

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 8
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STATEMENT OF BASIS**

PERMITTEE: City of Poplar

FACILITY NAME AND ADDRESS: City of Poplar Wastewater Treatment Facility
406 2nd Avenue West
Poplar, Montana 59255

PERMIT NUMBER: MT0030597

RESPONSIBLE OFFICIAL: John Grainger
Mayor
(406) 768-7541

FACILITY CONTACT: Shane Halverson
Director of Public Works
(406) 768-3483

PERMIT TYPE: Individual, renewal

TYPE OF TREATMENT: Mechanical Plant - Secondary Treatment

FACILITY LOCATION: Poplar, Montana
Roosevelt County
Lat. 48.1059° N, Long. 105.1884° W

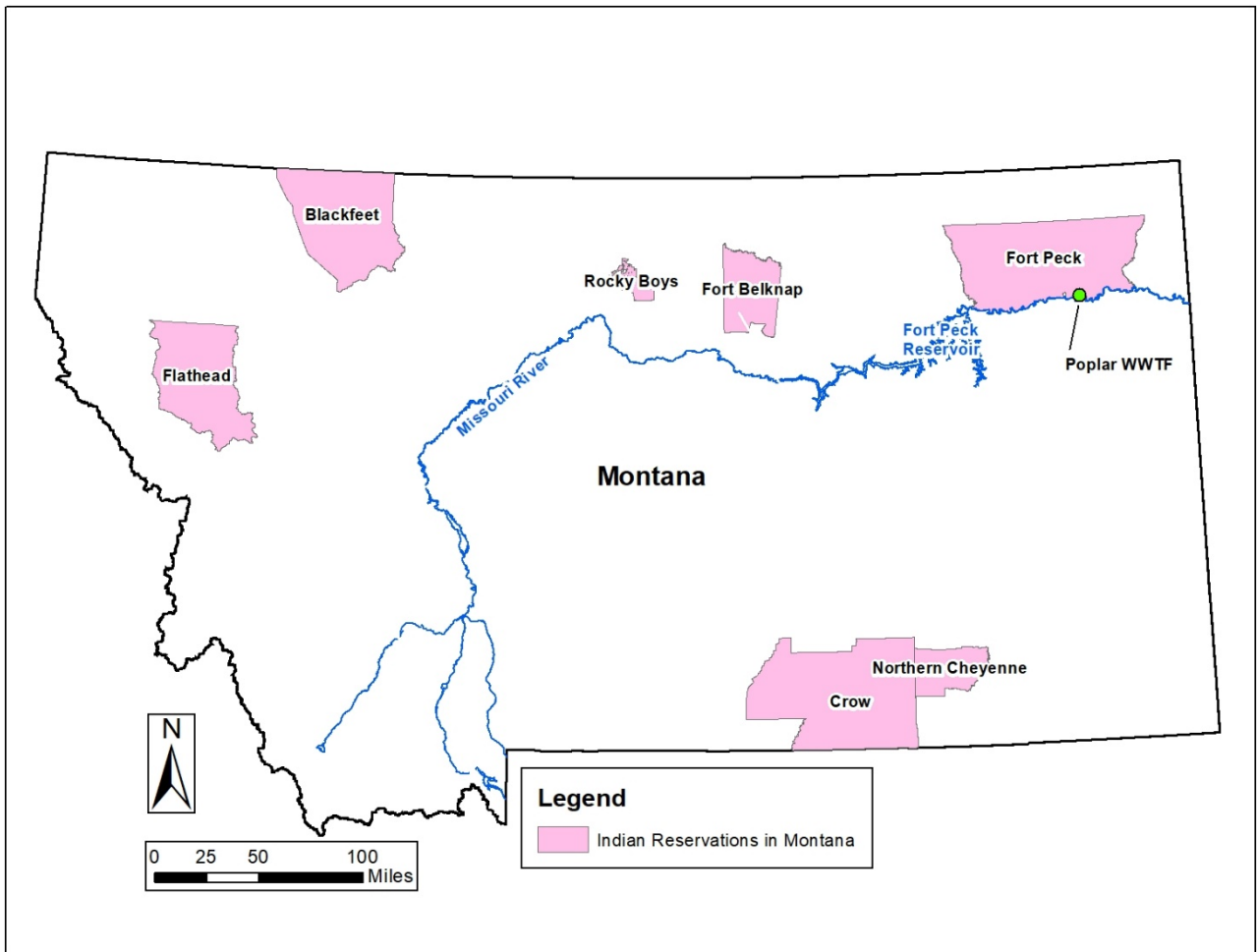
OUTFALL LOCATION: Lat. 48.10330° N, Long. 105.18741° W

1. INTRODUCTION

This statement of basis (SoB) is for the issuance of a National Pollutant Discharge Elimination System (NPDES) permit (the Permit) to the City of Poplar, for the City of Poplar Wastewater Treatment Facility (WWTF). The Permit establishes discharge limitations for the discharge of treated wastewater from Outfall 001 to the Missouri River. The SoB explains the nature of the discharge, the EPA’s decisions for limiting the pollutants in the wastewater, and the regulatory and technical basis for these decisions.

The WWTF is located on the Fort Peck Reservation in northeastern Montana (Figure 1), which is home to the Assiniboine and Sioux Tribes (Tribes). The EPA Region 8 is the permitting authority for facilities located in Indian country, as defined in 18 U.S.C. Part 1151, within Region 8 and supports implementation of federal environmental laws consistent with the federal trust responsibility, the government-to-government relationship, and the “EPA Policy for the Administration of Environmental Programs on Indian Reservations” (1984 Indian Policy).

Figure 1. Facility Location Map



2. BACKGROUND INFORMATION

The WWTF was built in 1978 and began its last upgrade in 2019. According to the 2017 permit application, the WWTF treats household waste for the City of Poplar, with a population of 810 people, as well as the surrounding homes on the reservation, for a total population of 2,350 (Figure 2). The WWTF also treats industrial wastewater, which is discussed below.

2.1. Facility Description

The WWTF is a small mechanical plant consisting of an oxidation ditch, clarifier, aerated sludge digester, a set of sludge drying beds and an ultraviolet light system for effluent disinfection (Figures 3 & 4). The 2017 application submittal reported a design flow of 0.6 million gallons per day (MGD).

The WWTF treats domestic wastewater from the City of Poplar residential discharge, and receives industrial contributions from the Vern E. Gibbs Health Center (Indian Health Service hospital) and an electronics manufacturer (West Electronics). The system previously received backwash water from the town's drinking water plant, but the town joined the Fort Peck Reservation Rural Water System in 2013 and no longer operates a drinking water treatment plant. A&S Industries (an industrial discharger mentioned in the previous statement of basis) has shut down and is no longer discharging. According to the Poplar Public Works Director, the Poplar Airport does not discharge to the town wastewater system, and there are no other industrial dischargers in the area.

Figure 2. Aerial Imagery – City of Poplar



Figure 3. Outfall 001 location

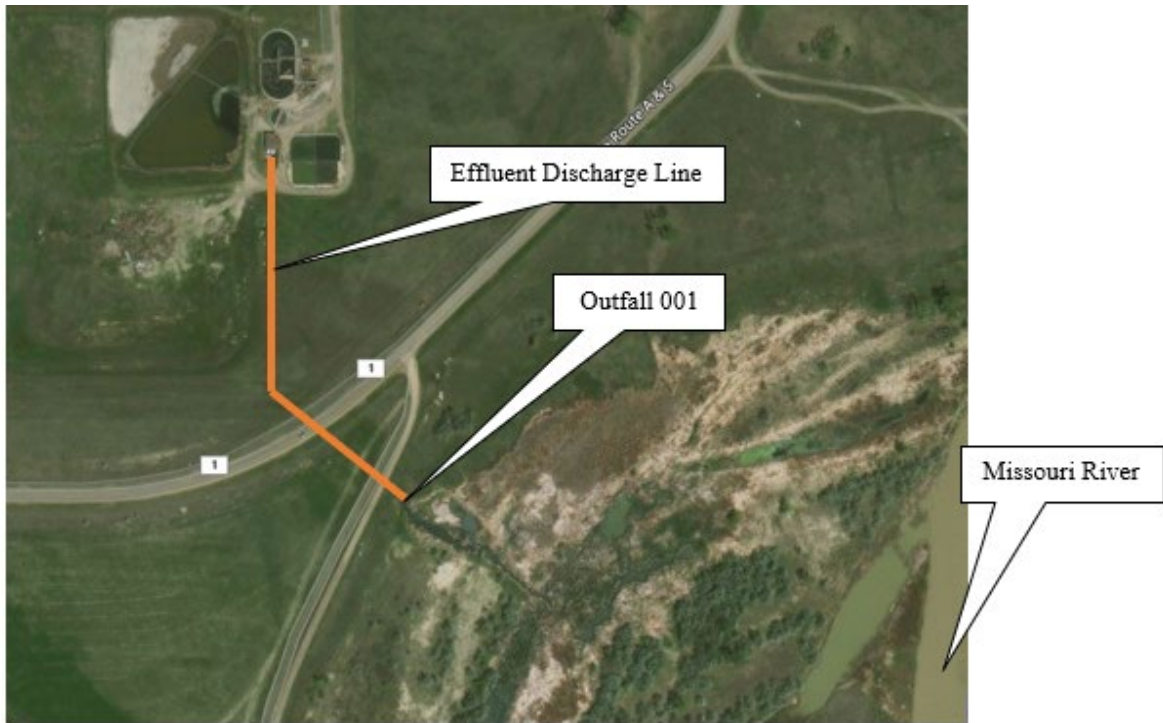


Figure 4. Aerial view of WWTF

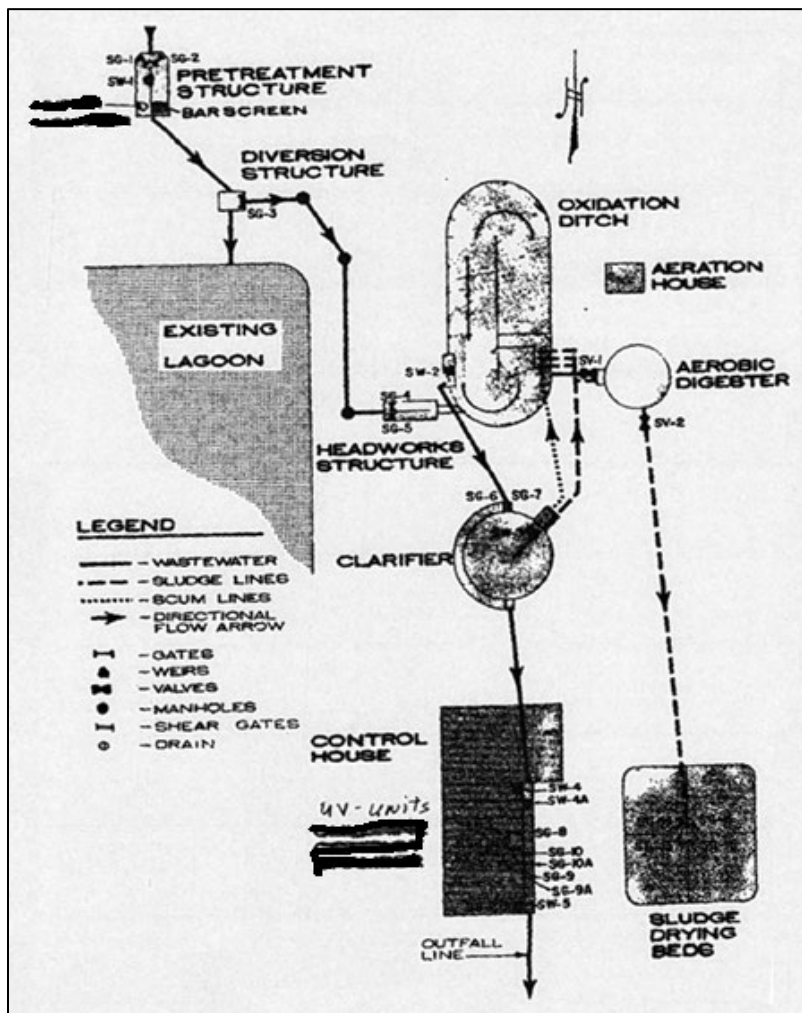


2.2. Treatment Process

The treatment process is shown in Figure 5. Wastewater influent enters the WWTF through a mechanical bar screen and grit chamber and then flows into the oxidation ditch via a Parshall flume. From the oxidation ditch, wastewater goes to the clarifier for settling and sludge removal. A small amount of activated sludge is returned to the oxidation ditch to provide a continuing microbe source for the oxidation process. Scum from the clarifier is also returned to the oxidation ditch. Clarified effluent is disinfected by ultraviolet light and continuously discharged to the Missouri River via Outfall 001. The WWTF has a large off-line holding lagoon that can be used for storage of influent when needed.

Sludge from the clarifier goes to the digester. Digested sludge is pumped to the four sludge drying beds. Smaller concrete sludge drying beds are also available onsite for use. Waste material from the headworks is collected in garbage cans for landfill disposal.

Figure 5. Line diagram of treatment process



2.3. Chemicals Used

No chemicals (including chlorine) are used in the process. The WWTF is designed to biologically treat the wastewater in the oxidation ditch prior to the wastewater moving on to the clarifier for physical removal of sludge and scum and then through ultraviolet disinfection for removal of bacteria.

3. DESCRIPTION OF RECEIVING WATER

The WWTF discharges to a naturally occurring surface water channel which runs approximately 400 meters into the Missouri River, and the Missouri River is considered the receiving water for the WWTF. The town of Poplar is approximately 100 miles downstream from the Fort Peck Dam, one of the largest dams in the United States. It creates the fifth largest man-made lake in the U.S., the Fort Peck Reservoir. Thus, the Missouri River is a large, regulated river at this location. Downstream from the point of the WWTF's discharge, the Missouri River flows approximately 90 miles to the North Dakota border. This section of the river is in hydrologic unit code (HUC) 10060005 (Charlie-Little Muddy). The Missouri River forms a boundary between the Fort Peck Reservation (to the north) and state of Montana (to the south). See section 6.2 for discussion on beneficial uses and water quality standards in this portion of the river.

The relevant critical flow statistics for the Missouri River in the vicinity of the WWTF are based on the Tribes' "Critical Conditions Policy" (see footnote, page 9) and use biologically-based low flows for acute and chronic aquatic life criteria. For human health criteria, a harmonic mean flow is used. A biologically-based low flow is computed based on all low flow events within a period of record, even if several occur in one year, and reflects the empirically observed frequency of biological exposure during a period of record. The relevant tribal critical conditions are listed below:

- Chronic aquatic life, and chronic human health (non-carcinogens): 4B3
- Acute aquatic life, and acute human health (non-carcinogens): 1B3
- Human health (carcinogens): harmonic mean flow

The term 4B3 means the lowest four-day average flow that occurs once every three years. The term 1B3 means the lowest one-day average flow that occurs once every three years.

The following flow statistics were obtained from the United States Geological Survey (USGS) Surface Water Toolbox tool for the period 1947 (the year in which the upstream Fort Peck Reservoir first reached full pool) to 2019, at USGS 06177000 Missouri River near Wolf Point, MT. This USGS site is approximately 25 miles upstream from the WWTF, and the drainage area is about 7% less than the drainage area of the Missouri River at the WWTF. This additional 7% of drainage area is mainly due to the Poplar River basin, which flows into the Missouri River just upstream of the WWTF discharge.

- 4B3: 3,190 cubic feet per second (cfs)
- 1B3: 2,620 cfs
- Harmonic Mean: 8,070 cfs

4. PERMIT HISTORY

Plant Performance and Compliance History

The City of Poplar had compliance issues during the previous permit cycle and up to present date (Table 1). The previous WWTF discharge permit expired on September 30, 2016. The WWTF is currently working with EPA compliance and enforcement staff, the U.S. Department of Agriculture – Rural Development, and Indian Health Service to make improvements to the WWTF and resolve compliance issues related to past effluent violations. The expected completion of these physical treatment plant upgrades is early 2020.

The previous permit included requirements to monitor for parameters in addition to those listed in Table 1. No monitoring data were received for the required ammonia, nitrate, phosphorus, or metals screen. These monitoring requirements are being continued into the Permit, and the monitoring frequency in some cases is being increased (see section 5).

Table 1. WWTF Discharge Monitoring Report (DMR) data taken from the Integrated Compliance Information System (ICIS) (Data from 1/1/2013 through 12/31/2017 – No data has been submitted since 2017.)

Parameter	Permit Limit(s)	Reported Average 30-Day/7-Day	Reported Range	Number of Data Points 30-Day/7-Day	Number of Violations 30-Day/7-Day
Flow, million gallons per day <u>a/</u>	---	0.34	0.26-0.52	44	---
Biochemical Oxygen Demand (BOD ₅), mg/L <u>b/</u>	30/45	91/91	4-260	45/45	30/25
BOD ₅ Percent Removal (%)	85	61	0-99	45	29
Total Suspended Solids (TSS), mg/L <u>b/</u>	30/45	70/70	12-740	35/35	30/19
TSS Percent Removal (%)	85	61	0-88	35	30
Fecal Coliform, # organisms/100 mL <u>b/</u>	200/400	262,000/262,000 <u>c/</u>	4,100-7,240,000	26/26	26/26
<i>E. coli</i> , # organisms/100 mL <u>b/</u>	126/235	270,000/270,000 <u>c/</u>	1,259-8,880,000	41/41	41/41
pH, standard units <u>d/</u>	6.5-9.0	7.35	6.2-8.7	46	2
Oil and Grease, mg/L <u>e/</u>	10	0.22	0-10	46	0

a/ A reported 30-day average value from October 2014 of 3,727 MGD was removed from the flow statistics as a likely reporting error.

b/ Data are provided for both 30-day average and 7-day average.

c/ Reported averages are geometric means.

d/ Limitation is a range, pH shall not to be less than 6.5 nor greater than 9.0 standard units at any time.

e/ Grab samples were only required if a visible sheen was present.

5. MAJOR CHANGES FROM PREVIOUS PERMIT

- The frequency of monitoring will be increased from annually to monthly for all nitrogen and phosphorus monitoring
- Temperature monitoring requirements have been added to the Permit (no effluent limits).
- The calculated *load limitations* (lbs/day) for BOD₅ and TSS will be not be continued in the Permit. The previous permit mistakenly developed load limitations for the Poplar River, but the WWTF discharges to the Missouri River. Concentration-based limits for BOD₅ and TSS will remain in the Permit as required in 40 CFR Part 133.
- Limitations on fecal coliform will not be continued in the Permit. Tribal water quality standards do not include fecal coliform or *E. coli* criteria for the Missouri River. The previous permit mistakenly referenced water quality standards for the Poplar River. The effluent limitations for *E. coli* will be kept but modified based on the EPA's 2012 Recreational Water Quality Criteria and the state of Montana *E. coli* water quality standards.
- The requirement to perform acute Whole Effluent Toxicity (WET) testing is being added due to compliance issues and violations of several parameters in the previous permit cycle. Compliance information, coupled with recent enforcement inspection findings of industrial users discharging to the WWTF, indicate reasonable potential to violate tribal water quality standards. If WET monitoring confirms reasonable potential to cause or contribute to an exceedance of the narrative standards, the Permit may be reopened to include a WET limitation.
- As previously identified in section 2.1 (Facility Description) of this SoB, the EPA Region 8 NPDES inspections performed in 2013 and 2019 identified that the WWTF services commercial and industrial users in addition to residential users. Due to the discrepancy between the renewal application information received from the WWTF and the EPA Region 8 inspection observations, an Industrial Waste Survey (IWS) shall be developed and maintained by the WWTF to ensure that the WWTF is aware of the nature of the discharges it is receiving from the service area, in alignment with the objectives of the general pretreatment regulations (40 CFR Part 403.2). This IWS requirement shall be completed within twelve (12) months of Permit issuance.

6. PROPOSED PERMIT LIMITATIONS

6.1. Technology Based Effluent Limitations (TBELs)

TBELs represent the minimum level of control that must be imposed by an NPDES permit based on available technology. 40 CFR Part 133 defines the minimum treatment requirements for secondary treatment, or treatment equivalent to secondary treatment, for publicly owned treatment works (POTWs) (Table 2).

Table 2. Secondary treatment standards

Parameter	30-day average (mg/L)	7-day average (mg/L)	30-day average percent removal (%)
BOD ₅	30	45	85%
TSS	30	45	85%
pH	Maintained within the limits of 6.0 to 9.0		

Additionally, the EPA Region 8 has developed a visual narrative “sheen or floating oil” requirement for POTWs in alignment with 40 CFR Part 401.161 which lists “oil and grease” as a conventional pollutant (as related to technology-based limitations in line with 40 CFR 125.3(h)(1)2) pursuant to section 304(a)(4)3 of the Act, as well as the 1986 National Recommended Aquatic Life Criteria which recommends that “surface waters shall be virtually free” from floating oils of petroleum origin and floating nonpetroleum oils of vegetable or animal origin, as “floating sheens of such oils result in deleterious environmental effects.” A concentration limitation of 10 mg/L has been established, as it has been associated with sheen and oil/grease discharges to some degree in several EPA documents. The EPA Region 8 considers this protocol to be a technology-based effluent limitation for POTWs.

6.2. Water Quality Based Effluent Limitations (WQBELs)

The WWTF discharges to the Missouri River. A general description of the receiving water can be found in section 3. Because the Missouri River in this vicinity forms the boundary between the Fort Peck Reservation to the north and the State of Montana to the south, beneficial uses and applicable water quality standards from both entities were considered in the development of WQBELs.

Water quality standards are established to protect both aquatic life and human health (based on consumption of organisms and/or water). When both apply, the EPA considers the more stringent of the two for final effluent limits.

6.2.1. Fort Peck Assiniboine and Sioux Tribes Water Quality Standards

The Assiniboine and Sioux Tribes have been approved by the EPA for treatment as a state to implement and manage a water quality standards (WQS) regulatory program. The EPA approved the Tribes’ most recent tribal water quality standards in 2018.¹ According to the tribal WQS, the Missouri River has beneficial use designations for:

- Public Water Supply (goal – the waters are presently not fully suitable but are intended to become fully suitable for the designated use)
- Class 1 Cool Water Aquatic Life
- Primary Contact Recreation

¹ Fort Peck Assiniboine and Sioux Tribes, Revised Water Quality Standards for the Fort Peck Indian Reservation, Office of Environmental Protection, approved 2018.

- Industrial
- Navigation
- Agriculture
- Cultural

Relevant numeric tribal WQS include those for ammonia, nitrate + nitrite, pH, temperature, and metals. Ammonia, nitrate + nitrite, temperature, and metals will be discussed further in section 6.3. The tribal WQS for pH for the Missouri River is the range of 6.5-9.0.

In addition to the numeric criteria that apply to this segment of the Missouri River, the Tribes' narrative criterion applies. It states that all surface water on the reservation shall be free from substances attributable to wastewater discharges or other pollutant sources that:

- settle to form objectionable deposits;
- float as debris, scum, oil, or other matter forming nuisances;
- produce objectionable color, odor, taste, or turbidity;
- cause injury to, or are toxic to, or produce adverse physiological responses in humans, animals, or plants; or
- produce undesirable or nuisance aquatic life.

Tribal WQS do not include biological criteria (including limits for fecal coliform and *E. coli*) for the Missouri River at this time, although they stipulate that water quality in the Missouri River shall be maintained sufficient to fully support all designated uses. Additionally, the EPA recommends *E. coli* limits based on its 2012 Recreational Water Quality Criteria. These recommended limits are that the geometric mean number of *E. coli* should not be greater than 126 colony forming units per 100 milliliters in any 30-day interval, and there should not be greater than a 10% excursion frequency of 410 colony forming units per 100 milliliters in any 30-day interval.

Tribal WQS include a mixing zone and dilution policy. The policy provides a dilution allowance equal to the critical low flow in the receiving water when the discharge mixes in a near instantaneous and complete manner and for minor POTWs where the discharge does not mix in a near instantaneous and complete manner. Tribal WQS do not require a designated mixing zone when these requirements are met. The tribal WQS also reference the "EPA Region VIII Mixing Zone and Dilution Policy" as guidance in developing dilution allowances. The EPA policy states that POTWs that are classified as minor dischargers *and* discharge to a river/stream segment at a dilution ratio greater than or equal to 50:1 shall be presumed to pose insignificant environmental risks, and up to the full chronic aquatic life, acute aquatic life and human health critical flows may be provided as a dilution allowance. Based on tribal WQS and the "EPA Region VIII Mixing Zone and Dilution Policy," a dilution allowance equal to the critical flow has been provided to the WWTF for several parameters and is further described in section 6.3.

6.2.2. State of Montana Water Quality Standards

The Missouri River (mainstem) from the Milk River to the North Dakota boundary is classified as B-3. Waters classified B-3 are to be maintained suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and propagation

of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

Relevant numeric state WQS include those for ammonia, nitrate + nitrite, pH, temperature, *E. coli*, and metals. The state has not developed nutrient criteria for the Missouri River at this time. Ammonia, nitrate + nitrite, temperature, and metals will be discussed further in section 6.3.

The state WQS for pH for this receiving water is:

- Induced variation of hydrogen ion concentration (pH) within the range of 6.5 to 9.0 must be less than 0.5 pH units. Natural pH outside this range must be maintained without change. Natural pH above 7.0 must be maintained above 7.0.

The state WQS for *E. coli* for this receiving water are:

- From April 1 through October 31, the geometric mean number of *E. coli* may not exceed 126 colony forming units per 100 milliliters and 10 percent of the total samples may not exceed 252 colony forming units per 100 milliliters during any 30-day period; and
- From November 1 through March 31, the geometric mean number of *E. coli* may not exceed 630 colony forming units per 100 milliliters and 10 percent of the samples may not exceed 1,260 colony forming units per 100 milliliters during any 30-day period.

6.2.3. Total Maximum Daily Loads (TMDLs)

Although the Assiniboine and Sioux Tribes have adopted water quality standards that have been approved by the EPA, they have not listed water bodies as impaired and developed a 303(d) list to require TMDLs. However, the state of Montana currently lists this segment of the river (AUID MT40S003_010) as not fully supporting aquatic life due to flow regime modification and temperature impairments and requires a TMDL to address the factors causing the impairment or threat. See section 6.3.3 for more discussion on temperature requirements.

6.3. Dilution Allowance and Reasonable Potential (RP) Determinations

The “EPA Region VIII Mixing Zone and Dilution Policy” provides an “insignificant environmental risk” allowance for minor POTWs that discharge with a dilution ratio greater than or equal to 50:1. The dilution ratio is defined as the chronic low flow of the segment upstream of the facility divided by the mean daily flow of the facility. The Poplar WWTF is a minor POTW with a design flow rate of 0.6 MGD (0.93 cfs) and an average discharge flow rate of 0.34 MGD (0.53 cfs) (Table 1). The relevant low flow statistics in the Missouri River at this location are all above 2,600 cfs (see section 3). Thus, the *minimum* dilution ratio for the WWTF is approximately 5,000:1, and this facility qualifies for allowing full critical stream flow for a dilution allowance for calculations of acute, chronic, and human health water quality based effluent limits in the Permit.

The statistical methods presented in Chapter 3 of the EPA’s “Technical Support Document for Water Quality-based Toxics Control” (TSD) were used to determine if individual pollutants had reasonable potential (RP) to cause exceedances to tribal WQS and state WQS where they exist. A simple mixing model using full critical streamflow was used for all RP calculations (Equation 1).

$$\text{Equation 1: } C_r = \frac{Q_s C_s + Q_d C_d}{Q_r}$$

Where C_r is the concentration of the pollutant in the water body downstream of the discharge, Q_s is the critical upstream flow, C_s is the background upstream concentration of the pollutant, Q_d is the critical effluent flow from discharge flow data, C_d is the critical effluent pollutant concentration, and Q_r is the sum of the critical stream flow and critical effluent flow ($Q_s + Q_d$).

All RP calculations were performed in a spreadsheet and are part of the administrative record.

6.3.1. Ammonia

Reasonable potential calculations were performed for both acute and chronic ammonia WQS. Neither tribal nor state WQS have human health criteria for ammonia. Ammonia criteria depend on the ambient pH and temperature in the receiving stream. To determine ambient receiving water conditions, pH and temperature data from USGS gage 06185500 (Missouri River near Culbertson MT – approximately 30 miles downstream from the WWTF) was analyzed. Between 1965 and 2013, 366 pH samples and 371 temperature samples were collected at this location. To determine the appropriate ammonia criteria, the 75th percentile of the unpaired pH and temperature data was used for chronic calculations and the 95th percentile of the pH data was used for acute calculations (Table 3). The choice of these percentiles is consistent with those used in other EPA-issued NPDES permits in Montana. Both tribal and state WQS have the same criteria for ammonia, so Table 3 represents the appropriate criteria for both entities. The stream pH and temperature dataset used in the analysis is part of the administrative record.

Table 3. Calculated Ammonia Water Quality Standards

Condition	Ambient Condition		Ammonia Water Quality Standard (mg N/L)
	pH	Temperature (°C)	
Acute (Salmonids Absent)	8.6 <u>a/</u>	N/A	2.65
Chronic	8.4 <u>b/</u>	17.0 <u>b/</u>	1.03

N/A- Not Applicable

a/ Based on the 95th percentile of the data.

b/ Based on the 75th percentile of the data.

The WWTF did not perform the required ammonia sampling in the previous permit term, so there was little data to calculate RP for ammonia. The WWTF provided one ammonia sample from April 2017, and took another one upon request in December 2019. The WWTF also took one total kjeldahl nitrogen (TKN) sample in June 2017. TKN is the sum of ammonia plus organic nitrogen. Due to a lack of data, the EPA used this sample as the equivalent of an ammonia sample, realizing that the TKN value was likely greater than the amount of ammonia in the effluent (i.e., some of the nitrogen in the TKN sample is likely organic nitrogen). The three samples ranged from 0.32 – 35.2 mg/L. The

upper end of this range is also the general upper end of the range of ammonia found in *untreated* domestic wastewater, so this likely represents a “worst-case” analysis of the ammonia concentration in the effluent.

Using these values for the effluent concentrations, a summary of the simple mixing calculation for RP is below (Table 4 and Table 5). Note that the calculated critical effluent pollutant concentration (C_d) in Table 4 is extremely conservative and is approximately an order of magnitude higher than that typically observed in untreated domestic wastewater.

Table 4. Calculation of critical effluent pollutant concentration for ammonia

Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Max (mg/L)	Number of Samples	Coefficient of Variation	Multiplier from TSD Table 3-1	C_d (mg/L)
27.2	35.2*	0.32	35.2	3	0.87	11.0	387

*This is a TKN sample as mentioned above.

For the reasonable potential calculations, background ammonia levels (C_s) in the Missouri River near the WWTF range from about 0 to 0.2 mg/L. An average value of 0.1 mg/L was used, the full critical stream flows (Q_s) from section 3 were used, and the critical discharge rate (Q_d) was based on a maximum monthly average flow of 0.52 MGD (0.81 cfs) (Table 1) for chronic calculations, and the design flow of 0.6 MGD (0.93 cfs) for acute calculations. Due largely to the high dilution ratio (a minimum of 5,000:1), there is no RP to cause exceedances in ammonia water quality standards in the Missouri River (Table 5), and ammonia effluent limits will not be included in the Permit. Since this analysis was performed with a minimal data set (only two ammonia samples and one TKN sample), ammonia monitoring will continue to be required in the Permit so this calculation can be re-visited in future permitting actions.

Table 5. Ammonia Reasonable Potential (RP) Calculations

Pollutant (criteria)	Critical Flow Used	Q_s (cfs)	C_s (mg/L)	Q_d (cfs)	C_d (mg/L)	Q_r (cfs)	C_r (mg/L)		WQS (mg/L)	RP?
Ammonia (acute)	1B3	2620	0.1	0.93	387	2621	0.24	<	2.65	NO
Ammonia (chronic)	4B3	3190	0.1	0.81	387	3191	0.20	<	1.03	NO

6.3.2. Nitrate + Nitrite

Tribal human health WQS include a criteria of 10 mg/L nitrate + nitrite for waters with designated uses as drinking water (i.e., the Missouri River), and state of Montana WQS include a criteria of 10 mg/L nitrate + nitrite for human health. Although nitrates have not been monitored in the WWTF discharge, background nitrate levels in the Missouri River near the WWTF range from about 0 to 0.3 mg/L. An RP analysis using a simple mixing model with full critical streamflow shows that nitrates in the WWTF discharge would have to be in the thousands of milligrams per liter to have RP to cause

a nitrate + nitrite exceedance in the Missouri River. For reference, typical total nitrogen levels in untreated domestic wastewater are well below 100 mg/L. Because of this, nitrate + nitrite effluent limits will not be included in the reissuance of this permit. However, nitrate + nitrite monitoring will be required as part of the calculation of total nitrogen, and so this determination can be re-visited using actual facility discharge data in future permitting actions.

6.3.3. Temperature

Tribal temperature WQS include both a maximum temperature (23° C for Class I Cool Water) and a range of allowable increases between 0.3° C and 0.5° C, depending on the ambient river temperature. State of Montana WQS allow for an increase between 0.5° F and 3° F (0.28° C and 1.7° C), depending on the ambient river temperature. Although temperatures have not been monitored in the WWTF discharge, an RP analysis using a simple mixing model with full critical streamflow shows that temperatures in the WWTF discharge would have to be well above 100° C (i.e., the boiling point of water) to increase ambient river temperatures by even 0.1° C. Thus, there is no RP for to cause a temperature exceedance in the Missouri River. However, this stream segment is listed as impaired by the state of Montana, and one impairment cause is temperature. Because of this, temperature monitoring only (no effluent limits) will be required so as to be able to inform a TMDL if one is developed in the future.

6.3.4. Metals

Both tribal and state WQS have criteria for metals and other toxics. High metals concentrations are typically found in industrial discharges. Since the WWTF accepts discharges from industrial sources (see section 2.1), metals may be present in the WWTF discharge. Additionally, the Fort Peck Reservation Rural Water System, which supplies the drinking water in Poplar, doses zinc orthophosphate into the drinking water system as a corrosion inhibitor at a rate of several milligrams per liter. The requirement for an annual metals screening will be retained in the Permit, and this data will be used to determine if the facility has reasonable potential to cause an exceedance of any metals WQS in the next permitting cycle. Total metals includes analysis for 10 metals listed as priority pollutants in Appendix A of 40 CFR Part 423: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. The Permit may also be reopened if toxicity is detected.

6.4. Final Effluent Limitations

Applicable technology-based and water-quality based effluent limits were compared, and the most stringent of the two was selected for the following effluent limits (Table 6).

Table 6. Effluent Limitations – Outfall 001

Characteristic	30-Day Average a/	7-Day Average a/	Daily Maximum a/	Limit Basis b/
Biochemical Oxygen Demand (BOD ₅), mg/L	30	45	-	TBEL
BOD ₅ Percent Removal (%) <u>c/</u>	85%	-	-	TBEL
Total Suspended Solids (TSS), mg/L	30	45	-	TBEL
TSS Percent Removal (%) <u>c/</u>	85%	-	-	TBEL
<i>Escherichia coli</i> (<i>E. coli</i>), Number/100 mL (April – October) <u>d/</u>	126	-	235	State of Montana WQC
<i>Escherichia coli</i> (<i>E. coli</i>), Number/100 mL (November – March) <u>d/</u>	126	-	410	EPA WQC
Oil and Grease (O&G), mg/L	-	-	10	TBEL
The pH of the discharge shall not be less than 6.5 or greater than 9.0 at any time.				Tribal WQS
There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall there be a discharge which causes a visible sheen in the receiving waters.				State/Tribal Narrative WQS

a/ See section 1 of the Permit for definition of terms.

b/ TBEL = Technology-Based National Secondary Standards from 40 CFR Part 133.102, WQS: Water Quality Standard, WQC: Water Quality Criteria

c/ Percent Removal Requirements (BOD₅ and TSS limitations): In addition to the concentration limits for BOD₅ and TSS, the arithmetic mean of the concentration for effluent samples collected in a 30-day consecutive period shall not exceed 15 percent of the arithmetic mean of the concentration for influent samples collected at approximately the same times during the same period (i.e., an 85 percent removal).

d/ The geometric mean shall be reported for *E. coli*. See section 1 of the Permit for more information on geometric means.

6.5. Antidegradation

On the Fort Peck Reservation, all reservation surface waters are provided one of three different levels of antidegradation protection (Tier 1 through Tier 3, with Tier 3 being the most protective). The Missouri River at the location of the WWTF is not specifically designated as Tier 1, 2, or 3 at this time, but tribal WQS “presume that most Tribal waters qualify for Tier 2 protection.” Tier 2 waters are high quality waters whose quality exceed levels necessary to support propagation of fish and wildlife and recreation in and on the water. Tier 2 waters shall have their quality maintained and protected unless degradation is allowed through an administrative process involving the Tribes, the EPA, and the public. The Tribes determine likelihood of significant degradation on a parameter-by-parameter basis.

Discharges from this facility are existing, and no proposed changes to effluent quality are proposed. Therefore, an antidegradation review is not necessary per the Tribes Antidegradation Policy and Review Process (see footnote page 9).

6.6. Anti-Backsliding

Federal regulations at 40 CFR Part 122.44(l)(1) require that when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit were based have materially and substantially changed since the time of issuance and would constitute cause for permit modification or revocation and reissuance under 40 CFR Part 122.62).

Most of the effluent limits in the previous permit are being carried over to this Permit to comply with the anti-backsliding regulatory requirements. All changes from the previous permit (see section 5) are either equal to or more stringent than previous limits, with the exception of dropping some of the effluent limits that were specific to discharges to the Poplar River (fecal coliform limits, portions of the *E. coli* limits, TSS and BOD load limits). These effluent limits were included in the previous permit on the mistaken assumption that the WWTF discharged to the Poplar River instead of the Missouri River. Correcting technical mistakes or mistaken interpretations of law are provided for in an exception to anti-backsliding requirements under 40 CFR Part 122.44(l)(2)(i)(B)(2).

7. MONITORING REQUIREMENTS

The following parameters shall be monitored during discharge from the WWTF as shown in Tables 7 and 8. If no discharge occurs during a monitoring period, “no discharge” shall be indicated on the DMR. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, as required in 40 CFR Part 122.41(j).

Influent monitoring samples shall be taken from the collection system just prior to entering any treatment process at the WWTF. Effluent monitoring samples shall be taken at or near Outfall 001, after all treatment processes but prior to discharge to the receiving water.

Table 7. Monitoring Requirements – Outfall 001.

Effluent Characteristic	Frequency	Sample Type <u>a/</u>
Flow, mgd <u>b/</u>	Continuous	Instantaneous
Biochemical Oxygen Demand (BOD ₅), mg/L <u>c/</u>	Monthly	Composite
BOD ₅ Percent Removal (%)	Monthly	Calculated
Total Suspended Solids (TSS), mg/L <u>c/</u>	Monthly	Composite
TSS Percent Removal (%)	Monthly	Calculated
<i>E. coli</i> , Number/100 mL <u>d/</u>	Monthly	Grab
Oil and grease, Visual	Weekly	Visual
Oil and grease, mg/L	<u>e/</u>	Grab
pH, standard units	Weekly	Grab/Instantaneous
Temperature, °C	Weekly	Grab/Instantaneous
Nitrate + Nitrite (as N), mg/L	Monthly	Composite
Total Kjeldahl Nitrogen (as N), mg/L	Monthly	Composite
Total Ammonia Nitrogen (as N), mg/L	Monthly	Composite
Total Nitrogen (TN), mg/L <u>f/</u>	Monthly	Calculated
Total Phosphorus (TP), mg/L	Monthly	Composite
Total Metals, µg/L <u>g/</u>	Annually	Composite
Whole Effluent Toxicity – Acute, LC50 <u>h/</u>	Quarterly	Grab

a/ See section 1 of the Permit for definition of terms.

b/ Flow measurements of effluent volume shall be made in such a manner that the Permittee can affirmatively demonstrate that representative values are being obtained. The average flow rate

during the reporting period and the daily maximum flow (maximum volume discharged during a 24-hour period) shall be reported (in million gallons per day).

- c/ Effluent sampling for BOD₅ and TSS shall occur concurrently with influent monitoring.
- d/ The geometric mean shall be reported for *E. coli*. See section 1 of the Permit for more information on geometric means.
- e/ If a visible sheen or floating oil is detected or observed in the discharge, a grab sample shall immediately be taken, analyzed and recorded in accordance with the requirements of 40 CFR Part 136.
- f/ For the purposes of this Permit, the term “Total Nitrogen (TN)” is defined as the calculated sum of analytical results from “Total Kjeldahl Nitrogen (TKN)” plus “Nitrate+Nitrite”.
- g/ “Total metals” includes analysis for the 10 metals listed as priority pollutants in Appendix A of 40 CFR Part 423: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc.
- h/ Report the LC50. See section 9.1 9.1 for more details.

Table 8. Monitoring Requirements – Influent.

Influent Characteristic	Frequency	Sample Type <u>a/</u>
Biochemical Oxygen Demand (BOD ₅), mg/L <u>b/</u>	Monthly	Composite
Total Suspended Solids (TSS), mg/L <u>b/</u>	Monthly	Composite

a/ See section 1 of the Permit for definition of terms.

b/ Influent sampling for BOD₅ and TSS shall occur concurrently with effluent monitoring.

8. REPORTING REQUIREMENTS

On December 21, 2015, the NPDES Electronic Reporting Rule (40 CFR Part 127) went into effect. This rule includes two phases. Phase 1 included the requirement that by no later than December 21, 2016, entities that are required to submit DMRs must do so electronically unless a waiver from electronic reporting is granted to the entity. Phase 2 includes the requirement that by no later than December 21, 2020, or as otherwise specified in 40 CFR Part 127, other specified reporting must be done electronically.

With the effective date of the Permit, the Permittee must electronically report DMRs on a quarterly frequency using NetDMR. Electronic submissions by permittees must be submitted to the EPA Region 8 no later than the 28th of the month following the completed reporting period (Table 9). Although the annual metals sampling can be completed at any time throughout the year, the compliance monitoring period for this analysis is considered to be the fourth quarter of every year, and thus the annual metals monitoring results are due on January 28. The Permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at <https://netdmr.zendesk.com/home>.

The reports that are to be submitted electronically after December 21, 2020, or as otherwise specified in 40 CFR Part 127, are to be submitted using the NPDES Electronic Reporting Tool (NeT). The instructions on how to use NeT are not yet available. In the future, the Permittee will receive instructions on how to use NeT. Until then, the Permittee shall continue to submit these reports in paper format by mailing them to the specified addresses.

In addition, the Permittee must submit a copy of the DMR to the Tribes. See section 5.5 of the Permit for more information on how to do this.

Table 9. Due Dates for Quarterly DMR Submittals

Compliance Monitoring Period	Due Date
January – March	April 28
April – June	July 28
July – September	October 28
October – December	January 28

9. SPECIAL CONDITIONS

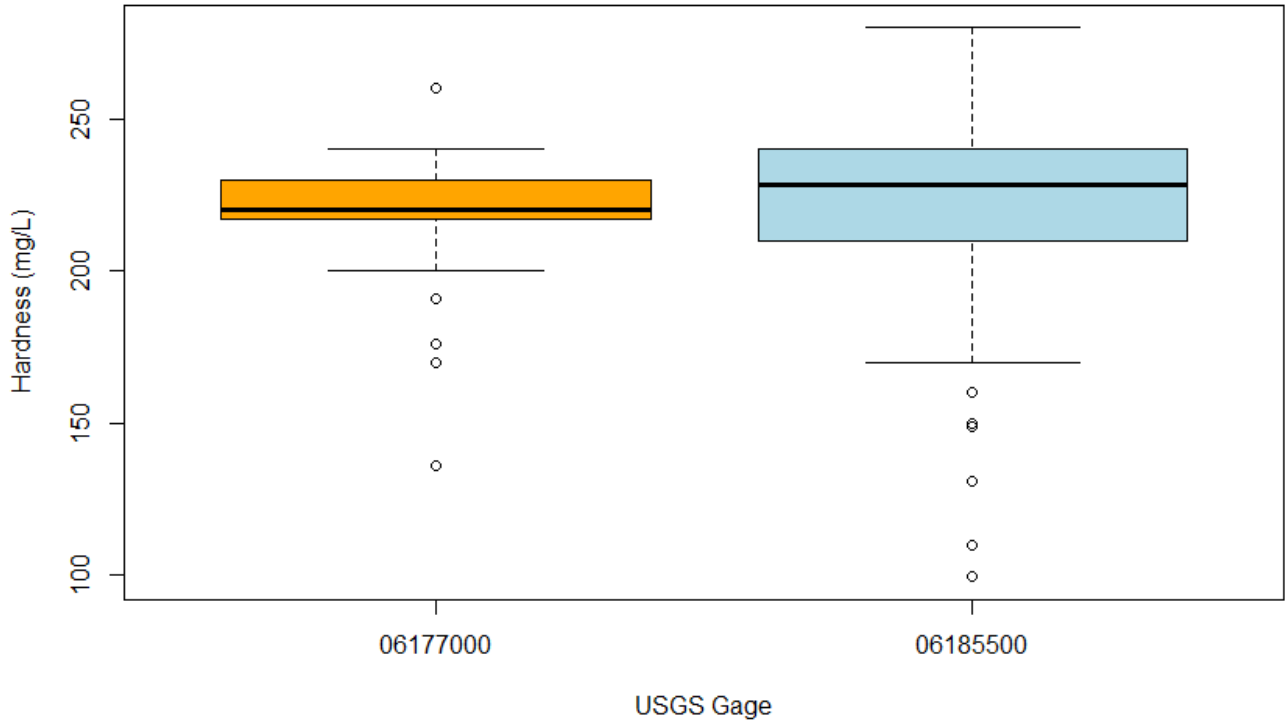
9.1. Whole Effluent Toxicity (WET) Testing

Many toxic pollutants have cumulative effects on aquatic organisms that cannot be detected by individual chemical testing. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Due to compliance issues and excursions of several parameters in the previous permit cycle, coupled with recent EPA inspection findings of industrial users discharging to the WWTF, the EPA has determined that reasonable potential exists to violate the Tribes’ narrative water quality criterion (section 6.2.1). Therefore, the requirement to perform acute WET testing is being added to the Permit. Acute WET testing shall be performed quarterly by the Permittee for two species: *Ceriodaphnia dubia* and *Pimephales promelas*. If WET testing confirms reasonable potential to cause or contribute to an exceedance of the narrative standards, the Permit may be reopened to include a WET limitation. Specific WET requirements are outlined in the Special Conditions section of the Permit (section 5.1).

Hardness requirements for WET testing in the Permit were determined by the receiving water quality data at two USGS gages on the Missouri River, one upstream of the facility (06177000) and one downstream of the facility (06185500). Receiving water hardness generally ranges from 200 to 240 mg/L (Figure 6).

Figure 6. Missouri River Hardness near Poplar, MT



9.2. Industrial Waste Survey (IWS) Requirements

As previously identified in section 2.1 (Facility Description) of this SoB, the EPA Region 8 NPDES inspections performed in 2013 and 2019 identified that the WWTF services commercial and industrial users in addition to residential users. These include the Indian Health Center and at least one other industrial source (an electronics manufacturer). Due to the discrepancy between the renewal application information received from the WWTF and the inspection observations, an Industrial Waste Survey (IWS) shall be developed and maintained by the WWTF to ensure that the WWTF is aware of the nature of the discharges it is receiving from the service area, in alignment with the objectives of the general pretreatment regulations (40 CFR Part 403.2). Specific IWS requirements are outlined in the Special Conditions section of the Permit (section 5.2), and general industrial waste management information can be found in section 7.11.

10. ENDANGERED SPECIES CONSIDERATIONS

The Endangered Species Act (ESA) of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any Federal action carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species (together, “listed” species), or result in the adverse modification or destruction of habitat of such species that is designated by the FWS as critical (“critical habitat”). See 16 U.S.C. Part 1536(a)(2), 50 CFR Part 402. When a Federal agency’s action “may affect” a protected species, that agency is

required to consult with the FWS, depending upon the endangered species, threatened species, or designated critical habitat that may be affected by the action (50 CFR Part 402.14(a)).

The U. S. Fish and Wildlife Information for Planning and Conservation (IPaC) website program was used to determine federally-listed Endangered, Threatened, Proposed and Candidate Species for the area near the WWTF (Table 10).

Table 10. Species Resource List

Species	Scientific Name	Status
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T
Least Tern	<i>Sterna antillarum</i>	E
Piping Plover CH	<i>Charadrius melodus</i>	T
Whooping Crane	<i>Grus americana</i>	E
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	E

Symbols/Acronyms:

T = Threatened

E = Endangered

CH = Critical Habitat

10.1. Biological Evaluations and Conclusions

The U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) tool was used to determine the listed species in the area. Review of these five listed species and the anticipated effects of the reissuance of the Permit are provided below.

Northern Long-eared Bat, *Myotis septentrionalis* – The threatened status for the bat is due to white-nose syndrome, a fungal disease. Additional threats to bat populations include destruction of nesting sites and caves. Discharges from the WWTF are not anticipated to affect bat populations or have any associated white-nose disease effects.

Least Tern, *Sterna antillarum* – The discharge from the WWTF is not anticipated to affect the Least Tern. This is because the discharge point from the WWTF is located inland of the Missouri River banks and shoreline, and the flow of the WWTF is not anticipated to affect the sandbars and/or reproductive success of the tern.

Piping Plover, *Charadrius melodus* – Effects from the discharge are not anticipated to affect the Piping Plover or its designated Critical Habitat, as the discharge from the WWTF flows are not anticipated to cause habitat disturbance and destruction, or disturbance of nesting adults and chicks. Their critical habitat typically occurs in riparian areas along riverine shorelines during migration, and unvegetated sand or pebble beaches in Montana during the summer months. Both of these habitat

types likely occur in the general vicinity of the WWTF. However, no alteration to shoreline habitat is being proposed with the reissuance of the Permit, and the effluent limitations established in the Permit are protective of beneficial uses.

Whooping Crane, *Grus americana* – Discharges from the WWTF are not anticipated to affect the Whooping Crane populations, as the WWTF is not located in the three wild population locations. Furthermore, for migratory populations, the effluent limitations established in the Permit are protective of the beneficial uses of the surrounding area.

Pallid Sturgeon, *Scaphirhynchus albus* – Effects to the Pallid Sturgeon are not anticipated based on the effluent limitations established in the Permit. Effluent limitations established in the Permit are based on protection of aquatic life in the receiving water. Limitations on ammonia, BOD, TSS, and pH either directly or indirectly support protection of these water quality standards. Additionally, the inclusion of Whole Effluent Toxicity monitoring with the Permit will ensure protections of aquatic life and the invertebrates necessary for aquatic life to feed upon.

Per the *Endangered Species Consultation Handbook* and the *Memorandum of Agreement Between the EPA, FWS, and NMFS Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act*, the EPA has determined that reissuance of this permit “may affect, but is not likely to adversely affect” listed threatened and endangered species. Due to the “may affect” determination, consultation with the U.S. FWS is required.

11. NATIONAL HISTORIC PRESERVATION ACT REQUIREMENTS

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. Part 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The U.S. National Park Service (U.S. NPS) National Register of Historic Places Database was used to determine and evaluate resources of concern in city of Poplar location.

The Fort Peck Agency site (reference number 70000365) is the only registered site near the WWTF. The location of the four historic buildings is approximately 1.2 miles north of the WWTF, and based upon the information provided by the NPS database, the EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources due to the Permit reissuance. During public notice of the Permit, the Tribal Historic Preservation Officer will be notified as an interested party to ensure that all historic properties are not negatively affected by the conditions of the Permit.

12. MISCELLANEOUS

The effective date and expiration date of the Permit will be determined upon issuance for a period not to exceed 5 years.

Drafted by VelRey Lozano, U.S. EPA (October 2019) and Erik Makus, U.S. EPA, (406) 457-5017 (February 2020)

ADDENDUM:

AGENCY CONSULTATIONS

On October 2, 2019, the USFWS concurred with the EPA's preliminary conclusion that reissuance of this permit is not likely to adversely affect listed species.

The Fort Peck tribal historic preservation office was notified of this draft permit, but did not provide any comments on the EPA's preliminary determination that reissuance of this permit will not impact any historic properties.

PUBLIC NOTICE AND RESPONSE TO COMMENTS

The Permit and statement of basis were public noticed in the Northern Plains Independent on April 9, 2020. The EPA received two comments. The comments received and the responses are provided below.

Comment #1 – Ryan Kopp, Interstate Engineering (consultant to the City of Poplar Public Works Department):

I have read through the draft permit, and I have one main concern. The fact that there will be a requirement for Whole Effluent Toxicity testing. The remoteness of Poplar combined with the cost to perform these tests are going to be a burden that the City will have to pass on to its rate payers.

The EPA's Response to Comment #1: Tribal water quality standards state that all surface water on the reservation shall be free from substances attributable to wastewater discharges or other pollutant sources that cause injury to, or are toxic to, or produce adverse physiological responses in humans, animals, or plants. As discussed in the statement of basis, the requirement to perform acute Whole Effluent Toxicity (WET) testing was added because recent compliance violations, coupled with recent enforcement inspection findings of industrial users discharging to the WWTF, indicate reasonable potential to violate this tribal water quality standard. The previous permit included requirements for collecting monitoring data that may have helped the EPA to determine whether or not the facility had reasonable potential to violate this standard, but the Permittee did not submit it.

However, the EPA understands that frequent WET testing does represent a significant economic burden on small, isolated cities such as Poplar. Therefore, while the WET testing requirements will remain in the Permit at a quarterly frequency, the number of consecutive "passing" WET tests required before the Permittee can request a reduction from quarterly sampling to semi-annual sampling will be reduced from 10 to 4. Thus, the Permittee will only have to pass four (4) consecutive WET tests before they can request this reduction. This changes the potential timeframe for reduced sampling from 2.5 years away to 1 year away.

Four quarterly tests will provide (at least) one year of data. This should be sufficient to evaluate possible seasonal and operational variability at the facility. Additionally, the Permit requires an Industrial Waste Survey and an annual metals screening within the first twelve months of the permit cycle. Thus, should the Permittee "pass" four consecutive quarters of WET tests and make a request for a reduced monitoring frequency, the EPA will have additional information available to help determine if reduced monitoring is appropriate. This change to the Permit should reduce the economic burden on the City of

Poplar if acute toxicity is not present in the effluent. The Permit language on page 11 has been modified as follows:

“If the DMR and laboratory report data results for ~~ten~~ four consecutive WET tests indicate no toxicity the Permittee may make a request, in writing, to the permitting authority to allow a reduction to semiannual testing.”

Comment #2 – Ryan Kopp, Interstate Engineering (consultant to the City of Poplar Public Works Department):

I am also worried that when the treatment facility begins treating, it’s going to take a few months to get all of the biology working in it, thus making it difficult to pass the initial tests which would then require more frequent WET testing. This will impose a cost of tens of thousands of dollars on the rate payers in Poplar.

The EPA’s Response to Comment #2: The facility should ensure that all biological processes are working properly prior to discharge because those processes are necessary to ensure the facility meets both its technology based effluent limits and its water quality-based effluent limits. Because the WET monitoring requirement is an important component in demonstrating compliance, the Permittee must begin WET testing in the first quarter that it starts discharging. However, the EPA notes that the Permittee has discretion as to when it collects its samples within each quarter as long as it is representative of the discharge during the quarter.

No changes were made to the Permit as a result of this comment.