DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

Fact Sheet (FS)

Permittee:	Dawson County West Glendive
Permit No.:	MT0021733
Receiving Water:	Yellowstone River
Facility Information:	
Name:	Community of West Glendive Wastewater Treatment Plant
Location:	102 Highway 16
County:	Dawson
Facility Contact:	Doug Keever Public Works Director 207 West Bell Glendive, MT 59330
Fee Information:	
Number of Outfalls:	1
Outfall – Type:	001 - Minor POTW

I. Permit Status

The existing MPDES permit was issued on January 20, 2015, became effective March 1, 2015, and expired on February 29, 2020. The permittee submitted a renewal application on November 11, 2019. On November 21, 2019, the Department of Environmental Quality (DEQ) considered the application complete and administratively extended the permit.

II. Facility Information

A. Facility Description

The Community of West Glendive Wastewater Treatment Plant (West Glendive WWTP), which is owned and operated by Dawson County, consists of a two-cell facultative lagoon with additional aeration provided by pumping water from cell 1 to cell 2 through an aeration trough. Cell 1 is 9.9 acres and cell 2 is 21.1 acres in size. Wastewater from the south side of the county enters a distribution (splitter) box which allows the operator to control the influent into cell 1 or cell 2. Wastewater from the flush tank, a non-mechanical wet well that uses gravity and air pressure to force sewage from the Highland Park subdivision (west of Highway 16 and north of Interstate 94) to the lagoon, enters the lagoon on the north side of cell 2. Approximately 85% of the total influent flow is through the distribution box and 15% of the flow is from the flush tank. Influent samples can be obtained at both the distribution box and flush tank.

Effluent is discharged to a manmade ditch from the northeastern corner of cell 1 through a 12-inch buried PVC pipe that surfaces east of the lagoon; Outfall 001 is the end of the 12-inch PVC pipe located at 47.11712 N latitude and 104.772478 W longitude. The manmade ditch flows about 150 feet north before it empties into the Yellowstone River. The lagoon is located in the 100-year flood plain of the Yellowstone River.

The facility maintains 10.5 miles of collection lines. Most of the collection system is approximately 45 years old. Two pump stations pump wastewater to the splitter box. The facility accepts 90 to 100 1,000-gallon septage loads from two local septic tank pumpers (see Section II.D) each year.

Table 1 summarizes the current design criteria for the facility. In the past, a controlled discharge usually occurs in May and November each year for about 16-30 days, but the West Glendive WWTP now sends its effluent to the new City of Glendive Water Resource and Recovery Facility (Glendive WRRF). A Memorandum of Understanding (MOU) outlines conditions and responsibilities for connecting to the Glendive WRRF. West Glendive WWTP intends to keep its MPDES permit in case it does not send effluent to the Glendive WRRF and needs to discharge directly to the Yellowstone River in the future.

Table 1. Current Design Criteria Summary – West Glendive WWTP

Facility Description: Two cell facultative lagoon with aeration trough between the two cells.	
Construction Date: 1959	Modification Date: 1967 (added 21.1 acre cell)
Design Population: 3,100	Population Served: 1,948
Design Flow, Average (mgd): 0.275	Design Flow, Peak (mgd): unknown
Primary Cells: one (9.9 acres)	Secondary Cells: one (21.1 acres)
Minimum Detention Time (System) (days): unknown	
Design BOD_5 Removal (%): unknown	Design Load (lb/day): 527
Design SS Removal (%): unknown	Design Load (lb/day): 620
Collection System: separate	
SSO Events (Y/N): Y	Number: 3
Bypass Events (Y/N): N	Number: 0
Inflow Flow (mgd): 0.23	Source: leaking sewer pipes, manholes
Disinfection: none	Type: not applicable
Discharge Method: controlled twice/year (May and November)	
Effluent Flow Primary Device: Parshall flume	
Recording Device: none	
Sludge Storage: none	
Sludge Disposal: none	EPA Biosolids Permit Authorization: none

B. Effluent Characteristics

The West Glendive WWTP has not discharged since connecting with the Glendive WRRF. Table 2 summarizes monthly self-monitoring effluent data reported by the West Glendive WWTP during from April 2010 through April 2014.

Table 2: Effluent Characteristics [1] for April 2010 through April 2014.

Parameter	Location	Units	Existing Permit Limit	Minimum Value	Maximum Value	Average Value	Number of Samples
Flow, Daily Average	Effluent	mgd	[5]	0.18	1.37	1.0	10
Biochemical Oxygen Demand (BOD_5)	Influent	mgd	[5]	80	256.7	151.5	10
	Effluent	mg/L	45/30 [4]	9	35	19	10
	--	% removal	85	75.6	93.6	86.3	10
	Effluent	lb/day	69 [6]	13.5	289.5	163.6	10
Total Suspended Solids (TSS)	Influent	mg/L	[5]	93	213.5	120.3	10
	Effluent	mg/L	65/45 [4]	4.3	62.3	41.1	9
	--	% removal	65	35.6	100	68.4	10
	Effluent	lb/day	230 [6]	48.5	608.1	353	9
E. coli [2, 3]	Effluent	cfu/100 ml	252/126[4] 1,260/630[4]	1,800	8,600	3,460	10
pH	Effluent	s.u.	6.0-9.0	7.35	8.5	8.0	20
Temperature	Effluent	ºC	[5]	7.5	15	11.6	10
Ammonia, as N	Effluent	mg/L	1.8/1.3[4]	3.6	14.9	7.3	10
Total Kjeldahl Nitrogen	Effluent	mg/L	[5]	5	24.1	13.8	10
Nitrate + Nitrite, as N	Effluent	mg/L	[5]	0.02	0.57	0.2	10
Total Nitrogen	Effluent	mg/L	[5]	5.2	24.1	14	10
		lb/day	[5]	7.9	185.9	120.5	10
Total Phosphorus as P	Effluent	mg/L	[5]	1	4.5	3.1	10
		lb/day	[5]	1.6	33.1	26	9
Oil and Grease	Effluent	mg/L	10	2	5	3.2	6

Footnotes:

1. Conventional and nonconventional pollutants only, table does not include toxics.
2. Sample period is April 1 through October 31.
3. Geometric mean.
4. Weekly average/Monthly average.
5. No limit in existing permit; monitoring requirement only.
6. Nondegradation Annual Average Load Value - not a permit limit.

C. Compliance History

The facility has a history of noncompliance for effluent limits, but those were resolved by connecting with the Glendive WRRF. An inspection of the West Glendive WWTP was performed on December 10, 2020 and no violations were found at that time.

III. Technology-based Effluent Limits (TBELs)

A. Scope and Authority

The Montana Board of Environmental Review has adopted by reference 40 CFR 133 which defines minimum treatment requirements for secondary treatment, or the equivalent, for publicly owned treatment works (POTW). Secondary treatment is defined in terms of effluent quality as measured by BOD_5, TSS, percent removal of BOD_5 and TSS, and pH.

These requirements may be modified on a case-by-case basis for facilities eligible for treatment equivalent to secondary (TES) treatment [40 CFR 133.101(g)] or alternative state requirements (ASR) for TSS. To determine if a facility is eligible for TES, the facility must meet the requirements of 40 CFR 133.101(g) 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 (40 CFR 133.102),
2) The treatment works utilize a trickling filter or waste stabilization pond, and
3) The treatment works utilizes biological treatment that consistently achieves a 30-day average of at least 65 percent removal [40 CFR 133.101(k)].

National Secondary Standards (NSS) for BOD_5 were applied in the existing permit: average weekly limit of 45 mg/L, average monthly limit of 30 mg/L, and 85% removal. The facility was granted TES standards (average weekly limit of 65 mg/L, average monthly limit of 45 mg/L, and 65% removal) for TSS in the existing permit.

Effluent limits must be expressed in terms of mass, except for certain parameters, such as pH or temperature. For municipal treatment plants, mass-based limits are based on design flow. The following mass-based limits were calculated in the previous SOB:

Load (lb/day) = Design Flow (mgd) x Concentration (mg/L) x Conversion Factor (8.34)

BOD_5:			
30-day	Load = 0.275 mgd x 30 mg/L x 8.34	=	69 lb/day
7-day	Load = 0.275 mgd x 45 mg/L x 8.34	=	103 lb/day
TSS:			
30-day	Load = 0.275 mgd x 45 mg/L x 8.34	=	103 lb/day
7-day	Load = 0.275 mgd x 65 mg/L x 8.34	=	149 lb/day

Concentration and mass-based limits (load) calculated in the previous permit will be retained in this renewal permit (Table 3).

Table 3. Proposed TBELs				
Parameter	Concentration (mg/L)		Load (lb/day)	
	Weekly Average [1]	Monthly Average [1]	Weekly Average [1]	Monthly Average [1]
BOD_5	45	30	103	69
TSS	65	45	149	103
pH (s.u)	Within the range of 6.0 to 9.0 (instantaneous)			
BOD_5 Percent Removal [1] (%)	85 %			
TSS Percent Removal [1] (%)	65 %			
1. See Definition section at end of permit for explanation of terms.				

B. Nondegradation

Nondegradation requirements apply to new or increased sources of pollution. Sources that are in compliance with the conditions of their permit and do not exceed the limits established in the permit, or as determined from a permit previously issued by DEQ, are not considered new or increased sources.

Nondegradation load values for BOD_5 and TSS were established in pervious permits based on an average monthly concentration limit of 100 mg/L (0.275 mgd x 100 mg/L x 8.34 = 230 lb/day). Table 4 shows nondegradation loads for BOD_5 and TSS and the actual loads for the facility. The facility exceeded nondegradation loads for BOD_5 and TSS from 2010 through 2014 for all years.

Table 4: Calculated Nondegradation and Actual Loads					
Parameter	**Nondegradation Load** (lb/day)	**Actual 30-day Average Loads** (lb/day)			
		2010	2011	2013	2014
BOD_5	69	142	162	226	200
TSS	230 [1]	320	194	555	424
1. Based on an alternative state requirement (ASR) of 100 mg/L.					

In order to maintain compliance with nondegradation requirements, DEQ is not allowing an increase in the pollutant loads above the most stringent of the mass-based or nondegradation BOD_5 and TSS loads.

IV. Water Quality-based Effluent Limits

A. Scope and Authority

Permits are required to include water quality-based effluent limits (WQBEL) when TBELs are not adequate to protect state water quality standards. 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.

B. Receiving Water

Wastewater is discharged from the West Glendive WWTP to the Yellowstone River. The 7Q10 of the Yellowstone River is 1,360 cubic feet per second (cfs) and 14Q5 is 4,190 cfs.

The receiving water is classified as B-3 according to Montana Water Use Classifications. B-3 waters are to be maintained suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

The Yellowstone River is considered high quality water for many parameters and degradation of high quality water for those parameters is not allowed unless authorized by DEQ. The Yellowstone River is located within the lower Yellowstone watershed as identified by United States Geological Survey (USGS) Hydrological Unit Code (HUC) 10100004 and Montana Stream Assessment Unit MT42M001_012. The Yellowstone River in the vicinity of the discharge is on the draft 2020 303(d) list of impaired streams as impaired because a fish-passage barrier is located on this segment of the Yellowstone River. The water quality category for this segment of the river is identified as 4C – Total Maximum Daily Limits (TMDLs) are not required; no pollutant-related use impairment identified.

C. Applicable Water Quality Standards

Discharges to surface waters classified B-3 are subject to water quality standards. More restrictive requirements may be necessary due to water quality standards.

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. 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.

Acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless DEQ finds that allowing minimal initial dilution will not threaten or

impair existing uses. The discharge must also comply with general prohibitions, 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.

Although certain standards may be exceeded in the mixing zone, an effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions. No mixing zone will be granted that will impair beneficial uses. Aquatic life chronic, aquatic life acute and human health standards may not be exceeded outside of the mixing zone.

A dilution of 1% of the 7Q10 of the Yellowstone River is used to calculate reasonable potential (RP) and acute ammonia effluent limits; 10% of the 7Q10 is allowed to calculate RP and chronic ammonia effluent limits (Appendix I). Based on Circular DEQ 12-A, dilution of 100% of the 14Q5 (low two-week flow in five years) is used to calculate RP for TN and TP (Appendices II and III).

E. Basis for WQBEL (Reasonable Potential and Calculations)

Pollutants typically present in municipal wastewater that may cause or contribute to a violation of water quality standards include conventional pollutants such as biological material (measured by BOD_5), suspended solids, oil & grease, *Escherichia coli* (*E. coli*) bacteria, pH and non-conventional pollutants such as chlorine, ammonia, phosphorus, and nitrogen. West Glendive has no industrial sources so metals are not a parameter of concern.

Effluent limits are required for all pollutants which demonstrate a RP to exceed numeric or narrative standards. DEQ uses a mass balance equation to determine RP based on *EPA Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001). Input parameters are based on receiving water concentration, maximum projected effluent concentration, design flow of the wastewater treatment facility, and the applicable receiving water flow.

DEQ uses a mass balance equation to determine RP (*Equation 1*).

$$C_{RP} = \frac{C_E Q_E + C_S Q_S}{Q_E + Q_S} \qquad \textit{(Eq. 1)}$$

Where:

C_{RP} = receiving water concentration (RWC) after mixing, mg/L

C_E = maximum effluent concentration, mg/L
C_S = RWC upstream of discharge, mg/L
Q_S = applicable receiving water flow, cfs
Q_E = facility design flow rate, cfs

1. Conventional Pollutants

BOD_5, TSS, and pH – The TBELs are sufficient to protect beneficial uses. No additional WQBELs are required for these parameters.

Oil and Grease - There is RP for the facility to exceed the oil and grease water quality standard because the facility accepts 90 to 100 1,000-gallon septic truck loads each year from unknown sources that may contain oil and grease. The effluent limit for oil and grease (10 mg/L) in the existing permit is retained in this renewal permit. Monitoring for oil and grease is required twice each year.

***Escherichia coli (E. coli)* Bacteria –** Based on the data in Table 2, there is RP for the facility to exceed the *E. coli* water quality standard. This permit identifies pathogen limits to protect public health. The applicable standards for *E. coli* are:

April 1 through October 31 of each year - the geometric mean number of *E. coli* must not exceed 126 colony forming units (cfu) per 100 milliliters (ml) and 10% of the total samples may not exceed 252 cfu per 100 ml 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 and 10% of the total samples may not exceed 1,260 cfu per 100 ml during any 30-day period.

2. Non-conventional Pollutants

Total Residual Chlorine (TRC): If the facility uses chlorine for disinfection, there is RP for the facility to exceed the water quality standards for chlorine. The facility does not currently have disinfection capabilities. In the event chlorination is used as a means of disinfection, chlorine effluent limits in this permit will be an average monthly limit of 0.011 mg/L (chronic) and 0.019 mg/L (acute) for a maximum daily limit. The permittee will be in compliance with the TRC limits if each sample is less than 0.1 mg/L TRC. TRC limits and monitoring do not apply if ultraviolet (UV) light is used for disinfection.

Ammonia as N: Ammonia limits are developed based on standards that account for a combination of pH and temperature of the receiving stream, the presence or absence of salmonid species, and the presence or absence of fish in early life stages. The Yellowstone River is a warm water fishery without salmonids present.

Yellowstone River data is from the downstream USGS gauging station at Sidney (USGS station 06329500). It is unlikely that the discharge from the Glendive WRRP greatly influences ammonia data at Sidney gauging station because the of the distance and large volume of the Yellowstone River. In addition, the background river concentration of

ammonia (0.04 mg/L) at the Sidney gauging station is similar to the background river concentration of ammonia (0.04 mg/L) at the USGS gauging station (06214500) in Billings. The 75th percentile of the USGS data for pH and temperature in the river is 8.5 s.u. and 19.2° C, respectively.

To determine if the ammonia concentration in the effluent will contribute to or create an exceedence of the state water quality standards in the Yellowstone River, a RP analysis was completed using *Equation 1* (Appendix I)**.** The projected maximum effluent concentration for ammonia was found following the method recommended in the TSD. Using the projected ammonia effluent of 14.9 mg/L (Table 2) a multiplier of 1.7 was determined from Table 3-2 in the TSD given a coefficient of variation of 0.6 and a sample size of ten (10) at the 95% confidence interval. The projected maximum effluent concentration is the multiplier times the maximum projected concentration (14.9 mg/L x 1.7) or 25.3 mg/L. Based on the RP calculations in Appendix I, there is not RP for ammonia so ammonia effluent limits are not necessary.

Ammonia effluent limits were established in the last permit, but were not present in previous permits due to lack of monitoring data available for the earlier permits. The ammonia limits were established in the last permit because of some confusion and technical mistakes on the low flow of the receiving water. These technical mistakes are now corrected and justify removal of ammonia limits under antibacksliding regulations. Ammonia limits will be removed, but monitoring will be continued in the permit.

Total Nitrogen (TN) and Total Phosphorus (TP) –Nutrient criteria are described in Department Circular DEQ-12A, Montana Base Numeric Nutrient Standards. Base numberic nutrient standards in Table 12A-1 of DEQ-12A apply to the Yellowstone River. Since TN and TP numeric standards for the Yellowstone River apply, then the 14Q5 for the Yellowstone River must be used to perform a RP analysis for TN and TP.

Base numeric nutrient standards in DEQ-12A for the Yellowstone River from the Powder River confluence to the state line (Montana/North Dakota border) for the period August 1 through October 31 are: TN = 0.815 mg/L and TP = 0.095 mg/L. The West Glendive WWTP has not historically discharged during the months when the standards apply.

However, DEQ will perform a reasonable potential analysis on TN and TP in case the West Glendive WWTP were to discharge during the August 1 to October 31 timeframe. Based on the effluent characteristics in Table 2 for the West Glendive WWTP, TN (24.1 mg/L) and TP (4.5 mg/L) exceed the numeric nutrient standards in DEQ-12A for the Yellowstone River at Glendive. Therefore, following the method for developing permit limits for base numeric nutrient standards in DEQ-12A, a RP analysis is required to determine if the discharge exceeds numeric TN and TP standards. The 75th percentile of background values are TN (0.46 mg/L) and TP (0.045 mg/L) in the Yellowstone River. RP analyses for TN and TP in Appendices II and III show there is no RP to exceed the TN and TP numeric nutrients standards in DEQ-12A so no effluent limits for TN and TP are required. Monitoring for nutrients in the effluent will be continued in the permit.

3. Toxics

Nitrate plus nitrite – The human health standard for nitrate plus nitrite is 10 mg/L and DEQ-7 specifies that no samples in surface water may exceed this standard. Based on the effluent characteristics for nitrate plus nitrite in Table 2, the effluent minimum, maximum, and average concentrations for nitrate plus nitrite are 0.02 mg/L, 0.57 mg/L, and 0.2 mg/L, respectively. Therefore, there is no RP for nitrate plus nitrite to exceed the water quality standard (10 mg/L). No effluent limit for nitrate plus nitrite is necessary.

Whole Effluent Toxicity (WET) - State surface waters must be free from substances attributable to municipal, industrial or agricultural discharges that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life. In the last permit, DEQ included a narrative limit on acute toxicity and standard WET testing due to the intermittent nature of the discharge providing limited monitoring data. This was a technical mistake justifying removal of WET limits under antibacksliding regulations. DEQ's WET policy generally does not require minor POTWs, especially lagoons, to perform WET testing. The WET testing and narrative limit will be removed from the permit.

IV. Proposed Effluent Limits

Effluent limits apply at the end of the 12-inch PVC discharge pipe.

Table 5. Effluent Limits

Parameter	Units	Effluent Limitations		
		Average Monthly Limit [1]	Average Weekly Limit [1]	Instantaneous Maximum Limit [1]
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--
	lb/day	69	103	--
BOD_5 Removal	%	85	--	--
Total Suspended Solids (TSS)	mg/L	45	65	--
	lb/day	103	149	--
TSS Removal	%	65	--	--
E. coli [2]	No./100 ml	126	252	--
E. coli [3]	No./100 ml	630	1,260	--
Total Residual Chlorine (TRC) [4]	ug/L	0.011	--	0.019
Oil and grease	mg/L	--	--	10
pH	Between 6.0 and 9.0			

Footnotes:
1. See definition in permit.
2. This limit applies during the period April 1 through October 31.
3. This limit applies during the period November 1 through March 31.
4. If the facility uses chlorine for disinfection or any other purpose these effluent limits apply. The permittee is in compliance with the TRC limits if each sample is less than 0.1 mg/L.

V. Monitoring Requirements

A. Influent/Effluent Monitoring

Equal volumes of influent must be obtained at the distribution (splitter) box and flush tank and combined before sample parameters are analyzed.

Effluent samples must be obtained at the Parshall flume.

Table 6. Monitoring Requirements

Parameter	Unit	Sample Location	Sample Frequency	Sample Type [1]
Flow	Mgd	Effluent	1/Day	Instantaneous [2]
5-Day Biochemical Oxygen Demand (BOD_5)	mg/L	Influent	1/Week	Grab
	mg/L	Effluent	1/Week	Grab
	% Removal [3]	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Week	Calculated
Total Suspended Solids (TSS)	mg/L	Influent	1/Week	Grab
	mg/L	Effluent	1/Week	Grab
	% Removal [3]	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Week	Calculated
pH	s.u.	Effluent	1/Week	Instantaneous
E. coli	No./100 ml	Effluent	2/Month	Grab
Temperature	°C	Effluent	1/Month	Instantaneous
Discharge Duration	Days	Effluent	--	Reported
Oil and Grease	mg/L	Effluent	2/Year	Grab
Total Residual Chlorine [4]	mg/L	Effluent	1/Day	Grab
Ammonia as N	mg/L	Effluent	1/Month	Grab
Nitrate + Nitrite, as N	mg/L	Effluent	1/Month	Grab
Total Kjeldahl Nitrogen, as N	mg/L	Effluent	1/Month	Grab
Total Nitrogen [5]	mg/L	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Month	Grab
	lb/day	Effluent	1/Month	Calculated

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. Flow measured at the Parshall flume.
3. Percent removal shall be calculated using monthly averages.
4. If chlorine is not used during a reporting period, write “not chlorinating” in the comment section of the DMR form.

5. Calculated as the sum of Nitrate + Nitrite as N and Total Kjeldahl Nitrogen.

B. Pretreatment Program

The facility is not currently operating under the EPA Pretreatment Program. The permit will include standard language restricting introducing certain pollutants to the West Glendive WWTP and requiring the facility to provide adequate notice to DEQ if a new source, volume, or character of industrial pollutant is introduced to the system.

VI. Nonsignificance Determination

The mass-based loads calculated in this permit are more stringent than nondegradation loads and will remain in the renewal permit so the discharge from the West Glendive WWTP does not constitute a new or increased source of pollutants.

VII. Special conditions/Compliance Schedule

The permit will include a condition stating the facility shall not discharge while also sending waste to the Glendive WRRF. The facility shall notify DEQ in writing 30 days before discharging if it discharges again.

VIII. Information Sources

ARM Title 17, Chapter 30, Subchapter 5 - Mixing Zones in Surface and Ground Water.

ARM Title 17, Chapter 30, Subchapter 6 - Surface Water Quality Standards.

ARM Title 17, Chapter 30, Subchapter 7 - Nondegradation of Water Quality.

ARM Title 17, Chapter 30, Subchapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Standards.

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

DEQ. Draft Water Quality Integrated Report. Montana 303(d) List. 2020.

Prepared by: Jon Kenning
Date: April 2021

Appendix I

Reasonable Potential for Ammonia - West Glendive

	Variables	Units	Acute Condition		Chronic Condition	
Q_d	Discharge Flow (Design Q for POTW = 0.275 mgd = 0.43 cfs)	cfs		0.43		0.43
C_d	Concentration in Discharge	mg/L	C_{95}	25.3	C_{95}	25.3
Q_s	Applicable Stream Flow (% of 7Q10)	cfs	1%	13.6	10%	136
C_s	Concentration in Stream	mg/L		0.04		0.04
C_r	Concentration Down Stream	mg/L		0.81		0.12
	Stream Standards	mg/L	CMC 1-h	3.20	CCC 30-d	0.82
RP				no		no
7Q10		cfs		1,360.0		
CV				0.6		
n				10		
[max], mg/L				14.9		
TSD multiplier, Table 3-2 (95/95)				1.7		
C_{95} is the projected maximum effluent concentration ([max, mg/L] * TSD multiplier)				25.3		

Appendix II

Reasonable Potential for TN - West Glendive WWTP

	Variables	Units	TN			
Q_d	Discharge Flow (Design Q for POTW- 0.275 mgd)	cfs		0.43		
C_d	Concentration in Discharge	mg/L	C_{95}	33.8		
Q_s	Applicable Stream Flow (100 % of 14Q5)	cfs		4190.00		
C_s	Concentration in Stream	mg/L		0.46		
C_r	Concentration Down Stream	mg/L		0.5		
	Stream Standards	mg/L		0.815		
RP				no		
14Q5		cfs		4190.0		
CV				0.38		
n				10		
[max], mg/L				24.12		
TSD multiplier, Table 3-2 (95/95)				1.4		
C_{95} is the projected maximum effluent concentration ([max, mg/L] * TSD multiplier)				33.8		

Appendix III

Reasonable Potential for TP - West Glendive WWTP

	Variables	Units	TP			
Q_d	Discharge Flow (Design Q for POTW-0.275 mgd)	cfs		0.43		
C_d	Concentration in Discharge	mg/L	C_{95}	11.8		
Q_s	Applicable Stream Flow (100% of 14Q5)	cfs		4190.00		
C_s	Concentration in Stream	mg/L		0.045		
C_r	Concentration Down Stream	mg/L		0.046		
	Stream Standards	mg/L		0.095		
RP				no		
14Q5		cfs		4190.0		
CV				1.25		
n				10		
[max], mg/L				4.45		
TSD multiplier, Table 3-2 (95/95)				2.65		
C_{95} is the projected maximum effluent concentration ([max, mg/L] * TSD multiplier)				11.8		