MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

Fact Sheet

Permittee:	Town of Bridger
Permit No.:	MT0020303
Receiving Water:	Clarks Fork Yellowstone River
Facility Information:	
Name	Bridger Wastewater Treatment Facility
Location	68 East Bridger Rd Bridger, MT Carbon County 45º17'43.00" N, 108º54'00.91" W
Facility Contact:	Tim Goldsberry Public Works Director 108 South D St Bridger, MT 59014
Fee Information:	
Type	Minor Publicly Owned Treatment Works
Type of Outfall	001 – Facility Discharge

I. Permit Status

This is a renewal of Montana Pollutant Discharge Elimination System (MPDES) permit MT0020303. The 2010-issued permit became effective August 1, 2010 and expired July 31, 2015. The Montana Department of Environmental Quality (DEQ) received an application and fees from the Town of Bridger (Bridger) for renewal of MT0020303 on January 16, 2015. DEQ deemed the application complete, and the 2010-issued permit was administratively extended in a letter dated July 31, 2015.

DEQ proposes the following changes with this renewal:

1. Oil and Grease and Total Residual Chlorine limits are removed.
2. Effluent monitoring for Oil and Grease is reduced to visual, with sample collected if a visual sheen is observed. Effluent monitoring is removed for metals.

3. Ambient monitoring is added in this renewal. Parameters to be collected in ambient monitoring are pH, temperature, ammonia, nitrate+nitrite, total Kjeldahl nitrogen, total nitrogen, and total phosphorous.

II. Facility Information

A. Facility Description

The Bridger Wastewater Treatment Facility (WWTF) serves the Town of Bridger, with a 2015 population of approximately 708 people (2015 application). The WWTF is a two-cell aerated/facultative lagoon system constructed as an upgrade in 1990 with a total volume of approximately 15 million gallons (MG). The system can be operated in series or parallel by controlling flow into cells 1 and 2. Only cell 1 contains aerators, and it was originally designed for eight 2-horsepower (HP) aerators. As a facultative lagoon cell, cell 2 provides for settling of solids prior to discharge. The design flow of the facility is 0.124 million gallons per day (mgd) and the total detention time is 120 days, including approximately 28 days under aeration. The facility provides disinfection of the effluent via an ultraviolet (UV) system that was installed in 2014.

Bridger WWTF discharges intermittently, from eight to 12 months per year, depending on the year. The lagoon is equipped with a multiple level discharge structure. After passing through the UV system, effluent is discharged from a pipe at approximately 45º17’44” N, 108º54’01” W to a ditch delivering effluent into the Clarks Fork Yellowstone River (Clarks Fork).

Table 1: Current Design Criteria Summary

Facility Description: Two-cell aerated/facultative lagoon system; UV disinfection; with intermittent discharge to Clarks Fork Yellowstone River.	
Original Construction Date: Unknown	Upgrade Date: 1990[(1)]
Current Population: 708 (2015)[(2)]	Design Population: 1000
Design Flow, Average Daily (mgd): 0.124[(3)]	
Design BOD Load: 180 lb/day	Design TSS Load: 220 lb/day
Number Aerated Cells: 1	Collection System Combined [ ] Separate [X]
Sanitary Sewer Overflow (SSO) Events (Y/N): N	Estimated I/I: negligible[(2)(3)]
Disinfection (Y/N): Y	Disinfection Type: UV[(2)(4)]

Footnotes:
(1) MT DEQ. 2014. Lagoon O&M Report, *Town of Bridger Wastewater Treatment Facility*
(2) 2015 application Form 2A
(3) Personal communication with Tim Goldsberry, Town of Bridger Public Works Director (April, 2017)
(4) Great West Engineering. 2013. *Town of Bridger UV Disinfection Improvements*.

As of July 2016, sludge filled nearly one half of cell 1. A 2016 Performance Evaluation Report recommends making sludge removal a priority for Bridger WWTF.

B. Effluent Characteristics

Table 2 summarizes effluent quality from facility Discharge Monitoring Reports (DMR) in the Period of Record (POR) from January 2011through February 2017. The POR contains exceedances of effluent limits for pH, total nitrogen (TN), total phosphorus (TP), ammonia (as N), TSS, BOD_5, and pH.

Table 2: DMR Effluent Characteristics(1) – January 2011 through February 2017

Parameter	Location	Units	2010 Permit Limit	Minimum Value	Maximum Value	Average Value	Number of Records
Flow, 30-Day Average(2)	Effluent	mgd	(3)	0.018	0.075	0.043	54
Biochemical Oxygen Demand (BOD_5)	Influent	mg/L	(3)	48	690	174	54
	Effluent	mg/L	45/65(4)	4.0	62.0	16.8	54
	Effluent	% removal	65	29.4	98.3	86.8	52
	Effluent	lb/day	47/67(4)	0.77	38.1	6.63	54
Total Suspended Solids (TSS)	Effluent	mg/L	100/135(4)	10.0	106	27.0	32
	Effluent	lb/day	103/140(4)	2.3	61.0	10.8	32
Escherichia coli Bacteria(5)(6)(7)	Effluent	cfu/100 mL	126/252(4)	1.0	802	51.6	29
Escherichia coli Bacteria(5)(6)(8)	Effluent	cfu/100 mL	630/1,260(4)	1.0	2.65	1.24	7
pH	Effluent	s.u.	6.0-9.0	6.0	9.3	8.2	54
Temperature	Effluent	ºC	(3)	0.0	28.0	11.6	54
Total Ammonia as N	Effluent	mg/L	13.3/19.4(4)	0.08	22.7	8.3	52
Total Kjeldahl Nitrogen	Effluent	mg/L	(3)	2.1	24.6	12.9	54
Nitrate + Nitrite as N	Effluent	mg/L	(3)	0.005	3.48	0.37	51
Total Nitrogen as N(9)(10)	Effluent	mg/L	(3)	2.1	15.3	9.6	11
	Effluent	lb/day	8.0/14.0(4)	0.66	7.3	3.4	11
Total Phosphorus as P(10)	Effluent	mg/L	(3)	0.31	4.1	2.3	11
		lb/day	3.2/5.5(4)	0.15	1.0	0.71	11
Oil and Grease	Effluent	mg/L	10	ND (<1.0)	3.0	1.6	6

Table 2: DMR Effluent Characteristics [(1)] – January 2011 through February 2017

Parameter	Location	Units	2010 Permit Limit	Minimum Value	Maximum Value	Average Value	Number of Records
Copper, total recoverable	Effluent	µg/L	[(3)]	ND (< 0.0050)	4	2.5	4
Iron, total recoverable	Effluent	µg/L	[(3)]	ND	280	NA	4
Lead, total recoverable	Effluent	µg/L	[(3)]	ND	0.50	NA	4
Mercury, total recoverable	Effluent	µg/L	[(3)]	ND	0.010	NA	4

Footnotes: NA = Not Available, ND = Not Detected, Data reported as ND is assumed to be the reporting limit.
(1) Statistical values based on individual values reported on DMRs when available. Average or maximum reported values used when no others available.
(2) Calculated from flow measured in gallons per minute.
(3) No limit in 2010 permit, monitoring requirement only.
(4) Limit shown as 30-day average/7-day average.
(5) POR = November 2014 through February 2017.
(6) Geometric average.
(7) Sample period is April 1 to October 31.
(8) Sample period is November 1 through March 31.
(9) Calculated as the sum of Nitrite+Nitrate as N and TKN concentrations.
(10) Samples collected July through September.

C. Compliance History

Effluent limit exceedances observed for the POR consist of:

- six total for total nitrogen (TN) lb/day 30-day and seven-day average.
- one for total phosphorus (TP) lb/day 30-day average.
- six total for ammonia (as N) mg/L 30-day average and daily maximum.
- one for TSS mg/L 30-day average.
- five total for BOD_5 mg/L 30-day average and percent removal.
- one for *E. coli* 30-day and seven-day average.
- one for pH.

DEQ performed one MPDES compliance inspection between 2010 and 2016 (January 30, 2013). The 2013 inspection took place prior to installing the UV system.

Items of noncompliance documented in the 2013 compliance inspection were:

- Failures to maintain records of monitoring information.
- Failure to complete sampling with approved test procedures.
- Failure to conduct monitoring with required frequency and sample type.
- Failure to correctly report monitoring results.
- Failure to meet numeric effluent limits for BOD_5, *E. coli*, total nitrogen, and pH.
- Failure to operate and maintain all facilities and systems of treatment and control.

Since the January 2013 inspection, monitoring parameter exceedances were reported for BOD_5, pH, TSS, total nitrogen, total phosphorus, ammonia (as N), and *E.coli*. Monitoring parameters not reported on time since the 2013 inspection are oil and grease (hexane extraction method) and metals.

III. Technology-Based Effluent Limits

A. Proposed Technology-Based Effluent Limits

Federal regulations (40 Code of Federal Regulations (CFR) 133) define minimum requirements for secondary treatment, or the equivalent, for publicly operated treatment works (POTWs). Secondary treatment is defined in terms of effluent quality as measured by pH, 5-Day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), and percent removal of BOD_5 and TSS.

These requirements may be modified on a case-by-case basis for facilities that are eligible for treatment equivalent to secondary treatment (TES) or alternative state requirements (ASR) for TSS. To determine if a facility is eligible for TES the facility must meet the requirements summarized as follows:

1) The BOD_5 and TSS effluent concentrations consistently achievable through proper operation and maintenance of the treatment works exceed the minimum effluent quality described for secondary treatment in 40 CFR 133.102,
2) The treatment works utilize a trickling filter or waste stabilization pond, and
3) The treatment works utilize biological treatment that consistently achieves a 30-day average of at least 65 % removal.

The 95th percentile of monthly TSS concentrations observed during the POR is 91.7 mg/L monthly and weekly average, a value greater than the TES for TSS. Nearly 20% of effluent samples exceed the TES for TSS during the POR.

The technology-based effluent limitations (TBELs) in the 2010-issued permit are based on the national secondary treatment standards for pH, TES for BOD_5 at 45 mg/L monthly and 65 mgL weekly with 65% removal, and ASR for TSS at 100 mg/L monthly and 135 mg/L weekly with no percent removal requirement. The limits applied in the 2010-issued permit are maintained in this permit renewal (see **Table 3**).

Effluent limits must be expressed in terms of mass (mass/time), except for certain conditions, such as pH or temperature. For municipal treatment plants, mass-based limits are calculated using the average daily design flow for the facility.

The mass-based limits are calculated as follows:

Load (lbs/day) = Design Flow (mgd) x Concentration (mg/L) x 8.34 (lb·L)/(mg·gal)

BOD_5 mass-based limits:
Average Monthly = 0.124 mgd x 45 mg/L x 8.34 (lb·L)/(mg·gal) = 47 lb/day

Average Weekly = 0.124 mgd x 65 mg/L x 8.34 (lb·L)/(mg·gal) = 67 lb/day

TSS mass-based limits:
Average Monthly = 0.124 mgd x 100 mg/L x 8.34 (lb·L)/(mg·gal) = 103 lb/day
Average Weekly = 0.124 mgd x 135 mg/L x 8.34 (lb·L)/(mg·gal) = 140 lb/day

Table 3: Bridger WWTF Outfall 001 Proposed TBELs

Parameter	Units	Average Monthly Limit	Average Weekly Limit	Rationale
5-Day Biochemical Oxygen Demand (BOD_5)	mg/L	45	65	40 CFR 133.105(a)
	lb/day	47	67	
	% removal	65(1)	NA	
Total Suspended Solids (TSS)	mg/L	100	135	40 CFR 133.103(c)
	lb/day	103	140	
pH	s.u.	6.0-9.0 (instantaneous)		40 CFR 133.102(c)

Footnotes:
(1) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 35% of the arithmetic mean of the values for influent samples collected at approximately the same time during the same period (65% removal).

B. Nondegradation

Nondegradation load allocations calculated in the 2010-issued permit cycle are presented in **Table 4** for BOD_5 and TSS in the effluent. These values define baseline allocated loads for the WWTF and any increases above these amounts are subject to the provisions of Montana's Nondegradation.

Actual discharge loads from self-monitoring data were calculated and are compared to the nondegradation loads in **Table 4**. Nondegradation loads from 2017 are not included because data is unavailable. The permit does not authorize a new or increased discharge, and therefore is not subject to Montana's Nondegradation Policy.

Table 4: Calculated Nondegradation Allocated and Actual Annual Loads

Parameter	Allocated Load (lb/day)	Actual 30-Day Average Loads (lb/day)					
		2011	2012	2013	2014	2015	2016
BOD_5	47	3.3	4.1	10.0	13.7	4.3	3.4
TSS	103	7.2	4.0	8.5	19.6	9.1	4.5

Loading limits for the technology-based parameters of concern are set at the more stringent values of nondegradation allocations or the mass-based loading limits calculated above; 47 lb/day and 103 lb/day.

IV. Water Quality-based Effluent Limits

A. Scope and Authority

Permits are required to include water quality-based effluent limits (WQBELs) when TBELs are not adequate to protect state water quality standards. Montana water quality standards require that no wastes may be discharged that can reasonably be expected to violate any state water quality standards. Montana water quality standards also define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses.

B. Receiving Water

Wastewater is discharged from Outfall 001 to the Clarks Fork Yellowstone River via a ditch, approximately 80 feet long, from the end of the outfall pipe to the river at high flows. In low flow conditions, the effluent may flow over a gravel shore before reaching the river. The receiving water in the vicinity of the WWTF discharge is classified as B-2 according to Montana Water Use Classifications. Waters classified B-2 are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. The Clarks Fork in the vicinity of the discharge is considered high quality water for all parameters except those for which impairments are listed on the 303(d) list. Degradation of high quality water by new or increased sources is not allowed unless authorized by DEQ.

The Clarks Fork where it receives the discharge from the Bridger WWTF is located within the Clarks Fork watershed identified as United States Geological Survey (USGS) Hydrological Unit Code (HUC) 10070006 and assessment unit ID MT43D001_011. Several impairments are identified and this segment of the Clarks For Yellowstone River is listed on the 2016 303(d) list for ammonia (total), copper, iron, lead, mercury, nitrate plus nitrite (as N), total nitrogen, total phosphorus, suspended solids, and temperature. However, no total maximum daily loads (TMDLs) for this assessment unit are completed. Probable sources for causes of impairments are streambank modification from destabilization and irrigated crop production, habitat modification, impacts from hydrostructure flow regulation or modification, and unknown sources.

The critical upstream flow value for most parameters is the 7-day low flow average expected to occur every 10 years (7Q10), and for nutrients is the 14-day low flow average expected to occur every 5 years (14Q5). The USGS gaging stations located nearest to Bridger WWTF are station 06207500 at Belfry, approximately 21 miles upstream, and station 06208500 at Edgar, approximately 14 miles downstream. Station 06207500 has a 7Q10 of 72 cfs, and a 14Q5 of 101 cfs. Station 06208500 has a 7Q10 of 101 cfs, and a 14Q5 of 151 cfs (USGS, 2015). The USGS applies a drainage-area ratio method to estimate streamflow characteristics for ungaged sites that are on the same stream as a gaging station. This method uses the computed streamflow characteristic (i.e. 7Q10 or 14Q5) at the gaging stations and the contributing drainage areas (USGS, 2015). Applying the drainage-area ratio method for an ungaged site between two gaging stations, the Clarks Fork at Bridger estimated 7Q10 is 95

cfs, equal to 61.4 mgd, and the estimated 14Q5 is 156 cfs, equivalent to 101 mgd.

Ambient Water Quality Data

Ambient water quality data from the Clarks Fork above the outfall location are limited. Available data were obtained from upstream monitoring by EPA Region 8 in 2010 at location R8MONTWQ-CFY-06, approximately three miles upstream from the WWTF discharge at the Highway 310 crossing of the Clarks Fork. **Table 5** provides a summary of the ambient water quality data used in assessing Reasonable Potential (RP) to exceed the water quality standards, and to develop any necessary effluent limits designed to protect these standards.

The reporting limit (i.e. the concentration under which the sample concentration was not quantified) was used for nondetect records. The upstream samples for lead and mercury were reported nondetect below an unknown reporting limit. DEQ will assume the lead concentration of the sample equals the DEQ-7 required reporting value (RRV) 0.3 µg/L. DEQ will assume the mercury concentration of the sample equals the DEQ-7 required reporting value (RRV) 0.005 µg/L.

Table 5. Clarks Fork Yellowstone River Water Quality Data

Parameter	Units	Concentration(1)	Number of Samples	Monitoring Data Source(2)
pH	s.u.	8.4	1	R8MONTWQ-CFY-06
Temperature	°C	18.3	1	
Nitrate + Nitrite as N	mg/L	0.59	1	
Copper, total recoverable	µg/L	2	1	
Iron, total recoverable	µg/L	140	1	
Lead, total recoverable	µg/L	ND (RRV 0.3)	1	
Mercury, Total	µg/L	ND (RRV 0.005)	1	
Hardness (Ca, Mg) (3)	mg/L	238(4)	1	

Footnotes:
(1) The 75th percentile is of the data is typically used, however only one sample record is available for all ambient parameters.
(2) Data collected in 2010
(3) Hardness (Ca, Mg) is considered sufficiently equivalent to Total Hardness for purposes of determining applicable metals standards.
(4) The 25th percentile of the data is typically used for hardness, however only one record is available for this parameter.

C. Applicable Water Quality Standards

Discharges to surface waters classified B-2 are subject to the specific water quality standards, mixing zones and nondegradation.

D. Mixing Zone

A mixing zone is an area where effluent mixes with the receiving water and certain water quality standards may be exceeded. Mixing zones must have the smallest practicable size, a minimum practicable effect on water uses, and definable boundaries. DEQ will determine the appropriateness of a mixing zone and will grant a mixing zone, deny the mixing zone, or grant an alternative or modified mixing zone.

Mixing zones allowed under a permit issued prior to April 29, 1993, will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses. Bridger was not granted a mixing zone prior to 1993. Mixing zones are granted on a parameter-by-parameter basis. No mixing zone will be granted that will impair beneficial uses. Chronic aquatic life, acute aquatic life, and human health standards may not be exceeded outside of a mixing zone.

Facilities that discharge a mean annual flow of less than 1 mgd to a stream segment with a dilution ratio of greater than 100:1 qualify for a dilution allowance of up to 100% of the 7Q10 for chronic aquatic life and human health conditions. Dilution with 100% and 25% or the 7Q10 addresses only human health and chronic aquatic life standards.

The 7Q10 value is 61.4 mgd, and the mean annual flow for 2016 is 0.024 mgd; therefore the dilution ratio is 3,958:1 (calculated as 7Q10 : mean annual flow of the facility). DEQ granted the following dilution with this renewal:

- 100% of the 7Q10 value is used to calculate RP for nitrate plus nitrite based on the human health standard.
- 25% of the 7Q10 (15.4 mgd) is used to calculate RP for copper, iron, and lead based on the chronic aquatic life standard, and for mercury based on the chronic aquatic life standard and human health standard.
- No dilution is used to calculate RP for any parameter based on acute aquatic life standard.

Based on available data, which is limited in the case of ambient data, Bridger WWTF does not exceed any of the water quality standards at the point of discharge. Therefore, no mixing zone is needed for nitrate+nitrite, copper, iron, lead, or mercury.

E. Basis for Water Quality-Based Effluent Limits

MPDES permit limits must control all pollutants which will cause, or have RP to cause or contribute to an excursion above any state water quality standard, including narrative criteria. Parameters typically present in municipal wastewater that may cause or contribute to a violation of water quality standards include: conventional pollutants such as biological material (as measured by BOD_5), TSS, pH, oil & grease, and pathogenic bacteria, and non-conventional pollutants such as nitrate+nitrite, nutrients, total ammonia, and metals.

DEQ develops WQBELs for any pollutant of concern (POC) for which there is reasonable potential (RP) to cause or contribute to exceedances of instream numeric or narrative water quality standards. Pollutants and parameters are identified as POC for one or more of the following reasons:

- TBELs;
- limits in the previous permit;
- present in the effluent through monitoring or otherwise expected present in the discharge; or
- pollutants associated with impairment which may or may not have a WLA in a TMDL.

DEQ evaluated pollutants for Bridger WWTF in **Table 6**.

Table 6. Identification of POC and Need for RP Analysis

Parameter	Basis for POC Identification
5-day Biochemical Oxygen Demand (BOD_5)	TBELs, previous permit
Total Suspended Solids (TSS)	TBELs, previous permit
pH	TBELs, previous permit
Oil & Grease	Previous permit, known present
E.coli bacteria	Previous permit, known present
Ammonia, as N	Previous permit, known present
Nitrate+Nitrite, as N	Known present
Total Nitrogen, Total Phosphorus	Previous permit, known present
Copper	Known present
Iron	Known present
Lead	Known present
Mercury	Known present

DEQ uses a mass balance equation (see *Equation 1* and *Equation 2*) to determine RP and develop WQBELs, based on *EPA's Technical Support Document for Water Quality-based Toxics Control, March 1991* (TSD), EPA/505/2-90-001.

$$C_r = \frac{C_d Q_d + C_s Q_s}{Q_d + Q_s} \qquad \textit{(Equation 1)}$$

Given:

C_r = the resulting receiving water concentration
Q_d = critical discharge rate (POTW average daily design flow)
Q_s = instream flow available for dilution (critical low flow x available % for dilution)
C_d = critical effluent pollutant concentration (maximum discharge concentration x TSD multiplier)
C_s = critical upstream ambient pollutant concentration (75th percentile concentration)

RP for the WWTF discharge to cause exceedances of water quality standards is evaluated using *Equation 1*, and presented in **Attachment A**. The critical effluent concentration (C_d) is obtained following the method recommended by the EPA's TSD. A multiplier is determined using TSD methods, based on the dataset statistics.

WQBELs must be developed for any parameter for which there is RP to cause or contribute to exceedances of instream numeric or narrative water quality standards. To establish WQBELs for an existing discharger DEQ first calculates wasteload allocations (WLAs). As shown in *Equation 2*, the mass-balance equation can be arranged to calculate the WLA (C_{WLA}) so that the discharge does not cause or contribute to an exceedance of the applicable water quality standard under critical conditions.

$$C_{WLA} = \frac{Q_r C_r + Q_s C_s}{Q_d} \qquad \textit{(Equation 2)}$$

Given:

C_{WLA} = calculated wasteload allocation necessary to achieve instream water quality standard
Q_d = critical discharge rate (POTW average daily design flow)
$Q_r = Q_d + Q_s$
C_r = water quality standard
Q_s = instream flow available for dilution (critical low flow x available % for dilution)
C_s = critical upstream ambient pollutant concentration (75th percentile concentration)

The WLAs are then translated into average monthly limitations (AMLs) and maximum daily limitations (MDLs) using TSD multipliers.
The following subsections discuss the basis for the RP and WQBELs in this permit.

1. Conventional Pollutants

BOD_5, TSS, and pH: These parameters are typical effluent quality indicators for municipal wastewater treatment facilities and are regulated as TBELs (see section III of this Fact Sheet). The permit renewal will maintain TBELs for BOD_5 based on TES and for TSS based on ASR. The WWTF provides significant amount of control for biological material, solids, and pH through secondary treatment. No additional limits are required for these parameters.

Oil and Grease (O&G): Montana regulations require state waters be free from substances

attributable to municipal discharges that will result in concentrations of oil and grease at or in excess of 10 mg/L. The standard of 10 mg/L was applied to discharges from Outfall 001 in the 2010-issued permit, with semiannual effluent monitoring for O&G by EPA method 1664, Revision A.

Reasonable potential for the WWTF discharge to cause exceedances of the oil and grease water quality standards were evaluated using the following values in *Equation 1*, and presented in **Attachment A**.

Given:
Q_d = 0.124 mgd average daily design flow
Q_s = 0 mgd (7Q10 x available chronic dilution of 0%)
C_d = 6.4 mg/L (maximum observed (3.00 mg/L) x TSD multiplier (2.14))
C_s = 0 mg/L
Calculated Result:
C_r = 6.4 mg/L oil and grease

Using the above calculated critical effluent concentration (C_d) and receiving water concentration (C_s), average daily design flow (Q_d) and low flow rate based on 0% of the 7Q10 (Q_s) in *Equation 1*, the resulting downstream pollutant concentration (C_r) is calculated as 6.4 mg/L. C_r is less than the water quality standard, therefore DEQ finds that the WWTF does not have RP to exceed the oil and grease standard and no effluent limit is required (see **Attachment A**).

***Escherichia coli* (*E. coli*) Bacteria:** Pathogens are known municipal wastewater contaminants. The average monthly and average weekly *E. coli* limits are maintained at the final effluent limits in the 2010-issued permit. The State has promulgated *E. coli* standards to protect the beneficial uses of receiving waters from pathogens. The standards for B-2 classified waters from are:

> April 1 through October 31 of each year – the geometric mean number of *E. coli* must not exceed 126 cfu per 100 mL or most probable number (MPN) and 10% of the total samples may not exceed 252 cfu per 100 mL or most probable number (MPN) during any 30-day period; and
>
> November 1 through March 31 of each year – the geometric mean number of *E. coli* must not exceed 630 cfu per 100 mL or most probable number (MPN) and 10% of the total samples may not exceed 1,260 cfu per 100 mL or most probable number (MPN) during any 30-day period.

The associated units for *E.* coli have been changed to read "number of organisms/100 mL," which will incorporate both cfu and MPN.

These standards are included in the proposed as permit average monthly and average weekly limits (Part V of this fact sheet).

1. Non-conventional Pollutants

Total Residual Chlorine (TRC) – The 2010-issued permit established TRC limits of 0.12 mg/L MDL and 0.06 mg/L AML. Limits for TRC have been removed in this permit renewal because chlorine is no longer used for disinfection, since the WWTF upgraded to a UV system.

Total Ammonia as N: The 2010-issued permit established final ammonia limits as 13.3 mg/L AML and 19.4 mg/L MDL. DEQ lacks sufficient new data to establish ambient ammonia concentration and an ammonia standard representative of year round conditions. Without sufficient data, an updated RP analysis cannot be completed. Therefore, the 2010-issued permit limits are maintained, and upstream monitoring will be required (see Part VI of this fact sheet).

Nitrate plus Nitrite (N+N): Nitrate and nitrite are toxic components of total nitrogen, which is a common constituent of municipal wastewater. The applicable water quality standard for N+N is the human health standard (HHS), 10 mg/L. WQBELs for N+N were not established in the 2010-issued permit, but monthly monitoring was required.

Reasonable potential for the WWTF discharge to cause exceedances of the N+N water quality standards were evaluated using the following values in *Equation 1*, and presented in **Attachment A**.

Given:
Q_d = 0.124 mgd average daily design flow
Q_s = 61.4 mgd (7Q10 x available human health dilution of 100%)
C_d = 3.6 mg/L (maximum observed (3.48 mg/L) x TSD multiplier (1.04))
C_s = 0.59 mg/L (75th percentile of upstream data)
Calculated Result:
C_r = 0.60 mg/L N+N

Using the above calculated critical effluent concentration (C_d) and receiving water concentration (C_s), average daily design flow (Q_d) and low flow rate based on 100% of the 7Q10 (Q_s) in *Equation 1*, the resulting downstream pollutant concentration (C_r) is calculated as 0.60 mg/L. C_r is less than the HHS, therefore DEQ finds that the WWTF does not have RP to exceed the N+N standard and no effluent limit is required (see **Attachment A**).

Total Nitrogen and Total Phosphorus: The receiving water has been assessed and is listed on the 2016 303(d) list as impaired with TN and TP as probable causes. This segment was originally listed for TN and TP in 1990. However, TMDLs are not completed for this receiving water segment.

During the previous permit renewal in 2010, TN and TP standards did not exist for the Clarks Fork. Because the river was listed as impaired for nutrients, DEQ established TN and TP limits based on capping at current performance, using TSD methods (EPA TSD Table 5.2). The 2010-issued permit set year round limits of 8.0 lbs/day AML and 14.0 lbs/day AWL for TN and 3.2 lbs/day AML and 5.5 lbs/day AWL for TP based on the current performance of the POTW. **Table 7** compares the average monthly limit to actual nutrient loads discharged by Bridger WWTF.

Table 7: Average Effluent Nutrient Load

Parameter	Units	Average Monthly Limit (2010)	2012	2013	2014	2015	2016
Total Nitrogen as N, year round	lb/day	8.0	3.96	3.63	5.55	6.26	4.70
Total Phosphorus as P, year round	lb/day	3.2	0.57	1.12	0.88	1.09	1.11

Department Circulars DEQ-12A and -12B: Circular DEQ-12A (Base Numeric Nutrient Standards) and Circular DEQ-12B (Nutrient Standard Variances) were first adopted in July 2014. EPA approved these standards on February 26, 2015. DEQ-12B has been updated as of June, 2017. On September 1, 2016, Sidney applied for a variance from the nutrient criteria for the Discharger Category "lagoon not designed to actively remove nutrients," in the event that Sidney WWTF was unable to meet WQBELs developed based on RP to exceed numeric nutrient standards. Due to lack of data, DEQ assumed background concentration equal to the nutrient standard, since the Clarks Fork is listed as impaired for TN.

Total Nitrogen: Seasonal numeric nutrient standards in Circular DEQ-12A apply to the Clarks Fork Yellowstone River from July 1 through September 30 as 1300 µg/L (1.3 mg/L) TN. DEQ evaluated whether the facility's current discharge, based on data from the POR, is capable of meeting the criteria outside of a nutrient mixing zone.

Given:

Q_d = 0.124 mgd average daily design flow
Q_s = 101 mgd (14Q5 x available nutrient dilution of 100%)
C_d = 11.3 mg/L (maximum observed (7.3 mg/L) x TSD multiplier (1.54))
C_s = 1.3 mg/L (75th percentile of upstream data; assumed equivalent to water quality standard)

Calculated Result:

C_r = 1.31 mg/L TN

Using the above calculated critical effluent concentration (C_d) and receiving water concentration (C_s), average daily design flow (Q_d) and low flow rate based on 100% of the 14Q5 (Q_s) in *Equation 1*, the resulting downstream pollutant concentration (C_r) is calculated as 1.31 mg/L. C_r is greater than the nutrient standard, therefore DEQ finds that the WWTF has RP to exceed the TN standard and a WQBEL is required.

Given:
Q_d = 1.4 mgd average daily design flow
Q_s = 101 mgd (14Q5 x available nutrient dilution of 100%)
Q_r = 101.124 mgd
C_s = 1.30 mg/L
C_r = 1.30 mg/L (water quality standard)
Calculated Results:
C_{WLA} = 1.30 mg/L TN

Bridger WWTF cannot meet the calculated WQBEL of 1.30 mg/L TN; therefore, a variance under Department Circular DEQ-12B is applicable. Circular 12B requires DEQ to develop monthly average variance load limits for TN and TP that are based on the long-term average of the facility's discharge concentration. Long-term average is calculated as the arithmetic average of representative facility data from May 2014 through December 2016 (see **Attachment C**). The seasonal facility long-term average TN effluent concentration and load are calculated as 9.6 mg/L and 9.9 lbs/day.

A monthly average load limit (AML) is calculated using TSD methods as:
Long-term average load (9.9 lbs/day) x TSD multiplier from Table 5.2 (1.36)
= 14 lbs/day

The calculated seasonal AML is greater than the AML of 8.0 lbs/day established in the 2010-issued permit. Therefore, the 2010 permit limit is retained in this renewal, and applied seasonally July 1 through September 30.

Total Phosphorus: Seasonal numeric nutrient standards in Circular DEQ-12A apply to the Clarks Fork Yellowstone River from July 1 through September 30 as 150 µg/L (0.150 mg/L) TP. DEQ evaluated whether the facility's current discharge, based on data from the POR, is capable of meeting the criteria outside of a nutrient mixing zone.

Given:
Q_d = 0.124 mgd average daily design flow
Q_s = 101 mgd (14Q5 x available nutrient dilution of 100%)
C_d = 1.5 mg/L (maximum observed (1.0 mg/L) x TSD multiplier (1.48))
C_s = 0.150 mg/L (75th percentile of upstream data; assumed equivalent to water quality standard)
Calculated Result:
C_r = 0.152 mg/L TP

Using the above calculated critical effluent concentration (C_d) and receiving water concentration (C_s), average daily design flow (Q_d) and low flow rate based on 100% of the 14Q5 (Q_s) in *Equation 1*, the resulting downstream pollutant concentration (C_r) is calculated as 0.152 mg/L. C_r is greater than the nutrient standard, therefore DEQ finds that the WWTF has RP to exceed the TP standard and a WQBEL is required.

Given:
Q_d = 0.124 mgd average daily design flow
Q_s = 101 mgd (14Q5 x available nutrient dilution of 100%)
Q_r = 101.124 mgd
C_s = 0.150 mg/L
C_r = 0.150 mg/L (water quality standard)
Calculated Results:
C_{WLA} = 0.150 mg/L TP

Bridger WWTF cannot meet the calculated WQBEL of 0.150 mg/L TP; therefore, a variance under Department Circular DEQ-12B is applicable. Circular 12B requires DEQ to develop monthly average variance load limits for TN and TP that are based on the long-term average of the facility's discharge concentration. Long-term average is calculated as the arithmetic average of representative facility data from May 2014 through December 2016 (see **Attachment C**). The seasonal facility long-term average TP effluent concentration and load are calculated as 2.3 mg/L and 2.4 lbs/day.

A monthly average load limit (AML) is calculated using TSD methods as:
Long-term average load (2.4 lbs/day) x TSD multiplier from Table 5.2 (1.36)
= 3.2 lbs/day

The calculated seasonal AML is equal to the seasonal AML of 3.2 lbs/day established in the 2010-issued permit. Therefore, the 2010 permit limit is retained in this renewal, and applied seasonally July 1 through September 30.

DEQ-12B is applied for both TN and TP. Therefore, for both TN and TP, the permittee must complete the pollutant minimization program (PMP) requirement described in DEQ-12B Sections 2.2 and 2.2.1.2 by no later than July 1, 2027. The PMP is a structured set of activities to improve processes and pollutant controls that will prevent and reduce pollutant loadings. (see Part VII of the Fact Sheet)

3. Toxic Pollutants

Total Recoverable Metals: During the POR, the permittee reported annual total recoverable metals effluent data for copper, iron, lead, and mercury.

Reasonable potential for the WWTF discharge to cause exceedances of the metals water quality standards for copper, iron, lead, and mercury were evaluated using the following values in *Equation 1*, and presented in **Attachment A**. The upstream values were presented in **Table 5**. **Table 8** summarizes the RP analysis and *Equation 1*, with results of the RP analysis.

Given:

Q_d = 0.124 mgd average daily design flow

$Q_{s\ acute}$ = 0 mgd (7Q10 x available acute dilution of 0%)
$Q_{s\ chronic/human\ health}$ = 15.4 mgd (7Q10 x available chronic / human health dilution of 25%)

$C_{d\ Copper}$ = 10 µg/L (maximum observed (4 µg/L) x TSD multiplier (2.59))
$C_{d\ Iron}$ = 724 µg/L (maximum observed (280 µg/L) x TSD multiplier (2.59))
$C_{d\ Lead}$ = 1.3 µg/L (maximum observed (0.5 µg/L) x TSD multiplier (2.59))
$C_{d\ Mercury}$ = 0.03 µg/L (maximum observed (0.010 µg/L) x TSD multiplier (2.59))

$C_{s\ Copper}$ = 2 µg/L (upstream data)
$C_{s\ Iron}$ = 140 µg/L (upstream data)
$C_{s\ Lead}$ = 0.3 µg/L (upstream data)
$C_{s\ Mercury}$ = 0.005 µg/L (upstream data)

Calculated Result:

$C_{r\ Copper\ acute}$ = 10 µg/L
$C_{r\ Copper\ chronic}$ = 2.1 µg/L
$C_{r\ Iron\ chronic}$= 145 µg/L
$C_{r\ Lead\ acute}$ = 1.3 µg/L
$C_{r\ Lead\ chronic}$ = 0.31 µg/L
$C_{r\ Mercury\ acute}$ = 0.03 µg/L
$C_{r\ Mercury\ chronic/human\ health}$ = 0.01 µg/L

Table 8: Total Recoverable Metals Reasonable Potential Analysis Summary(1)

Metal	C_d Critical effluent concentration (µg/L)	C_s Upstream concentration (µg/L)	C_r Calculated Result(2) (µg/L)	Acute standard (µg/L)	Chronic standard (µg/L)	Human health standard (µg/L)	RP?
Copper(3)	10	2	10/2.1	31.7	19.6	NA	No
Iron	724	140	NA/145	NA	1000	NA	No
Lead(3)	1.3	0.3	1.3/0.31	246.2	9.6	NA	No
Mercury	0.03	0.005	0.03/0.01	1.7	0.91	0.05	No

Footnotes: NA = Not Applicable
(1) POR = 2011 through 2016.
(2) Values presented as $C_{r\ acute}/C_{r\ chronic}$
(3) Hardness-based standards are calculated using ambient data 238 mg/L hardness (Mg,Ca).

Using the above calculated critical effluent concentrations (C_d) and receiving water concentrations (C_s), average daily design flow (Q_d) and low flow rate based on 25% of the 7Q10 for chronic, and 0% of the 7Q10 for acute (Q_s) in *Equation 1*, the resulting downstream pollutant concentrations (C_r) is calculated as less than the water quality standards for each scenario (acute, chronic, or human health). Therefore, DEQ finds that the WWTF does not have RP to exceed the metals standards and no effluent limit is required (see **Attachment A**).

Whole Effluent Toxicity (WET): The proposed facility is a small POTW discharging less than 1.0 mgd. There are no identified industrial contributions as listed in 40 CFR 122 Appendix A, and the facility will not receive discharge from significant industrial users subject to pretreatment requirements. WET testing is not required.

Table 9: Outfall 001 Proposed WQBELs

Parameter	Units	Average Monthly Limitation(1)	Average Weekly Limitation(1)	Maximum Daily Limitation
Escherichia coli (E. coli) Bacteria, April - October	Number of organisms/100 mL	126(2)	252	--
Escherichia coli (E. coli) Bacteria, November - March	Number of organisms/100 mL	630(2)	1,260	--
Ammonia, total as N	mg/L	13.3	--	19.4
Total Nitrogen(3)	lb/day	8.0	14.0	--
Total Phosphorus as P(3)	lb/day	3.2	5.5	--

Footnotes:
(1) See Definition section at end of permit for explanation of terms.
(2) Report Geometric Mean if more than one sample is collected in the reporting period.
(3) Effective seasonally July 1 through September 30.

V. Final Effluent Limits

Effluent limitations or conditions in reissued permits must be at least as stringent as those in the existing permit, with certain exceptions. Federal regulations require permits to contain the more stringent TBEL or WQBEL limitation applicable to an individual pollutant. DEQ considered the proposed permit limits to ensure that they were as stringent as previous limits, or met the anti-backsliding requirements.

Beginning on the effective date and lasting through the term of the permit, the discharge from Outfall 001 shall, at a minimum, meet the effluent limits presented in **Table 10**:

Table 10: Proposed Final Effluent Limits

Parameter	Units	Effluent Limitations[1]			
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit
5-Day Biochemical Oxygen Demand (BOD_5)	mg/L	45	65	--	--
	lbs/day	47	67	--	--
	% removal	65	--	--	--
Total Suspended Solids (TSS)	mg/L	100	135	--	--
	lbs/day	103	140	--	--
pH[2]	s.u.	--	--	--	6.0 – 9.0
Escherichia coli (E. coli) Bacteria –summer[3][5]	Number of organisms/ 100 mL	126	252	--	--
Escherichia coli (E. coli) Bacteria –winter[4][5]	Number of organisms/ 100 mL	630	1,260	--	--
Ammonia, total as N	mg/L	13.3	--	19.4	--
Total Nitrogen as N[6]	lb/day	8.0	14.0	--	--
Total Phosphorus as P[6]	lb/day	3.2	5.5	--	--

Footnotes:
(1) See definitions in the permit.
(2) Effluent pH shall remain between 6.0 and 9.0 (instantaneous minima and maxima). For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.
(3) This limit applies from April 1 through October 31.
(4) This limit applies from November 1 through March 31.
(5) The geometric mean of the samples taken for the sample period (monthly or weekly) may not exceed these values.
(6) Effective seasonally July 1 through September 30.

There shall be no discharge of floating solids or visible foam in other than trace amounts. There shall be no discharge which causes visible oil sheen in the receiving stream [ARM 17.30.637(1)(b)].

VI. Monitoring Requirements

Samples shall be collected, preserved and analyzed in accordance with approved procedures listed in 40 CFR 136 and the analysis must meet any Required Reporting Values (RRVs) listed in Circular DEQ-7 unless otherwise specified.

Influent and effluent monitoring results must be reported within a Discharge Monitoring Report (DMR). Monitoring results must be submitted electronically (NetDMR web-based application) no later than the 28th day of the month following the end of the monitoring period. If no discharge into Clarks Fork Yellowstone River is observed during the reporting period, "no discharge" shall be reported on the Net DMRs.

A. Influent/Effluent Monitoring

Most influent and effluent monitoring requirements applied in the 2010-issued permit are maintained. Effluent monitoring of TRC is removed because a UV disinfection system has replaced chlorine treatment. Effluent monitoring of oil & grease is changed to visual, with the requirement to take a grab sample and analyze for O&G in the case of a sheen, since no RP was observed for that parameter. Effluent flow measurements are taken from a digital flow meter prior to the UV system. Effluent samples for all parameters must be obtained from the effluent weir box directly after the UV system. Influent samples for BOD_5 are to be taken from the lagoon influent manhole. Monitoring of the effluent must be representative of the volume and nature of the discharge. Effluent and influent monitoring requirements are presented in **Table 11**. **Table 11** summarizes outfall 001 monitoring and reporting requirements.

Table 11: Outfall 001 Monitoring and Reporting Requirements

Parameter	Units	Sample Location	Minimum Sample Frequency	Sample Type[1]	Reporting Requirements	Reporting Frequency	Required Reporting Value
Flow	mgd	Effluent	Weekly	Instantaneous	Monthly Average	Monthly	NA
5-Day Biochemical Oxygen Demand (BOD_5)	mg/L	Influent	Monthly	Composite	Monthly Average	Monthly	NA
	mg/L	Effluent	Weekly	Grab	Weekly Maximum Average Monthly Average		
	lb/day	NA	Weekly	Calculated	Weekly Maximum Average Monthly Average		
BOD_5 Percent Removal[2]	%	NA	Monthly	Calculated	Monthly Minimum		
Total Suspended Solids (TSS)	mg/L	Effluent	Weekly	Grab	Weekly Maximum Average Monthly Average	Monthly	NA
	lb/day	Effluent	Weekly	Calculated	Weekly Maximum Average Monthly Average		
pH	s.u.	Effluent	Weekly	Instantaneous	Daily Maximum Daily Minimum	Monthly	NA
Temperature	°C	Effluent	Monthly	Instantaneous	Daily Maximum Monthly Average	Monthly	NA
Escherichia coli (E. coli) Bacteria[3]	Number of organisms/ 100 mL	Effluent	Weekly	Grab	Weekly Average Monthly Average	Monthly	NA
Oil and Grease	Y/N	Effluent	Weekly	Visual	Report	Monthly	NA
	mg/L		(4)	Grab	Daily Maximum	(4)	
Ammonia, total as N	mg/L	Effluent	Monthly	Grab	Daily Maximum Monthly Average	Monthly	0.070
Nitrate + Nitrite, as N[5] [6]	mg/L	Effluent	Monthly	Grab	Monthly Average	Monthly	0.05
Total Kjeldahl Nitrogen, as N[5] [6]	mg/L	Effluent	Monthly	Composite	Monthly Average	Monthly	0.225
Total Nitrogen as N[5] [6]	mg/L	Effluent	Monthly	Calculated/ Composite	Monthly Average	Monthly	NA
	lb/day	Effluent	Monthly	Calculated	Monthly Average	Monthly	
Total Phosphorus as P[6]	mg/L	Effluent	Monthly	Composite	Monthly Average	Monthly	0.01
	lb/day	Effluent	Monthly	Calculated	Monthly Average	Monthly	NA

Footnotes:

(1) See Definition section at end of permit for explanation of terms.
(2) Percent (%) removal shall be calculated using the monthly average values.
(3) Report Geometric Mean if more than one sample is collected in the reporting period.
(4) If a visual sheen is observed, an effluent sample must be collected for Oil and Grease analysis. Use EPA Method 1664, Revision A: N-Hexane Extractable Material (HEM), or equivalent.
(5) The total nitrogen concentration calculated as the sum of total Kjeldahl nitrogen plus nitrate + nitrite.
(6) Nutrient monitoring only required from July 1 through September 30.

B. Instream Monitoring

Instream monitoring will be required, beginning year two (calendar year 2018) and lasting through year five (2021) of the permit cycle, as found in **Table 12**. Monitoring must take place at a consistent location upstream and outside the influence of Outfall 001 with the sample type, frequency, and RRVs as identified below. Instream monitoring results must be reported within a DMR. Monitoring results must be submitted electronically (NetDMR web-based application) no later than the 28th day of the month following the end of the monitoring period. Even in the case that there is no effluent discharge and no effluent monitoring, ambient instream monitoring is still required to be conducted and reported.

Table 12. Ambient Monitoring and Reporting Requirements(1)

Location	Parameter	Units	Sample Frequency	Sample Type(2)	Reporting Requirements	Reporting Frequency	Required Reporting Value(3)
Clarks Fork Yellowstone River: Upstream of discharge at Outfall 001 and downstream of any tributary or irrigation return flow.	pH	s.u.	Quarterly	Instantaneous	Quarterly Maximum Quarterly Minimum	Quarterly	NA
	Temperature	°C	Quarterly	Instantaneous	Quarterly Maximum Quarterly Minimum	Quarterly	NA
	Ammonia	mg/L	Quarterly	Grab	Quarterly Maximum	Quarterly	0.070
	Nitrate+Nitrite(4)(5)	mg/L	Monthly	Grab	Monthly Maximum	Monthly	0.020
	Total Kjeldahl Nitrogen, as N(4)(5)	mg/L	Monthly	Grab	Monthly Maximum	Monthly	0.225
	Total Nitrogen as N(4)(5)	mg/L	Monthly	Grab	Monthly Maximum	Monthly	0.070(6)
	Total Phosphorus as P(5)	mg/L	Monthly	Grab	Monthly Maximum	Monthly	0.003

Footnote: NA = Not applicable.
(1) Ambient water quality monitoring is required beginning the second year of the permit cycle (2018).
(2) See Definition section at end of permit for explanation of terms.
(3) See Circular DEQ-7 or DEQ-12A for more information on RRVs. Analysis must achieve these, or lower, reporting limits.
(4) The total nitrogen concentration may be analyzed by either persulfate digestion, or by the sum of total Kjeldahl nitrogen plus nitrate+nitrite; If persulfate digestion is used, the Permittee is not required to conduct the weekly summer sampling for nitrate+nitrite or total Kjeldahl nitrogen .
(5) Nutrient monitoring only required from July 1 through September 30.
(6) The total nitrogen RRV of 0.070 mg/L applies only to total nitrogen determined by persulfate digestion.

VII. Special Conditions

A. Nutrient Criteria General Variance Requirements

Bridger WWTF TN and TP limits are established using the DEQ-12B nutrient standards variances because the WWTF cannot meet nutrient criteria concentrations in DEQ-12A. Lagoons not designed to actively remove nutrients are required to maintain a long-term average for TN and TP, and implement the PMP.

Permittees that receive a general variance shall provide sufficient information to allow the Department to evaluate the performance of all PMP activities. Bridger WWTF is required to submit information at the time of the next renewal application in 2022, due 180 days prior to the date of permit expiration. Feasible activities will, as provided in subchapter 13, be incorporated into each discharger's PMP through the permit renewal process.

VIII. Public Participation

A. Public Notice

In accordance with ARM 17.30.1372, DEQ issued Public Notice No. MT-17-17 dated August 14, 2017. The public notice states that a tentative decision has been made to issue an MPDES permit to the Permittee and that a draft permit, fact sheet and environmental assessment (EA) have been prepared. Public comments are invited any time prior to the close of the business on September 13, 2017. 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 a draft permit is inappropriate or that DEQ's tentative decision to deny an application, terminate a permit, or prepare a 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 (including any public hearing) under ARM 17.30.1372.

B. Notification of Interested Parties

Copies of the public notice were mailed to the discharger, state and federal agencies and interested 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 this 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 (ARM 17.30.1373).

D. Permit Appeal

After the close of the public comment period DEQ will issue a final permit decision. A final permit decision means 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 pursuant to ARM 17.30.1379, or the applicant files an appeal pursuant to 75-5-403, MCA.

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 406-444-3080.

IX. Information Sources

Administrative Rules of Montana Title 17 Chapter 30 - Water Quality
Sub-Chapter 5 - *Mixing Zones in Surface and Ground Water*
Sub-Chapter 6 - *Montana Surface Water Quality Standards and Procedures*
Sub-Chapter 7- *Nondegradation of Water Quality*.
Sub-Chapter 10 - *Montana Ground Water Pollution Control System*
Sub-Chapter 12 - *Montana Pollutant Discharge Elimination System (MPDES) Standards*,
Sub-Chapter 13 - *Montana Pollutant Discharge Elimination System (MPDES) Permits*

Great West Engineering. 2013. *Town of Bridger UV Disinfection Improvements*.

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

Montana DEQ. 2017. Circular DEQ-7, *Montana Numeric Water Quality Standards* (May 2017).

Montana DEQ. 2014: Department of Environmental Quality, Circular DEQ-12A, *Montana Base Numeric Nutrient Standards* (July 2014)

Montana DEQ. 2017: Department of Environmental Quality, Circular DEQ-12B, *Nutrient Standards Variances* (June 2017)

Montana DEQ. 2014. Lagoon O&M Report, Town of Bridger Wastewater Treatment Facility (October, 2014)

Montana Department of Fish Wildlife and Parks. 2001. *Spawning Times of Montana Fishes* (March 2001)

Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0020303
a. Administrative Record
b. Renewal Application Forms DEQ-1 and EPA Form 2A, 2014

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

US Code of Federal Regulations, 40 CFR Part 503 – *Standards for the Use or Disposal of Sewage Sludge.*

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

USGS 2015: *Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2009*, US Geological Survey Scientific Investigations Report 2015-5019 (Electronic, 2015)

Montana Fish, Wildlife, and Parks. MFISH: Montana Fisheries Information System, http://fwp.mt.gov/fishing/mFish/ (accessed 2017)

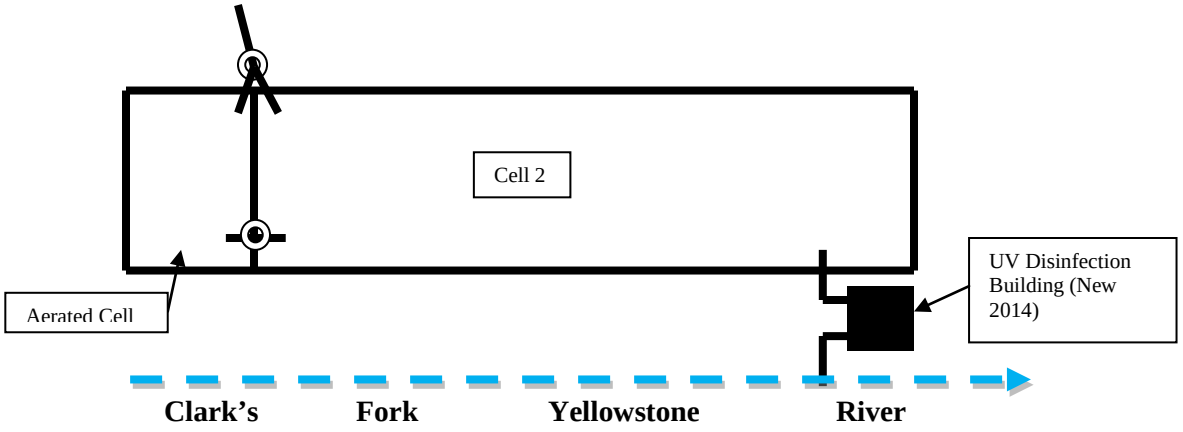
CWAIC: Clean Water Act Information Center, Department of Environmental Quality, (http://deq.mt.gov/Water/WQPB/cwaic (accessed 2017)

Fact Sheet prepared: July 2017 by Emilie Erich Hoffman

Attachment A: Bridger WWTP Reasonable Potential Analysis (April 2017)

			Oil and Grease	N+N (HHS)		Copper, total recoverable (Chronic)	Copper, total recoverable (Acute)	Iron, total recoverable (Chronic)	Lead, total recoverable (Chronic)	Lead, total recoverable (Acute)	Mercury, total recoverable (Chronic)	Mercury, total recoverable (Acute)	Mercury, total recoverable (HHS)
Flow													
critical stream flow	7Q10	mgd	61.4	61.4	mgd	61.4	61.4	61.4	61.4	61.4	61.4	61.4	61.4
% of critical stream flow for dilution			0%	100%		25%	0%	25%	25%	0%	25%	0%	25%
Q_s	instream flow available for dilution Q_s = (critical stream flow for dilution)*(% of critical stream flow provided)	**mgd**	**0.00**	**61**	**mgd**	**15.4**	**0.00**	**15.4**	**15.4**	**0.00**	**15.4**	**0.00**	**15.4**
Q_d	critical effluent flow (avg. daily design flow)	**mgd**	**0.124**	**0.124**	**mgd**	**0.124**	**0.124**	**0.124**	**0.124**	**0.124**	**0.124**	**0.124**	**0.124**
Q_r	downstream flow ($Q_s + Q_d$)	mgd	0.124	61.52		15.47	0.124	15.47	15.47	0.124	15.47	0.124	15.47
Concentrations													
C_{max}	maximum effluent concentration for POR (from application or DMR data)	mg/L	**3.00**	**3.48**	µg/L	**4**	**4**	**280**	**0.5**	**0.5**	**0.01**	**0.01**	**0.01**
n	number of samples in effluent data set		6	51		4	4	4	4	4	4	4	4
CV	0.6 if n < 10 calculated as $\sigma_{effluent}/\mu_{effluent}$ if n ≥ 10		0.6	0.6		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
P_n	%tile for n samples at 95% confidence level		0.61	0.94		0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Z_{Pn}	Z-score for P_n		0.27	1.58		-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07
TSD	calculated TSD multiplier (should be close to Table 3-2 value)		2.14	1.04		2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59
C_d	critical effluent concentration - 95%tile (=max. effluent concentration * TSD multiplier)	**mg/L**	**6.4**	**3.6**	**µg/L**	**10**	**10**	**724**	**1.3**	**1.3**	**0.03**	**0.03**	**0.03**
C_s	critical instream concentration (75%tile if n<=30, 95% UCL if n>30)	**mg/L**	**0.00**	**0.59**	**µg/L**	**2**	**2**	**140**	**0.3**	**0.3**	**0.005**	**0.005**	**0.005**
C_r	**resulting or downstream pollutant concentration** $C_r = (C_dQ_d + C_sQ_s)/(Q_d+Q_s)$	**mg/L**	**6.4**	**0.60**	**µg/L**	**2.1**	**10**	**145**	**0.31**	**1.3**	**0.01**	**0.03**	**0.01**
WQS	**water quality standard**	**mg/L**	**10**	**10**	**µg/L**	**19.6**	**31.7**	**1000**	**9.6**	**246.2**	**0.91**	**1.7**	**0.05**
Reasonable Potential			**no**	**no**		**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**

Attachment B: Bridger WWTF Flow Schematic Diagram (from 2014 O&M report)



Attachment C: Bridger WWTF Nutrient (TN, TP) Long-Term Average and Average Monthly Limit

Total Nitrogen May, 2014-Dec, 2016

effluent monitoring mg/L	lbs/day calculated from design flow	
10.0000	10.3	
10.3000	10.7	
11.8000	12.2	
2.1000	2.2	
7.8000	8.1	
9.2000	9.5	
10.8000	11.2	
6.5000	6.7	
15.3000	15.8	
11.1000	11.5	
10.7000	11.1	
9.6	**9.9**	**Mean**
	3.46	Std Dev
	0.35	CV
	1.36	Average LTA multiplier 95th percentile, n=4 (TSD Table 5.2)
	14	**AML**
	8.0	**2010 AML**

Total Phosphorus May, 2014-Dec, 2016

effluent monitoring mg/L	lbs/day calculated from design flow	
3.090	3.196	
3.000	3.102	
3.250	3.361	
0.520	0.538	
1.880	1.944	
2.560	2.647	
2.200	2.275	
1.510	1.562	
0.305	0.315	
2.630	2.720	
4.080	4.219	
2.3	**2.4**	**Mean**
	1.19	Std Dev
	0.51	CV
	1.36	Average LTA multiplier 95th percentile, n=4 (TSD Table 5.2)
	3.2	**AML**
	3.2	**2010 AML**