



Water Quality Division
Montana Pollutant Discharge Elimination System (MPDES) - Fact Sheet

Permittee:	Town of Wibaux
Permit No.:	MT0020516
Receiving Water:	Beaver Creek
Outfall Location:	46.995387° N, 104.184686° W
Facility Information	
Name:	Town of Wibaux Wastewater Treatment Facility
Location:	46.994722° N, 104.185278° W 94 Sewage Disposal Access Road Wibaux, MT 59353
Contact:	Wes Bacon, Public Works Director Debra Zinda, Clerk
Fee Information	
Type of Facility:	Minor Publicly Owned Treatment Works
Number of Outfalls:	1 (For Fee Determination Only)
Type of Outfall:	001 – Facility Discharge
Fact Sheet Date:	December 2020

lift station near the aerated Cell 1. At the transfer pump lift station, there is a temporary pipe attached to the valve pit. To discharge, the Town of Wibaux manually opens a check valve and the treated effluent flows through the pipe from the valve pit to Beaver Creek. The facility usually discharges once a year, sometime between August and November.

The reconstructed WWTF was designed to be a full retention system, and was not designed for discharge. A study conducted by Stahly Engineering in conjunction with DEQ in July 2016 estimated 7,200 gallons per day of inflow and infiltration, which was concluded not to be significant inflow or infiltration. However, the WWTF is undersized and the Town of Wibaux was forced to discharge from the new cells by 2013. The WWTF discharged to an ephemeral drainage of Yates Creek under the Domestic Sewage Treatment Lagoons MPDES General Permit, number MTG580037. This discharge was authorized in 2013 and expired on January 1, 2018. As a result, Wibaux is no longer authorized to discharge under the General Permit.

Wibaux wants to retain their capability to discharge, so are continuing the MPDES permit to discharge effluent to Beaver Creek. Wibaux plans to switch to a land application system so the WWTF can irrigate the wastewater instead of discharging to Beaver Creek. Because these plans have not been solidified at the time of this permit renewal, the permit limits and reasoning are based on the data available from 2014-2019, without consideration of possible design changes.

C. Existing Permit Requirements

Table 1 lists the effluent limits for Wibaux as described in the 2012-issued permit.

Table 1. 2012-Issued Permit Limits for MT0020516				
Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾	Maximum Daily Limit ⁽¹⁾
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45	-
	lb/day	10	15	-
	% Removal	85%	-	-
Total Suspended Solids (TSS)	mg/L	45	65	-
	lb/day	15	21.7	-
	% Removal	65%	-	-
pH	s.u.	Within the range of 6.0 and 9.0		
<i>E.Coli</i> Bacteria, Summer ⁽²⁾	cfu/100mL	126 ⁽³⁾	252 ⁽³⁾	-
<i>E.Coli</i> Bacteria, Winter ⁽²⁾	cfu/100mL	630 ⁽³⁾	1260 ⁽³⁾	-
Total Residual Chlorine (TRC) ^(4,5)	mg/L	0.011	-	0.019
Total Ammonia, as N	mg/L	1.2	-	2.3
(1) See Definitions section at the end of the MPDES permit for explanation of terms (2) <i>Escherichia coli</i> bacteria - summer is April 1 through October 31, winter is November 1 through March 31 (3) Geometric mean. (4) This limit only applies if chlorination is used for disinfection. (5) Analysis of effluent with results ≤ 0.1 mg/L is considered to be in compliance with the TRC limit.				

D. Effluent Characteristics

Because treatment has remained consistent for the period of record (POR), effluent data from October 2014 to September 2019 were selected to represent the POR. These dates describe the period in which Wibaux WWTF discharged effluent under this permit, and are representative of the facility's effluent quality. A total of five years of data is described, as the facility did not discharge in 2015. Table 2 summarizes effluent quality as reported on discharge monitoring reports.

Table 2. Outfall 001 Effluent Characteristics October 2014 to September 2019					
Parameter	Units	Minimum Value	Maximum Value	Average Value	Sample Size
Duration of Discharge ⁽¹⁾	day	5	54	29	5
Temperature	°C	14.3 ⁽²⁾	18.3	16.3	5
Flow Rate	mgd	0.093 ⁽²⁾	0.317	0.15	9
Conventional Pollutants:					
Biochemical Oxygen Demand (BOD ₅)	mg/L	14 ⁽²⁾	73 ⁽³⁾	48.6	9
	lb/day	11 ⁽²⁾	108 ⁽³⁾	56.4	9
	% Removal	69 ⁽⁴⁾	95 ⁽⁴⁾	82.7	6
Total Suspended Solids (TSS)	mg/L	52 ⁽²⁾	251 ⁽²⁾	139	9
	lb/day	40.3 ⁽²⁾	450 ⁽³⁾	213	9
	% Removal	34 ⁽⁴⁾	85 ⁽⁴⁾	50	4
pH	s.u.	7.8	10	9.3	9
<i>E. Coli</i> Bacteria, Summer	cfu/100mL	1 ⁽²⁾	11000 ⁽²⁾	1465	8
<i>E. Coli</i> Bacteria, Winter	cfu/100mL	1 ⁽²⁾	1 ⁽²⁾	1	1
Oil and Grease	mg/L	0	0	0	1
Nonconventional Pollutants:					
Total Ammonia, as N	mg/L	0.07 ⁽²⁾	11.2	1.5	5
	lb/day	0.08 ⁽²⁾	47.5 ⁽²⁾	11.5	5
Nitrate plus Nitrite, as N	mg/L	0.01	0.07	0.03	5
Kjeldahl Nitrogen, as N	mg/L	6.7	30	15	4
Total Nitrogen, as N	mg/L	2.3	30	14	4
Total Phosphorus, as P	mg/L	2.3	5.7	4.3	4
(1) To determine the duration of a discharge event, data from consecutive months were considered one discharge event (i.e. one sample). The maximum consecutive months was two.					
(2) Based off reported monthly average or geometric mean.					
(3) Based off reported weekly average.					
(4) Based off reported monthly minimum.					

E. Compliance History

Wibaux WWTF had 81 exceedance violations during the POR and DEQ conducted three compliance evaluation inspections during the POR. Violations include effluent limit exceedances of parameters BOD₅, TSS, pH, *E. coli*, and total ammonia. Other violations include reporting violations, record keeping violations, sampling violations, improper operation and maintenance, improper analysis, failure to conduct analysis, failure to sample, failure to maintain records, and late submission of DMRs. DEQ continues to actively work with Wibaux on these issues.

III. Receiving Waters

The Town of Wibaux WWTF discharges to Beaver Creek.

A. Receiving Water Summary

The following information is used to develop water quality based effluent limits:

▪ Water Use Classification:	C-3
▪ Watershed:	Little Missouri/Belle Fourche
▪ Waterbody Name/Location:	Beaver Creek, headwaters to North Dakota Border
▪ Montana Stream Segment:	MT39G001_010
▪ USGS Hydrologic Unit Code:	10110204
▪ USGS Stream Gage:	Beaver Creek near Wibaux, 06336500
▪ Ecoregion:	Northwestern Great Plains
▪ Identified as Impaired:	No
▪ Total Maximum Daily Load (TMDL):	None
▪ Salmonids and early life stages:	Not Present; Present
▪ 7Q10 (7-day, 10-year average low flow):	0.02 cubic feet per second (cfs)
▪ Dilution Ratio:	0.085:1

B. Water Use Classification

According to Montana Water Use Classifications, this section of Beaver Creek is classified as C-3. The goal of the state of Montana is to maintain C-3 class waters suitable for:

- bathing, swimming, and recreation; and
- growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers.

The quality of these waters is naturally marginal for:

- drinking, culinary, and food processing purposes, after conventional treatment; and
- agricultural and industrial water supply.

C. Impairments

This segment of the Beaver Creek is not listed as impaired.

D. Applicable Water Quality Standards

Each waterbody classification has numeric and narrative water quality standards designed to ensure that beneficial uses are protected.

E. Ambient Stream Conditions

1. Instream Pollutant Concentrations

Recent ambient (instream/upstream) water quality data for Beaver Creek upstream of Wibaux WWTF is available from sampling done by the facility for the POR. Table 3 shows the upstream water quality parameters necessary for calculations.

Table 3. Beaver Creek Relevant Upstream Pollutants and Comparison to Water Quality Standards					
<u>Receiving Water Quality</u>			<u>Water Quality Standards</u> ⁽¹⁾		
Parameter	Sample Size	75 th Percentile	Aquatic Life		Human Health
			Acute	Chronic	
Total Ammonia (mg/L)	3	0.07 ⁽²⁾	4.71 ⁽³⁾	1.26 ⁽⁴⁾	-
Nitrate plus Nitrite, as N (mg/L)	4	0.02 ⁽²⁾	-	-	10
Kjeldahl Nitrogen, as N (mg/L)	3	0.65	-	-	-
Total Nitrogen, as N (mg/L)	4	0.625	-	-	-
Total Phosphorus, as P (mg/L)	4	0.046	-	-	-
pH (s.u.)	3	8.3	6.5 – 9.0		
Temperature (°C)	3	17.5	Varies Depending on Current Receiving Water Temperature		
(1) From circular DEQ-7 and ARM 17.30.629 C-3 Classification Standards.					
(2) No detection reported on all samples, reporting level (RL) represents the 75 th percentile.					
(3) Based on absence of salmonids and the 75 th percentile of pH.					
(4) Based on presence of early life stages of fish and the 75 th percentile of pH and temperature.					

2. Low Flow

In the 2012 Fact Sheet, the 7-day, 10-year average low flow (7Q10) for the receiving water was calculated using flow data from USGS gaging station (06336500) on Beaver Creek. The USGS gage is about 0.5 miles upstream of the WWTF discharge point with no substantial tributaries, return flows, or withdrawals between the gage and the facility. The USGS gage was active from 1938 – 1983. Due to the area and creek's relatively small size, no additional representative gages were present. As a result, the same USGS gage data set was used in this permit despite being an older data set.

To justify the stream gage measurements, the monthly average flow was compared to the monthly average precipitation from a weather monitoring station located in Wibaux, MT. The monthly averages from 1938 – 1983 varied only slightly from monthly averages from 1984 – 2020. The 2012 Fact Sheet used a 7Q10 value of 0 cfs in the reasonable potential analysis. Updated methodology for 7Q10 calculations determined the following value for reasonable potential analysis in this permit:

- 7Q10 = 0.02 cfs = 0.013 mgd

IV. Technology-Based Effluent Limits (TBELs)

Technology-based effluent limitations (TBELs) represent the minimum treatment requirements implemented in MPDES permits. The limits are based on actual, available control technologies to treat pollutants, and must be met prior to dilution. The Montana Board of Environmental Review has adopted by reference 40 CFR 133, which defines minimum requirements for secondary treatment for publicly owned treatment works (POTWs).

A. Applicable Effluent Limits

1. National Secondary Treatment Standards (NSS)

40 CFR 133 defines minimum treatment requirements for secondary treatment or equivalent for POTWs as measured by pH, BOD₅, TSS, and percent removal of BOD₅ and TSS. Wibaux

WWTF is currently held to NSS for BOD₅ and Treatment Equivalent to Secondary (TES) treatment for TSS.

Facultative wastewater lagoons may be eligible for TES standards if effluent concentrations consistently achievable through proper operation and maintenance of the facility exceed NSS. DEQ re-evaluated the secondary treatment standards at Wibaux and found:

For BOD₅:

- The 95th percentile monthly average of BOD₅ was higher than 30 mg/L for the POR.
- The WWTF did not retain proper operation and maintenance.
- Thus, BOD₅ will continue to be held to NSS.

For TSS:

- The 95th percentile monthly average was higher than 30 mg/L for the POR.
- The WWTF did not retain proper operation and maintenance.
- TSS will no longer to be held to TES treatment, but will be held to NSS.

Table 5 below summarizes the TBELs applicable to Wibaux; set at the National Secondary Standards. NSS includes:

- BOD₅ and TSS monthly average: must not exceed 30 mg/L
- BOD₅ and TSS weekly average: must not exceed 45 mg/L
- BOD₅ and TSS monthly average % removal: must not be less than 85%
- pH: must be within the range of 6.0 to 9.0

2. Mass-Based Expression of Limits

Effluent limits must be expressed in terms of mass and are identified as load (pounds/day) when suitable. Exceptions include parameters that cannot be appropriately expressed in mass, such as pH and temperature. The following equations were used to calculate the BOD₅ and TSS mass-based load allocations using the TBEL concentrations associated with national secondary treatment standards, the design flow of 0.04 mgd, and a conversion factor:

$$BOD_5 \text{ and TSS monthly average load} = 0.04 \text{ mgd} \times 30 \frac{\text{mg}}{\text{L}} \times 8.34 \frac{\text{lb} \cdot \text{L}}{\text{Mgal} \cdot \text{mg}} = 10 \frac{\text{lb}}{\text{day}}$$

$$BOD_5 \text{ and TSS weekly average load} = 0.04 \text{ mgd} \times 45 \frac{\text{mg}}{\text{L}} \times 8.34 \frac{\text{lb} \cdot \text{L}}{\text{Mgal} \cdot \text{mg}} = 15 \frac{\text{lb}}{\text{day}}$$

Load limits for BOD₅ and TSS will apply to the effluent and the monthly average load limit will be maintained at the more stringent of the nondegradation load allocations or mass-based loading limits, as discussed next.

B. Nondegradation

Montana's nondegradation policy prevents degradation of state waters and ensures that existing uses continue to be achieved. Nondegradation allocated loads established in 1993 for Wibaux WWTF are compared to the actual average loads discharged from the facility for the POR:

Table 4. Nondegradation Allocated Loads from 2012-Issued Permit						
Nondegradation Allocated Limits		Average Monthly Load (lb/day)				
Parameter	Load (lb/day)	2014	2016	2017	2018	2019
BOD ₅	18	13	44	59	53	65
TSS	26	53	120	115	388	250

C. Final Technology-Based Effluent Limits

Table 5. Technology-Based Effluent Limits for Outfall 001			
Parameter	Units	Average Monthly Limit	Average Weekly Limit
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45
	lb/day	10	15
	% Removal	85%	-
Total Suspended Solids (TSS)	mg/L	30	45
	lb/day	10	15
	% Removal	85%	-
pH	s.u.	Within the range of 6.0 and 9.0	

V. Water Quality-Based Effluent Limits (WQBELs)

Permits are required to include Water Quality-Based Effluent Limits when TBELs are not adequate to protect state water quality standards. WQBELs are developed for each parameter demonstrating reasonable potential to cause or contribute to an excursion from any water quality standard.

A. Scope and Authority

The Montana Water Quality Act states that a permit may only be issued if DEQ finds that it will not result in pollution of any state waters. No wastes may be discharged that can reasonably be expected to violate any state water quality standards. Montana water quality standards define both water use classifications for all state waters, and numeric and narrative standards that protect those designated uses. MPDES permit limitations must control all pollutants which will cause or have reasonable potential (RP) to cause or contribute to an excursion above any state water quality standard, including narrative criteria.

B. Applicable Water Quality Standards

Discharge from the Wibaux WWTF must comply with general prohibitions (narrative standards) which require that state waters, including mixing zones, must be free from substances which will:

- (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
- (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter), or globules of grease or other floating materials;
- (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;

- (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and
- (e) create conditions which produce undesirable aquatic life.

C. Pollutants of Concern

Pollutants and parameters are identified as a pollutant of concern for the following reasons:

- Listed as TBELs
- Identified as needing WQBELs in the previously issued permit
- Identified as present in effluent monitoring or otherwise expected present in the discharge
- Associated with impairment which may or may not have a wasteload allocation (WLA) in a total maximum daily load (TMDL).

The need for additional WQBELs is based on reasonable potential for pollutants to exceed numeric or narrative water quality standards. Pollutants specific to the Wibaux WWTF are identified in Table 6. Identification of a pollutant of concern (POC) is not an indication that WQBELs are necessary, but an indication that further evaluation is required.

Table 6. Identification of Pollutants of Concern for WQBELs	
Parameter	Basis for POC Identification
<i>Conventional Pollutants:</i>	
BOD ₅	TBEL, Previous permit
TSS	TBEL, Previous permit
pH	TBEL, Previous permit
<i>Escherichia coli (E. coli)</i>	WQBEL in Previous Permit
Oil and Grease	WQBEL in Previous Permit
<i>Nonconventional Pollutants:</i>	
Total Residual Chlorine (TRC)	WQBEL in Previous Permit
Total Ammonia, as N	WQBEL in Previous Permit
Nitrate + Nitrite, as N	Known Present
Total Nitrogen, as N	Known Present
Total Phosphorus, as P	Known Present

D. Mixing Zone

A mixing zone is an area where the effluent mixes with the receiving water and certain water quality standards may be exceeded. For Wibaux, no mixing zones were allowed in previous permits, nor has one been requested by the facility. Therefore, no instream dilution is available for mixing and compliance must be met at end of pipe.

E. Reasonable Potential Analysis

The RP analysis predicts the impact of the discharge on the receiving water under design (or critical) conditions. WQBELs are developed for each parameter that demonstrates RP to cause or contribute to an exceedance of a water quality standard. DEQ uses a mass-balance equation (shown below) and a statistical approach outlined in Chapter 3 of EPA’s *Technical Support Document for Water Quality-based Toxics Control* (EPA’s TSD Manual) to determine RP for individual pollutants.

1. **Critical Effluent Concentration (C_d) Calculation:** The facility's maximum reported effluent concentration (C_{max}) is converted into the projected critical effluent concentration (C_d). This accounts for variation in effluent concentration.
 - First, the statistical TSD 3-2 multiplier is determined by the data set's coefficient of variation (CV) and sample size at the 95th percentile confidence interval. A default CV of 0.6 is used if there are less than 10 samples.
 - Then the TSD 3-2 multiplier is applied to the facility's maximum reported effluent concentration (C_{max}) to determine the critical effluent concentration (C_d).
2. **Parameters Not Allowed Dilution:** If the $C_d > WQS$, reasonable potential exists.
3. **Parameters Allowed Dilution:** The steady-state mass balance model (Equation 1) is used to determine the projected receiving water concentration (C_r) after mixing. If $C_r > WQS$, reasonable potential exists.

Equation 1. Using the Mass Balance Equation to Determine Reasonable Potential

$$\text{Mass Balance Equation: } Q_s C_s + Q_d C_d = Q_r C_r$$

$$\text{Receiving Water Pollutant Concentration: } C_r = \frac{Q_d C_d + Q_s C_s}{(Q_r)}$$

Variable (critical conditions):

Q_s = upstream flow

Q_d = discharge flow

Q_r = receiving flow after discharge

C_s = upstream pollutant conc.

C_d = discharge pollutant conc.

Calculated As:

Q_s = dilution flow from Part V.D

Q_d = average daily design flow

Q_r = $Q_s + Q_d$

C_s = 75th percentile critical instream conc.

C_d = max effluent concentration ·
TSD multiplier

F. Water Quality-Based Effluent Limits Development

DEQ uses the approach outlined in Chapter 5 of EPA's TSD Manual to develop WQBELs for each pollutant. WQBELs are expressed as maximum daily limit (MDL) and average monthly limit (AML).

- The maximum daily limit (MDL) is the highest allowable discharge measured during a calendar day or 24-hour period representing a calendar day.
- The average monthly limit (AML) is the highest allowable value for the average of daily discharges over a calendar month.

Each parameter's MDL and AML is derived from a wasteload allocation (WLA). The WLA is the concentration of a pollutant that the point source can discharge while assuring applicable water quality standards are attained in the receiving water.

WQBEL development is detailed on a parameter-by-parameter basis in Section VI. Final Pollutant Evaluation.

VI. Final Pollutant Evaluation

A. Conventional Pollutants

1. **BOD₅, TSS, and pH:** These parameters are typical effluent quality indicators for wastewater treatment facilities and are regulated as TBELs. The facility provides a significant reduction in biological material and solids through secondary treatment.
 - No additional limits are necessary - TBELs should adequately control these pollutants and protect the beneficial uses of Beaver Creek.
2. ***Escherichia coli* (*E. coli*) Bacteria:** Pathogens are known municipal wastewater contaminants. *E. coli* standards protect beneficial uses of receiving waters for pathogens. State waters must be free from substances that are harmful or toxic to humans. The standards for C-3 classified waters as expressed by most probable number, a statistical representation of the number of organisms in a sample, are:
 - Summer:** April 1 through October 31 of each year
 - The geometric mean number must not exceed 126 organisms per 100 milliliters (org/100 mL).
 - 10% of the total samples may not exceed 252 org/100 mL during any 30-day period.
 - Winter:** November 1 through March 31 of each year
 - The geometric mean number of *E. coli* must not exceed 630 org/100 mL.
 - 10% of the total samples may not exceed 1,260 org/100 mL during any 30-day period.

Mixing zones are not appropriate for pathogens, and the standards are applied at end-of-pipe. The existing permit limits for *E. coli* are maintained in this renewal. The monitoring requirement will be twice per month.

3. **Oil and Grease (O&G):** The 2012-permit required semi-annual monitoring for this parameter. No O&G was detected in the one sample collected during the monitoring period. If visual monitoring indicates the presence of oil and grease, an additional grab sample must be submitted for analysis and discharge must stop if the concentration is found to be greater than the standard of 10 mg/L.
 - A 10 mg/L limit will be included in this permit.
 - A monthly monitoring requirement will be required.

B. Nonconventional Pollutants

1. **Total Residual Chlorine (TRC):** TRC effluent limits were included in the previous permit in the case that Wibaux used chlorine to disinfect its effluent. Wibaux did not use chlorine, nor did it state that it planned to in its renewal application. In the event chlorination is utilized as a method of disinfection, Wibaux will be required to meet previous permit limits and monitoring requirements.
 - TRC 0.011 mg/L average monthly limit and 0.019 mg/L maximum daily limit will be continued in this permit.
 - The daily monitoring requirements will be continued in this permit.
 - On-site analysis of TRC using an approved method is necessary. The EPA - approved analytical methods in 40 CFR 136 require TRC samples to be analyzed immediately. The method must achieve a minimum detection level of 0.1 mg/L. Analysis of effluent with results less than or equal to 0.1 mg/L is considered to be

in compliance with the TRC limit, and will be required if Wibaux implements chlorine disinfection.

2. **Total Ammonia:** The numeric water quality standards for ammonia account for a combination of receiving water characteristics such as the presence/absence of salmonids and early life stages of fish and the 75th percentile of pH and temperature. Ambient Beaver Creek water quality data was available as described in Part III.E and the updated ammonia standard was presented in Table 3.

Excluding the discharge in 2017, all other discharge event occurred in the fall. These ammonia values were below the 2012 permit limits. The highest average monthly concentration in the fall was 0.96 mg/L (< 1.2 mg/L) and the highest daily maximum concentration in the fall was 1.91 mg/L (< 2.3 mg/L). This suggests if the WWTF continues to discharge once a year or less, in the fall, and at low concentrations, then there is no reasonable potential for the discharge to cause or contribute to an exceedance of the water quality standards.

- As reasonable potential does not exist, this permit renewal will not include ammonia limits.
 - A twice per month monitoring requirement for ammonia in the effluent will be required in this permit.
3. **Nitrate Plus Nitrite (N+N):** Nitrate and nitrite are toxic components of total nitrogen, which is a common constituent of domestic wastewater. The human health standard is the only standard that applies to this parameter. Table 9 below shows that reasonable potential does not exist because the projected critical effluent concentration is less than the human health water quality standard without dilution (0.2 mg/L < 10 mg/L). As reasonable potential does not exist, there will be no effluent limit for N+N.

Table 9. Reasonable Potential Analysis for Nitrate + Nitrite								
Projected Critical Effluent Concentration (C _d)						Water Quality Standard		
CV	Sample Size	→	TSD Mult.	•	C _{max} = C _d	Acute	Chronic	HH
0.6	5		2.32		0.07 mg/L = 0.2 mg/L	-	-	10 mg/L

- This permit renewal will not include an effluent limit for nitrate plus nitrite.
 - A twice per month monitoring requirement for N+N will be required.
 - Quarterly upstream monitoring for N+N will be required for a three-year period, specified in Part VIII.B.3.
4. **Total Nitrogen and Total Phosphorus:** The 2012-permit did not include average effluent limits for Total Nitrogen (TN) or Total Phosphorus (TP), but did require effluent and in-stream monitoring. Montana has a narrative water quality standard found at ARM 17.30.637(1)(e). For the POR, Wibaux did not discharge during summer months. Because of the infrequent discharge from the WWTF (usually once per year in the fall), there is not a significant load of TN or TP from Wibaux during the nutrient growing season. DEQ concludes discharge will not produce undesirable aquatic life.
 - This permit renewal will not include effluent limits for TN or TP.
 - A twice per month monitoring requirement for TN and TP concentration and load will be required in this permit during the summer months.

- The monthly upstream monitoring requirement will be required during June, July, and August for a three-year period, specified in Part VIII.B.3.

D. Whole Effluent Toxicity Testing

Water quality standards require that state water be free from substances attributable to municipal waste that create conditions which are harmful or toxic to human, animal, plant or aquatic life, and provides the basis for whole effluent toxicity (WET) requirements in MPDES permits. Wibaux WWTF is a small discharger that discharges only treated sanitary wastewater with no identified industrial contribution.

- WET testing will not be required in this permit renewal.

VII. Final Effluent Limits

The final effluent limits are a combination of the more stringent of the technology-based and water quality-based effluent limits developed. The final effluent limits in Table 10 will be applied to the discharge at Outfall 001 beginning on the permit effective date and lasting through the term of the permit.

- There shall be no discharge of floating solids or visible foam other than in trace amounts.
- There shall be no discharge which causes visible oil sheen in the receiving stream.
- There shall be no discharge that settles to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines.

Table 10. Final Effluent Limits - Outfall 001				
Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾	Maximum Daily Limit ⁽¹⁾
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45	-
	lb/day	10	15	-
	% Removal	85%	-	-
Total Suspended Solids (TSS)	mg/L	30	45	-
	lb/day	10	15	-
	% Removal	85%	-	-
pH	s.u.	Within the range of 6.0 and 9.0		
<i>E.coli</i> Bacteria, Summer ⁽²⁾	Number of organisms/ 100mL	126 ⁽³⁾	252 ⁽³⁾	-
<i>E.coli</i> Bacteria, Winter ⁽²⁾	Number of organisms/ 100mL	630 ⁽³⁾	1260 ⁽³⁾	-
Oil and Grease	mg/L	-	-	10
Total Residual Chlorine (TRC) ^(4,5)	mg/L	0.011	-	0.019
<p>(1) See Definitions section at the end of the MPDES permit for explanation of terms (2) <i>Escherichia coli</i> bacteria - summer is April 1 through October 31, winter is November 1 through March 31. (3) Geometric Mean. (4) This limit only applies if chlorination is used for disinfection. (5) Analysis of effluent with results ≤ 0.1 mg/L is considered to be in compliance with the TRC limit.</p>				

VIII. Monitoring and Reporting Requirements

A. Requirement to Monitor and Report

Wibaux WWTF must monitor their effluent. At a minimum, the following constituents must be monitored at the frequencies and with the types of measurements indicated; the samples collected and analyzed must be representative of the volume and nature of the facility's discharge. If no discharge occurs during the entire monitoring period, it must be stated on the electronic Discharge Monitoring Report (NetDMR) that no discharge or overflow occurred. Samples must be collected, preserved and analyzed with approved procedures listed in 40 CFR 136.

The analysis must have a detect or achieve the Required Reporting Value (RRV), which is DEQ's best determination of a level of analysis that can be achieved by the majority of commercial, university, or governmental laboratories using EPA-approved methods or methods approved by DEQ, unless another reporting level is specified by DEQ, in writing.

- Monitoring will start with the effective date of the permit and last for the duration of the permit cycle.
- All analytical procedures must comply with the specifications of 40 CFR Part 136.
- Wibaux WWTF must submit electronic NetDMR results for each month by the 28th of the following month.

B. Monitoring Locations, Frequency, Sample Type, and Calculations

The monitored parameters, their respective monitoring locations, and the reporting requirements are presented in Tables 11 and 12.

1. *Influent Monitoring*

Influent samples will be collected from raw wastewater influent stream at the wet well near the first lift station. Influent monitoring is needed to calculate percent removal for BOD₅ and TSS.

2. *Effluent Monitoring*

Effluent samples must reflect the volume and nature of the discharge at the frequency presented in Table 11. Samples are to be taken at the end of the temporary pipe used to discharge. Effluent flow measurements will be taken where the siphon passes over a level section of pipe that will have a v-notch weir.

Discharge from the facility is intermittent and variable, so monitoring will occur during discharges. A logbook will be kept to record discharge start and end dates, as well as measured discharge rates.

Table 11. Monitoring Requirements for Outfall 001					
Parameter ⁽¹⁾	Units ⁽²⁾	Sample Type ⁽³⁾	Minimum Frequency ⁽⁴⁾	Reporting Requirement	RRV ⁽⁵⁾
Flow	mgd	Instantaneous	Continuous	Daily Maximum Monthly Avg Flow	-
Flow Duration	days	Calculated	Continuous	Number Days	0.5
Biochemical Oxygen Demand (BOD ₅)	mg/L	Composite	1/Week	Max Weekly Avg ⁽⁶⁾	2
	lb/day	Calculated	1/Week	Monthly Average	-
	% Removal	Calculated	1/Month	Monthly Average	-
Influent BOD ₅	mg/L	Composite	1/Quarter	Monthly Average	2
Total Suspended Solids (TSS)	mg/L	Composite	1/Week	Max Weekly Avg ⁽⁶⁾	10
	lb/day	Calculated	1/Week	Monthly Average	-
	% Removal	Calculated	1/Month	Monthly Average	-
Influent TSS	mg/L	Composite	1/Quarter	Monthly Average	10
pH	s.u.	Instantaneous	1/Week	Daily Minimum Daily Maximum	0.1
<i>E.coli</i>	Number of Organisms/ 100mL	Grab	2/Month	Weekly and Monthly Geometric Mean	1/100m L
Oil and Grease	mg/L	Grab	1/Month ⁽⁷⁾	Monthly Maximum	1.0
	Presence	Observation	1/Week	Present/Absent	-
Total Residual Chlorine (TRC) ⁽⁸⁾	mg/L	Instantaneous	5/Week	Monthly Average Weekly Average	0.1
Total Ammonia, as N	mg/L	Composite	2/Month	Daily Maximum Monthly Average	0.07
Nitrate plus Nitrite, as N	mg/L	Composite	2/Month	Monthly Average	0.02
Kjeldahl Nitrogen, as N ⁽⁹⁾	mg/L	Composite	2/Month	Monthly Average	0.225
Total Nitrogen, as N ^(9,10)	mg/L	Composite	2/Month	Monthly Average	0.01
	lb/day	Calculated	2/Month	Monthly Average	-
Total Phosphorus, as P ⁽⁹⁾	mg/L	Composite	2/Month	Monthly Average	0.001
	lb/day	Calculated	2/Month	Monthly Average	-

(1) All parameters are effluent unless otherwise noted.

(2) See narrative discussion in Part I.C of the permit for additional details on calculating load and percent removal.

(3) See Definition section at end of permit for explanation of terms.

(4) Monitoring only required during periods of discharge.

(5) Required Reporting Value.

(6) Enter the highest of the four weekly averages for each month in NetDMR.

(7) A sample must also be taken any time the visual presence of oil is observed.

(8) TRC monitoring only required when chlorination is used for disinfection.

(9) Monitoring required June, July and August.

(10) Calculated as the sum of nitrate + nitrite and total Kjeldahl nitrogen concentrations.

3. Upstream/Ambient Monitoring

- Wibaux WWTF will be required to monitor ambient data from January 2022 through December 2024 (for three years of continuous data) whether or not the facility discharges.
- Monitoring must take place at a consistent location on Beaver Creek immediately upstream and outside the influence of Outfall 001 with the sample type, frequency, and required reporting values (RRVs) as identified in Table 12. The values will be reported on the facility’s NetDMRs.

Table 12. Upstream/Ambient Monitoring Requirements for Outfall 001				
Parameter	Units	Sample Type (1)	Minimum Frequency	RRV (2)
Nitrate plus Nitrite, as N	mg/L	Grab	1/ Quarter	0.02
Kjeldahl Nitrogen, as N (3)	mg/L	Grab	1/ Quarter	1.02
Total Nitrogen, as N (3,4)	mg/L	Calculated	1/ Quarter	0.01
Total Phosphorus, as P (3)	mg/L	Grab	1/ Quarter	0.001
(1) See Definition section at end of permit for explanation of terms.				
(2) Required Reporting Value. See Circular DEQ-7 for minimum RRVs.				
(3) Monitoring required June, July and August.				
(4) Calculated as the sum of nitrate + nitrite and total Kjeldahl nitrogen concentrations.				

IX. Public Participation

A. Public Notice

DEQ issued a public notice stating that a tentative decision has been made to issue an MPDES permit to the Town of Wibaux and that a draft permit, fact sheet, and environmental assessment (EA) have been prepared. Details are below:

- Public Notice No. MT-20-20 dated December 14, 2020
- Public comments are invited any time prior to the close of business January 15, 2021
- Comments may be directed to:

Department of Environmental Quality
 Water Protection Bureau
 PO Box 200901
 Helena, MT 59620

or

DEQWPBPublicComments@mt.gov

- All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit.
- DEQ will respond to all substantive comments and issue a final decision within sixty days of the close of the public comment period or as soon as possible thereafter.

All persons, including the applicant, who believe any condition of the draft permit is inappropriate shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period.

B. Notification of Interested Parties

Copies of the public notice were mailed to the discharger, state and federal agencies, and persons who have expressed an interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this permit.

In addition to mailing the public notice, a copy of the notice and applicable draft permit, fact sheet and EA were posted on DEQ's website for 30 days. Any person interested in being placed on the mailing list for information regarding the MPDES permit should contact DEQ, reference this facility, and provide a name, address, and email address.

C. Public Hearing

During the public comment period provided by the notice, DEQ will accept requests for a public hearing. A request for a public hearing must be in writing and must state the nature of the issue proposed to be raised in the hearing.

D. Permit Appeal

After the close of the public comment period DEQ will issue a final permit decision, which is a final decision to issue, deny, modify, revoke and reissue, or terminate a permit. A permit decision is effective 30 days after the date of issuance unless a later date is specified in the decision, a stay is granted, or the applicant files an appeal.

The Applicant may file an appeal within 30 days of DEQ's action to the following address:

Secretary, Board of Environmental Review
Department of Environmental Quality
1520 East Sixth Avenue
PO Box 200901
Helena, Montana 59620-0901

E. Additional Information

Requests for additional information or questions regarding this permit should be directed to the Water Protection Bureau at (406) 444-5546

X. Information Sources

Administrative Rules of Montana Title 17 Chapter 30 – Water Quality

- Subchapter 2 – *Water Quality Permit and Application Fees*
- Subchapter 5 – *Mixing Zones in Surface and Ground Water*
- Subchapter 6 – *Montana Surface Water Quality Standards and Procedures*
- Subchapter 7 – *Nondegradation of Water Quality*
- Subchapter 12 – *Montana Pollutant Discharge Elimination (MPDES) Standards*
- Subchapter 13 – *Montana Pollutant Discharge Elimination (MPDES) Permits*

CWAIC: Clean Water Act Information Center, Department of Environmental Quality.
Accessed August 2020.

Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387, October 18, 1972, as amended 1973-1983, 1987, 1988, 1990-1992, 1994, 1995 and 1996.

Integrated 303(d) Water Quality Report for Montana (2018).

Montana Code Annotated (MCA), Title 75-5-101, *et seq.*, “Montana Water Quality Act.”

Montana DEQ. 2013. *Compliance Evaluation Inspection Report, Town of Wibaux WWTF.*

Montana DEQ. 2019. *Compliance Evaluation Inspection Report, Town of Wibaux WWTF.*

Montana DEQ. 2020. *Compliance Evaluation Inspection Report, Town of Wibaux WWTF.*

Montana DEQ. 2019. *Department Circular DEQ-7, Montana Numeric Water Quality Standards.*

Montana DEQ. Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0020516.

- Administrative Record
- Renewal Application Forms DEQ-1 and EPA Form 2A, May 2017

Natural Resource Conservation Service Report Generator, NRCS, 2020.

US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.

US EPA *NPDES Permit Writers' Manual*, EPA 833-B-96-003, September 2010.

US EPA. *EPA Region VIII Mixing Zones and Dilution Policy*. December 1994 (Updated September 1995)

US EPA *Technical Support Document for Water Quality-Based Toxics Control*, EPA/505/2-30-001, March 1991.

USGS, Montana StreamStats, SIR 2015-5019, 2015.

U.S. Geological Survey. 2000 "USGS 06336500 Beaver Creek at Wibaux, MT."

https://waterdata.usgs.gov/nwis/inventory/?site_no=06336500