

Statement of Basis

Permittee: City of Vergas

Facility: Vergas Wastewater Treatment Facility, 411 Old Detroit Rd, Vergas, Minnesota 56587, Otter Tail County

Permit Number: MN0025097

Date: September 27, 2021

Purpose

This document serves as a resource that describes and explains the rationale for the permit requirements. A statement of basis is prepared for a draft National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) permit when a fact sheet is not required. [40 CFR §124.7]

Description of permitted facility

The Vergas Wastewater Treatment Facility (Facility) is located at 411 Old Detroit Rd, Vergas, Minnesota 56587, Otter Tail County.

The Facility has a controlled discharge (SD001) to an unnamed wetland (Class 2D, 3D, 4C, 5, 6 water) and also has rapid infiltration basins. The Facility is a Class D facility.

The Facility is designed to treat:

- An average wet weather (AWW) flow of 0.046 million gallons per day (MGD)
- 5-day carbonaceous biochemical oxygen demand (CBOD5) of 150 mg/l

Major components of the Facility include:

- Effluent Disposal - three rapid infiltration basins
- Primary treatment - primary stabilization pond
- Secondary Stabilization Pond

The application indicates that the existing treatment system consists of a two cell stabilization pond system and three rapid infiltration basins (RIBs). The primary pond is 2.48 acres while the secondary pond is 1.74 acres. The pond system provides a total detention time of 120 days. There are three RIBs with two of the basins being 0.96 acres each and one basin being 0.99 acres. This permit allows up to 12.20 million gallons per year to be applied to the RIBs. There are six piezometers around the RIBs that are used to assist with loading to the RIBs. Approximately 4.60 million gallons can be discharged through a controlled discharge from SD001 to an unnamed wetland (Class 2D, 3D, 4C, 5, 6 water) within the spring and fall discharge windows. There is a draitile discharge that discharges to an unnamed wetland at groundwater station GW007.

The Facility is further described in plans and specifications on file with the MPCA and Larsen-Peterson and Associates, Inc. in Detroit Lakes, Minnesota.

General information

The permit is based on a NPDES/SDS permit application dated January 14, 2021 and additional documents found in the Administrative record.

The primary reason for reissuing the permit is due to permit expiration. The Permittee is not proposing changes at this time.

Special conditions

- Discharge events from SD 001 shall not exceed 2.4 million gallons to the 8.37 acre wetland complex (see “Surface Discharge Station General Requirements” section of the permit).
- Discharge to the rapid infiltration basins may take place between April and November (see the Limits and Monitoring section of the permit).
- Drantile requirements for the discharge from GW007 to the 1.1-acre wetland are found in the “Groundwater Station General Requirements” section of the permit.

Waste stream stations

Limits and monitoring requirements for waste streams are assigned in order to ascertain their impact on wastewater treatment processes, contributions to other treatment facilities, and/or land treatment/discharge sites. Requirements are based on Minnesota Pollution Control Agency (MPCA) sampling policies and/or state health requirements.

This permit contains two waste streams, which have all been assigned a waste stream station for monitoring and reporting purposes. The influent wastewater will be monitored as WS 001. WS 002 monitors the effluent to the rapid infiltration basins during discharge. The proposed limit and monitoring requirements for the waste stream stations are found in the limits and monitoring table in the accompanying draft permit document.

Groundwater stations

There are four groundwater stations in this permit for monitoring and reporting purposes. Limit and monitoring requirements for groundwater are assigned in order to ascertain their impact on land treatment/discharge sites and downgradient groundwater quality. Requirements are based on MPCA sampling policies and/or state health requirements.

Groundwater monitoring and limits have been included with this permit. Limits for parameters of concern are set at the Health Risk Limit established for drinking water. Standard well sampling and monitoring shall be performed using the *1997 Sampling Procedures for Groundwater Monitoring Wells* located on the MPCA’s website at <https://www.pca.state.mn.us/sites/default/files/wq-gw1-01.pdf>.

The proposed limits and monitoring requirements for the groundwater stations are found in the limits and monitoring table in the accompanying draft permit document.

Surface water discharge stations

Limits and monitoring requirements for surface water discharges are set in consideration of Minnesota state water discharge criteria also known as State Discharge Restrictions (SDRs). SDRs are based on Minn. R. Ch. 7053, Minnesota state water quality-based effluent limits (WQBEL) for the receiving water use classification, federal technology-based effluent limits applicable to specific discharge types, or a combination of these limits to regulate the discharge of wastewater. When limits overlap for a particular pollutant, the most restrictive limit is applied in the permit. In addition, MPCA may derive limits that are specific to a particular discharge. These limits may be based on toxicity studies, professional judgment analysis, technology-based standards, and in some instances standards developed by other U.S. states or regulatory agencies.

The receiving water lowest average seven-day flow with a once in ten-year recurrence interval (7Q₁₀) low flow at outfall SD 001 is zero cubic feet per second (cfs), thus no dilution factors were used in determining the discharge limits in relation to the immediate receiving waters.

Technology Based Effluent Limits (TBELs)

Limits are applied pursuant to Minn. R. 7053.0215, subp. 1 for CBOD₅, CBOD₅ percent removal, total suspended solids (TSS), TSS percent removal, and potential of hydrogen (pH).

Table 1: TBELs

Pollutant	Calendar month average	Calendar week maximum	Calendar month max/ Calendar month min
pH			9.0 SU 6.0 SU
TSS	45 mg/L	65 mg/L	
CBOD ₅	25 mg/L	40 mg/L	

Water Quality Based Effluent Limits (WQBELs)

Minn. R. 7053.0205, subp. 8 authorizes the MPCA to develop WQBELs for point source discharges to waters of the state of Minnesota to protect receiving waters for the applicable use classifications.

The quality of Class 2Bd surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water aquatic biota and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface waters is also protected as a source of drinking water (Minn. R. 7050.0222, subp. 3).

The quality of Class 2B surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water aquatic biota, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface water is not protected as a source of drinking water (Minn. R. 7050.0222, subp. 4).

The quality of Class 2D wetlands shall be such as to permit the propagation and maintenance of a healthy community of aquatic and terrestrial species indigenous to wetlands, and their habitats. Wetlands also add to the biological diversity of the landscape. These waters shall be suitable for boating and other forms of aquatic recreation for which the wetland may be usable. The standards for class 2B waters listed under subpart 4 shall apply to these waters except as listed in Minn. R. 7050.0222, subp.6.

The beneficial use subclass designators "e," "g," and "m" are added to the Class 2 designator as specific additional designators. The additional subclass designators do not replace the Class 2 designator. All requirements for Class 2 stream and river habitats in Minn. R. 7050.0222 and 7052.0100 continue to apply in addition to requirements for Class 2Bg or Class 2Bdg stream and river habitats in Minn. R. 7050.0222. These subclass designators are applied to lotic waters only.

State Discharge Restrictions (SDRs)

SDRs are not considered WQBELs. The MPCA requires secondary treatment or the equivalent as a minimum to protect water quality and maintain in-stream water quality standards (WQS)¹. Therefore, the restrictions are generally stringent enough to protect WQS, except where there is inadequate dispersion, or dilution at applicable minimum stream flows.

The 200 organisms per 100 milliliters (orgs/100mL) calendar month geometric mean limit for fecal coliform is based on Minn. R. 7053.0215, subp. 1.

¹ Minnesota Regulation WPC 15, Criteria for the Classification of the Interstate Waters of the State and the Establishment of Standard of Quality and Purity. Minnesota Pollution Control Agency, April 8, 1969.

Table 3: SDRs

Pollutant	Calendar month average	Calendar month geometric mean
Fecal Coliform, MPN or Membrane Filter 44.5 C		200 orgs/100ml ¹

¹ Limit applies April-October

Explanation of total phosphorus limit review

Total phosphorus:

Federal law [40 CFR §122.44(d)] restricts mass increases of pollutants upstream of an impaired water and requires WQBEL(s) to be established for pollutant parameters where it is found that a NPDES/SDS discharger has the reasonable potential (RP) to cause or contribute to an excursion above a state WQS. An effluent limits analysis was completed to determine if the facility's discharge has RP to cause or contribute to an exceedance of a state WQS or contribute to any downstream impairment. As a result of the analysis, it was determined that discharge from the facility does not have RP; and therefore, a WQBEL for total phosphorus is not required at this time.

River Eutrophication Standards (RES)

The Otter Tail River Watershed analysis demonstrated that the Facility does not have reasonable potential (RP) to cause or contribute to a river eutrophication impairment in the Otter Tail River Watershed, under permitted effluent conditions. As such, no limit in the permit is needed to protect the immediate receiving waters based on current performance levels and permitted flow.

Pollutants of concern

Nitrogen

Nitrogen is a pollutant that can negatively impact the quality of Minnesota's water resources, including water used for drinking. Studies have shown that nitrogen in lakes and streams has a toxic effect on aquatic life such as fish. Like phosphorus, nitrogen is a nutrient that promotes algae and aquatic plant growth, often resulting in decreased water clarity and oxygen levels. The Statewide Nutrient Reduction Strategy (<http://www.pca.state.mn.us/zihy1146>) identifies goals and milestones for nitrogen reductions for both point and non-point nitrogen sources in Minnesota. To gain a better understanding of the current nitrogen concentrations and loadings received by and discharged from the facility, effluent nitrogen monitoring is required in accordance with Minn. Stat. ch. 115.03.

The permit includes influent monitoring for total nitrogen, total nitrite plus nitrate-nitrogen, and total Kjeldahl nitrogen at a frequency of once per month in the months of March and September. The permit includes effluent monitoring for ammonia nitrogen, nitrite plus nitrate-nitrogen, total Kjeldahl nitrogen, and total nitrogen at a frequency of once per half year for station SD 001 during the months of January through December. WS 002 monitors total nitrite plus nitrate, and total Kjeldahl nitrogen once per month during the months of April through November.

This nitrogen monitoring will provide the data necessary to develop a better understanding of the total nitrogen concentrations and loadings that are discharged. Once a more extensive total nitrogen data set is established, nitrogen reduction work can begin to achieve the necessary reductions to meet the goal of a 20% reduction in total nitrogen loads from point source dischargers by 2025. The changes and/or increases in total nitrogen monitoring in wastewater permits as a result of the *Statewide Nutrient Reduction Strategy* is outlined in the *Minnesota NPDES Wastewater Permit Nitrogen Monitoring Implementation Plan* document located on the

MPCA wastewater permits webpage at: <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/wastewater/wastewater-permits/index.html>.

Dissolved Oxygen (DO)

The permittee monitors DO at SD001 twice per week during the months of January through December.

Phosphorus

Phosphorus is a common constituent in many wastewater discharges and a pollutant that has the potential to negatively impact the quality of Minnesota's lakes, wetlands, rivers, and streams. Phosphorus promotes algae and aquatic plant growth, often resulting in decreased water clarity and oxygen levels. In addition to creating general aesthetic problems, these conditions can also impact a water body's ability to support healthy fish and other aquatic species. Therefore, phosphorus discharges are being carefully evaluated throughout the state.

The Permittee is required to prepare a Streamlined Phosphorus Management Plan (PMP) and submit it to the MPCA *within 180 days of permit issuance*. While the PMP does not require specific reductions at this time, the MPCA strongly encourages the Permittee to identify and eliminate/reduce sources of phosphorus to, and improve phosphorus management within, the facility. However, the Permittee should be aware that new or expanding discharges may be required to actively manage and reduce phosphorus, including complying with new or more restrictive phosphorus effluent limits. Please review these permit requirements carefully.

Guidance for considering phosphorus in the wastewater treatment system and preparing a PMP can be found on the MPCA's website at <https://www.pca.state.mn.us/water/phosphorus-management-plans> or the University of Minnesota's website at <http://www.mntap.umn.edu/greenbusiness/water/phosphorus.htm>. For additional information about completing the PMP, please contact the MPCA at 651-282-6143 or 800-657-3864.

Total Suspended Solids (TSS)

Suspended solids may include both organic and inorganic matter. The inorganic compounds may include sand, silt, clay and precipitated metals. The organic fraction may include such materials as wood fibers and unsettled biomass from biological treatment systems.

These solids may settle out rapidly and bottom deposits are often a mixture of both organic and inorganic solids. Solids may be suspended in water for a time and then settle to the bed of the stream or lake. They may be inert, slowly biodegradable materials, or rapidly decomposable substances. While in suspension they increase the turbidity of the water, reduce light penetration, and impair the photosynthetic activity of aquatic plants. Suspended solids may kill fish and shellfish by causing abrasive injuries, by clogging gills and respiratory passages, by screening out light and by promoting and maintaining the development of noxious conditions through oxygen depletion. Suspended solids also reduce the recreational value of water.

Impairments

The following table lists the current impairments for the immediate receiving water.

AUID or Lake ID#	Waterbody	Pollutants or impairment
09020103-532	Otter Tail River	<i>Dissolved Oxygen, Mercury in Fish Tissue, Turbidity, Fishes Bioassessments, Arsenic</i>
	Red River of the North	<i>Mercury in Fish Tissue, Mercury in Water Column, Arsenic, E. coli, Fecal Coliform, Turbidity, Dissolved Oxygen</i>

Total Maximum Daily Load (TMDL) Study

To address water quality impairments, a TMDL study of the Otter Tail River Watershed (Watershed) may be conducted. The study will determine the capacity to assimilate pollutant loads as the basis for recommendations of wasteload allocations (WLAs) for point sources and load allocations for nonpoint sources in the Watershed. An appropriate balance of point and nonpoint source controls that attain water quality objectives will be selected with full stakeholder involvement. Based on the results of the TMDL study, the permit may be reopened and effluent limitations for this facility may be re-examined. This permit will be modified or reissued as needed to incorporate effluent loading recommendations from the TMDL study.

The Red River of the North has been identified as impaired, and is currently on the EPA-approved MPCA 303d Impaired Waters List, for *Escherichia coli*. The Facility monitors fecal coliform as a state discharge restriction (SDR) of 200 organisms per 100 milliliters.

Pond system

The acceptable discharge periods for discharges from this Facility are listed in the “Pond System” section of the permit. A copy of the *Stabilization Pond Discharge Guidance* can be found on the MPCA’s website at: <http://www.pca.state.mn.us/publications/wq-wwtp7-06.doc>.

Total facility requirements

Certified laboratory

Effective January 1, 2013, all Minnesota municipal, county, or industrial laboratories that analyze wastewater per Clean Water Act requirements must be certified by the MPCA or the Minnesota Department of Health. Information regarding MPCA laboratory certification is located on the MPCA’s website at <http://www.pca.state.mn.us/4p44whk>. If there are any questions concerning MPCA laboratory certification, please contact the MPCA at 1-800-657-3864 or by email at qa.questions.mPCA@state.mn.us. Commercial laboratories doing these analyses must maintain Minnesota Department of Health certification.

Electronic Discharge Monitoring Reports (eDMRs)

The eDMRs, Sample Values/Operational Spreadsheets, and related attachments shall be electronically submitted via the MPCA e-Services (https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initiate=true). Paper copies of DMRs will no longer be accepted. The eDMR and Sample Value/Operational Spreadsheets are generated directly from the limits and monitoring requirements in the reissued permit for the facility. They are generated by the Pollution Control Data Specialist assigned to manage the data for the facility and will be available online within 30 days of the permit action, please make sure to download the most recent version of the eDMR and Sample Value/Operational Spreadsheet prior to submitting the next monthly eDMRs.

Antidegradation and anti-backsliding

Antidegradation: Changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility are subject to antidegradation requirements found in Minn. R. 7050.0250 to 7050.0335. The permit does not propose to allow a new or increased discharge and does not trigger antidegradation.

Anti-backsliding: Any point source discharger of sewage, industrial, or other wastes for which a NPDES Permit has been issued by the MPCA that contains effluent limits more protective than those that would be established by Minn. R. 7053.0215 to 7053.0265 shall continue to meet the effluent limits established by the permit, unless

the permittee establishes that less protective effluent limits are allowable pursuant to federal law, under section 402(o) of the Clean Water Act, United States Code, title 33, section 1342. The permit complies with Minn. R. 7053.0275 regarding anti-backsliding.

Term of permit

The effective date of the permit and the permit expiration date will be determined at the time of issuance.

The Agency has made a preliminary determination to reissue this NPDES/SDS permit for a term of approximately five years.