nondomestic wastes discharged to their system do not negatively impact system operation or pass through the wastewater treatment facility. The permittee must not authorize discharges of pollutants that would inhibit, interfere, or otherwise be incompatible with operation of the wastewater treatment works, including *interference* with the use or disposal of municipal sludge.

5.3 Compliance Schedule

The permit includes a compliance schedule to allow the city time to develop and implement a plan to create a site specific ground water monitoring well that will meet the requirements necessary to comply with the permit limits for Outfall 002 in the permit.

Table 19. Compliance schedule

| Task No. | Time From Effective Date | Date | Task Activity |
|-----------------|---------------------------------|-------------|---|
| 1 | 4 months | 07/01/2020 | <p>Complete Required Work or On-Site Construction Complete the installation of the groundwater monitoring wells and begin ground water gradient study. Deliverable: The permittee must provide the DEQ with a Progress Report confirming gradient study data collection has commenced</p> |
| 2 | 10 months | 12/01/2020 | <p>Status/Progress Report Progress Report on gradient study data collection Deliverable: The permittee must provide the DEQ with a Progress Report which provides information on data collection progress</p> |
| 3 | 16 months | 07/01/2021 | <p>Complete Required Sampling and Analytical Work or Studies Complete data collection required to determine optimal compliance well placement. Deliverable: The permittee must provide the DEQ with a Progress Report confirming 12 months of data collection has been completed.</p> |
| 4 | 18 months | 09/01/2021 | <p>Preliminary Engineering Report: Preparation and Submittal of a Preliminary Engineering Report (PER)</p> <ul style="list-style-type: none"> • Provide an analysis of the gradient study • Finalize design criteria • Determine site locations and equipment sizing for improvements <p>Deliverable: Permittee must submit a preliminary engineering report to DEQ for approval.</p> |
| 5 | 18 months + 42days | 10/13/2021 | <p>Preliminary Engineering Report: DEQ review of PER:</p> <ul style="list-style-type: none"> • DEQ will review and comment on the PER • DEQ will submit any comment to Engineer and Cascade <p>Deliverable: Engineer and Cascade will incorporate comments, and the PER will be resubmitted back to DEQ for approval.</p> |
| 6 | 20 months+ 42days | 12/13/2021 | <p>Engineering Plan: Preparation and Submittal of a Plans and Specifications Deliverable: Permittee must submit a plans and specifications to DEQ for approval.</p> |
| 7 | 20 months +84days | 01/24/2022 | <p>Engineering Plan: DEQ review of plans and specifications:</p> <ul style="list-style-type: none"> • DEQ will review and comment on the plans and specifications • DEQ will submit any comment to Engineer and Cascade <p>Deliverable: Engineer and Cascade will incorporate comments, and the plans and specifications will be resubmitted back to DEQ for approval.</p> |

| Task No. | Time From Effective Date | Date | Task Activity |
|----------|--------------------------|------------|---|
| 8 | 22 months +84days | 03/28/2022 | Complete Required Work or On-Site Construction <ul style="list-style-type: none"> Complete installation of compliance monitoring well Deliverable: Permittee must provide DEQ with written notice that construction is complete. |
| 9 | 23 months +84days | 04/26/2022 | Comply With Permit Limits <p>Begin monitoring for required parameters for Outfall 002 in the permit.</p> Deliverable: Permittee must provide DEQ with written notice that the facility has achieved compliance with the final effluent limits. |

5.4 Spill Control Plan

The permittee shall update and implement a spill control plan for possible spills of all stored chemicals.

5.5 Inflow and Infiltration Evaluation

The application mentions that known manhole issues are potential sources of inflow during wet weather periods. At this time, excessive I/I related issues are not apparent in the limited data available. The weekly influent monitoring for BOD₅ and TSS required in this permit will provide some necessary data to develop the report. The permittee is required to submit an I/I evaluation report with reapplication submittal.

6 Standard Conditions

Sections 6.1.1 through 6.1.3 of the permit contains standard regulatory language that must be included in all IPDES permits. DEQ bases the standardized Standard Conditions on state and federal law and regulations. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

6.1.1 Quality Assurance Project Plan

In accordance with IDAPA 58.01.25.300.05, permittees are required to develop procedures to ensure that the monitoring data submitted is accurate and explain data anomalies if they occur. The permittee is required to develop and implement a plan for optimal RIB loading in order to maximize disinfection efficiency. The quality assurance plan shall consist of standard operating procedures for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to DEQ upon request.

6.1.2 Operation and Maintenance Manual

The permit requires the city to properly operate and maintain all facilities and systems of conveyance, treatment, and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The

permittee is required to maintain and implement an operation and maintenance plan for their facility. The plan must be retained on site and made available to DEQ upon request.

6.1.3 Emergency Response Plan

The permittee must maintain and implement an emergency response plan that identifies measures to protect public health and the environment. At a minimum, the plan must include mechanisms for the following:

1. Ensure that the permittee is aware (to the greatest extent possible) of all overflows from portions of the collection system over which the permittee has ownership or operational control as well as any unanticipated treatment unit bypass or upset that may exceed any effluent limit in the permit;
2. Ensure that reports of an overflow or of an unanticipated bypass or upset that may exceed any effluent limit in this permit are immediately dispatched to appropriate personnel for investigation and response as required in section 4.1.3 of the permit;
3. Ensure immediate notification to DEQ of any noncompliance that may endanger public health or the environment and identify the public health district and other officials who will receive immediate notification for items that require 24-hour reporting in section 2.2.7 of the permit;
4. Ensure that appropriate personnel understand, are appropriately trained on, and follow the Emergency Response Plan; and
5. Provide emergency facility operation.

7 Compliance with other DEQ Rules

7.1 Operator's License

The permittee must meet the requirements and operator license levels listed in the wastewater rules at IDAPA 58.01.16.203 for the type(s) of operations at the facility.

7.2 Lagoon Seepage Testing

The permittee must comply with the "Wastewater Rules" in IDAPA 58.01.16, including the seepage testing requirements in IDAPA 58.01.16.493 for municipal lagoons. Prior to lagoon seepage testing, the permittee must consult DEQ. The seepage test report submittals to DEQ must be up-to-date per the IDAPA 58.01.16 timelines.

7.3 Sludge / Biosolids

DEQ separates wastewater and sludge permitting for the purposes of regulating biosolids. DEQ 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 503 and the

requirements of Idaho's Wastewater Rules (IDAPA 58.01.16.480 and 650). The 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued. Idaho's Wastewater Rules require a POTW to have the capability to process sludge accumulated on-site in preparation for final disposal or reuse (IDAPA 58.01.16.480 and 58.01.16.650). Operations of these sludge processing, storage, and disposal activities must comply with the facility's sludge management plan.

This permit requires the permittee to submit a sludge depth report with the reapplication material. The permittee should use this information to determine if and when sludge removal is necessary to properly operate the facility. Sludge removal will require the permittee to have a DEQ approved sludge management plan. The permittee is encouraged to contact the DEQ regional office with any questions regarding sludge assessment and management.

8 Permit Expiration

The permit will expire five years from the effective date (02/28/2025).

8.1 Permit Modifications

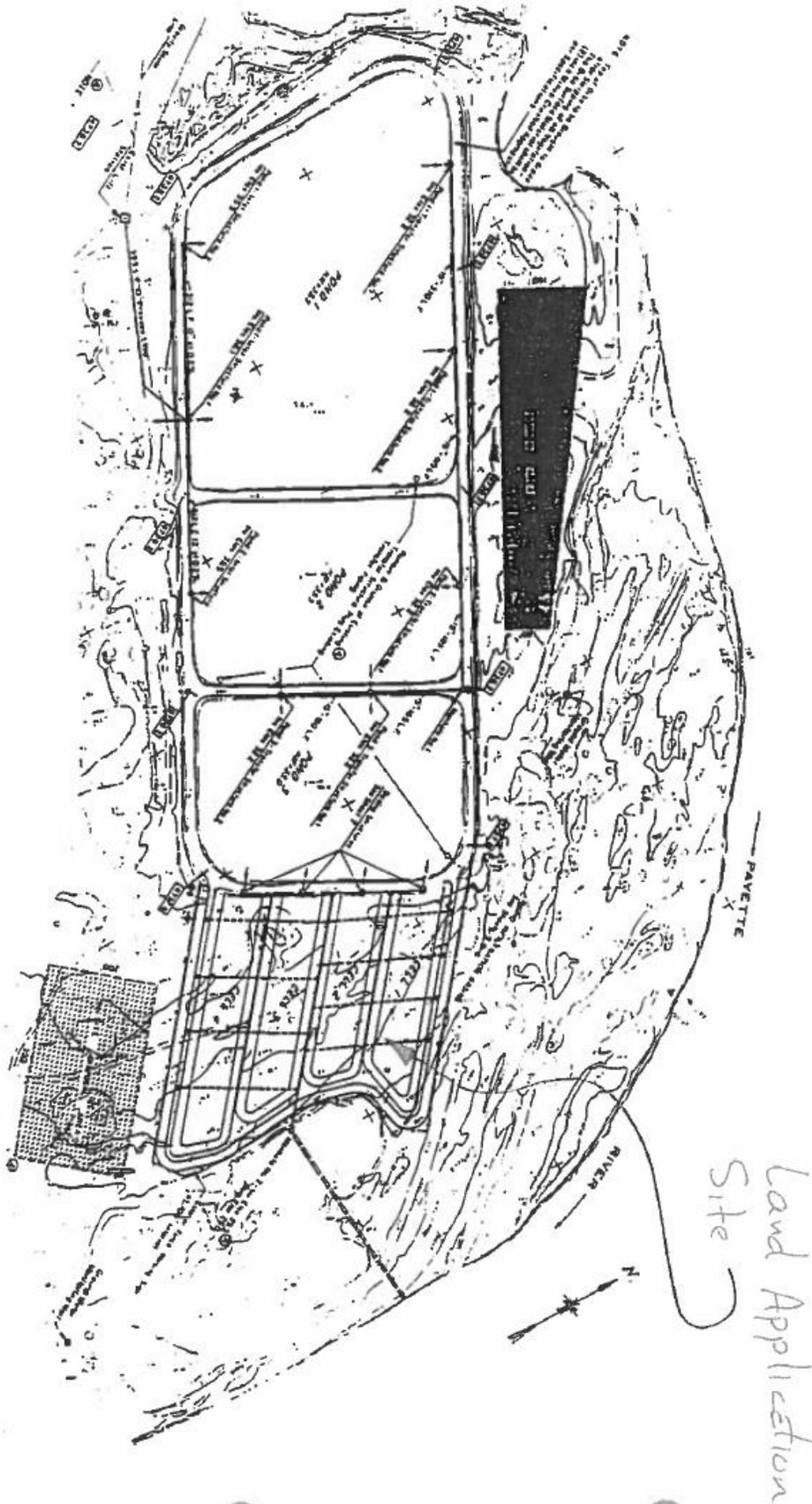
DEQ may modify a permit before its expiration date only for causes specified in IDAPA 58.01.25.201. A modification other than a *minor modification* requires preparing a permit that incorporates the proposed changes, preparing a fact sheet, and conducting a public review period. Only the permit conditions subject to the modification will be reopened when a permit is modified. All other conditions of the existing permit remain in effect. Modifying a permit does not change the expiration date of the original permit.

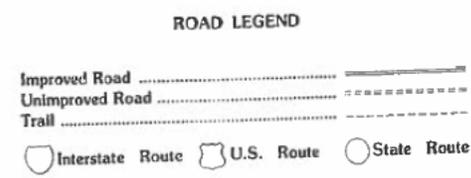
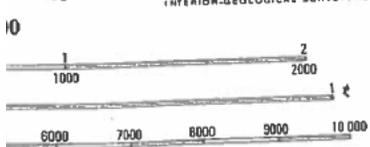
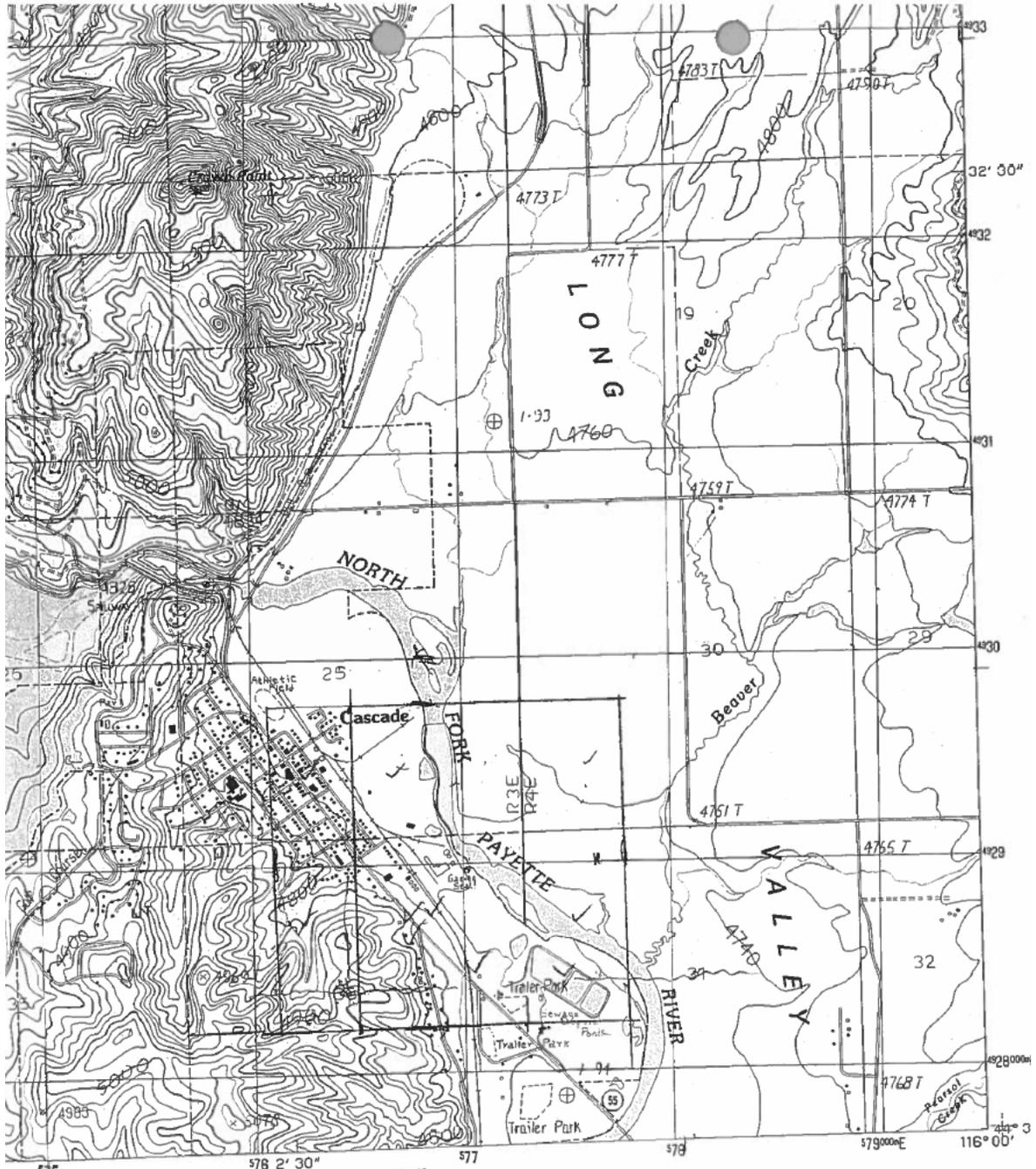
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Appendix A. Facility Maps / Process Schematics







- ① INLET STRUCTURE
- ② TRANSFER STRUCTURE
- ③ CELL 1
- ④ CELL 2
- ⑤ CELL 3
- ⑥ RAPID INFILTRATION BASIN
- ⑦ EMERGENCY OVERFLOW

Table 1. WWTP Surface Areas and Volumes

| | Surface Area (acres) | Water Depth (ft) | Volume (million gallons) |
|---------------|-------------------------|---------------------|-----------------------------|
| Cell 1 | 6.3 | 5.5 | 10.7 |
| Cell 2 | 3.5 | 5.8 | 6.1 |
| Cell 3 | 3.6 | 6.2 | 6.7 |
| RI basins (4) | 0.52 – 0.72 each | - | - |

Appendix B. Technical Calculations

The results of the technical calculations are discussed above in sections 3.2 and 3.3 of the fact sheet.

A. Technology-Based Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as secondary treatment, which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated secondary treatment effluent limits, which are found in 40 CFR 133. These TBELs apply to all municipal wastewater treatment facilities and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD₅, TSS, and pH.

In addition, Idaho rules and federal regulations include special considerations to allow “treatment equivalent to secondary,” for treatment facilities with waste stabilization ponds (lagoons) and trickling filters. These provisions allow alternative limits for BOD₅ and TSS for such facilities, provided the following requirements are met (40 CFR 133.101(g) and 40 CFR 133.105(d)):

There are three requirements a facility needs to meet to qualify for equivalent to secondary treatment standards listed under 40 CFR 133.101(g), which states:

“Facilities eligible for treatment equivalent to secondary treatment... Treatment works shall be eligible for consideration for effluent limitations described for treatment equivalent to secondary treatment (Section 133.105), if:

(1) The BOD₅ and SS effluent concentrations consistently achievable through proper operation and maintenance (Section 133.101(f)) of the treatment works exceed the minimum level of the effluent quality set forth in Sections 133.102(a) and 133.102(b),

(2) A trickling filter or waste stabilization pond is used as the principal process, and

(3) The treatment works provide significant biological treatment of municipal wastewater.”

The concentration and removal rate limits for BOD₅ and TSS are the technology-based effluent limits of 40 CFR 133.102. As explained below, DEQ has determined that more-stringent water quality-based effluent limits are necessary for pH, as well as *E. coli*, in order to ensure compliance with water quality standards.

B. Reasonable Potential and Water Quality-Based Effluent Limit Calculations

DEQ uses the process in the *Effluent Limit Development Guidance* (DEQ 2017) to determine reasonable potential. After characterizing the effluent and receiving water, DEQ compares the projected receiving water concentration after the effluent is discharged to the water quality criteria for the pollutant of concern. If the projected concentration exceeds the criterion, there is reasonable potential and an effluent limit is developed.

If DEQ chooses to authorize a mixing zone, the water quality criteria must still be met at the edge of the mixing zone. If after the analysis of the mixing zone, water quality criteria are not being met, the facility will receive an effluent limit that identifies both the size of the mixing zone and the final effluent limit.

Mass Balance

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

Equation 1. Simple mass-balance equation

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

Where:

| | |
|---|---|
| C_d = downstream receiving water concentration | Calculated value |
| Q_e = critical effluent flow | From discharge flow data (design flow for POTW) |
| Q_u = critical upstream flow (1Q10 acute criterion, 7Q10 chronic, or harmonic mean) | From water quality standards |
| $\%MZ$ = percent of critical low flow provided by mixing zone | From mixing zone analysis |
| C_u = critical upstream pollutant concentration (90th to 95th percentile) | From receiving water data |
| C_e = critical effluent pollutant concentration | Calculated value using |

A dilution factor (D) can be introduced to describe the allowable mixing. A dilution factor represents the ratio of the receiving water body low flow percentage (i.e., the low-flow design discharge conditions) to the effluent discharge volume and is expressed as:

Equation 2. Dilution factor calculation.

$$\text{Dilution Factor} = D_f = \frac{(Q_s \times P + Q_e)}{Q_e} = \frac{(Q_s \times P)}{Q_e} + 1$$

Where: D_f = Dilution factor

Q_s = Receiving water low-flow condition (cfs)

P = Mixing zone percentage

Q_e = Effluent discharge flow (cfs)

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

Critical Effluent Pollutant Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, DEQ's *Effluent Limit Development Guidance* (DEQ 2017) recommends using the critical effluent pollutant concentration (C_e) in the mass balance calculation (see equation 1). To determine the C_e DEQ has adopted EPA's statistical approach that accounts for day-to-day variability in effluent quality by identifying the number of samples, calculating the coefficient of variation (CV) (Equation 3, below), and selecting a reasonable potential multiplying factor (RPMF) from the tables in the *Effluent Limit Development Guidance* (DEQ 2017).

Equation 3. CV calculation

$$CV = \frac{\text{Standard Deviation}}{\text{Mean}}$$

Equation 4. C_e calculation.

$$C_e = MOEC \times RPMF$$

If the C_e exceeds water quality criteria then a reasonable potential analysis is conducted.

Reasonable Potential Analysis

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria, referred to as a reasonable potential to exceed (RPTE), if the critical concentration of the pollutant at the end of pipe exceeds the most stringent WQ criterion for that pollutant. This RPTE may result in end of pipe limits or may be accommodated if the receiving water has sufficient low flows to provide a mixing zone, and the pollutant of concern does not have acute toxicity attributes. Other conditions may also be applicable that may restrict the use of a mixing zone for the pollutant of concern.

C. WQBEL Calculations

The following calculations demonstrate how the WQBELs in the permit were calculated. The permit includes WQBELs for pH and *E.coli*. The following discussion presents the general equations used to calculate the WQBELs.

Calculate the Wasteload Allocations (WLAs)

WLAs are calculated using the same mass-balance equations used to calculate the concentration of the pollutant at the mixing zone boundary in the RPA. WLAs must be calculated for both acute and chronic criteria. To calculate the WLAs, C_d is set equal to the appropriate criterion and

the equation is solved for C_e . The calculated C_e is the WLA. Equation 5 is rearranged to solve for the WLA:

Equation 5. Simple mass-balance equation for calculating WLA for flowing water

$$C_e = WLA_{(a\ or\ c)} = \frac{WQC_{(a\ or\ c)}[Q_e + (Q_u \times \%MZ)] - [C_u \times (Q_u \times \%MZ)]}{Q_e}$$

Where:

| | |
|---|---|
| $WQC_{(a\ or\ c)}$ = Pollutant water quality criterion (acute or chronic) | Calculated value |
| Q_e = Critical effluent flow | From discharge flow data (design flow for POTW) |
| Q_u = Critical upstream flow (1Q10 acute criterion or 7Q10 chronic) | From water quality standards |
| $\%MZ$ = Percent of critical low flow provided by mixing zone | From mixing zone analysis |
| C_u = Critical upstream pollutant concentration (90th to 95th percentile) | From receiving water data |
| $C_e = WLA_{(a\ or\ c)}$ = wasteload allocation (acute or chronic) | Calculated from Equation 4 |

Idaho's WQC for some metals are expressed as the dissolved fraction. The rules regulating the IPDES program (IDAPA 58.01.25.303.03) require that effluent limits be expressed as total recoverable metal unless standards have been promulgated allowing limits specified in dissolved, valent, or total forms. A case-by-case basis has been established for limits specified in dissolved, valent, or total form, or all approved analytical methods for the metal inherently measure only its dissolved form. Therefore, the permit writer should calculate a WLA 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 discussed in *Guidance Document on Dynamic Modeling and Translators* (EPA 1993), the criteria translator (CT) is equal to the conversion factor when site-specific translators are not available. Conversion factors for metals criteria are listed in DEQ's Water Quality Standards (WQS) at IDAPA 58.01.02.210.02. The WQS also lists several guidance documents at IDAPA 58.01.02.210.04 that are recommended for the development of site specific translators.

The next step is to compute the acute and chronic long-term average ($LTA_{(a\ or\ c)}$) concentrations, which will be derived from the acute and chronic WLAs. This is done using the following equations from the *Effluent Limit Development Guidance* (DEQ 2017):

Equation 6 Acute LTA for toxics

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z_{99}\sigma)}$$

Where:

| | |
|---|--|
| LTA _a = Acute long-term average | Calculated value |
| WLA _a = Acute wasteload allocation | Calculated value. See Equation 5. Simple mass-balance equation for calculating WLA for flowing water |
| e = Base of natural log | Approximately 2.718 |
| σ = Square root of σ ² | |
| σ ² = Ln(CV ² +1) | Ln is the natural log |
| CV = Coefficient of variation | Calculated using field data. If 10 or less samples available, use default value of 0.6. See Equation 3 |
| Z ₉₉ = z score of the 99th percentile of the normal distribution | 2.326 |

Equation 7. Chronic LTA average for toxics.

$$LTA_c = WLA_c \times e^{(0.5\sigma_n^2 - z_{99}\sigma_n)}$$

Where:

| | |
|---|---|
| LTA _c = Chronic long-term average | Calculated value |
| WLA _c = Chronic wasteload allocation | Calculated value. See Equation 5 |
| e = Base of natural log | Approximately 2.718 |
| σ _n = Square root of σ _n ² | |
| σ _n ² = Ln[(CV ²)/n + 1] | Ln is the natural log |
| CV = Coefficient of variation | Calculated using field data. If 10 or less, samples available use default value of 0.6. See Equation 3. |
| Z ₉₉ = z score of the 99th percentile of the normal distribution | 2.326 |
| n = Averaging period for the chronic water quality criterion (typically 4 days) | Varies |

The acute and chronic LTAs are compared, and the more stringent of the two is used to calculate the maximum daily and average monthly limits.

Derive the Maximum Daily and Average Monthly Effluent Limits

Using the *Effluent Limit Development Guidance* (DEQ 2017) equations, the maximum daily limit (MDL) and average monthly limit (AML) are calculated as follows:

Equation 8. Maximum daily limit for toxics

$$\text{Maximum Daily Limit} = LTA_m \times e^{(z_{99}\sigma - 0.5\sigma^2)}$$

Where:

| | |
|--|--|
| LTA _m = Minimum long-term average value | Lesser value calculated from Equation 6 and Equation 7 |
| e = Base of natural log | Approximately 2.718 |
| σ = Square root of σ ² | |
| σ ² = Ln(CV ² +1) | Ln is the natural log of base e |

Z_{99} = z score of the 99th percentile of the normal distribution 2.326

CV = Coefficient of variation See Equation 3

Equation 9. Average monthly limit for toxics

$$AML = LTA_m \times e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}$$

Where:

LTA_m = Minimum long-term average Lesser value calculated from Equation 6 and Equation 7

AML = Average monthly limit Calculated value

e = Base of natural log Approximately 2.718

σ_n = Square root of σ_n^2

$\sigma_n^2 = \text{Ln}[(CV^2)/n + 1]$ Ln is the natural log of base e

Z_{95} = z score of the 95th percentile of the normal distribution 1.645

n = Number of sample specified in the permit to be analyzed each month Typically n = 1, 2, 4, 10, or 30.

CV = Coefficient of variation See Equation 3

Table 20. RPA spreadsheet results.

| Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations | | | | |
|--|--|------------------------|--|----|
| Facility Name | Cascade | | | |
| Facility Flow (mgd) | 0.7200 | | | |
| Facility Flow (cfs) | 1.11384 | | | |
| Critical River Flows | | (IDAPA 58.01.02 03. b) | Annual | |
| Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC) | 1Q10 | 131.45000 | cfs | |
| Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC) | 7Q10 or 4B3 | 164.59000 | cfs | |
| Ammonia | 30B3/30Q10 (seasonal) | 191.00000 | cfs | |
| Human Health - Non-Carcinogen | 30Q5 | 188.64000 | cfs | |
| Human Health - carcinogen | Harmonic Mean Flow | 364.50000 | cfs | |
| Receiving Water Data | | Notes: | Annual | |
| Hardness, as mg/L CaCO ₃ | Hardness, as mg/L CaCO ₃ 5 th prctile at critical flow | 21.2 | mi | |
| Temperature, °C | Temperature, °C 90 th - 95 th percentile | 8.3 | | |
| pH, S.U. | pH, S.U. 90 th - 95 th percentile | | | |
| Pollutants of Concern | | | AMMONIA, default: cold water, fish early life stages | |
| Effluent Data | Number of Samples in Data Set (n) | 23 | | |
| | Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6) | 1.01 | | |
| | Effluent Concentration, µg/L (Max. or 95 th Percentile) - (C _e) | 15,340 | | |
| | Calculated 50 th prctile Effluent Conc. (when n>10), Human Health Only | 3750 | | |
| Receiving Water Statistics | 90 th Percentile Conc., µg/L - (C _r) | 215 | | |
| | Geometric Mean, µg/L, Human Health Criteria Only | 5.6 | | |
| Applicable Water Quality Criteria | Aquatic Life Criteria, µg/L | Acute | 3,149.089 | -- |
| | Aquatic Life Criteria, µg/L | Chronic | 990.6 | -- |
| | Human Health Water and Organism, µg/L | | -- | -- |
| | Human Health, Organism Only, µg/L | | -- | -- |
| | Metals Criteria Translator, decimal (or default use Conversion Factor) | Acute | | -- |
| | | Chronic | | -- |
| | Carcinogen (Y/N), Human Health Criteria Only | | -- | |
| Percent River Flow | Aquatic Life - Acute | 1Q10 | 13.62% | -- |
| | Aquatic Life - Chronic | 7Q10 or 4B3 | | -- |
| | | 30B3 or 30Q10 | | -- |
| | Human Health - Non-Carcinogen and Chronic Ammonia | 30Q5 | 25.00% | -- |
| | Human Health - Carcinogen | Harmonic Mean | | -- |
| Calculated Dilution Factors (DF) (or enter Modeled DFs) | Aquatic Life - Acute | 1Q10 | 17.07 | -- |
| | Aquatic Life - Chronic | 7Q10 or 4B3 | | -- |
| | | 30B3 or 30Q10 | | -- |
| | Human Health - Non-Carcinogen and Chronic Ammonia | 30Q5 | 43.34 | -- |
| | Human Health - Carcinogen | Harmonic Mean | | -- |

Aquatic Life Effluent Limit Calculations

| | | | | |
|---|---|---------|-----------|----|
| Number of Compliance Samples Expected per month (n) | | | 30 | |
| 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) | | | 1.010 | -- |
| Permit Limit Coeff. Var. (CV), decimal (Use CV from data set or default = 0.6) | | | 1.010 | -- |
| Acute WLA, ug/L | $C_a = (\text{Acute Criteria} \times MZ_a) - C_a \times (MZ_a - 1)$ | Acute | 50,313 | -- |
| Chronic WLA, ug/L | $C_c = (\text{Chronic Criteria} \times MZ_c) - C_c \times (MZ_c - 1)$ | Chronic | 33,830 | -- |
| Long Term Ave (LTA), ug/L | $WLA_c \times \exp(0.5\sigma^2 - z\sigma)$, Acute | 99% | 10,167 | -- |
| (99 th % occurrence prob.) | $WLA_a \times \exp(0.5\sigma^2 - z\sigma)$; ammonia n=30, Chronic | 99% | 22,481 | -- |
| Limiting LTA, ug/L | used as basis for limits calculation | | 10,167 | -- |
| Applicable Metals Criteria Translator (metals limits as total recoverable) | | | | -- |
| Average Monthly Limit (AML), ug/L , where % occurrence prob = | 95% | | 13,506 | -- |
| Maximum Daily Limit (MDL), ug/L , where % occurrence prob = | 99% | | 50,313 | -- |
| Average Monthly Limit (AML), mg/L | | | 13.5 | -- |
| Maximum Daily Limit (MDL), mg/L | | | 50.3 | -- |
| Average Monthly Limit (AML), lb/day | | | 81.103 | -- |
| Maximum Daily Limit (MDL), lb/day | | | 302.118 | -- |

Appendix C. Your Right to Appeal

Persons aggrieved, as specified in IDAPA 58.01.25.204.01.a., have a right to appeal the final permit decision to the Board of Environmental Quality. A Petition for Review must be filed with the Department's Hearing Coordinator within twenty eight (28) days after the Department serves notice of the final permit decision under IDAPA 58.01.25.107 (Decision Process).

All documents concerning actions governed by these rules must be filed with the Hearing Coordinator at the following address: Hearing Coordinator, Department of Environmental Quality, 1410 N. Hilton, Boise, ID 83706-1255. Documents may also be filed by FAX at FAX No. (208) 373-0481 or may be filed electronically. The originating party is responsible for retaining proof of filing by FAX. The documents are deemed to be filed on the date received by the Hearing Coordinator. Upon receipt of the filed document, the Hearing Coordinator will provide a conformed copy to the originating party. Additional requirements for appeals of IPDES final permit decisions can be found in IDAPA 58.01.25.204.

DEQ seeks public comment on draft wastewater discharge permit for the city of Cascade

Thursday, September 05, 2019

CASCADE – The Idaho Department of Environmental Quality (DEQ) is seeking public comment on a draft Idaho Pollutant Discharge Elimination System (IPDES) permit for the Cascade Wastewater Treatment Facility in Cascade.

The proposed permit authorizes the discharge of treated municipal wastewater year-round to the North Fork of the Payette River for five years.

The permit identifies the pollutants of concern and lists the required limits for each pollutant or parameter; monitoring requirements, and reporting requirements necessary to ensure compliance with the permit and protect human health and the environment.

Written comments on the draft permit and fact sheet will be accepted through Monday, Oct. 7th, 2019 at 5 p.m. MST. A public hearing may be held if requested in writing by Thursday, Sept. 19th, 2019.

The draft permit and fact sheet are available for public review at DEQ's Boise Regional Office, DEQ's state office in Boise, and on DEQ's website (download at right).

Submit requests for a public meeting or written comments on the draft permit and fact sheet electronically on DEQ's website or by mail or email to:

Lori Flook
Idaho Department of Environmental Quality
Water Quality Division
1410 N. Hilton
Boise, ID 83706
Email: lori.flook@deq.idaho.gov

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Related Documents

- » [City of Cascade - Draft Permit](#)
- » [City of Cascade - Fact Sheet](#)
- » [City of Cascade - Application Part 1](#)
- » [City of Cascade - Application Part 2](#)
- » [City of Cascade - EPA Form 1A Application Revision](#)
- » [City of Cascade - EPA Form 2A Application Revision](#)

Related Pages

[Wastewater Reuse Permitting in Idaho](#)

Public Comments and Response to Comments

Idaho Pollutant Discharge Elimination System Discharge Permit No. ID0023167

Response to Comments on Draft City of Cascade IPDES Permit

October 7, 2019 comment deadline

EPA Region 10:

1. Monitoring Requirements (Tables 5 and 6):

Although the State of Idaho does not have a numeric criterion for nitrate, the EPA has a recommended criterion for nitrate of 10 mg/L for consumption of water and organisms, which could be used to interpret Idaho's narrative criterion for toxic substances. Since the receiving water is designated for domestic water supply and the draft permit proposes monthly monitoring for both ammonia and total nitrogen, we recommend adding monthly monitoring and reporting for nitrate + nitrite nitrogen and total Kjeldahl nitrogen.

Response: DEQ agrees that requiring monitoring for both parameters separately in this case will further help assess effects on the domestic water supply beneficial use. When examining potential nutrient contributions, DEQ will use the sum of total Kjeldahl nitrogen (TKN) and nitrate + nitrite nitrogen (N+N) to determine total nitrogen.

Changes: The total nitrogen monitoring in the permit has been replaced with Nitrate + Nitrite nitrogen monitoring and total Kjeldahl Nitrogen monitoring.

2. Regulatory Mixing Zone (Section 1.3):

The draft permit states, in Section 1.3, that "There is no regulatory mixing zone authorized for this discharge." This is inconsistent with the reasonable potential analysis for ammonia in Table 18 of the fact sheet, which shows that a dilution factor of 5.4 was applied to the chronic ammonia criterion. See also our comments on the fact sheet.

Response: The dilution factor calculated as 5.4 with no authorized mixing zone was an error that has now been corrected with the reevaluated RPA.

DEQ agrees that correct ammonia criteria represented in Table 13 (formerly Table 12) of the fact sheet were not transferred to the RPA calculations correctly. In turn this affected the mixing zone development as represented in section 1.3 of the permit. See the response to comment 3 below for more detail.

Changes: The Mixing Zone section (1.3) in the permit has been revised to include the addition of a mixing zone for ammonia. See the response to comment #3 below for further description of changes to the RPA and fact sheet.

3. Fact Sheet Ammonia Calculations:

The calculation of the ammonia criteria values based on pH and temperature in the reasonable potential analysis in Table 18 of the fact sheet is incorrect. The correct ammonia criteria values for a pH of 8.3 and a temperature of 21.2 °C are an acute criterion of 3,149 µg/L and a chronic criterion of 991 µg/L. The correct ammonia criteria appear in Table 12 of the fact sheet.

In addition, Table 18 shows that the percentage of the river flow authorized for mixing for chronic ammonia criteria is “0.0,” and the permit states in Section 1.3 that no mixing zone is authorized. However, Table 18 also shows that there is a dilution factor of 5.4 applied to the chronic ammonia criterion. If no mixing zone was authorized (i.e., 0% of the critical flow), then the dilution factor should be 1.0.

Back-calculating from the facility flow of 0.72 mgd and the 30B3 stream flow of 191 CFS, we find that the dilution factor of 5.4 is equivalent to a mixing zone encompassing 2.6% of the 30Q5 stream flow. When formatted as a decimal, with one decimal place shown, this value will appear as “0.0” in a spreadsheet.

Please correct the ammonia criteria and mixing zones and repeat the reasonable potential analysis for ammonia. Please ensure that the mixing zone section of the permit (Section 1.3) is consistent with the mixing zones used for the reasonable potential analysis and (if necessary) water quality-based effluent limit calculations.

Response: DEQ agrees that the ammonia criteria represented in Table 12 (currently Table 13) are correct and did not get transferred to the RPA calculation properly in Table 18 (currently Table 19)). Applying the correct water quality criteria that account for ambient receiving water pH and temperature, into the RPA calculation reveal a reasonable potential to exceed (RPTE) WQC with the approved mixing zone.

Changes: Based on this finding DEQ has revised the permit to include an approved mixing zone for ammonia and developed WQBELs for ammonia at Outfall 001. The permit limits for ammonia are 13.5 mg/L (81.1 lbs/day) as a monthly average and 50.3 mg/L (302.1lbs/day) as daily maximum.

The fact sheet has been updated in sections 3.3.2 and 3.3.3.1. In this section it is explained why DEQ determined a mixing zone is warranted and that the limits are protective of WQS and beneficial uses. Additionally section 3.5.2 (Anti-degradation) of the fact sheet was revised to address potential anti-degradation impacts of including first time limits in a permit.

ICL:

4. E. coli Single Value Exceedances:

Footnote d of Table 3 elaborates on the use of a single sample value for E. coli. The footnote states: “if this value is exceeded at any point within the month, the facility should consider monitoring according to IDAPA 58.01.02.251.01.a to determine compliance with the monthly geometric mean.” (emphasis added).

The highlighted language suggests that monitoring pursuant to the requirements of IDAPA 58.01.02.251.01.a is at the discretion of the facility. This is inconsistent with the language of the rule, which states, “If a single sample exceeds the maximums set forth in Subsections 251.01.b.i., 251.01.b.ii., and 251.01.b.iii., then additional samples must be taken as specified in Subsection 251.01.c.” (emphasis added).

In light of this, DEQ should change the language of Footnote d of Table 3 to read, “facility shall perform monitoring...” Rewording this sentence is consistent with DEQ’s language throughout the Fact Sheet (e.g. – Section 3.6.1) where they make it clear that additional sampling following an exceedance of the single sample value is required.

Response: DEQ agrees that the footnote in question could be misconstrued to imply that the rules in IDAPA 58.01.02.251.01.a do not always apply. The intent of this sentence in the footnote is to stress that 5 samples per month are the minimum required to determine the geometric mean. This footnote is revised in the permit and fact sheet to clarify that 5 samples per month are always required in this permit.

*Changes: The footnote of concern has been changed to:
“Idaho’s water quality standards for primary contact recreation include a single sample value of 406 organisms/100 mL. Exceedance of this value indicates likely exceedance of the 126 organisms/100 mL average monthly effluent limit; however, it is not an enforceable limit for a daily value, nor is exceeding this value a violation of water quality standards. If this value is exceeded at any point within the month, the facility should consider collecting more samples than the 5 per month required in this permit to determine compliance with the monthly geometric mean according to IDAPA 58.01.02.251.01.a”*

5. RPA for Ammonia:

Table 12 in DEQ’s Fact Sheet lists 3.15 mg N/L and 0.99 mg N/L as the acute criterion (CMC) and chronic criterion (CCC), respectively, for ammonia. These values differ from those present in Table 18 of the Reasonable Potential Analysis (RPA), which lists a CMC of 38.99 mg/L and a CCC of 7.09 mg/L. We request that DEQ explain this discrepancy and, if necessary, redo the RPA using the appropriate values.

Response: DEQ agrees with this comment and it has been addressed in the fact sheet and permit. See the response to comment #3 above for further information.

Changes: See response #3, above.

6. Below Grade Manholes and Inflow:

They City cites below-grade manholes as a source of infiltration and high influent volumes. Will this permit require this issue to be remedied, and if so, will there be a compliance schedule associated with such a requirement?

Response: Currently the data available do not indicate that (Inflow and Infiltration) I/I is an immediate issue affecting facility treatment efficiency. Annual average daily flows as reported in the application (0.23mgd, 2017) are well below the design flow of 0.72 mgd. Additionally, BOD and TSS average influent concentrations are 152 mg/L and 121 mg/L respectively; which do not indicate overly diluted intake water. The permit requires weekly influent monitoring for BOD and TSS to better assess influent concentrations of these parameters. However, DEQ agrees that this facility's permit history indicates an I/I evaluation report should be submitted with the reapplication material.

Changes: The permit has been revised to include an I/I Evaluation special condition and require an I/I evaluation report to be submitted by 05/04/2024 (updated to 08/30/2024 based on new effective date of permit).

City of Meridian:

7. 24-Hour Reporting of Non-Permit Limit Value:

The current draft permit requires 24-hour reporting of an E.coli result of 406 organisms/100mL. This concentration value is not a daily maximum limit in the permit and should not require 24 hour reporting as such.

Request: Remove the 24-hour reporting requirement for a non-enforceable, non-permit limited value.

Response: DEQ acknowledges that this maximum value is not enforceable. It indicates an exceedance of water quality criteria may exist or be forthcoming. DEQ finds this information informative and important for assessing use support and public health protection and requires to be notified when a facility is aware of an exceedance of this value

Changes: None.

8. Continuous Temperature Monitoring Frequency- 2.1.4 Tables 7 (footnote d and e) and 8 (footnote b and c)- Page 16-17

The City greatly appreciates DEQ's acknowledgement of the brief and occasional outages that will occur on continuously monitored equipment for reasons such as equipment failure, calibrations, and vandalism. However, the requirement for the data outage to be no more than 30 minutes is contradictory to the requirement to take one reading per hour as stated later in the permit in section 2.1.4.1 (page 18).

Additionally, it may be challenging to identify an equipment/data issue, get equipment replaced, and recalibrated in less than 1 hour. It would be reasonable to include a larger data gap window, such as 4 hours, to allow this unplanned event to be reasonably and realistically resolved. The permittee would of course have to report this data outage in their files, as noted in the current footnotes.

Request: Change the allowable missing data interval to be 4 hours.

Response: DEQ agrees that that footnote pertaining to the data logger time interval should be revised to require the data logger interval be no less than 1 hour.

The second part of this comment refers to time allowed to resolve data collection issues. The permit requires the permittee to minimize interruption of data, and collect grab samples to substitute for equipment collected samples. The permit does not require issues to be resolved in a certain amount of time.

Change: Footnote (d) of Table 7 and footnote (b) of Table 8 have been changed to allow 60 minutes for the time interval of the temperature data loggers.

9. 24-Hour Reporting of Receiving Water Value

The current draft permit requires 24-hour reporting of an E.coli result of 406 organisms/100mL in the upstream and downstream of the receiving water. Receiving water values, especially upstream of the facility, may be completely out of the permittee's control. EPA has not required 24 hour reporting of receiving water values.

Request: Remove the 24-hour reporting requirement for all-receiving water body monitoring.

Response: The permit only requires 24-hour reporting of an E. coli maximum daily threshold in tables 2, 3 and 5 in the permit, which are for effluent monitoring. Tables 7 and 8 pertain to receiving water and do not have the footnote requiring 24-hour reporting. Additionally, nothing in section 2.2.7 24-Hour Notice of Noncompliance Reporting requires reporting of an E. coli maximum daily threshold exceedance in the receiving water. While it is not a requirement of this permit DEQ would appreciate notification of any data that reflects an exceedance of water quality standards or is in any way concerning to the permittee.

To alleviate confusion the footnote pertaining to E. coli in Tables 7 and 8 of the permit has been revised to inform the reader that no limits are associated with receiving water monitoring.

Changes: Table 7 footnote (c) and table 8 footnote (a) have been revised by removing the reference to the "monthly limit" and replacing it with a reference to water quality criteria.

10. Permit Renewal Effluent Monitoring

Section 2.1.5 of the draft permit contains requirements for additional effluent data to be collected for the permit renewal application.

The City believes there is still significant over complexity in this section requiring some samples as 4 separate sample grabs, some as composites (varying between 8 and 24 hour composites), and some as single, discrete grab samples

If a composite sample can be taken, it is generally preferable and more representative than 4 individually analyzed grab samples.

If 8 hour composites are ok for routine monitoring in the permit (tables 2, 4, and 5), why is a 24 hour composite period suddenly needed for this monitoring? This would mean that composites taken for routine monitoring could not be used to satisfy this monitoring requirement, which we believe was the intent.

Request: Revise this section of the permit for clarity around grab and/or composite samples. Allow for a single 8 hour composite samples to be utilized (as required in other sections of the permit) rather than 4 individually analyzed grabs.

Response: In this permit, all monitoring for reapplication purposes can be conducted with a minimum of one grab sample because the facility has lagoons with a retention time over 24 hours as explained in the form 2A instructions (Federal Register Volume 64, No. 149 appendix A). The current footnotes that explain this for tables 9 and 10 indicate that this only applies to pollutants that would otherwise require 24-hour composite samples. In doing so these footnotes intentionally omit pH, E. coli, and temperature samples which already require grab samples.

DEQ agrees with the comment in that varying types of grab samples are required at different times in the permit which can lead to confusion. All grab samples that are required for compliance with effluent limits and permit required monitoring of the effluent and receiving water, are as defined in section 5 of the permit. The permit language will be revised to reflect this, and the permittee is advised to reach out to DEQ at any time for clarification pertaining to the requirements in this permit.

The Federal Register (Vol. 64, No. 149) Instructions for Completing Form 2A Application for an NPDES Permit, explains “...grab samples must be collected for pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform, E. coli, and enterococci... For all other pollutants, 24-hour composite samples must be collected.” These requirements are also in IDAPA 58.01.25.105.11.g.ii.(1) (and 40 CFR 122.21(g)(7)(i)). It is also stated that the applicant may use any other monitoring that meet the requirements for reapplication testing in lieu of conducting additional sampling. This means that the Cascade POTW can use data from routine monitoring to meet reapplication requirements, because 8-hour composite monitoring would be acceptable (preferable) in place of the minimum of one grab sample. In any permit where 8-hour composites are required for routine monitoring, but 24-hour composite monitoring is required for reapplication monitoring, the permittee needs to adhere to the 24-hour composite sampling as required in IDAPA 58.01.25.105.11.g.ii.(2) (and 40 CFR 122.21(g)(7)(i)) for application monitoring.

Changes: Section 2.1.5 Permit Renewal Effluent Monitoring of the permit has been revised to remove the language requiring four grab samples in a 24 hour period to meet the requirement of a grab sample. This section also includes clarification that monitoring data acquired utilizing composite samples can be used to meet reapplication requirements in this permit.

11. Resampling based on failed QAPP requirement

As currently written, section 2.1.6.1 of the permit requires the permittee to reanalyze or resample if a sample fails QAPP requirements, at the earliest possible opportunity. This statement can be confusing if the permittee has already resampled based on established sampling schedules. Does the second sample taken under the normal sampling routine, count as the resample? Or must the permittee take another additional sample?

Request: Remove this resampling requirement. The permittee is responsible for meeting the minimum sampling requirements established under the permit. Additional, specified resampling requirements is confusing, excessive, and overly prescriptive.

Response: In order to obtain the highest quality data DEQ requires all data collected to conform to the permittee's QAPP. The permit section 2.1.6.1 informs the permittee that any samples not meeting this requirement will require resampling. If the permittee experiences any unique circumstances not expressly covered in this section, they should contact their regional IPDES compliance officer for direction.

Changes: None.

12. Names of Individuals Performing Analysis – Section 2.2.1.4

Laboratories generally use an individual's initials rather than names on records.

Request: Change #4 to allow for “names or initials of the individuals who performed the analysis”.

Response: This is required under 40 CFR 122.41(j)(3)(ii) and IDAPA 58.01.25.300.10.c.vi . The permittee is required to be able to identify who is conducting all sampling and analyzing associated with this permit. If a third party laboratory is contracted to assist the permittee in meeting these requirements the permittee should request the laboratory make accessible a list of all relevant analysts' initials and corresponding names in order to comply with this permit requirement.

Changes: None.

13. Non-Domestic Waste Management- Municipal Code Development Requirement

The City of Cascade should not have to develop a legally enforceable municipal code or sewer ordinance. The list of requirements in 40CFR 403.5 already applies to all industry in the United States. 40CFR403.8 (f)(1) applies to authorized pretreatment programs, not all POTW's, which DEQ has stated that the City of Cascade does not need to develop.

Request: Remove all language in this section after item #10 on the top of page 27.

Response: The City of Cascade's sewer use ordinance does not currently contain sufficient legal authority to enforce these prohibitions on its users. The intent is for the City of Cascade to codify the general and specific prohibitions to ensure sufficient legal authority to prevent pass through and interference. The intent is not for the City of Cascade to develop a pretreatment program or a code that is comprehensive of the 40 CFR 403 regulations.

Changes: None.

14. Non-Domestic Waste Management- Industrial Master List Requirements

DEQ states in the first paragraph of this section that the City is not required to develop an authorized pretreatment program, yet many of the items in this section appear to require them to develop a de-facto program. This is excessive, burdensome, and beyond the minimum federal requirements.

Several of the requirements for the Industrial User Master list for all non-domestic users in the system are excessively burdensome and may be difficult to comply with. The City agrees that all non-domestic users in the system should be identified by the POTW to allow the permittee to assess relative risk of the non-domestic user to the treatment plant. Items #1-3 would allow the user to do this. However, the remaining items should not be requirements of all non-domestic users. Items #4-9 are more appropriate for significant industrial users, not all non-domestic users. Tracking and reporting these items, even one time per permit cycle, for all businesses in the community is excessive and would not provide significant value to the POTW.

Additionally item #4 is not easily attainable. Most Cities do not meter wastewater flow from all users (usually just potable water is metered to the user and the sewer bill is estimated from this number). The requirement to track (or have the businesses self-report) average daily flow for each City business, including process and non-process flow, could conceivably require the installation of multiple flow meters at each business in a community. This is an excessive requirement to place on community businesses that are not posing a substantial risk to the POTW.

Request: Remove all language in this section after item #10 on the top of page 27.

Response: DEQ has included requirements so that the POTW can adequately assess the non-domestic influence on its facility. The City can elect to have the businesses self-report any or all of the relevant information required in this permit. The requirement pertaining to average daily flow of an industrial user is required to determine if a user is a significant industrial user (SIU).

To ease the burden of this requirement, DEQ has revised the due date of the Master List of Nondomestic Users to coincide with permit renewal application. Because the City has recently updated this list in support of development of this IPDES permit this extension is warranted.

Changes: The permit has been revised to require the Master List of Nondomestic Users to be submitted with reapplication materials from 10/31/2021 to 05/04/2024(updated to 08/30/2024 based on new effective date of the permit).

15. Quality Assurance Project Plan

The draft permit is written to require the permittee to notify DEQ of significant QAPP modifications. This is more restrictive than what is currently required by EPA and is not needed.

QAPs are living documents that reflect the real-time practices of the laboratory operations and sampling. This document should be kept up to date. However, requiring the permittee to notify DEQ of significant change in the QAP is excessive and does not serve the intended purpose. Keeping a record of significant updates to the QAP and the requirement to have an up-to-date QAP available for DEQ inspection at any time is reasonable.

Request: Utilizing the following language (from current Region 10 EPA permits) that meets the intent of keeping the QAP up to date.

“The permittee must amend the QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP. Copies of the QAP must be kept on site and made available to EPA and/or IDEQ upon request.”

Or utilize similar language that was utilized for the O&M Manual (at the bottom of page 29):

Example: Any significant modifications to laboratory operations must be concurrently reflected within the QAP manual. The manual must be retained on site and made available to DEQ upon request.

Response: DEQ agrees that notifying DEQ of all significant QAPP modifications may be excessive in some instances. The permittee is encouraged to discuss changes to the QAPP with the regional IPDES compliance officer to avoid any potential issues that may result.

Change: Removed requirement to notify DEQ of all modifications to the QAPP.

16. Bypass

The current definition and general prohibition of all bypasses seems antiquated considering upgraded treatment plant technologies. Understandably, bypasses that violate permit limits should not be allowed, and should only occur if no other options are available in order to protect life and property. However, as treatment plants have progressed and installation of additional secondary and tertiary advanced treatment processes has occurred, plants have more flexibility over which process units are required to be on to meet permit compliance.

It should not be considered a bypass if a permittee can meet permit limits with certain plant equipment offline.

As the current draft permit is written, even if the permittee can meet all limits with a certain piece of plant equipment offline (for example tertiary filters) the permittee would still be considered bypassing. If an element, like tertiary filtration, is not needed to meet permit conditions, the permittee may have numerous reasons besides “essential maintenance” to keep the equipment offline including energy efficiency and equipment lifespan extension which are both valuable things for POTW rate payers and the environment. If the permittee is meeting end of pipe permit limits, it is overstepping to dictate what equipment the permittee must run within their facility.

This is not relevant if the permittee cannot meet end of pipe permit limits with certain plant equipment shut off.

Request: While the City appreciates the additional DEQ Users Guide Volume 2 (UGV2) language that was included as a response to the City of Shoshone's Response to Comments (page 108 of the Fact Sheet) that allows the bypass of approved plant processes, similar language should be placed in the body of permits as well to ensure clarity and legal enforceability,

Revise the last sentence of section 4.2.12 that allows bypassing of certain plant equipment if no permit limits are exceeded, for any reason, not just essential maintenance activities. Or include the UGV2 language in section 4.2.12.

Response: This request is not specifically relevant to this facility. The Cascade POTW consists of lagoon treatment followed by RIBs. Any bypasses at this facility must in compliance with the requirements in 4.2.12.

Change: None.

AIC and City of Cascade;

17. Submission Schedule

The City believes that the compliance activities and dates that set forth in the draft Permit's Submission Schedule on page 2 does not present a complete list.

Request: The City requests that the final Permit continue to include a comprehensive Submission Schedule table, but to also include the following deadlines:

- Begin river monitoring
- Begin monitoring at Outfall 002
- 2020 – 3rd Quarter Permit Renewal Effluent Monitoring
- 2021 – 4th Quarter Permit Renewal Effluent Monitoring
- 2022 – 1st Quarter Permit Renewal Effluent Monitoring

Explanation: A complete table of submittals with dates and Permit Section references helps keep the City on track.

Response: DEQ will assist the City in developing a comprehensive schedule that includes all permit relevant dates for the upcoming permit handoff meeting. However, beginning dates for receiving water and permit renewal monitoring, for example, do not have a specific submittal requirement.

Changes: None.

18. Effluent Limits and Effluent Monitoring Requirements

Corrections Regarding Rapid Infiltration Basins' Numbering and Outfalls from Cell #3

Request: That the Fact Sheet include a copy of Attachment A and for the final Permit to be revised to take into account that each Rapid Infiltration (RI) basin has its own outfall from Cell #3. Further, we request that the correct identification numbers for each RI basin and associated outfalls be noted and used for sampling and monitoring requirements. The

City requests that the final Permit clarify that that the four flow structures between Cell #3 and the RI basins are the sampling points.

Explanation: On Table 1, Internal Discharge 001 is described as “Flow from Cell #3 into the Rapid Infiltration B (RIBs)” and then a single latitude and longitude are given for the point at which this occurs. We wish to make two points: First, each Rapid Infiltration (RI) basin has its own outfall from Cell #3 so there are really four outfalls. This is illustrated on the Fact Sheet Page 46. Second, the site description for Internal Discharge 001 is written as “flow from Cell #3” which we interpret as only enabling a sample to be taken when discharge is occurring from Cell #3 to one of the RI basins at the flow structure between Cell #3 and the RI basin being loaded. Perhaps the description should be enhanced to clarify that the flow structures between Cell #3 and the RI basins are the sampling points. It would then follow that four latitude and longitude locations are given, one for each flow structure at the head of each RI basin. This could be clarified further if the drawing attached to this letter was inserted in Appendix A of the Fact Sheet.

It should also be noted that for record keeping of loading and drying each RI basin, the original 1988 JUB record drawings, Sheets 2 and 3 of 11, identify the most northern RI basin as #1, the next as #2, the next as #3 and the far south RI basin as #4. It seems this may be significant when sampling and testing begin to keep track of which RI basin is being loaded at the time of the sampling from the associated discharge structure. This is especially true when determining from the gradient study what direction the water is flowing when each of the RI basins are successively loaded.

Response: To avoid unnecessarily complicating the permit and DMR submittal, and to maintain consistency with the previous permit, DEQ considers any structure that transfers effluent from cell #3 to the RIBs as Internal Discharge 001. DEQ agrees this warrants further explanation in the fact sheet.

DEQ is ultimately only concerned with the effluent leaving one treatment process (cell #3) into the next treatment process (RIBs). DEQ understands the RIBs are 4 individual basins, and we are not concerned with which cell is receiving the effluent; rather, that effluent is leaving cell #3 and that this discharge is the last possible place in the treatment train to sample effluent before it has the potential to mix with groundwater.

Changes: Further description has been included in the fact sheet section 2.1.5 and Table 1 of the fact sheet has been revised to include the location of the 4 potential discharge points that comprise Internal Discharge 001.

19. Effluent Limits and Effluent Monitoring Requirements

Necessary Clarifications for E. coli and pH Effluent Limits Monitoring Sample Collection (Section 1.2, Table 2) and Additional Effluent Monitoring Sample Collection (Section 2.1.2, Table 5)

Request: The City requests that the final Permit include clarifications on how the City will properly gather five samples per month for these parameters. For example, the final Permit should clarify that three of the five samples per month should be collected from

briefly opening the internal Outfall from Lagoon Cell #3 to the RI basin that will be loaded next, according to the RI basin loading rotation.

Explanation: The City is currently loading two RI basins over separate 1 to 2-day intervals every month. Lagoon Cell #3 is allowed to become fully loaded between each RI basin loading interval. Because the Operators fill Lagoon Cell #3 before the next RI basin loading event occurs, collecting these parameters five times per month presents a problem unless three of the samples are collected in another manner. We suggest that, to comply with the five-sample requirement, three of the samples be collected by briefly opening the internal Outfall from Lagoon Cell #3 to the RI basin that will be loaded next, in order to not compromise the RI basin drying periods.

Response: DEQ will include the recommended language as an option in section 2.1.2 of the permit. The permit does not state, specifically, how the permittee must gather all necessary samples, only that the permittee must collect representative samples at the specific outfall. DEQ believes that how to accomplish this is best left to the discretion of the operator.

Changes: Additional language has been added to section 2.1.2 of the permit explaining that the operator may choose to briefly release effluent from cell #3 to the RIB in order to capture a required sample. At some point when the operator develops a sampling scenario that meets this requirement it should be identified in the QAPP.

20. Effluent Limits and Effluent Monitoring Requirements

Potential Data Quality Impacts when Updates to, and IDEQ Review of Monitoring Quality Assurance Project Plans (QAPPs) May Be Warranted Prior to Data Collection and Reporting

Request: To ensure the City's effluent monitoring and sampling data are correct and reflect actual facility operations, the City requests that effluent monitoring QAPP submittal(s) occur prior to data collection and NetDMR submittal deadlines.

Explanation: As stated in Section 2.1.6.1, "The permittee must develop and implement a QAPP that conforms to the quality assurance and quality control requirements of 40 CFR 136.7. The requirements for a QAPP are in section 4.1.1 of this permit." This Section goes on to state additional requirements that support the collection and reporting of accurate effluent monitoring results. The City understands the importance of ensuring monitoring data are correct and the very important role QAPPs play. Therefore, we feel it is critically important for the QAPP to be developed and submitted prior to the initial monitoring data submittals via the NetDMR.

Response: DEQ appreciates the importance of the QAPP in generating reliable data. However, the facility's current QAPP should contain much of the required content to adequately collect samples and generate data required in this permit. The permittee should contact the DEQ

regional office at any time with questions or concerns pertaining to meeting the requirements of this permit.

Changes: None.

21. Submission Schedule for Final Sludge Management Plan
Insufficient Time is Provided in the Draft Permit to Develop the Sewage Sludge Management Plan (Section 2.1.3)

Request: The City requests that the final Permit provide additional time for the City to adopt the necessary budget and to develop a Sludge Management Plan. Taking into account the City's budget adoption process, the City believes that a more appropriate deadline for the submittal of the final Sludge Management Plan is October 1, 2022.

Explanation: The City views this effort as part of a Facility Plan update. The 2010 Facility Plan gives sludge depths determined as part of the study. The City currently has no budget or plans to remove sludge from the lagoons. Once new sludge depths are obtained (as required by 12/31/2020 per Section 2.1.3), and the Facility Plan is updated, the City may then have impetus to prepare a well thought through Sludge Management Plan . The City requests that an additional two budget years be provided in the final Permit (i.e., ending in September 2022).

Response: DEQ agrees and will revise the permit accordingly. DEQ did not intend to imply that the facility was required to remove sludge from the lagoons. The required plan must address monitoring of sewage sludge accumulation in the lagoons and document at what depths further actions are potentially warranted. This plan will not require DEQ review and approval, but must be included in the facility's O&M manual. If the permittee determines it is necessary to remove and dispose of sludge during this permit cycle an appropriate sludge management plan will be required for approval, if one is not already approved.

Changes: Section 2.1.3 of the permit has been changed to require the permittee to keep an updated sludge depth monitoring and management plan in the O&M manual. The requirement to submit a sludge management plan for approval has been removed. The permit now requires the permittee to submit a sludge depth report once per permit cycle through the IPDES E-Permitting System with the permit renewal application (08/30/2024).

22. Receiving Water Monitoring
Insufficient Time is Provided in the Draft Permit to Establish Receiving Water Monitoring Stations and to Initiate Data Collection for Continuous Temperature Monitoring

Request: The City requests that the final Permit provide until 06/01/2020 for the submission of monitoring station designs and locations for approval; and to provide additional time for the City to adopt the necessary budget (10/01/2020), and to develop

and verify the necessary sampling plan and QAPP (04/01/2021) prior to the station installation date (06/01/2021), and data collection deadline (07/01/2021).

Explanation: The draft Permit states that submission of monitoring station approval must occur by 01/01/2020 and that data collection must begin by 02/01/2020. The City has serious concerns regarding their ability to comply with both the 01/01/2020 station location and the 02/01/2020 data collection deadlines for the continuous temperature monitoring.

Given the current winter conditions, additional time is necessary in order to select, design, obtain approval for, and construct receiving water monitoring stations in the N.F. Payette River. It can take significant time, effort, potential legal work and coordination with outside agencies to design and obtain access to receiving water monitoring stations. The City needs time to budget for and purchase approved sampling equipment and monitoring devices and install them.

Further, the draft Permit requires that continuous river monitoring for temperature begin as soon as the permit is issued. We are not sure how to meet this monitoring requirement without approved and installed sampling stations, and the supporting QAPPs, at the outset. The City requests that the continuous river monitoring compliance date for temperature be pushed back until the month following the installation of the continuous monitoring sampling stations, to 07/01/2021.

Response: The permittee is urged to contact their regional IPDES office compliance officer as early as possible accomplish this requirement. Section 2.1.4.1 requires receiving water continuous temperature monitoring to begin November, 2020 which is approximately one year from public comment period of this draft permit and well after the scheduled permit issuance.

DEQ informed the City of the required monitoring locations in the permit for the North Fork of the Payette River in September of 2018. The permit section 2.1.4 number 2 states, "A failure to obtain DEQ approval of receiving water monitoring stations does not relieve the permittee of the receiving water monitoring requirements of this permit." Additionally, equipment is readily available and should not take long to install and initiate operation of temperature data loggers. However, based on this comment DEQ will include text to explain that grab samples are acceptable until continuous recording devices are installed.

Changes: Table 7 and Table 8 and Section 2.1.4.1 of the permit have been revised to instruct the permittee that grab samples are acceptable until continuously recorded data is required.

23. Receiving Water Monitoring
Continuous River Monitoring for Temperature During the Winter Months

Request: The City requests that the final Permit only require continuous river monitoring for temperature for the months May to October.

Explanation: Continuous river monitoring for temperature during the winter months is difficult due to ice formation and may not address the overarching reason for these temperature monitoring requirements. The draft Permit Fact Sheet indicates that the need for this continuous river temperature monitoring requirement stems from a likely cause of warm water release from Cascade Dam (see Fact Sheet, page 14). The City agrees that the temperature concerns may occur during the summer and not the winter. This begs the question, why is the continuous temperature monitoring required during the winter? The City requests that the draft Permit be modified to only require continuous monitoring from May to October (i.e., when warmer temperature may be of concern) and for the IDEQ to remove these temperature monitoring requirements during the colder, winter months from November to April in the final Permit.

Response: Because of unique treatment process in this facility, DEQ requires year round receiving water monitoring for temperature during this permit cycle to adequately document the thermal impact that the facility is having on the river year-round. DEQ has included upstream and downstream temperature as a requirement in this permit, specifically, to capture thermal impacts of the discharge through the RIBs. DEQ understands that seasonal conditions may hamper receiving water sampling and NODI code 5 is provided specifically for frozen conditions.

Changes: None.

24. Typographical Errors

The draft Permit appears to contain a few minor typographical errors.

Request:

The City suggests a few typographic errors found in the draft Permit be addressed in the final Permit.

Explanation:

- Section 2.1.4, Receiving Water Monitoring: Item 7 states that receiving water monitoring must be submitted by 11/31 each year. That should be changed to 12/31 in order to be consistent with the Submission Table.
- Section 3.3 Nondomestic Waste Management: In the first full paragraph on page 27. The word ordinance is misspelled as “ordnance” twice.

Response: DEQ appreciates this comment and has made the corrections.

Changes: 11/31 has been changed 01/31 in section 2.1.4 and the submission schedule as it relates to the receiving water monitoring report submittal which will provide time to incorporate the December data into the report, and corrected the misspelling of “ordinance” three times in section 3.3 of the permit.

Other Changes:

1. Submission Schedule Revisions:

- a. The Receiving Water Monitoring Station Approval Request submittal date has been changed from 01/01/2020 to 03/01/2020 to account for the time between the end of the public comment period until permit issuance.

- b. Annual Equivalent Dwelling Unit (EDUs) Reporting submission date has been changed from 9/1/2020 to 5/31/2020 to align with date required in section 4.2.8. of the permit.
2. Footnote (a) in Table 2 and Table 3 of the permit, and Table 8 and Table 9 of the fact sheet was applied to Reporting Period column. This footnote has been moved to the Parameter column and only to the parameters it applies to. In order to keep changes to a minimum the footnote will retain the (a) designation in the final permit.
3. Table 16 of the fact sheet has been revised to correctly reflect the monitoring requirements of pH for both Outfall 001 and Outfall 002.