

**STATEMENT OF BASIS FOR  
RIVERVIEW ESTATES WWTF  
NPDES PERMIT ND-0031143**

July 2017

PERMITTEE: Three Affiliated Tribes Utilities

FACILITY NAME AND ADDRESS: Riverview Estates WWTF  
308 4 Bears Complex  
New Town, North Dakota 58763  
Telephone: 1-701-627-5269

PERMIT NO: ND-0031143

RESPONSIBLE OFFICIAL: Justin Spotted Bear, Public Works Director  
Three Affiliated Tribes Utilities  
Mandan, Hidatsa & Arikara Nation  
308 4 Bears Complex  
New Town, North Dakota 58763

PERMIT TYPE: Minor POTW, Indian Country, First Issued Permit

FACILITY LOCATION: NE1/4 and the NW1/4 of the SE1/4 of  
Section 22, Township 152, Range 92

OUTFALL: Latitude 47.973285° N and longitude  
102.437314° W

**Background Information:**

This Statement of Basis is for the issuance of NPDES Individual Permit ND-0031143 for the discharge from the wastewater treatment facility (WWTF) that treats the sanitary wastes from the Riverview Subdivision. The facility is located at the end of A Street, two miles east of New Town in Mountrail County, North Dakota, in the west half of the NE1/4 and the NW1/4 of the SE1/4 of Section 22, Township 152, Range 92. It is entirely within the boundaries of the Fort Berthold Indian Reservation. The discharge outfall is located at latitude 47.973285° N and longitude 102.437314° W.

Based on the permit application, there is a population of approximately 120 served by the treatment facility. All wastes are conveyed to the WWTF via underground gravity sewer piping.

The WWTF consists of two settling tanks for primary treatment and two package plants connected in parallel that provide secondary treatment. Supplementary information provided with the application outlines the current package plants as AdvanTex AX-Max models of Orenco Systems, Inc. consisting of a pump system that recirculates primary-treated water over manufactured textile media and additional pumps that deliver the secondary-treated water to the disposal point. The average design flow of the system is 10,000 gallons per day (gpd) with a peak flow design of 20,000 gpd. According to the application submitted by the facility, the effluent is discharged with no additional disinfection.

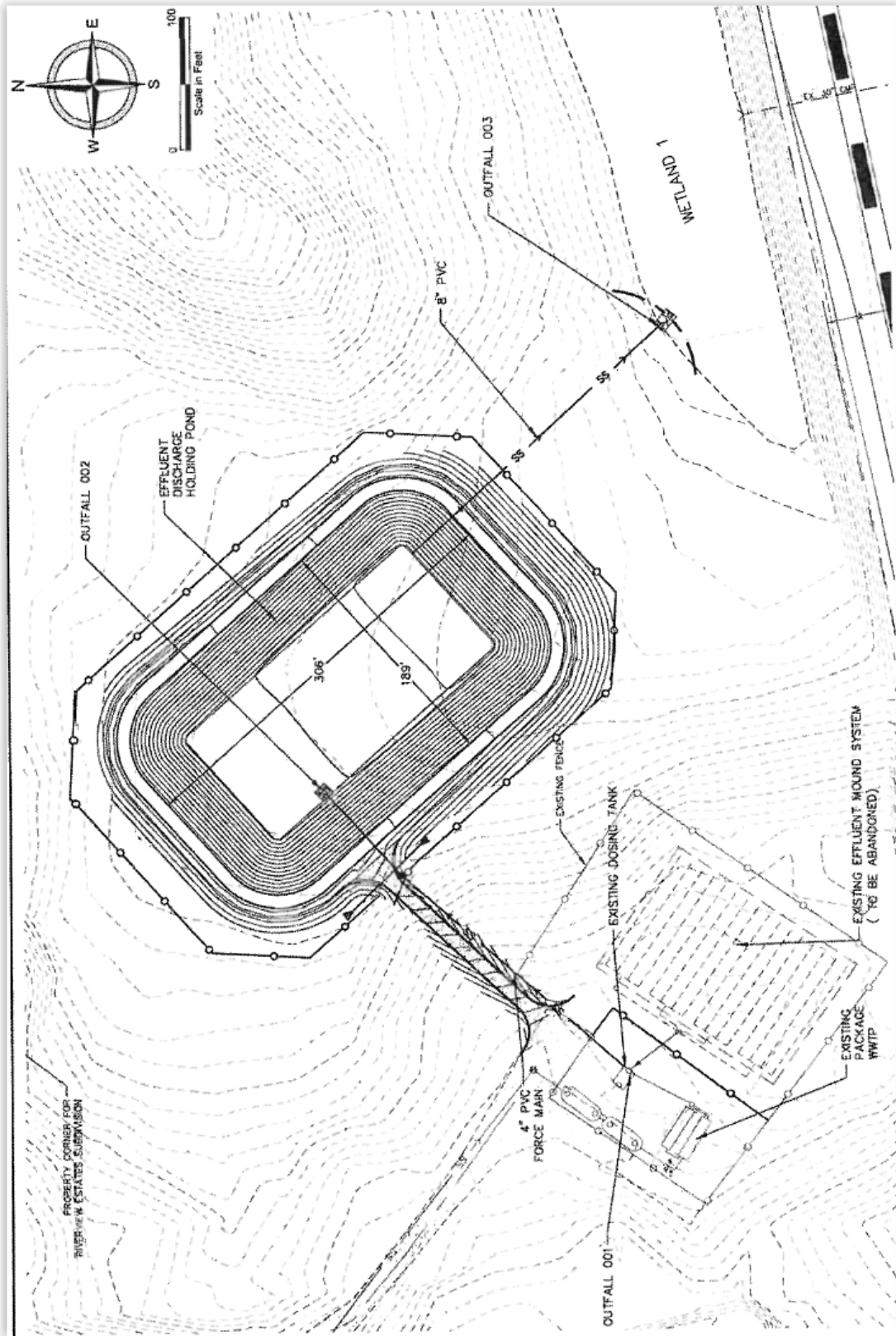
Based on its original design, the treatment system disposed of secondary-treated effluent in a subsurface mound system. During the winter of 2012-2013, seeping water from the mound system led to the discovery of ponding in the filtration rock. A dosing tank to store the effluent exceeding the mound system capacity, for later disposal by a septage hauler, was added in 2015. The WWTF is now proposing to discharge treated effluent to nearby wetlands via a holding pond.

The following exhibits provide the site layout and schematic of the treatment facility and wastewater collection system:

Exhibit 1. Site Layout



Exhibit 2. Plant Schematic



### **Receiving Waters**

An examination of the USGS topographic mapping of the area indicates that the discharge from the WWTF would flow south towards Lake Sakakawea (a reservoir in the Missouri River) if the water does not evaporate or soak into the ground first. The distance from the wetlands to the nearest boundary of Lake Sakakawea is less than 0.5 miles.

### **Effluent Monitoring Data**

No monitoring data are available. The applicant has not begun to discharge to the wetlands.

### **Technology-based Effluent Limitations**

The WWTF is a publicly-owned treatment works owned and operated by Three Affiliated Tribes Utilities of the Mandan, Hidatsa & Arikara Nation. Therefore, effluent limitations for 5-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) are based on the secondary treatment standards as defined in 40 CFR 133.102. The pH requirement in the secondary treatment standards is pH within the range of 6.5 to 9.0 standard units at all times; however, as discussed below, the water quality-based effluent limitations for pH are more restrictive.

The percent removal requirements for BOD<sub>5</sub> and TSS required by 40 CFR 133.102(a)(3) and (b)(3) are not included in this permit because the facility is not a continuous discharger. Compliance with percent removal requirements generally is based on influent and effluent data taken at approximately the same time. The WWTF's holding pond will discharge intermittently and the duration of each discharge is proposed to be less than one week. The hydraulic residence time is typically greater than 30 days. The percent removal requirement is based on a 30-day average, but for this treatment system, influent and effluent samples collected within a given 30-day period are not representative of the same wastewater. It is infeasible to calculate the 30-day average percent removal, based on the operation of the treatment system.

### **Water Quality Considerations and Water Quality-based Effluent Limitations**

The Mandan, Hidatsa, & Arikara Nation (MHA Nation) has not developed and EPA has not approved water quality standards for the Fort Berthold Indian Reservation. The Missouri River, including Lake Sakakawea, is a Class I waterbody outside the Fort Berthold Reservation in the State of North Dakota. In North Dakota's water quality standards, Class I waters have designated uses that include propagation or protection, or both, of resident fish species and other aquatic biota and swimming, boating, and other water recreation. Although North Dakota standards do not apply on the MHA Nation tribal lands, to ensure protection of downstream water quality standards for Lake Sakakawea, which is less than 0.5 miles from the wetlands, the EPA is applying its National Recommended Water Quality Criteria. These criteria are used to assess the need for water quality-based effluent limitations (WQBELs) in this permit. The criteria are published pursuant to Section 304(a) of the Clean Water Act (CWA) and provide guidance for states and tribes to use to establish water quality standards and ultimately provide a basis for controlling discharges or releases of pollutants.

*Pathogens and pH*

There is potential for contact with the effluent as it is conveyed away from the WWTF toward Lake Sakakawea. Furthermore, designated uses for Lake Sakakawea include primary and secondary contact recreation. Because pathogens are present at significant levels in untreated municipal wastewater, the EPA has determined that the WWTF’s discharge could cause, have the reasonable potential to cause, or contribute to an excursion above applicable recreational water quality standards, specifically *Escherichia coli* (*E. coli*). Effluent limits and monitoring for *E. coli* levels are included in the permit. The EPA has published CWA 304(a) numeric human health criteria for bacteria for the protection of primary contact recreational uses. These primary contact values for *E. coli* are a geometric mean of 126 colonies/100 mL over a 30-day period and a statistical threshold value of 410 colonies/100 mL, not to be exceeded by more than 10 percent of samples in a 30-day period. Pathogen limitations are based on these CWA 304(a) criteria. The effluent limit based on the geometric mean is applicable only when a discharge from the WWTF occurs during at least 5 days within a 30-day period.

In addition, to these pathogen limits, the pH limitation in the permit is also based on a 304(a) criterion of 6.5 to 9.0. The pH criterion is more restrictive than the secondary treatment standards at § 133.102(c).

*Other Parameters*

Ambient water quality data for various waters within Mountrail County was examined for comparison to the CWA 304(a) criteria. The data provided were the detailed monitoring results for various parameters sampled at points throughout the county (though not necessarily the same parameters sampled at every point). These data are not directly representative of the water quality in the receiving wetlands or at the point of discharge from the wetlands to Lake Sakakawea (Missouri River). They do, however, provide a general overview of water quality within the county. This overview indicates that the quality of waters in Mountrail County largely attain the EPA’s National Recommended Water Quality Criteria for the parameters monitored.

Below is a summary of the ambient water quality data for nutrients provided for Mountrail County.

<b>Parameter</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Median</b>	<b>Average</b>
Ammonia	Non-Detect	2.07 mg/L	0.1 mg/L	0.13 mg/L
Total Kjeldahl Nitrogen (TKN)	0.08 mg/L	5.49 mg/L	1.49 mg/L	1.79 mg/L
Nitrate	Non-Detect	1.4 mg/L	Non-Detect	0.08 mg/L
Nitrite	Non-Detect	0.029 mg/L	0.011 mg/L	0.004 mg/L
Phosphorous <u>a/</u>	Non-Detect	0.918 mg/L	0.09 mg/L	0.18 mg/L

a/ Phosphate summary: Minimum = Non-Detect, Maximum = 1.71 mg/L; Median = 0.19 mg/L; Average = 0.26 mg/L

Three Affiliated Tribes Utilities has not yet begun to discharge and therefore has not yet collected effluent data for these parameters. Therefore, there is not enough information for a quantitative determination of the effect of the discharge on the receiving water. In addition, due to the expected low discharge volume from the facility and the intermittent nature of the discharge, the discharge is not

expected to have a significant impact on water quality for any of these parameters. However, monitoring requirements for metals and nutrients are included in the permit to characterize the effluent and provide data for future water quality assessments.

**Final Effluent Limitations**

The effluent limitations included in the WWTF’s permit are given below:

Effluent Characteristic	Effluent Limitation		
	30-Day Average <u>a/</u>	7-Day Average <u>a/</u>	Daily Maximum <u>a/</u>
BOD <sub>5</sub> , mg/L <u>b/</u>	30	45	N/A
Total Suspended Solids (TSS), mg/L <u>b/</u>	30	45	N/A
The pH of the discharge shall not be less than 6.5 standard units or greater than 9.0 standard units at any time.			
<i>E. coli</i> , the 5-day geometric mean shall not exceed 126 colonies/100 mL; no more than 10 percent of samples in a 30-day period shall exceed 410 colonies/100 mL. <u>c/</u>			

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

b/ The limits for BOD<sub>5</sub> and total suspended solids are based on secondary treatment standards (40 CFR 133.102).

c/ The limits for *E. coli* will apply between May 1 and September 30 only. The limit of 126 colonies/100 mL based on the geometric mean requires a minimum of 5 samples be obtained during separate 24-hour periods for any 30-day period and apply only if the facility discharges for 5 days during a 30-day period. In addition, no more than 10 percent of the samples examined in this same 30-day period shall exceed 410 colonies/100 mL.

**Self-Monitoring and Reporting Requirements – Outfall 003**

Because of the intermittent nature of the discharge, the minimum effluent monitoring frequency is established as daily monitoring during a discharge event. The pH sample must be analyzed promptly on-site and cannot be sent to the laboratory for analysis.

All effluent monitoring samples except flow values will be taken from the “end of pipe” discharge point into the wetland. Should unsafe conditions arise or if the discharge point becomes inaccessible, monitoring will occur after the last unit process of the treatment facility. All monitored data will be recorded in the daily log notebook. If no discharge occurs on any one day, zero (0) is recorded in a daily log notebook for that day for flow and for all other parameters required to be monitored.

Although the Permit does not include percent removal requirements for BOD<sub>5</sub> and TSS, influent monitoring shall occur prior to entering the initial settling tank for the duration of this permit in order to characterize the incoming wastewater.

If a discharge occurs for five or more days over a 30-day period, the geometric mean of the *E. coli* samples will be compared to the 126 colonies/100 mL limitation. If the geometric mean exceeds the limitation, the Discharger will be considered out of compliance with this *E. coli* limit. In addition, no more than 10 percent of the samples examined in this same 30-day period shall exceed 410 colonies/100 mL.

**Effluent and Influent Monitoring**

Effluent <u>a/</u>	Monitoring Frequency	Sample/Monitoring Type <u>b/</u>
Total Flow, mgd <u>c/</u>	Daily during discharge	Instantaneous
BOD <sub>5</sub> , mg/L	Daily during discharge	Grab
Total Suspended Solids, mg/L	Daily during discharge	Grab
pH, units	Daily during discharge	Grab
<i>Escherichia coli</i> , no./100 mL	Daily during discharge	Grab
Influent Characteristic <u>a/</u>	Monitoring Frequency	Sample/Monitoring Type <u>b/</u>
Influent Flow, mgd	Monthly	Instantaneous
Influent BOD <sub>5</sub> , mg/L	Monthly	Grab
Influent TSS, mg/L	Monthly	Grab

a/ All monitored data shall be recorded in a daily log notebook. If no discharge occurs on any one day, zero (0) shall be recorded in the daily log notebook for that day for flow and for all other parameters required to be monitored. If the required data are not entered into the daily log notebook on a day that a discharge occurs, it will be assumed that the required monitoring was not performed.

b/ See Definitions, Part 1.1, for definition of terms.

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

Three Affiliated Tribes Utilities anticipates discharging for a period of two to three days twice each year, once during the spring and once during the fall. An intermittent discharge such as that from Riverview Estates would generally require semiannual reporting covering the periods of January through June and July through December. However, because the discharge to the wetlands is a new discharge, additional reporting is necessary to gain a better understanding of the frequency and volume of the discharge. To this end, the reporting periods are set to quarterly (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Nov). In the next permit, monitoring and reporting periods will be tailored to the facility based on the nature of its discharge.



In addition to monitoring for parameters limited in the permit, the discharger is required to monitor for the constituents listed below at the frequency specified. This monitoring may be used to determine whether the discharge would cause, have the reasonable potential to cause, or contribute to exceedances above EPA 304(a) criteria for the parameters monitored.

**Additional Self-Monitoring for Effluent Characterization**

Effluent Characteristic	Monitoring Frequency	Sample Type <u>a/</u>
Total Residual Chlorine <u>b/</u>	Daily during discharge	Grab
Ammonia <u>c/</u>	Once per year during discharge	Grab
Total Kjeldahl Nitrogen (TKN)	Once per year during discharge	Grab
Nitrate	Once per year during discharge	Grab
Nitrite	Once per year during discharge	Grab
Phosphorous	Once per year during discharge	Grab
Arsenic	Twice per permit term during discharge <u>d/</u>	Grab
Cadmium	Twice per permit term during discharge <u>d/</u>	Grab
Chromium III	Twice per permit term during discharge <u>d/</u>	Grab
Chromium VI	Twice per permit term during discharge <u>d/</u>	Grab
Copper	Twice per permit term during discharge <u>d/</u>	Grab
Lead	Twice per permit term during discharge <u>d/</u>	Grab
Mercury	Twice per permit term during discharge <u>d/</u>	Grab
Nickel	Twice per permit term during discharge <u>d/</u>	Grab
Selenium	Twice per permit term during discharge <u>d/</u>	Grab
Silver	Twice per permit term during discharge <u>d/</u>	Grab
Zinc	Twice per permit term during discharge <u>d/</u>	Grab
Hardness	Once per year during discharge	Grab

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

b/ Monitoring for total residual chlorine only required if the effluent is chlorinated.

c/ Date, time, temperature and pH of receiving stream to wetland must be taken concurrently

d/ One time in Year 2 of permit term and one time in Year 3 of permit term.

The permittee shall record all required monitoring data at the frequency described within the permit into the daily log notebook and report electronically using *NetDMR*. If the required data are not entered into

the daily log notebook on a day that a discharge occurs, it will be assumed that the required monitoring was not performed.

**Compliance Schedule**

Not Applicable

**Endangered Species Act (ESA) Requirements**

Section 7(a) of the Endangered Species Act requires federal agencies to ensure that any actions authorized, funded, or carried out by an agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species. Federally listed threatened, endangered and candidate species found on the Fort Berthold Indian Reservation, North Dakota include:

SPECIES	SCIENTIFIC NAME	STATUS
<b>Birds</b>		
Least Tern	<i>Sterna antillarum</i>	Endangered
Whooping Crane	<i>Grus americana</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Red Knot	<i>Calidris canutus rufa</i>	Threatened
<b>Fishes</b>		
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered
<b>Mammals</b>		
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened
Gray Wolf	<i>Canis lupus</i>	Threatened
<b>Insects</b>		
Dakota Skipper	<i>Hesperia dacotae</i>	Threatened

The EPA finds that this permit is Not Likely to Adversely Affect any of the species listed by the U.S. Fish and Wildlife Service under the Endangered Species Act. This facility discharges into unnamed wetland tributary to Lake Sakakawea. The permit limitations are protective of water quality and flows are expected to be intermittent and small (approximately 0.6 mgd over 2 to 3 days, 2 times per year).

**National Historic Preservation Act (NHPA) Requirements**

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The EPA has evaluated its planned issuance of the NPDES permit for the Riverview Estates Wastewater Treatment Facility to assess this action's potential effects on any listed or eligible historic properties or cultural resources.

The EPA has reviewed the National Register of Historic Places and finding no listed sites, does not anticipate any impacts on listed/eligible historic properties or cultural resources due to the issuance of this permit or discharge. The North Dakota Tribal Historic Preservation Office (THPO) will also be notified/consulted prior to the finalization of this permitting action.

### **Discharge Monitoring Reports**

Starting January 1, 2017, Permittees must electronically report DMRs using *NetDMR*. If you have any DMR questions or concerns regarding *NetDMR*, please contact EPA's Policy, Information Management & Environmental Justice Program, DMR Coordinator at (303) 312-6056. See Section 2.4 of the permit, Reporting of Monitoring Results, for additional information.

### **Miscellaneous**

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