Fact Sheet

The U.S. Environmental Protection Agency (EPA)

Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

City of Worley Wastewater Treatment Plant

Public Comment Start Date: February 17, 2023
Public Comment Expiration Date: March 20, 2023

Technical Contact: Cody Piscitelli
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EPA Proposes to Reissue the NPDES Permit

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

This Fact Sheet (FS) includes:

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

CWA § 401 Certification

The Coeur d'Alene Tribe has Treatment as a State (TAS) for CWA purposes for a portion of the Reservation. The facility discharges to a portion of the Reservation where the Tribe does not have TAS. Therefore, EPA is the certifying authority for this permit. See FS

Section VI.C. Comments regarding the intent to certify should be directed to the EPA technical contact listed above.

CLEAN WATER ACT §401(A)(2) REVIEW

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

PUBLIC COMMENT

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

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

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Water Division will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit.

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

Documents are Available for Review

The draft NPDES permit, fact sheet, and other information can be downloaded from the EPA Region 10 website at https://www.epa.gov/npdes-permits/about-region-10s-npdes-permit-program

The draft NPDES permit, fact sheet and related documents are also available electronically upon request by contacting Cody Piscitelli.

For technical questions regarding the permit or fact sheet, contact Cody Piscitelli at the 206-553-1169 or piscitelli.cody@epa.gov. Services can be made available to persons with disabilities by contacting Audrey Washington at (206) 553-0523.

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
AML	Average Monthly Limit
AWL	Average Weekly Limit
BOD_5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
Gpd	Gallons per day
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LTA	Long Term Average
mg/L	Milligrams per liter
mL	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MPN	Most Probable Number
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and maintenance

POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
WD	Water Division
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. BACKGROUND INFORMATION

A. GENERAL INFORMATION

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

Table 1. General Facility Information

NPDES Permit #:	ID0022713
Applicant:	Worley Wastewater Treatment Plant City of Worley
Type of Ownership	POTW
Physical Address:	S 29401 B. Street Worley, ID 83876
Mailing Address:	P.O. Box 219 Worley, ID 83876
Facility Contact:	Brenda Morris City Clerk/Treasurer worleyidclerk@aol.com (208) 686-1258
Facility Location:	47.407778°N 116.920833°W
Receiving Water	North Fork Rock Creek
Facility Outfall	47.4078°N 116.920844°W

B. PERMIT HISTORY

The most recent NPDES permit for the City of Worley Wastewater Treatment Plant (WWTP) was issued on March 10, 2015, became effective on May 1, 2015, and expired on April 30, 2020. An NPDES application for permit issuance was submitted by the permittee on November 15, 2019. EPA determined that the application was timely and complete. Therefore, pursuant to Title 40 Code of Federal Regulations (CFR) 122.6, the permit has been administratively continued and remains fully effective and enforceable.

C. TRIBAL CONSULTATION

EPA consults on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Meaningful tribal consultation is an integral component of the federal government's general trust relationship with federally recognized tribes. The federal government recognizes the right of each tribe to self-government, with sovereign powers over their members and their territory. Executive Order 13175 (November, 2000) entitled "Consultation and Coordination with Indian Tribal Governments" requires federal agencies to have an accountable process to assure meaningful and timely input by tribal officials in the development of regulatory policies on matters that have tribal implications and to strengthen the government-to-government relationship with Indian tribes. In May 2011,

the EPA issued the “EPA Policy on Consultation and Coordination with Indian Tribes” which established national guidelines and institutional controls for consultation.

The City of Worley WWTP is located on the Coeur d’Alene Reservation of the Coeur d’Alene Tribe. Consistent with the Executive Order and the EPA tribal consultation policies, EPA coordinated with the Coeur d’Alene Tribe during development of the draft permit and invited the Coeur d’Alene Tribe to engage in formal tribal consultation.

II. FACILITY INFORMATION

A. TREATMENT PLANT DESCRIPTION

1. Service Area

The City of Worley owns and operates the Worley WWTP located in Worley, ID. The collection system has no combined sewers. The facility serves a resident population of 550. There are no major industries discharging to the facility.

2. Treatment Process

The design flow of the facility is 0.0571 mgd. The reported actual flows from the facility range from 0.165 to 0.365 (average monthly flow). The treatment process consists of an aerated lagoon, a storage lagoon and chlorine disinfection. The chlorine contact chamber passes underneath the storage lagoon from the vicinity of the treatment control building to a manhole on the northern berm of the lagoon system before discharging to North Fork Rock Creek. A schematic of the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A**.** Because the design flow is less than 1 mgd, the facility is considered a minor facility.

B. OUTFALL DESCRIPTION

The outfall consists of a six-inch pipe one foot from the shore of North Fork Rock Creek. The outfall diagram is shown in Appendix A. Under the previous permit, the facility is only authorized to discharge from November 1st through June 30th provided the flow in North Rock Creek provides a 10:1 dilution ratio. Over the past several years, the facility has only discharged during the months of January through the end of May.

C. EFFLUENT CHARACTERIZATION

To characterize the effluent, EPA evaluated the facility’s application form, discharge monitoring report (DMR) data, and additional data provided by the City of Worley. The effluent quality is summarized in Table 2. Data are provided in Appendix B.

Table 2 Effluent Characterization

Parameter	Minimum	Maximum	Limit
TSS Concentration (7-day)	8.0 mg/L	29 mg/L	45 mg/L
TSS Concentration (30-day)	8.0 mg/L	29 mg/L	30 mg/L
TSS - % Removal	72%	96%	85% (minimum)

Parameter	Minimum	Maximum	Limit
BOD Concentration (7-day)	2.9 mg/L	13.6 mg/L	45 mg/L
BOD Concentration (30-day)	2.9 mg/L	13.6 mg/L	30 mg/L
BOD5 - % Removal	70%	97%	85% (minimum)
TRC Concentration (daily maximum)	0.007 mg/L	0.520 mg/L	0.013 mg/L
TRC Concentration (30-day average)	0.001 mg/L	0.050 mg/L	0.011 mg/L
E. coli (instant maximum)	2.0 (CFU/100 mL)	230.0 (CFU/100 mL)	235.0 (CFU/100 mL)
E. coli (30-day geomean)	0.00 (CFU/100 mL)	2.76 (CFU/100 mL)	126.00 (CFU/100 mL)
Ammonia Concentration (as N) (daily maximum)	0.7 mg/L	10.9 mg/L	10.6 mg/L
Ammonia Concentration (as N) (30-day average)	0.0 mg/L	10.9 mg/L	4.1 mg/L
pH (instant minimum and maximum)	6.9 S.U.	8.0 S.U.	6.5-8.5 S.U.
Nitrate + Nitrite (as N) (3-day maximum)	0.0 mg/L	10.2 mg/L	--
Total Kjeldahl Nitrogen (as N) (30-day maximum)	3.7 mg/L	16.2 mg/L	--
Dissolved Oxygen (30-day minimum)	4.5 mg/L	11.7 mg/L	--
Temperature (30-day maximum)	4.8 °C	17.3 °C[1]	--
Total Phosphorus (as P) (30-day maximum)	1.1 mg/L	4.0 mg/L	--

Notes

1. The temperature sample from March 2018 was entered as 43.00 °C, but likely the unit was erroneously reported as °C instead of °F, meaning the sample was actually 6.11 °C. The actual highest temperature sample was 17.34°C.

Source: DMR data from ICIS November 2016 – May 2021

D. COMPLIANCE HISTORY

A summary of effluent violations is provided in Table 3. The most common effluent violation involves the exceedance of permitted discharge dilution flow rates, which exceeded the limit of the previous permit in every one of the eight samples provided in the last five years. In addition, the facility had numerous effluent limit violations over the last permit term.

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=ID0022713&sys=ICP.

Table 3. Summary of Effluent Violations

Parameter	Limit Type	Units	Number of Instances
TSS	7-day Average Loading	lbs/day	7
TSS	30-day Average Loading	lbs/day	7
TSS Percent Removal	30-day Average	%	4
BOD_5	7-day Average Loading	lbs/day	2
BOD_5	30-day Average Loading	lbs/day	2
BOD Percent Removal	30-day Average	%	2
Total Residual Chlorine	Daily Maximim Concentration	mg/L	5
Total Residual Chlorine	Daily Maximum Loading	lbs/day	5
Total Residual Chlorine	30-day Average Loading	lbs/day	1
Ammonia	Daily Maximum Concentration	mg/L	1
Ammonia	Daily Maximum Loading	lbs/day	6
Ammonia	30-day Average Concentration	mg/L	5
Ammonia	30-day Average Loading	lbs/day	6
Effluent Dilution	30-day Minimum	ratio	8
Information accessed in ICIS/ECHO on June 27, 2021			

EPA conducted an inspection of the facility in June, 2021. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, and the collection system. Overall, the results of the inspection identified issues with effluent limit violations, including 864 effluent limit exceedances between March 2017 and April 2021, the Operation and Maintenance (O&M) plan, chain of custody documents, the Quality Assurance Plan (QAP), missing Total Residual Chlorine (TRC) progress report, misrepresentation of flow data, inadequate analytical methods, and a missing Emergency Response and Public Notification Plan. A notice of violation was issued in July 2022. In addition, the previous permit required the completion of an inflow and infiltration study which the City completed in 2016. The study noted significant inflow and infiltration into the City's collection system and concluded that approximately 13,500 linear feet of the City collection system and 72 manholes are in need of repair and/or replacement.

III. RECEIVING WATER

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

This facility discharges to North Fork Rock Creek near the City of Worley, ID, which is on the Coeur d'Alene Reservation in Kootenai County, before flowing into Washington State waters approximately seven miles downstream, as displayed in Appendix H. The confluence with Hangman Creek, a major tributary to the Spokane River, is approximately 27 miles downstream of the facility's outfall.

A. WATER QUALITY STANDARDS (WQS)

CWA § 301(b)(1)(C) requires the development of limitations in permits necessary to meet WQS. 40 CFR 122.4(d) requires that the conditions in NPDES permits ensure compliance with the WQS of all affected States. A State's WQS are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The Coeur d'Alene Tribe has Treatment as a State (TAS) for CWA purposes for a portion of the Reservation. As part of this TAS authority, the Tribe implements the water quality standards program and has EPA-approved WQS applicable to the St. Joe River and a portion of Lake Coeur d'Alene, referred to as the "Reservation TAS Waters." In addition, for all other surface waters within the exterior boundaries of the Coeur d'Alene Reservation, the Tribe has tribally-adopted WQS which they have not submitted to EPA for approval. These waters are referred to as "Reservation Waters." The Reservation TAS Waters are a subset of Reservation Waters. The "Reservation Waters" and "Reservation TAS Waters" have similar WQS for pollutants of concern in this permit.

The facility is located within the exterior boundaries of the Coeur d'Alene Reservation, and discharges to Reservation Waters. The receiving water ultimately flows across the Idaho-Washington border into Washington State waters. At no point is the receiving water, downstream of the point of discharge, considered Reservation TAS Waters nor Idaho State waters. Since the facility discharges to a portion of the Reservation where the Tribe does not have TAS, EPA used the downstream Washington WQS as reference for determining the permit limits to protect tribal designated uses and to protect downstream uses in the State of Washington. EPA notes that the tribal WQS which have not been submitted to the EPA are the same as or similar to the Washington WQS, thus, application of the Washington WQS ensures that tribal waters are protected. The distance from the point of discharge to the Washington-Coeur d'Alene Reservation boundary is approximately seven miles.

1. Designated Beneficial Uses

The facility discharges to the North Fork Rock Creek (Hangman Creek Subbasin Hydrologic Unit Code [HUC] 00017010306031), within the exterior boundaries of the Coeur d'Alene Indian Reservation.

Upon entering Washington State, Hangman Creek has the following designated uses (WAC 173-201A-602): Salmonid Spawning, Rearing, and Migration; Primary Contact Recreation; Domestic, Industrial, and Agricultural Water Supply; Stock Watering; Wildlife Habitat; Harvesting; Commerce and Navigation; Boating; and Aesthetic Values

B. RECEIVING WATER QUALITY

The portion of North Fork Rock Creek where the facility discharges is understood to be an intermittent stream, meaning its flow in late summer months is nearly zero. There are no USGS or other stream gauges in this portion of the stream, so the facility's Surface Water Monitoring Report data are displayed in Table 4.

Table 4. Surface Water Monitoring Report

Surface Water Monitoring									
Date	**Flow (gallons/day)**	**pH**	**Temp. °F**	**Temp. °C**	**Total Ammonia (mg/L)**	**Total Phosphorus (mg/L)**	**Nitrate + Nitrite (mg/L)**	**TKN (mg/L)**	**Dissolved Oxygen (mg/L)**
2/17/2016	5,000	6.9	42.6	5.9	ND	0.096	1.36	0.525	12.6
4/19/2016	3,000	6.8	51.0	10.6	0.122	0.132	ND[2]	0.611	10.8
5/11/2016	1,500	7.2	51.2	10.7	0.096	0.104	ND[2]	0.792	9.7
3/22/2017	5,200	6.8	39.3	4.1	ND[1]	0.126	ND[2]	0.613	12.2
4/5/2017	3,000	6.9	44.0	6.7	ND[1]	0.105	ND[2]	0.99	10.6
3/20/2018	3,200	7.0	43.5	6.4	0.075	0.120	0.92	0.475	11.8
4/4/2018	3,000	6.8	46.6	8.1	0.155	0.091	0.38	0.584	10.8
5/2/2018	2,500	6.9	52.5	11.4	0.130	0.143	0.21	0.635	10.2
4/10/2019	3,200	7.3	53.5	11.9	0.115	0.160	1.15	0.649	11.7
4/21/2020	3,500	6.9	51.0	10.6	ND[1]	0.067	ND[2]	0.448	10.6
Average	3,310	7.0	47.5	8.6	0.116	0.114	0.80	0.632	11.1
Minimum	1,500	6.8	39.3	4.1	0.075	0.067	0.21	0.448	9.7
Maximum	5,200	7.3	53.5	11.9	0.155	0.160	1.36	0.990	12.6

1. Any total ammonia sample below the detection limit of 0.05 mg/L is labeled as non-detect (ND)
2. Any total nitrate+nitrite sample below the detection limit of 0.1 mg/L is labeled as non-detect (ND)

1. Water Quality Limited Waters

Washington Waters (downstream)

The portion of North Fork Rock Creek where the facility discharges is not listed as water quality limited, although downstream waters from the confluence with South Fork Rock Creek to Rockford, WA, are listed as impaired for temperature, fecal coliform bacteria, and turbidity by the State of Washington's 2018 *Water Quality Assessment* (CWA § 303(d)). Washington Department of Ecology (Ecology) completed a TMDL for bacteria, temperature, and turbidity for the Hangman Creek Watershed entitled *Hangman (Latah) Creek Watershed Fecal Coliform Bacteria,*

Temperature, and Turbidity Total Maximum Daily Load Water Quality Implementation Plan (Ecology, 2011) (*Hangman Creek TMDL*). The *Hangman Creek TMDL* does not provide WLAs for point sources on the Reservation. Ecology's 2018 *Hangman Creek Watershed Nutrients and Sediment Pollutant Source Assessment* lists North Fork Rock Creek as a contributor to downstream sediment and nutrient issues, namely for dissolved inorganic nitrogen and suspended sediment loading; however, Ecology noted that Hangman Creek point source contributions in Washington, tend to be localized (i.e. less than 3 miles from the point source).[1] Because of the distance between the Worley WWTP's outfall and the Hangman Creek impairment, this facility does not appear to be a significant contributor to the downstream impairment.

Dissolved oxygen and pH impairments are typically the result of eutrophication caused excess nutrients such as nitrogen and phosphorus leading to phytoplankton blooms. The *Spokane River and Lake Spokane Dissolved Oxygen TMDL* (Ecology, February 2010) (*Spokane River TMDL*) established phosphorus load allocations at the mouth of Hangman Creek, but it did not allocate loading to sources within the Hangman Creek watershed.

The following is a link to the Ecology webpage for the Hangman Creek subbasin: http://www.ecy.wa.gov/programs/wq/tmdl/HangmanCr/index.html

Coeur d'Alene Reservation Waters

The WWTP discharges into Reservation Waters for which the Coeur d'Alene Tribe does not have TAS for CWA purposes. North Fork Rock Creek has not been evaluated for compliance with water quality standards.

As discussed above, approximately ten river miles downstream of the discharge in Washington, North Fork Rock Creek is listed as impaired for temperature, bacteria, and turbidity. Consequently, this draft permit proposes monitoring and effluent limits that are protective of Washington WQS and is consistent with the recommendations in the Hangman Creek TMDL. Since tribal designated uses are similar to those in Washington, the Washington WQS are protective of tribal designated uses

2. Low Flow Conditions

For North Fork Rock Creek, no data on stream flow were available and the stream is dry for at least a portion of the year as confirmed through aerial photography. A mixing zone is not included in this permit because there is no flow during the critical period.

The previous permit included a dilution ratio requirement which states that the facility may only discharge when the effluent is no more than 1/10 the receiving water's stream flow. Because of this, the facility was only able to discharge a few times per year, and during those discharges would routinely exceed the design flow of the facility resulting in the facility violating the effluent limits in the permit. To address this, the dilution ratio has been replaced with end-of-pipe limits, which are more stringent, but also allow the facility to discharge with less likelihood of exceeding permitted flow

[1] Personal communication, Mitch Redfern, Ecology September 6, 2022

limitations.

IV. Effluent Limitations and Monitoring

Table 5, below, presents the existing effluent limits and monitoring requirements in the previous permit.

Table 5. Existing Permit - Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Parameters with Effluent Limits							
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Effluent	2/month	Grab
	lbs/day	14.3	21.4	--			Calculation[1]
BOD_5 Percent Removal	%	85 (min)	--	--	--	1/month	Calculation[2]
Total Suspended Solids (TSS)	mg/L	30	45	--	Effluent	2/month	Grab
	lbs/day	14.3	21.4	--			Calculation
TSS Percent Removal	%	85 (min)	--	--	--	1/month	Calculation[2]
E. coli Bacteria	CFU/ 100 ml	126[3]	--	235 (instant maximum)	Effluent	5/month[5]	Grab
pH	Std units	6.5 – 8.5			Effluent	1/week	Grab
Total Residual Chlorine (TRC)[4]	mg/L	0.011	--	0.013	Effluent	1/week	Grab
	lbs/day	0.0050	--	0.0060			Calculation
Ammonia	mg /L	4.1	--	10.6	Effluent	2/month	Grab
	lbs/day	1.9	--	5.1			Calculation
Effluent Dilution Ratio	--	A 10:1 dilution ratio is required			--	Each day of discharge	Calculation
Narrative	See Paragraph I.1.4 of this permit			--	Effluent	1/month	Visual Observation
Report Parameters							
Flow	mgd	--	--	--	Effluent	continuous	Recording
Temperature	°C	--	--	--	Effluent	1/week	Grab
Total Phosphorus as P	mg/L	--	--	--	Effluent	1/month	Grab
Nitrate plus Nitrite	mg/L	--	--	--	Effluent	1/month	Grab
Total Kjeldahl Nitrogen	mg/L	--	--	--	Effluent	1/month	Grab
Dissolved Oxygen	mg/L	--	--	--	Effluent	1/month	Grab

1. Loading (in lbs/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the *NPDES Self-Monitoring System User Guide* (EPA 833-B-85-100, March 1985).
2. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation: (average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration x 100. Influent and effluent samples must be taken over approximately the same time period
3. The permittee must report the geometric mean *E. coli* concentration.
4. The limits for chlorine are not quantifiable using EPA-approved analytical methods. The minimum level (ML) for chlorine is 50 µg/L for this parameter. The EPA will use 50 µg/L as the compliance evaluation level for this parameter. The permittee will be compliance with the total residual chlorine limitations if the average monthly and maximum daily concentration limits are less than 50 µg/L and the average monthly and maximum daily mass discharge limits are less than 0.024 lbs/day. For purposes of calculating the monthly averages, see Paragraph I.B.8 of this permit.

Table 6. Draft Permit - Effluent Limits and Monitoring Requirements

The following effluent limitations are proposed in the draft permit:

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Parameters with Effluent Limits							
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Influent and Effluent	2/month	Grab
	lbs/day	14.3	21.4	--			Calculation[1]
BOD_5 Percent Removal	%	85 (min)	--	--	--	1/month	Calculation[2]
Total Suspended Solids (TSS)	mg/L	30	45	--	Influent and Effluent	2/month	Grab
	lbs/day	14.3	21.4	--			Calculation
TSS Percent Removal	%	85 (min)	--	--	--	1/month	Calculation[2]
E. Coli Bacteria	CFU/ 100 ml	100[3]	--	235 (instant maximum)	Effluent	5/month[5]	Grab
pH	Std units	6.5 – 8.5			Effluent	1/week	Grab
Total Residual Chlorine (TRC)[4]	mg/L	0.009	--	0.018	Effluent	1/week	Grab
	lbs/day	0.0043	--	0.009			Calculation
Ammonia	mg/L	4.1	--	10.6	Effluent	2/month	Grab
	lbs/day	1.9	--	5.1			Calculation
Narrative	See Paragraph I.2 of this permit			--	Effluent	1/month	Visual Observation
Report Parameters							
Flow	mgd	--	--	--	Effluent	Continuous	Recording

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Temperature	°C	--	--	--	Effluent	1/week or Continuous[5]	Grab
Total Phosphorus as P	mg/L	--	--	--	Effluent	1/month	Grab
Nitrate plus Nitrite	mg/L	--	--	--	Effluent	1/month	Grab
Total Kjeldahl Nitrogen	mg/L	--	--	--	Effluent	1/month	Grab
Dissolved Oxygen	mg/L	--	--	--	Effluent	1/month	Grab
Per- and Polyfluoroalkyl Substances (PFAS)[6]	ng/L	Report	--	Report	Influent and Effluent	1/quarter[6]	24-Hour Composite
	mg/kg dry weight	--	--	Report	Sludge	1/quarter[6]	Grab

1. Loading (in lbs/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the *NPDES Self-Monitoring System User Guide* (EPA 833-B-85-100, March 1985).
2. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation: (average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration x 100. Influent and effluent samples must be taken over approximately the same time period
3. The permittee must report the geometric mean *E. coli* concentration.
4. The limits for chlorine are not quantifiable using EPA-approved analytical methods. The minimum level (ML) for chlorine is 50 µg/L for this parameter. The EPA will use 50 µg/L as the compliance evaluation level for this parameter. The permittee will be compliance with the total residual chlorine limitations if the average monthly and maximum daily concentration limits are less than 50 µg/L and the average monthly and maximum daily mass discharge limits are less than 0.024 lbs/day. For purposes of calculating the monthly averages, see Paragraph I.B.8 of this permit.
5. The permittee must monitor influent and effluent temperature one per week from the effective date of the permit to (insert four years). Starting (first day of the fifth year of the effective date of the permit) the permittee must monitor temperature continuously.
6. Monitoring for PFAS chemicals is required for 2 years (8 quarters), beginning at the start of the first complete quarter in the third year of the permit term.
7. See Permit Part I.B.8.

Effluent Limitation Changes

- The previous permit required a 10:1 dilution ratio, which was removed for this permit. Because North Fork Rock Creek is ephemeral and runs dry periodically, this dilution ratio requirement restricted the facility to only discharge a few times a year which resulted in the facility exceeding its design flow and, thus, exceeding the calculated effluent limits. The new permit maintains the temporal limitation of discharge only being allowed between November 1 and June 30; however, the permit no longer contains the dilution ratio and, instead, contains end-of-pipe limits.

- The average monthly effluent limit for the *E. coli* was decreased to a geometric mean of 100 CFU/100 mL to reflect an amendment made to the Washington Water Quality Standards Chapter 173-201A on January 23, 2019. This is a more stringent effluent limit than the previous effluent limit of 126 CFU/100 mL.
- EPA recalculated the total residual chlorine effluent limits using the recent effluent data which showed a higher variability compared with the data used to calculate the limits in the current (2015) permit. This resulted in less stringent maximum daily limits but more stringent average monthly limits. See below for anti-backsliding discussion for the limits that are less stringent.

A. BASIS FOR EFFLUENT LIMITS

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

1. Pollutants of Concern

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

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

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

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

- BOD_5
- DO
- TSS
- *E. coli* bacteria
- TRC
- pH
- Ammonia
- Total Kjeldahl Nitrogen
- Nitrate-Nitrite
- Phosphorus
- Temperature

- Per- and polyfluoroalkyl substances (PFAS)

2. Technology-Based Effluent Limits (TBELs)

a. Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. CWA § 301 established a required performance level, referred to as "secondary treatment," which POTWs were required to meet by July 1, 1977. EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These TBELs apply to certain municipal WWTPs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table 7. For additional information and background refer to Part 5.1 *Technology Based Effluent Limits for POTWs* in the Permit Writers Manual.

Table 7. Secondary Treatment Effluent Limits

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

b. Equivalent to Secondary Treatment Effluent Limits

EPA has additionally established effluent limitations (40 CFR 133.105) that are considered "equivalent to secondary treatment" which apply to facilities meeting certain conditions established under 40 CFR 133.101(g). The federally promulgated equivalent to secondary treatment effluent limits are listed below in Table 8.

Table 8. Equivalent to Secondary Treatment Effluent Limits

Parameter	30-day average	7-day average
BOD_5	45 mg/L	65 mg/L
TSS	45 mg/L	65 mg/L
Removal for BOD_5 and TSS (concentration)	65% (minimum)	--
Source: 40 CFR 133.105		

Using DMR data from November 2016 to May 2021, EPA evaluated the facility's eligibility for effluent limits based on equivalent to secondary

treatment standards. To be eligible, a POTW must meet all three of the following criteria:

Criterion #1 – Consistently Exceeds Secondary Treatment Standards: The first criterion that must be satisfied to qualify for the equivalent to secondary standards is demonstrating that the BOD_5 and TSS effluent concentrations consistently achievable through proper operation and maintenance of the treatment works exceed the secondary treatment standards set forth in 40 CFR 133.102(a) and (b). 40 CFR 133.101(f) defines "effluent concentrations consistently achievable through proper operation and maintenance" as

- (f)(1): For a given pollutant parameter, the 95th percentile value for the 30-day average effluent quality achieved by a treatment works in a period of at least 2 years, excluding values attributable to upsets, bypasses, operational errors, or other unusual conditions, and
- (f)(2): A 7-day average value equal to 1.5 times the value derived under paragraph (f)(1)

Criterion #2 – Principal Treatment Process: The second criterion that a facility must meet to be eligible for equivalent to secondary standards is that its principal treatment process must be a trickling filter or waste stabilization pond (i.e., the largest percentage of BOD_5 and TSS removal is from a trickling filter or waste stabilization pond system).

Criterion #3 – Provide Significant Biological Treatment: The third criterion for applying equivalent to secondary standards is that the treatment works provides significant biological treatment of municipal wastewater. 40 CFR 133.101(k) defines significant biological treatment as using 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.

EPA determined that the facility does not meet all three criteria, therefore, is not eligible for equivalent to secondary treatment standards.

See Table 9 for the Treatment Equivalent to Secondary Treatment determinations for BOD5 and TSS.

Table 9. Treatment Equivalent to Secondary Treatment Determinations for BOD_5 and TSS

Criterion 1: Consistently Exceeds Secondary Treatment Standards			
BOD_5	**95th Percentile**	**Secondary Treatment Standard**	**Exceeds Secondary Standard**
Average Monthly	13.0 mg/L	30 mg/L	No
Weekly Average	13.0 mg/L × 1.5 = 19.5 mg/L	45 mg/L	No

TSS	95th Percentile	Secondary Treatment Standard	Exceeds Secondary Standard
Average Monthly	20.1 mg/L	30 mg/L	No
Weekly Average	20.1 mg/L × 1.5 = 30.2 mg/L	45 mg/L	No

Criterion 2: Principal Treatment Process

Waste stabilization ponds are the primary treatment method; this meets Criterion 2.

Table 10. Significant Biological Treatment

Criterion 3: Provides Significant Biological Treatment			
BOD_5 30-day Average Percent Removal	**5th Percentile**	**Treatment Standard**	**Provides Significant Biological Treatment**
	89.4%	65%	Yes

The POTW does not meet the three criteria for treatment equivalent to secondary for BOD_5, therefore the technology-based secondary limits, for BOD_5, apply.

The POTW does not meet the three criteria for treatment equivalent to secondary for TSS, therefore the technology-based secondary limits, for TSS, apply.

Table 11 lists the basis and proposed effluent limits for BOD_5 and TSS.

Table 11. Effluent Limits for BOD_5 and TSS

Parameter	Monthly Average	Weekly Average	Percent Removal	Basis
BOD_5	30 mg/L	45 mg/L	85%	TBELs for secondary treatment (40 CFR 133.102(a)-(b))
TSS	30 mg/L	45 mg/L	85%	TBELs for secondary treatment (40 CFR 133.102(a)-(b))

c. Mass-Based Limits

40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, except under certain conditions. 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility.

The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit = concentration limit (mg/L) × design flow (mgd) × 8.34[2]

Since the design flow for this facility is 0.0571 mgd, the technology-based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.0571 mgd × 8.34 = 14.3 lbs/day

Average Weekly Limit = 45 mg/L × 0.0571 mgd × 8.34 = 21.4 lbs/day

3. Chlorine

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

4. Water Quality-Based Effluent Limits (WQBELs)

a. Statutory and Regulatory Basis

CWA § 301(b)(1)(C) requires the development of limitations in permits necessary to meet WQS. Discharges to State or Tribal waters must also comply with conditions imposed by the State or Tribe as part of its certification of NPDES permits under CWA § 401. 40 CFR 122.44(d)(1) implementing CWA § 301(b)(1)(C) requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal WQS, including narrative criteria for water quality. Effluent limits must also meet the applicable water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (40 CFR 122.4(d), 122.44(d)(4), see also CWA § 401(a)(2)).

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

[2] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

consistent with any available wasteload allocation for the discharge in an approved TMDL. If there are no approved TMDLs that specify wasteload allocations for this discharge; all of the WQBELs are calculated directly from the applicable WQS.

b. Reasonable Potential Analysis and Need for WQBELs

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

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

c. Reasonable Potential and WQBELs

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

<u>Ammonia</u>

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. Table 12, below, details the equations used to determine water quality criteria for ammonia.

Table 12. Ammonia Criteria

Total ammonia nitrogen criteria (mg N/L):
Annual Basis
Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	11.7
2. Receiving Water pH:	7.26
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)	**18.39**
Chronic Criterion (CCC)	**5.21**

Acute Criteria Equation: Cold Water

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

Acute Criteria Equation: Warm Water

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

Chronic Criteria: Cold Water, Early Life Stages Present

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

Chronic Criteria: Cold Water, Early Life Stages Absent

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

A reasonable potential calculation showed that the City of Worley WWTP discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. However, the previous permit included WQBELs for ammonia which are more stringent than the ones that were for this permit. To comply with antibacksliding, the draft

permit maintains these ammonia limits from the previous permit. The draft permit requires that the permittee monitor the receiving water for ammonia, pH and temperature in order to determine the applicable ammonia criteria for the next permit reissuance. See Appendices C and D for reasonable potential and effluent limit calculations for ammonia.

pH

The Washington WQS at WAC 173-201A-200(g), require pH values of the receiving water to be within the range of 6.5 to 8.5. Mixing zones are generally not granted for pH, therefore, the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were compared to the water quality criteria. The pH data in the effluent have ranged between 6.9 and 8.0 over the last five years.

Dissolved Oxygen (DO) and BOD_5

The impaired portion of the downstream receiving water is listed under Ecology's Aquatic Life Designated Uses for salmonid spawning, rearing, and migration, which requires a DO one-day minimum requirement of 8.0 mg/L. WAC 173-201A-200(1)(d). Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The BOD_5 of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. It is assumed that the BOD_5 TBEL will be stringent enough to protect DO downstream. Effluent monitoring of DO is required in this permit.

Phosphorus, Total Kjeldahl Nitrogen, and Nitrate-Nitrite

Because of the facility's low discharge and with a mean monthly maximum total phosphorus concentration of 2.3 mg/L, EPA does not believe there is reasonable potential for the discharge to exceed any applicable water quality standards. However, Hangman Creek is impaired for dissolved oxygen upon entering Washington, which can be caused or exacerbated by phosphorus and nitrogenous compounds caused by phytoplankton. Therefore, the permitee is required to monitor effluent for total phosphorus (as P), nitrate-nitrite, and total kjeldahl nitrogen once per month to ensure the nutrient concentrations are not increasing.

E. coli

The Washington WQS state that waters of the State of Washington, that are designated for recreation, limit discharge to a geometric mean value of 100 CFU or MPN per 100 mL during an averaging period, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained within the averaging period exceeding 320 CFU or MPN per 100 mL (WAC 173-201A-200(2)(b)). The previous permit used Coeur d'Alene Tribal WQS for *E. coli*, which include a geometric mean of 126 CFU or MPN per 100 mL during an averaging period, and an instantaneous

maximum of 235 CFU or MPN per 100 mL. The draft permit uses the Washington WQS value for the geometric mean, and preserves the value for the instantaneous maximum from the previous permit in order to comply with antibacksliding.

The goal of a WQBEL is to ensure a low probability that WQS will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. EPA imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 235 organisms per 100 ml, in addition to a monthly geometric mean limit of 100 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding WQS for *E. coli*.

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

Temperature

The Washington water quality standards at WAC 173-201A-200(1)(c) establish criterion for the protection of salmonid spawning, which is the designated use downstream of the discharge in Hangman Creek (See Section III.A.1 of the Fact Sheet). Because this downstream segment is impaired for temperature, as described in the Hangman Creek TMDL, temperature is a pollutant of concern. While the current permit includes temperature monitoring in the receiving water and effluent, there are only eight temperature samples in the last five years from the facility; therefore to properly understand the potential for the facility to exceed temperature criteria, this permit is proposing more frequent temperature monitoring via weekly grab sampling for the first four years of this permit, followed by continuous grab sampling beginning the fifth year of the permit.

Chlorine

The WQS at WAC 173-201A-240 (Table 240) establish an acute criterion of 19 µg/L, and a chronic criterion of 11 µg/L for the protection of aquatic life. A reasonable potential calculation indicated the discharge from the facility would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. EPA recalculated the effluent limits using the recent effluent data which showed a higher variability compared with the data

used to calculate the limits in the current (2015) permit. Both the existing and draft limits meet the water quality standards at the point of discharge, therefore the draft limits are as stringent as the previous permit's limits. These are more stringent than chlorine TBELs, and therefore, the proposed chlorine limits are WQBELs.

Residues

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

Narrative Requirements

The Washington WQS require that surface waters be free from floating, suspended or submerged matter of any kind in concentrations impairing designated beneficial uses. The Coeur d'Alene Reservation WQS have similar requirements. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

The Washington WQS have general water quality criteria, EPA has included a narrative limitation prohibiting the discharge of visible oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature that may impair designated uses. The permittee must visually inspect the effluent for these conditions once per month.

d. Antibacksliding

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

The draft permit does not backslide. The draft permit retains the previous (more stringent) ammonia limits. The chlorine limits meet the water criteria at the end of pipe.

B. MONITORING REQUIREMENTS

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

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

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

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

1. Effluent Monitoring

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

Dilution Ratio

Because the draft permit proposes more stringent end-of-pipe limits, described in Section III.A.3, the dilution ratio effluent limit was removed, therefore the draft permit no longer requires reporting of the effluent dilution ratio.

Per- and polyfluoroalkyl substances (PFAS)

PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Discharges of PFAS above certain levels may cause adverse effects to human health effects or aquatic life.[3,4]

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the draft permit requires that the permittee conduct quarterly influent, effluent, and sludge sampling for PFAS chemicals for two years. The monitoring requirements for PFAS chemicals are deferred until the third and fourth years of the permit term (beginning during the first complete quarter[5] of the third year). This will give the permittee time to plan for this new monitoring requirement (e.g., to obtain funding, train employees, and find a suitable contract laboratory).

The purpose of these monitoring and reporting requirements is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits. EPA is authorized to require this monitoring and reporting by CWA § 308(a). The permit conditions reflect EPA's commitments in the PFAS Strategic

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

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

[5] Quarters are defined as: January 1 to March 31; April 1 to June 30; July 1 to September 30; and October 1 to December 31.

Roadmap, which directs the Office of Water to leverage NPDES permits to reduce PFAS discharges to waterways "at the source and obtain more comprehensive information through monitoring on the sources of PFAS and quantity of PFAS discharged by these sources."

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

2. Surface Water Monitoring

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

Table 13. Surface Water Monitoring in Draft Permit[1]

Parameter	Units	Sample Location	Sample Type	Sample Frequency
Flow	mgd	Upstream of WWTP outfall	Recordings	Daily[2]
pH	s.u.	Upstream of WWTP outfall	Grab	1/month
Temperature	°C	Upstream of WWTP outfall	Grab	1/week or Continuous[3]
Total Ammonia as N	mg/L	Upstream of WWTP outfall	Grab	1/month
Total Phosphorus as P	mg/L	Upstream of WWTP outfall	Grab	1/month
Nitrate plus Nitrite	mg/L	Upstream of WWTP outfall	Grab	1/month
Total Kjeldahl Nitrogen	mg/L	Upstream of WWTP outfall	Grab	1/month
Dissolved Oxygen	mg/L	Upstream of WWTP outfall	Grab	1/month

1 – Monitoring must be conducted under flow conditions typical for the month when sampling occurs. Samples should not be collected immediately after storm events.
2 – Permittee shall provide an estimate or measurement of flow for each day when discharge occurs.
3 – Permittee must monitor receiving water temperature once per week from the effective date of the permit to (insert four years). Starting (first day of the fifth year of the effective date of the permit) the permittee must monitor temperature continuously.

3. Electronic Submission of Discharge Monitoring Reports

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

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

The permittee may use NetDMR after requesting and receiving permission from EPA Region 10. Part III.B.3 of the draft permit requires that the permittee submit a copy of the DMR to the Coeur d'Alene Tribe. Currently, the permittee may submit a copy to the Coeur d'Alene Tribe by one of three ways: 1. a paper copy may be mailed. 2. The email address for the Coeur d'Alene Tribe may be added to the electronic submittal through NetDMR, or 3. The permittee may provide the Coeur d'Alene Tribe viewing rights through NetDMR.

C. Sludge (Biosolids) Requirements

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

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

V. Special Conditions

A. Nutrient Optimization Plan and Report

Permit Part II.A requires the permittee to submit a Nutrient Optimization Plan and Report within 48 months of the effective date of the permit and identify the optimization strategy selected for implementation within 18 months of the effective date of the permit. The Nutrient Optimization Study must evaluate and implement operational strategies for maximizing phosphorus removal from the existing treatment plant during the permit term. The plan must be submitted to EPA and the Coeur d'Alene Tribe.

B. Quality Assurance Plan

The City of Worley WWTP is required to update the Quality Assurance Plan (QAP) within 180 days of the effective date of the permit. The QAP must consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and made available to EPA and the Coeur d'Alene Tribe.

C. Operation and Maintenance Plan

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

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

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

The following specific permit conditions apply:

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

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

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

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

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The

permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

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

E. Environmental Justice

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

The City of Worley WWTP is located within or near a Census block group that is potentially overburdened because of cumulative direct discharge pollution, as well as airborne particulate matter.

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

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

F. Standard Permit Provisions

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

VI. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. A review of the threatened and endangered species located in Idaho finds that there are no threatened or endangered species present near the facility's outfall in North Fork Rock Creek. Bull trout, a threatened salmonid species, is found near Hangman Creek approximately ten miles downstream; however, EPA concludes that this permitting action has no effect on endangered or threatened species under the jurisdiction of NOAA Fisheries or USFWS due to the low flow from the facility compared to the receiving water flow from the point of discharge to Hangman Creek from November 1 – June 30, the period of time the permittee is allowed to discharge

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). A review of the Essential Fish Habitat documents shows that no critical habitats are present in North Fork Rock Creek.

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

EPA has determined that issuance of this permit will not affect EFH in North Fork Rock Creek.

C. CWA § 401 Certification

CWA § 401 requires a Certification that any permit requirements comply with the appropriate sections of the CWA, as well as any appropriate requirements of Tribal Law. See 33 USC § 1341(d). Since this facility discharges to tribal waters and the Tribe has not been approved for TAS for these waters from EPA under the CWA, EPA is the certifying authority. EPA is taking comment on EPA's intent to certify this permit. See the draft certification in Appendix F.

D. Antidegradation

EPA has completed an antidegradation review and finds that it is consistent with State water quality standards and the State's antidegradation implementation procedures.

E. Permit Expiration

The permit will expire five years from the effective date.

VII. REFERENCES

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Washington State, 2010, *Spokane River and Lake Spokane Dissolved Oxygen TMDL*. Water Quality Program, Eastern Regional Office, Department of Ecology. Publication no. 07-10-073. https://apps.ecology.wa.gov/publications/documents/0710073.pdf

Washington State, 2011, *Hangman (Latah) Creek Watershed Fecal Coliform Bacteria, Temperature, and Turbidity Total Maximum Daily Load Water Quality Implementation Plan*. Water Quality Program, Eastern Regional Office, Department of Ecology Publication no. 09-10-030. https://apps.ecology.wa.gov/publications/documents/0910030.pdf

Appendix A. **Facility Information**

Figure 1. Map of facility

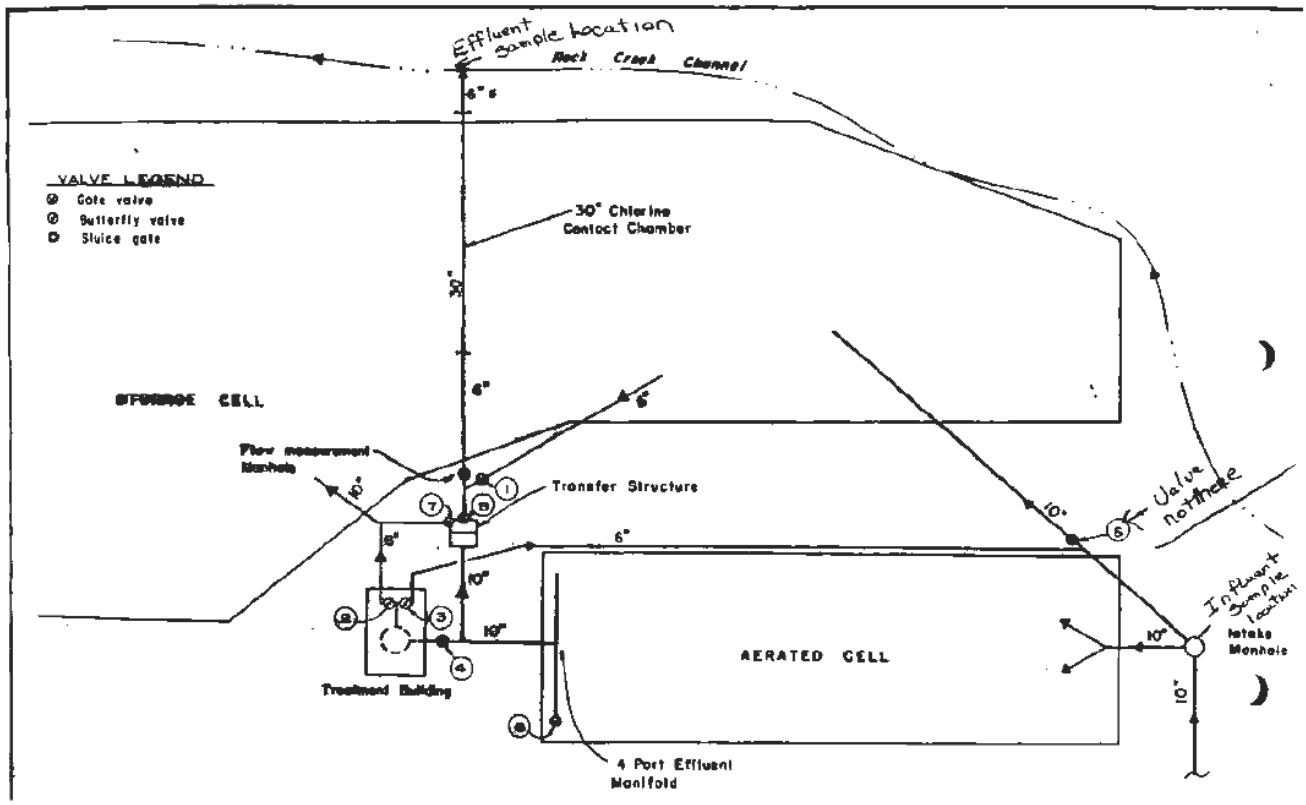

Figure 2. Facility diagram

Appendix B. **Water Quality Data**

Treatment Plant Effluent Data

Table 14. DMR data of BOD_5 between November 2016 and May 2021

	Effluent											Sewage Influent	
Parameter Desc	BOD, 7 day in mg/L		BOD, 7day in lbs/day		BOD, 30day in mg/L		BOD, 30day in lbs/day		BOD, % Removal		Monitoring Period End Date	BOD, 30day in mg/L	
	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit		DMR	Monitoring End Date
Effluent Gross	7.75	45.	13.84	21.4	7.75	30.	13.84	14.3	70.	85.	03/31/2017	25.5	03/31/2017
Effluent Gross	5.65	45.	14.05	21.4	5.65	30.	14.05	14.3	86.	85.	04/30/2017	39.	04/30/2017
Effluent Gross	5.65	45.	12.82	21.4	5.65	30.	12.82	14.3	87.	85.	03/31/2018	50.	03/31/2018
Effluent Gross	6.6	45.	13.65	21.4	6.6	30.	13.65	14.3	91.	85.	04/30/2018	67.5	04/30/2018
Effluent Gross	2.85	45.	3.93	21.4	2.85	30.	3.93	14.3	97.	85.	05/31/2018	89.5	05/31/2018
Effluent Gross	8.14	45.	21.12	21.4	8.14	30.	12.12	14.3	92.	85.	04/30/2019	84.5	04/30/2019
Effluent Gross	13.55	45.	39.33	21.4	13.55	30.	39.33	14.3	97.	85.	05/31/2020	440.	05/31/2020
Effluent Gross	12.	45.	29.22	21.4	12.	30.	29.22	14.3	95.	85.	04/30/2021	230.	04/30/2021
Average	7.77		18.50		7.77		17.37		89.38			128.25	
Minimum	2.85		3.93		2.85		3.93		70.00			25.50	
Maximum	13.55		39.33		13.55		39.33		97.00			440.00	
Count	8		8		8		8		8			8	
Std Dev	3.51		11.12		3.51		11.27		8.86			141.06	
CV	0.45		0.60		0.45		0.65		0.10			1.10	
95th Percentile	13.01		35.79		13.01		35.79		97.00			366.50	
5th Percentile	3.83		7.04		3.83		6.80		75.60			30.23	
90th percentile	12.47		32.25		12.47		32.25		97.00			293.00	

Table 15. DMR data of BOD_5 percent removal between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Desc	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Date
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	70.	85.	Percent	3/1/2017	03/31/2017
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	86.	85.	Percent	4/1/2017	04/30/2017
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	87.	85.	Percent	3/1/2018	03/31/2018
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	91.	85.	Percent	4/1/2018	04/30/2018
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	97.	85.	Percent	5/1/2018	05/31/2018
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	92.	85.	Percent	4/1/2019	04/30/2019
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	97.	85.	Percent	5/1/2020	05/31/2020
Percent Removal	81010	BOD, 5-day, percent removal	Percent Removal	MO AV MN	95.	85.	Percent	4/1/2021	04/30/2021
				Maximum	97.00				
				Minimum	70.00				
				Average	89.38				

Table 16. DMR data of Total Residual Chlorine between November 2016 and May 2021

Parameter Desc	Daily Max Concentration		Daily Max Loading		Monthly Average Concentration		Monthly Average Loading		Monitoring Period End Date
	mg/L		lbs/day		mg/L		lbs/day		
	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	
Chlorine, total residual	.36	.013	.65	.024	.05	.011	.09	.024	03/31/2017
Chlorine, total residual	.52	.013	1.3	.024	.05	.011	.13	.024	04/30/2017
Chlorine, total residual	.12	.013	.28	.024	.02	.011	.01	.024	03/31/2018
Chlorine, total residual	.19	.013	.4	.024	.01	.011	.02	.024	04/30/2018
Chlorine, total residual	.25	.013	.35	.024	.02	.011	.03	.024	05/31/2018
Chlorine, total residual	.009	.013	.024	.024	.004	.011	.011	.024	04/30/2019
Chlorine, total residual	.007	.013	.02	.024	.001	.011	.01	.024	05/31/2020
Chlorine, total residual	.008	.013	.02	.024	.001	.011	.002	.024	04/30/2021

Average	0.183		0.381		0.020		0.038	
Minimum	0.007		0.020		0.001		0.002	
Maximum	0.520		1.300		0.050		0.130	
Count	8		8		8		8	
Std Dev	0.187		0.434		0.020		0.047	
CV	1.023		1.140		1.039		1.228	
95th Percentile	0.464		1.073		0.050		0.116	
5th Percentile	0.007		0.020		0.001		0.005	
90th percentile	0.408		0.845		0.050		0.102	

Table 17. DMR data of *E. coli* bacteria between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Desc	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Date
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	52.00	235.	Colony Forming Units per 100ml	3/1/2017	03/31/2017
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	8.50	235.	Colony Forming Units per 100ml	4/1/2017	04/30/2017
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	2.00	235.	Colony Forming Units per 100ml	3/1/2018	03/31/2018
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	10.90	235.	Colony Forming Units per 100ml	4/1/2018	04/30/2018
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	7.30	235.	Colony Forming Units per 100ml	5/1/2018	05/31/2018
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	230.00	235.	Colony Forming Units per 100ml	4/1/2019	04/30/2019
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	22.60	235.	Colony Forming Units per 100ml	5/1/2020	05/31/2020
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	INST MAX	27.52	235.	Colony Forming Units per 100ml	4/1/2021	04/30/2021
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.00	126.	Colony Forming Units per 100ml	3/1/2017	03/31/2017
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.00	126.	Colony Forming Units per 100ml	4/1/2017	04/30/2017
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.00	126.	Colony Forming Units per 100ml	3/1/2018	03/31/2018
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	2.76	126.	Colony Forming Units per 100ml	4/1/2018	04/30/2018
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.12	126.	Colony Forming Units per 100ml	5/1/2018	05/31/2018
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.00	126.	Colony Forming Units per 100ml	4/1/2019	04/30/2019
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.00	126.	Colony Forming Units per 100ml	5/1/2020	05/31/2020
Effluent Gross	31648	E. coli, MTEC-MF	Effluent Gross	MO GEOMN	0.00	126.	Colony Forming Units per 100ml	4/1/2021	04/30/2021

INST MAX	min	2.00
	max	230.00
MO GEOMN	min	0.00
	max	2.76

Table 18. DMR data of the effluent dilution ratio between November 2016 and May 2021

Limits. Monitoring Location Des	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Desc	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Da
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	10.	10.	Ratio	3/1/2017	03/31/2017
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	10.	10.	Ratio	4/1/2017	04/30/2017
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	20.	10.	Ratio	3/1/2018	03/31/2018
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	15.	10.	Ratio	4/1/2018	04/30/2018
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	10.	10.	Ratio	5/1/2018	05/31/2018
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	10.	10.	Ratio	4/1/2019	04/30/2019
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	10.	10.	Ratio	5/1/2020	05/31/2020
Effluent Gross	78480	Effluent dilution ratio	Effluent Gross	MO MIN	10.	10.	Ratio	4/1/2021	04/30/2021

Table 19. DMR data of the facility discharge flow between November 2016 and May 2021

Limits. Monitoring Location Des	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Des	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Date
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.271		Million Gallons per Day	3/1/2017	03/31/2017
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.298		Million Gallons per Day	4/1/2017	04/30/2017
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.272		Million Gallons per Day	3/1/2018	03/31/2018
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.248		Million Gallons per Day	4/1/2018	04/30/2018
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.165		Million Gallons per Day	5/1/2018	05/31/2018
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.365		Million Gallons per Day	4/1/2019	04/30/2019
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.348		Million Gallons per Day	5/1/2020	05/31/2020
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO AVG	.292		Million Gallons per Day	4/1/2021	04/30/2021
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.4		Million Gallons per Day	3/1/2017	03/31/2017
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.298		Million Gallons per Day	4/1/2017	04/30/2017
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.441		Million Gallons per Day	3/1/2018	03/31/2018
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.366		Million Gallons per Day	4/1/2018	04/30/2018
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.291		Million Gallons per Day	5/1/2018	05/31/2018
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.365		Million Gallons per Day	4/1/2019	04/30/2019
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.589		Million Gallons per Day	5/1/2020	05/31/2020
Effluent Gross	50050	Flow, in conduit or thru treatment plant	Effluent Gross	MO MAX	.567		Million Gallons per Day	4/1/2021	04/30/2021

	Monthly Ave	Monthly Max
Min	0.165	0.291
Avg	0.282	0.415
Max	0.365	0.589

Table 20. DMR data of nitrite+nitrate between November 2016 and May 2021

Limits. Monitoring Location Des	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Des	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Date
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	10.20		Milligrams per Liter	3/1/2017	03/31/2017
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.00		Milligrams per Liter	4/1/2017	04/30/2017
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.24		Milligrams per Liter	3/1/2018	03/31/2018
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.78		Milligrams per Liter	4/1/2018	04/30/2018
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.59		Milligrams per Liter	5/1/2018	05/31/2018
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.23		Milligrams per Liter	4/1/2019	04/30/2019
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.37		Milligrams per Liter	5/1/2020	05/31/2020
Effluent Gross	00630	Nitrite + Nitrate total [as N]	Effluent Gross	MO MAX	0.16		Milligrams per Liter	4/1/2021	04/30/2021
				min	0.00				
				max	10.20				

Table 21. DMR data of total ammonia between November 2016 and May 2021

Parameter Desc	Daily Max Concentration		Daily Max Loading		Monthly Average Concentration		Monthly Average Loading		Monitoring Period End Date
	mg/L		lbs/day		mg/L		lbs/day		
	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	
Nitrogen, ammonia total [as N]	2.12	10.6	3.79	5.1	1.92	4.1	3.43	1.9	03/31/2017
Nitrogen, ammonia total [as N]	.68	10.6	1.69	5.1	.03	4.1	.08	1.9	04/30/2017
Nitrogen, ammonia total [as N]	6.05	10.6	13.73	5.1	.2	4.1	.46	1.9	03/31/2018
Nitrogen, ammonia total [as N]	5.27	10.6	10.9	5.1	5.08	4.1	10.51	1.9	04/30/2018
Nitrogen, ammonia total [as N]	5.42	10.6	7.46	5.1	5.23	4.1	7.2	1.9	05/31/2018
Nitrogen, ammonia total [as N]	6.61	10.6	17.5	5.1	5.98	4.1	15.51	1.9	04/30/2019
Nitrogen, ammonia total [as N]	9.96	10.6	28.91	5.1	9.28	4.1	26.94	1.9	05/31/2020
Nitrogen, ammonia total [as N]	10.85	10.6	26.42	5.1	10.85	4.1	26.42	1.9	04/30/2021
Average	5.870		13.800		4.821		11.319		
Minimum	0.680		1.690		0.030		0.080		
Maximum	10.850		28.910		10.850		26.940		
Count	8		8		8		8		
Std Dev	3.457		9.977		3.974		10.782		
CV	0.589		0.723		0.824		0.953		
95th Percentile	10.539		28.039		10.301		26.758		
5th Percentile	1.184		2.425		0.090		0.213		
90th percentile	10.227		27.167		9.751		26.576		

Table 22. DMR data of total Kjeldahl nitrogen between November 2016 and May 2021

Limits. Monitoring Location Des	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Desc	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Date
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	8.67		Milligrams per Liter	3/1/2017	03/31/2017
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	3.73		Milligrams per Liter	4/1/2017	04/30/2017
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	8.34		Milligrams per Liter	3/1/2018	03/31/2018
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	8.52		Milligrams per Liter	4/1/2018	04/30/2018
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	6.57		Milligrams per Liter	5/1/2018	05/31/2018
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	8.11		Milligrams per Liter	4/1/2019	04/30/2019
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	14.4		Milligrams per Liter	5/1/2020	05/31/2020
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX	16.2		Milligrams per Liter	4/1/2021	04/30/2021
Effluent Gross	00625	Nitrogen, Kjeldahl, total [as N]	Effluent Gross	MO MAX			Milligrams per Liter	5/1/2021	05/31/2021
				min	3.7				
				max	16.2				

Table 23. DMR data of dissolved oxygen between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Desc	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Date
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	4.5		Milligrams per Liter	3/1/2017	03/31/2017
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	7.1		Milligrams per Liter	4/1/2017	04/30/2017
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	5.7		Milligrams per Liter	3/1/2018	03/31/2018
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	5.7		Milligrams per Liter	4/1/2018	04/30/2018
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	11.5		Milligrams per Liter	5/1/2018	05/31/2018
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	11.7		Milligrams per Liter	4/1/2019	04/30/2019
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	11.5		Milligrams per Liter	5/1/2020	05/31/2020
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN	11.2		Milligrams per Liter	4/1/2021	04/30/2021
Effluent Gross	00300	Oxygen, dissolved [DO]	Effluent Gross	MO MIN			Milligrams per Liter	5/1/2021	05/31/2021
				min	4.5				
				max	11.7				

Table 24. DMR data of pH between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Desc	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Da
Effluent Gross	00400	pH	Effluent Gross	INST MAX	7.4	8.5	Standard Units	3/1/2017	03/31/2017
Effluent Gross	00400	pH	Effluent Gross	INST MAX	7.5	8.5	Standard Units	4/1/2017	04/30/2017
Effluent Gross	00400	pH	Effluent Gross	INST MAX	7.6	8.5	Standard Units	3/1/2018	03/31/2018
Effluent Gross	00400	pH	Effluent Gross	INST MAX	7.6	8.5	Standard Units	4/1/2018	04/30/2018
Effluent Gross	00400	pH	Effluent Gross	INST MAX	7.4	8.5	Standard Units	5/1/2018	05/31/2018
Effluent Gross	00400	pH	Effluent Gross	INST MAX	8.0	8.5	Standard Units	4/1/2019	04/30/2019
Effluent Gross	00400	pH	Effluent Gross	INST MAX	8.0	8.5	Standard Units	5/1/2020	05/31/2020
Effluent Gross	00400	pH	Effluent Gross	INST MAX	7.9	8.5	Standard Units	4/1/2021	04/30/2021
Effluent Gross	00400	pH	Effluent Gross	INST MIN	6.9	6.5	Standard Units	3/1/2017	03/31/2017
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.2	6.5	Standard Units	4/1/2017	04/30/2017
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.1	6.5	Standard Units	3/1/2018	03/31/2018
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.2	6.5	Standard Units	4/1/2018	04/30/2018
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.2	6.5	Standard Units	5/1/2018	05/31/2018
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.3	6.5	Standard Units	4/1/2019	04/30/2019
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.3	6.5	Standard Units	5/1/2020	05/31/2020
Effluent Gross	00400	pH	Effluent Gross	INST MIN	7.8	6.5	Standard Units	4/1/2021	04/30/2021
Effluent Gross	00400	pH	Effluent Gross	INST MIN		6.5	Standard Units	5/1/2021	05/31/2021
				min	6.9				
				max	8.0				

Table 25. DMR data of total phosphorus between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Des	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Da
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	1.63		Milligrams per Liter	3/1/2017	03/31/2017
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	1.08		Milligrams per Liter	4/1/2017	04/30/2017
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	1.91		Milligrams per Liter	3/1/2018	03/31/2018
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	1.75		Milligrams per Liter	4/1/2018	04/30/2018
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	1.7		Milligrams per Liter	5/1/2018	05/31/2018
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	2.52		Milligrams per Liter	4/1/2019	04/30/2019
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	3.74		Milligrams per Liter	5/1/2020	05/31/2020
Effluent Gross	00665	Phosphorus, total [as P]	Effluent Gross	MO MAX	3.98		Milligrams per Liter	4/1/2021	04/30/2021
				min	1.08				
				max	3.98				

Table 26. DMR data of total suspended solids between November 2016 and May 2021

	Effluent											Sewage Influent	
Parameter Desc	TSS, 7 day in mg/L		TSS, 7day in lbs/day		TSS, 30day in mg/L		TSS, 30day in lbs/day		TSS, % Removal		Monitoring Period End Date	TSS, 30day in mg/L	
	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit		DMR	Monitoring End Date
Effluent Gross	27.	45.	48.19	21.4	27	30	48.19	14.3	77.	85	03/31/2017	115.	03/31/2017
Effluent Gross	16.	45.	39.77	21.4	16	30	39.77	14.3	73.	85	04/30/2017	58.35	04/30/2017
Effluent Gross	16.5	45.	37.43	21.4	16.5	30	37.43	14.3	80.	85	03/31/2018	143.	03/31/2018
Effluent Gross	19.5	45.	40.34	21.4	19.5	30	40.34	14.3	88.	85	04/30/2018	159.5	04/30/2018
Effluent Gross	8.	45.	11.01	21.4	8	30	11.01	14.3	96.	85	05/31/2018	166.	05/31/2018
Effluent Gross	28.84	45.	74.81	21.4	28.84	30	74.81	14.3	72.	85	04/30/2019	136.5	04/30/2019
Effluent Gross	22.	45.	63.86	21.4	22	30	63.86	14.3	92.	85	05/31/2020	258.5	05/31/2020
Effluent Gross	23.	45.	56.01	21.4	23	30	56.01	14.3	85.	85	04/30/2021	298.	04/30/2021
Minimum	8.0		11.0		8.0		11.0		72.0			58.4	
Maximum	28.8		74.8		28.8		74.8		96.0			298.0	
95th Percentil	28.2		71.0		28.2		71.0		94.6			284.2	
Average	20.11		46.43		20.11		46.43		82.88			166.86	

Table 27. DMR data of total suspended solids percent removal between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Des	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Da	Violation Code
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	77.	85.	Percent	3/1/2017	03/31/2017	E90
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	73.	85.	Percent	4/1/2017	04/30/2017	E90
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	80.	85.	Percent	3/1/2018	03/31/2018	E90
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	88.	85.	Percent	4/1/2018	04/30/2018	
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	96.	85.	Percent	5/1/2018	05/31/2018	
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	72.	85.	Percent	4/1/2019	04/30/2019	E90
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	92.	85.	Percent	5/1/2020	05/31/2020	
Percent Removal	81011	Solids, suspended percent removal	Percent Removal	MO AV MN	85.	85.	Percent	4/1/2021	04/30/2021	
				min	72.					
				max	96.					

Table 28. DMR data of temperature between November 2016 and May 2021

Limits. Monitoring Location Desc	Parameter Code	Parameter Desc	DMR Parameters Monitoring Location Des	Statistical Base Short Desc	DMR Value	Limit Value	Limit Unit Desc	Monitoring Period Start Date	Monitoring Period End Da
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	4.80		Degrees Centigrade	3/1/2017	03/31/2017
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	8.22		Degrees Centigrade	4/1/2017	04/30/2017
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	43.00		Degrees Centigrade	3/1/2018	03/31/2018
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	6.82		Degrees Centigrade	4/1/2018	04/30/2018
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	17.34		Degrees Centigrade	5/1/2018	05/31/2018
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	10.06		Degrees Centigrade	4/1/2019	04/30/2019
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	9.66		Degrees Centigrade	5/1/2020	05/31/2020
Effluent Gross	00010	Temperature, water deg. centigrade	Effluent Gross	MO MAX	8.83		Degrees Centigrade	4/1/2021	04/30/2021
				min	4.80				
				max	43.00				

Receiving Water Data

Table 29. Receiving water data from the Surface Water Monitoring Report between November 2016 and May 2021

City of Worley									
Surface Water Monitoring									
Date	Flow	pH	Temp. F	Temp. C	Total Ammonia	Total Phosphorus	Nitrate + Nitrite	TKN	Dissolved Oxygen
2/17/2016	5,000	6.9	42.6	5.89	ND	0.096	1.36	0.525	12.6
4/19/2016	3,000	6.8	51	10.56	0.122	0.132	ND	0.611	10.8
5/11/2016	1,500	7.2	51.2	10.67	0.096	0.104	ND	0.792	9.7
3/22/2017	5,200	6.8	39.3	4.06	ND	0.126	ND	0.613	12.2
4/5/2017	3,000	6.9	44	6.67	ND	0.105	ND	0.99	10.6
3/20/2018	3,200	7	43.5	6.39	0.075	0.12	0.918	0.475	11.8
4/4/2018	3,000	6.8	46.6	8.11	0.155	0.091	0.378	0.584	10.8
5/2/2018	2,500	6.9	52.5	11.39	0.13	0.143	0.21	0.635	10.2
4/10/2019	3,200	7.3	53.5	11.94	0.115	0.16	1.15	0.649	11.7
4/21/2020	3,500	6.9	51	10.56	ND	0.067	ND	0.448	10.6
Average	3310	7.0	47.5	8.62	0.116	0.114	0.803	0.632	11.1
Minimum	1500	6.8	39.3	4.06	0.075	0.067	0.210	0.448	9.7
Maximum	5200	7.3	53.5	11.94	0.155	0.160	1.360	0.990	12.6
Count	10	10.0	10.0	10.00	6.000	10.000	5.000	10.000	10.0
Std Dev	1091	0.2	4.9	2.74	0.028	0.027	0.494	0.159	0.9
CV	0	0.0	0.1	0.32	0.240	0.239	0.615	0.251	0.1
95th Percentile	5110	7.3	53.1	11.69	0.149	0.152	1.318	0.901	12.4
5th Percentile	1950	6.8	40.8	4.88	0.080	0.078	0.244	0.460	9.9
90th percentile	5020	7.2	52.6	11.44	0.143	0.145	1.276	0.812	12.2

Notes
ND: non-detect Ammonia dection limit: 0.05 Nitrate-nitrite detection limit: 0.1

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

A. Reasonable Potential Analysis

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

1. Mass Balance

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

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

where,

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

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

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

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

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

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

Where:

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

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

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

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

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

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

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

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

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

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

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

2. Maximum Projected Effluent Concentration

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

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

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

where,

p_n = the percentile represented by the highest reported concentration

n = the number of samples

confidence level = 99% = 0.99

and

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

Where,

σ^2 = $\ln(CV^2 + 1)$

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

Z_{Pn} = z-score for the P_n percentile (inverse of the normal cumulative distribution function at a given percentile)

CV = coefficient of variation (standard deviation ÷ mean)

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

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

where MRC = Maximum Reported Concentration

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

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

4. Reasonable Potential

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

B. WQBEL Calculations

1. Calculate the Wasteload Allocations (WLAs)

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

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

   Washington's water quality criteria for some metals are expressed as the dissolved fraction, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, EPA must

calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation __. As discussed in Appendix ___, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

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

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

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

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

where,

σ^2 = $\ln(CV^2 + 1)$

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

CV = coefficient of variation (standard deviation ÷ mean)

σ_4^2 = $\ln(CV^2/4 + 1)$

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

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

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

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

2. Derive the maximum daily and average monthly effluent limits

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

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

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

where σ, and σ² are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1$

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

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

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

C. Critical Low Flow Conditions

The low flow conditions of a water body are used to determine WQBELs. For North Fork Rock Creek, no data on stream flow were available and the stream is dry for at least a portion of the year as confirmed through aerial photography.

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

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages	CHLORINE (Total Residual)
Effluent Data	**Number of Samples in Data Set (n)**		8	8
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		0.6	0.6
	Effluent Concentration, µg/L (Max. or 95th Percentile) – (C_e)		10,850	520
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only			
Receiving Water Data	**90th Percentile Conc., µg/L – (C_u)**			
	Geometric Mean, µg/L, Human Health Criteria Only			
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	18,390.88	19.
	Aquatic Life Criteria, µg/L	Chronic	5,206.137	11.
	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		--	N
Percent River Flow Default Value = 0%	**Aquatic Life – Acute**	**1Q10**	0%	0%
	Aquatic Life – Chronic	7Q10 or 4B3		0%
		30B3 or 30Q10		0%
	Human Health – Non-Carcinogen and Chronic	30Q5	0%	0%
	Human Health – Carcinogen	Harmonic Mean		0%
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life – Acute	1Q10	1.0	1.0
	Aquatic Life – Chronic	7Q10 or 4B3		1.0
		30B3 or 30Q10		1.0
	Human Health – Non-Carcinogen and Chronic	30Q5	1.0	1.0
	Human Health – Carcinogen	Harmonic Mean		1.0
Aquatic Life Reasonable Potential Analysis				
σ	$\sigma^2=\ln(CV^2+1)$		0.555	0.555
P_n	=(1-confidence level)$^{1/n}$, where confidence level =	**99%**	0.562	0.562
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	**99%**	3.3	3.3
Statistically projected critical discharge concentration (C_e)			36131	1731.62
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	36131	1731.62
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	36131	1731.62
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**
Aquatic Life Effluent Limit Calculations				
Number of Compliance Samples Expected per month (n)				
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			30	4
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		0.600	0.600
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		0.600	0.600
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a-1)$	Acute	18,391	19.0
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_{u\times}(MZ_c-1)$	Chronic	5,206	11.0
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-z\sigma)$, Acute	**99%**	5,904	6.1
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	**99%**	4,062	5.8
Limiting LTA, ug/L	used as basis for limits calculation		4,062	5.8
Applicable Metals Criteria Translator (metals limits as total recoverable)				--
Average Monthly Limit (AML), ug/L, where % occurrence prob =		**95%**	**4,833**	**9**
Maximum Daily Limit (MDL), ug/L, where % occurrence prob =		**99%**	**12,654**	**18**
Average Monthly Limit (AML), mg/L			**4.8**	**0.009**
Maximum Daily Limit (MDL), mg/L			**12.7**	**0.018**

Appendix E. **Essential Fish Habitat Assessment**

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

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

A. Listing of EFH Species in the Facility Area

All waterbodies used by anadromous salmon throughout Alaska must be considered for EFH identification. According to NOAA Fisheries, the receiving water is a migrational corridor for sockeye, coho, chum, and pink salmon.

B. Description of the Facility and Discharge Location

The activities and sources of wastewater at the Juneau-Mendenhall waste water treatment facility are described in detail in Part II and Appendix A of this fact sheet. The location of the outfall is described in Part III ("Receiving Water").

C. EPA's Evaluation of Potential Effects to EFH

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

Protection of Aquatic Life in NPDES Permitting

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

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

Effects Determination

Since the proposed permit has been developed to protect aquatic life species in the receiving water in accordance with the Washington WQS, EPA has determined that issuance of this permit is not likely to adversely affect any EFH in the vicinity of the discharge. EPA will provide NMFS with copies of the draft permit and fact sheet during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to reissuance of this permit.

Appendix F. **CWA § 401 Certification**

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

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

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

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

Appendix G. **Antidegradation Analysis**

The purpose of Washington's Antidegradation Policy is to:

1. Restore and maintain the highest possible quality of the surface waters of Washington.

2. Describe situations under which water quality may be lowered from its current condition.

3. Apply to human activities that are likely to have an impact on the water quality of surface water.

4. Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment.

5. Apply three tiers of protection (described below) for surface waters of the state.

    i. Tier I is used to ensure existing and designated uses are maintained and protected and applies to all waters and all sources of pollution.

    ii. Tier II is used to ensure that waters of a higher quality than the criteria assigned in this chapter are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities.

    iii. Tier III is used to prevent the degradation of waters formally listed in this chapter as "outstanding resource waters," and applies to all sources of pollution.

EPA utilized Washington's WQS downstream from the discharge in North Fork Rock Creek to establish discharge limits in the permit and accordingly, the antidegradation analysis was completed for North Fork Rock Creek downstream of the discharge. The discharge proposed in this permit should not cause a loss of beneficial uses because there have not been any changes in the process of the existing facility, and there is no change in the design flow. Therefore, EPA concludes that the discharge does not trigger the need for any further antidegradation analysis beyond Tier I Protection.

Tier I Protection – Protection and maintenance of existing and designated uses

According to Washington's antidegradation policy, WAC 172-210A-310, this facility must meet Tier I requirements. Existing and designated uses must be maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in WAC 173-201A612. The waters of North Fork Rock Creek in Washington downstream of the point of discharge are protected for the following designated beneficial uses:

- Industrial Water Supply;

- Wildlife Habitat;
- Aesthetic Values.

The effluent limits in the permit ensure compliance with applicable numeric and narrative water quality criteria. The numeric and narrative water quality criteria are set at levels that ensure protection of the designated uses. As there is no information indicating the presence of existing beneficial uses other than those that are designated, the draft permit ensures a level of water quality necessary to protect the designated uses and, in compliance with WAC 173-201A-310 and 40 CFR 131.12(a)(1), also ensures that the level of water quality necessary to protect existing uses is maintained and protected. If EPA receives information during the public comment period demonstrating that there are existing uses for which North Fork Rock Creek is not designated, EPA will consider this information before issuing a final permit and will establish additional or more stringent permit conditions if necessary to ensure protection of existing uses.

Tier II Protection – Protection of waters of higher quality than the standards

EPA determined that analysis for a Tier II Protection is not necessary because the facility is not a new or expanded action that has the potential to cause measurable degradation to existing water quality. According to WAC 173-210A-320(2), a facility must prepare a Tier II analysis when the facility is planning a new or expanded action that has the potential to cause measurable degradation to the physical, chemical, or biological quality of the water body.

Tier III Protection – Protection of Outstanding Resource Waters

EPA determined that a Tier III antidegradation analysis is not necessary because the receiving water does not meet the conditions as an Outstanding Resource Water pertaining to WAC 173-201A-330(1).

Appendix H. **Facility Map**

Worley Wastewater Treatment Plant

6/6/2022

Coeur d'Alene Tribal Boundary
Washington-Idaho State Boundary
NHD Coastline

NHD Rivers
Stream / Perennial
Intermittent / Ephemeral
Canal, Ditch

Pipeline
Connector
NHD Waterbody
Lake, Pond, Reservoir

Swamp, Marsh
Ice Mass
NHD Area
Large Rivers

1:106,049

0 0.5 1 2 mi
0 1 2 4 km