

**STATEMENT OF BASIS FOR THE
CITY OF NEW TOWN WATER TREATMENT PLANT
PERMIT NUMBER ND-0031151**

July 24, 2018

PERMITTEE:	City of New Town
FACILITY NAME AND ADDRESS:	New Town Water Treatment Plant 301 West Ave. South New Town, North Dakota 58763
PERMIT NUMBER:	ND0031151
RESPONSIBLE OFFICIAL:	Daryl Lyson (701) 627-4812
FACILITY CONTACT:	Cal Oldenberg Operator New Town Water Treatment Plant 103 Soo Place New Town, North Dakota 58763
PERMIT TYPE:	Minor, Indian Country
TYPE OF TREATMENT:	Stabilization Lagoon
FACILITY LOCATION:	NE 1/4, NE 1/4, Section 19, Township 152N, Range 92W in Mountrail County

DISCHARGE LOCATION(S):	Lagoon 1: Lat 47.977509° N Long 102.495555° W Lagoon 2: Lat 47.977222° N Long 102.495833° W Lagoon 3: Lat 47.976111°N Long 102.495833° W Lagoon 4: Lat 47.975555° N Long 102.495833° W Lagoon 5: Lat 47.975555° N Long 102.494444° W
RECEIVING WATER:	An unnamed tributary to Lake Sakakawea

1. INTRODUCTION

This statement of basis (SOB) is for the issuance of an NPDES permit to the City of New Town for wastewater discharges from the New Town water treatment plant (WTP). The permit establishes discharge limitations for pollutants from the facility. The SOB explains the nature of the discharges, and the EPA's decisions for limiting the pollutants in the wastewater, as well as the regulatory and technical basis for these decisions.

The City of New Town resides in the Fort Berthold Indian Reservation (Reservation). The Three Affiliated Tribes (Tribes) are the governing agency on the Reservation. The Tribes have not yet been approved for Treatment as a State (TAS) as set forth in §518 (e) of the Clean Water Act. Without TAS the EPA is the responsible permitting entity on the Reservation.

2. BACKGROUND INFORMATION

2.1. FACILITY DESCRIPTION

The WTP is located in the City of New Town in Mountrail County, North Dakota. The plant provides municipal water for the city and rural water distribution system. The WTP was designed for 3 million gallons per day (MGD), but currently operates at 0.5 MGD. Construction of the WTP was completed in 2004. At this time the wastewater treatment facility consisted of two waste stabilization lagoons operating in a parallel batch process. In 2014 a WTP upgrade included the construction of three additional wastewater stabilization lagoons. The five lagoons are operated in a parallel batch treatment train. The lagoons are dredged every 3-5 years and the removed solids are disposed of at a landfill. The lagoons have not needed to be dredged since the WTP upgrade due to increased solids storage capacity in the lagoons.

The WTP sources groundwater from four wells near the facility. The ground water is first aerated then clarified in the solids contact basins. In the solids contact basins polymers are added to facilitate flocculation and sedimentation of contaminants. Lime is also added in the solids contact basins for water softening. The lime addition causes minerals to precipitate out of the water generating sludge while simultaneously raising the pH of both the product and waste streams. The sludge generated in the contact basins is collected and pumped to the wastewater lagoons at an estimated rate of 12 gallons per minute.

Fluoride and polyphosphate are added to the water after the solids contact basin. The water is then carbonated, chlorinated and filtered. In the course of daily operation, the filters are cleaned with a filter backwash operation. Filter backwash wastewater is pumped to a recovery tank for clarification. The filter solids present in the backwash water are removed through sedimentation creating a sludge. The clarified backwash water is decanted to the WTP influent. The sludge is pumped to the wastewater lagoons at an estimated rate of one gallon per minute.

The wastewater lagoons are located to the west and south of the water treatment plant. (See Figure 1) Wastewater is collected in one lagoon at a time. When a lagoon has been filled to capacity the wastewater is redirected to the next lagoon in the rotation. The lagoons are expected to have a residence time of at least six months. After treatment, the wastewater is discharged to the unnamed drainage ditch which runs along the south and west of the lime sludge lagoons.

Discharges from this facility occur approximately twice a year for each lagoon with an estimated flow of 0.4 MGD. The largest lagoons have a volume of 800,000 gallons requiring two days to completely evacuate. Wastewater is removed from each lagoon with a portable pump. Each lagoon has been assigned an outfall point where the discharges are expected to occur (See Figure 1).



Figure 1 - Overhead Photograph of New Town Water treatment plant and Lagoon system with outfall points identified

2.2. TREATMENT PROCESS

The treatment process consists of five waste stabilization lagoons. The lagoons are operated in a parallel batch rotation. The wastewater remains in the lagoon until the solids have settled and the pH has returned to a level compliant with the discharge permit.

2.3. CHEMICALS USED

Table 1 contains a list of the chemicals used onsite and the consumption for 2016. All Chemicals are added prior to filtration and have the potential to be present in WTP wastewater effluent.

Table 1 - Chemical use for water treatment at New Town Water Treatment Plant

Chemical	Amount used in 2016
Aquahawk 9847 (Anionic Polymer)	9 Gallons
AquaHawk 457 (Cationic Polymer)	347 Gallons
Hydrofluosilicic Acid	487 Gallons
LPC-5 (polyphosphate)	439 Gallons
CO2 (recarbonation)	145,000 pounds
Lime	750,000 pounds
Chlorine	4759 pounds

3. RECEIVING WATER DESCRIPTION

Wastewater discharges from the WTP will enter an unnamed drainage approximately 400 yards upstream from an impoundment formed by a culvert under Main St. (Highway 23). The culvert discharges into a branch of Lake Sakakawea named Spanish Bay. Lake Sakakawea is a reservoir on the Missouri River.

The EPA and Tribes have not identified beneficial uses for the unnamed drainage and impoundment. The EPA assumes these water features are ephemeral based on satellite images. Discharges from the facility are expected to occur 10 times a year. These discharges will occur predominantly in the spring, summer, and fall because in winter it is expected that the contents of each stabilization pond will be frozen and unable to discharge.

During the driest parts of the year it is likely that the water in the unnamed drainage and impoundment will be composed entirely of WTP effluent. This has caused the EPA to assume no dilution in the development of water quality based effluent limits.

The Tribes have identified the following beneficial uses of Lake Sakakawea on their webpage: municipal water supply, recreation, agriculture, fisheries, and industrial.

After discharging from the culvert to Lake Sakakawea, discharges will travel approximately 66 miles through the reservoir before entering waters of the State of North Dakota.

4. PAST DISCHARGE DATA

Data reported in the application for NPDES coverage are summarized in Table 2. In 2011 a monitoring event reported a pH of 9.55 standard units which is in excess of the State’s permit effluent limit of 9.0 standard units. The State conducted enforcement in response to this exceedance. The City of New Town expanded the wastewater treatment process with three new lagoons in 2014 to improve wastewater treatment.

Table 2 – Monitoring data reported in NPDES application.

Characteristic	Result low	Result High	Number of samples
Total Suspended Solids (TSS) (mg/L)	4	25	13
Ammonia (mg/L as N)	0	0.14	13
Flow (MGD)	0.4	0.4	5
pH (standard units)	5.7	9.55	13
Fluoride (mg/L)		0.147	1
Nitrate Nitrite (as N)		0.07	1
Sulfate as SO ₄ (mg/L)		666	1
Total Aluminum (mg/L)		0.319	1
Total Barium (mg/L)		0.0079	1
Total Boron (mg/L)		0.374	1
Total Iron (mg/L)		0.273	1
Total Magnesium (mg/L)		5	1
Molybdenum (mg/L)		0.0057	1

5. PREVIOUS PERMITS

The facility has been covered under an NPDES permit issued by the State of North Dakota since 2006. The New Town WTP NPDES permit (permit number ND0025691) was renewed by the State

in 2011 and again in 2016. The renewal was a “No Discharge” Permit which didn’t specify effluent limitations. In 2011 the State issued an NPDES Permit with the effluent limitations listed in Table 3.

Table 3- 2011 New Town NPDES Permit Effluent Limitations

Characteristic	Effluent Limit (30 day Average limit)
Total Dissolved Aluminum (mg/L)	0.75
Total Suspended Solids (TSS) (mg/L)	30
pH (standard units)	Between 7.0 and 9.0

The permit effluent limits established in the 2011 reissuance were developed using the State’s water quality standards. For the current (2017) NPDES permit issuance, the State’s water quality standards do not apply since the City of New Town resides completely inside the Reservation. The State’s WQS will be considered to ensure downstream WQS are accommodated in the EPA issued permit.

6. PROPOSED PERMIT LIMITATIONS

6.1. Water Quality Based Effluent Limitations

Section 301 of the CWA requires the EPA to develop NPDES effluent limits through evaluating water quality standards (WQS) and treatment technology standards. In the absence of applicable water quality standards, the EPA must conduct an evaluation of the Federal water quality criteria (WQC) and the assimilative capacity for the receiving stream (see 40 CFR § 304).

This evaluation is used to establish water quality based effluent limits to ensure protection of the receiving stream’s water quality and its existing and designated beneficial uses.

The Tribes have not been approved by the EPA for TAS which grants authorization to establish WQS that must be conditionally approved by the EPA before implementation. As of the writing of this permit the Tribes have not applied for TAS or proposed WQS for the Reservation.

Section 101(a)(2) of the Clean Water Act states “it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water to be achieved by July 1, 1983”. To achieve this Congressional goal in the absence of Tribal WQS on the Reservation, the EPA considers the beneficial uses of the receiving waters to include aquatic life and recreation.

The EPA relied on CWA § 301(b)(1)(C) in establishing QBELs based on EPA’s Section 304(a) recommended WQC to protect the above mentioned uses in the receiving waters.

The EPA has determined WTP discharges do not have reasonable potential for an exceedance of the State’s water quality standards. The main factors in this decision are: dilution in Lake Sakakawea, the 66 miles to waters of the State, and the intermittent nature of discharges from the WTP.

6.2. Technology Based Effluent Limitations

The National Secondary Standards (NSS) for secondary treatment (40 CFR § 133) have been developed by the EPA to be economical and protective of water quality. The NSS will be referenced for establishing effluent limits. The EPA and Tribes have not developed additional technological based effluent limitations that apply to discharges from the WTP.

6.3. Effluent Limitations

The proposed effluent limitations are equal to, or more stringent than the WQC and NSS. The pollutants summarized in Table 2 have been assessed by the EPA and, if reasonable potential exists, an effluent limit was developed. Table 4 details the proposed effluent limits for the WTP.

Table 4 - Proposed Effluent Limitations

Effluent Characteristic	Daily Maximum	30 day average
Total Suspended Solids, mg/L	45	30
Total Residual Chlorine, mg/L	0.019	0.011
Aluminum, Total Recoverable, mg/L	0.75	0.087
The pH of the discharge shall not be less than 6.5 or greater than 9.0 at any time, Standard Units.		

BOD5: Biological oxygen demand (BOD) was omitted from the effluent limitations. The NSS were developed for the regulation of treatment plants treating domestic sewage. The source water for the WTP is ground water which does not have significant organic loading. The water treatment process does not add appreciable sources of BOD. The characteristics of the influent and water treatment process do not have reasonable potential to exceed the WQC and therefore no BOD limit is required.

TSS: Total suspended solids effluent limitations are adopted from the NSS.

Total Residual Chlorine: The limits of 0.019 mg/L and 0.011 mg/L are the acute and chronic WQC for aquatic life respectively.

Total Recoverable Aluminum: 0.75 mg/L and 0.087 mg/L are the acute and chronic WQC limits for aquatic life respectively.

pH: A lower pH limit of 6.5 is the limit established in the Aquatic Life WQC. The upper limit of 9.0 is consistent with WQC and NSS. A lower limit for pH of 6.5 standard units (SU) is less stringent than the 7.0 SU lower limit established in the previous State issued permit. This less stringent limit does not conflict with the anti-backsliding requirements of the CWA (40 CFR part 122.44(l)) because the transfer in permitting authority for this facility has changed the basis for water quality based effluent limitations from the State's WQS to the WQC.

Ammonia: Ammonia is present in the plant's source water and has been identified in the effluent. Currently there is not enough information on the receiving water conditions to establish an effluent

limit. The Permit requires the permittee to collect additional monitoring data to assist in establishing an ammonia effluent limit.

7. MONITORING REQUIREMENTS

7.1. MONITORING LOCATIONS

Table 5 details the outfall locations for each lagoon as well as the receiving water sampling point.

Table 5 – Monitoring Locations

Outfall Serial Number	Description of Discharge Point	GPS Coordinates
001	Outfall from stabilization lagoon 1	Lat 47.977509° N Long 102.495555° W
002	Outfall from stabilization lagoon 2	Lat 47.977222° N Long 102.495833° W
003	Outfall from stabilization lagoon 3	Lat 47.976111° N Long 102.495833° W
004	Outfall from stabilization lagoon 4	Lat 47.975555° N Long 102.495833° W
005	Outfall from stabilization lagoon 5	Lat 47.975555° N Long 102.494444° W
006R	Receiving water sampling point	Lat 47.983389 Long-102.514382

7.2. SELF MONITORING - ALL OUTFALLS

The following constituents shall be monitored at the frequency and with the type of measurement indicated (Table 6). Samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report (DMR) that no discharge or overflow occurred.

Table 6 – Monitoring requirements

Effluent Characteristic	Frequency <u>a/</u>	Sample Type <u>a/</u>
Average Flow, mgd <u>b/</u>	Daily <u>c/</u>	Instantaneous <u>a/</u>
Total Discharge Volume gallons <u>b/</u>	Daily <u>c/</u>	Instantaneous <u>a/</u>
Total Suspended Solids mg/L	Daily <u>c/</u>	Grab <u>a/</u>
pH, standard units	Daily <u>c/</u>	Grab <u>a/</u>
Total Ammonia Nitrogen (as N) mg/L	Daily <u>c/</u>	Grab <u>a/</u>
Total Nitrogen (N), mg/L	Daily <u>c/</u>	Grab <u>a/</u>
Total Residual Chlorine mg/L	Daily <u>c/</u>	Grab <u>a/</u>
Total Phosphorus (P), mg/L	Daily <u>c/</u>	Grab <u>a/</u>
Alumnium, Total Recoverable, mg/L	Daily <u>c/</u>	Grab <u>a/</u>
Receiving water Temp. °F <u>d/</u>	Monthly	Instantaneous <u>a/</u>
Receiving Water pH standard units <u>d/</u>	Monthly	Grab <u>a/</u>
Receiving water Total Ammonia Nitrogen (as N) mg/L <u>d/</u>	Quarterly	Grab <u>a/</u>

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

b/ Flow measurements of effluent volume shall be made in such a manner that the Permittee can affirmatively demonstrate that representative values are being obtained. The average flow rate (in million gallons per day) and the total discharge volume for each discharge event during the reporting period shall be reported.

c/ Due to the intermittent nature of the discharge, effluent monitoring is required every day a discharge is conducted.

d/ Receiving water conditions are required to be sampled at or near the GPS coordinates identified as the “Receiving water sampling point” (Outfall 006R) in Table 5. The goal is to obtain ambient water quality characteristics of Spanish Bay. The receiving water monitoring location may be adjusted to accommodate fluctuations of the lake elevation only as long as the sample is representative of the water quality in Spanish Bay. The Receiving water is not to be monitored during or immediately after a WTP discharge.

8. FACILITY INSPECTION REQUIREMENTS

On a monthly basis, unless otherwise specified in writing by the EPA, the permittee shall inspect the wastewater treatment facility. The permittee shall maintain an inspection log containing all information obtained during the inspection. Monthly inspections are required due to the consistency of operations, and intermittent nature of wastewater discharges at the facility.

9. REPORTING REQUIREMENTS

Reporting of Monitoring Results: With the effective date of this Permit, the Permittee must electronically report monthly DMR on a quarterly frequency using NetDMR. Electronic submissions by permittees must be sent to the EPA Region 8 no later than the 28th of the month following the completed reporting period. The Permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at <https://netdmr.zendesk.com/home>.

In addition, the Permittee must submit a copy of the DMR to the Tribes. Currently, the Permittee may submit a copy to the Tribes by one of three ways: 1.) a paper copy may be mailed, 2.) The email address for the Tribes may be added to the electronic submittal through NetDMR, or 3.) The Permittee may provide Tribes viewing rights through NetDMR.

10. ENDANGERED SPECIES CONSIDERATIONS

The Endangered Species Act (ESA) of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any Federal action carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species (together, “listed” species), or result in the adverse modification or destruction of habitat of such species that is designated by the FWS as critical (“critical habitat” See 16 U.S.C. § 1536(a)(2), 50 C.F.R. Part 402). When a Federal agency’s action “may affect” a protected species, that agency is required to consult with the FWS, depending upon the endangered species, threatened species, or designated critical habitat that may be affected by the action (50 C.F.R. § 402.14(a)).

The U. S. Fish and Wildlife Information for Planning and Conservation (IPaC) website program was utilized to determine Federally-Listed Endangered, Threatened, Proposed and Candidate Species that may be impacted by discharges from this facility. The IPaC Trust Resource Report findings are provided below (see Table 7). The designated area utilized covers the City of New Town, the unnamed drainage, and portions of Lake Sakakawea.

Table 7 - Listed Species according to IPAC

Species	Scientific Name	Status
Grey Wolf	<i>Canis lupus</i>	Endangered
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Red Knot	<i>Calidris canutus rufa</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered
Dakota Skipper	<i>Hesperia dacotae</i>	Threatened

Least Tern	<i>Sterna antillarum</i>	Endangered
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10.1. BIOLOGICAL EVALUATION

This permit does not require or allow new construction, or new activities that would remove or disrupt habitat of the species identified in Table 7. Wastewater discharges from this facility will maintain the same quality and quantity as discharges covered under previous permits. The effluent limits have been developed according to nationally developed criteria deemed adequate to protect wildlife, and fisheries.

10.1.1. Grey Wolf

No Effect: the species is not known to occupy the area

10.1.2. Northern Long Eared Bat

No Effect: Terrestrial species

10.1.3. Piping Plover

May affect, not likely to adversely affect.

10.1.4. Red Knot

May affect, not likely to adversely affect.

10.1.5. Whooping Crane

May affect, not likely to adversely affect.

10.1.6. Pallid Sturgeon

May affect, not likely to adversely affect.

10.1.7. Dakota Skipper

No Effect: Terrestrial species.

10.2. CONCLUSION

Issuance of this permit will have no effect on endangered species in the area.

Note: During public notice of this permit a copy of the draft Permit and this Statement of Basis will be sent to the USFWS requesting concurrence with the EPA's finding that issuance of this NPDES Permit for the New Town WTP is "Not Likely to Adversely Affect" any of the species listed as threatened or endangered by the USFWS under the Endangered Species Act nor their critical habitat.

11. NATIONAL HISTORIC PRESERVATION ACT REQUIREMENTS

During public notice of this permit the Tribal Historic Preservation Officer (THPO) will be contacted to ensure that all historic properties are not negatively affected by the conditions of this permit.

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The U.S. National Park Service (NPS) National Register of Historic Places Focus Database was utilized to determine and evaluate resources of concern impacted by the WTP activities.

The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the NPS National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Table 8 details the NHPA locations near the WTP. Based upon the information provided by the NPS database, the EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources due to this permit issuance and WTP related activities.

11.1. Conclusion

The permit and statement of basis were sent by e-mail to the THPO on February 21, 2018 requesting comment through the public notice process. No comments were received

Table 8 – National Historic Places in Mountrail County, North Dakota

Name:	EVANS SITE	GREAT NORTH RAILWAY UNDERPASS	MOUNTRAIL COUNTY COURTHOUSE
National Register Information System ID:	80002922	97000182	78001992
Areas Of Significance:	PREHISTORIC	ENGINEERING TRANSPORTATION	POLITICS/GOVERNMENT ARCHITECTURE
Resource Type:	SITE	STRUCTURE	BUILDING
Asset ID:	c138141c-e8db-44f2-a5d3-e7848f638858	ce7b2ead-6833-4832-bcbf-5f6d2e6db425	d542407a-f1fb-4813-a661-9a6363d38caa

12. MISCELLANEOUS

The effective date of the permit and the permit expiration date will be determined upon issuance of the permit. The intention is to issue the permit for a period not to exceed 5 years.

Paul Garrison, Environmental Engineer
USEPA Region 8, Denver CO
(303) 312-6016

ADDENDUM:

13. PUBLIC NOTICE AND RESPONSE TO COMMENTS

The permit and statement of basis were public noticed in the MHA Times newspaper on February 21, 2018. The comment(s) received and the response(s) are provided below.

Comment:

Fish and wild life service requested that the Biological Evaluation for Piping Plover, Red Knot, Whooping Crane, and Pallid Sturgeon be changed from “No Effect” to “May affect, but not likely to adversely affect”.

Response:

The requested changes were made in the SOB Section 10.1 Biological Evaluation 2018. The comment(s) received and the response(s) are provided below.

Comment:

No Comment was received from the Tribal Historic Preservation Officer during public notice.

Response:

The Statement of Basis Section 11.1 was updated to reflect this.