

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

Public Notice Date: 1/16/2020

Public Notice Number: ND-2020-001

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: 10/7/2019

Application Number: ND0026344

Applicant Name: South Central WTP-Emmons Co

Mailing Address: PO Box 4182, Bismarck, ND 58501-4182

Telephone Number: 701.258.8710

Proposed Permit Expiration Date: 3/31/2025

Facility Description

The application is for a water treatment plant that supplies drinking water to rural communities. Wastewater from the operation of the microfiltration and reverse osmosis membranes discharges through diffusers placed in the Missouri River / Lake Oahe via outfall 001. The discharge is located in the SE 1/4, Section 35, T133N, R79W. The Missouri River / Lake Oahe is subject to Class I water quality standards.

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 FWPCA will be protected.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Dept of Env Quality, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by February 17, 2020 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. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.

Permit No: ND0026344
Effective Date: April 1, 2020
Expiration Date: March 31, 2025

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 Quality rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

South Central Regional Water District

is authorized to discharge from the Emmons County Water Treatment Plant

to Lake Oahe / Missouri River

provided all the conditions of this permit are met.

This permit and the authorization to discharge shall expire at midnight,
March 31, 2025.

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.

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OUTFALL DESCRIPTION

Outfall 001. Active. Final Outfall.			
Latitude: 46.28	Longitude: -100.57	County: Emmons	
Township: 133 North	Range: 79 West	Section: 35	QQ: D
Receiving Stream: Lake Oahe		Classification: Class I Lake	
Outfall Description: Reverse Osmosis Concentrate.			

PERMIT SUBMITTALS SUMMARY

Coverage Point	Submittal	Frequency	First Submittal Date
001A	Discharge Monitoring Report	Quarterly	July 31, 2020
Application Renewal	NPDES Application Renewal	1/permit cycle	September 30, 2024

SPECIAL CONDITIONS

Water Treatment Additives

In the event a permittee proposes to discharge water additives, the permittee shall submit a request to discharge water additives to the department as described in this section. Water treatment systems which utilize membrane filtration equipment require routine cleaning and conditioning as part of normal operation. Care should be used in the selection and management of the chemicals used in routine cleaning and conditioning, such as the control of scaling, coagulants, flocculants, and bio-fouling. To ensure selection and management of chemicals minimize the potential for harmful effects in the discharge or sewerage, the permittee will be required to provide the following information on all chemical additives which do not follow American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 60:

- Safety Data Sheet (SDS)
- Proposed water additive discharge concentration
- Discharge frequency (i.e., number of hours per day and number of days per year)
- Monitoring point for product discharge
- Type of removal treatment, if any, that the water additive receives prior to discharge
- Product function (e.g., microbiocide, flocculant, etc.)
- A 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (*Ceriodaphnia sp.*, *Daphnia sp.*, or *Simocephalus sp.*)
- Results for a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean)

I. LIMITATIONS AND MONITORING REQUIREMENTS

A. Discharge Authorization

During the effective period of this permit, the permittee is authorized to discharge pollutants from the outfall as specified to the following: **Lake Oahe**.

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

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

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Effluent Limitations and Monitoring Requirements Outfall 001							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration			Sample Frequency	Sample Type
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit		
Biochemical Oxygen Demand (BOD ₅) 1/	*	*	30 mg/l	*	45 mg/l	Conditional/Monthly	Grab
Total Suspended Solids (TSS), mg/l	*	*	*	*	90 mg/l	Monthly	Grab
pH 2/	Between 7.0 to 9.0 S.U.					Continuous	Recorder
Total Residual Chlorine (TRC), mg/l 3/	*	*	*	*	1.2 mg/l	Conditional/Monthly	Grab
Conductivity, µmho/cm	*	*	*	*	*	Continuous	Recorder
Total Sulfate, mg/l	*	*	*	*	*	Monthly	Grab
Total Chloride, mg/l	*	*	*	*	*	Monthly	Grab
Flow Effluent, MGD	Report Avg. Monthly Value	Report Max. Daily Value	*	*	*	Continuous	Recorder
Total Drain, MGAL	*	Report Quarterly Total	*	*	*	Quarterly	Calculated
<p>*. This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.</p> <p>1/ BOD₅ shall be sampled on days when treatment unit cleaning/conditioning wastes are discharged. The grab sample should be proportioned to reflect the approximate time cleaning/conditioning waste containing organic chemicals (such as citric acid) are discharged.</p> <p>2/ The pH, an instantaneous limitation, shall be between 7.0 s.u. and 9.0 s.u. Any single analysis and or measurement beyond this limitation shall be considered a violation of the conditions of this permit.</p> <p>3/ TRC testing is only required during periods when chlorinated waste streams are discharged (such as from the microfiltration unit "bio-fouling" control or clean-in-place (CIP)).</p> <p>Stipulations: The dates of discharge, frequency of analyses, total number of gallons discharged, discharge flow rates, and number of exceedances shall also be included on the Discharge Monitoring Reports (DMR).</p> <p>Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to leaving the facility property or entering the receiving stream.</p> <p>There shall be no discharge of floating solids or visible foam in other than trace amounts.</p> <p>The department may specify additional discharge conditions or restrictions at any time to maintain water quality standards.</p>							

II. MONITORING, RECORDING, AND REPORTING REQUIREMENTS BP 2019.05.29

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, 2020, the permittee may elect to electronically submit the following compliance monitoring data and reports instead of mailing paper forms. Beginning December 21, 2020, 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
918 East Divide Ave
Bismarck ND 58501-1947

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.

III. 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.

IV. 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.

**FACT SHEET FOR NDPDES PERMIT
ND0026344**

**SOUTH CENTRAL REGIONAL WATER DISTRICT
EMMONS COUNTY WATER TREATMENT PLANT**

DATE OF THE FACT SHEET – January 2020

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 C - Response to Comments**.

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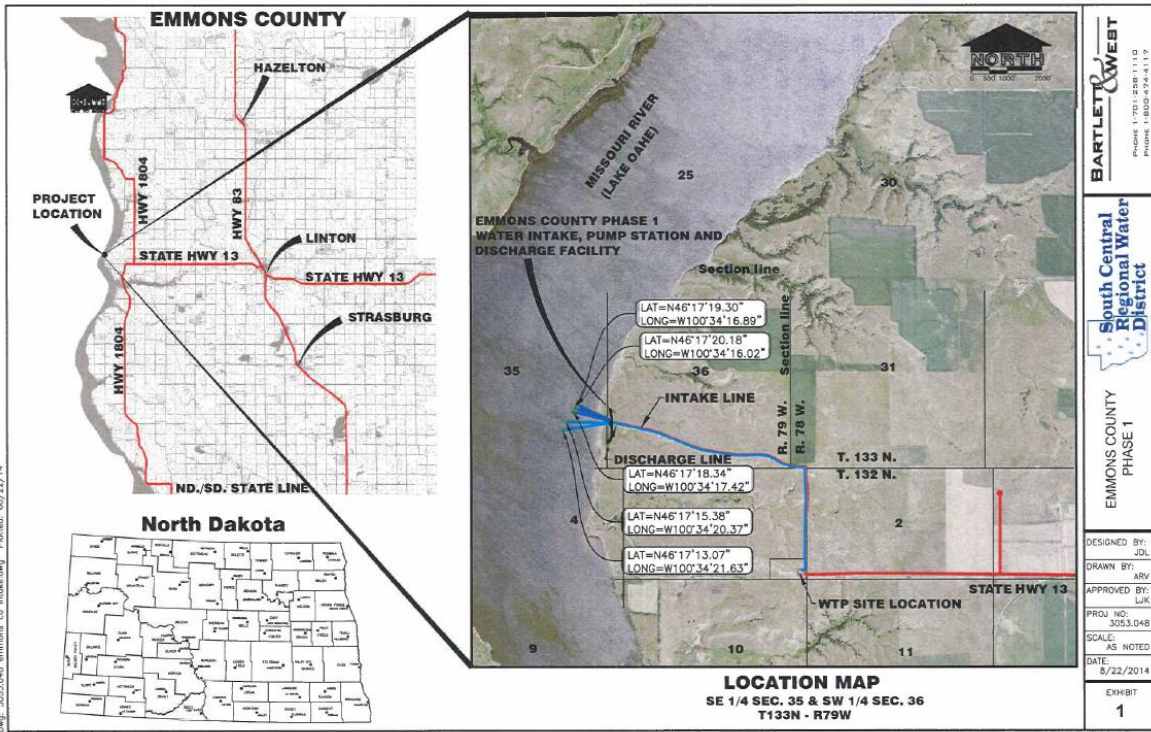
BACKGROUND INFORMATION

Table 1: General Facility Information	
Permittee:	South Central Regional Water District, Emmons County Water Treatment Plant P.O. Box 4182 Bismarck, ND 58502
Facility Name and Address:	South Central Regional Water District - Emmons 801 79 th St. SW Linton, ND 58552
Permit Number:	ND0026344
Permit Type:	Minor, Non POTW - Reissue
Type of Treatment:	Direct discharge
SIC Code:	4941
Discharge Location:	001: Lake Oahe, Class 1 Reservoir South diffuser: Lat. 46.286964, Long. -100.572675 North diffuser: Lat. 46.287606, Long. -100.572325
Hydrologic Code:	10130102 - Upper Lake Oahe

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FACT SHEET FOR NDPDES PERMIT ND0026344
 SOUTH CENTRAL REGIONAL WATER DISTRICT – EMMONS CO WTP
EXPIRATION DATE: March 31, 2025
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Figure 1: Overview of South Central Regional Water District.



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Figure 2: South Central Regional Water District Water Treatment Plant and Evaporation Ponds.



FACILITY DESCRIPTION

History

The South Central Regional Water District, Emmons County Water Treatment Plant is located approximately sixteen miles west of Linton, North Dakota. This facility is similar to a WTP plant constructed north of Bismarck by South Central Regional Water District. The Emmons plant is designed to meet current drinking water treatment standards. The plant is part of a regional water supply plan that provides drinking water to rural cities and residences in Burleigh, Emmons, Logan, McIntosh, and Kidder counties. The plant has the capacity to produce approximately 2083 gallons per minute (gpm) of finished water and in the process generate a waste discharge of approximately 315 gpm.

Treatment System

The treatment plant is located approximately 1.5 miles south and east of the intake structure and discharge point. The source water for the plant is from a screened intake located near the bottom of Lake Oahe. The wastewater discharge is comprised of concentrate from reverse osmosis treatment and cleaning solutions required for routine maintenance of the treatment equipment.

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The water treatment process will consist primarily of microfiltration (MF), and reverse osmosis (RO) processes. The MF processes is to clarify water and remove particulates and organisms. The MF membranes are backwashed periodically. Sludge from the MF is sent to a recovery basin where settling occurs, and the clean water is recycled back to the head of the plant. The sludge from the recovery basin is discharged to the two (2) evaporation basins.

Water from the MF is then sent to the RO Feed Buffer Tank, then to the RO system. The RO system is also periodically cleaned. The system utilizes hydrochloric acid for a low pH clean or sodium hydroxide for a high pH clean dependent upon the type of scaling experienced on the membranes. Each cleaning is then followed by a rinse cycle. The cleaning chemical and rinse water (RO concentrate) are then sent to the neutralization tanks for pH adjustment prior to discharging. All sludge and flocculant are discharged to the two (2) evaporation ponds.

Finished water is then sent through the disinfection basin and pumped out for distribution. The wastewater discharge is routed to diffusers, downstream of the intake, in Lake Oahe reservoir in the SE ¼, Section 35, T133N, R79W.

Table 2 outlines the wastewater sources and flows.

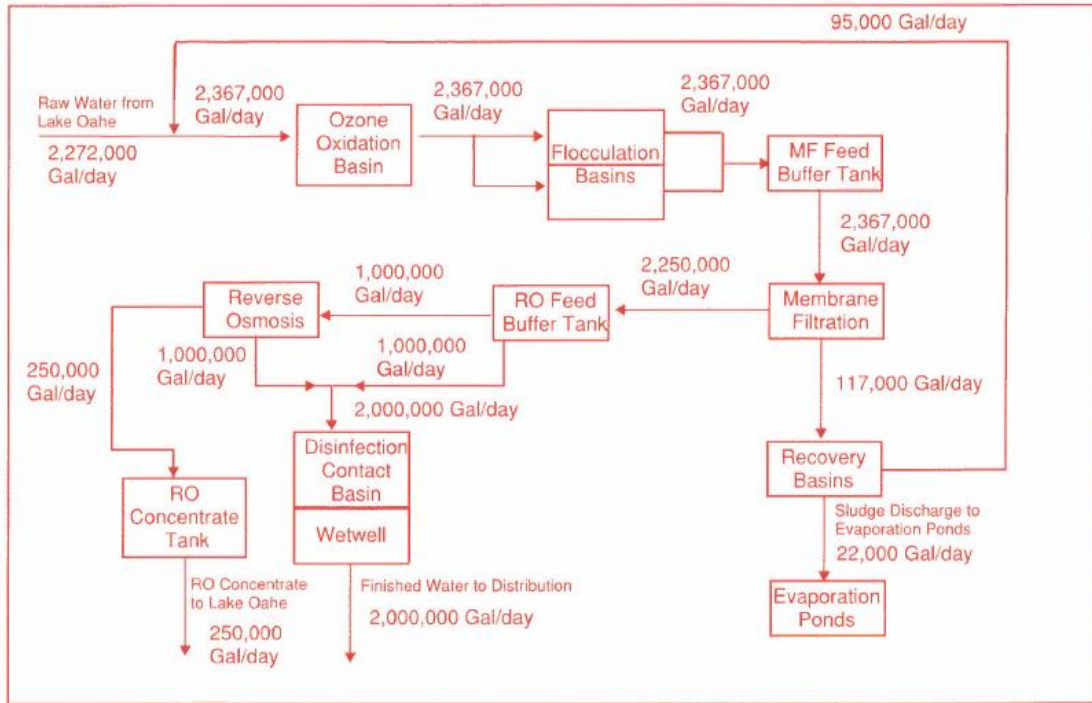
Table 2: Wastewater sources and flows.			
Wastewater Source	Process	Nature of waste	Average Flow
Microfiltration (MF)	Remove particulates	Filter backwash	Recycled and solids storage
Reverse Osmosis (RO)	Remove dissolved minerals & provide softening	Concentrate or RO reject	173.6 gpm/ 0.25 mgd (Form 2C)
Membrane Cleaning	Clean and condition MF & RO membranes	Neutralized acid & caustic, disinfectant and cleaning solutions	30 gpm/0.0432 mgd (per batch) (Form 2C)

Table 3 below displays the plant capacity.

Table 3: Plant Flow Rates.		
	Finished Water	Projected Wastewater Flow @ Design Capacity
Plant Capacity	2083 gpm	315 gpm
Operated 16 hours/day	2.0 million gallons per day (mgd)	0.3 mgd

The following line diagram was provided with the permit application:

LINE DRAWING



South Central Regional Water District
 Emmons County Water Treatment Plant Schematic
 Emmons County, North Dakota

Outfall Description

Outfall 001. Active. Final Outfall.		
Latitude: 46.28	Longitude: -100.57	County: Emmons
Township: 133 North	Range: 79 West	Section: 35 QQ: D
Receiving Stream: Lake Oahe		Classification: Class I Lake
Outfall Description: Reverse Osmosis Concentrate.		

PREVIOUS PERMIT STATUS

The department issued the current permit for this facility on April 1, 2015. The current permit has effluent limits on the following parameters: pH, Total Residual Chlorine (TRC), five-day biochemical oxygen demand (BOD₅), and Total Suspended Solids (TSS).

The department has been in contact with South Central Water to obtain information to reissue their permit. The department received EPA applications Form 1 and Form 2C on October 07, 2019. The application was accepted by the department on October 08, 2019. Effluent sample data has been provided to the department through official laboratory reports, discharge monitoring reports (DMRs) and the permit application Form 2C.

SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED

One (1) inspection has been conducted at the facility on February 28, 2015. The department’s assessment of compliance is based on review of the facility’s Discharge Monitoring Report (DMR) data and inspections conducted by department staff.

Past Discharge Data

The concentration of pollutants in any discharge was reported on DMR forms. Effluent information for outfall 001 is characterized as shown in Table 4. There were no excursions from April 01, 2015 through September 30, 2019.

Table 4: South Central Water – Emmons WTP DMR Data Summary from 04/01/2015 – 09/30/2019.

Disch Pt	Location	Parameter	Ave Conc	Range	Units	Ave Load	Max Load	Max Load Units
001A	Effluent	Biochemical Oxygen Demand	1.84	0 - 21.5	mg/l	N/A	N/A	N/A
001A	Effluent	Chlorides	54.74	29.3 - 74.9	mg/l	N/A	N/A	N/A
001A	Effluent	Conductivity	3180.44	2412 - 4440	uS/cm	N/A	N/A	N/A
001A	Effluent	Discharge Flow in Million Gals	N/A	N/A	N/A	0.07	0.194	MGD
001A	Effluent	Flow Total Quarter	N/A	N/A	N/A	N/A	9.216	MGAL
001A	Effluent	pH	N/A	7 - 8.8	S.U.	N/A	N/A	N/A
001A	Effluent	Sulfates	924.61	580 - 1210	mg/l	N/A	N/A	N/A
001A	Effluent	Total Residual Chlorine	0.00	0 - 0.08	mg/l	N/A	N/A	N/A
001A	Effluent	Total Suspended Solids	N/A	0 - 7	mg/l	N/A	N/A	N/A

PROPOSED PERMIT LIMITS AND SELF MONITORING REQUIREMENTS

The discharge of wastewater generated in the production of drinking water is not regulated by national effluent limitation guidelines, which establish technology-based effluent limitations for various industries. In the absence of a federal standard, limitations may be determined using Best Professional Judgment (BPJ) to ensure reasonable control technologies are used in reducing any environmental impacts from the discharge. In addition, the department must consider and include limitations necessary to protect water quality standards applicable to the receiving waters.

Biological Oxygen Demand

The BOD₅ limits are standard limitations applied to domestic wastewater and similar organic wastewater discharges. BOD is required for other similar facilities and for membrane filtration water treatment plants in the water treatment plants and potable distribution systems general permit (NDG520000 Part II(B)). During most times an appreciable BOD load is not expected from the plant discharge. However, some of the cleaning chemicals proposed for use in MF and RO maintenance may include organic acid (citric acid) which may present a BOD load when discharged. The proposed limits will provide criteria for the plant operators to consider when planning the use of organic based chemicals and discharging waste from the neutralization tank.

The department proposes a BOD₅ limitation of 30 mg/l (monthly average) and to change the 45 mg/l (weekly average) to 45 mg/l (daily maximum) to match other similar permits and the NDG520000 general permit. The department proposes to continue with a sampling frequency of conditional/monthly.

Total Suspended Solids

The TSS limits are standard limitations applied to domestic wastewater and similar organic wastewater discharges. TSS is required for other similar facilities and for membrane filtration water treatment plants in the water treatment plants and potable distribution systems general permit (NDG520000 Part II(B)). The department proposes to continue with a TSS limitation of 90 mg/l (daily maximum) and a sampling frequency of monthly.

Effluent Limitations

Table 5: Effluent Limitations and Monitoring Requirements Outfall 001					
Parameter	Effluent Limitations				
	Quantity		Concentration		
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Biochemical Oxygen Demand (BOD ₅) 1/	*	*	30 mg/l	*	45 mg/l
Total Suspended Solids (TSS), mg/l	*	*	*	*	90 mg/l
pH 2/	Between 7.0 to 9.0 S.U.				
Total Residual Chlorine (TRC), mg/l 3/	*	*	*	*	1.2 mg/l
Conductivity, µmho/cm	*	*	*	*	*
Total Sulfate, mg/l	*	*	*	*	*
Total Chloride, mg/l	*	*	*	*	*
Flow Effluent, MGD	Report Avg. Monthly Value	Report Max. Daily Value	*	*	*
Total Drain, MGAL	*	Report Quarterly Total	*	*	*
<p>*. This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.</p> <p>1/ BOD₅ shall be sampled on days when treatment unit cleaning/conditioning wastes are discharged. The grab sample should be proportioned to reflect the approximate time cleaning/conditioning waste containing organic chemicals (such as citric acid) are discharged.</p> <p>2/ The pH, an instantaneous limitation, shall be between 7.0 s.u. and 9.0 s.u. Any single analysis and or measurement beyond this limitation shall be considered a violation of the conditions of this permit.</p> <p>3/ TRC testing is only required during periods when chlorinated waste streams are discharged (such as from the microfiltration unit “bio-fouling” control or clean-in-place (CIP)).</p> <p>Stipulations:</p> <p>The dates of discharge, frequency of analyses, total number of gallons discharged, discharge flow rates, and number of exceedances shall also be included on the Discharge Monitoring Reports (DMR).</p> <p>Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to leaving the facility property or entering the receiving stream.</p> <p>There shall be no discharge of floating solids or visible foam in other than trace amounts.</p> <p>The department may specify additional discharge conditions or restrictions at any time to maintain water quality standards.</p>					

Effluent Monitoring

All effluent samples shall be collected at a point following the addition of all process waste streams and prior to entering the Lake Oahe Reservoir.

Monitoring requirements for effluent parameters in the current permit will be continued in the proposed permit.

Effluent Parameter	Frequency	Sample Type
BOD ₅ , mg/L	Conditional/Monthly	Grab
TSS, mg/L	Monthly	Grab
pH	Continuous	Recorder
Total Residual Chlorine (TRC), mg/l	Conditional/Monthly	Grab
Conductivity, µmho/cm	Continuous	Recorder
Total Sulfate, mg/l	Monthly	Grab
Total Chloride, mg/l	Monthly	Grab
Flow Effluent, MGD	Continuous	Recorder
Total Drain, MGAL	Quarterly	Calculated

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.

Lake Oahe is designated as a Class I lake under 33.1.-16-02.1. Class I lakes and reservoirs must meet the physical and chemical criteria for class I streams. The quality of the waters in this class shall be suitable for the propagation or protection, or both, of resident fish species and other aquatic biota and for swimming, boating, and other water recreation. The quality of the waters shall be suitable for irrigation, stock watering, and wildlife without injurious effects. After treatment processes, the water quality shall meet the bacteriological, physical and chemical requirements of the department for municipal or domestic use.

According to the *North Dakota 2018 Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Waters Needing Total Maximum Daily Loads*, currently TMDL has not been developed for the receiving water body, nor is it listed as impaired under Section 303(d).

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are listed in the water quality standards 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 Water Quality Standards 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.

The permittee provided a CORMIX mixing zone analysis and diffuser design to demonstrate that the effluent would have complete mixing within the mixing zone allowed in the state’s water quality standards.

Mixing Zone Modeling

The details on the proposed diffuser design and the mixing zone modeling results were provided with the permit application. The following is a summary of the mixing zone modeling conditions evaluated for the proposed discharge:

- Diffuser (Proposed): 30-foot multi-port (16 ports)
- Model program: CORMIX (Cornell Mixing Zone Model)
- Mix Zone considered: Near instantaneous and Complete (WQS App. III, Step 5);
Dilution at mixing zone boundary
- Criteria to meet: Less than 10% difference in concentration;
Concentration (dilution) at mixing zone boundary
- Distance allowed: 200 feet (Lake allowance; WQS App. III)

The mixing zone modeling completed for the planned diffuser demonstrated that near instantaneous and complete mixing can be expected. The report provided mixing zone model results for several cases using the expected discharge sulfate concentration of 770 mg/L and an ambient concentration of 100-150 mg/L. The model provided the distance the effluent plume would travel before dilution to a concentration equal to 10 mg/L above background (a 10 percent difference between plume and ambient concentration). The following summarizes the CORMIX modeling results for the described conditions:

Case No.	Discharge Configuration	Rate of Effluent Discharge (gpm)	Water Depth (ft)	Stream Velocity (fps)	Density, (Kg/m ³)		Distance to Complete Mixing (ft)
					Ambient	Discharge	
1	30’ 16-port	221	13	2.5	1000.368	1002.486	8.2
2	30’ 16-port	350	13	2.5	1000.368	1002.486	20.6
3	30’ 16-port	100	13	2.5	1000.368	1002.486	1.4
4	30’ 16-port	221	30	0.38	997.604*	999.380	24.8
5	30’ 16-port	350	30	0.38	997.604*	999.380	28.7
6	30’ 16-port	100	30	0.38	997.604*	999.380	35.5

From: Mixing Zone Modeling Results; Bartlett & West Engineers

* Bottom

The distance to complete mixing determined by the model corresponds to a dilution factor of 1/67th for the difference between the discharge and ambient concentrations. The dilution factor can be used to determine the resulting concentration at the indicated distance for any

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constituent and concentration. The output from the CORMIX model provides a tabulation of plume dimensions and concentrations for progressive distances from the discharge source. The dilutions for select distances from the discharge source for the 30-foot diffuser at 221 gpm (Case 4) are provided below.

Distance From Discharge (ft)	Modeled Dilution Factor
24.8	67
50	104
200	179

To ensure that the operation of the discharge reflects the proposed design capabilities and the information from the CORMIX model, the permit will include a statement that the conditions and monitoring requirements are based on the use of a diffuser. A new mixing zone analysis and verification of the mixing zone may be required if the discharge rate or pollutant concentrations change substantially from those provided in the application.

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

The NDPDES discharge permit must assure that the proposed wastewater discharge will comply with the state's water quality standards. In addition to the numeric standards, the discharge must conform to supplementary policies and procedures included in the standards such as anti-degradation criteria and the mixing zone and dilution policy. Discharge limits must be considered for pollutants that would have a reasonable potential to exceed a water quality standard.

Sulfate

The department has reviewed the sulfate data. The department conducted a reasonable potential analysis for sulfate. The calculation determined no reasonable potential to violate the water quality standards (**Appendix C**). The department proposes to continue monitoring for sulfate with a sampling frequency of monthly.

Chloride

The department has reviewed the chloride data. The department conducted a reasonable potential analysis for chloride. The calculation determined no reasonable potential to violate the water quality standards (**Appendix C**). The department proposes to continue monitoring for chloride with a sampling frequency of monthly.

Total Residual Chlorine

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A limitation for Total Residual Chlorine (TRC) has been applied since there is the potential for the discharge to contain TRC from the anticipated MF unit disinfection procedures as part of routine cleaning. Although the disinfection process would be infrequent and the application indicates that dechlorination would be provided, a reasonable potential analysis was performed on TRC. The maximum daily concentration provided on the application was utilized for the analysis. Reasonable potential to exceed the chronic WQS was determined, while there was no reasonable potential to exceed the acute WQS. Though there was no reasonable potential for the acute WQS, the department has determined to include a maximum daily limit for TRC as the calculated TRC concentration was determined to be 0.016 mg/l and the acute WQS is 0.019 mg/l.

The department proposes a maximum daily limitation of 1.2 mg/l as determined by utilizing the mass balance equation (**Appendix C**) with a sampling frequency of monthly. A monthly average limit has not been proposed since the chlorination will only be practiced on an infrequent basis, approximately monthly, as provided in the application.

pH

The limitations for pH are based on the state water quality standards (NDAC 33.1-16-02.1-09 Table 1) applicable to this water body. The department proposes a limit of “shall remain between 7.0 and 9.0” as referenced in the WQS for Class I streams. All classifications of lakes and reservoirs shall have the same limit as Class I streams.

Human Health

North Dakota’s water quality standards 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 determined the applicant’s discharge is unlikely to contain chemicals regulated to protect human health. The department will re-evaluate this discharge for impacts to human health at the next permit reissuance.

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

The department must be notified, in advance, of any facility expansions, additions, or modifications to increase the amount of discharge or discharge of pollutants. The increase in any effluent limitation is considered a major permit modification. Major modifications require the issuance of a public notice inviting public comment.

Water Treatment Additives

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The MF and RO equipment require routine cleaning and conditioning as part of the normal operation. A description of the periodic cleaning procedures and chemical solutions required for the MF and RO units was provided with the initial permit application. While the chemical solutions will primarily consist of acid (Hydrochloric (HCl) or Citric acid) and caustic (Sodium Hydroxide (NaOH)) to remove mineral deposits from the membranes, the need may arise to employ specialized chemical treatments for the control of scaling and bio-fouling. Such treatment chemicals can vary in composition or formulation.

In the event the facility proposes to discharge water additives, the facility must submit a request to discharge the additives to the department. The permittee will be required to provide the following information on all chemical additives which do not follow American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 60:

- Safety Data Sheet (SDS);
- The proposed water additive discharge concentration;
- The discharge frequency (i.e. number of hours per day and number of days per year);
- The monitoring point from which the product is to be discharged;
- The type of removal treatment, if any, that the water additive receives prior to discharge;
- Product function (i.e. microbicide, flocculant, etc.);
- A 48-hour LC₅₀ or EC₅₀ for a North American freshwater planktonic crustacean (either *Ceriodaphnia* sp., *Daphnia* sp. Or *Simocephalus* sp.); and
- The results for a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean).

PERMIT ISSUANCE PROCEDURES

Permit Modifications

The department may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, or with water quality standards for ground waters, based on new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The department may also modify this permit to comply with new or amended state or federal regulations.

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 (5) years.

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APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

The department proposes to reissue a permit to the South Central Regional Water District Emmons County Water Treatment Plant, Emmons County, North Dakota. 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 **January 16, 2020** in the **Emmons County Record** and the **Bismarck Tribune** 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
918 East Divide Avenue, 4th Floor
Bismarck, ND 58501

The primary author of this permit and fact sheet is Patrick Schuett.

FACT SHEET FOR NDPDES PERMIT ND0026344
SOUTH CENTRAL REGIONAL WATER DISTRICT, EMMONS COUNTY WATER TREATMENT
PLANT

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

Public Notice Date: 1/16/2020

Public Notice Number: ND-2020-001

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: 10/7/2019

Application Number: ND0026344

Applicant Name: South Central WTP-Emmons Co

Mailing Address: PO Box 4182, Bismarck, ND 58501-4182

Telephone Number: 701.258.8710

Proposed Permit Expiration Date: 3/31/2025

Facility Description

The application is for a water treatment plant that supplies drinking water to rural communities. Wastewater from the operation of the microfiltration and reverse osmosis membranes discharges through diffusers placed in the Missouri River / Lake Oahe via outfall 001. The discharge is located in the SE 1/4, Section 35, T133N, R79W. The Missouri River / Lake Oahe is subject to Class I water quality standards.

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 FWPCA will be protected.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Dept of Env Quality, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by February 17, 2020 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. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.

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APPENDIX B – GLOSSARY

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.

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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.

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APPENDIX C – DATA AND TECHNICAL CALCULATIONS

DFLOW

Due to Lake Oahe having a residence time of greater than 20 days at critical conditions (Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991)), the mixing zone criteria described in Appendix III of NDAC ch. 33.1-16-02.1 was utilized. No critical low flows were determined.

Reasonable Potential

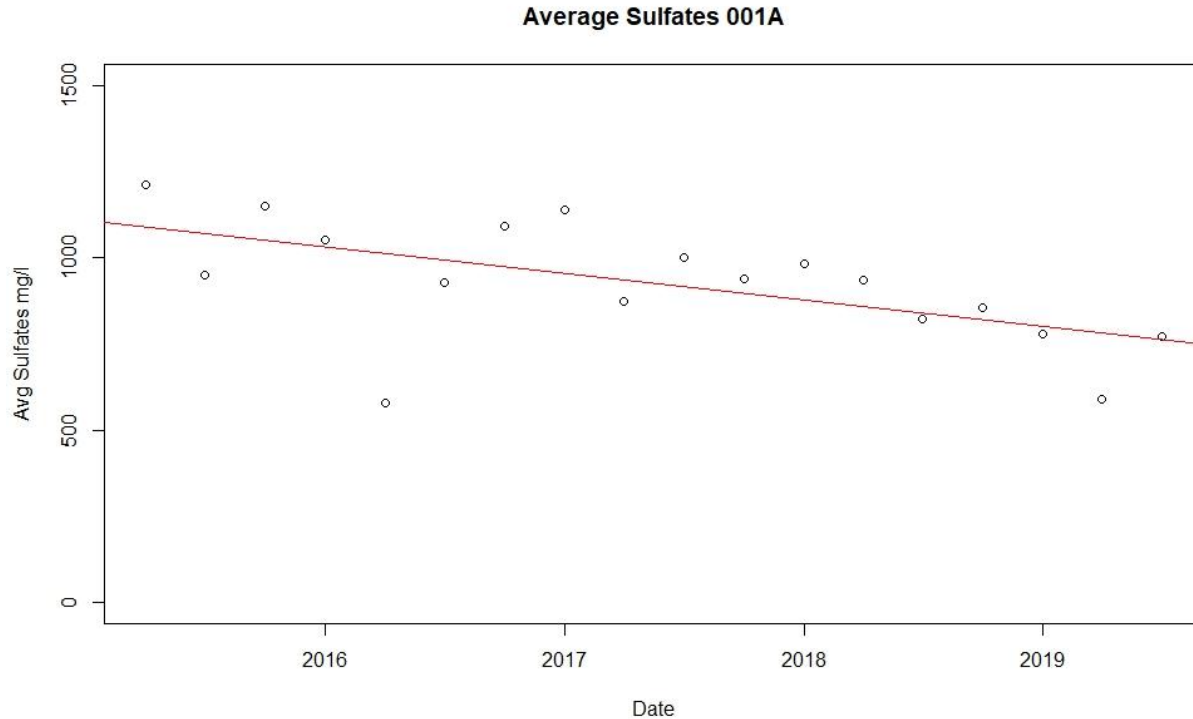
Ambient data was collected from the USGS Gauging Station 06354815 from 7/1/1991 – 9/01/1999 and ND Station ID 385032 from 8/01/2011 - 6/7/2019.

Sulfate

The department conducted a reasonable potential analysis for Sulfate. The reasonable potential for sulfate was determined using the worst-case scenario. To calculate the reasonable potential the mass balance equation: $C_p = \frac{C_a + (C_e - C_a)}{S}$ (where: S = Dilution (volumetric), Ca = ambient concentration, Ce = Concentration of effluent and Cp = Concentration in the waste plume), and the Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991) were used.

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Figure 3: Average Discharged Sulfates from 04/01/2015 - 09/30/2019.



The NDDEQ has developed the following tool to evaluate the dilution of a single sample result to the North Dakota Standards of Quality for Waters of the State. Facilities which can demonstrate the criteria outlined in ch 33.1-16-02.1, Appendix III are allowed a dilution allowance.

The tool below calculates the diluted concentration of a specific parameter at the end of the determined mixing zone using the dilution factor as determined by modeling and compares the parameter value to the WQS.

The tool also calculates the concentration at which a parameter may be discharged at so that it meets the WQS at the boundary of the mixing zone given the dilution factor as

Lake Mixing - Reasonable Potential Calculation		
Lake Oahe		
Parameter: Sulfate		
Average Ambient Concentration	194.000	mg/l
Water Quality Standard Acute	N/A	mg/l
Water Quality Standard Chronic	250.000	mg/l
Ce-Effluent Concentration	924.600	mg/l
Ca-Ambient Concentration	194.000	mg/l
S-Dilution (volumetric) (Provided by model or calculated)	67.0	to 1
Cp-Concentration in the waste plume, where: $C_p = \frac{C_e + (C_a - C_e)}{S}$	204.90	mg/l
Reasonable Potential Acute	No	
Reasonable Potential Chronic	No	

Where C_e is the average effluent concentration, C_a is the average ambient concentration, and S is the dilution ratio from the Cormix modeling.

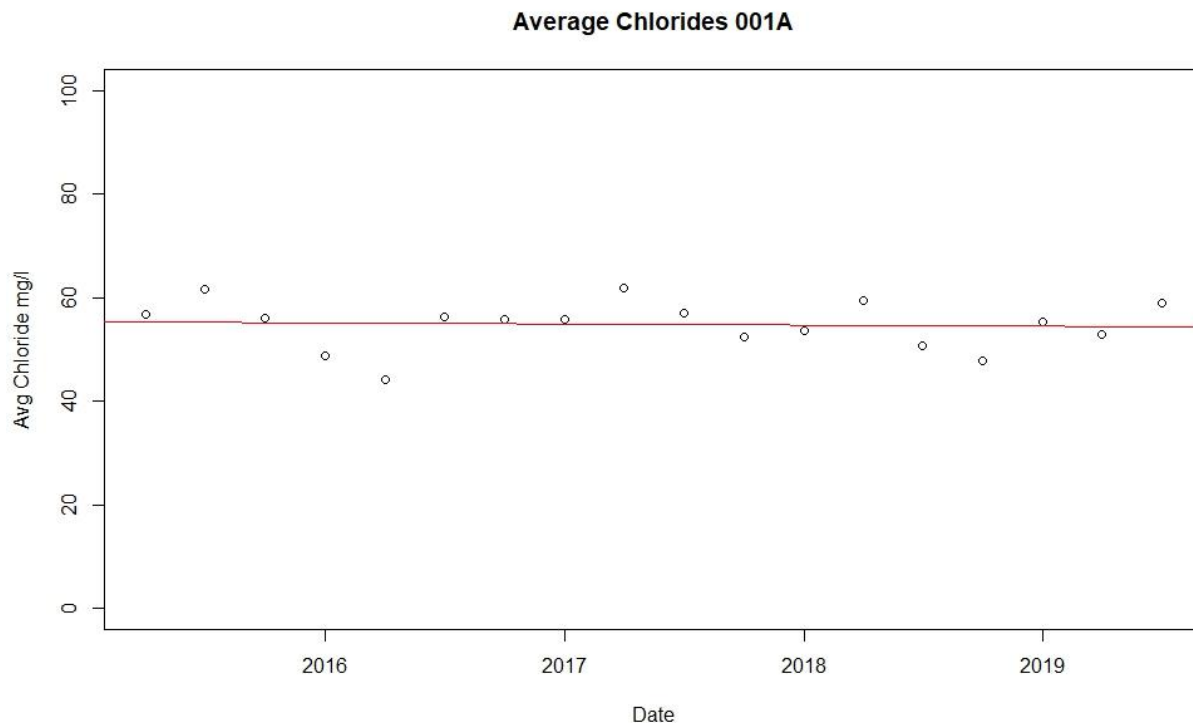
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Chloride

The department conducted a reasonable potential analysis for Chloride. The reasonable potential for TRC was determined using the worst-case scenario. To calculate the reasonable potential the mass balance equation: $Cp = \frac{Ca + (Ce - Ca)}{S}$ (where: S = Dilution (volumetric), Ca = ambient concentration, Ce = Concentration of effluent and Cp = Concentration in the waste plume), and the Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991) were used.

Figure 4: Average Discharged Chlorides from 04/01/2015 - 09/30/2019.



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The NDDEQ has developed the following tool to evaluate the dilution of a single sample result to the North Dakota Standards of Quality for Waters of the State. Facilities which can demonstrate the criteria outlined in ch 33.1-16-02.1, Appendix III are allowed a dilution allowance.

The tool below calculates the diluted concentration of a specific parameter at the end of the determined mixing zone using the dilution factor as determined by modeling and compares the parameter value to the WQS.

The tool also calculates the concentration at which a parameter may be discharged at so that it meets the WQS at the boundary of the mixing zone given the dilution factor as

Lake Mixing - Reasonable Potential Calculation		
Lake Oahe		
Parameter: Chloride		
Average Ambient Concentration	14.200	mg/l
Water Quality Standard Acute	N/A	mg/l
Water Quality Standard Chronic	100.000	mg/l
Ce-Effluent Concentration	54.740	mg/l
Ca-Ambient Concentration	14.200	mg/l
S-Dilution (volumetric) (Provided by model or calculated)	67.0	to 1
Cp-Concentration in the waste plume, where: $C_p = \frac{C_a + (C_e - C_a)}{S}$	14.81	mg/l
Reasonable Potential Acute	No	
Reasonable Potential Chronic	No	

Where C_e is the average effluent concentration, C_a is the average ambient concentration, and S is the dilution ratio from the Cormix modeling.

TRC

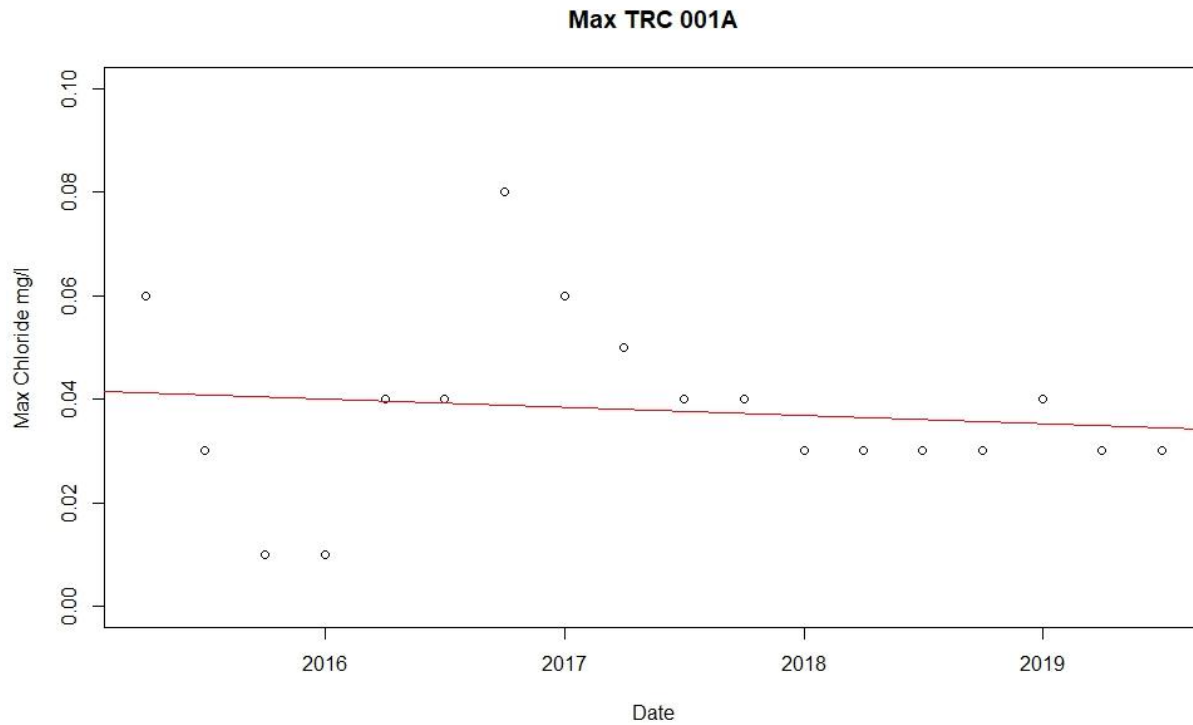
The department conducted a reasonable potential analysis for TRC. The reasonable potential for TRC was determined using the worst-case scenario. To calculate the reasonable potential the mass balance equation: $C_p = \frac{C_a + (C_e - C_a)}{S}$ (where: S = Dilution (volumetric), C_a = ambient concentration, C_e = Concentration of effluent and C_p = Concentration in the waste plume), and the Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991) were used. The coefficient of variance was 0.4.

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Figure 5: Daily Maximum Discharged TRC from 04/01/2015 - 09/30/2019.



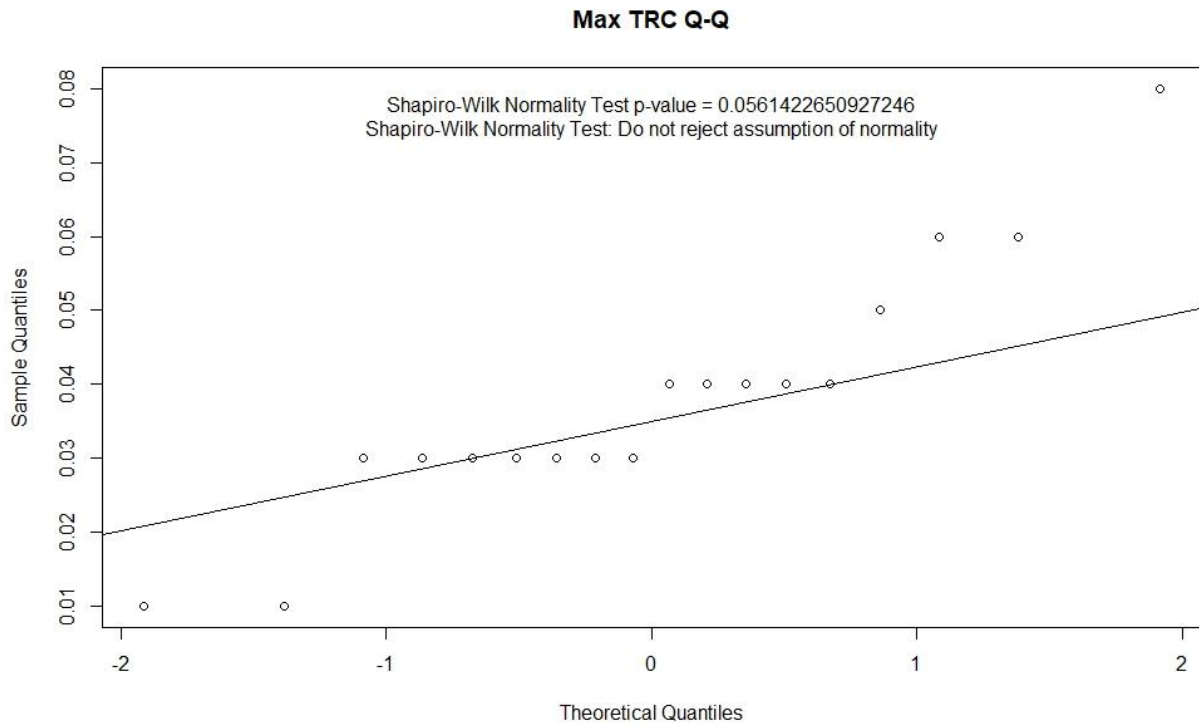
The department performed a Shapiro-Wilk test for normality determined whether the effluent data for TRC was normally distributed. The normal distribution test is conducted to determine how the coefficient of variance should be calculated so that it is an accurate statistical representation of the effluent data when determining the reasonable potential and effluent limitations.

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Figure 6: Test for normality.



Coefficient of Variance determination:

$$CV = \frac{sd}{mean} = \frac{0.01699673}{0.03777778} = 0.4499135$$

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The NDDoH has developed the following tool to evaluate the dilution of a single sample result to the North Dakota Standards of Quality for Waters of the State. Facilities which can demonstrate the criteria outlined in ch 33-16-02.1, Appendix III are allowed a dilution allowance.

The tool below calculates the diluted concentration of a specific parameter at the end of the determined mixing zone using the dilution factor as determined by modeling and compares the parameter value to the WQS.

The tool also calculates the WLA at for the parameter may be discharged at so that it meets the WQS at the boundary of the mixing zone given the dilution factor as

Lake Mixing - Reasonable Potential Calculation		
Lake Oahe		
Parameter: Total Residual Chloride (TRC)		
Maximum Ambient Concentration	0.000	mg/l
Water Quality Standard Acute	0.019	mg/l
Water Quality Standard Chronic	0.011	mg/l
Ce-Effluent Concentration	1.040	mg/l
Ca-Ambient Concentration	0.000	mg/l
S-Dilution (volumetric) (Provided by model or calculated)	67.000	to 1
Cp-Concentration in the waste plume, where: $C_p = \frac{C_a + (C_e - C_a)}{S}$	0.016	mg/l
Reasonable Potential Acute	No	
Reasonable Potential Chronic	Yes	

Lake Waste Load Calculation		
Lake Oahe		
Parameter: Total Residual Chloride (TRC)		
Maximum Ambient Concentration	0.000	mg/l
Water Quality Standard Acute	0.019	mg/l
Water Quality Standard Chronic	0.011	mg/l
Cp-Concentration in the waste plume-Acute	0.019	mg/l
Cp-Concentration in the waste plume-Chronic	0.011	mg/l
Ca-Ambient Concentration	0.000	mg/l
S-Dilution (volumetric) (Provided by model or calculated), where: $C_e = C_a + (C_wqs - C_a) \times S$	67.000	to 1
Calculation of Effluent Concentration-Acute	1.273	mg/l
Calculation of Effluent Concentration-Chronic	0.737	mg/l

Long Term Average (LTA) Determination		
Lake Oahe		
Parameter: Total Residual Chloride (TRC)		

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Acute Multiplier (see TSD, Table 5-1, page 102)	0.571	
Chronic Multiplier (see TSD, Table 5-1, page 102)	0.736	
LTAa (where $LTAa = WLAa \times e^{[0.5q2 - zq]}$)	0.727	
LTAc (where $LTAc = WLAc \times e^{[0.5q42 - zq]}$)	0.542	

Maximum Daily Limit (MDL) Determination		
Lake Oahe		
Parameter: Total Residual Chloride (TRC)		
z (see TSD, Table 5-2, page 103, 99th percentile)	2.270	
MDL (where $MDL = LTA \times e^{[zq - 0.5q2]}$)	1.231	

Average Monthly Limit (AML) Determination		
Lake Oahe		
Parameter: Total Residual Chloride (TRC)		
z (see TSD, Table 5-2, page 103, 95th percentile)	1.830	
AML (where $AML = LTA \times e^{[zqn - 0.5qn2]}$)	0.993	

WQS Based Limits	mg/l	µg/L
MDL	1.231	1231.321
AML	0.993	992.651

Where C_e is the average effluent concentration, C_a is the average ambient concentration, and S is the dilution ratio from the Cormix modeling.

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APPENDIX D – RESPONSE TO COMMENTS

Comments received during the public comment period will be placed here.