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

PERMITTEE:	Northern Cheyenne Utilities Commission
PERMIT NO.:	MT0029360
RECEIVING WATERS:	Lame Deer Creek to Rosebud Creek
FACILITY:	Lame Deer Lagoon
RESPONSIBLE OFFICIAL:	Shari Bement, General Manager Lame Deer Lagoon WWTF Northern Cheyenne Utility Commission P.O. Box 747, Lame Deer, MT 59043 (406) 477-6318
LOCATION:	NE 1/4 of Section 33 and SE 1/4 of Section 28, Township 2S, Range 41E, Montana Principal Meridian 45.628889°N, 106.673611°W
PERMIT TYPE:	Indian country, Minor, Renewal

I. Permit Status

This statement of basis is for the renewal of the National Pollutant Discharge Elimination System (NPDES) Permit (MT0029360) authorizing discharge from the Lame Deer Lagoon wastewater treatment facility (facility).

The facility is located on the Northern Cheyenne Indian Reservation and is thus in "Indian country" as defined at 18 U.S.C. 1151. The Northern Cheyenne Tribe was granted treatment in a manner similar to a state (TAS) on August 11, 2006, and the EPA approved the Northern Cheyenne Tribe's water quality standards (WQS) on March 21, 2013. The EPA has not approved the Tribe or the State of Montana to implement the Clean Water Act (CWA) NPDES program in Indian country within the State of Montana. The EPA directly implements the CWA NPDES program on Indian country lands within the State of Montana.

II. Facility Information

This Permit is for the discharge from the Lame Deer facility that serves approximately 3,700 residents of the Lame Deer community, Dull Knife College, Lame Deer Elementary School, Northern Cheyenne Tribal Health and the Northern Cheyenne Tribal Headquarters on the Northern Cheyenne Indian Reservation.

The facility consists of a three-cell lagoon system, constructed in portions through the years. The three cells are Cell 1 (facultative), Cell 2 (aeration, currently non-operational) and Cell 3 (polishing/settling). A lift station positioned after a grinder carries influent from the sewer line to Cell 1. If this lift station is non-operational, influent flows directly to Cell 2. Effluent is discharged from the west corner of Cell 3 and is not disinfected prior to discharge.

The facility has been undergoing renovations since 2005, which had been expected to be complete prior to expiration of the Permit adopted in 2011. Those renovations included removal of approximately 700,000 gallons of sludge from Cell 1 and installation of a bentonite liner as well as fermentation pits to improve solids treatment. Dike and cell bottom levels were raised to improve separation from groundwater.

According to the application for this Permit renewal and supplemental information from the Facility, continuing renovations include replacement of approximately 5,400 linear feet of sewer main, improvements to Cell 2 (desludging and aeration installation), and installation of bio-reactor (bio-dome technology) to enhance the biological activity of treatment systems in order to reduce ammonia, BOD and TSS concentrations. Delays in these improvements occurred in 2017, and the renovations are expected to continue in the next permit cycle.

As depicted on the satellite image included with the permit application (Figure 1), influent enters Cell 1, moves through the cells consecutively, and is discharged to Lame Deer Creek from a point near the west corner of Cell 3.

Figure 1. Lame Deer Lagoon WWTF

A. Effluent Characteristics

A summary of self-monitoring effluent data for the period of record (POR) from March 2011 through January 2017 is included in Table 1.

Table 1. Summary of Self-Monitoring Data for March 2011-January 2017

	Value Reported a/				
Parameter	**Minimum**	**Maximum**	**Average**	**No. of Samples**	**No. of Exceed-ances b/**
BOD_5, mg/L	6	110	32.75	64	13
TSS, mg/L	10	53	25.02	61	4
Fecal Coliform, #/100 mL	1	260,000	17,201	34	16 c/
pH, s.u.	6.44	9.32	--	47	1 d/
Oil & Grease, mg/L	0	0	0	50	0
Oil & Grease, Visual	0	0	0	47	0
Flow, MGD	0	0.8	0.55	23	N/A e/

a/ This table shows the minimum, maximum, and average of values reported on the Discharger's monthly reports. The values are calculated from sample averages for BOD_5, TSS and Flow; single sample values for oil & grease and pH; and geometric mean values for fecal coliform.

b/ "Number of Exceedances" is the number of reported values that exceeded one or both, of the numeric limits provided in the Permit. For example, if a single value reported on the DMR exceeded both the 30-day average and the 7-day average, it is counted as a single exceedance in this summary.

c/ Fecal coliform limits became effective September 1, 2012. Only monitoring results provided after September 1, 2012 were included in this summary. Exceedances reported in this table are those values that exceeded the geometric mean limits.

d/ There were 8 reported pH recordings of 0.1 s.u. It is assumed that these were incorrectly recorded, therefore they were not included in the summary.

e/ The final ten reported values for flow, beginning July 2012, were reported as values between 5 and 8 MGD. It is assumed that these values were reported incorrectly. To provide a summary of flow data, these values were divided by 10 (0.5-0.8 MGD), which would make them consistent with other reported values.

B. Compliance History

Based on Discharge Monitoring Report (DMR) data, there were 49 effluent violations during the POR:

- The 30-day average limitation on BOD_5 of 45 mg/L was exceeded 13 times, with reported values ranging from 49-110 mg/L.
- The 30-day average limitation on TSS of 45 mg/L was exceeded four times, with reported values of 53 (twice), 51 and 48 mg/L.
- The instantaneous maximum limitation on pH of 9.0 standard units was exceeded once, in June of 2013, with a reported value of 9.32 s.u.
- The 30-day geometric mean limitation on fecal coliform of 200/100 mL was exceeded 16 times, with reported values ranging from 250/100 mL to 260,000/100 mL.

- The 7-day geometric mean limitation on fecal coliform of 400/100 mL was exceeded 15 times, with reported values ranging from 610/100 mL to 260,000/100 mL.

III. Technology-Based Effluent Limits (TBELs)

Treated effluent from the Lame Deer Lagoon is subject to the Secondary Treatment Regulations found at 40 CFR Part 133. Regulations at 40 CFR § 133.102 require that the minimum level of effluent quality for secondary treatment is 30-day average concentrations of BOD_5 and TSS that do not exceed 30 mg/L and 7-day average concentrations of these parameters that do not exceed 45 mg/L. The secondary treatment regulations also provide a limit for pH to be maintained between 6.0 and 9.0 standard units.

40 CFR § 133.105 provides less stringent standards that may be applied to certain types of facilities that employ treatment technologies deemed equivalent to secondary. POTWs or other facilities treating sewage with trickling filters or waste stabilization ponds (wastewater treatment ponds) are capable, of achieving significant reductions in BOD_5 and TSS, but might not consistently achieve the secondary treatment standards. To be eligible for discharge limitations based on these equivalent-to-secondary standards, a POTW must meet all, of the following criteria specified in 40 CFR § 133.101(g):

- The principal treatment process must be either a trickling filter or waste stabilization pond.
- The effluent quality consistently achievable through proper operation and maintenance of the treatment system is in excess of 30 mg/L BOD_5 and TSS.
- The treatment works as a whole provides significant biological treatment, which is defined in 40 CFR § 133.101(k) as consistently attaining a minimum 65 percent removal of BOD_5 as a monthly average.

The Facility's principal biological treatment system consists of waste stabilization ponds and the effluent concentrations for BOD_5 and TSS are consistently above the effluent quality set forth in 40 CFR §§ 133.102(a) and (b). The Permit issued in 2011 applied equivalent-to-secondary standards as the basis for BOD_5 and TSS effluent limits for the Facility. However, effluent data provided by the Discharger and facility inspections conducted by the EPA show that the Facility has not been properly operated and maintained, as is required for application of equivalent-to-secondary standards. Consequently, the BOD_5 and TSS limitations that apply to the Facility upon the effective date of this Permit are based on the secondary treatment standards at 40 CFR § 133.102(a) and (b): the 30-day average BOD_5 and TSS concentrations shall not exceed 30 mg/L and the 7-day average concentrations shall not exceed 45 mg/L.

The percent removal requirements for BOD_5 and TSS required by 40 CFR § 133.102(a)(3) are not included in this permit. Compliance with percent removal requirements generally is based on influent and effluent data taken at approximately the same time. The hydraulic residence time in the Facility's lagoon system is typically greater than 30 days. The percent removal requirement is based on a 30-day average, but for the lagoon system, influent and effluent samples collected within a given 30-day period are not representative of the same wastewater. It is infeasible to calculate the 30-day average percent removal, based on the operation of lagoon treatment systems.

40 CFR § 133.102(c) establishes the pH limits for all types of facilities. The pH requirement in the secondary treatment standards is pH within the range of 6.0 to 9.0 standard units at all times, however as discussed below, the water quality-based effluent limitations (WQBELs) for pH in this Permit are based on the Northern Cheyenne Tribe WQS. These WQBELs are more restrictive than limits based on the secondary treatment standards.

IV. Water Quality-Based Effluent Limits (WQBELs)

WQBELs, which are based on WQS, must be established for any parameters where TBELs are not sufficient to ensure water quality standards will be attained in the receiving water (40 CFR § 122.44(d)). The parameters that must be limited are those that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an exceedance of water quality standards.

The Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation adopted surface water quality standards for the Reservation that were approved by the EPA and became effective on March 21, 2013. This section provides a basis and rationale for establishing WQBELs based on the applicable water quality standards of the receiving water.

A. Receiving Waters

The discharge from the facility enters Lame Deer Creek from cell three of the Lagoon at a point approximately 2,000 feet due north of U.S. Highway 212. The full length of the mainstem of Lame Deer Creek, approximately 7.5 miles over land, is located on the Northern Cheyenne Indian Reservation, flowing into Rosebud Creek just south of the northern boundary of the Reservation. Rosebud Creek is tributary to the Yellowstone River.

B. Fish Species/Life Stages Present

The Montana Natural Heritage Program Fish of Montana field guide (updated March 9, 2016) was used to identify forty-two fish species potentially present on the Northern Cheyenne Indian Reservation. The Montana Fisheries Information System (M-FISH) was used to establish the most common species; however M-FISH did not supply survey data for Lame Deer Creek. Since Lame Deer creek is tributary to Rosebud Creek, the M-FISH survey for Rosebud Creek was reviewed. The most common species of fish identified in the M-FISH Rosebud Creek survey are channel catfish, carp, flathead chub, longnose dace, northern pike, sauger, shorthead redhorse and white sucker.

Based on "Spawning Times of Montana Fishes," Don Skaar, Montana FWP, 3/6/01, these most common species are present in early life stages from March through August. However, other species potentially present in Lame Deer Creek, though less abundant, are shown to have early life stages present throughout the rest of the calendar year. In consideration of ammonia and dissolved oxygen, early life stages of salmonid and non-salmonid fishes are assumed to be present in Lame Deer Creek year-round. Early life stages include all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.

C. Water Quality Considerations

The Northern Cheyenne WQS classify the mainstem of Lame Deer Creek as Class 1 Cold Water with the following designated uses: Salmonid propagation/growth; recreation – incidental contact; drinking water after conventional treatment; wildlife, agricultural, industrial, cultural, and wetland. Numeric or narrative criteria have been developed for various parameters, including several that are likely to be discharged from the facility: fecal coliform bacteria, *Escherichia coli* (*E. coli*), total residual chlorine, oil

and grease, ammonia and nutrients, as well as for physical characteristics such as pH, temperature, and dissolved oxygen.

The WQS include the following narrative water quality criteria at Sections 1.3.5.A and B:

1. [1.3.5.A.] Reservation surface waters must be free from substances which are or may become injurious to public health, safety, welfare, or any of the designated or existing beneficial uses. Such substances may or 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 oil 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 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 except for pesticide application as described in the Standards;
    e. Create conditions which produce undesirable aquatic life.

2. [1.3.5.B.] No pollutants may be discharged which, either alone or in combination with other pollutants, will cause exceedances of surface water quality standards or criteria.

Pollutants typically present in treated effluent from domestic wastewater treatment facilities that may cause or contribute to exceedances of water quality standards include conventional pollutants such as biological material (measured by BOD_5), TSS, oil and grease, fecal coliform bacteria, and pH; and non-conventional pollutants or parameters such as *E. coli*, total residual chlorine (TRC), ammonia (NH_3), total nitrogen (TN), total phosphorous (TP), dissolved oxygen and total dissolved solids.

Based on the domestic nature of the discharge and absence of industrial users, other parameters, including most priority and non-conventional pollutants with numeric criteria established for the agricultural and drinking water designated uses of Lame Deer Creek, are not expected to be discharged in quantities that would cause, have reasonable potential to cause, or contribute to an excursion of the Northern Cheyenne WQS; therefore effluent limitations and monitoring are not required for those additional parameters.

1. Conventional Pollutants
   BOD_5, TSS, and pH – The Northern Cheyenne WQS do not include numeric criteria for BOD_5 or TSS, so no WQBELs are necessary for these pollutants at this time. The water quality criterion for pH is 6.5 to 9.0 standard units, which is more stringent than the TBEL, and will apply as the WQBEL.

   Dissolved Oxygen – Numeric criteria for dissolved oxygen are established by the Northern Cheyenne WQS. These criteria are based on the presence or absence of early life stages of freshwater aquatic life. There are currently no dissolved oxygen data for the lagoon system's effluent; however, the discharge has consistently exceeded its technology-based effluent limitations for BOD_5, indicating elevated discharges of oxygen-demanding organic material.

Limitations based on the dissolved oxygen criteria, assuming fish early life stages present, are included in this Permit. Monitoring will be required to evaluate compliance with the effluent limits and to provide data to reevaluate the need for WQBELs for dissolved oxygen.

Fecal coliform – During periods when the daily maximum water temperature is greater than 15.5 C, the geometric mean number of organisms in the fecal coliform group must not exceed 200 per 100 milliliters, nor are 10% of the total samples during any 30-day period to exceed 400 fecal coli forms per 100 milliliters. Fecal coliform sampling shall occur at least five times during a calendar month, with sampling events equally spaced throughout the calendar month.

The WQS include a Mixing Zone and Dilution Policy which provides basis for the denial of mixing zones when the potential exists for human exposure to pollutants resulting from drinking water or recreational activities. Of 34 fecal coliform samples reported during the period of record, 16 reported averages exceeded the 30-day geometric mean limit of 200 colonies/100 mL and 15 of the reported averages exceeded the 7-day geometric mean limit of 400 colonies/100 mL. Based on these exceedances, and because two of the designated uses of the mainstem of Lame Deer creek are recreation (incidental contact) and drinking water after conventional treatment, numeric limitations for fecal coliform are established by applying the water quality criteria at end-of-pipe.

Oil and Grease – The Permit issued in 2011 included an effluent limitation for oil and grease of 10 mg/L. The Northern Cheyenne WQS includes a narrative criterion that Reservation surface waters must be free from substances which may or will "create floating debris, scum, a visible oil film (or oil be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials." The reissued Permit includes as WQBELs both a numeric limit of 10 mg/L and narrative limitation stating that "[there shall be no] visible sheen in the receiving water or adjoining shoreline." Visual monitoring for oil and grease shall occur weekly. In the event that an oil sheen or floating oil is observed in the discharge, a grab sample shall immediately be taken, analyzed, and the results reported.

2. Non-conventional Pollutants

E. coli – The Northern Cheyenne WQS establish numeric criteria for *E. coli* of 126 colonies per 100 mL as a 30-day geometric mean and a single sample maximum of 406 colonies per 100 mL for waters designated for incidental recreational use. The numeric criteria for *E. coli* established by the WQS will be applied at end-of-pipe as numeric effluent limitations for the duration of this Permit based on the potential for human exposure as discussed above for fecal coliform bacteria. Because the WQS specify a statistically sufficient number of samples as "not less than 5 samples equally spaced over a 30-day period," sampling for *E. coli* is to occur five times during each calendar month, with sampling events equally spaced throughout the calendar month.

Floating solids – The previous Permit contained the narrative limitation of "there shall be no discharge of floating solids or visible foam in other than trace amounts." This Permit retains a similar narrative limitation revised to more closely match the narrative criterion in the water quality standards, which states: "Reservation surface waters must be free from substances … [that may or will] … Create floating debris, scum, a visible oil film (or oil be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials." The prohibitions of visible oil film, globules of grease, or oil present in concentrations in excess of 10 mg/L is addressed by the oil and grease limitations.

Temperature – The temperature limitation in this Permit is based on the physical and biological criteria maximum value of 20ºC established by the Northern Cheyenne WQS for waters designated Class 1 Cold Water Salmonid Propagation. Temperature will be monitored monthly and the temperature requirement will be applied as a single sample limit.

Total Residual Chlorine (TRC) – The TRC limitations are based on the numeric criteria established in the Northern Cheyenne WQS of 0.019 mg/L (acute, 1-hour average) and 0.011 mg/L (chronic, 4-day average). The discharger has not yet selected and installed a disinfection system at the facility. If a disinfection system that does not use chlorine is selected, the TRC monitoring requirements and limitations do not apply. If a system that uses chlorine is selected, TRC limitations will apply and TRC monitoring will be required weekly. A mixing study of the effluent and receiving water has not been completed; therefore, the TRC limitations are applied based on meeting the water quality criteria end-of-pipe.

EPA is setting the minimum level at 0.05 mg/L when using this method. The permittee shall conduct analyses of total residual chlorine in accordance with this method and report actual analytical values. Measured values greater than or equal to 0.05 mg/L will be considered violations of the effluent limitations and values less than 0.05 mg/L will be considered to be in compliance with the effluent limitations. For average effluent limits, compliance shall be determined by taking the arithmetic mean of values reported for a specified averaging period, using zero (0) for any value reported at a concentration less than the minimum level and comparing that mean to the appropriate average effluent limit. An arithmetic mean that is less than or equal to the average effluent limit shall be considered in compliance with that effluent limit.

NH_3, TN, and TP – There is no available effluent data for NH_3, TN, and TP. Ambient data at a location north of the facility were analyzed for these parameters. The results for samples analyzed between September 2005 and July 2016 are summarized below.

Table 2. Maximum Nutrient Values in Lame Deer Creek near Rosebud Creek

	Ammonia	Nitrogen	Phosphorus
Maximum	0.15 mg/L	0.21 mg/L	0.54 mg/L
Average	0.080 mg/L	0.18 mg/L	0.20 mg/L
# of samples	27	2	23

The Northern Cheyenne WQS do not establish criteria for TN. For TP, the WQS include a reference to narrative criteria. The Tribe's narrative criteria include a provision stating that "Reservation surface waters must be free from substances which are or may become injurious to public health, safety, welfare, or any of the designated or existing beneficial uses." This provision addresses substances that may or will produce odors, colors or other conditions which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life except for pesticide application; and create conditions which produce undesirable aquatic life. The Tribe has not interpreted its narrative criteria to derive numeric values for TN or TP. Quarterly monitoring for TP and TN are required to allow future evaluation of the need for WQBELs and to assure attainment of narrative criteria from the WQS.

Effluent limitations for ammonia are included in the permit based on the supplemental data provided by the applicant. The ammonia limits are new, and the limited data the EPA has indicates that the facility will need time to come into compliance. Compliance schedules are authorized under 40 CFR § 122.47 and are intended to be used when compliance with water quality based effluent limits is not feasible upon permit issuance. They provide a timeline for permittees to meet new or lower effluent limits and must require compliance as soon as possible. The Permittee will have until 42 months after the effective date of the permit, to optimize treatment for ammonia using the bio-reactors. The ammonia limitations will not become effective until 42 months after the effective date. This time is being allowed in order for the Facility to complete installation of bio-reactor technology enhancements and upgrades which are currently underway. Since the compliance schedule for ammonia is longer than one year, annual milestones are required and must be reported to the EPA (40 CFR § 122.47) and are included in the Permit.

The ammonia limit will be a calculated limit due to the lack of data. However, the EPA is requiring end-of-pipe effluent monitoring for ammonia, as well as receiving water monitoring for time, date, temperature, and pH. The additional ammonia data and receiving stream data collected over the next three years may be used to calculate a monthly ammonia limit. It is incumbent upon the permittee to formally request a permit modification from the EPA for numeric ammonia limits once sufficient data is available. If at this time, the permittee formally requests a recalculation and set monthly ammonia limit, the EPA will reopen the permit and establish a monthly limitation. If the permittee does not request a calculated monthly limitation, the Northern Cheyenne WQS ammonia calculation will be the limitation for ammonia, effective 42 months after the effective date of the permit.

Total Dissolved Solids – Monitoring for Total Dissolved Solids is required to evaluate the nature of the discharge and the potential impact on designated uses of the receiving water, including agricultural uses. Monitoring for Total Dissolved Solids is required quarterly for the duration of the Permit, but the frequency may be increased or decreased at the next permit issuance based on the results of monitoring during this Permit term.

3. Antidegradation

The Northern Cheyenne WQS includes an Antidegradation Policy applicable to all surface waters of the Tribe. Antidegradation requirements are triggered whenever a regulated activity is proposed that may have some effect on surface water quality. Such activities are reviewed to determine, based on the level of antidegradation protection afforded to the affected waterbody segment, whether the proposed activity should be authorized. In general, it is presumed that a majority of tribal waters qualify for Tier 2 protection. Once it is determined that Tier 2 protection applies to a waterbody, the next step in the review process is to determine whether the degradation that will result from the proposed activity is significant enough to warrant further review (such as evaluation of alternatives).

This permit does not allow any new or increased discharge concentrations of pollutants from the Lame Deer Lagoon facility to Lame Deer Creek. Furthermore, there has been no significant increase in effluent flow from the Facility since the previous permit was issued and, therefore, no significant increase in pollutant loading. Consequently, this permit would not result in significant degradation and, based on the Tribe's antidegradation policy, no further analysis is necessary.

V. Final Effluent Limitations

The effluent limitations in Table 3 will be applied to the discharge at Outfall 001 for the duration of the permit cycle. All limits become effective on the effective date of this Permit. Limits are based on the most stringent of either the TBELs or WQBELs presented in Sections III and IV, respectively.

Table 3. Effluent Limitations Included in the Permit

Effluent Characteristic	Effluent Limitation		
	Average Monthly a/	Average Weekly a/	Daily Maximum a/
BOD_5, mg/L	30	45	N/A
Total Suspended Solids, mg/L	30	45	N/A
Fecal coliform, cfu/100 mL	200 b/	N/A	400 b/
E. coli, cfu/100 mL	126 c/	N/A	406 c/
Total Residual Chlorine, mg/L d/	0.011	N/A	0.019
Ammonia as N, mg/L	See Permit section 1.3.1.1		N/A
The pH of the effluent shall not be less than 6.5 standard units or greater than 9.0 standard units (s.u.) in any single sample or analysis.			
The Dissolved Oxygen limitation 7 Day mean cannot be less than 6.5 mg/L and the 1 Day Minimum cannot be less than 5.0 mg/L.			
The concentration of oil and grease in any single sample shall not exceed 10 mg/L nor shall there be any visible sheen in the receiving water or adjoining shoreline.			
The temperature of the effluent shall not exceed 20ºC in any single sample or analysis.			
There shall be no discharge of floating debris, scum, or other floating materials.			

a/ See Permit Definitions, section 1.1, for definition of terms.

b/ Fecal coliform: From March 1 through October 31 each year, the geometric mean number of organisms in the fecal coliform group must not exceed 200 cfu/100 mL. In addition, no more than 10 percent of the total samples during any month are to exceed 400 cfu/100 mL.

c/ *E. coli*: Based on a statistically sufficient number of samples (not less than 5 samples equally spaced over a month), the geometric mean of the *E. coli* densities shall not exceed 126 per 100 mL. In addition, no single sample shall exceed 406 per 100 mL.

d/ The limits for Total Residual Chlorine are only applicable if chlorine is used in the disinfection process, once installed. The limits are below the minimum level of 0.05 mg/L for the required analytical method. Measured values greater than or equal to 0.05 mg /L are considered violations of the effluent limitations and measured values less than 0.05 mg /L are considered to be in compliance with the effluent limitations.

VI. Self-Monitoring and Reporting Requirements – Outfalls 001 and 001R

The self-monitoring requirements in Table 4 apply to Outfall 001. The frequency of effluent self-monitoring requirements for BOD_5, TSS and fecal coliform has been increased compared to the previous Permit because several DMRs have indicated exceedances of permit limitations. The frequency of monitoring for oil and grease has been increased compared to the previous Permit because the Lame Deer Lagoon facility is a continuous discharge outfall with several food service establishments in the service area. Weekly monitoring for oil and grease will provide a higher level of water quality protection than the monthly monitoring required in the previous permit. Monitoring for parameters for which new water quality standards have been adopted, and which are expected to be discharged by the facility, has been added to determine whether the discharge will cause, have the reasonable potential to cause, or contribute to an exceedance of those standards.

Table 4. Monitoring Requirements – Outfall 001

Effluent Characteristic a/	Frequency	Sample Type b/
Flow, MGD c/	Daily	Instantaneous
BOD_5, mg/L	Monthly	Grab
Total Suspended Solids, mg/L	Monthly	Grab
pH, standard units	Weekly d/	Instantaneous
Dissolved Oxygen, mg/L	Monthly	Grab
Fecal Coliform, no./100 ml. e/	5 per month f/	Grab
E. coli, no./100 ml.	5 per month f/	Grab
Oil and Grease (visible sheen) g/	Weekly	Visual Observation
Oil and Grease, mg/L g /	Weekly	Grab
Temperature, ºC	Weekly d/	Instantaneous
Total Residual Chlorine, mg/L h/	Weekly	Grab
Ammonia, as N, mg/L	Monthly d/	Grab
Total Phosphorous, µg/L	Quarterly	Grab
Total Nitrogen, µg/L	Quarterly	Grab
Total Dissolved Solids, mg/L	Quarterly	Grab

a/ All monitored data shall be recorded in a daily log (paper or electronic). If no discharge occurs on any one day, zero (0) shall be recorded in the daily log for that day for flow and for all other parameters required to be monitored. If the required data are not entered in the daily log on a day that a discharge occurs, it will be assumed that the required monitoring was not performed. If no discharge occurs during the reporting period, the appropriate "No Discharge" code shall be reported on the DMR.

b/ See Permit Definitions, section 1.1, for definition of terms.

c/ Flow monitoring shall be daily. Flow measurements of effluent volume shall be made in such a manner that the Permittee can affirmatively demonstrate that representative values are being obtained. The average flow rate (in million gallons per day) during the reporting period and the maximum flow rate observed (in mgd) shall be reported.

d/ Monitoring for pH and temperature must be conducted at the same time as the sample to be analyzed for ammonia is taken.

e/ Monitoring for fecal coliform is required from March 1 to October 31 only.

f/ Samples shall be equally spaced over a calendar month.

g/ If a visible sheen is detected, a grab sample shall be taken immediately and analyzed in accordance with the requirements of 40 CFR Part 136. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

h/ Monitoring for Total Residual Chlorine is required only if chlorine is used as part of the disinfection process.

pH – Due to reported exceedances of the pH limit, monitoring will be increased from monthly to weekly to better characterize the effluent.

Oil and grease – The previous Permit contained visual monitoring of oil and grease as well as a sampling requirement upon observation of visible sheen and a numeric limitation of 10 mg/L. The Lame Deer Lagoon facility is a continuous discharge outfall with several food service establishments in the service area. With this Permit issuance, the visual observation requirement for oil and grease has been increased from monthly to weekly because weekly monitoring for oil and grease will provide a higher level of water quality protection than the monthly monitoring required in the previous permit.

Fecal coliform – The previous permit contained a limit for fecal coliform. With this permit issuance the sampling requirement for fecal coliform will be increased to require 5 samples per month, evenly spaced throughout the month. This increase in sampling requirement is necessary to meet the Northern Cheyenne WQS's geometric mean reporting requirement.

E. coli – The previous Permit did not require monitoring of *E. coli*. However, because the Northern Cheyenne WQS include numeric criteria for *E. coli*, and WQBELs based on meeting those criteria at the end-of-the-pipe have been included in this Permit, *E. coli* monitoring will be required for the duration of this Permit.

Nutrients – Because the human waste in domestic wastewater is a source of nutrient pollution, and the WQS include numeric criteria that address ammonia and narrative criteria that may be interpreted to address total phosphorus and total nitrogen, this Permit contains monitoring requirements for these constituents. Total phosphorus and total nitrogen monitoring are required quarterly to provide data for future evaluation of the need for WQBELs and to assure attainment of narrative criteria from the WQS.

Ammonia monitoring is being required monthly from the facility, additionally, in-stream temperature and pH monitoring are being required to provide adequate date to determine ammonia limits and to assess the efficacy of facility modifications and the utilization of bio-reactors to be installed in 2018.

The self-monitoring requirements in Table 5 apply to Outfall 001R. As discussed above, ambient monitoring for pH, temperature and the date and time of those samples have been added to appropriately calculate the applicable ammonia criteria and assess attainment of the criterion in the receiving water. At a minimum, upon the effective date of this Permit, the facility is responsible for monitoring these parameters monthly. Monitoring of receiving stream parameters shall occur in Lame Deer Creek. The monitoring point selected is located at the Montana Highway 39 bridge over Lame Deer Creek about three and one-half miles north of Lame Deer, approximate latitude 45.667570° N, longitude 106.699640° W, as described in section 1.2 of the Permit.

Table 5. Monitoring Requirements – Outfall 001R

Effluent Characteristic a/	Frequency	Sample Type b/
pH, standard units	Monthly	Instantaneous
Temperature, ºC	Monthly	Instantaneous
Time sample collected	Monthly	Instantaneous
Date sample collected	Monthly	Instantaneous

a/ All monitored data shall be recorded in a daily log (paper or electronic). If no discharge occurs on any one day, zero (0) shall be recorded in the daily log for that day for flow and for all other parameters required to be monitored. If the required data are not entered in the daily log on a day that a discharge occurs, it will be assumed that the required monitoring was not performed. If no discharge occurs during the reporting period, the appropriate "No Discharge" code shall be reported on the DMR.

b/ See Permit Definitions, section 1.1, for definition of terms.

A. Reporting of Monitoring Results

Upon the effective date of this Permit, the Permittee must electronically submit discharge monitoring reports (DMRs) on a monthly frequency using NetDMR. Electronic submissions by permittees must be submitted to EPA Region 8 no later than the 28th of the month following the completed reporting period. The Permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at https://netdmr.zendesk.com/home. In addition, the Permittee must submit a copy of the DMR to the Northern Cheyenne Tribe's Environmental Protection Department. Currently, the Permittee may submit a copy to the Northern Cheyenne Tribe's Environmental Protection Department by one of three ways: 1. a paper copy may be mailed, 2. the email address for Northern Cheyenne Tribe's Environmental Protection Department may be added to the electronic submittal through NetDMR, or 3. the Permittee may provide the Northern Cheyenne Tribe's Environmental Protection Department viewing rights through NetDMR.

VII. Endangered Species Act Requirements

Section 7(a) of the Endangered Species Act requires federal agencies to ensure that any actions authorized, funded or carried out by an agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species.

According to U.S. Fish & Wildlife Service, Information for Planning and Conservation (IPaC) website (https://ecos.fws.gov/ipac/), the federally listed endangered species found in the area of the Facility include:

Species	Status
Black-footed Ferret (*Mustela nigripes*)	Endangered
Northern Long-eared Bat (*Myotis septenrionalis)*	Threatened
(No critical habitats are located in the project area)	

Determination

The EPA has determined this Permit renewal is not likely to adversely affect any of the species listed by the U.S. Fish and Wildlife Service under the Endangered Species Act within Rosebud County or the Northern Cheyenne Indian Reservation. The finding is based upon the following:

- The reissue of this Permit does not allow any increase in effluent limitations over the previous Permit.
- There is no new construction or Facility size increase that would result in ground disturbance or vegetation removal with the reissue of this Permit.
- The Facility location is in a creek bottom adjacent to the built-up area of the Lame Deer, which is not an area the Black-footed Ferret would normally frequent.

Before going to public notice, a copy of the draft Permit, this Statement of Basis and the Official Species List was sent to the USFWS requesting concurrence with the EPA's finding that reissuance of this NPDES Permit (MT-0029360) for the Lame Deer Lagoon is Not Likely to Adversely Affect any of the species listed as threatened or endangered for the Northern Cheyenne Indian Reservation by the USFWS under the Endangered Species Act nor their critical habitat. On November 21, 2017, the USFWS concurred with the EPA's finding.

VIII. National Historic Preservation Act (NHPA) Requirements

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The EPA has evaluated its planned reissuance of the NPDES Permit for the Lame Deer Lagoon system to assess potential effects on any listed or eligible historic properties or cultural resources.

The EPA does not anticipate any impacts on listed/eligible historic or cultural properties because this Permit is a renewal and will not be associated with any new ground disturbances or changes to the volume or point of discharge. During the public comment period, the EPA notified the Tribal Historic Preservation Office (THPO) of the Northern Cheyenne Tribe of the planned issuance of this NPDES Permit and request input on potential effects on historic properties and EPA's preliminary determination in this regard.

IX. Miscellaneous

The effective date and the expiration date of the Permit will be determined at the time of Permit issuance. This NPDES Permit shall be effective for a fixed term not to exceed 5 years.

Permit drafted by: Kristy Allen, Environmental Scientist, Tetra Tech. June 2017
Permit reviewed by: David Rise and VelRey Lozano, U.S. EPA. October 2017
Response to Comments and Permit edits by: David Rise, U.S. EPA. January 2018

ADDENDUM:

Response to Comments

The permit and statement of basis were public noticed in the Bighorn County News on November 30, 2017. Comments on the draft Permit were received from the Permittee, the Northern Cheyenne Tribe Department of Environmental Protection and Natural Resources, and the Indian Health Service. The summary of the comments and the EPA's responses are provided below.

Comment(s): All commenters felt the 36-month compliance schedule was not enough time to meet ammonia limits and suggested the compliance schedule for ammonia be increased beyond 36 months to allow sufficient time to gather monitoring data, assess the new Biodome® treatment and remove sludge from the lagoon cells. The commenters note the need for additional time (12 to 18 months) to install and collect effluent data which will be used in evaluating the effectiveness of the Biodomes® in treating for ammonia.

Response: Based on the information provided by the commenters, EPA agrees that 42 months is necessary to implement changes and meet the final effluent limit for ammonia. The Permit compliance schedule reporting requirements and milestones will be adjusted to reflect the change. The effluent monitoring and ambient stream monitoring will still be required to provide the needed data the EPA will use in calculating monthly average and daily maximum ammonia effluent limits for the next permit once complete installation and operation are in place for the facility.

Comment(s): Commenters noted the Average Monthly and Daily Maximum values for total residual chlorine are reversed in the effluent limits tables of the Statement of Basis and Permit. The acute limit in the Tribe's WQS is 0.019 mg/L and should correspond to the Daily Maximum value and 0.011 mg/L is the chronic limit in the Tribe's WQS and should correspond to the Average Monthly value.

Response: The effluent limit tables in the Statement of Basis and Permit were changed to show the correct total residual chlorine values in the monthly average and daily maximum cells of the tables.

Comment(s): On commenter noted the ammonia limit was calculated as the water quality standard due to lack of data and expressed concern that data collected during this permit may result in different ammonia limits in the next permit. If the EPA data indicates that more stringent ammonia limits will be required, the utility will again be in the position of needing to upgrade to remain in compliance. If EPA data indicates that less stringent limits are required, the utility may be burdened with maintaining and operating more equipment than is necessary to meet the requirements. The commenter recommended the ammonia limit be removed from this permit and used the data collected during this permit to calculate a limit for the next permit.

Response: The Northern Cheyenne Tribe has a water quality standard for ammonia and the EPA has determined that the discharge from the facility has reasonable potential to cause or contribute to an exceedance of that water quality standard. Accordingly, EPA rules at 40 CFR 122.44(d) require that EPA establish a water quality based effluent limit for ammonia to protect Tribal waters.