North Dakota Department of Environmental Quality Public Notice
Reissue of an NDPDES Permit

Public Notice Date: 5/25/2023 Public Notice Number: ND-2023-014

Purpose of Public Notice

The Department intends to reissue the following North Dakota Pollutant Discharge Elimination System (NDPDES) Discharge Permit under the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information

Application Date: 1/3/2023 Application Number: ND0021211

Applicant Name: Beulah City Of

Mailing Address: PO Box 910, Beulah, ND 58523-0910

Telephone Number: 701.873.4637

Proposed Permit Expiration Date: 6/30/2028

Facility Description

The reapplication is for two three-cell waste stabilization pond systems which service the City of Beulah. The northern treatment system is located in the NW1/4 of the SE1/4 of Section 19, Township 144 N, and Range 87 W. The southern treatment system is located in the NE1/4 of the NE1/4 of Section 36, Township 144 N, and Range 88 W. Any discharge would be to the Knife River, a Class II stream.

Tentative Determinations

Proposed effluent limitations and other permit conditions have been made by the Department. They assure that State Water Quality Standards and applicable provisions of the FWPCAA will be protected.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. For further information on making public comments/public comment tips please visit: https://deq.nd.gov/PublicCommentTips.aspx. Comments or requests should be directed to the ND Dept of Env Quality, Div of Water Quality, 4201 Normandy Street, Bismarck ND 58503-1324 or by calling 701.328.5210.

All comments received by June 24, 2023 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice.

The NDDEQ will consider every request for reasonable accommodation to provide an accessible meeting facility or other accommodation for people with disabilities, language interpretation for people with limited English proficiency (LEP), and translations of written material necessary to access programs and information. To request accommodations, contact the NDDEQ Non-discrimination Coordinator at 701-328-5210 or deqEJ@nd.gov. TTY users may use Relay North Dakota at 711 or 1-800-366-6888.

FACT SHEET FOR NDPDES PERMIT
ND0021211

CITY OF BEULAH
BEULAH, ND

DATE OF THE FACT SHEET – MAY 2023

INTRODUCTION

The Federal Clean Water Act (CWA, 1972, and later amendments in 1977, 1981, and 1987, etc.) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the CWA is the National Pollutant Discharge Elimination System (NPDES), which the US Environmental Protection Agency (EPA) has oversight authority. In 1975, the State of North Dakota was delegated primacy of the NPDES program by EPA. The North Dakota Department of Environmental Quality (NDDEQ), hereafter referred to as "department", has been designated the state water pollution control agency for all purposes of the Federal Water Pollution Control Act, as amended [33 U.S.C. 1251, et seq.], and is hereby authorized to take all action necessary or appropriate to secure to this state the benefits of the act and similar federal acts. The department's authority and obligations for the wastewater discharge permit program is in the NDAC 33.1-16 (North Dakota Administrative Code) which was promulgated pursuant to NDCC chapter 61-28 (North Dakota Century Code). The department uses North Dakota Pollutant Discharge Elimination System (NDPDES) as its permitting title.

The following rules or regulations apply to NDPDES permits:

Procedures the department follows for issuing NDPDES permits (NDAC chapter 33.1-16-01), Standards of Quality for Waters of the State (NDAC chapter 33.1-16-02.1).

These rules require any treatment facility operator to obtain an NDPDES permit before discharging wastewater to state waters. They also define the basis for limits on each discharge and for other requirements imposed by the permit.

According to the North Dakota Administrative Code (NDAC) section 33.1-16-01-08, the department must prepare a draft permit and accompanying fact sheet, and make it available for public review. The department must also publish an announcement (public notice) during a period of thirty days, informing the public where a draft permit may be obtained and where comments regarding the draft permit may be sent (NDAC chapter 33.1-16-01-07). For more information regarding preparing and submitting comments about the fact sheet and permit, please see Appendix A - Public Involvement. Following the public comment period, the department may make changes to the draft NDPDES permit. The department will summarize the responses to comments and changes to the permit in Appendix D - Response to Comments.

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BACKGROUND INFORMATION

Table 1 – General Facility Information

Permittee:	City of Beulah
Facility Name and Address:	Publicly Owned Treatment Works 120 Central Ave W, Beulah, ND 58523
Permit Number:	ND-0021211
Permit Type:	Major Municipality - Reissue
Type of Treatment:	Two Waste Stabilization Pond Systems
SIC Code:	4952
NAICS Code:	221320
Discharge Location:	001: Knife River, Class II Stream Latitude: 47.275328 Longitude: -101.744075 002: Knife River, Class II Stream Latitude: 47.253764 Longitude: -101.769325
Hydrologic Code:	10130201 - Knife
Population:	3,058

Figure 1 – Aerial Photograph of the City of Beulah – Beulah, ND (Google Earth 08/20/2022)

FACILITY DESCRIPTION

The City of Beulah Publicly Owned Treatment Works (POTW) consists of two waste stabilization pond systems that treat municipal waste – a north system and a south system. Per the 2020 U.S. Census, the City of Beulah has a population of 3,058 people.

The north system is located in the NE ¼ of the SE ¼, Section 19, Township 144 North, Range 87 West in Mercer County. The north system consists of a three-cell system. The first cell has a surface area of 4.1 acres and is aerated. The second cell has a surface area of 13.2 acres and the third cell has a surface area of 11.9 acres. Any discharge would be to the Knife River.

The south system is located in the NW ¼ or the NE ¼, Section 36, Township 144 North, Range 88 West in Mercer County. The south system also consists of a three-cell system. The first cell has a surface area of 4 acres, the second cell has a surface area of 3.25 acres and the third cell has a surface area of 4 acres. Any discharge would be to the Knife River.

The Knife River is classified as a class II stream in the Standards of Quality for Waters of the State (NDAC 33.1-16-02.1). Class II streams must be suitable for the propagation or protection of resident fish species and other aquatic biota and for swimming, boating, and other water recreation. However, streams in this classification may be intermittent which makes them of limited value for beneficial uses such as municipal water, fish life, irrigation, bathing, or swimming. The quality of class II streams must be suitable for irrigation, stock watering, and wildlife without injurious effects. The quality also must meet bacteriological, physical, and chemical requirements for municipal or domestic use after treatment; however, additional treatment may be required to meet drinking water requirements.

There are no categorical industrial users (CIU) that discharge to the POTW and thus no city pretreatment program is required. The city accepts hauled domestic waste or septage but does not accept hauled industrial waste. Inflow and infiltration from sources other than municipal waste (e.g., rainwater/groundwater infiltration) has not been identified as a significant contributor to influent loadings to the POTW.

History

The facility was first permitted on January 1, 1965. In 2009, the North Dakota State Water Commission and the US Army Corp of Engineers began to work with the City of Beulah to reduce the size of the south lagoon system due to the oxbow in the Knife River. This project reduced the size of the three cells, raised the dikes, and relined the cells. Design engineering for this project began in 2010 with the final work completed in the fall of 2016. This project assisted with flood relief through that area.

Previously the City of Beulah directed the backwash water from the water treatment plant to the primary cell of the south lagoon system. In 2016, the water treatment plant obtained a NDPDES permit and no longer directs backwash water to the south lagoon system.

Outfall Description

Discharges at any location not authorized under a NDPDES permit is a violation of the Clean Water Act (CWA) and could subject the person(s) responsible for such discharge to penalties under section 309 of the CWA. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge within the specified timeframe outlined in this permit could subject such person(s) to criminal penalties as provided under the CWA.

Outfall 001. Active. Final.			
Latitude: 47.275328	Longitude: -101.744075	County: Mercer	
Township: 144N	Range: 87W	Section: 19	QQ: DBA
Receiving Stream: Knife River		Classification: Class II Stream	
Outfall Description: All effluent is generated from waste stabilization ponds. The treated effluent flows from a three-cell lagoon system, located in the northern part of the City of Beulah, to the Knife River, a Class II stream. This outfall is the primary discharge point for the City of Beulah.			

Outfall 002. Active. Final.			
Latitude: 47.253764	Longitude: -101.779325	County: Mercer	
Township: 144N	Range: 88W	Section: 36	QQ: AAB
Receiving Stream: Knife River		Classification: Class II Stream	
Outfall Description: All effluent is generated from waste stabilization ponds. The treated effluent flows from a three-cell lagoon system, located in the southern part of the City of Beulah, to the Knife River, a Class II stream.			

PERMIT STATUS

The department issued the previous permit for this facility on July 1, 2018. The pervious permit had effluent monitoring requirements for: Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, Ammonia as N, *Escherichia coli (E. coli)*, Oil and Grease, Whole Effluent Toxicity (WET), and metals.

SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED

Between July 2018 and December 2022, the department conducted five inspections at the facility. Department staff last conducted a non-sampling compliance inspection on August 17, 2022. The department's assessment of compliance is based on a review of the facility's Discharge Monitoring Reports (DMRs) and physical inspections conducted by department staff. During the inspection, minor discrepancies were noted on the DMRs. These were corrected by the facility. No other findings were found.

The city reported one bypass and one force main break in 2020. The sewer force main break occurred on March 11, 2020. The break occurred between North Cell #1 and Outfall 001. Flow was diverted to the South Cells for the duration of the repair. The bypass occurred on May 27, 2020. The cause of this bypass was determined to be a pipe break. Flows from the lift station and force main to the North Cells were halted until repairs could be made.

Past Discharge Data

According to department records, this facility has discharged nine times from Outfall 001 and eight times from Outfall 002 during the previous permit cycle. Outfall 001 average length of discharge was 5.7 days while the average length of discharge for Outfall 002 was 4.8 days. The last reported discharge for both Outfall 001 and Outfall 002 occurred on November 4, 2022 and ran until

November 8, 2022. The concentration of pollutants for all discharges that occurred during the previous permit cycle were reported through DMRs. The effluent for both Outfall 001 and Outfall 002 is characterized in the below tables:

Table 2 - Outfall 001 Effluent (July 2018 – December 2022)

Parameter	Units	Range	Average	Permit Limit	Number of Exceedances	TRC Exceedance
BOD_5	mg/l	6 – 10	6.28	25	0	0
TSS	mg/l	5 – 112	19.5	30	5	2
pH	S.U.	7.87– 9.92	N/A	6.0 to 9.0	3	N/A
E. coli	#/100 ml	1 – 20	7.33	126	0	0
Ammonia as N	mg/l	0.1 – 3.45	0.58	WQS	0	0
Temp	°C	3.4 – 21	11.18	N/A	N/A	N/A
Flow	MGD	0.894 – 4.57	2.96	N/A	N/A	N/A
Drain	MG	4.47 – 21.8	14.31	N/A	N/A	N/A
Antimony	ug/l	≤5	≤5	N/A	N/A	N/A
Arsenic	ug/l	≤5	≤5	N/A	N/A	N/A
Beryllium	ug/l	≤5	≤5	N/A	N/A	N/A
Cadmium	ug/l	≤5	≤5	N/A	N/A	N/A
Chromium	ug/l	<5	≤5	N/A	N/A	N/A
Copper	ug/l	5 – 8.47	5.87	N/A	N/A	N/A
Cyanide	mg/l	≤0.005	≤0.005	N/A	N/A	N/A
Lead	ug/l	≤5	≤5	N/A	N/A	N/A
Mercury	ug/l	≤0.2	≤0.2	N/A	N/A	N/A
Nickel	ug/l	≤5	≤5	N/A	N/A	N/A
Phenols	mg/l	≤5	≤5	N/A	N/A	N/A
Selenium	ug/l	≤5	≤5	N/A	N/A	N/A
Silver	ug/l	≤5	≤5	N/A	N/A	N/A
Thallium	ug/l	≤5	≤5	N/A	N/A	N/A

Parameter	Units	Range	Average	Permit Limit	Number of Exceedances	TRC Exceedance
Zinc	ug/l	5 – 14.5	7.38	N/A	N/A	N/A

Table 3 - Outfall 002 Effluent (July 2018 – December 2022)

Parameter	Units	Range	Average	Permit Limit	Number of Exceedances	TRC Exceedance
BOD_5	mg/l	6 – 18	7.81	25	0	0
TSS	mg/l	5 – 84	28.3	30	4	2
pH	S.U.	8.39 – 10.5	N/A	6.0 to 9.0	7	N/A
E. coli	#/100 ml	1 – 2400	247.3	126	1	1
Ammonia as N	mg/l	0.1 – 3.1	0.67	WQS	0	0
Temp	°C	3.5 – 23.1	13.5	N/A	N/A	N/A
Flow	MGD	.175 – 2.3	0.62	N/A	N/A	N/A
Drain	MG	5.242	2.70	N/A	N/A	N/A
Antimony	ug/l	≤5	≤5	N/A	N/A	N/A
Arsenic	ug/l	8.48 – 15.4	12.65	N/A	N/A	N/A
Beryllium	ug/l	≤5	≤5	N/A	N/A	N/A
Cadmium	ug/l	≤5	≤5	N/A	N/A	N/A
Chromium	ug/l	≤5	≤5	N/A	N/A	N/A
Copper	ug/l	5 – 8.15	6.35	N/A	N/A	N/A
Cyanide	mg/l	≤0.005	≤0.005	N/A	N/A	N/A
Lead	ug/l	≤5	≤5	N/A	N/A	N/A
Mercury	ug/l	≤0.2	≤0.2	N/A	N/A	N/A
Nickel	ug/l	6.4 – 12.8	9.47	N/A	N/A	N/A
Phenols	mg/l	5 – 17.8	12.73	N/A	N/A	N/A
Selenium	ug/l	≤5	≤5	N/A	N/A	N/A
Silver [a]	ug/l	≤5	≤5	N/A	N/A	N/A
Thallium [a]	ug/l	≤5	≤5	N/A	N/A	N/A

Parameter	Units	Range	Average	Permit Limit	Number of Exceedances	TRC Exceedance
Zinc	ug/l	5 – 12.7	7.12	N/A	N/A	N/A

PROPOSED PERMIT LIMITS

Effluent Limitations

The following limitations are based on promulgated guidelines as outlined in the Code of Federal Regulations (40 CFR), the North Dakota Administrative Code (NDAC), the North Dakota Standards of Quality for Waters of the State (WQS) and Best Professional Judgment (BPJ), as determined by the North Dakota Department of Environmental Quality. The effluent limitations applied to each lagoon cell discharge reflect secondary treatment standards outlined in 40 CFR Part 133.102 and NDAC 33.1-16-01-14(3).

A pre-discharge sample must be taken prior to the start of any discharge. This analysis shall be reported to the department. The pre-discharge sample shall be tested for BOD_5, TSS, pH, Ammonia as N, and temperature. A pre-discharge sample shall also be tested for *E. coli* during the recreational season from April 1 to October 31. The pre-discharge sample shall represent the first discharge sample. An additional sample of the actual discharge shall be taken the first week of discharge, and one sample per week shall be taken after the first seven days of discharge for the duration of the discharge. The effluent limitations and the basis for the limitations are provided in Tables 4 and 5.

Table 4 – Effluent Limitations for Outfall 001

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis [a]
BOD_5 (mg/l) [c]	25	45	*	40 CFR 133.102(a) NDAC 33.1-16-01-14(3)(c)(1)
Total Suspended Solids (TSS), (mg/l) [c]	30	45	*	40 CFR 133.102(b)
pH (SU) [c]	Shall remain between 6.0 to 9.0			40 CFR 133.102(c) NDAC 33.1-16-01-14(3)(c)(3) WQS
Escherichia coli (E.coli) (#/100 ml) [b, c]	126	*	409	WQS
Escherichia coli (E.coli) (CFUs/Day)	*	*	$3.720x10^{10}$	TMDL
Oil & Grease	*	*	10 mg/l	BPJ
Whole Effluent Toxicity (WET) , (TU_a)	Refer to Whole Effluent Toxicity (WET) Requirements			40 CFR 122.44(d)(1)(iv)(v)
Ammonia as N (mg/l)	Refer to the Ammonia Table (**Table 6**)			WQS

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis [a]
There shall be no discharge of floating solids or visible foam in other than trace amounts, nor a discharge which causes a visible sheen in the receiving waters from oil and grease.				Previous Permit WQS

Notes:

* This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.

a. The basis for the effluent limitations is given below:

"Previous Permit" refers to limitations in the previous permit. The NDPDES regulations **40 CFR Part 122.44(1)(1) Reissued Permits** require that when a permit is renewed or reissued, interim limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit unless the circumstances on which the previous permit was issued have materially and substantially changed since the previous permit was issued and would constitute cause for permit modification or revocation and reissuance under **40 CFR Part 122.62.**

"WQS" refers to effluent limitations based on the State of North Dakota's "Standards of Quality for Waters of the State", NDAC Chapter 33-16-02.1.

"BPJ" refers to best professional judgment.

b. *E. coli* limits shall be effective from April 1 through October 31.

c. The limitations for BOD5, TSS and *E. coli* are based on the average of all samples taken to monitor the discharge from a cell. If only one sample is collected, that value shall be used as the average. The average for *E. coli* shall be calculated as a geometric mean. The limitation for pH applies to each sample taken.

Table 5 – Effluent Limitations for Outfall 002

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis [a]
BOD_5 (mg/l) [c]	25	45	*	40 CFR 133.102(a) NDAC 33.1-16-01-14(3)(c)(1)
Total Suspended Solids (TSS), (mg/l) [c]	30	45	*	40 CFR 133.102(b)
pH (SU) [c]	Shall remain between 6.0 to 9.0			40 CFR 133.102(c) NDAC 33.1-16-01-14(3)(c)(3) WQS
Escherichia coli (E.coli) (#/100 ml) [b, c]	126	*	409	WQS
Escherichia coli (E.coli) (CFUs/Day)	*	*	$1.049x10^{10}$	TMDL
Oil & Grease	*	*	10 mg/l	BPJ

Effluent Parameter	**30-Day Average**	**7-Day Average**	**Daily Maximum**	**Basis** [a]
Arsenic (ug/l)	13.8	*	*	WQS
Whole Effluent Toxicity (WET), (TU_a)	Refer to Whole Effluent Toxicity (WET) Requirements			40 CFR 122.44(d)(1)(iv)(v)
Ammonia as N (mg/l)	Refer to the Ammonia Table (**Table 6**)			WQS
Best Management Practices (BMPs) are to be utilized so that there shall be no discharge of floating debris, oil, scum, and other floating materials in sufficient amounts to be unsightly or deleterious, or oil wastes that produce a visible sheen on the surface of the receiving water.				Previous Permit WQS BPJ

Notes:

* This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.

a. The basis for the effluent limitations is given below:

"Previous Permit" refers to limitations in the previous permit. The NDPDES regulations **40 CFR Part 122.44(1)(1) Reissued Permits** require that when a permit is renewed or reissued, interim limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit unless the circumstances on which the previous permit was issued have materially and substantially changed since the previous permit was issued and would constitute cause for permit modification or revocation and reissuance under **40 CFR Part 122.62.**

"WQS" refers to effluent limitations based on the State of North Dakota's "Standards of Quality for Waters of the State", NDAC Chapter 33-16-02.1.

"BPJ" refers to best professional judgment.

b. *E. coli* limits shall be effective from April 1 through October 31.

c. The limitations for BOD5, TSS and *E. coli* are based on the average of all samples taken to monitor the discharge from a cell. If only one sample is collected, that value shall be used as the average. The average for *E. coli* shall be calculated as a geometric mean. The limitation for pH applies to each sample taken.

Table 6 – Ammonia Effluent Limitations and Monitoring Requirements (NDAC 33.1-16-02.1)

	Effluent Limitations		
Parameter	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Ammonia 1/	†	*	‡
Stream flow upstream, cfs 2/	*	*	*
Temperature upstream, ° C 2/, 3/	*	*	*
pH upstream, S.U. 2/, 3/	*	*	*

	Effluent Limitations		
Parameter	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit

1/ Calculations must be performed for each discharge sample. If an exceedance is detected on any single sample, the exceedance must be reported on the DMR.

2/ Sample must be collected/recorded the same day as the ammonia sample. The upstream flow, temperature, and pH may be obtained upstream of the final discharge points from the ND Highway 49 bridge sampling location.

3/ If the upstream values are not collected the following minimum values based on the 90th percentile upstream USGS data are to be used: pH: 8.5 S.U., Temperature 23.0 ° C, and ammonia 0.18 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 0.42 cfs shall be used. The maximum mixing factor is 10.0%.

† Chronic Standard (Average Monthly Limit)
The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed the numerical value given by the following formula and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:

$$0.8876 \times \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(2.126 \times 10^{0.028\times(20-MAX(T,7))}\right)$$

Receiving stream pH is used for the calculation

‡ Acute Standard (Daily Maximum Limit)
The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed the numerical value given by the following formula:

$$0.7249 \times \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}}\right) \times MIN\left(51.93, 23.12 \times 10^{0.036\times(20-T)}\right)$$

where *Oncorhynchus* are absent.

SELF-MONITORING REQUIREMENTS

All effluent shall be sampled at a point leaving Outfall 001 or Outfall 002 but prior to entering waters of the state.

Table 7 – Self-Monitoring Requirements

Effluent Parameter	Frequency	Sample Type [a]
BOD_5, mg/l	Weekly	Grab
TSS, mg/l	Weekly	Grab
pH	Weekly	Instantaneous

Oil & Grease – Visual	Daily	Visual
Oil & Grease, mg/l [c]	Conditional/Weekly	Grab
E. coli, #/100 ml [b]	Weekly	Grab
E. coli, CFUs/day [b]	Weekly	Grab
Temperature	Weekly	Grab
Total Nitrogen, mg/l [d]	Monthly	Grab
Total Phosphorus, mg/l	Monthly	Grab
Flow, MGD	Daily	Calculated
Total Drain, MGAL	Monthly	Calculated
Total Days Discharge	Monthly	Calculated
Ammonia as N	Weekly	Grab
Whole Effluent Toxicity	Quarterly	Grab
Metals	Annually	Grab
Arsenic	Weekly	Grab
Notes:		
a.	Refer to Appendix B for definitions.	
b.	*E. coli* limits shall be effective from April 1 through October 31.	
c.	If a visible sheen is observed in the discharge, a grab sample shall be collected, and the department shall be contacted.	
d.	Total nitrogen is a combination of nitrate, nitrite, and Total Kjeldahl Nitrogen (TKN).	

Secondary Treatment Effluent Limits

Federal and state regulations define secondary treatment effluent limitations for municipal wastewater treatment plants. These effluent limits are given in 40 CFR 133 and in NDAC Chapter 33.1-16-01-30. These regulations describe the minimum level of effluent quality attainable by secondary treatment of municipal wastewater in terms of BOD_5, TSS, and pH.

NDAC Chapter 33.1-16-01-30 incorporates by reference 40 CFR 133 which list the following technology-based limits for BOD_5, TSS, and pH:

Table 8 – Secondary Treatment Effluent Limits

Parameter	30 Day Average	7 Day Average
BOD_5	25 mg/l	45 mg/l
TSS	30 mg/l	45 mg/l
pH	Remain between 6.0 to 9.0	--
Percent Removal	85% BOD_5 and TSS	--

SURFACE WATER QUALITY-BASED EFFLUENT LIMITS

The North Dakota State Water Quality Standards (NDAC Chapter 33.1-16-02.1) are designed to protect existing water quality and preserve the beneficial uses of North Dakota's surface waters.

Wastewater discharge permits must include conditions that ensure the discharge will meet the surface water quality standards. Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load (TMDL) study. TMDLs result from a scientific study of the water body and are developed in order to reduce pollution from all sources.

The Knife River is listed as impaired for *E. coli* in the 2018 North Dakota Section 303(d) List of Waters Needing Total Maximum Daily Loads (TMDL) (303(d) List). A TMDL for *E. coli* was completed in September 2017. This TMDL assigned a Waste Load Allocation (WLA) for *E. coli* for both Outfall 001 and Outfall 002. This WLA was incorporated into the loading limit in the permit.

Numerical Criteria for the protection of Aquatic Life and Recreation

Numerical water quality criteria are listed in the WQS for surface waters (NDAC Chapter 33.1-16-02.1). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. The department uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published numeric water quality criteria for the protection of human health that are applicable to dischargers. These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The WQS also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria (NDAC Chapter 33.1-16-02.1-08) limit concentrations of pollutants from exceeding applicable standards of the receiving waters. The department adopted a narrative biological goal solely to provide an additional assessment method that can be used to identify impaired surface waters.

Antidegradation

The purpose of North Dakota's Antidegradation Policy (NDAC Chapter 33.1-16-02(Appendix IV)) is to:

- Provide all waters of the state one of three levels of antidegradation protection.
- Determine whether authorizing the proposed regulated activity is consistent with antidegradation requirements.

The department's fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

Mixing Zones

The department's WQS contain a Mixing Zone and Dilution Policy and Implementation Procedure, NDAC Chapter 33.1-16-02.1 (Appendix III). This policy addresses how mixing and dilution of point source discharges with receiving waters will be addressed in developing chemical-specific and whole effluent toxicity discharge limitations for point source discharges. Depending upon site-specific mixing patterns and environmental concerns, some pollutants/criteria may be allowed a mixing zone or dilution while others may not. In all cases, mixing zone and dilution allowances shall be limited, as necessary, to protect the integrity of the receiving water's ecosystem and designated uses.

EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA

BOD_5

Outfall 001: The department has reviewed the BOD_5 data and sampling frequency. During the previous permit cycle, no exceedances occurred from Outfall 001 for this parameter. The department proposes to continue with the 25 mg/l (average monthly limit) and 45 mg/l (average weekly limit) with a sampling frequency of once per week.

Outfall 002: The department has reviewed the BOD_5 data and sampling frequency. During the previous permit cycle, no exceedances occurred from Outfall 002 for this parameter. The department proposes to continue with the 25 mg/l (average monthly limit) and 45 mg/l (average weekly limit) with a sampling frequency of once per week.

TSS

Outfall 001: The department has reviewed TSS data and sampling frequency. During the previous permit cycle, five permit limitation exceedances occurred for this parameter from Outfall 001. Two of these exceedances exceeded the Technical Review Criteria (TRC) of 40% above the effluent limitation.

Outfall 002: The department has reviewed TSS data and sampling frequency. During the previous permit cycle, four permit limitation exceedances occurred for this parameter from Outfall 002. Two of these exceedances exceeded the TRC of 40% above the effluent limitation.

The TRC values for TSS were determined using the following equations:

TRC 1.4* BOD5 25 mg/l = TSS 35 mg/l
TRC 1.4* BOD5 45 mg/l = TSS 63 mg/l

The department proposes to continue with the 30 mg/l (average monthly limit) and 45 mg/l (average weekly limit) with a sampling frequency of one time per week.

pH

Outfall 001: The department has reviewed pH data and sampling frequency. During the previous permit cycle, three permit limitation exceedances occurred from Outfall 001.

Outfall 002: The department has reviewed pH data and sampling frequency. During the previous permit cycle, seven permit limitation exceedances occurred from Outfall 002. The department attributes the pH exceedances from Outfall 002 to the fact that the south lagoon system holds the lime sludge from the water treatment plant and used to accept the backwash water from the water treatment plant.

A determination was made to continue with the previous permit limits of 6.0 to 9.0. This is based upon NDAC 33.1-16-02-1.

Oil and Grease

The WQS state that waters of the state must be free from oil and grease attributable to wastewater which causes a visible sheen or film upon the water. No visible sheen was detected at Outfall 001 or Outfall 002 during the previous permit. Using BPJ, the department has determined that a daily maximum limitation of 10 mg/l is appropriate for this type of facility if a visible sheen is detected. Comparable treatment systems throughout the state have a similar limitation.

E. coli

Outfall 001: The department has reviewed *E. coli* data and sampling frequency. During the previous permit cycle, zero permit limitation exceedances occurred from Outfall 001.

Outfall 001: The department has reviewed *E. coli* data and sampling frequency. During the previous permit cycle, one permit limitation exceedance occurred from Outfall 001. The exceedance also exceeded the TRC.

Based on the WQS, the department has determined that an *E. coli* limitation of 126 organisms per 100 mL as a monthly geometric mean and 409 organisms per 100 mL as a daily maximum is appropriate for this type of facility. The standard only applies during the recreation season from May 1 through September 30. The limitation in the permit has extended the recreation coverage due to seasonal variabilities and will be from April 1 through October 31.

A TMDL was developed for *E. coli* for the stretch of the Knife River that the City of Beulah discharges to. According to the TMDL, “WLA calculations for the City of Beulah were calculated based on the following criteria:

1) The maximum daily discharge will be used in wasteload allocation calculations. This value was chosen because it represents the highest discharge volume on record that the facility has produced and will allow for flexibility in bacterial loading, due to the variability of the facilities discharge volumes and durations.

2) Although *E. coli* bacteria data has been collected, the systems are assigned the water quality standards value of 126 CFU/100mL for this TMDL. This value was chosen both because it is the North Dakota water quality standard, and because those dischargers throughout the state that are required to sample for bacteria are assigned this same value in their permit.

It should also be noted that all of these facilities are allowed under their NDPDES permit to discharge on an "as needed" basis.

According to the NDPDES permit the city of Beulah, ND, has two wastewater discharge points. These discharge points were identified in the DMR report as Outfall 001A and Outfall 002A…Outfall 001A had discharges during the recreation season (May 1-September 30) since 2009 there have been a total of 15 discharges. These discharges occurred in May and July of 2009, July 2010, May, June, July and August of 2011, July, August, and September 2012, July and September 2013, June and August 2014 and June 2015…Outfall 002A also had two discharges but not during the recreation season…The city of Beulah, ND will be given a maximum daily discharge value for each outfall (001A and 002A) of 7.8 and 2.2 MGD.

The wasteload allocation for Outfall 001A was determined by maximum daily discharge volume of 7.8 MGD multiplied by an *E. coli* bacteria concentration of 126 CFUs/100 mL, times appropriate conversion factors.

WLA-Outfall 001A = 7.8 million gallons/ day * 126 CFUs/100mL

= 7.8 million gallons/day * 3.7854 L/gal*1000mL/L * 126 CFU/100mL

= 3,720.2 x 10^7 CFUs/day

The wasteload allocation for Outfall 002A was determined by taking the maximum daily discharge volume of 2.2 MGD multiplied by an *E. coli* bacteria concentration of 126 CFUs/100 mL, times appropriate conversion factors.

WLA-Outfall 002A = 2.2 million gallons/ day * 126 CFUs/100mL

= 2.2 million gallons/day * 3.7854 L/gal*1000mL/L * 126 CFU/100mL

= 1,049.3 x 10^7 CFUs/day"

The department assigned this WLA as a loading limit, to ensure that the facility does not exceed the allocation assigned in the TMDL. The facility will need to take into account the concentration of *E. coli* to determine the maximum volume of effluent that can be discharged. This can be calculated using the following equations where the *E. coli* concentration is expressed as #/100 mL:

Outfall 001:

$$MGD = \frac{3.720 * 10^{10}\ CFUs}{3.7854\frac{L}{gal} * 1{,}000\frac{mL}{L} * [E.coli] * 1{,}000{,}000\frac{gal}{million\ gallons}}$$

Outfall 002:

$$MGD = \frac{1.049 * 10^{10}\ CFUs}{3.7854\frac{L}{gal} * 1000\frac{mL}{L} * [E.coli] * 1{,}000{,}000\frac{gal}{million\ gallons}}$$

The department and the permittee will verify compliance with the TMDL and the WQS through the use of an *E. coli* spreadsheet.

Ammonia as N

The department considers the potential for contaminants (ammonia, metals, and organic chemicals) commonly associated with domestic waste facilities to compromise a water quality standard. The most prominent parameter of concern with domestic waste discharges and the treatment of other organic-type waste is ammonia. Ammonia is generated during the decay or the process of stabilizing organic materials that commonly occur during the domestic wastewater treatment process.

Ammonia presents both acute and chronic toxicity to aquatic life at variable levels depending on in-stream conditions (pH, temperature, and ammonia). Federal regulations (40 CFR 122.44) require the department to place limits in NDPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. According to the North Dakota Game and Fish, *Oncorhynchus* are not present in the Knife River, therefore all acute ammonia calculations will be performed using the equation located in the water quality standards for *Oncorhynchus* absent.

The department has conducted a reasonable potential analysis for ammonia as N. Based upon this analysis it was determined that there is a reasonable potential to exceed the WQS for ammonia as N (**Appendix C**). The department reviewed the ammonia as N data and sampling frequency and no WQS exceedances occurred during the previous permit for Outfall 001 or Outfall 002. The department proposes the following requirements for ammonia as N based upon the calculations in NDAC 33.1-16-02-1 for ammonia:

Table 9 – Ammonia Effluent Limitations and Requirements

	Effluent Limitations		
Parameter	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Ammonia 1/	†	*	‡
Stream flow upstream, cfs 2/	*	*	*
Temperature upstream, ° C 2/, 3/	*	*	*
pH upstream, S.U. 2/, 3/	*	*	*
1/ Calculations must be performed for each discharge sample. If an exceedance is detected on any single sample, the exceedance must be reported on the DMR.			

	Effluent Limitations		
Parameter	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit

2/ Sample must be collected/recorded the same day as the ammonia sample. The upstream flow, temperature, and pH may be obtained upstream of the final discharge points from the ND Highway 49 bridge sampling location.

3/ If the upstream values are not collected the following minimum values based on the 90th percentile upstream USGS data are to be used: pH: 8.5 S.U., Temperature 23.0 ° C, and ammonia 0.18 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 0.42 cfs shall be used. The maximum mixing factor is 10.0%.

† Chronic Standard (Average Monthly Limit)
The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed the numerical value given by the following formula and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:

$$0.8876 \times \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(2.126 \times 10^{0.028\times(20-MAX(T,7))}\right)$$

Receiving stream pH is used for the calculation

‡ Acute Standard (Daily Maximum Limit)
The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed the numerical value given by the following formula:

$$0.7249 \times \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}}\right) \times MIN\left(51.93, 23.12 \times 10^{0.036\times(20-T)}\right)$$

where *Oncorhynchus* are absent.

A numeric ammonia limit will not be established in the permit at this time; however, discharge limits will be calculated at the time of discharge in compliance with the WQS for ammonia to provide the permittee with instream real-time ammonia limitations. The department and the permittee will verify compliance with the state water quality standard through the use of an ammonia spreadsheet. Any ammonia as N effluent values exceeding the applicable ammonia as N calculations shall be reported on the DMR submitted to the department. It is the intent of the department to ensure that the WQS are not violated, and the permittee optimizes the efficiency of its treatment facility.

Because this facility discharges intermittently (discharges generally last less than seven days), the department has determined that the 4-day chronic standard over the 30-day average standard is appropriate for determining compliance. Because the discharges are usually less than seven days, a 30-day average was deemed impracticable.

Whole Effluent Toxicity (WET)

The department has reviewed the WET testing data and sampling frequency for acute WET tests. The dataset consisted of 15 tests and indicated no occurrences of toxicity to *Ceriodaphnia dubia* (Water Flea) nor *Pimephales promelas* (Fathead Minnow). All sample results were below method detection level for Outfalls 001 and 002. The department conducted a reasonable potential analysis for WET. Based on this analysis, it was determined that there is reasonable potential to exceed the acute standard of 0.3 Toxic Units (TU_a) (**Appendix C**). The department proposes to continue with an effluent limitation of <1.0 TU_a based upon NDAC 33.1-16-02.1.

The department is proposing the following requirements for WET:

Table 10 – WET requirements for Outfall 001 and 002

Implementation	Limitations Imposed					
Effluent Dilution	0%(Control)	12.5%	25%	50%	75%	100%
Dilution Water	Knife River [a]					
Species and Test Type	*Ceriodaphnia dubia* - 48 Hour Acute - Static Renewal - 20°C					
	Pimephales promelas - 96 Hour Acute - Static Renewal - 20°C					
Endpoint	Mortality LC_{50} reported as TU_a					
Compliance Point	End of pipe					
Sampling Frequency	Quarterly. Samples from the discharge shall be collected during the first week of discharge each calendar year and at least once every 90 days thereafter. The sampling frequency does not need to coincide with calendar quarters.					
Sample Type	Grab					
Maximum Daily Limit (MDL)	<1 TU_a					
Average Monthly Limit (AML)	<1 TU_a					
Test Failure	**Acute test failure is defined as lethality to 50% or more of the test organisms exposed to 100% effluent or >1.0 TU_a for *Ceriodaphnia dubia* 48-hour and fathead minnow 96-hour test.** The 48-hour and 96-hour effluent value must be **<1.0 TU_a** to indicate a passing test. Any 48-hour or 96-hour effluent value of **>1.0 TU_a** will constitute a failure. Tests in which the control survival is less than 90% are invalid and must be repeated.					
Reporting Requirements	The permittee shall report the following results of each toxicity test on the DMR for that reporting period: Report the highest TU_a for *Ceriodaphnia dubia*, Parameter No. TSM3B. Report the highest TU_a for *Pimephales promelas*, Parameter No. TSN6C.					

The use of alternate testing procedures or methods shall be approved in advance by the department (including, but not limited to the use of EDTA, CO_2 overlay, chlorine removal from the effluent sample if the effluent is chlorinated, etc.).

If toxicity occurs in a routine test, an additional test shall be initiated within 14 days from the date of the initial toxicity findings. Should there be no discharge during a specified sampling time frame; sampling shall be performed as soon as there is a discharge. Should toxicity occur in the second test, testing shall be conducted at a frequency of once a month and the implementation of a 5. Toxicity Reduction Evaluation (TRE) shall be determined by the department. If no toxicity is found in the second test, testing shall occur as outlined in the permit.

a. When dangerous conditions exist for personnel (i.e., thin ice, melting ice, flooding, etc.) the permittee may utilize moderately hard reconstituted water upon request and approval by the department.

The department is proposing to continue with TU_a of less than 1 (<1) in order to meet the requirements of NDAC 33.1-16-02.1-08(a)(4), which states that "[a]ll waters of the state shall be:…Free from substances attributable to municipal, industrial, or other discharges or agricultural practices in concentrations or combinations which are toxic or harmful to humans, animals, plants, or resident aquatic biota. For surface water, this standard will be enforced in part through appropriate whole effluent toxicity requirements in North Dakota pollutant discharge elimination system permits." This limit will need to be met at the end-of-pipe with no allowance for a zone of initial dilution (ZID), in accordance with NDAC 33.1-16-02.1, Appendix III, which states: "Acute whole effluent toxicity (WET) limits shall be achieved at the end-of-pipe with no allowance for a ZID."

Acute toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms," EPA-821-R-02-012 (Fifth Ed., October 2002). The permittee shall conduct an acute 48-hour static renewal toxicity test using freshwater fleas, *Ceriodaphnia dubia* and an acute 96-hour static renewal toxicity test using fathead minnows, *Pimephales promelas*.

Human Health

North Dakota's WQS include numeric human health-based criteria that the department must consider when writing NDPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria. The department evaluated arsenic pertaining to the human health criteria established in the WQS (**Appendix C**).

Outfall 001: The department has reviewed the arsenic data and sampling frequency. A reasonable potential analysis was conducted for arsenic. Based upon this analysis it was determined that there is not reasonable potential to exceed the "North Dakota Standards of Quality for Waters of the State" for arsenic for the human health criteria for Outfall 001. The department proposes to continue with monitoring for this parameter with a sampling frequency of annual for Outfall 001.

Outfall 002: The department has reviewed the arsenic data and sampling frequency. A reasonable potential analysis was conducted for arsenic. Based upon this analysis it was determined that there is reasonable potential to exceed the "North Dakota Standards of Quality for Waters of the State" for arsenic for the human health criteria for Outfall 002. The department proposes an average monthly limit of 13.8 ug/l with a sampling frequency of weekly for Outfall 002. This is based on NDAC 33.1-16-02.1.

Monitoring Requirements

The department requires monitoring, recording, and reporting (NDAC Chapter 33.1-16-01-(21 through 23) and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's limits.

The permittee must notify the department prior to any discharge. Approximately two weeks prior to a planned discharge, a representative pre-discharge grab sample must be collected from the settling basin and analyzed for the parameters listed in Tables 4 and 5. The pre-discharge sample results must be provided when notifying the department of a planned discharge.

The permittee shall collect one grab sample of the discharge every calendar week and have it analyzed while discharging.

Biosolids
Currently the department does not have the authority to regulate biosolids. Therefore, the permittee is required under the Direct Enforceability provision of 40 CFR §503.3(b) to meet the applicable requirements of the regulation.

Test Procedures

The collection and transportation of all samples shall conform to EPA preservation techniques and holding times. All laboratory tests shall be performed by a North Dakota certified laboratory in conformance with test procedures pursuant to 40 CFR 136, unless other test procedures have been specified or approved by EPA as an alternate test procedure under 40 CFR 136.5. The method of determining the total amount of water discharged shall provide results within 10 percent of the actual amount.

OTHER PERMIT CONDITIONS

Industrial Waste Management

The proposed permit contains general pretreatment language and requirements. The general requirements include protection from any source of non-domestic waste water which causes Pass Through or Interference; creates a fire or explosion hazard; causes corrosive structural damage; causes obstruction; interferes with the treatment process; includes excessive heat; contains petroleum oil and other products which causes Interference or Pass Through; results in the

presence of toxic gases, vapors or fumes in the facility; and is any trucked or hauled pollutant except at designated discharge points.

In addition to the general limitations are requirements, the facility must sample and analyze the effluent from discharge points 001 and 002 for those parameters listed in 40 CFR 122, Appendix D, Table III (Table 9). Samples must be collected annually, generally from the first discharge of the year. Sample analyses must be conducted with a detection limit less than the applicable water quality standard where reasonable.

Table 11 - Parameters from 40 CFR 122, Appendix D, Table III

Antimony, Total	Lead, Total	Zinc, Total
Arsenic, Total	Mercury, Total	Cyanide, Total
Beryllium, Total	Nickel, Total	Phenols, Total
Cadmium, Total	Selenium, Total	Hardness as $CaCO_3$
Chromium, Total	Silver, Total	
Copper, Total	Thallium, Total	

Beneficial Reuses

Wastewater that has met secondary or tertiary treatment standards may be beneficially reused in lieu of discharging. The permit will contain conditions for the beneficial reuse of wastewater for irrigation, construction, and oil and gas production

PERMIT ISSUANCE PROCEDURES

Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to the WQS, the development and approval of waste load allocation plans, the development or revision to water quality management plans, changes in sewage sludge practices, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Proposed Permit Issuance

This proposed permit meets all statutory requirements for the department to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of North Dakota. The department proposes to issue this permit for a term of five years.

APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

The department proposes to reissue a permit to the **City of Beulah**. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and the department's reasons for requiring permit conditions.

The department will place a Public Notice of Draft on **May 25, 2023** in the **Hazen Star** to inform the public and to invite comment on the proposed draft North Dakota Pollutant Discharge Elimination System permit and fact sheet.

The Notice –

- Indicates where copies of the draft Permit and Fact Sheet are available for public evaluation.
- Offers to provide assistance to accommodate special needs.
- Urges individuals to submit their comments before the end of the comment period.
- Informs the public that if there is significant interest, a public hearing will be scheduled.

You may obtain further information from the department by telephone, 701.328.5210, or by writing to the address listed below.

North Dakota Department of Environmental Quality
Division of Water Quality
4201 Normandy Street, 3rd Floor
Bismarck, ND 58503

The primary author of this permit and fact sheet is Julianna Zittleman.

North Dakota Department of Environmental Quality Public Notice
Reissue of an NDPDES Permit

Public Notice Date: 5/25/2023 Public Notice Number: ND-2023-014

Purpose of Public Notice
The Department intends to reissue the following North Dakota Pollutant Discharge Elimination System (NDPDES) Discharge Permit under the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information
Application Date: 1/3/2023 Application Number: ND0021211

Applicant Name: Beulah City Of
Mailing Address: PO Box 910, Beulah, ND 58523-0910
Telephone Number: 701.873.4637

Proposed Permit Expiration Date: 6/30/2028

Facility Description
The reapplication is for two three-cell waste stabilization pond systems which service the City of Beulah. The northern treatment system is located in the NW1/4 of the SE1/4 of Section 19, Township 144 N, and Range 87 W. The southern treatment system is located in the NE1/4 of the NE1/4 of Section 36, Township 144 N, and Range 88 W. Any discharge would be to the Knife River, a Class II stream.

Tentative Determinations
Proposed effluent limitations and other permit conditions have been made by the Department. They assure that State Water Quality Standards and applicable provisions of the FWPCAA will be protected.

Information Requests and Public Comments
Copies of the application, draft permit, and related documents are available for review. For further information on making public comments/public comment tips please visit: https://deq.nd.gov/PublicCommentTips.aspx. Comments or requests should be directed to the ND Dept of Env Quality, Div of Water Quality, 4201 Normandy Street, Bismarck ND 58503-1324 or by calling 701.328.5210.

All comments received by June 24, 2023 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice.

The NDDEQ will consider every request for reasonable accommodation to provide an accessible meeting facility or other accommodation for people with disabilities, language interpretation for people with limited English proficiency (LEP), and translations of written material necessary to access programs and information. To request accommodations, contact the NDDEQ Non-discrimination Coordinator at 701-328-5210 or deqEJ@nd.gov. TTY users may use Relay North Dakota at 711 or 1-800-366-6888.

APPENDIX B – DEFINITIONS

DEFINITIONS Standard Permit BP 2019.05.29

1. "**Act**" means the Clean Water Act.

2. "**Average monthly discharge limitation**" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

3. "**Average weekly discharge limitation**" means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

4. "**Best management practices**" (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.

5. "**Bypass**" means the intentional diversion of waste streams from any portion of a treatment facility.

6. "**Composite**" sample means a combination of at least 4 discrete sample aliquots, collected over periodic intervals from the same location, during the operating hours of a facility not to exceed a 24 hour period. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.

7. "**Daily discharge**" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

8. "**Department**" means the North Dakota Department of Environmental Quality, Division of Water Quality.

9. "**DMR**" means discharge monitoring report.

10. "**EPA**" means the United States Environmental Protection Agency.

11. "**Geometric mean**" means the n^{th} root of a product of n factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.

12. "**Grab**" for monitoring requirements, means a single "dip and take" sample collected at a representative point in the discharge stream.

13. "**Instantaneous**" for monitoring requirements, means a single reading, observation, or measurement. If more than one sample is taken during any calendar day, each result obtained shall be considered.

14. "**Maximum daily discharge limitation**" means the highest allowable "daily discharge."

15. "**Salmonid**" means of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.

16. "**Sanitary Sewer Overflows (SSO)**" means untreated or partially treated sewage overflows from a sanitary sewer collection system.

17. "**Severe property damage**" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

18. "**Total drain**" means the total volume of effluent discharged.

19. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

DEFINITIONS Whole Effluent Toxicity (WET) BP 2017.04.06

20. "**Acute toxic unit"** ("TU_a") is a measure of acute toxicity. TU_a is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e., 100/"LC50").

21. "**Chronic toxic unit"** ("TU_c") is a measure of chronic toxicity. TU_c is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e., 100/"IC25").

22. "**Inhibition concentration**", ("IC"), is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).

23. "**LC50**" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the organisms exposed in the time period prescribed by the test.

"**No observed effect concentration**", ("NOEC"), is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle

(short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

APPENDIX C – DATA AND TECHNICAL CALCULATIONS

DFLOW

Critical low flow limitations are provided below.

DFLOW 1B3 (ACUTE)	0.13	CFS	DFLOW 1Q10 (ACUTE)	0.24	CFS
DFLOW 4B3 (CHRONIC)	0.15	CFS	DFLOW 7Q10 (CHRONIC)	0.31	CFS
DFLOW 30B10 (AMMONIA)	0.42	CFS			

Reasonable Potential

The department utilized ambient data from ND Station ID 380086 on the Knife River south of Beulah, USGS Gage Station 06339500 on the Knife River near Golden Valley, and submitted DMR data from July 1, 2018 to December 31, 2022 to perform reasonable potential analysis. Since metals have been sampled for annually, the department also used submitted DMR data for arsenic from July 1, 2013 to December 31, 2022 to be more representative of the discharge.

Ammonia

The department used the following criteria to determine the acute and chronic ammonia criterion for the reasonable potential analysis:

Flow Variable Calculated Effluent Ammonia Concentrations in mg/l				Estimated	
Discharger:	Beulah City of		Enter the upstream ammonia in mg/l:	90th %	0.18
Stream:	Knife River		Enter the receiving stream pH:	No	8.50
Enter receiving stream flow (CFS):		0	Enter the receiving stream temperature in Deg C: 73 F	Yes	23.00
Mixing Zone Percentage/CFS:	10%	0.0	Enter the effluent drain rate (MGD):	Yes	1.41
Enter increments to calculate stream flow:			Enter increments to calculate drain rate:		0.1
			Mixing Zone Dilution Rate:		1.0
			Overall Dilution Rate:		1.1

Maximum allowable ammonia in mg/l												
	Water Quality Standard:			1.1600	Water Quality Standard:			0.7165	Water Quality Standard:			0.2866
	Intermittent 1hr Acute				Intermittent 4 Day Chronic				Continuous 30 Day Chronic			
DRAIN MGD →	1.31	1.41	1.51	1.61	1.31	1.41	1.51	1.61	1.31	1.41	1.51	1.61
STREAM FLOW in CFS												
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	**1.17**	1.17	1.17	0.72	**0.72**	0.72	0.72	0.29	**0.29**	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29
0.03	1.18	1.17	1.17	1.17	0.72	0.72	0.72	0.72	0.29	0.29	0.29	0.29

The reasonable potential determinations for ammonia are provided below. The determinations were conducted utilizing the Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991). For Outfall 001, the coefficient of variation 0.6 was used with a sample size of 9. For Outfall 002, the coefficient of variation used was 0.6 with a sample size of 8.

Outfall 001:

Receiving Water Concentration (RWC)
Reasonable Potential (RP)
Determination

Technical Support Document (TSD) For Water Quality-based Toxics Control
EPA/505/2-90-001; March 1991

Facility Name:	Beulah City of	Receiving Stream:	Knife River	
NDPDES Permit:	ND0021211	1Q10 Acute	0.24	cfs
Daily Maximum Flow (mgd):	6.90	1B3 Acute	0.13	cfs
Daily Average Flow (mgd):	1.87	7Q10 Chronic	0.31	cfs
Stream Design Mixing:	10.0%	4B3 Chronic	0.15	cfs
Statistical Multiplier:	1.8			
Upstream Concentration:	0.1800	mg/l	**Parameter:**	
Effluent Concetration (max):	3.4500	mg/l	**Ammonia**	

$$RWC = \frac{(StatQeCe)+(Cs(pmf)Qs)}{Qe+(pmf)Qs}$$

Outfall: **001**

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)
Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
Qe = Effluent Design Flow
Ce = Highest effluent concentration reported.
pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)
Cs = Background concentration of the receiving water.

Qe - Acute	6.90	mgd	Qs - 1Q10	0.16	mgd
Qe - Chronic	1.87	mgd	Qs - 1B3	0.08	mgd
Ce	3.4500	mg/l	Qs - 7Q10	0.20	mgd
Cs	0.1800	mg/l	Qs - 4B3	0.10	mgd
Stat	1.80				
pmf	10.0%				

Acute RP			Chronic RP		
RWC - 1Q10	6.1965	mg/l	RWC - 7Q10	6.1461	mg/l
RWC - 1B3	6.2027	mg/l	RWC - 4B3	6.1789	mg/l

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	1.16	mg/l	Chronic Criterion	0.7165	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		**CCC RP Present:**	
1Q10 Acute OR	**YES**	**7Q10 Chronic OR**	**YES**
1B3 Acute	**YES**	**4B3 Chronic**	**YES**

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

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Outfall 002:

Receiving Water Concentration (RWC)
Reasonable Potential (RP)
Determination

Technical Support Document (TSD) For Water Quality-based Toxics Control
EPA/505/2-90-001; March 1991

Facility Name:	Beulah City of	Receiving Stream:	Knife River	
NDPDES Permit:	ND0021211	1Q10 Acute	0.24	cfs
Daily Maximum Flow (mgd):	6.90	1B3 Acute	0.13	cfs
Daily Average Flow (mgd):	1.87	7Q10 Chronic	0.31	cfs
Stream Design Mixing:	10.0%	4B3 Chronic	0.15	cfs
Statistical Multiplier:	1.9			
Upstream Concentration:	0.1800	mg/l	**Parameter:**	
Effluent Concetration (max):	3.1000	mg/l	**Ammonia**	

$$RWC = \frac{(StatQeCe)+(Cs(pmf)Qs)}{Qe+(pmf)Qs}$$

Outfall: 002

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)
Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
Qe = Effluent Design Flow
Ce = Highest effluent concentration reported.
pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)
Cs = Background concentration of the receiving water.

Qe - Acute	6.90	mgd	Qs - 1Q10	0.16	mgd
Qe - Chronic	1.87	mgd	Qs - 1B3	0.08	mgd
Ce	3.1000	mg/l	Qs - 7Q10	0.20	mgd
Cs	0.1800	mg/l	Qs - 4B3	0.10	mgd
Stat	1.90				
pmf	10.0%				

Acute RP			Chronic RP		
RWC - 1Q10	5.8772	mg/l	RWC - 7Q10	5.8295	mg/l
RWC - 1B3	5.8831	mg/l	RWC - 4B3	5.8606	mg/l

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	1.16	mg/l	Chronic Criterion	0.7165	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		**CCC RP Present:**	
1Q10 Acute OR	**YES**	**7Q10 Chronic OR**	**YES**
1B3 Acute	**YES**	**4B3 Chronic**	**YES**

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

Whole Effluent Toxicity

The reasonable potential determinations for WET are provided below. The determinations were conducted utilizing the Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991). For Outfall 001, the coefficient of variation used was 0.6, and the sample size was 8. For Outfall 002, the coefficient of variation used was 0.6, and the sample size was 7.

Outfall 001:

Whole Effluent Toxicity (WET)
Resonable Potential (RP)
Determination

Technical Support Document (TSD) For Water Quality-based Toxics Control
EPA/505/2-90-001; March 1991

Facility Name:	Beulah City of	Receiving Stream:	Knife River	
NDPDES Permit:	ND0021211	1Q10 Acute	0.24	cfs
Effluent Flow (mgd):	6.900	1B3 Acute	0.13	cfs
Stream Design Mixing:	10.0%	7Q10 Chronic	0.31	cfs
WET TUa (max):	1.00	4B3 Chronic	0.15	cfs
ACR:				
Statistical Multiplier:	1.9			

$$RWC = \frac{StatQeCe}{Qe+(pmf)Qs}$$

Outfall: 001

RWC = Receiving water concentration, the resultant magnitude of toxicity in the receiving water after effluent discharge in TUs (also known as the in-stream waste concentration)
Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
Qe = Effluent Design Flow
Ce = Highest Toxicity Unit (TU) reported. (Use 1 if no WET data is available.)
pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Qe	6.900	mgd	Qs - Acute	0.155	mgd
Ce	1.00	TU	Qs - Acute 1B3	0.084	mgd
pmf	10.0%		Qs - Chronic	0.200	mgd
Stat	1.9		Qs - Chronic 4B3	0.097	mgd
ACR	0.00				

Acute RP			Chronic RP		
RWC - 1Q10	1.90	TUa	RWC - 7Q10	0.00	TUc
RWC - 1B3	1.90	TUa	RWC - 4B3	0.00	TUc

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	0.3	TUa	Chronic Criterion	1.0	TUc

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		**CCC RP Present:**	
1Q10 Acute OR	**YES**	**7Q10 Chronic OR**	**NO**
1B3 Acute	**YES**	**4B3 Chronic**	**NO**

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design flows to determine Whole Effluent Toxicity (WET) limits for acute and chronic endpoints.

Outfall 002:

Whole Effluent Toxicity (WET)
Resonable Potential (RP)
Determination

Technical Support Document (TSD) For Water Quality-based Toxics Control
EPA/505/2-90-001; March 1991

Facility Name:	Beulah City of		Receiving Stream:	Knife River	
NDPDES Permit:	ND0021211		1Q10 Acute	0.24	cfs
Effluent Flow (mgd):	6.900		1B3 Acute	0.13	cfs
Stream Design Mixing:	10.0%		7Q10 Chronic	0.31	cfs
WET TUa (max):	1.00		4B3 Chronic	0.15	cfs
ACR:					
Statistical Multiplier:	2				

$$RWC = \frac{StatQeCe}{Qe+(pmf)Qs}$$

Outfall:
002

RWC = Receiving water concentration, the resultant magnitude of toxicity in the receiving water after effluent discharge in TUs (also known as the in-stream waste concentration)
Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
Qe = Effluent Design Flow
Ce = Highest Toxicity Unit (TU) reported. (Use 1 if no WET data is available.)
pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Qe	6.900	mgd	Qs - Acute	0.155	mgd
Ce	1.00	TU	Qs - Acute 1B3	0.084	mgd
pmf	10.0%		Qs - Chronic	0.200	mgd
Stat	2.0		Qs - Chronic 4B3	0.097	mgd
ACR	0.00				
Acute RP			Chronic RP		
RWC - 1Q10	2.00	TUa	RWC - 7Q10	0.00	TUc
RWC - 1B3	2.00	TUa	RWC - 4B3	0.00	TUc
Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	0.3	TUa	Chronic Criterion	1.0	TUc

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		**CCC RP Present:**	
1Q10 Acute OR	**YES**	**7Q10 Chronic OR**	**NO**
1B3 Acute	**YES**	**4B3 Chronic**	**NO**

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design flows to determine Whole Effluent Toxicity (WET) limits for acute and chronic endpoints.

Metals Review

The department reviewed the metals sample results from Outfall 001 and 002 for potential to cause exceedances of the WQS. Below are the reviews of the highest metal levels to the WQS. Parameters which were below method detection level were entered at the detection limit value.

Outfall 001:

The NDDEQ has developed the following tool to evaluate a single sample result to the North Dakota Standards of Quality for Waters of the State. A detailed explanation of the calculations and limits for the parameters listed can be found in ch 33.1-16-02.1-9, Table 1.

Parameters indicated as "HD-Hardness Dependent" are less toxic as the calcium carbonate hardness of the receiving stream increases. The calcium carbonate hardness of the effluent or the receiving stream is entered above. A hardness value in grains per gallon can also be entered.

Items in bold italic and underline indicate a parameter that needs further evaluation. Parameters listed above must be analyzed using an EPA approved method (40 CFR 136) that has a detection limit at or below the limits listed in 40 CFR 136 or the current version of the North Dakota Standards of Quality for Waters

Facility Name			Beulah City of				Print Date:			
Location			Outfall 001				Below are the current or calculated acute, chronic and human health standards based on the data entered.			
Enter Grains/Gallon or					0					
Hardness - Total (CaCO3) mg/l					400					
Safety Factor(multiplier):										
Enter Concentration Values							µg/l	µg/l	µg/l	µg/l
Parameter		Detect	MDL/DL /RL	mg/l	µg/l	µg/l	Acute	Chronic	Human Health Class I ,IA,II	Human Health Class III
Antimony		<	5		5	5			5.6	640
Arsenic			5		14.5	14.5	340	150	10	
Beryllium		<	5		5	5			***4***	
Cadmium	HD	<	5		5	5	7.4	***2.39***	***5.00***	
Chromium - Total		<	5		5	5			100	
Chromium (III)	HD					0	5612	268		
Chromium (VI)						0	16	11		
Copper	HD		5		8.47	8.47	52	30.5	1000.0	
Lead	HD	<	5		5	5	477	18.6	15.0	
Mercury		<	0.2		0.2	0.2	1.7	0.88	0.05	***0.051***
Molybdenum - Total						0				
Nickel	HD		5		8.79	8.79	1516	168.5	100.0	4200
Selenium		<	5		5	5	20	5	50	
Silver	HD	<	5		5	5	41			
Thallium		<	5		5	5			***0.24***	***0.47***
Zinc	HD		5		14.5	14.5	388	387.8	7400.0	26000
Cyanide - Total		<	0.005	0.005		5	22	5.2	4	400
Phenols			5		15.4	15.4		300	4000	300000

Comments:
The maximum values reported for each parameter from discharges that occurred from July 1, 2018 -December 31, 2022 were used. Non-detects were entered at the detection limit value.

Beryllium - Value was below method detection. No further analysis conducted

Cadmium - Value was below method detection. No further analysis conducted.

Mercury - Value was below method detection. No further analysis conducted

Selenium - Value was below method detection. No further analysis conducted.

Thallium - Value was below method detection. No further analysis conducted

Total Cyanide - Value was below method detection. No further analysis conducted.

Outfall 002:

The NDDEQ has developed the following tool to evaluate a single sample result to the North Dakota Standards of Quality for Waters of the State. A detailed explanation of the calculations and limits for the parameters listed can be found in ch 33.1-16-02.1-9, Table 1.

Parameters indicated as "HD-Hardness Dependent" are less toxic as the calcium carbonate hardness of the receiving stream increases. The calcium carbonate hardness of the effluent or the receiving stream is entered above. A hardness value in grains per gallon can also be entered.

Items in bold italic and underline indicate a parameter that needs further evaluation. Parameters listed above must be analyzed using an EPA approved method (40 CFR 136) that has a detection limit at or below the limits listed in 40 CFR 136 or the current version of the North Dakota Standards of Quality for Waters

Facility Name			Beulah City of				Print Date:			
Location			Outfall 002				Below are the current or calculated acute, chronic and human health standards based on the data entered.			
Enter Grains/Gallon or					0					
Hardness - Total (CaCO3) mg/l					400					
Safety Factor(multiplier):										
Enter Concentration Values							µg/l	µg/l	µg/l	µg/l
Parameter		Detect	MDL/DL /RL	mg/l	µg/l	µg/l	Acute	Chronic	Human Health Class I ,IA,II	Human Health Class III
Antimony		<	5		5	5			5.6	640
Arsenic			5		15.4	15.4	340	150	10	
Beryllium		<	5		5	5			***4***	
Cadmium	HD	<	5		5	5	7.4	***2.39***	***5.00***	
Chromium - Total		<	5		5	5			100	
Chromium (III)	HD					0	5612	268		
Chromium (VI)						0	16	11		
Copper	HD		5		8.15	8.15	52	30.5	1000.0	
Lead	HD	<	5		5	5	477	18.6	15.0	
Mercury		<	0.2		0.2	0.2	1.7	0.88	0.05	***0.051***
Molybdenum - Total						0				
Nickel	HD		5		12.8	12.8	1516	168.5	100.0	4200
Selenium		<	5		5	5	20	5	50	
Silver	HD	<	5		5	5	41			
Thallium		<	5		5	5			***0.24***	***0.47***
Zinc	HD		5		12.7	12.7	388	387.8	7400.0	26000
Cyanide - Total		<	0.005	0.005		5	22	5.2	4	400
Phenols			5		17.8	17.8		300	4000	300000

Comments:
The maximum values reported for each parameter from discharges that occurred from July 1, 2018 -December 31, 2022 were used. Non-detects were entered at the detection limit value.

Beryllium - Value was below method detection. No further analysis conducted

Cadmium - Value was below method detection. No further analysis conducted.

Mercury - Value was below method detection. No further analysis conducted

Selenium - Value was below method detection. No further analysis conducted.

Thallium - Value was below method detection. No further analysis conducted

Total Cyanide - Value was below method detection. No further analysis conducted.

Arsenic

The reasonable potential determinations for arsenic are provided below. The determinations were conducted utilizing the Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991). For Outfall 001, the coefficient of variation was 0.6 with a sample size of 9. For Outfall 002, the coefficient of variation was 0.6 with a sample size of 8.

Outfall 001:

Receiving Water Concentration (RWC)
Reasonable Potential (RP)
Determination

Technical Support Document (TSD) For Water Quality-based Toxics Control
EPA/505/2-90-001; March 1991

Facility Name:	Beulah City of	Receiving Stream:	Knife River	
NDPDES Permit:	ND0021211	1Q10 Acute	0.24	cfs
Daily Maximum Flow (mgd):	6.90	1B3 Acute	0.13	cfs
Daily Average Flow (mgd):	1.87	7Q10 Chronic	0.31	cfs
Stream Design Mixing:	10.0%	4B3 Chronic	0.15	cfs
Statistical Multiplier:	1.8			
Upstream Concentration:	0.0030	mg/l	**Parameter:**	
Effluent Concetration (max):	0.0043	mg/l	**Arsenic**	

$$RWC = \frac{(StatQeCe)+(Cs(pmf)Qs)}{Qe+(pmf)Qs}$$

Outfall: **001**

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)
Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
Qe = Effluent Design Flow
Ce = Highest effluent concentration reported.
pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)
Cs = Background concentration of the receiving water.

Qe - Acute	6.90	mgd	Qs - 1Q10	0.16	mgd
Qe - Chronic	1.87	mgd	Qs - 1B3	0.08	mgd
Ce	0.0043	mg/l	Qs - 7Q10	0.20	mgd
Cs	0.0030	mg/l	Qs - 4B3	0.10	mgd
Stat	1.80				
pmf	10.0%				

Acute RP			Chronic RP		
RWC - 1Q10	0.0076	mg/l	RWC - 7Q10	0.008	mg/l
RWC - 1B3	0.0076	mg/l	RWC - 4B3	0.008	mg/l

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	N/A	mg/l	Chronic Criterion	0.0100	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		**CCC RP Present:**	
1Q10 Acute OR	**NO**	**7Q10 Chronic OR**	**NO**
1B3 Acute	**NO**	**4B3 Chronic**	**NO**

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

Outfall 002:

Receiving Water Concentration (RWC)
Reasonable Potential (RP)
Determination

Technical Support Document (TSD) For Water Quality-based Toxics Control
EPA/505/2-90-001; March 1991

Facility Name:	Beulah City of	Receiving Stream:	Knife River	
NDPDES Permit:	ND0021211	1Q10 Acute	0.24	cfs
Daily Maximum Flow (mgd):	6.90	1B3 Acute	0.13	cfs
Daily Average Flow (mgd):	1.87	7Q10 Chronic	0.31	cfs
Stream Design Mixing:	10.0%	4B3 Chronic	0.15	cfs
Statistical Multiplier:	1.9			
Upstream Concentration:	0.0030	mg/l	**Parameter:**	
Effluent Concetration (max):	0.0119	mg/l	**Arsenic**	

$$RWC = \frac{(StatQeCe)+(Cs(pmf)Qs)}{Qe+(pmf)Qs}$$

Outfall: 002

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)
Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
Qe = Effluent Design Flow
Ce = Highest effluent concentration reported.
pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)
Cs = Background concentration of the receiving water.

Qe - Acute	6.90	mgd	Qs - 1Q10	0.16	mgd
Qe - Chronic	1.87	mgd	Qs - 1B3	0.08	mgd
Ce	0.0119	mg/l	Qs - 7Q10	0.20	mgd
Cs	0.0030	mg/l	Qs - 4B3	0.10	mgd
Stat	1.90				
pmf	10.0%				

Acute RP			Chronic RP		
RWC - 1Q10	0.0226	mg/l	RWC - 7Q10	0.0224	mg/l
RWC - 1B3	0.0226	mg/l	RWC - 4B3	0.0226	mg/l

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	N/A	mg/l	Chronic Criterion	0.0100	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		**CCC RP Present:**	
1Q10 Acute OR	**NO**	**7Q10 Chronic OR**	**YES**
1B3 Acute	**NO**	**4B3 Chronic**	**YES**

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

The limit determination for Outfall 002 for arsenic is found below. The coefficient of variation was 0.6. DMR data from the previous 2 permit cycles shows that the facility discharges 1 to 2 times per year, and the facility discharges intermittently (discharges generally last less than seven days). Because of this, n=1 was deemed practical for the average monthly limit (AML) calculation.

Long Term Average (LTA) Determination

Long Term Average (LTA), calculate acute and chronic numbers. (see TSD, Table 5-1, page 102)

LTAa = WLAa x e^[0.5q2 -zq]
LTAc = WLAc x e^[0.5q42 - zq]

Acute Multiplier	0.468
Chronic Multiplier	0.644

LTAa		
1Q10	#VALUE!	mg/l
1B3	#VALUE!	mg/l

LTAc		
7Q10	0.0065	mg/l
4B3	0.0065	mg/l

Maximum Daily Limit (MDL) Determination

Maximum Daily Limit (MDL) - EPA recommends using the 99th percentile (see TSD, Table 5-2, page 103)

MDL = LTA x e^[zq-0.5q2]

z	2.13

MDL		
1Q10	#VALUE!	mg/l
1B3	#VALUE!	mg/l
7Q10	0.0138	mg/l
4B3	0.0138	mg/l

Average Monthly Limit (AML) Determination

Average Monthly Limit (AML) - EPA recommends using the 95th percentile (see TSD, Table 5-2, page 103)

AML = LTA x e^[zqn-0.5qn2]

z	2.13

AML		
1Q10	#VALUE!	mg/l
1B3	#VALUE!	mg/l
7Q10	0.0138	mg/l
4B3	0.0138	mg/l

Following these procedures, the maximum daily limit and average monthly limit may then be incorporated into the permit as justifiable WQBELs.

BIOLOGICALLY BASED LIMITS					
WQBELs	CMC - Acute Limit			CCC - Chronic Limit	
	MDL	AML		MDL	AML
mg/l	#VALUE!	#VALUE!	mg/l	0.0138	0.0138
ug/l	#VALUE!	#VALUE!	ug/l	13.7668	13.7668

HYDROLOGICALLY BASED LIMITS					
WQBELs	CMC - Acute Limit			CCC - Chronic Limit	
	MDL	AML		MDL	AML
mg/l	#VALUE!	#VALUE!	mg/l	0.0138	0.0138
ug/l	#VALUE!	#VALUE!	ug/l	13.8197	13.8197

APPENDIX D – RESPONSE TO COMMENTS

Comments provided during the public notice/comment period will be placed here.

DRAFT

Permit No: ND0021211
Effective Date: July 1, 2023
Expiration Date: June 30, 2028

AUTHORIZATION TO DISCHARGE UNDER THE

NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Chapter 33.1-16-01 of the North Dakota Department of Environmental Quality rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

the City of Beulah

is authorized to discharge from its waste stabilization ponds

to the Knife River, a Class II stream

provided all the conditions of this permit are met.

This permit and the authorization to discharge shall expire at midnight,

June 30, 2028.

Signed this _____ day of _____, _____.

_____
Karl H. Rockeman, P.E.
Director
Division of Water Quality

BP 2019.05.29

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DEFINITIONS Standard Permit BP 2019.05.29

1. "**Act**" means the Clean Water Act.

2. "**Average monthly discharge limitation**" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

3. "**Average weekly discharge limitation**" means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

4. "**Best management practices**" (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.

5. "**Bypass**" means the intentional diversion of waste streams from any portion of a treatment facility.

6. "**Composite**" sample means a combination of at least 4 discrete sample aliquots, collected over periodic intervals from the same location, during the operating hours of a facility not to exceed a 24 hour period. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.

7. "**Daily discharge**" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

8. "**Department**" means the North Dakota Department of Environmental Quality, Division of Water Quality.

9. "**DMR**" means discharge monitoring report.

10. "**EPA**" means the United States Environmental Protection Agency.

11. "**Geometric mean**" means the n^{th} root of a product of n factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.

12. "**Grab**" for monitoring requirements, means a single "dip and take" sample collected at a representative point in the discharge stream.

13. "**Instantaneous**" for monitoring requirements, means a single reading, observation, or measurement. If more than one sample is taken during any calendar day, each result obtained shall be considered.

14. "**Maximum daily discharge limitation**" means the highest allowable "daily discharge."

15. "**Salmonid**" means of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.

16. "**Sanitary Sewer Overflows (SSO)**" means untreated or partially treated sewage overflows from a sanitary sewer collection system.

17. "**Severe property damage**" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

18. "**Total drain**" means the total volume of effluent discharged.

19. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

DEFINITIONS Whole Effluent Toxicity (WET) BP 2017.04.06

20. "**Acute toxic unit"** ("TUa") is a measure of acute toxicity. TUa is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e., 100/"LC50").

21. "**Chronic toxic unit"** ("TUc") is a measure of chronic toxicity. TUc is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e., 100/"IC25").

22. "**Inhibition concentration**", ("IC"), is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).

23. "**LC50**" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the organisms exposed in the time period prescribed by the test.

24. "**No observed effect concentration**", ("NOEC"), is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

OUTFALL DESCRIPTION

Outfall 001. Active. Final.			
Latitude: 47.275328	Longitude: -101.744075	County: Mercer	
Township: 144N	Range: 87W	Section: 19	QQ: DBA
Receiving Stream: Knife River		Classification: Class II Stream	
Outfall Description: All effluent is generated from waste stabilization ponds. The treated effluent flows from a three-cell lagoon system, located in the northern part of the City of Beulah, to the Knife River, a Class II stream.			

Outfall 002. Active. Final.			
Latitude: 47.253764	Longitude: -101.779325	County: Mercer	
Township: 144N	Range: 88W	Section: 36	QQ: AAB
Receiving Stream: Knife River		Classification: Class II Stream	
Outfall Description: All effluent is generated from waste stabilization ponds. The treated effluent flows from a three-cell lagoon system, located in the southern part of the City of Beulah, to the Knife River, a Class II stream.			

PERMIT SUBMITTALS SUMMARY

Coverage Point*	Submittal	Frequency	First Submittal Date
001A	Discharge Monitoring Report	Quarterly	October 31, 2023
001W	Discharge Monitoring Report	Semiannually	January 31, 2024
001M	Discharge Monitoring Report	Annually	July 31, 2024
002A	Discharge Monitoring Report	Quarterly	October 31, 2023
002W	Discharge Monitoring Report	Semiannually	January 31, 2024
002M	Discharge Monitoring Report	Annually	July 31, 2024
Application Renewal	NPDES Application Renewal	1/permit cycle	December 31, 2027

* A, W, and M are report designators: “A” is the general outfall designation for conventional pollutants, “W” is the WET designation, and “M” is the metals designation.

SPECIAL CONDITIONS

No special conditions have been determined at this time.

I. LIMITATIONS AND MONITORING REQUIREMENTS

A. Discharge Authorization

During the effective period of this permit, the permittee is authorized to discharge pollutants from the outfalls as specified to the following: **Knife River**

No discharge shall occur from the lagoons until all pre-discharge parameters have been reviewed by the department. After the review process has been completed the permittee shall comply with the limitations of this permit.

This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in the permit application process.

B. Effluent Limitations and Monitoring

1. The permittee must limit and monitor all discharges as specified below:

Table 1: Effluent Limitations and Monitoring Requirements **Outfall 001**							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration				
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Biochemical Oxygen Demand (BOD_5)	*	*	25 mg/l	45 mg/l	*	Weekly	Grab
Total Suspended Solids (TSS)	*	*	30 mg/l	45 mg/l	*	Weekly	Grab
pH [a]	*	*	Shall remain between 6.0 and 9.0 S.U.			Weekly	Instantaneous
Oil & Grease, Visual [b]	*	*	*	*	*	Daily	Visual
Oil & Grease [b]	*	*	*	*	10 mg/l	Conditional/Weekly	Grab
E. coli [c]	*	$3.720x10^{10}$ CFUs	126/100 ml	*	409/100 ml	Weekly	Grab
Temperature (°C)	*	*	*	*	*	Weekly	Grab
Whole Effluent Toxicity (WET)	Refer to Part I(C)(1) of this permit					Quarterly	Grab
Metals, µg/l	Refer to Part V(C) of this permit (Table 4)					Annually	Grab
Nitrogen, Total	Monitor only (mg/l)					Monthly	Grab
Phosphorus, Total	Monitor only (mg/l)					Monthly	Grab
Effluent Flow, MGD [d]	*	*	*	*	*	Daily	Calculated
Total Drain (MG)	*	*	*	*	*	Monthly	Calculated
Total Days Discharging	*	*	*	*	*	Monthly	Calculated
Ammonia as N [e]	Refer to Ammonia Table (Table 3)					Weekly	Grab

Notes:

*. This parameter is not limited. However, the department may impose limitations based on sample history and to protect receiving waters.

a. The pH, an instantaneous limitation, shall be between 6.0 and 9.0 s.u. Any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of the permit.

Table 1: Effluent Limitations and Monitoring Requirements **Outfall 001**							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration				
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type

b. Best Management Practices (BMPs) are to be utilized so that there shall be no discharge of floating debris, oil, scum, and other floating materials in sufficient amounts to be unsightly or deleterious, or oil wastes that produce a visible sheen on the surface of the receiving water.

c. *E. coli* limits shall be effective from April 1 through October 31

d. The discharge rate shall be adjusted using the *E. coli* concentration to stay within the loading limit assigned by the Knife River TMDL. This determination shall be in accordance with the waste load allocation formula specified in the Knife River TMDL where the *E. coli* concentration is expressed as #/100 mL.

$$MGD = \frac{3.720 * 10^{10}\ CFUs}{3.7854\frac{L}{gal} * 1000\frac{mL}{L} * [E.coli] * 1{,}000{,}000\frac{gal}{million\ gallons}}$$

e. The discharge rate shall be adjusted when necessary to maintain the water quality standard for ammonia. The permittee shall adjust the discharge rate daily to maintain the water quality standard.

Stipulations:

A pre-discharge sample must be taken prior to the start of any discharge. A grab sample shall be tested for BOD_5, TSS, pH, *E. coli*, and Ammonia as N.

The discharge shall not contain, in sufficient amounts to be unsightly or deleterious, any floating debris, oil, scum, and other floating materials attributable to municipal operations.

The dates of discharge, frequency of analysis, and number of exceedances shall be included on the Discharge Monitoring Report (DMR).

Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to leaving permittee property or entering the receiving stream.

Table 2: Effluent Limitations and Monitoring Requirements **Outfall 002**							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration				
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Biochemical Oxygen Demand (BOD_5)	*	*	25 mg/l	45 mg/l	*	Weekly	Grab
Total Suspended Solids (TSS)	*	*	30 mg/l	45 mg/l	*	Weekly	Grab
pH [a]	*	*	Shall remain between 6.0 and 9.0 S.U.			Weekly	Instantaneous
Oil & Grease, Visual [b]	*	*	*	*	*	Daily	Visual
Oil & Grease [b]	*	*	*	*	10 mg/l	Conditional/Weekly	Grab
E. coli [c, d]	*	$1.049x10^{10}$ CFUs	126/100 ml	*	409/100 ml	Weekly	Grab
Arsenic	*	*	13.8 ug/l	*	*	Weekly	Grab
Temperature (°C)	*	*	*	*	*	Weekly	Grab
Whole Effluent Toxicity (WET)	Refer to Part I(C)(1) of this permit					Quarterly	Grab
Metals, µg/l	Refer to Part V(C) of this permit (Table 4)					Annually	Grab
Nitrogen, Total	Monitor only (mg/l)					Monthly	Grab
Phosphorus, Total	Monitor only (mg/l)					Monthly	Grab
Effluent Flow, MGD [d]	*	*	*	*	*	Daily	Calculated
Total Drain (MG)	*	*	*	*	*	Monthly	Calculated
Total Days Discharging	*	*	*	*	*	Monthly	Calculated
Ammonia as N	Refer to Ammonia Table (Table 3)					Weekly	Grab

Notes:

*. This parameter is not limited. However, the department may impose limitations based on sample history and to protect receiving waters.

a. The pH, an instantaneous limitation, shall be between 6.0 and 9.0 s.u. Any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of the permit.

Table 2: Effluent Limitations and Monitoring Requirements **Outfall 002**							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration				
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type

b. Best Management Practices (BMPs) are to be utilized so that there shall be no discharge of floating debris, oil, scum, and other floating materials in sufficient amounts to be unsightly or deleterious, or oil wastes that produce a visible sheen on the surface of the receiving water.

c. *E. coli* limits shall be effective from April 1 through October 31

d. The discharge rate shall be adjusted using the *E. coli* concentration to stay within the loading limit assigned by the Knife River TMDL. This determination shall be in accordance with the waste load allocation formula specified in the Knife River TMDL where the *E. coli* concentration is expressed as #/100 mL.

$$MGD = \frac{1.049 * 10^{10}\ CFUs}{3.7854\frac{L}{gal} * 1000\frac{mL}{L} * [E.coli] * 1{,}000{,}000\frac{gal}{million\ gallons}}$$

e. The discharge rate shall be adjusted when necessary to maintain the water quality standard for ammonia when effluent concentrations are above the appropriate trigger value. The permittee shall adjust the discharge rate daily to maintain the water quality standard.

Stipulations:

A pre-discharge sample must be taken prior to the start of any discharge. A grab sample shall be tested for BOD_5, TSS, pH, *E. coli*, and Ammonia as N.

The discharge shall not contain, in sufficient amounts to be unsightly or deleterious, any floating debris, oil, scum, and other floating materials attributable to municipal operations.

The dates of discharge, frequency of analysis, and number of exceedances shall be included on the Discharge Monitoring Report (DMR).

Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to leaving permittee property or entering the receiving stream.

Table 3: Ammonia Effluent Limitations and Monitoring Requirements for **Outfall 001 and Outfall 002**			
	Effluent Limitations		
Parameter	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Ammonia 1/	†	*	‡
Stream flow upstream, cfs 2/	*	*	*
Temperature upstream, ° C 2/, 3/	*	*	*
pH upstream, S.U. 2/, 3/	*	*	*

1/ Calculations must be performed for each discharge sample. If an exceedance is detected on any single sample, the exceedance must be reported on the DMR.

2/ Sample must be collected/recorded the same day as the ammonia sample. The upstream flow, temperature, and pH may be obtained upstream of the final discharge points from the ND Highway 49 bridge sampling location.

3/ If the upstream values are not collected the following minimum values based on the 90th percentile upstream USGS data are to be used: pH: 8.5 S.U., Temperature 23.0 ° C, and ammonia 0.18 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 0.42 cfs shall be used. The maximum mixing factor is 10.0%.

† Chronic Standard (Average Monthly Limit)
The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed the numerical value given by the following formula and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:

$$0.8876 \times \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(2.126 \times 10^{0.028\times(20-MAX(T,7))}\right)$$

Receiving stream pH is used for the calculation

‡ Acute Standard (Daily Maximum Limit)
The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed the numerical value given by the following formula:

$$0.7249 \times \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}}\right) \times MIN\left(51.93, 23.12 \times 10^{0.036\times(20-T)}\right)$$

where *Oncorhynchus* are absent.

C. Whole Effluent Toxicity (WET) Requirements BP 2021.01.26

1. Acute Toxicity Testing

Acute toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *"Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*," EPA-821-R-02-012 (Fifth Ed., October 2002). The permittee shall conduct an acute 48-hour static renewal toxicity test using freshwater fleas, *Ceriodaphnia dubia* and an acute 96-hour static renewal toxicity test using fathead minnows, *Pimephales promelas*.

WET tests shall be performed on the first discharge made each calendar year, unless

specifically waived by the department. Thereafter, tests shall be performed at least once every calendar quarter in which there is a discharge.

Toxicity is defined as:

Acute test failure is defined as lethality to 50% or more of the test organisms exposed to 100% effluent or >1.0 TUa for *Ceriodaphnia dubia* 48-hour and fathead minnow 96-hour test. The 48-hour and 96-hour effluent value must be <**1.0 TUa** to indicate a passing test. Any 48-hour or 96-hour effluent value of >**1.0 TUa** will constitute a failure. Tests in which the control survival is less than 90% are invalid and must be repeated.

Acute WET requirements for **Outfalls 001 and 002**						
Implementation	Monitoring Imposed or Limitation Imposed					
Effluent Dilution	0%(Control)	12.5%	25%	50%	75%	100%
Dilution Water	**Knife River**					
Species and Test Type	*Ceriodaphnia dubia* - 48 Hour Acute - Static Renewal - 20°C					
	Fathead minnow - 96 Hour Acute - Static Renewal - 20°C					
Endpoint	Mortality LC_{50} reported as TUa					
Compliance Point	**End of pipe**					
Sample Frequency	**Quarterly**					
Sample Type	**Grab**					
Maximum Daily Limit (MDL)	**<1.0 TU_a**					
Average Monthly Limit(AML)	**<1.0 TU_a**					

If toxicity occurs in a routine test, an additional test shall be initiated within 14 days from the date of the initial toxicity findings. Should toxicity occur in the second test, testing shall be conducted at a frequency of once a month and the implementation of a Toxicity Reduction Evaluation (TRE) shall be determined by the department. If no toxicity is found in the second test, testing shall occur as outlined in the permit. Should there be no discharge during a specified sampling time frame; sampling shall be performed as soon as there is a discharge.

When dangerous conditions exist for personnel (i.e. thin ice, melting ice, flooding, etc.) the permittee may utilize moderately hard reconstituted water upon request and approval by the department.

The permittee shall report the following results of each toxicity test on the DMR for that reporting period:

***Pimephales promelas* (Fathead Minnow)**
a. Report the highest TUa for Fathead minnow, Parameter No. TSN6C.

***Ceriodaphnia dubia* (Water Flea)**
a. Report the highest TUa for *Ceriodaphnia dubia*, Parameter No. TSM3B.

2. Reduced Monitoring for Toxicity Testing

a. Alternating Species
If the results of a minimum of four consecutive samples taken over at least a 12 month period indicate no toxicity, the permittee may request the Department for a test reduction. This reduction would only be testing one species per sampling frequency. If fathead minnows are used first then the next test would be *C. dubia* or vice versa and continue alternating. The department may approve or deny the request, based on the biomonitoring results and other available information. If the request is approved, the test procedures are to be the same as outlined in 1. Acute Toxicity Testing and/or 2. Chronic Toxicity Testing.

This provision is revoked at the time of permit reissuance/renewal. Permittees may request alternating species after the conditions of this section are met under the reissued permit.

If toxicity occurs in any single species test the provision for alternating species shall be immediately revoked and 1. Acute Toxicity Testing and/or 2. Chronic Toxicity Testing shall be followed in whole.

b. Monthly Testing
If the results of 5. Toxicity Reduction Evaluation (TRE) have been accepted by the department or a period of time has indicated no toxicity, the permittee may request the department to allow a reduction from monthly to quarterly toxicity testing for both species. The department may approve or deny the request, based on the bio-monitoring results and other available information. If the request is approved, the test procedures are to be the same as outlined in 1. Acute Toxicity Testing and/or 2. Chronic Toxicity Testing.

3. Reporting Requirements
Test results shall be submitted with the Discharge Monitoring Report (DMR) form for each reporting period. The format for the report shall be consistent with the above reference manual(s) as outlined in the section “Report Preparation and Test Review.” Each lab generated report shall document the findings for each species reference toxicity testing chart.

4. Toxicity Reduction Evaluation (TRE)
If toxicity is detected, and it is determined by the department that a TRE is necessary, the permittee shall be so notified and shall initiate a TRE immediately thereafter. A TRE shall reference the latest revision of “*Technical Support Document for Water Quality-based Toxics Control,*” EPA/505/2-90-001 – PB91-127415 (March 1991). The purpose of the TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and control or provide treatment for the toxicity.

If the TRE establishes that the toxicity cannot be eliminated by the current treatment system, the permittee shall submit a proposed compliance plan to the department. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving control. If the approach and schedule are acceptable to the department, this permit may be reopened and modified.

If the TRE shows that the toxicity is caused by a toxicant(s) that may be controlled with specific numerical limitations or proper discharge management as approved by the department, the permittee may:

Submit an alternative control program for compliance with the numerical requirements; or

If necessary, provide a modified biomonitoring protocol which compensates for the pollutant(s) being controlled numerically.

If acceptable to the department, this permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the department, and/or a modified biomonitoring protocol.

Failure to conduct an adequate TRE, or failure to submit a plan or program as described above, or the submittal of a plan or program judged inadequate by the department, shall in no way relieve the permittee from maintaining compliance with the whole effluent toxicity requirements of this permit.

II. MONITORING, RECORDING, AND REPORTING REQUIREMENTS BP 2021.09.09

A. Representative Sampling (Routine and Non-Routine Discharges)

All samples and measurements taken shall be representative of the monitored discharge.

In order to ensure that the effluent limits set forth in this permit are not violated at times other than when routine samples are taken, the permittee must collect additional samples at the appropriate outfall whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample. The permittee must analyze the additional samples for those parameters limited under **Part I Effluent Limitations and Monitoring** requirements of this permit that are likely to be affected by the discharge.

The permittee must collect such additional samples as soon as the spill, discharge, or bypassed effluent reaches the outfall. The samples must be analyzed in accordance with B. Test Procedures. The permittee must report all additional monitoring in accordance with D. Additional Monitoring.

B. Test Procedures

The collection and transportation of all samples shall conform with EPA preservation techniques and holding times found in 40 CFR 136. All laboratory tests shall be performed by a North Dakota certified laboratory in conformance with test procedures pursuant to 40 CFR 136, unless other test procedures have been specified in this permit or approved by EPA as an alternate test procedure under 40 CFR 136.5. The method of determining the total amount of water discharged shall provide results within 10 percent of the actual amount.

C. Recording of Results

Records of monitoring information shall include:

1. the date, exact place and time of sampling or measurements;
2. the name(s) of the individual(s) who performed the sampling or measurements;
3. the name of the laboratory;
4. the date(s) and time(s) analyses were performed;
5. the name(s) of the individual(s) who performed the analyses;
6. the analytical techniques or methods used; and
7. the results of such analyses.

D. Additional Monitoring

If the discharge is monitored more frequently than this permit requires, all additional results, if in compliance with B. Test Procedures, shall be included in the summary on the Discharge Monitoring Report.

E. Reporting of Monitoring Results

1. Monitoring results shall be summarized and reported to the department using Discharge Monitoring Reports (DMRs). If no discharge occurs during a reporting period, "No Discharge" shall be reported. The permittee must submit DMRs electronically using the electronic information reporting system unless requirements in subsection 3 are met.

2. Prior to December 21, 2025, the permittee may elect to electronically submit the following compliance monitoring data and reports instead of mailing paper forms. Beginning December 21, 2025, the permittee must report the following using the electronic reporting system:

   a. General permit reports [e.g., notices of intent (NOI); notices of termination (NOT); no exposure certifications (NOE)];

   b. Municipal separate storm sewer system program reports;

   c. Pretreatment program reports;

   d. Sewer overflow/bypass event reports; and

   e. Clean Water Act 316(b) annual reports

3. The permittee may seek a waiver from electronic reporting. To obtain a waiver, the permittee must complete and submit an Application for Temporary Electronic Reporting Waiver form (SFN 60992) to the department. The department will have 120 days to approve or deny the waiver request. Once the waiver is approved, the permittee may submit paper versions of monitoring data and reports to the department.

   a. One of the following criteria must be met in order to obtain a waiver. The department reserves the right to deny any waiver request, even if they meet one of the criteria below.

      1. No internet access,

      2. No computer access,

      3. Annual DMRs (upon approval of the department),

      4. Employee turnover (3-month periods only), or

      5. Short duration permits (upon approval of the department)

   All reports must be postmarked by the last day of the month following the end of each reporting period. All original documents and reports required herein shall be signed and submitted to the department at the following address:

   ND Department of Environmental Quality
   Division of Water Quality
   4201 Normandy Street
   Bismarck ND 58503-1324

F. Records Retention

All records and information (including calibration and maintenance) required by this permit shall be kept

for at least three years or longer if requested by the department or EPA.

COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. Proper Operation and Maintenance

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. If necessary to achieve compliance with the conditions of this permit, this shall include the operation and maintenance of backup or auxiliary systems.

C. Planned Changes

The department shall be given advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance. Any anticipated facility expansions, production increase, or process modifications which might result in new, different, or increased discharges of pollutants shall be reported to the department as soon as possible. Changes which may result in a facility being designated a "new source" as determined in 40 CFR 122.29(b) shall also be reported.

D. Duty to Provide Information

The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the department, upon request, copies of records required to be kept by this permit. When a permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or any report, it shall promptly submit such facts or information.

E. Signatory Requirements

All applications, reports, or information submitted to the department shall be signed and certified.

All permit applications shall be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

The authorization is made in writing by a person described above and submitted to the department; and

The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If an authorization under E. Signatory Requirements is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the department prior to or together with any reports, information, or applications to be signed by an authorized representative.

Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and

evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

F. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The following occurrences of noncompliance shall be included in the oral report to the department at 701.328.5210:

    a. Any lagoon cell overflow or any unanticipated bypass which exceeds any effluent limitation in the permit under G. Bypass of Treatment Facilities;

    b. Any upset which exceeds any effluent limitation in the permit under H. Upset Conditions; or

    c. Violation of any daily maximum effluent or instantaneous discharge limitation for any of the pollutants listed in the permit.

2. A written submission shall also be provided within five days of the time that the permittee became aware of the circumstances. The written submission shall contain:

    a. A description of the noncompliance and its cause;

    b. The period of noncompliance, including exact dates and times;

    c. The estimated time noncompliance is expected to continue if it has not been corrected; and

    d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

Reports shall be submitted to the address in **Part II.E. Reporting of Monitoring Results**. The department may waive the written report on a case by case basis if the oral report has been received within 24 hours by the department at 701.328.5210 as identified above.

All other instances of noncompliance shall be reported no later than at the time of the next Discharge Monitoring Report submittal. The report shall include the four items listed in this subsection.

G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to any of the following provisions in this section.

2. Bypass exceeding limitations-notification requirements.

    a. Anticipated Bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of bypass.

    b. Unanticipated Bypass. The permittee shall submit notice of an unanticipated bypass as required under F. Twenty-four Hour Notice of Noncompliance Reporting.

3. Prohibition of Bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. The permittee submitted notices as required under the 1. Anticipated Bypass subsection of this section.

The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed above.

H. Upset Conditions

An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of the following paragraph are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the permittee can identify its cause(s);

2. The permitted facility was, at the time being, properly operated;

3. The permittee submitted notice of the upset as required under F. Twenty-four Hour Notice of Noncompliance Reporting and

4. The permittee complied with any remedial measures required under I. Duty to Mitigate.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee, at the department's request, shall provide accelerated or additional monitoring as necessary to determine the nature and impact of any discharge.

J. Removed Materials

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not be directly blended with or enter either the final plant discharge and/or waters of the state. The permit issuing authority shall be contacted prior to the disposal of any sewage sludges. At that time, concentration limitations and/or self-monitoring requirements may be established.

K. Duty to Reapply

Any request to have this permit renewed should be made six months prior to its expiration date.

III. GENERAL PROVISIONS

A. Inspection and Entry

The permittee shall allow department and EPA representatives, at reasonable times and upon the presentation of credentials if requested, to enter the permittee's premises to inspect the wastewater treatment facilities and monitoring equipment, to sample any discharges, and to have access to and copy any records required to be kept by this permit.

B. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the department and EPA. As required by the Act, permit applications, permits, and effluent data shall not be considered confidential.

C. Transfers

This permit is not transferable except upon the filing of a Statement of Acceptance by the new party and subsequent department approval. The current permit holder should inform the new controller, operator, or owner of the existence of this permit and also notify the department of the possible change.

D. New Limitations or Prohibitions

The permittee shall comply with any effluent standards or prohibitions established under Section 306(a), Section 307(a), or Section 405 of the Act for any pollutant (toxic or conventional) present in the discharge or removed substances within the time identified in the regulations even if the permit has not yet been modified to incorporate the requirements.

E. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans, changes in sewage sludge practices, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

F. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

G. State Laws

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation preserved under Section 510 of the Act.

H. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

J. Severability
The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

II. INDUSTRIAL WASTE MANAGEMENT BP 2021.09.28
Major POTWs - Non-Approved Pretreatment Program Requirements

A. General Responsibilities
The permittee has the responsibility to protect the Publicly Owned Treatment Works (POTW) from pollutants which would inhibit, interfere, or otherwise be incompatible with operation of the treatment works including interference with the use or disposal of municipal sludge.

B. Pollutant Restrictions
Pretreatment Standards (40 CFR Section 403.5) developed pursuant to Section 307 of the Federal Clean Water Act (the Act) require that the permittee shall not allow, under any circumstances, the introduction of the following pollutants to the POTW from any source of nondomestic discharge:

1. Any other pollutant which may cause Pass Through or Interference;

2. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than sixty (60) degrees Centigrade (140 degrees Fahrenheit) using the test methods specified in 40 CFR Section 261.21;

3. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with a pH of lower than 5.0 s.u., unless the treatment facilities are specifically designed to accommodate such discharges;

4. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, or other interference with the operation of the POTW;

5. Any pollutant, including oxygen demanding pollutants (e.g., BOD), released in a discharge at a flow rate and/or pollutant concentration which will cause Interference with any treatment process at the POTW;

6. Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds forty (40) degrees Centigrade (104 degrees Fahrenheit) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits;

7. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause Interference or Pass Through at the POTW;

8. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

9. Any trucked or hauled pollutants, except at discharge points designated by the POTW; and

10. Any specific pollutant which exceeds a local limitation established by the permittee in accordance with the requirements of 40 CFR Section 403.5 (c) and (d).

C. Approval Authority

North Dakota was delegated the Industrial Pretreatment Program in September of 2005. The North Dakota Department of Environmental Quality, Division of Water Quality shall be the Approval Authority and the mailing address for all reporting and notifications to the Approval Authority shall be:

ND Department of Environmental Quality
Division of Water Quality
4201 Normandy Street
Bismarck ND 58503-1324

D. Industrial Categories

In addition to the general limitations expressed above, more specific Pretreatment Standards have been and will be promulgated for specific industrial categories under Section 307 of the Act (40 CFR Part 405 et. Seq.).

E. Notification Requirements

The permittee must notify the Approval Authority, of any new introductions by new or existing industrial users or any substantial change in pollutants from any industrial user within sixty (60) days following the introduction or change. Such notice must identify:

1. Any new introduction of pollutants into the POTW from an industrial user which would be subject to Sections, 301, 306, and 307 of the Act if it were directly discharging those pollutants; or

2. Any substantial change in the volume or character of pollutants being introduced into the POTW by any industrial user;

3. For the purposes of this section, adequate notice shall include information on:

   a. The identity of the industrial user;

   b. The nature and concentration of pollutants in the discharge and the average and maximum flow of the discharge to be introduced into the POTW; and

   c. Any anticipated impact of the change on the quantity or quality of effluent to be discharged from or biosolids produced at such POTW.

4. For the purposes of this section, a significant industrial user shall include:

   a. Any discharger subject to Categorical Pretreatment Standards under Section 307 of the Act and 40 CFR chapter I, subchapter N;

   b. Any discharger which has a process wastewater flow of 25,000 gallons or more per day;

   c. Any discharger contributing five percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant;

   d. Any discharger who is designated by the Approval Authority as having a reasonable potential for adversely affecting the POTW's operation or for violating any Pretreatment Standards or requirements.

F. Sampling and Reporting Requirements

The permittee shall sample and analyze the effluent for the following pollutants:

40 CFR 122 Appendix D Table III				
Antimony, Total	Arsenic, Total	Beryllium, Total	Cadmium, Total	Chromium, Total
Copper, Total	Lead, Total	Mercury, Total	Nickel, Total	Selenium, Total
Silver, Total	Thallium, Total	Zinc, Total	Cyanide, Total	Phenols, Total
Hardness, Total a/				

Notes:

a. A total hardness of the receiving stream needs to be determined every time the above parameters are tested. The hardness is used to calculate parameter criterion(s) according to the North Dakota State Water Quality Standards.

The sampling shall commence within thirty (30) days of the effective date of this permit and continue at a frequency of once per year.

Sampling and analytical procedures shall be in accordance with guidelines established in 40 CFR Part 136. Where sampling methods are not specified the effluent samples collected shall be composite samples consisting of at least twelve (12) aliquots collected at approximately equal intervals over a representative 24 hour period and composited according to flow. Where a flow proportioned composite sample is not practical, the permittee shall collect at least three (3) grab samples, taken at equal intervals over a representative 24 hour period. Lagoon treatment systems may collect a single effluent grab sample.

The results of all analyses shall be attached to, and reported along with the Discharge Monitoring Report (DMR) submitted for the end of that reporting period.

G. Approval Authority Options

At such time as a specific pretreatment limitation becomes applicable to an industrial user of the permittee, the Approval Authority may, as appropriate:

1. Amend the permittee's North Dakota Pollutant Discharge Elimination System (NDPDES) discharge permit to specify the additional pollutant(s) and corresponding effluent limitation(s) consistent with the applicable Pretreatment Standards;

2. Require the permittee to specify, by ordinance, order, or other enforceable means, the type of pollutant(s) and the maximum amount which may be discharged to the permittee's POTW for treatment. Such requirement shall be imposed in a manner consistent with the POTW program development requirements of the General Pretreatment Regulations at 40 CFR Part 403; and/or,

3. Require the permittee to monitor its discharge for any pollutant which may likely be discharged from the permittee's POTW, should the industrial user fail to properly pre-treat its waste.

H. Enforcement Authority

The Approval Authority retains, at all times, the right to take legal action against any source of nondomestic discharge, whether directly or indirectly controlled by the permittee, for violations of a permit, order or similar enforceable mechanism issued by the permittee, violations of any Pretreatment Standard or requirement, or for failure to discharge at an acceptable level under national standards issued by EPA under 40 CFR, chapter I, subchapter N. In those cases where a North Dakota Pollutant Discharge Elimination System (NDPDES) permit violation has occurred because of requirements as necessary to protect the POTW, the North Dakota Department of Environmental Quality and/or Approval Authority shall hold the permittee and/or industrial user responsible and may take legal action against the permittee as well as the industrial user(s) contributing to the permit violation.

VI. BENEFICIAL REUSES BP 2015.09.03

A. Irrigation

Only wastewater that has received secondary or tertiary treatment may be used for irrigation provided soil and water compatibility testing confirms the water is suitable for irrigation. Wastewater used for irrigation shall be applied at a rate which would allow complete infiltration and not result in ponding or runoff from the irrigated area.

Agricultural land may be irrigated provided the crop is not used for human consumption. Forage crops used for livestock consumption or pastures irrigated with wastewater shall not be harvested or grazed within 30 days of a wastewater application.

Public properties such as golf courses or parks may be irrigated provided the treated wastewater meets the following quality criteria.

Parameter	Discharge Limitations	Monitoring Frequency	
	Daily Max	Measurement Frequency	Sample Type
BOD_5 (mg/l)	30.0	1 per 14 days	Grab
TSS (mg/l)	45.0	1 per 14 days	Grab
E. Coli (number/100 ml)	126	Weekly	Grab

Whenever possible, irrigation shall take place during hours when the public does not have access to the area being irrigated. If the public has constant access to an area, signs must be posted in visible areas during irrigation and for two hours after irrigation is completed. The signs must advise people that the water could pose a health concern and to avoid the irrigated area.

Worker and public contact with treated wastewater should be minimized. Where frequent contact is likely, a higher level of disinfection should be provided such as achieving *E. coli* counts less than 14 colonies per 100 ml.

Avoid application within 100 feet of areas which have unlimited access (i.e., yards) or within 300 feet of potable water supply wells.

Runoff that occurs from irrigated areas shall be monitored at the frequencies and with the types of measurements described in Part I(B).

The permittee shall maintain monitoring records indicating the location and usage (e.g., park or agricultural) of the land being irrigated, the dates irrigation occurred, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples.

B. Construction

Treated domestic wastewater may be used for construction purposes such as soil compaction, dust suppression and washing aggregate, provided the following conditions are met.

The wastewater intended for use in construction, must at a minimum, receive secondary treatment.

Prior to using treated wastewater a sample from the prospective source must be tested and meet the

criteria set below. In addition the test results for *E. coli* must be provided to the department prior to use. Results from samples up to two (2) weeks old will be considered valid. The water quality limitations and minimum sampling frequencies recommended for wastewater used in construction are provided in the following table.

Parameter	Limitations (Maximum)	Measurement Frequency	Sample Type
BOD_5 (mg/l)	30	Monthly	Grab
TSS (mg/l)	100	Monthly	Grab
E. Coli (number/100 ml)	126	Weekly	Grab

In some systems chlorination is available. Chlorination is particularly desirable when frequent worker contact with the treated wastewater is likely or when the public may have constant access to areas where the wastewater is being used. Maintaining a chlorine residual of at least 0.1 mg/l is recommended.

While the conventional methods for treating domestic wastewater are generally effective in reducing infectious agents (bacteria, viruses, parasites) to acceptable levels, direct reuse of treated wastewater can pose a health concern. Additional precautions to consider are:

1. Worker and public contact with treated wastewater should be minimized.

2. Where frequent worker contact is likely a higher level of disinfection should be provided, such as achieving *E. coli* counts less than 14/100 ml.

3. Work closely with the treatment system operator to ensure treated wastewater quality is suitable when it is drawn for construction purposes.

4. Apply the treated wastewater in a manner that does not result in runoff or ponding.

Runoff that occurs from application areas shall be monitored at the frequencies and with the types of measurements described in Part I(B).

The permittee shall maintain monitoring records indicating the location and usage of the land where application occurs, the dates application occurred, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples.

C. Oil and Gas Production (including Hydraulic Fracturing)

The specific user of the wastewater may determine the specific treatment requirements for receiving wastewater.

The permittee shall maintain monitoring records indicating the specific user, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples.

D. Other Uses as Approved

The permittee must consult with the department before beneficially reusing wastewater for purposes not identified in this permit.