

U.S. EPA Region 8 NPDES Inspection Report

National Database Information	
Inspection Date: August 8, 2022	Inspection Type: Compliance Evaluation Inspection
Entry / Exit Time: 09:30 AM / 15:30 PM	NPDES ID: MT0029360
Major / Non-Major Facility: Non-Major	Program Sector(s): Publicly-Owned Treatment Works (POTW)
NAICS Code: 221320 (Sewage Treatment Facilities)	Inspection ID: 202208_MT0029360
Inspector and affiliation: Akash Johnson / U.S. EPA Region 8	

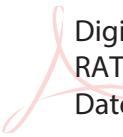
Facility Location Information	
Site/Facility Name & Location: Lame Deer WWTF Lame Deer, Montana 45.628889, -106.673611	Email Report to: Ethelyn Shoulder Blade Acting General Manager Northern Cheyenne Utilities Commission ethelyn.ncuc@gmail.com

Contact Information	
	Name(s)/Title
Other EPA Attendees	Erik Makus / Wastewater Section / U.S. EPA Region 8
Facility Contacts	Rae Peppers / General Manager (at time of inspection) / NCUC (present for opening and closing conferences only; no longer with NCUC)
	Ethelyn Shoulder Blade / Acting General Manager (as of report issuance) / NCUC (not present for inspection)
	Wallis Headswift / Maintenance / NCUC (present for site review only)
	Victor Woodenthigh / Maintenance / NCUC Commission (present for site review only; no longer with NCUC)
	Gilbert Bradley / Maintenance / NCUC (present for site review only; no longer with NCUC)
Indian Health Service Contacts	Jason Schneider / Tribal Utility Consultant / IHS (present)
Tribal Government Contacts	Charlene Alden / Director / Northern Cheyenne Environmental Protection Department (not present)
	Joe Walksalong, Jr. / Water Quality Coordinator / Northern Cheyenne Environmental Protection Department (present)

	Joe Limberhand / Water Quality Technician / Northern Cheyenne Environmental Protection Department (present)
Person/Company meeting definition of "Owner"	Northern Cheyenne Tribe
Person/Company meeting definition of "Operator"	NCUC
Responsible Official(s)	Rae Peppers / General Manager (at time of inspection) / NCUC (no longer with NCUC) Ethelyn Shoulder Blade / Acting General Manager (as of report issuance) / NCUC

Permit / Facility Information	
Permit on site and available: Yes; also accessible electronically	Permit Application Date: Renewal application deemed complete August 24, 2022; new permit has not been issued as report issuance
Permit Effective Date: March 1, 2018	Permit Expiration Date: December 31, 2022 (administratively continued as of report issuance)
Facility Latitude and Longitude: 45.628889, -106.673611	
Receiving Water(s): Lame Deer Creek, which flows into Rosebud Creek, which flows into the Yellowstone River	
Weather Conditions: Warm, sunny, clear	
Inspector's source of information: NCUC representatives, NCUC records, IHS representatives, EPA records and databases, and inspection observations	

Areas Evaluated During Inspection		
<u>Permit</u>	<u>Self-Monitoring Program</u>	Pretreatment
<u>Records</u>	<u>Compliance Schedule</u>	Pollution Prevention
<u>Facility Site Review</u>	Laboratory	Stormwater
<u>Effluent/Receiving Waters</u>	<u>Operations and Maintenance</u>	Combined Sewer Overflow
<u>Flow Measurement</u>	Sludge Handling/Disposal	Sanitary Sewer Overflow

Report Review and Signature		
Lead Inspector Name/Signature/Final Date	Draft Date	Contact Information
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NPDES and Wetlands Enforcement Section		
Supervisor Reviewer Name/Signature/Approval Date		Contact Information
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Inspection Narrative and Facility Description

1.0 Introduction

On Monday, August 8, 2022, I, U.S. Environmental Protection Agency (EPA) inspector Akash Johnson, conducted a compliance evaluation inspection of the Lame Deer wastewater treatment facility (WWTF; facility), located in Lame Deer, Montana, within the exterior boundaries of the Northern Cheyenne Reservation. I was accompanied by the individuals identified as “present” on pages 1 and 2 of this report. The facility is owned by the Northern Cheyenne Tribe (Tribe) and operated by the Northern Cheyenne Utilities Commission (NCUC). The inspection was coordinated with NCUC and the Tribe several weeks in advance, and an inspection notification letter was sent to the Tribe on July 6, 2022. The purpose of the inspection was to evaluate compliance with applicable Clean Water Act, National Pollutant Discharge Elimination System (NPDES), and federal consent decree (CD) requirements. Throughout the inspection, I took notes on discussions and observations in a bound logbook. Photographs taken during the inspection are included in the enclosed photo log.

2.0 General Background

2.2 NPDES Permitting

The EPA is the primary Clean Water Act regulatory authority for the facility. At the time of the inspection, NCUC was authorized to discharge treated wastewater from the facility into Lame Deer Creek in accordance with the conditions of NPDES Permit No. MT0029360 (Permit), issued by the EPA. The Permit became effective March 1, 2018 and was due to expire on December 31, 2022, but Permit coverage has been administratively continued by the EPA and remains in effect as of this report. The Permit and Statement of Basis are accessible online at <https://www.epa.gov/npdes-permits/npdes-permit-lame-deer-lagoon-wastewater-treatment-facility-montana>.

NCUC submitted a facility NPDES permit renewal application to the EPA in 2022. As of this report, the EPA is drafting a new NPDES permit for the facility, the timeframe for issuance of which is not known.

2.3 Consent Decree

Effective November 8, 2021, NCUC entered into a CD with the U.S. Department of Justice (DOJ) and the EPA (Civil Action No. 21-cv-4-SPW-TJC). The CD resolves prior alleged violations of Clean Water Act and NPDES requirements at the facility and requires NCUC to improve its financial and managerial capacity and implement physical and operational changes at the facility. The CD also includes a civil penalty to address past violations and stipulated penalties to potentially resolve any violations during the effective period of the CD.

The CD will remain in-effect for a minimum of 5 years from the November 8, 2021 effective date. The EPA maintains ongoing contact with NCUC to track the status of compliance with Permit and CD requirements, provide compliance assistance, and help facilitate the provision of technical assistance. A table reflecting the status of CD requirements as of this report issuance is included as Appendix A.

2.4 Previous Compliance Monitoring Activities

Prior to the inspection, the most recent EPA compliance monitoring activity at the facility was a compliance evaluation inspection conducted June 13-14, 2018 (2018 inspection) summarized in a

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July 20, 2018 inspection report. This report and reports from earlier inspections are maintained in EPA records.

3.0 Utility Operations

3.1 NCUC Organization and Staffing

NCUC is headquartered in Lame Deer and provides water and wastewater services to five communities on the Northern Cheyenne Reservation: Busby, Muddy, Lame Deer, Birney, and Ashland. NCUC is overseen by a Board of Directors. NCUC operations and staff are primarily directed by a General Manager. At the time of the inspection, NCUC employed a General Manager, an Accounts Receivable Clerk, some accounting and administrative support staff, and a Maintenance Foreman overseeing three Maintenance Workers.

As of this report issuance, NCUC employs fewer staff than during the inspection, with an Accounts Receivable Clerk who is also Acting General Manager, a part-time accountant/bookkeeper, one Maintenance Foreman, and one part-time consultant. The NCUC is actively trying to hire for several open positions. In a July 21, 2022 CD quarterly report submittal, NCUC provided an organization chart indicating desired staffing would include a General Manager, Bookkeeper, Accounts Payable [sic] Clerk, Administrative Assistant, and a Maintenance Foreman overseeing a Water/Wastewater Technician and two Maintenance Workers. NCUC also occasionally utilizes support from outside technical assistance (TA) providers and day laborers.

Paragraph 29.d of the CD requires NCUC to develop a Staffing and Management Plan describing management and staffing positions, job descriptions and associated qualifications, training requirements, salaries, and any staffing increases and or changes needed to ensure regular and emergency facility operations in compliance with all applicable legal requirements. As of this report, NCUC is working with a TA provider to evaluate their staffing and develop this Staffing and Management Plan (sometimes referred to by the TA provider as a “Workforce Development Plan”). Through development of this Staffing and Management Plan, NCUC may elect to revise the organization chart provided in the July 21, 2022 CD quarterly report submittal

NCUC maintenance staff are primarily responsible for the hands-on operation and maintenance of water and wastewater facilities. During the inspection, NCUC representatives estimated approximately seventy-percent of maintenance staff time was spent on water issues, with the remaining thirty-percent spent on wastewater issues. None of the maintenance staff employed during the inspection or at the time of this report issuance were or are certified wastewater operators.

3.2 Finances

Over the past several years, NCUC has implemented substantial changes to their finances. Detailed information on NCUC finances is not discussed in this report, but is available in policies, budgets, Tribal ordinances, and other records maintained by NCUC, the Tribe, and the EPA. A cursory overview of some of NCUC’s recent financial improvements is discussed below.

In 2020, NCUC completed a rates study (2020 Initial Rates Study) which concluded its primary revenue source at the time, water and wastewater service fees, was insufficient to cover the costs of NCUC operations. The 2020 Initial Rates Study identified four rate change alternatives with target service

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rates for each customer rate category (residential full, residential elder [50% of residential full], and non-residential) to support financial solvency, including the establishment of a reserve fund.

By February 2022, NCUC implemented rate increases for all rate categories to meet target rates identified in one of the alternatives outlined in the 2020 Initial Rates Study, and secured a commitment from the Tribe to provide annual funding to compensate NCUC for the reduced residential elder rate.

Paragraph 31.c of the CD requires NCUC to commence and implement the recommendations of an interim rates study. As of this report, NCUC is working with a TA provider to complete this interim rates study.

4.0 Facility Description

4.1 Service Area and Users

The facility serves the community of Lame Deer. The 2020 Census estimated the population of Lame Deer as 1,897. Estimates of users served by the facility (versus on septic) were not evaluated as part of this inspection. The facility serves both residential and non-residential users. Non-residential users served include, but are not limited to, an IHS hospital, a U.S Bureau of Indian Affairs (BIA) jail, Chief Dull Knife College, Charging Horse Casino, restaurants, gas stations, general stores, schools, churches, and government administration buildings. In June 2018, the EPA conducted industrial user inspections of the IHS hospital and the BIA jail (discussed further in Section 4.5), reports for which are maintained in EPA records. During the subject inspection, NCUC representatives indicated septage was not disposed of at the facility.

4.2 Collection System

Information included in this section is based on a cursory review of IHS and EPA records and conversations I have had with IHS and NCUC over the past several years, including during the subject inspection. A detailed review of collection system information was not performed as part of this inspection. Dozens of records pertaining to collection system design, construction, assessments, deficiencies, and completed and planned improvement projects are maintained by the IHS, EPA, and NCUC.

The facility's collection system was initially constructed approximately 60 years ago. The collection system comprises approximately 40,000 linear feet of pipe, the majority of which was originally asbestos cement (AC) or clay. Over the past decade, NCUC and the IHS have undertaken multiple projects to clean, inspect, and improve the collection system, in-part to address collection system deficiencies such as collapsed and broken piping that resulted in recurring sanitary sewer overflows (SSOs) and elevated levels of inflow and infiltration (I&I) that resulted in increased hydraulic loading to the lagoon. These historical deficiencies are not discussed at length in this report, but are documented in IHS and EPA records.

Within the past decade, high-priority (the most deficient) areas of the collection system have been improved through repairs or replacement. Replacement piping has primarily comprised polyvinyl chloride (PVC).

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4.3 Lift Station

The facility includes one lift station, located within the lagoon enclosure on the southeast side of the lagoon, between Cells 1 and 2 (approximately 45.629088, -106.672555). All sewage from the collection system gravity-flows to the lift station prior to entering the lagoon. During the 2018 inspection, and for several years before and after, the lift station was generally inoperable due to failed pumps, resultant at least in-part from solids interference (discussed further in Section 4.5), so sewage flowed directly from the lift station wet well overflow outlet into the northeast corner of Cell 2, bypassing the fermentation pits and Cell 1.

In 2021, substantial lift station improvements were completed, including construction of a manually-cleaned bar screen in front of the lift station, lining of the wet well interior, installation of a grinder and two new chopper pumps, and installation of new electrical and control equipment. Following completion of these improvements, the lift station has generally remained operable, pumping sewage through a buried force main into the fermentation pits ahead of Cell 1.

4.4 Lagoon

At the time of the inspection, the lagoon comprised two “fermentation pits” (north and south) and two cells (Cell 1 and Cell 2). The lagoon generally discharges continuously. Between the 2018 inspection and the subject inspection, several lagoon improvements were completed, discussed throughout the subsections below.

4.4.1 Cell 1 and Fermentation Pits

The two fermentation pits are constructed adjacent the northeast side of Cell 1. The fermentation pits are presumably intended to consolidate settleable solids entering the lagoon. Based on my interpretation of design drawings for the fermentation pits and Cell 1, it appears the peak of elevation of the berm between the fermentation pits is lower than the peak elevation of the berm between the fermentation pits and Cell 1, and the peak elevation of both berms is lower than the peak elevation of the exterior berms, so the interior berms were presumably intended to be submerged, acting as baffles.

Influent enters the lagoon in the south fermentation pit. Based on my interpretation of design drawings, the intended sequence of flow through the fermentation pits and Cell 1 is in series, from the south fermentation pit, to the north fermentation pit, to Cell 1. A planned baffle fence between the fermentation pits and Cell 1 reflected in design drawings was not constructed, so prior to recent installation of a baffle curtain between the fermentation pits and Cell 1 (discussed further in the next paragraph), it is my understanding water could potentially flow into Cell 1 from either fermentation pit by overtopping the submerged berm between the fermentation pits and Cell 1, with some wastewater potentially bypassing the north fermentation pit. According to as-built drawings, there are also two transfer pipes through the berm between the fermentation pits.

As part of the recent lagoon improvements, an insulating cover of modular floating plastic media was installed over the fermentation pits to retain heat for sustained biological treatment in the winter. The media comprising this cover are intended to be held in-place over the fermentation pits by a baffle curtain suspended from a cable. The baffle curtain features an exit opening on the north side of the north fermentation pit to Cell 1, which restores the sequence of flow to the original intended series (south fermentation pit to north fermentation pit to Cell 1). However, during the inspection, the baffle

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curtain cable was observed to have detached from an anchor post and the baffle curtain and floating media had dispersed across Cell 1, discussed further in Section 5.0.

Transfer piping through the southern portion of the berm between Cells 1 and 2 conveys wastewater from Cell 1 into Cell 2.

4.4.2 Cell 2 and Bio-Domes

As part of the recent lagoon improvements, in 2018 and 2019, sludge was removed from Cell 2 and approximately forty Bio-Dome units were installed on the cell floor. Bio-Domes are a patented product available from Wastewater Compliance Systems (WCS). Bio-Domes may be described as submerged aerated fixed-film packed-media bio-reactors. They are intended to facilitate increased biological activity and associated treatment of conventional pollutants and ammonia. The forty Bio-Domes are installed in three rows forming a strip across Cell 2, perpendicular to the general direction of flow. A baffle curtain is installed on either side the Bio-Domes, with an entry on the north side of the Bio-Dome strip and an exit of the south side of the Bio-Dome strip, intended to maximize flow and residence time in the Bio-Dome treatment zone. Additional information on Bio-Domes is available in the facility-specific Bio-Dome operation and maintenance (O&M) manual prepared by WCS, dated September 2019, WCS's website, and associated records maintained by the EPA, IHS, and NCUC.

The air delivery system associated with the Bio-Domes, including blowers, manifold boxes, etc., was installed in conjunction with the Bio-Domes. The blower building is located on the southeast side of Cell 2. A copy of the blower package O&M manual is maintained in the blower building and by the EPA and IHS.

Wastewater exits Cell 2 in the northwest corner of the cell and is conveyed through piping along the northwest side of the offline Cell 3 and through what is identified in the Permit as Outfall 001, located near the west corner of Cell 3 (approximately 45.628073, -106.675480), into Lake Deer Creek. Effluent monitoring is conducted from a Parshall flume located in a concrete vault at Outfall 001.

4.4.3 Cell 3

Prior to the recent lagoon improvements, Cell 3 was operational and received wastewater from Cell 2. However, in conjunction with the Bio-Domes being brought online in 2019, Cell 3 was taken offline. Some sludge removed from Cell 2 was placed in Cell 3. During the subject inspection, some water was retained in Cell 3, likely at least in-part precipitation and or groundwater infiltration, and the sludge remained submerged, presumably undergoing further reduction.

After the inspection, during a June 23, 2023 phone call with me, NCUC representatives indicated the water level in Cell 3 had begun rising. Based on our conversation, it was not apparent whether the rising water level in Cell 3 was due to precipitation, groundwater infiltration or engineered drainage, or wastewater from Cell 2 flowing into Cell 3 through a valve that had been inadvertently opened or overflow piping that had been surpassed by the water level in Cell 2. We discussed the importance of determining and, if feasible, ceasing the mechanism by which water was entering Cell 3, and, should the water level in Cell 3 continue to rise, ensuring NCUC would be able to facilitate a discharge from Cell 3 if necessary to prevent water in the cell from overtopping the berms.

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4.5 Solids Interference

Beginning prior to the 2018 inspection and continuing through the subject inspection, facility operations have been adversely impacted by foreign solids entering the collection system. Solids interference has resulted in a variety of undesirable conditions, including lift station failures, partial lagoon bypasses, collection system blockages, SSOs, increased health and safety risks to NCUC staff, and undue maintenance burdens and costs imposed on NCUC and supporting funders.

As discussed in Section 4.3, NCUC identified solids interfering with lift station pumps as a contributing factor to the frequent inoperability of the pre-renovation lift station. During the recent lift station renovation, a bar screen was installed ahead of the lift station to capture solids and protect the pumps, but solids still passed the bar screen and clogged the new pumps that were initially installed, so two new chopper pumps had to be installed instead. As of this report, the chopper pumps have remained generally operable.

Over the past several years, including during the subject inspection, NCUC identified various items comprising foreign solids in facility sewage, including medical exam gloves, needles/syringes, rags, clothing, electrical cords, asphalt, and grease. Sources of all these items have not been definitively identified. As discussed in Section 4.1, in 2018, the EPA conducted industrial user inspections of the IHS hospital and the BIA jail, as these two users had been identified as possible contributors of solids. Reports for these industrial user inspections are maintained in EPA records. Based on the wide-ranging nature of the solids, it is likely they are emanating from multiple sources. Given the nature and large size of some of the solids, it is also likely some items are being introduced into the collection system directly via manholes rather than flushed through plumbing.

5.0 Inspection Narrative

The inspection began when Erik Makus and I arrived at the NCUC office in Lame Deer at approximately 09:30 AM and convened with Rae Peppers, Joe Walksalong, Joe Limberhand, and Jason Schneider in a meeting room. I presented my inspector credentials and proceeded to conduct an opening conference, during which we discussed a variety of issues pertaining to NCUC and facility operations, including NCUC staffing, TA providers, rates studies, permitting, compliance sampling, grant opportunities, and other water and wastewater facilities operated by NCUC.

During the opening conference, NCUC mentioned several recent instances of solids entering the collection system and interfering with facility operations (see Section 4.5), including suspected dumping of asphalt directly into a sewer main the week prior to the inspection, which had resulted in a sewer backup. We discussed possible ways to identify and regulate the sources of these solids, including user inspections, a sewer use ordinance, and sewer user agreements/permits.

After the opening conference, all of us but Rae walked outside to observe the lagoon. We met with Wallis, Victor, and Gilbert at the lift station. We first observed the newly-constructed bar screen (Photograph 148). NCUC staff stated the bar screen was raked at least daily. Solids were collected in a nearby trash can and eventually hauled offsite. We then observed the interior of the newly-lined lift station wet well (Photograph 149). Two floats (presumably high-level and low-level) and two chopper pumps were installed in the wet well. We then observed the new lift station control panel (Photograph 163). Pump hours were being recorded and displayed on the control panel. We also observed the interior of a check valve vault between the lift station pumps and the force main conveying sewage to Cell 1 (Photograph 152). Overall, the lift station appeared to be generally operational.

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We then walked north along the southeastern side of Cell 1, along the path of the buried force main conveying sewage from the lift station into the lagoon, towards the fermentation pits. Along the southeastern side of Cell 1, we stopped at a concrete vault from which an atypical noise was emanating (Photograph 153). NCUC and IHS representatives discussed the possibility that an air-release valve inside the vault was in need of cleaning, and that wastewater had previously seeped out of the valve vault, which was supposed to remain dry. We did not open the vault because the heavy machinery that would be required to open the vault was not readily available.

Also along the southeastern side of Cell 1, we observed one of the two metal anchor posts from which the cable suspending the baffle curtain was supposed to be attached (Photograph 154). NCUC representatives indicated the cable had become detached during a storm with strong winds within a few weeks prior to the inspection. As mentioned in Section 4.4.1, the baffle curtain and floating plastic media intended to comprise an insulating cover over the fermentation pits had dispersed across Cell 1 (Photographs 151 and 154).

We then walked around part of Cell 2 and observed the baffle curtains and bubble patterns above the strip of Bio-Domes (Photographs 155 and 156).

We then walked to Outfall 001 and observed the Parshall flume located in the concrete vault at this location (Photograph 157). NCUC representatives indicated effluent was collected from the Parshall flume in a plastic pitcher maintained on a nearby fence post (Photograph 158) before being poured into laboratory-provided sample containers. NCUC representatives indicated no cleaning or decontamination of the plastic pitcher was performed between sampling events. NCUC representatives also stated daily flow measurements were not being conducted and recorded, and it was unclear whether NCUC retained a weir chart to interpret readings on the Parshall flume. Jason indicated a copy of the weir chart could potentially be maintained in IHS records. NCUC also indicated representative field measurements of effluent pH, temperature, and dissolved oxygen were not being conducted, as NCUC did not have the appropriate field measurement device(s) for these parameters. We also discussed the ambient receiving stream monitoring location identified in the Permit as Outfall 001R, Lame Deer Creek at the Highway 39 bridge, approximately 3.5 miles north of the lagoon (approximately 45.667570, -106.699640). NCUC representatives indicated they had not been conducting monitoring at this location.

We then observed water contained in Cell 3 (Photograph 159). We did not walk around the perimeter of Cell 3, as the majority of it had not been mowed.

We concluded our site review at the blower building (Photograph 160). We performed a cursory review of the blower O&M manual (Photograph 162) and maintenance log maintained in the blower building; the last entry in the maintenance log was for an oil change performed on February 28, 2020 (Photograph 161). NCUC representatives indicated they had not reviewed a copy of the Bio-Dome O&M manual and had not been performing some of the recommended maintenance for the Bio-Domes and related appurtenances, such as periodic blow-downs or visual inspections of air delivery equipment. Following our discussion at the blower building, we parted with Wallis, Gilbert, Victor, Joe, and Joe, and paused the inspection for lunch at approximately 12:30 PM.

Erik, Jason, Rae, and I resumed the inspection back in the NCUC office at approximately 13:30 PM. We discussed several topics relating to the facility's pending permit renewal application, sampling, and follow-up questions from our opening conference and observations at the lagoon. Erik then departed and Jason, Rae, and I continued with discussions relating to NCUC's compliance with the Permit and

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CD. Our conversation is not detailed in this report, but relevant points are summarized in Appendix A and my notes from the inspection. The inspection concluded when I left the NCUC office around 15:30 PM.

6.0 Post-Inspection Activities and Conclusion

Over the months following the inspection, the EPA has maintained regular communications with NCUC, IHS, and TA providers assisting NCUC to discuss a variety of issues relating to NCUC operations and Permit and CD compliance. With the exception of developments at Cell 3, discussed in Section 4.4.3, these communications are not detailed in this report, but relevant points are summarized in Appendix A and my notes from the inspection.

In preparing this report, I also reviewed discharge monitoring report (DMR) data submitted by NCUC via the EPA's online NetDMR platform for monitoring periods spanning January 2022 through March 2023, included as Appendix B, and quarterly report submittals required by the CD. I did not perform an in-depth review of any laboratory analytical reports, chain-of-custodies (COCs), or other monitoring records during the inspection, but I have some knowledge of NCUC's general monitoring procedures through previous review of various hard-copy analytical reports and COCs NCUC has submitted to the EPA over years prior to the inspection, as well various discussions with NCUC representatives on monitoring procedures prior to, during, and following the inspection.

Findings, requested corrective actions, and recommendations identified pursuant to the inspection are included in the section below. A table reflecting the status of CD requirements as of this report issuance is included as Appendix A.

Findings, Corrective Actions, and Recommendations

Findings 1.1 through 1.7: NCUC has not been consistently conducting monitoring and reporting as required by the Permit.

Based on data submitted via DMRs for monitoring periods spanning January 2022 through March 2023 (Appendix B) and discussions with NCUC representatives during and following the inspection, the following general monitoring and reporting deficiencies have been identified:

- 1. Representative monitoring of temperature, pH, and dissolved oxygen (DO) has not been conducted.** As specified in Parts 1.3.2, 1.3.3, and 5.10.4 of the Permit, monitoring of temperature, pH, and DO should be conducted “instantaneously” (i.e. in the field using a field measurement device/probe), in accordance with analytical methods specified in 40 Code of Federal Regulations (CFR) Part 136. Table II in 40 CFR Part 136 specifies a maximum holding time of 15 minutes for these parameters. At the time of the inspection, NCUC did not maintain field measurement device(s) for measuring these parameters. Laboratory analyses of some of these parameters has been conducted and reported on DMRs, but the laboratory engaged by NCUC is located in Billings, an approximately 1.5 hour drive from Lame Deer, and any laboratory analyses of these parameters would have been conducted the maximum allowable holding time. Monitoring of temperature, pH, and dissolved oxygen is required at Outfall 001, and monitoring of temperature and pH is required at Outfall 001R.

Corrective Action: Obtain the requisite field measurement device(s) and conduct monitoring and reporting of temperature, pH, and DO at Outfall 001 and temperature and pH Outfall 001R.

- 2. Compliance with ammonia limits cannot be evaluated.** As specified in Parts 1.3.1 and 1.3.2 of the Permit, ammonia limits are temperature- and pH-dependent, so measurements of temperature and pH must be taken at the same time the sample for ammonia is collected, then used to calculate the sample-specific ammonia limit in accordance with the tables and equations in Part 1.3.1.1 of the Permit. As stated previously, representative monitoring of temperature and pH has not been conducted. Therefore, representative ammonia limits cannot be calculated and compliance with said limits cannot be evaluated. Ammonia limits are applicable at Outfall 001.

The EPA expects this finding will be addressed during the course of ongoing discussions with NCUC relating to Permit and CD compliance.

- 3. Monitoring and reporting has not been regularly conducted or reported for the ambient receiving stream monitoring location, Outfall 001R.** Part 1.2 of the Permit identifies Outfall 001R as Lame Deer Creek at the Highway 39 bridge, approximately 3.5 miles north of the lagoon (approximately 45.667570, -106.699640). NCUC representatives indicated they had not been conducting monitoring at this location. Part 1.3.3 of the Permit requires monthly monitoring of temperature and pH at this location.

Corrective Action: See corrective action requested pursuant to Finding 1.1.

- 4. Monitoring for fecal coliform and *E. coli* has not been consistently conducted at the required frequency of five times per month.** Part 1.3.2 of the Permit requires monitoring for fecal coliform and *E. coli* to be conducted five times per month (March 1st through October 31st for fecal coliform and year-round for *E. coli*), equally spaced over a calendar month. While I did not perform an in-depth review of analytical reports, COCs, or other monitoring records for these parameters during the inspection, in various conversations prior to, during, and following

Findings, Corrective Actions, and Recommendations

the inspection, NCUC representatives indicated they have not always been able to complete monitoring for these parameters at the required frequency. Additionally, based on my previous reviews of various hard-copy analytical reports and COCs NCUC has submitted to the EPA over years prior to the inspection, it appears NCUC has not always been able to conduct monitoring for these parameters at the required frequency.

The EPA expects this finding will be addressed during the course of ongoing discussions with NCUC relating to Permit and CD compliance.

- 5. Compliance with fecal coliform and *E. coli* limits cannot be evaluated.** As specified in Part 1.3.1 of the Permit, effluent limits for fecal coliform and *E. coli* are intended to apply to the geometric mean of the values returned for all the samples collected for each parameter throughout the month. For *E. coli*, Part 1.3.1 of the Permit specifically identifies the number of samples needed to calculate the geometric mean as a “statistically sufficient number of samples (not less than [five] samples per month).” Also, as stated previously, Part 1.3.2 of the Permit requires monitoring for fecal coliform and *E. coli* to be conducted five times per month (March 1st through October 31st for fecal coliform and year-round for *E. coli*), equally spaced over a calendar month. As stated previously, monitoring for fecal coliform and *E. coli* has not been consistently conducted at the required frequency of five times per month. Therefore, the appropriate value (geometric mean) for each parameter cannot be calculated, reported, or evaluated for compliance.

The EPA expects this finding will be addressed during the course of ongoing discussions with NCUC relating to Permit and CD compliance.

- 6. Monitoring and reporting of flow has not been conducted.** Part 1.3.2 of the Permit requires flow at Outfall 001 be measured and recorded daily, and 30-Day Average and Daily Maximum flow rates be reported on DMRs for each monthly monitoring period. During the inspection, NCUC representatives stated daily flow measurements were not being conducted and recorded, and it was unclear whether NCUC retained a weir chart to interpret readings on the Parshall flume. In DMRs submitted for monitoring periods spanning January 2022 through March 2023 (Appendix B), values of “0” or no values were reported in all fields for 30-Day Average and Daily Maximum flow.

Corrective Action: Obtain a copy of the weir chart to interpret readings on the Parshall flume at Outfall 001 and begin conducting and recording daily flow measurements and reporting 30-Day Average and Daily Maximum flow values on DMRs.

- 7. Data for numerous parameters has been reported late or not at all.** Part 2.3 of the Permit requires DMRs be submitted no later than the 28th day of the month following the completed reported period. As shown in Appendix B, data for numerous parameters has been reported late or not at all.

Corrective Action: Ensure complete DMRs are submitted no later than the 28th day of the month following the completed reported period.

Findings, Corrective Actions, and Recommendations

Permit Requirements:

Permit sections associated with each finding are referenced in the respective findings above. Due to their multi-page length, word-for-word citations of Permit requirements pertaining to Findings 1.1 through 1.7 are not included in this report.

CD Requirements:

Paragraph 25 of the CD (NPDES Permit Compliance) states: At all times, NCUC shall operate and discharge from the Facility in compliance with the Facility's NPDES Permit including, but not limited to, requirements pursuant to effluent limitations, ammonia compliance schedules, self-monitoring, submittal of DMRs, inspections, record-keeping, non-compliance reporting, and proper operation and maintenance.

Paragraph 43 of the CD states: The following additional stipulated penalties shall accrue per Day for failure to timely submit electronic discharge monitoring reports ("DMRs") in accordance with the Facility's NPDES Permit:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$100	1st through 14th Day
\$200	15th through 30th Day
\$300	31st Day and beyond

Finding 2: The insulating cover intended to be installed over the fermentation pits was not operational.

The cable suspending the baffle curtain intended to retain the modular floating plastic media comprising the insulating cover over the fermentation pits had detached from an anchor post, so the baffle curtain and floating media had dispersed across Cell 1 (Photographs 151 and 154).

Permit Requirements:

Part 3.1 of the Permit (Proper Operation and Maintenance) states: In addition to the operation and maintenance requirements outlined at 5.5, the Permittee shall operate, at a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve Permit effluent compliance.

Part 5.5 of the Permit (Proper Operation and Maintenance) states: The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

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CD Requirements:

Paragraph 26.d of the CD (Cover Installation over Fermentation Pits) states: NCUC has completed the installation of a modular floating insulation cover over the Lagoon fermentation pits to retain heat to sustain biological treatment in the winter. NCUC shall operate and maintain the floating insulation cover in a manner that allows for retention of heat and bacteriological function during the winter season.

Corrective Action:

Restore and properly operate maintain the floating insulating cover over the fermentation pits.

Finding 3: An air release valve in the force main between the lift station and Cell 1 may be in need of maintenance.

On the southeastern side of Cell 1, along the buried force main between the lift station and Cell 1, an atypical noise was emanating from a concrete vault (Photograph 153). NCUC and IHS representatives discussed the possibility that an air-release valve inside the vault was in need of cleaning, and that wastewater had previously seeped out of the valve vault, which was supposed to remain dry. We did not open the vault during the inspection because the heavy machinery that would be required to open the vault was not readily available.

Permit Requirements:

Part 3.1 of the Permit (Proper Operation and Maintenance) states: In addition to the operation and maintenance requirements outlined at 5.5, the Permittee shall operate, at a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve Permit effluent compliance.

Part 5.5 of the Permit (Proper Operation and Maintenance) states: The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

CD Requirements:

Paragraph 25 of the CD (NPDES Permit Compliance) states: At all times, NCUC shall operate and discharge from the Facility in compliance with the Facility's NPDES Permit including, but not limited to, requirements pursuant to effluent limitations, ammonia compliance schedules, self-monitoring, submittal of DMRs, inspections, record-keeping, non-compliance reporting, and proper operation and maintenance.

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Corrective Action:

Investigate the condition of any air release valves or other appurtenances in the concrete vault located on southeastern side of Cell 1, and perform any maintenance, repairs, or replacements necessary to ensure all components within the vault are operational.

Finding 4: Routine recommended maintenance of the Bio-Domes, blower system, and related appurtenances was not being performed or recorded.

The last entry in the blower maintenance log was for an oil change performed on February 28, 2020 (Photograph 161). Additionally, NCUC representatives indicated they had not reviewed a copy of the Bio-Dome O&M manual and had not been performing some of the recommended maintenance for the Bio-Domes and related appurtenances, such as periodic blow-downs or inspections of air delivery equipment.

Bio-Dome O&M Manual:

Section 4 of the Bio-Dome O&M manual (System Maintenance and Monitoring) outlines recommended maintenance for Bio-Dome components including plastic domes and spacers, air diffuser tubing, and air delivery equipment.

Blower O&M Manual:

Section 2 of the blower package O&M manual includes a schedule for recommended maintenance, including the blowers, motors, and various belts and valves. Additional relevant information, such as O&M procedures for each component of the blower package, operational procedures and checklists, recommended spare parts lists, component specifications, handling and installation instructions, troubleshooting tips, safety information, etc. is included throughout the blower O&M manual package.

Permit Requirements:

Part 3.1 of the Permit (Proper Operation and Maintenance) states: In addition to the operation and maintenance requirements outlined at 5.5, the Permittee shall operate, at a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve Permit effluent compliance.

Part 3.1.2 of the Permit states: The Permittee shall maintain a daily log, in either paper (bound notebook) or electronic format, containing a summary record of all operation and maintenance activities at the wastewater treatment facility. At a minimum, the log shall include the following information:

- 3.1.2.1. Date and time;
- 3.1.2.2 Name and title of person(s) making the log entry;
- 3.1.2.3. Name of the persons(s) performing the activity;
- 3.1.2.4. A brief description of the activity; and,
- 3.1.2.5. Other information, as appropriate.

The Permittee shall maintain the log in accordance with proper record-keeping procedures and shall make the log available for inspection, upon request, by authorized representatives of the U.S. Environmental Protection Agency or the Tribe.

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Part 5.5 of the Permit (Proper Operation and Maintenance) states: The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

CD Requirements:

Paragraph 25 of the CD (NPDES Permit Compliance) states: At all times, NCUC shall operate and discharge from the Facility in compliance with the Facility's NPDES Permit including, but not limited to, requirements pursuant to effluent limitations, ammonia compliance schedules, self-monitoring, submittal of DMRs, inspections, record-keeping, non-compliance reporting, and proper operation and maintenance.

Paragraph 26.c of the CD states: To ensure proper operation of the Bio-Dome system, blowers, trunk lines, manifolds, and individual airlines connected to each Bio-Dome have also been installed. NCUC shall operate and maintain the Bio-Dome system, including the current 40 Bio-Domes, any additional Bio-Domes installed, and any related appurtenances, in accordance with the standard operating procedures and any operating manuals and other project completion manuals provided by IHS.

Paragraph 29.c of the CD (Lagoon SOPs) states: Lagoon components and routine procedures for which SOPs should be developed include, but are not limited to: monitoring and recording electrical use at the lift station, blower system, and any other electrically powered Lagoon appurtenances; monitoring and recording pump usage at the lift station (recording hours each pump is operating); maintenance of the blower system (including regular oil, filter and hose checks, and alternation of the motors to ensure longevity); conducting and recording daily visual inspections of the bar screen, lift stations, fermentation pits and cover, Bio-Domes (including an evaluation of Bio-Dome system performance based on inspections of bubble patterns, air pressure, and hose integrity), blower system, Lagoon berm integrity, and Outfall 001 (including effluent measuring flume and manhole); routine removal and disposal of debris from the bar screen as needed to protect the integrity of lift station pumps and prevent SSOs; conducting and recording routine evaluation and maintenance of the Bio-Domes and air lines (such as back pressure evaluation, blow downs, and joint inspections); and conducting and recording routine inspections of all other areas of the Facility as required by the Facility's NPDES Permit.

Corrective Action:

Ensure NCUC maintenance staff are familiar with, conduct, and record recommended O&M procedures for the Bio-Domes, blower system, and related appurtenances. As discussed in Appendix A, the EPA understands NCUC is working with a TA provider to develop SOPs required by CD, including those specified in CD Paragraph 29.c, cited above. NCUC should continue to work with the TA provider to develop and implement these SOPs.

Finding 5: Proper sampling technique was not being implemented.

Effluent at Outfall 001 was collected in a plastic pitcher maintained on a nearby fence post (Photograph 158) before being poured into laboratory-provided sample containers. NCUC

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representatives indicated no cleaning or decontamination of the plastic pitcher was performed between sampling events.

Permit Requirements:

Part 2.1 of the Permit (Representative Sampling) states: Samples taken in compliance with the monitoring requirements established under Part 1 shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge...

Recommendation:

The EPA recommends evaluating sampling equipment decontamination procedures to ensure samples collected for field measurements and laboratory analysis are representative of the monitored discharge.

Recommendation:

Analytical methods, preservation, and holding times were not evaluated in-depth during this inspection. It is recommended NCUC review relevant requirements in the Permit, 40 CFR Part 136, and with their analytical laboratory, to ensure compliance monitoring samples are collected, preserved, and analyzed in accordance with the Permit and 40 CFR Part 136.