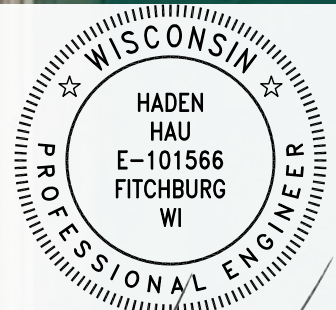


Kingston WWTP Facility Plan

Village of Kingston

Green Lake County, WI

KINGV25002| September 1, 2026



Haden HAU



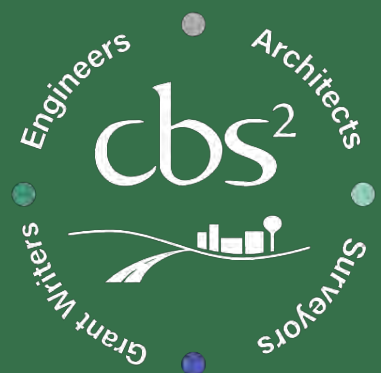
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Executive Summary

The Village of Kingston, WI (Village), operates a Wastewater Treatment Plant (WWTP) that serves approximately 120 sewer connections consisting primarily of residential customers. The current average daily flow at the WWTP is 0.018 million gallons per day (MGD). The current WWTP consists of a centralized septic tank pretreatment system, a two-cell aerated lagoon treatment system with a settling zone, and a surface water discharge to the Grand River. The original wastewater treatment system was constructed in the early 1980s as a septic tank and subsurface absorption facility; however, the subsurface absorption beds experienced hydraulic failure due to biological clogging and restrictive soil conditions, resulting in conversion to the existing lagoon treatment system and discharge to the Grand River in 1987.

While projected wastewater flows are expected to remain relatively stable over the 20-year planning period, the facility is experiencing ongoing challenges meeting its Wisconsin Pollutant Discharge Elimination System (WPDES) permit requirements. Repeated permit violations for 5-day biochemical oxygen demand (BOD₅), ammonia, total suspended solids (TSS), and phosphorus discharge limits, combined with operational deficiencies identified during the 2025 EPA Compliance Evaluation Inspection, have increased the risk of regulatory enforcement actions. In addition, aging infrastructure components will require evaluation and potential improvements to ensure long-term permit compliance, operational reliability, and effective wastewater treatment service.

Alternatives:

For evaluating the requirements and costs associated with upgrading the WWTP, a 20-year design period is used to examine alternatives. Several alternatives were evaluated to determine the best option for the Village's WWTP upgrades. One alternative for WWTP would be to take no action, but this scenario is not feasible because it does not address future phosphorus discharge limits established in the village's WPDES permit and would not resolve operational and compliance issues identified in the EPA Compliance Evaluation Inspection.

Other alternatives include:

- Regionalization
- Upgrade existing facility with absorption ponds
- Upgrade existing facility with subsurface absorption

The capital and present value costs calculated for the alternatives, anticipated social and environmental impacts, and discussions with Village leadership were used to evaluate the alternatives.

Recommended WWTP Alternative:

It is recommended that the Village pursue **Alternative 3: Upgrade Existing Facility with Absorption Ponds**. This alternative would retain and improve the existing treatment facilities while implementing the upgrades necessary to achieve long-term compliance with current and anticipated WPDES permit requirements. Improvements would include bypassing the existing septic tank system, rehabilitation of the existing lagoon aeration system, modifications to the existing control structure and effluent lift station, and construction of new absorption ponds. The new absorption ponds would incorporate cycling between multiple absorption beds to provide load and rest periods, helping preserve the infiltration capacity and treatment functions of the native soils. The estimated capital cost of this alternative is \$2,170,000.

Funding:

Potential funding options for the long-term improvements include working with the WDNR Clean Water Fund Loan Program (CWFLP). The CWFLP provides funding for communities in the form of principal forgiveness and reduced market rate loans. Applications for funding will be completed in Fall 2026.

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Appendix G: Wastewater Treatment Plant Alternatives Cost Estimates
Appendix H: NHI Endangered Resources Review
Appendix I: Proposed Site Plan

1 INTRODUCTION

1.1 PLANNING OBJECTIVES

The Village of Kingston (Village) is evaluating potential changes to their existing wastewater treatment plant (WWTP) to ensure effective wastewater treatment and to maintain compliance with their effluent permit. The intent of this Facility Plan is to develop and evaluate viable alternatives of improved treatment to meet current and future flows and loadings and pollutant effluent concentration limits as set by the Wisconsin Department of Natural Resources (WDNR) for the Village.

The existing WWTP has been evaluated to address alternatives to improve treatment effectiveness and efficiency. Using recent (2021-2026) flow and loading data, predicted population changes within the service area, and existing equipment conditions, future design parameters were established to develop cost-effective alternatives that meet the Village's needs and WDNR effluent limits. The following alternatives have been evaluated for the WWTP:

- Take no action
- Regionalization
- Upgrade existing facility with absorption ponds
- Upgrade existing facility with subsurface absorption

1.2 PLANNING BACKGROUND

The current effluent limits, future effluent limits, and the compliance schedule for the Village's WWTP can be found in the Facility's Wisconsin Pollutant Discharge Elimination System (WPDES) Permit which is included in **Appendix A**. The WWTP's WPDES Permit went into effect on October 01, 2017, expired on September 30, 2022, and is currently being administratively extended pending reissuance by the WDNR.

The constituents that will have their effluent limits or monitoring impacted include:

- 5-Day Biochemical Oxygen Demand (BOD₅)
- Total Suspended Solids (TSS)
- Ammonia Nitrogen
- Total Phosphorus
- pH
- Dissolved Oxygen
- Whole Effluent Toxicity (WET) Monitoring

Several studies and evaluations have been completed by the Village and regulatory agencies to assess the performance and compliance status of the WWTP. These reports include:

- 1986 Report of Findings for the Kingston Wastewater Treatment Facility
- 2025 EPA Compliance Evaluation Inspection (CEI)

The 1986 Report of findings was completed to evaluate the failure of the Village's original septic tank and subsurface absorption system. The report concluded that biological clogging, restrictive soil conditions and inadequate infiltration capacity contributed to seepage bed failure and recommended an evaluation of alternative wastewater treatment and disposal methods. More details can be found in **Appendix B**.



In May 2025, the U.S. Environmental Protection Agency (EPA) completed a CEI of the Kingston WWTP. The inspection identified concerns related to seasonal BOD₅ and ammonia exceedances, phosphorus compliance, sampling and record keeping procedures, Capacity, Management, Operations, and Maintenance (CMOM) documentation, lagoon maintenance, and operator certification. More details can be found in **Appendix C**.

The existing WWTP has experienced ongoing difficulty meeting the requirements of its WPDES permit. EPA inspections and historical compliance records have documented exceedances of BOD₅, TSS, ammonia, and phosphorus discharge limits, as well as deficiencies in sampling and recordkeeping practices, excessive lagoon detention times, and lagoon maintenance concerns such as algae and duckweed accumulation. In addition, the facility's WPDES permit includes ultra-low total phosphorus limits that are unlikely to be consistently achieved with the existing treatment infrastructure. Accordingly, the alternatives analysis evaluated treatment performance, historical flow and loading conditions, site constraints, and anticipated regulatory requirements to identify a long-term wastewater treatment and effluent disposal solution capable of achieving and maintaining compliance throughout the 20-year planning period.

2 PROJECT PLANNING AREA

2.1 LOCATION AND MAPS

The Village of Kingston, located in Green Lake County, Wisconsin, is approximately 22 miles northeast of Portage, WI. The Village operates a WWTP that is located off South Street on the southern edge of the Village. The facility consists of three septic tanks north of the facility, which then pump wastewater into two aerated lagoon treatment cells with one completely aerated, and the second cell as a half aerated zone and half quiescent settling zone and associated pumping infrastructure. The WWTP discharges treated effluent to the Grand River north of the Village. The Grand River is located within the Upper Fox River Basin and has been identified as an impaired waterbody for nutrient related impacts.

The location of the existing Kingston WWTP is shown in the project site plans in **Appendix D**.

3 BACKGROUND INFORMATION AND EXISTING CONDITIONS

3.1 PROJECT HISTORY

The Village operates a WWTP that serves a population of 432 residents and local businesses. The original WWTP was constructed in the early 1980s as a septic tank and subsurface soil absorption system consisting of three subsurface absorption fields. However, following seepage field failures identified in the mid-1980s, the facility was converted to the existing lagoon treatment process in the late 1980's. More recently, the Village added chlorine disinfection to meet pathogen reduction requirements under its WPDES permit, although it is no longer in use. Additionally, the Village added chemical phosphorus treatment using ferric acid in the early 2020's. The facility currently discharges to the Grand River at an outfall location north of the WWTP.



3.2 EXISTING FACILITIES

The WWTP receives and treats municipal wastewater from the Village's sanitary sewer collection system. The facility has an average annual flow of 0.018 million gallons per day (MGD). The treatment process consists of three septic tanks, two aerated lagoon cells, chemical phosphorus removal, pH adjustment using sulfuric acid, and effluent discharge to the Grand River through an effluent lift station. The first lagoon has aeration diffusers throughout the pond bottom, while the second lagoon has aeration in the first half, and a quiescent settling zone in the second half. Lagoon sludge was last removed in 2018.

3.2.1.1 CONDITIONS

Recent EPA inspections identified concerns related to BOD₅ exceedances, seasonal ammonia exceedances, total phosphorus effluent concentrations, lagoon maintenance, operator certification, and sampling and recordkeeping procedures. The facility currently operates below its hydraulic capacity; however, compliance limitations related to BOD₅, ammonia, and total phosphorus treatment indicate that process performance, rather than flow capacity, is the primary concern.

3.2.1.2 FLOW AND LOADING

The Village's WWTP is the only facility treating wastewater collected from the municipal sanitary sewer system. The plant has a total design capacity of 0.02 MGD, with an average influent flow of 0.018 MGD (between 2021-2026), with the plant averaging a flow of approximately 90% of design capacity. While current flows utilize a substantial portion of the facility's design capacity, projected flows are expected to remain stable or decline, and hydraulic capacity is not anticipated to limit future operations. **Table 1** provides a summary of the influent flow and loadings to the WWTP. A further breakdown of flow and loading data is included in **Appendix E**.

Table 1: Current Flow and Loading Data for Kingston WWTP

Constituent	Average	Max Month	Max Day		Average	Max Month	Max Day
	Loading				Peaking Factor		
Flow (MGD)	0.018	0.034	0.280		1	1.91	15.5
BOD ₅ (lb/d)	17	40	123		1	2.31	7.13
TSS (lb/d)	4	11	120		1	2.97	33.8
-	Concentration				Peaking Factor		
BOD ₅ (mg/L)	115	187	219		1	1.64	1.91
TSS (mg/L)	24	67	120		1	2.83	5.06

3.2.1.3 PERMIT LIMITS

The Village's current WPDES permit WI-0036421-05-0 was modified on October 01, 2017, and expired on September 30, 2022. The permit is currently being administratively extended pending reissuance by the WDNR. A copy of the WPDES permit is included in **Appendix A**. The WWTP effluent is monitored for BOD₅, TSS, pH, ammonia nitrogen, total phosphorus, chloride, fecal coliform, and WET. Additionally, the facility monitors influent and effluent in accordance with permit requirements and reporting obligations. Future total phosphorus limits of 0.225 mg/L as a monthly average, and 0.075 mg/L and 0.013 lb/d as 6-month averages that are established in the permit are the primary regulatory driver for the improvements evaluated in this Facility Plan, in addition to the effluent compliance issues regarding BOD₅ and ammonia.



3.2.1.4 TREATMENT PLANT EFFLUENT AND PERFORMANCE

The facility has experienced periodic permit exceedances for BOD₅, ammonia nitrogen, and total phosphorus in recent years, resulting in increased regulatory attention and evaluation of future treatment requirements. Effluent concentrations for constituents historically monitored by the facility are summarized in **Table 2**.

Table 2: Effluent Data 2021 - 2026

Constituent	Average	Max Month	Max Day
	Loading		
BOD ₅ (lb/d)	2.83	11.2	13.06
TSS (lb/d)	1.60	7.45	21.62
Ammonia (lb/d)	2.20	2.87	23.29
Phosphorus (lb/d)	0.52	1.80	3.55
-	Concentration		
	Average	Max Month	Max Day
BOD ₅ (mg/L)	22.5	91.8	106
TSS (mg/L)	12.3	60.5	162
Ammonia (mg/L)	16.7	55.2	57.1
Phosphorus (mg/L)	3.77	8.43	9.23

To further illustrate the facility's permit compliance history, **Figure 1** through **Figure 3** present effluent concentrations for BOD₅, ammonia nitrogen, and total phosphorus alongside their respective WDNR permit limits. These figures highlight periods when effluent concentrations exceeded permitted levels.

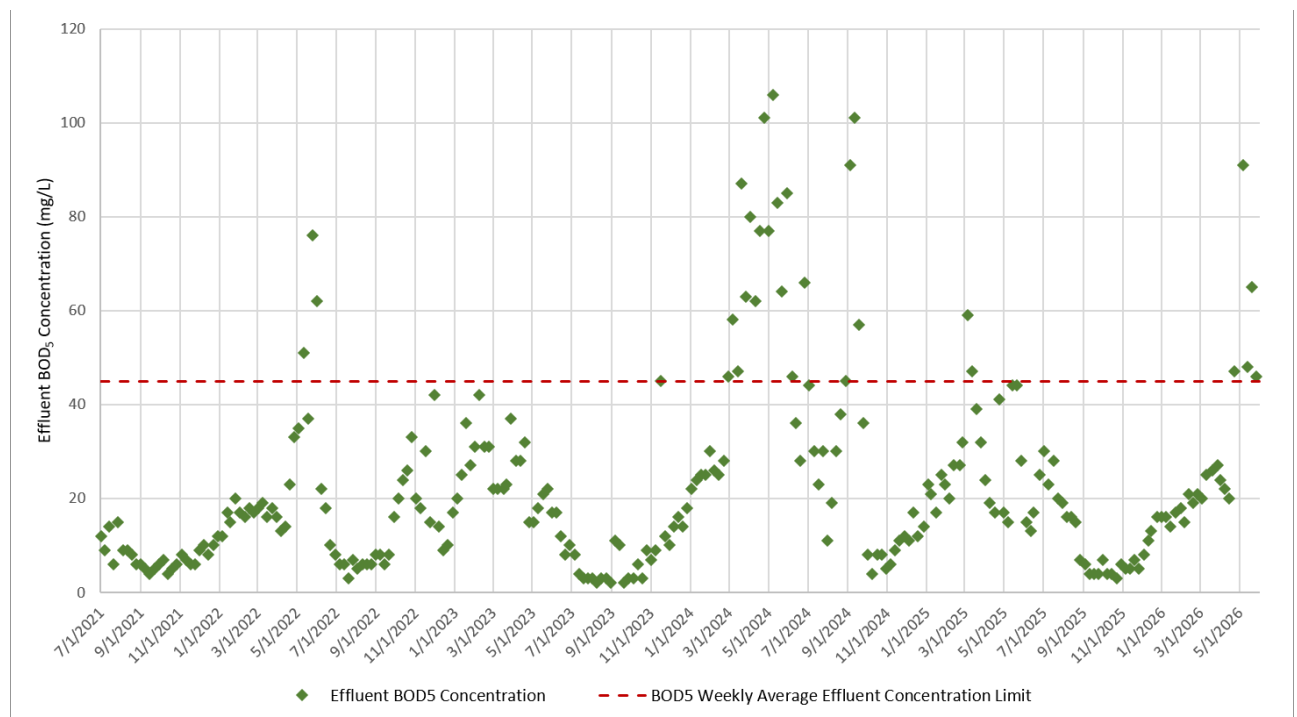


Figure 1: Effluent BOD₅ Concentrations Compared to the WPDES Weekly Average Effluent Limit (2021 – 2026)



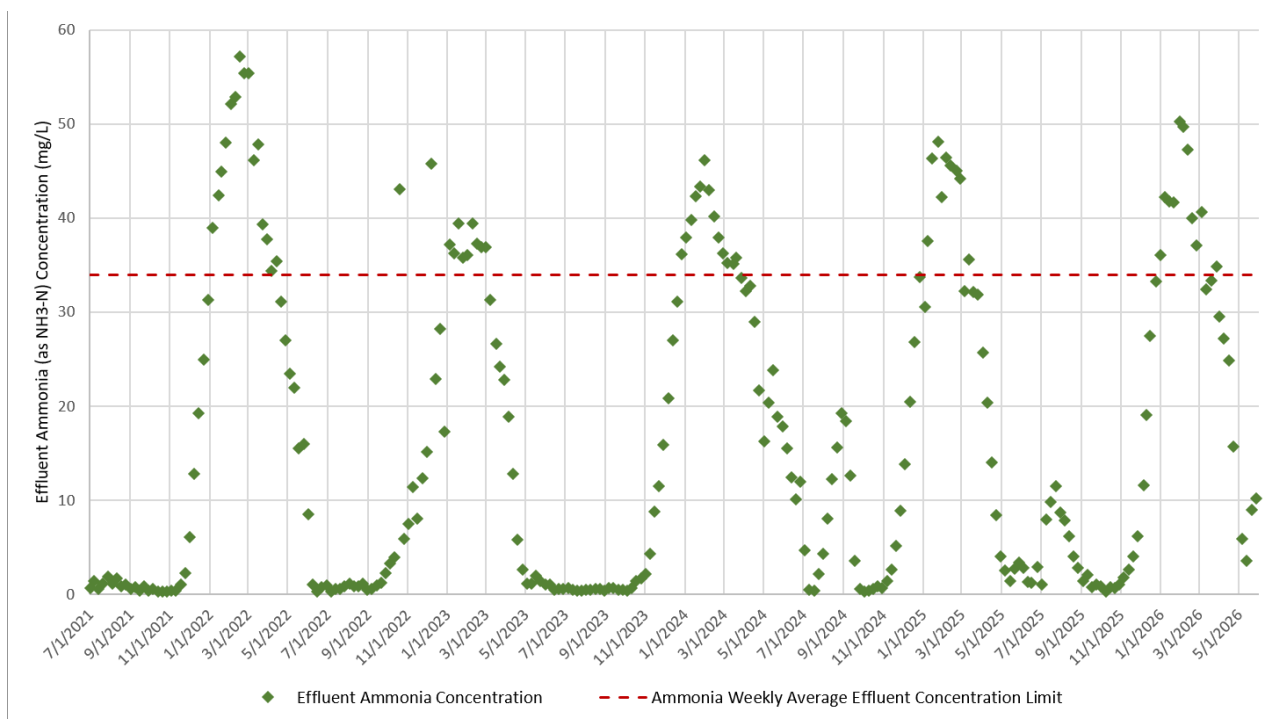


Figure 2: Effluent Ammonia Concentration Compared to the WPDES Weekly Average Effluent Limit (2021 – 2026)

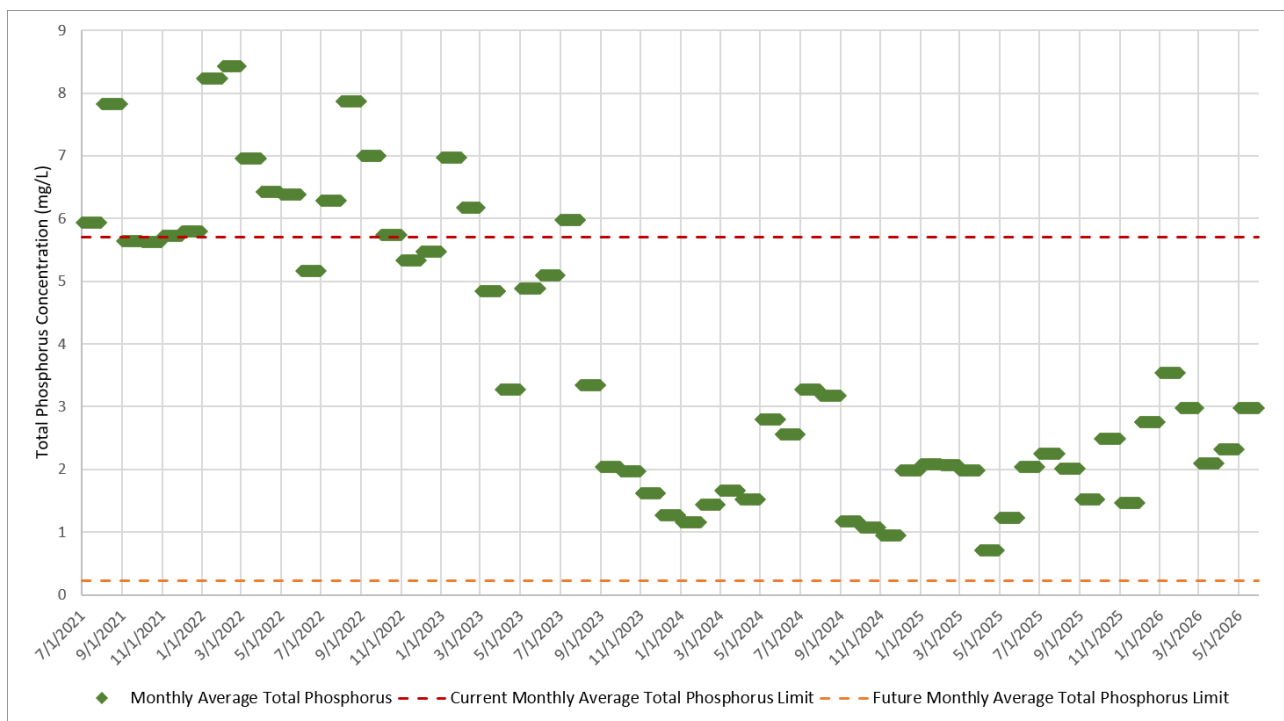


Figure 3: Monthly Average Effluent Total Phosphorus Concentrations Compared to Current and Future WPDES Permit Limits (2021 – 2026)



3.2.1.5 OPERATION AND MAINTENANCE

The operation and maintenance (O&M) of the WWTP includes routine inspection of the septic tanks, lift station, lagoons, and associated treatment equipment. The O&M activities include monitoring treatment performance, collecting permit-required samples, maintaining lagoon vegetation and duckweed growth, and performing preventive maintenance as needed. The septic tanks are pumped out approximately every 5 years by a local septage hauler. It is recommended that the Village maintain and regularly update their CMOM program to ensure system information, maintained records, equipment inventories, and emergency response procedures remain current. Regular updates to the CMOM program will help document O&M activities and support continued compliance with regulatory requirements.

3.2.2 SANITARY SEWER

3.2.2.1 SUMMARY OF COLLECTION SYSTEM

The Village's wastewater collection system conveys flow from approximately 120 sewer connections to the WWTP for treatment. The collection system consists of gravity sewers, lift stations, force mains, and grinder pump installations located throughout the Village. Wastewater collected in the service area is conveyed to the septic tanks for pretreatment before it is pumped to the lagoon treatment facilities located south of the Village. The collection system primarily serves residential customers with a limited number of commercial users. The Village maintains and operates the collection system to provide reliable conveyance of wastewater to the WWTP and conducts maintenance activities as needed to support continued system performance.

3.2.2.2 INFLOW AND INFILTRATION

The capture of rainwater and groundwater through direct connections (inflow) or piping cracks and leaks (infiltration) throughout a wastewater collection system heavily influences the flow and loading conditions at the WWTP. Disparities between billed wastewater flow and measured influent flow can indicate that the facility is treating rainwater and groundwater (clearwater) in addition to the wastewater flow. When planning new improvements, excessive inflow and infiltration (I&I) can result in additional capital funds being spent on larger equipment and installations to manage clearwater flow that otherwise would not be necessary if there was not a significant I&I contribution. Excessive I&I can also lead to reduced WWTP performance and process upsets through dilution and biomass washout.

To determine if the collection system has excessively increased flow due to I&I without having to televise the entire sewer network, data analysis was performed to show the relationship between precipitation events and influent rates to the WWTP. Precipitation data from January 2021 through May 2026 was collected from the National Oceanic and Atmospheric Administration (NOAA) and filtered to show only significant precipitation events (>0.5 inches of precipitation). Both the precipitation data and influent flow data were compared to determine if there was any correlation between significant precipitation events and increased WWTP influent flow. This graph is shown below as **Figure 4**.

As seen in **Figure 4**, there was no apparent trend correlating significant precipitation events and influent flow. Influent flow remains steady regardless of these significant precipitation events, which indicates that the collection system is likely not significantly impacted by I&I events.

Per WDNR facility planning guidelines, the infiltration threshold criterion is whether the highest base flow plus infiltration occurring for a 7-day weather period during a year is less than or equal to 120 gallons per capita per day (gpcd). The inflow threshold criterion is whether the maximum daily flow during a storm (wet period) is less than or equal to 275 gpcd. The infiltration and inflow thresholds for the Village's WWTP were



37 and 40 gpcd, respectively. Since the I&I thresholds for the WWTP collection system are less than the WDNR guidelines, the collection system is not considered to have “excessive” I&I, and I&I was not considered in alternative selection.

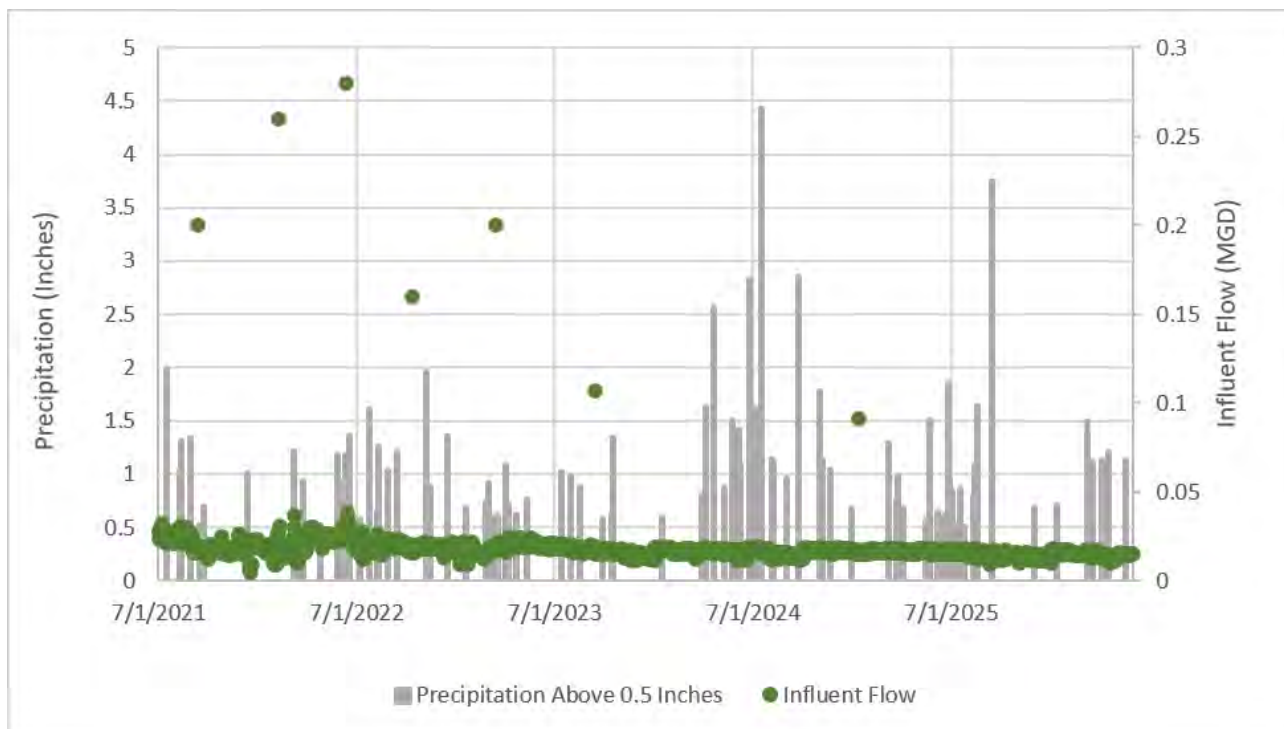


Figure 4: WWTP Influent Flow Compared to Significant (>0.5 in.) Precipitation Events

4 DESIGN CONDITIONS

4.1 POPULATION AND SERVICE AREA

The 2020 Census population for the Village was 281, and the estimated 2026 population is 262 based on WI Department of Administration (DOA) projections. The DOA projection data shows the Village in a slight population decline (4% between 2020 and 2050). Using a 20-year planning period, there is an estimated population of 200 in the design year 2046. The Village currently does not have a comprehensive plan for population growth in their community. The current municipal population estimate plus average per capita flows from the developments were used for determining projected flows and loadings for the WWTP as the entirety of the Village’s sewage collection system reaches the facility. Population census data and projections from the DOA are summarized below in **Table 3**.

Table 3: Village of Kingston Population Estimates

2020 Population	2030 Estimate	2040 Estimate	2050 Estimate
281	249	218	188

*Values taken from 2024 municipal estimates from DOA using Wisconsin Demographic Service Center data



4.2 PROJECTED FLOW AND LOADING

Flow and loading projections for the WWTP were determined by per capita flow amounts developed using historical flow and loading data for influent flow, BOD₅ and TSS. Influent TKN and total phosphorus concentrations were estimated as low strength municipal wastewater concentrations as reported in Metcalf and Eddy (2014). Projected peak flows were generated by multiplying the estimated future average flows by the peaking factors for the existing flows, while projected loadings were estimated by multiplying the projected flows by existing constituent concentrations. The 2046 projected flows and loadings are summarized in **Table 4**.

Table 4: Projected Flows and Loadings for Kingston WWTP

Parameter	Current	Projected - Year 2046
Average Daily Base Flow (MGD)	0.018	0.016
Maximum Monthly Flow (MGD)	0.034	0.031
Maximum Weekly Flow (MGD)	0.065	0.058
Maximum Daily Flow (MGD)	0.280	0.248
NR110.15 Max Hour Peaking Factor*	5	5
Peak Hour (NR 110.15) (MGD)	0.09	0.08
Average BOD ₅ (lb/d)	17	15
Peak Month BOD ₅ (lb/d)	40	35
Peak Day BOD ₅ (lb/d)	123	109
Average TSS (lb/d)	4	3
Peak Month TSS (lb/d)	11	9
Peak Day TSS (lb/d)	120	107
Average TKN (lb/d)**	3.6	3.2
Average Phosphorus (lb/d)**	0.6	0.5

*Peaking factor selected from Wis. Admin. Code NR110.15

**Assumed low strength concentration value from Metcalf and Eddy (2014). *Wastewater Engineering: Treatment and Resource Recovery*, Table 3-18

4.3 DESIGN FLOW AND LOADING

The WWTP service area population projection is in a slight decline (4%) with no planned development projects in the Village's future. Any upgrades made to the WWTP would need to handle current peak flow conditions and projected conditions. Therefore, the alternatives analysis for this project is based on existing flows, with design decisions made to cover the range of expected flow and loading conditions. This will ensure that the modifications to the WWTP are able to meet current and future flows and loadings. In addition to accommodating existing and projected peak flow and loading conditions, the selected improvements must address regulatory compliance deficiencies identified by recent inspections and provide a reliable long-term solution for meeting current and future WPDES permit requirements.



5 ALTERNATIVES IDENTIFICATION

5.1 ALTERNATIVE 1: TAKE NO ACTION

The alternative to take no action was not pursued because it would not address existing treatment and regulatory compliance issues at the WWTP. While the facility can currently handle the volume of wastewater flows and is not projected to require additional hydraulic capacity, recent inspections identified deficiencies related to BOD₅ exceedances, seasonal ammonia exceedances, total phosphorus compliance, lagoon maintenance, operators' certification, and sampling and recordkeeping practices.

5.2 ALTERNATIVE 2: REGIONALIZATION

This alternative would involve decommissioning the existing WWTP and septic tank system, construction of a new lift station and force main, and connecting this new lift station and force main to the Markesan WWTP. Additionally, The Town of Manchester has expressed interest in regionalizing as well, if the Village of Kingston connects to the Markesan WWTP. This alternative would require construction of an 8.35-mile force main with a 4 in. diameter to convey wastewater from the Village to the Markesan WWTP. The Town of Manchester has a population of 1,057 according to the 2020 census, with approximately 289 households. By combining the Town of Manchester's flow with the Village's for regionalization, the project costs could be spread over a larger ratepayer base, but for the purpose of this Facility Plan, no cost sharing with the Town of Manchester is assumed. Regionalization would also result in the Village no longer needing to operate and maintain their WWTP, only the sanitary sewer network and force main to Markesan, but the Village would be charged fees for wastewater treatment by the Markesan WWTP. An approximate path for the force main is included in **Appendix D**.

5.3 ALTERNATIVE 3: UPGRADE EXISTING FACILITY WITH ABSORPTION PONDS

This alternative would involve rehabilitating the existing lagoon aeration system at the WWTP including a new fine-bubble diffused aeration system, new blowers, and a baffle in the second treatment lagoon to better separate the aerated zone from the quiescent settling zone, construction of four new absorption ponds and a control structure to convert the facility to surface discharge instead of discharge to the Grand River, and the reconfiguration of the existing effluent lift station to send wastewater effluent to the new absorption ponds. The existing septic tank system would also be decommissioned, and sludge in the existing lagoons would be removed. This alternative would result in new effluent requirements, and the Village would no longer have to meet their strict total phosphorus effluent limit to discharge to the Grand River. The four absorption ponds would be operated with a load/rest cycle to preserve the infiltration capacity and treatment ability of the soil. By using absorption ponds, inspection and maintenance is simpler, as any clogging of the pond bottoms can often be inspected and fixed during a rest period, the pond bottoms more effectively dry during rest periods as they are open to air. A preliminary investigation of existing soil conditions using data from the Natural Resources Conservation Service (NRCS) web soil survey (WSS) is included in **Appendix F**.



5.4 ALTERNATIVE 4: UPGRADE EXISTING FACILITY WITH SUBSURFACE ABSORPTION

This alternative would involve the same rehabilitation to the existing lagoon aeration system, the same control structure, and the same alterations to the existing effluent lift station, but would instead use a subsurface absorption field, like the system initially used by this facility in the 1970s. The original subsurface absorption field that was used with the community septic system before the aerated lagoons were constructed has been abandoned since the 1980s due to the subsurface absorption field clogging, likely due to a lack of rotation between absorption beds. The condition of the existing subsurface absorption beds is unknown, and the existing perforated piping is too small to reliably be televised, therefore, this alternative assumes that the existing system would have to be demolished, with a new subsurface absorption system installed in place. The new subsurface absorption system would implement cycling between the three absorption beds, similar to the absorption pond system, to provide a load and rest cycle to preserve the infiltration capacity and treatment functions of the soil. Using a subsurface absorption system can be beneficial in that odor and vector potential is lower because there is no exposed wastewater. A preliminary investigation of existing soil conditions using data from the NRCS WSS is included in **Appendix F**. Before construction of the subsurface absorption field, pilot testing would be required to ensure adequate treatment and drainage for the system to function properly.

6 ALTERNATIVES ANALYSIS

6.1 ENERGY REDUCTION

The inclusion of energy reduction measures is an important factor to consider when planning WWTP improvements. The Village is planning on taking several measures to reduce energy use throughout the WWTP, including the use of variable frequency drives (VFDs) to minimize motor energy expenditure when not operating equipment at full load. Additionally, by converting the system from surface water discharge to the Grand River to land disposal on site in Alternatives 3 and 4, energy expenditure for pumping will be greatly reduced, as the effluent will no longer need to be pumped over 1 mile to the Grand River.

6.2 ECONOMIC ANALYSIS

The alternatives were evaluated using cost information prepared for each alternative. Present worth analysis is used to accurately compare cost items that have long life expectancies and O&M cost items. A detailed breakdown of each alternative's capital cost is included in **Appendix G**.

The present worth analysis considered the capital costs, O&M, energy usage, and salvage costs over a 20-year planning period and compared the total cost of each alternative in 2026 dollars. An interest rate of 4.3% was used for the present worth calculations as determined by WDNR Clean Water Fund Loan Program (CWFLP) eligibility. A summary of the capital, O&M and present worth costs is summarized in **Table 5**. The present worth analysis is included in **Appendix G**. The O&M costs for each alternative were calculated using estimated values based on equipment supplier recommendations. Energy and O&M are estimated to be similar between Alternatives 3 and 4, as they both include the same aeration system and pumping upgrades. Specifically for Alternative 4, the pilot testing would not be able to be completed before the CWFLP fiscal year



2027 deadline and would likely result in less funding opportunities due to changes in funding availability for fiscal year 2028.

Table 5: Comparison of Present Worth Costs for Alternatives

	Alternative 2 - Regionalization	Alternative 3 - Upgrade Existing Facility with Absorption Ponds	Alternative 4 - Upgrade Existing Facility with Subsurface Absorption
Initial Capital Cost	\$6,307,000	\$2,170,000	\$2,323,000
Power Usage	\$10,000	\$5,000	\$5,000
Maintenance and Repairs	\$ -	\$4,000	\$4,000
Equipment Depreciation	\$35,000	\$14,000	\$14,000
Annual O&M Costs	\$10,000	\$9,000	\$9,000
Present Worth of O&M	\$133,000	\$120,000	\$120,000
Total Present Worth	\$6,440,000	\$2,290,000	\$2,443,000

6.3 NON-MONETARY ANALYSIS AND SOCIAL CONSIDERATIONS

Alternatives 3 and 4 would not require any land acquisition or major disturbances to the surrounding community as they would reside on the WWTP's property, while Alternative 2 would require construction of an 8.35-mile force main from the Village to the Town of Manchester, and then to the Markesan WWTP. Alternative 3 would potentially have a higher social impact as the absorption ponds would be visible from the road, while Alternative 2 and 4 would result in no newly visible treatment systems on the WWTP property. Additionally, absorption pond systems must maintain a minimum 500-foot setback from the nearest inhabited dwelling unless written consent is obtained from the affected property owner and occupant. This setback would not be met under Alternative 3, as one residence is located within the projected 500-foot setback area, as shown in **Figure 5**. Therefore, the Village would need to coordinate with the affected residents and obtain any necessary agreements as part of the project upgrade with Alternative 3.



Figure 5: Projected 500-ft Offset Radius for Alternative 3

6.4 ENVIRONMENTAL CONSIDERATIONS

Alternative 2 would combine the flow from two or three separate WWTPs into one existing WWTP, which likely could result in more efficient wastewater treatment from a larger flow sent to one facility. Alternatives 2, 3, and 4 would all result in a reduction of BOD₅, TSS, ammonia nitrogen, and total phosphorus being discharged into the Grand River by changing the discharge location away from the Grand River, which would help improve the surface water quality of the Grand River. A preliminary Endangered Resources Review on the Natural Heritage Inventory portal shows that no further action is necessary for any of the WWTP alternatives. A copy of this assessment is included in **Appendix H**. Wetland and floodplain area maps from Surface Water Data Viewer are included in **Appendix D**. These maps indicate that wetlands will not be disturbed at this project location. None of these alternatives would result in an increase in impermeable areas for stormwater.

6.5 SLUDGE HANDLING

The existing aerated lagoons last had sludge removed in 2018. Alternatives that involve upgrading the existing lagoon system would also include removal of the sludge from the existing ponds, with the removed sludge being disposed of per WDNR requirements. No alternative will significantly affect the WWTP regarding available sludge capacity or quality.

7 RECOMMENDED ALTERNATIVE

7.1 SUMMARY

Based on both the monetary and non-monetary evaluation criteria, it is recommended that the Village pursues **Alternative 3: Upgrade Existing Facility with Absorption Ponds**. This alternative provides the lowest overall project cost while addressing the WWTPs existing treatment and compliance challenges through rehabilitation of the lagoon aeration system and conversion from a surface water discharge to a land treatment system utilizing subsurface absorption. The proposed approach would involve constructing a new absorption pond system designed with multiple absorption ponds that can be operated on a load-and-rest cycle to preserve infiltration capacity and long-term performance. A proposed site plan for this project is included in **Appendix I**.

7.2 PROJECT PHASING AND FUNDING

The first phase in implementing the WWTP improvement project is for the Village to apply for funding through the WDNR CWFLP. The next phase would be to develop the plans and specifications for the proposed improvements and submit them to WDNR by September 30th, 2026. During construction of the WWTP upgrades, work will be carefully phased to ensure the existing wastewater flow is still treated during construction.



8 COST IMPACTS

8.1 OVERALL PROJECT COST

The overall project costs for Alternative 4, upgrading the existing facility with subsurface absorption, are summarized in **Table 6**. A detailed breakdown of costs for the recommended alternative is included in **Appendix G**.

Table 6: Overall Project Costs for Alternative 4

	Alternative 3 - Upgrade Existing Facility with Absorption Ponds
Initial Capital Cost	\$2,170,000
Power Usage	\$5,000
Maintenance and Repairs	\$4,000
Equipment Depreciation	\$14,000
Annual O&M Costs	\$9,000
Present Worth of O&M	\$120,000
Total Present Worth	\$2,290,000

8.2 PARALLEL COST PERCENTAGE

As the Village may pursue funding through the WDNR CWFLP, the parallel cost percentage for the project has been determined. The parallel cost percentage is used to determine the portion of the total project cost that is eligible for financing below the market rate, as described by the WDNR.

To determine the parallel cost percentage, a reduced flow condition was established, which accounts for the reserve capacity that will be realized within the first ten years following project completion. The reduced capacity condition excludes population growth from 2026 to 2046. Once the reduced capacity condition was determined, a cost associated with the condition was calculated using proportions between the projected 2046 flows and the reduced capacity condition. Based on this estimate, a parallel cost percentage of 0.25 was calculated.

This project does not include any upgrades to septage receiving, so the septage percentage for this project is 0%.

8.3 USER RATE IMPACTS

The current average monthly sewer bill for residential customers is \$43.21. Based on the selected alternative and the associated costs, plus the Village's eligibility for a reduced market rate of 2.365% and 55% principal forgiveness, average sewer rates for Village residents are anticipated to increase by approximately 92%. A typical residential user can expect their monthly bill to increase from \$43.21 to \$82.95, amounting to a difference of \$39.74 per month.



Without the reduced interest rate and principal forgiveness from the CWFLP, the average monthly sewer rate for a residential customer is anticipated to increase by approximately 205%. A typical residential user can expect their monthly sewer bill to increase from \$43.21 to \$131.63, amounting to a difference of \$88.42 per month. User rate impacts are detailed in **Appendix G**.

9 PUBLIC HEARINGS AND CITY BOARD MEETINGS

A public hearing will be held in September 2026. A Summary of the public hearing including a sign-in sheet, meeting minutes, and public notice will be submitted to WDNR upon completion of the public hearing.



APPENDIX A

VILLAGE OF KINGSTON WWTP WPDES PERMIT



WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
**PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

Village of Kingston

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility
located at

1050 S. South Street, Kingston, Wisconsin
to

**the Grand River in the Lower Grand River Watershed (UF11) of the Upper Fox River Drainage Basin in the
Lake Michigan Basin**

in accordance with the effluent limitations, monitoring requirements and other conditions set
forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By

Kelley O'Connor
Wastewater Supervisor, Northeast Region

Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - October 01, 2017

EXPIRATION DATE - September 30, 2022

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1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
701	Influent, Post-Septic Tank: Influent samples may be collected at the main lift station prior to the first lagoon. Flow rate shall be measured prior to the primary lagoon at the discharge line from the lift station.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - Influent, Post-Septic Tank

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total		mg/L	Weekly	Grab	
Suspended Solids, Total		mg/L	Weekly	Grab	

2 Surface Water Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
001	Effluent: Representative samples of the effluent discharged shall be collected at the effluent pumps' wet well.

2.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point (Outfall) 001 - Effluent

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total	Weekly Avg	45 mg/L	Weekly	Grab	
BOD ₅ , Total	Monthly Avg	30 mg/L	Weekly	Grab	
Suspended Solids, Total	Monthly Avg	60 mg/L	Weekly	Grab	
pH Field	Daily Min	6.0 su	Weekly	Grab	
pH Field	Daily Max	9.0 su	Weekly	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	Weekly	24-Hr Flow Prop Comp	Limit based on effluent pH; See Section 2.2.1.2
Nitrogen, Ammonia (NH ₃ -N) Total	Weekly Avg	34 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	34 mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	5.7 mg/L	Monthly	24-Hr Flow Prop Comp	This is an interim limit. The final effluent limits will be 0.225 mg/L as a monthly average and 0.075 mg/L and 0.013 lb/day as 6-month averages. See Sections 2.2.1.3, 2.2.1.4, 2.2.1.5 below and 5.1 for compliance schedule.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only in 2021.
Fecal Coliform		#/100 ml	Weekly	Grab	Monitoring only May - September in 2019.

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Acute WET		TU _a	See Listed Qtr(s)	24-Hr Comp	See Section 2.2.1.6

2.2.1.1 Average Annual Design Flow

The average annual design flow of the permittee's wastewater treatment facility is 0.020 MGD.

2.2.1.2 Daily Maximum Ammonia Nitrogen (NH₃-N) Limits

The daily maximum ammonia nitrogen effluent limit is a variable limit, dependent upon the effluent pH. Presented below is a table of the daily maximum ammonia nitrogen effluent limits corresponding to various effluent pH values. Measurement of effluent pH is required on the same days as the collection of samples for ammonia analysis.

Effluent pH – s.u.	Daily Max. Ammonia Limit – mg/L	Effluent pH – s.u.	Daily Max. Ammonia Limit – mg/L
		8.2 < pH ≤ 8.3	9.4
pH ≤ 7.5	> 34	8.3 < pH ≤ 8.4	7.8
7.5 < pH ≤ 7.6	34	8.4 < pH ≤ 8.5	6.4
7.6 < pH ≤ 7.7	29	8.5 < pH ≤ 8.6	5.3
7.7 < pH ≤ 7.8	24	8.6 < pH ≤ 8.7	4.4
7.8 < pH ≤ 7.9	20	8.7 < pH ≤ 8.8	3.7
7.9 < pH ≤ 8.0	17	8.8 < pH ≤ 8.9	3.1
8.0 < pH ≤ 8.1	14	8.9 < pH ≤ 9.0	2.6
8.1 < pH ≤ 8.2	11	pH > 9.0	< 2.6

For each day that the effluent is monitored for ammonia, report the measured ammonia concentration in the Ammonia column of the Discharge Monitoring Report (DMR) and the applicable variable limit (from the table above) in the Ammonia Variable Limit column of the DMR, specifically:

- If the pH is less than or equal to 7.5, report the Ammonia Variable Limit as > 34 mg/L
- If the pH is greater than 9.0, report the Ammonia Variable Limit as < 2.6 mg/L

2.2.1.3 Phosphorus Water Quality Based Effluent Limitation(s)

The final water quality based effluent limit for phosphorus are 0.225 mg/L as a monthly average and 0.075 mg/L and 0.013 lb/day as six month averages and will take effect per the Compliance Schedule unless:

- As part of the application for the next reissuance, or prior to filing the application, the permittee submits either: 1.) a watershed adaptive management plan and a completed Watershed Adaptive Management Request Form 3200-139; or 2.) an application for water quality trading; or 3.) an application for a variance; or 4.) new information or additional data that supports a recalculation of the numeric limitation; and
- The Department modifies, revokes and reissues, or reissues the permit to incorporate a revised limitation before the expiration of the compliance schedule*.

Note: The permittee may also submit an application for a variance within 60 days of this permit reissuance, as noted in the permit cover letter, in accordance with s. 283.15, Stats.

If Adaptive Management or Water Quality Trading is approved as part of the permit application for the next reissuance or as part of an application for a modification or revocation and reissuance, the plan and specifications

submittal, construction, and final effective dates for compliance with the total phosphorus WQBEL may change in the reissued or modified permit. In addition, the numeric value of the water quality based effluent limit may change based on new information (e.g. a TMDL) or additional data. If a variance is approved for the next reissuance, interim limits and conditions will be imposed in the reissued permit in accordance with s. 283.15, Stats., and applicable regulations. A permittee may apply for a variance to the phosphorus WQBEL at the next reissuance even if the permittee did not apply for a phosphorus variance as part of this permit reissuance.

Additional Requirements: If a water quality based effluent limit has taken effect in a permit, any increase in the limit is subject to s. NR 102.05(1) and ch. NR 207, Wis. Adm. Code. When a six-month average effluent limit is specified for Total Phosphorus the applicable averaging periods are May through October and November through April.

***Note:** The Department will prioritize reissuances and revocations, modifications, and reissuances of permits to allow permittees the opportunity to implement adaptive management or nutrient trading in a timely and effective manner.

2.2.1.4 Alternative Approaches to Phosphorus WQBEL Compliance

Rather than upgrading its wastewater treatment facility to comply with WQBELs for total phosphorus, the permittee may use Water Quality Trading or the Watershed Adaptive Management Option, to achieve compliance under ch. NR 217, Wis. Adm. Code, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. The permittee may also implement an upgrade to its wastewater treatment facility in combination with Water Quality Trading or the Watershed Adaptive Management Option to achieve compliance, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. If the Final Compliance Alternatives Plan concludes that a variance will be pursued, the Plan shall provide information regarding the basis for the variance.

2.2.1.5 Submittal of Permit Application for Next Reissuance and Adaptive Management or Pollutant Trading Plan or Variance Application

The permittee shall submit the permit application for the next reissuance at least 6 months prior to expiration of this permit. If the permittee intends to pursue adaptive management to achieve compliance with the phosphorus water quality based effluent limitation, the permittee shall submit with the application for the next reissuance: a completed Watershed Adaptive Management Request Form 3200-139, the completed Adaptive Management Plan and final plans for any system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the permittee intends to pursue pollutant trading to achieve compliance, the permittee shall submit an application for water quality trading with the application for the next reissuance. If system upgrades will be used in combination with pollutant trading to achieve compliance with the final water quality-based limit, the reissued permit will specify a schedule for the necessary upgrades. If the permittee intends to seek a variance, the permittee shall submit an application for a variance with the application for the next reissuance.

2.2.1.6 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Grand River from a point upstream from outfall 001

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once every other year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Acute:** 2nd Quarter 2019 (April 1 – June 30, 2019) & 4th Quarter 2021 (October 1 – December 30, 2021)

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in 1st Quarter of 2023.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: $TU_a = 100 \div LC_{50}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90 day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

2.2.1.7 Total Maximum Daily Load (TMDL) Limitations

TMDL Under Development: A Total Maximum Daily Load (TMDL) is being developed for the Upper Fox & Wolf River Basin to address issues of nutrient and sediment enrichment water quality impairments within the TMDL area. This TMDL will likely result in limitations for Total Phosphorus and Total Suspended Solids that must be included in WPDES permits, which may be different than those calculated for this permit reissuance. TMDL-derived limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code.

3 Land Application Requirements

3.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
002	Lagoon Sludge: Liquid sludge that accumulates in the treatment lagoons. Representative samples shall be collected from various depths and locations then composited for analysis. At the time of sample collection the permittee shall evaluate the quantity of sludge in the lagoon(s) and shall submit these findings with the characteristics report form.

3.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 002 - Lagoon sludge

Sludge Management: The permittee shall contact the Department prior to recycling/disposing of any sludge. The permittee shall monitor for the following parameters during the second year of the permit, (**2018**). Analysis shall be submitted by **January 31, 2019**.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	Limits only applicable to land application.
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	Limits only applicable to land application.
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	Limits only applicable to land application.
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	Limits only applicable to land application.
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	Limits only applicable to land application.
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	Limits only applicable to land application.
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	Limits only applicable to land application.
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	Limits only applicable to land application.
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	Limits only applicable to land application.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	Limits only applicable to land application.
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	Limits only applicable to land application.
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	Limits only applicable to land application.
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	Limits only applicable to land application.
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	Limits only applicable to land application.
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	Limits only applicable to land application.
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	Limits only applicable to land application.
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	Limits only applicable to land application.
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	See Section 3.2.1.1
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	See Section 3.2.1.1

3.2.1.1 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2018**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4 Septage Management Requirements

4.1 Sampling Point(s)

The discharge(s) shall be limited to land application for the listed sampling point(s) on Department approved land application sites, or by hauling to another permitted facility.

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
990	Septage: Settleable solids and floating scum that accumulate in the community septic tank. See below for applicable requirements.

4.2 Record Keeping Requirements and Limitations

The permittee shall comply with the following record keeping requirements and limitations.

4.2.1 Sampling Point 990 - Septage

4.2.1.1 System Maintenance

To ensure proper system maintenance, the accumulated solids in the septic tank(s) shall be removed regularly, consistent with the recommended removal rates in the operations and maintenance manual. The permittee shall obtain the following copies of records from the licensed septage hauler and they shall be retained for at least five years and made available to the Department on request. The records shall include: the licensed hauler used; the volume of waste pumped; dates when the waste was removed; the land application site DNR number and the method used to satisfy the pathogen and vector attraction control (injection, incorporation, or pH adjustment) requirements of ch. NR 113; Wis. Administrative Code, and/or the treatment plant where it was disposed. Winter application is not allowed.

NOTE: The contents of the septic system must be removed and disposed of by a licensed and certified septage hauler in accordance with chapter NR 113, Wis. Adm. Code. If the permittee intends to manage the septage directly then advance notice to the Department is required. The Standard Requirements section herein specifies land application requirements for septage when managed directly by the permittee.

5 Schedules

5.1 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by October 1, 2020. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than October 1, 2020 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report. If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by October 1, 2020 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet WQBELs', 'Complete Construction', 'Achieve Compliance'). STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than October 1, 2026.	09/30/2018
Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs.	09/30/2019
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design	09/30/2020

report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan. If water quality trading will be undertaken, the plan must state that trading will be pursued.	
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code. If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	09/30/2021
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	09/30/2022
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.) Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	09/30/2023
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2023
Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2024
Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2025
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface	09/30/2026

Water section of this permit.	
Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	10/01/2026

6 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

6.1 Reporting and Monitoring Requirements

6.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

6.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

6.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

6.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD₅ and Total Suspended Solids shall be considered to be limits of quantitation
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

6.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted and certified by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

The CMAR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The certification verifies that the electronic report is true, accurate and complete.

6.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

6.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

6.1.8 Reporting Requirements – Alterations or Additions

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

- The alteration or addition to the permitted facility may meet one of the criteria for determining whether a facility is a new source.
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification requirement applies to pollutants which are not subject to effluent limitations in the existing permit.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use of disposal sites not reported during the permit application process nor reported pursuant to an approved land application plan. Additional sites may not be used for the land application of sludge until department approval is received.

6.2 System Operating Requirements

6.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.

The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

6.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

6.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-536, Wis. Adm. Code.

6.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

6.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

6.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, 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 preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

6.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit,

the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

6.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

6.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. The wastewater treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2), Wis. Adm. Code. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

6.3 Sewage Collection Systems

6.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

6.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;

- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

6.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

6.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:
 - The date and location of the overflow;
 - The surface water to which the discharge occurred, if any;
 - The duration of the overflow and an estimate of the volume of the overflow;
 - A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
 - The estimated date and time when the overflow began and stopped or will be stopped;
 - The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
 - Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
 - A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
 - Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
 - To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
 - The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at <http://dnr.wi.gov/topic/wastewater/SSOreport.html>. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

6.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

6.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall develop and maintain written documentation of the CMOM program components in accordance with s. NR 210.23, Wis. Adm. Code. Such documentation shall be available for Department review upon request. The Department may request that the permittee provide this documentation or prepare a summary of the permittee's CMOM program at the time of application for reissuance of the WPDES permit.
- The permittee shall at least annually conduct a self-audit of activities conducted under the permittee's CMOM program to ensure CMOM components are being implemented as necessary to meet the general standards of s. NR 210.23(3), Wis. Adm. Code.

6.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

6.4 Surface Water Requirements

6.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

6.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

6.4.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. ‘Cold Shock’ means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

6.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

6.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

- a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

- b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.
- c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.
- d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

6.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD₅ and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

6.4.7 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition"* (PUB-WT-797, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

6.4.8 Whole Effluent Toxicity (WET) Identification and Reduction

Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including some or all of the following actions:
 - (a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
 - (b) Identify the compound(s) causing toxicity
 - (c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
 - (d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)
- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

6.5 Land Application Requirements

6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

6.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

6.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

6.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

6.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:

Water Extractable Phosphorus (% of Total P) =

$$[\text{Water Extractable Phosphorus (mg/kg, dry wt)} \div \text{Total Phosphorus (mg/kg, dry wt)}] \times 100$$

6.5.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

- EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note:** It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.
- EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003 mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

3620C – Florisil	3611B - Alumina
3640A - Gel Permeation	3660B - Sulfur Clean Up (using copper shot instead of powder)
3630C - Silica Gel	3665A - Sulfuric Acid Clean Up

6.5.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the ‘eReport Certify’ page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The ‘eReport Certify’ page certifies that the electronic report form is true, accurate and complete.

6.5.8 Land Application Report for Septage

Land Application Report Form 3400-55 shall be submitted by January 31, each year whether or not septage is land applied by the permittee.

6.5.9 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is

distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.10 Other Methods of Disposal or Distribution Report for Septage

The permittee shall submit Report Form 3400-52 by January 31, each year whether or not septage is hauled to another facility by the permittee.

6.5.11 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

6.5.12 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

6.5.13 Approval to Land Apply Septage

Septage may not be applied to a land application site by the permittee without a written site approval letter or Form 3400-122 from the Department.

6.5.14 Land Application Site Evaluation for Septage

The permittee may use land application sites provided the sites meet all applicable provisions of Wisconsin Administrative Code Chapter NR 113 and have been approved in writing by this Department. If the permittee wishes to have approval for additional sites, application shall be made using Landspreading Site Evaluation Form 3400-53. Complete information shall be submitted about each site, including plat, topographical and soil maps, aerial photograph of the site, any soil analyses results, and other information showing that the site complies with all application requirements. Land application may commence on a new site when a proposed site has been approved by the Department. The Department may issue a written notice to withdraw approval for any site that is found to be environmentally unacceptable or violates the conditions of this permit. A permittee may not land apply septage on sites that have been withdrawn by the department or that have not been approved by the department.

It is the permittee's responsibility to locate land application sites that meet the land application criteria set forth in ch. NR 113, Wis. Adm. Code.

6.5.15 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will

evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6.5.16 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

$$\text{Geometric Mean} = (X_1 \times X_2 \times X_3 \dots \times X_n)^{1/n}$$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

$$\text{Geometric Mean} = \text{antilog}[(X_1 + X_2 + X_3 \dots + X_n) \div n]$$

Where X = $\log_{10}$ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	$\log_{10}$
1	6.0×10^5	5.78
2	4.2×10^6	6.62
3	1.6×10^6	6.20
4	9.0×10^5	5.95
5	4.0×10^5	5.60
6	1.0×10^6	6.00
7	5.1×10^5	5.71

The geometric mean for the seven samples is determined by averaging the $\log_{10}$ values of the coliform density and taking the antilog of that value.

$$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$$

$$\text{The antilog of } 5.98 = 9.5 \times 10^5$$

6.5.17 Class B Sludge - Vector Control: Injection

No significant amount of the sewage sludge shall be present on the land surface within one hour after the sludge is injected.

6.5.18 Class B Sludge - Vector Control: Incorporation

Class B sludge shall be incorporated within 6 hours of surface application, or as approved by the Department.

6.5.19 Septage Hauling

The permittee is required to submit Form 3400-52 to the Department. If septage is hauled to another facility, information shall include the quantity of septage hauled, the name, address, phone number, contact person, and permit number of the receiving facility. Form 3400-52 shall be submitted annually by January 31 each year whether or not septage is hauled by the permittee.

7 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Operational Evaluation Report	September 30, 2018	9
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Compliance Alternatives, Source Reduction, Improvements and Modifications Status	September 30, 2019	9
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Preliminary Compliance Alternatives Plan	September 30, 2020	9
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Compliance Alternatives Plan	September 30, 2021	10
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Progress Report on Plans & Specifications	September 30, 2022	10
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Plans and Specifications	September 30, 2023	10
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Treatment Plant Upgrade to Meet WQBELs	December 31, 2023	10
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Construction Upgrade Progress Report #1	December 31, 2024	10
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Construction Upgrade Progress Report #2	December 31, 2025	10
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Complete Construction	September 30, 2026	11
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Achieve Compliance	October 1, 2026	11
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	13
General Sludge Management Form 3400-48	prior to any significant sludge management changes	21
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	21
Land Application Report Form 3400-55	by January 31, each year whether or not septage is land applied by the permittee	22
Report Form 3400-52	by January 31, each year whether or not septage is hauled to	23

	another facility by the permittee	
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	12

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:

Northeast Region - Oshkosh, 625 E. CTY RD Y, Suite 700, Oshkosh, WI 54901

APPENDIX B

1986 REPORT OF FINDINGS FOR THE KINGSTON WASTEWATER
TREATMENT FACILITY

REPORT OF FINDINGS AT
VILLAGE OF KINGSTON
WASTEWATER TREATMENT FACILITY

Central
Engineers & Surveyors, Inc.

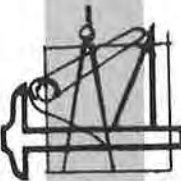
112½ South Spring Street
Beaver Dam, Wisconsin 53916

P.O. Box 381
(414) 887-3127

**REPORT OF FINDINGS AT
VILLAGE OF KINGSTON
WASTEWATER TREATMENT FACILITY**

JUNE, 1986

**CENTRAL ENGINEERS & SURVEYORS, INC.
Consulting Engineers
112 S. Spring Street
P.O. Box 381
Beaver Dam, Wisconsin 53916
(414) 887-3127**



Central Engineers & Surveyors, Inc.

112½ S. Spring St. P.O. Box 381
Beaver Dam, WI 53916
(414) 887-3127

45 Sheboygan St. P.O. Box 413
Fond du Lac, WI 54935
(414) 921-5432

June 10, 1986

Ms. Jean Miller, President
Village of Kingston
P.O. Box 112
Kingston, Wisconsin 53939

Dear Ms. Miller:

Central Engineers & Surveyors, Inc. is pleased to present the accompanying report concerning the status of the Village of Kingston wastewater treatment facilities. Our proposal, dated April 7, 1986, provided that our firm evaluate information pertaining to the failure of the treatment facility, in particular, the following:

1. Pertinent design data for existing facilities.
2. Documentation of existing treatment and disposal problems.
3. Information provided by both regulatory and funding agencies concerning methodology to facilitate implementation of corrective action and the availability of grant funds to supplement future Village expenditures.

I hope this report will satisfy your expressed need to obtain a better grasp of the situation concerning the status of work efforts to correct deficiencies at your wastewater treatment facility. In the text of this report we have also provided you with our recommendations and a sequence of events which we feel will enable the Village to attain this goal in a timely, cost effective manner. Central Engineers & Surveyors, Inc. is anxious to work with the Village and lend our expertise in remedying the situation.

Sincerely,

CENTRAL ENGINEERS & SURVEYORS, INC.



Craig J. Kunkel, P.E.

REPORT OF FINDINGS AT
VILLAGE OF KINGSTON
WASTEWATER TREATMENT FACILITY

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FORWARD

FORWARD

In 1981 the Village of Kingston constructed a new wastewater treatment facility and sanitary sewer collection system. These facilities were placed into operation in December of 1981 with property lateral connections being installed over the next year. The wastewater treatment facility consists of a centralized septic tank/pump station, coupled with subsurface soil disposal fields.

On March 22, 1983 effluent ponding was noted on seepage Bed No. 1. The Village of Kingston, being concerned with this condition, promptly informed the design professionals of this situation and have since been working to resolve the matter. Since the time ponding was first noted, the situation has grown progressively worse. It is particularly intensified during the Spring of the year when flows increase due to infiltration/inflow.

During the ensuing time period, a number of preliminary investigations were undertaken by the previous engineering consultant, the Department of Industry, Labor and Human Relations, as well as University of Wisconsin Small Scale Waste Studies personnel. With the situation appearing to be unresolvable, the Village of Kingston formally contracted for Step 1 Planning services from the engineering firm of Held & Associates, Inc. on December 10, 1985. A Step 1 "Advance of Allowance" was applied for and subsequently received on February 20, 1986 in the sum of \$4,135. Subsequent to meetings with

regulatory agencies and further site investigations, the Village became aware of impending orders from the Department of Industry, Labor and Human Relations requiring the Village to discontinue use of the system. Due to the frustration in coordinating these efforts, and an inability to precisely define the cause of the problems, the Village requested that Held & Associates, Inc. temporarily suspend work efforts regarding the Step 1 Facilities Planning efforts on April 5, 1986. On April 8, 1986 the Village contracted with Central Engineers & Surveyors, Inc. to further investigate the situation and issue a resultant report.

EXISTING FACILITIES

EXISTING FACILITIES

Components of the Village of Kingston wastewater collection system are:

- 11,400 feet of 8" diameter gravity collector sewer;
- 2 sewage lift stations, each with 2 pumps rated at 100 gpm;
- 1,016 feet of 4" diameter forcemain; and
- 10 grinder pumping stations.

The wastewater treatment facility consists of a centralized septic tank/pump station and subsurface soil disposal field. The septic tank provides a capacity of 47,175 gallons including 11,500 gallons as reserve for accumulated sludge. This capacity provides a 24 hour detention time at the design flow. The pumping station consists of two 750 gpm pumps designed to operate four times per day. Approximately 4,000 lineal feet of 8" diameter forcemain directs flow to the absorption beds.

The subsurface soil absorption beds were designed for a loading rate of 0.91 gallons of sewage per square foot, per day, with a conservative upgrading factor of 1.5. The absorption area consists of three 18,000 square foot beds with a distribution system in each bed consisting of 8" diameter distribution headers and 1-1/2" diameter laterals. The distribution system was installed in 15" of washed gravel with a filter fabric over the gravel to prevent soil infiltration. Additionally, insulation was provided over the headers to prevent potential freezing problems.

Design criteria for the treatment facilities, as approved by the Department of Natural Resources, are as follows:

Existing Population	346
Year 2000 Population	400
Year 2020 Population	450
Average Design Flow	32,800 gallons per day
B.O.D. ₅	68 pounds per day
Suspended Solids	80 pounds per day

DOCUMENTATION OF FAILURE

DOCUMENTATION OF FAILURE

Evidence of failure was first noted as ponding in Bed No. 1 by the wastewater treatment facility operator on March 22, 1983. The Wisconsin Department of Industry, Labor and Human Relations, in a site inspection on November 5, 1985, noted 12" to 14" of effluent ponding in all three beds with surface discharge of effluent occurring at the Northwest corner of Bed No. 1. Mr. Schultz, the DILHR Agent, determined this ponding to be a violation of Wisconsin Statutes s.146.14. Mr. Schultz further stipulated and directed the Village of Kingston to promptly discontinue use of Bed No. 1 and to abate the nuisance. Therefore, if the surface discharge of effluent continued, the Village would have no alternative but to utilize the system as a holding tank. As such the contents would be required to be pumped and hauled to an acceptable alternative disposal site. In a follow-up letter dated November 20, 1985, Mr. Jim Sargent, Director of DILHR, indicated that the issuance of the previously mentioned inspection report by Mr. Schultz was the first step in the issuance of compliance orders.

REASON FOR FAILURE

REASON FOR FAILURE

Since system failure was first noted at the Village of Kingston wastewater treatment facility, there have been a number of site investigations as well as speculation as to the cause of system failure.

Messrs. Parker and Held, in a site investigation conducted on May 10, 1983, noted the formation of a black gelatinous material under the distribution system, approximately 1/4" thick. This indicated the formation of a biological clogging mat. The soil under the mat appeared in a normal state and was unsaturated. A clogging mat such as the one described above naturally forms in all wastewater disposal systems. In effect it controls application rates by restricting permeability. Usually the clogging mat is dissipated during the resting cycle of the system when exposed to oxygen. Such a resting cycle had been intended for in the operation of the Kingston facility.

Another potential problem was also identified during the May 10, 1983 site investigation. As previously stated, the specifications required that washed stone be utilized in constructing the seepage beds. However, fine particles of silt were evidenced at the bed bottom indicating that perhaps unwashed material had been utilized. This would further restrict the permeability of the seepage beds.

In addition to concern for the previous two items, Mr. Ed Drozd, Soil Scientist for the Department of Industry, Labor and Human Relations, sampled areas adjacent to the seepage beds and

noted that the soil profile appeared to be "extremely variable as to stratification of sands, silts and gravel". At least one soil profile "consisted primarily of loamy, fine sand". In Mr. Drozd's report, issued April 8, 1986, concern was expressed due to the "presence of a great deal of fine sand in the profiles and the density of some of that sand". Mr. Drozd recommended that a "very low' loading rate would be required" in this area.

Central Engineers & Surveyors, Inc. contacted Mr. Daniel Peeranboom, Department of Natural Resources Project Engineer, with regard to the Kingston situation. Mr. Peeranboom felt that the system was essentially designed utilizing an extended criteria for residential onsite systems. He felt the extension of this criteria was inappropriate in attempting to scale-up the design parameters. Mr. Peeranboom also felt that perhaps climate negatively impacted the long term permeability of the soils.

The Farmers Home Administration, in a memorandum dated February 5, 1986, surmised that probable cause of failure was due to the fact that large, rectangular beds, as used in the Village of Kingston, prevented natural air ventilation from reaching the center of the drain fields. The memorandum suggested that long, narrow beds be utilized in the ratio of 1 to 14 for future projects. This configuration would permit better oxygen transfer at the biological clogging mat to induce drying and dissipation during the rest cycle.

Central Engineers & Surveyors, Inc. also contacted Mr. James Converse of the University of Wisconsin. He felt that the

problems in the Village of Kingston could be attributed to the following:

1. The soils in the area, especially the fine sand material, do not enhance the vertical capillary action. In effect, fine soils have a greater matric potential for capillary action than do fine sandy materials.
2. The presence of the clogging mat served as evidence that an anaerobic condition (without air) exists in the seepage bed. This, coupled with methane production enhanced the density of the clogging mat further restricting wastewater permeability.

Mr. Jerry Tyler, also from the University of Wisconsin, concurred with the opinions of Mr. Converse, and added that failure of the Village of Kingston system was due to the following:

1. The fine, sandy material has a low capacity of hydraulic conductivity, therefore, movement of effluent downward through the soil was impaired. A more coarse sandy material, as used in the construction of mound systems, would be advantageous since there would be less adherence of the clogging mat to the individual sand particles.
2. The fine silt on the infiltrative soil surface washed down from the "clear stone" in the bed above. This acted as a restrictive barrier to the percolation of waste through the soil.
3. The bed configuration did not provide enough oxygen transfer to the center and, therefore enabled the beds to operate in an anaerobic condition.

Mr. Tyler felt that the technology for the design and construction of community onsite systems was not adequate at the time the Village of Kingston project was undertaken.

TEMPORARY SOLUTIONS

TEMPORARY SOLUTIONS

Due to the magnitude of the problem in the Village of Kingston, and concern over impending legal actions by the Department of Industry, Labor and Human Relations, a number of short term solutions have previously been proposed and are as follows:

1. The first proposal consisted of constructing berms around the seepage beds in order to prevent runoff of ponded effluent. This proposal was provided in a letter dated December 5th by Mr. Held to the Regulatory Agencies involved. The "Emergency Containment Berm" proposal was apparently not implemented in this situation.
2. Mr. Held, at a Village Board meeting of January 23, 1986, recommended that absorption trenches be constructed in order to accept additional sewage and, as such, would be the recommendation of the Step 1 Facilities Planning Program. The costs for construction were estimated to range from \$10,000-\$15,000. DILHR, however, in a letter dated February 24, 1986 to Mr. Held, indicated that their Department would not approve of the implementation of seepage trenches and, as such, would require the use of a pressure dosing type system.
3. As a third alternative solution, Mr. Held, in a letter dated March 11, 1986, suggested replacing one of the 750 gpm dosing pumps with a 20 gpm pump in order to provide a more continual flow pattern and avoid forcing sewage through the seepage beds. Both the Department of Natural Resources and DILHR approved utilizing this methodology as a temporary measure.

LONG TERM SOLUTIONS

LONG TERM SOLUTIONS

General

The Village of Kingston has received a Step 1 "Advance of Allowance" in order to facilitate the preparation of a Facilities Plan Report. This report is intended to discuss the needs of the Village, evaluate alternatives, and recommend a plan of action which will be followed in the implementation of a solution to the current problem. Irregardless of whether the DNR or DILHR has final review authority, the facilities plan must be submitted in concurrence with DNR regulations. Of consequence is the fact that in addition to Administrative Code NR-110, which governs wastewater treatment facilities, two new Administrative Codes have been enacted.

Administrative Code NR-140 "Groundwater Quality" enacted in October of 1985 and NR-206 "Land Disposal of Municipal and Domestic Wastewater" enacted in March of 1985, also impact the design and construction of new facilities. In the author's opinion, both of these new Chapters severely restrict the utilization of future groundwater discharge alternatives. In a memorandum dated January 28, 1985, the Department of Natural Resources further required that all land disposal alternatives be dropped from the Facilities Planning process unless an Emergency Contingency Plan could be provided in the text of the proposal. Before any future planning efforts can be undertaken for Kingston, we will need to carefully examine the impacts of these administrative rules.

Surface Discharge Alternatives

A number of surface water discharge alternatives currently exist for the Village of Kingston. The following should be addressed during the facilities planning process:

1. Direct discharge to Grand Lake.
2. Surface water discharge to the wetlands West of the existing absorption systems and North of County Trunk Highway "FF".
3. Discharge to the Grand River at a point North of the Village of Kingston.

The Department of Natural Resources has recommended that the first and third alternatives carry with them secondary treatment limits. Discharge to the Grand River would, in their opinion, be preferred.

Wastewater Treatment Alternatives

In the evaluation of surface water discharge alternatives, a number of treatment systems should be examined as follows:

1. Package wastewater treatment facilities.
2. Stabilization ponds.
3. Aerated lagoons.

The Department of Natural Resources also requires examination of other alternative treatment systems during the course of the facilities planning process. These would need to be addressed in any subsequent report, however, it is our opinion that one of the above three alternatives would make economic and technological sense for implementation in the Village of Kingston.

GRANT STATUS

GRANT STATUS

Farmers Home Administration

The Farmers Home Administration has previously provided funds via grant monies and loans for the construction of the present facilities at the Village of Kingston. In a letter dated November 5, 1985, FmHA indicated that they had no provisions for providing additional funds except as loan monies on the project.

Department of Natural Resources

The Department of Natural Resources provided "Wisconsin Fund" grant monies for the construction of the present facilities. In addition, the DNR has provided a current Step 1 "Advance of Allowance" in the sum of \$4,135.00, and indicated that a Step 2 "Advance of Allowance" would also be provided if the Facilities Plan were approved. These monies are provided by the Environmental Protection Agency program administered by the Department of Natural Resources. There remains, however, a clouded picture with regard to DNR funding of Step 3, Construction activities.

Both Mary Jo Kopetke and Diane Alme of the Department of Natural Resources have respectively addressed the Step 3 funding issue. Ms. Kopetke, at a meeting on December 13, 1985 and in additional telephone conversations with this office, indicated that the Department has not previously been faced with a situation as has developed in Kingston with regard to funding Step 3 activities. Therefore, no firm policy has yet been

established. However, a number of items can be ascertained:

1. The Department of Natural Resources will not participate in funding the demolition of the existing facilities.
2. The Department will not participate in "reworking" existing systems.
3. The Department may fund "additions" to existing facilities.
4. The Department may fund totally new facilities if monies granted for previous construction are refunded to the Department.

Ms. Alme, in a letter dated March 11, 1986, indicated that Step 3 monies could be provided for facility modifications or to implement a different type of system only if the recommended alternative was proven to be the most cost effective.

In effect, any alternatives evaluated for the Village of Kingston would have to take into account the complexity of the above situation in order to maximize the amount of grant participation for a future project.

CONCLUSIONS

CONCLUSIONS

1. The Village of Kingston wastewater treatment facility has and does experience problems due to:
 - a. The formation of a biological clogging mat which restricts percolation and, therefore, negatively impacts the amount of wastewater flow accepted by the treatment system.
 - b. Utilization of an impure stone bedding has resulted in deposits of fine silt being washed to the interface of the soil/bed. This factor has also negatively impacted the permeability of the system.
 - c. Due to the particle size of the sandy soil and its low conductivity, the permeability of the system has been negatively impacted.
2. The existing subsurface soil absorption system can be expected to accept only a limited amount of sewage during the duration of its lifetime. The accepted flow will not be enough to accommodate the total flow generated by the Village of Kingston.
3. Land treatment of municipal sewage is no longer a viable alternative under newly promulgated Department of Natural Resources regulations.
4. An alternate type of treatment system will need to be designed and constructed in order to supplement treatment currently provided by the existing facility.
5. The Village of Kingston receives sustained peak clear water flows which serve to further complicate the treatment situation.
6. The Department of Natural Resources will only fund treatment plant additions and will not participate in abandonment or reworking of existing systems.

RECOMMENDATIONS

RECOMMENDATIONS

1. The Village of Kingston should proceed immediately with planning efforts to facilitate the construction of an addition to the existing facilities in order to accommodate the additional sewage generated and supplement current treatment capacity.
2. Grant procurement efforts should be stepped up immediately by the Village of Kingston and conducted on both a State and Federal level.
3. The Village of Kingston should immediately undertake a program of wastewater conservation and clearwater reduction to extend the ability of the existing facilities to accept and treat wastewater.
4. The Village of Kingston should resolve to retain the consulting firm of Central Engineers & Surveyors, Inc. to immediately proceed with facilities planning efforts and to guide future grant procurement efforts.

APPENDIX C

2025 EPA COMPLIANCE EVALUATION INSPECTION

**CWA COMPLIANCE EVALUATION INSPECTION REPORT
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5**

Facility: Village of Kingston Wastewater Treatment Plant
1050 S. South Street
Kingston, Wisconsin 53939

WPDES Permit Number: WI0036421

Purpose: To evaluate compliance with applicable regulations under the National Pollutant Discharge Elimination System (NPDES) permit program and the Clean Water Act (CWA).

Date of Inspection: May 1, 2025

EPA Region 5 Water Enforcement Compliance Assurance Representatives:

- Keith Middleton, Environmental Engineer, middleton.keith@epa.gov, 312-886-6465
- Danny Nguyen, Environmental Engineer/Scientist, nguyen.danny@epa.gov, 440-250-1709
- Eric Small, Physical Scientist, small.eric@epa.gov, 312-886-6680

Facility Representatives:

- Robert Dolgner, Village of Kingston WWTP Operator, doggy0372@gmail.com, 608-697-9909

Report Prepared by: Keith Middleton, Environmental Engineer

Inspector Signature: KEITH MIDDLETON Digitally signed by KEITH MIDDLETON
Date: 2025.06.04 12:02:36 -05'00'

Approver Name and Title: Ryan Bahr, Section 2 Chief, Water Enforcement and Compliance Assurance Branch

Approver Signature: Bahr, Ryan Digitally signed by Bahr, Ryan
Date: 2025.06.05 12:20:21 -05'00'

INTRODUCTION

On May 1, 2025, representatives from the U.S. Environmental Protection Agency Region 5 conducted a Compliance Evaluation Inspection regarding the Village of Kingston Wastewater Treatment Plant (WWTP) in Kingston, Wisconsin. The purpose of this inspection was to evaluate this WWTP's compliance with the CWA and its current WPDES permit. This inspection consisted of an opening conference, a compliance discussion, a WWTP walk-through, and a closing conference at the Kingston WWTP. Any findings and concerns that EPA identified during the inspection are listed in the section entitled "Areas of Concern" starting on page 12 of this report.

WWTP BACKGROUND

The Kingston WWTP is owned by the Village of Kingston ("Village" or "Kingston"). Mr. Dolgner is the principal wastewater treatment operator of this WWTP and has been working at the WWTP since 2017. Mr. Dolgner had previously obtained his wastewater operator license from the State of Wisconsin. At the time of this inspection, Mr. Dolgner's wastewater operator license was expired.

Mr. Dolgner is typically at the WWTP every day to check the status of the pumps at the WWTP and other WWTP treatment components. Mr. Dolgner did note to EPA that originally this WWTP was designed to be operated without an WWTP operator.

WWTP History

According to Mr. Dolgner, the Kingston WWTP was constructed in approximately 1982. The Kingston WWTP was originally built utilizing the current lagoon pond system with the treated effluent to discharge to a leach field located to the east of the WWTP. In 1988, the Kingston WWTP was redesigned to pump the treated effluent 1.3 miles to the north to the Grand River, due to the leach field failing.

During the inspection, EPA learned that the WWTP serves a total of 120 sewer connections. These sewer connections are all residential connections except a mill/office building. Kingston residents also must pay sewer rates if the sewer collection system sewerage runs past their home, even if they are on a septic system and not connected to the sewer system. The Kingston residents are all on private wells for drinking water, so the sewer rates are fixed for all users.

WWTP Summary

The Kingston WWTP's average annual design flow is 0.020 million gallons per day (MGD), according to the WWTP's Wisconsin Permit Discharge Elimination System (WPDES) permit. Mr. Dolgner told EPA that the WWTP treats approximately 11,000 to 13,000 gallons per day on

average during dry weather. The most the WWTP has treated in one day was 30,000 gallons during a very heavy precipitation event in 2018.

The Kingston WWTP consists of a two-cell lagoon treatment system. Before wastewater from Kingston's sewer collection system flows into the WWTP, it first flows into a large septic tank. The septic tank is located approximately 0.75 miles northwest of the WWTP on south side of town near the intersection Vine Street and Wisconsin State Route 44. The septic tank utilizes three chambers/tanks, each sized at 19,000 gallons, and provides both settling and some anaerobic treatment. Mr. Dolgner told EPA he was not sure what the wastewater detention time is in the septic tank. The buildup of solids in the septic tank was last removed in 2020 by United Liquid Waste Recycling, Inc, located in Watertown, WI ("United"). Previously the septic tank was pumped out every 10 years, although after the last pump out by United, the company requested that the frequency be increased to every 5 years, due to the concentration of solids in the tank. Mr. Dolgner indicated that there is no diversion associated with the septic tank.

Wastewater is then pumped out of the septic tank to the WWTP using a lift station with two pumps, for redundancy. Mr. Dolgner estimated that there were 4-5 pumping events to the WWTP from the septic tank on a normal, dry weather day. There is no screening associated with the WWTP headworks. The influent flow meter for the WWTP is located in sewerage before the first lagoon cell (lagoon pond #1). Mr. Dolgner was not sure what the exact size of the first or second stage lagoon. He informed EPA that the lagoons were cone shape and about 14-feet deep with 3-feet of freeboard. Mr. Dolgner indicated that the water surface level in the lagoons will drop in the summer/dry period but are otherwise consistent. There are two aeration blower motors utilized by the Kingston WWTP; only one blower is needed to run the aeration systems in both lagoons. Ferric acid is added to the first lagoon cell for phosphorus treatment. There is a control structure in between lagoon #1 and #2 that can control the flow out of lagoon #1. Mr. Dolgner estimated that overall retention time in the two lagoon cells was approximately 105 days. The solids were last pumped out of both lagoons in 2018.

There is no disinfection utilized at the Kingston WWTP. After the second stage lagoon (lagoon pond #2), the wastewater then flows back through a structure that Mr. Dolgner referred to as the effluent pit. After flowing through the effluent pit, wastewater will then flow by gravity to an effluent wet well south of the WWTP building, before being pumped to the Grand River. The Kingston WWTP has two effluent pumps. Mr. Dolgner will alternate between the use of these pumps and will have the pumps serviced if there are any issues. Sulfuric acid is added in the effluent pit as needed for pH adjustment. The Kingston WWTP utilizes an effluent ultrasonic flow meter, which Mr. Dolgner explained is calibrated every one to two years. The Kingston WWTP also includes a small building ("WWTP building") where records, some testing equipment, pump meters, and the aeration blower motors are housed. A small pump is utilized for the effluent compliance sampling, with the tubing located in the effluent discharge location, is also located in the WWTP building.

Receiving Waters



Exhibit 1: Kingston WWTP Discharge Location

Source: USGS The National Map

As previously mentioned, the Kingston WWTP directly discharges to the Grand River, located approximately 1.25 miles north of the WWTP. The Grand River is shown as a permanent river on the USGS National Map website (<https://apps.nationalmap.gov/viewer/>). The Grand River is impaired for aquatic life related to nitrogen/phosphorus issues.

WPDES Permit

The Kingston WWTP is located in Wisconsin and the State of Wisconsin is delegated permitting authority for this facility. The Wisconsin Department of Natural Resources (WDNR) issued the Kingston WWTP's current WPDES permit (Permit No. WI0036421). Kingston WWTP's WPDES permit is the same as an NPDES permit in other states. This WPDES permit became

effective on October 1, 2017 and the permit expires on September 30, 2022. This WPDES permit is currently administratively extended. The Village of Kingston is listed as the permittee.

The WPDES permit identifies one effluent sampling location (Outfall 001) for the Kingston WWTP and one influent sampling location (Outfall 701), post-septic tank. Outfall 001 had final effluent limitations for pH, total suspended solids (TSS), total ammonia-nitrogen, total phosphorus, chloride, fecal coliform, and five-day biochemical oxygen demand (BOD₅), with the total ammonia-nitrogen, total phosphorus, and chloride compliance sampling requiring 24-hour flow proportional composite sampling.

The WPDES permit also contains:

- Outfall 002 includes lagoon sludge sampling and disposal requirements.
- Outfall 990 includes the septic tank disposal requirements.
- Section 6 of the WPDES permit includes other standard permit requirements related to: sample and testing procedures, recording of records, sanitary sewer overflow and sewage treatment facility overflows requirements, bypass requirements, operation and maintenance, TSS and BOD₅ percent removal requirements, and additional sewage sludge requirements.

Other Background Information

- According to the EPA ECHO website, the last WDNR inspection occurred on September 25, 2019

SITE INSPECTION



Exhibit 2: General Location of the Kingston WWTP

Source: Google Maps (2025)

Inspection Discussion

The EPA team, consisting of Mr. Middleton, Mr. Small, and Mr. Nguyen, arrived at the Kingston WWTP at 10:00 am eastern daylight time (EDT) on Thursday, May 1, 2025. The weather was cloudy, and it rained during most of the inspection with a temperature of approximately 50° Fahrenheit. Mr. Dolgner, the Kingston WWTP representative present, met EPA outside of the WWTP. Soon after, Mr. Middleton began the inspection opening conference within the WWTP building. After explaining the purpose of the EPA inspection, Mr. Middleton, Mr. Nguyen, and Mr. Small then presented their EPA inspector credentials to Mr. Dolgner. Next, EPA discussed EPA's Confidential Business Information (CBI) provisions, notified Mr. Dolgner that EPA would be taking pictures of the facility and potentially be requesting documents, and proposed a tentative schedule for the inspection.

EPA inspectors then began discussing the background information of the Kingston WWTP, including the history of the facility and the general operations of the facility. This information is summarized above in the Facility Background section on page 2 of the inspection report.

WWTP WPDES Permit Compliance Discussion

Year	BOD ₅	BOD ₅	Total Phosphorus	Total Ammonia-Nitrogen	Total Ammonia-Nitrogen
	Monthly Avg.	Weekly Max	Monthly Avg.	Monthly Avg.	Weekly Avg.
2020	1	1	0	0	0
2021	1	2	9	3	4
2022	1	2	9	3	6
2023	1	0	3	2	4
2024	7	5	0	3	3
2025	1	1	0	2	3
Total	12	11	21	13	20

Exhibit 2: Kingston WWTP Last Five Years of WPDES Permit Exceedances Source: EPA's ECHO Database

Biochemical Oxygen Demand Exceedances

EPA asked Mr. Dolgner about the 23 BOD₅ WPDES permit effluent limit exceedances that had occurred in the last five years. Mr. Dolgner indicated to EPA he was unsure why these BOD₅ exceedances had occurred. EPA notes that it appears that many of these exceedances occur in spring, especially in the months of April and May. The Kingston WWTP was in SNC from the 1st Quarter of 2024 to the 3rd Quarter of 2024.

Total Ammonia-Nitrogen Exceedances

Next, EPA asked Mr. Dolgner about the 33 total ammonia-nitrogen WPDES permit effluent limit exceedances that had occurred in the last five years. Mr. Dolgner told EPA that he believed these exceedances had all occurred in the winter months when the biological activity in the lagoons was decreased by the cold conditions.

Total Phosphorus Exceedances

EPA then asked Mr. Dolgner about the 21 total phosphorus WPDES permit effluent limit exceedances that had occurred in the last five years. Mr. Dolgner explained to EPA that the Kingston WWTP had piloted 12 different treatment chemicals before deciding on the use of ferric acid to assist with phosphorus treatment. Since the use of the ferric acid, Mr. Dolgner indicated the phosphorus concentration in the treated effluent went from 5-6 mg/L to 1-2 mg/L. Mr. Dolgner also told EPA during the inspection that the use of ferric acid was a temporary solution. The Kingston WWTP was in SNC from 1st Quarter of 2021 to 1st Quarter of 2023.

85% Removal Calculations

Section 6.4.6 of Kingston WWTP's WPDES permit requires that the average effluent concentrations of BOD₅ and TSS shall not exceed 15% of the average influent concentrations. This equates to the removal of 85% of the average effluent concentrations of BOD₅ and TSS.

During the inspection, EPA asked Mr. Dolgner if the Kingston WWTP met this WPDES permit condition and Mr. Dolgner was unsure. After the inspection, EPA calculated this and found that since January 2022, the Kingston WWTP had met this condition 24 out of 39 months for BOD₅ and none of the months for TSS.

Compliance Sampling and Sample Analysis

During the inspection, Mr. Dolgner told EPA that he typically conducts the Kingston WWTP permit compliance sampling on Wednesdays before 6:00 am. The Markesan WWTP, located approximately 7 miles to the east of the Kingston WWTP, conducts the BOD₅, TSS, total ammonia-nitrogen, and total phosphorus WPDES permit compliance sample analysis for the Kingston WWTP. Mr. Dolgner performs the compliance sampling procurement and then use coolers and glassware provided by the Markesan WWTP laboratory to transport the samples, in the coolers on ice, to the Markesan WWTP. EPA learned from Mr. Dolgner that an official chain of custody sheet is not filled out; however, the bench sheet with sample information is filled out by Mr. Dolgner and then used by the Markesan WWTP laboratory to record the sample analysis results (Photograph 9 in Attachment A). After getting the results back from the Markesan WWTP laboratory, the Kingston discharge monitoring reports (DMRs) are then filled out by Mr. Dolgner and signed by Kathy Jerome, the Kingston's village clerk.

Mr. Dolgner also informed EPA that the Kingston WWTP had performed the previous WPDES permit-required fecal coliform sampling in 2019 and chloride in 2021 sampling. According to Mr. Dolgner, the last whole effluent toxicity (WET) sample analysis was done by Environmental Consulting & Testing in Superior, Wisconsin. Mr. Dolgner does the pH sampling at the Kingston WWTP and has shared with EPA that he has recently ordered a new pH meter to conduct the sample analysis.

EPA asked Mr. Dolgner about the February 2025 DMR submittal, which appeared on the EPA ECHO website as not having been submitted. Mr. Dolgner told EPA there was issue with the entry of a specific number within the DMR and, as a result, the DMR submittal for that month kept being rejected. As of the date of this inspection, the missing February 2025 DMR issues had been removed from the Kingston WWTP's compliance information on the EPA ECHO website.

Sewer Collection System and Sanitary Sewer Overflows

Next, Mr. Dolgner and EPA discussed the Kingston sewer collection system that conveys the wastewater to the WWTP. There are two main sanitary lift stations in the sewer collection system, in addition to the septic tank lift station. All three lift stations are checked on a regular basis.

The Village of Kingston has an ordinance that requires all restaurants to have grease traps, although recently both the restaurants in the Village closed. In addition, new residential connections are required to have a grinder pump. There is no formal Capacity, Management, Operation, and Maintenance (CMOM) program implemented by Kingston nor are there written maintenance collection system protocols. Mr. Dolgner informed EPA that there had not been any sanitary sewer overflows in Kingston in the last five years.

There had been two complaints of sewer backups from two residents in the past year. A local plumber televised the sewer associated with both cases and found issues in the private lateral caused the issues/blockages. Mr. Dolgner told EPA that Kingston has been cleaning its entire sanitary sewer collection system at least once every five years on a regular rotation.

Other Items Discussed:

- WWTP lagoon pond maintenance:
 - Mr. Dolgner indicated that there had been some buildup of cattails in the past within the lagoon ponds. Mr. Dolgner told EPA that WDNR recommends spraying or burning the cattails in the winter.
 - Duckweed does build-up in both the lagoons ponds. Mr. Dolgner indicated to EPA that the effluent will be slightly green once the duckweed begins to die. Once a year in the fall, Mr. Dolgner will have the surface of the lagoon ponds skimmed off to remove any buildup of duckweed before winter.
- Mr. Dolgner told EPA that the WDNR did conduct a CMOM inspection in 2024 at the WWTP, mainly going through a CMOM program self-assessment checklist.
- The Village of Kingston has considered implementing other potential treatment enhancements or changes to the WWTP, including the viability of land applying the treated effluent in lieu of a direct discharge to the Grand River.
- At the time of the inspection, there were no formalized plans to implement any upgrades to the Kingston WWTP.
- Mr. Dolgner told EPA that the required submittals in Section 5.1 in Kingston WWTP's WPDES permit was still ongoing.
- Over the past five year there have been some electrical issues with WWTP components. Mr. Dolgner indicated those issues are fixed as soon as possible, with the help of an electrician.
- Mr. Dolgner performs daily checks at the Kingston WWTP. EPA learned during the inspection that this protocol is not recorded.
- There is no designated backup for Mr. Dolgner regarding the operation of the Kingston WWTP.
- There have been no bypasses of the Kingston WWTP in the last five years.
- EPA asked Mr. Dolgner why WDNR has not reissued the WPDES permit for the Kingston WWTP. Mr. Dolgner indicated to EPA that he did not know why the permit has yet to be reissued.

- Kathy Jerome, Kingston village clerk, came out to the Kingston WWTP during the inspection around 11:00 am to introduce herself to the EPA inspectors.

WWTP Walk-Through

Note that Mr. Dolgner, Mr. Middleton, Mr. Nguyen and Mr. Small did view some components of the Kingston WWTP during the initial discussion portion of the inspection, with a more thorough WWTP walk-through occurring at noon after the conclusion of the discussion.

At 10:18 am, EPA and Mr. Dolgner viewed the influent pit that flowed into the Kingston WWTP from the septic tank. This wastewater then flowed into Lagoon Pond #1 (Photograph 1 in Attachment A). At this time, Mr. Dolgner and EPA followed the influent to Lagoon Pond #1 (Photograph 2 in Attachment A). EPA observed that the surface aeration setup on both lagoon ponds, which consisted of an air hose that was attached to two perforated pipes in the center of the pond (Photograph 4 in Attachment A). This perforated pipe appeared to be in places not making contact with the surface of the pond. Mr. Dolgner did mention later in the inspection that there had been some consideration for a different aeration setup than the current WWTP setup. EPA also noticed riprap along the water surface level to restrict vegetation growth and erosion. EPA and Mr. Dolgner went back inside to the WWTP building to continue discussing the WWTP operation.

At approximately 10:27 am, Mr. Dolgner then showed EPA a room within the WWTP building that housed the aeration blower motors (Photograph 5 in Attachment A). Mr. Dolgner explained to EPA that the blower motors are rotated in and out of service every 3-4 months. In addition, Mr. Dolgner performs the routine maintenance on this equipment. While in this room, EPA observed the ferric acid (Photograph 6 in Attachment A) and the sulfuric acid dosing setup. Mr. Dolgner estimated that the Kingston WWTP uses approximately one 55-gallon drum of ferric acid each month. Mr. Dolgner indicated to EPA that the WWTP uses much less sulfuric acid, which is added to the effluent to achieve a constant pH of about 7.5. Mr. Dolgner told EPA that the ferric acid and sulfuric acid are supplied by Hawkins, a wastewater treatment chemical supply company. EPA and Mr. Dolgner then went back to the main room in the WWTP building to continue discussing EPA's questions related to the Kingston WWTP.

While EPA and Mr. Dolgner discussed the Kingston WWTP's WPDES permit compliance sampling, Mr. Dolgner showed EPA the pump used to obtain compliance samples from the Kingston WWTP effluent sampling point (Photograph 7 in Attachment A). Mr. Dolgner then used the pump to obtain an effluent sample (Photograph 8 in Attachment A). The sample obtained at this time appeared clear.

At approximately 11:55 am, EPA and Mr. Dolgner began a more comprehensive walkthrough of the Kingston WWTP. EPA and Mr. Dolgner first went to the Lagoon Pond #1 and then walked to the lagoon ponds' control structure in between Lagoon Pond #1 and Lagoon Pond #2 (Photograph 11 in Attachment A). Mr. Dolgner told EPA that he typically does not adjust the

weir that controls the water surface elevation in the lagoon ponds, unless there is a large precipitation event that has occurred. EPA and Mr. Dolgner then turned to the north to observe lagoon pond #2. The aeration setup for Lagoon Pond #2 was similar to Lagoon Pond #1, with the same perforated aeration pipe setup (Photograph 13 in Attachment A). EPA did notice that there was some algae buildup on the southwest corner of Lagoon Pond #2 (Photograph 14 in Attachment A). There was also some buildup of material in Lagoon Pond #2 along the northern aeration hose (Photograph 15 in Attachment A).

After observing Lagoon Pond #2, EPA and Mr. Dolgner began walking towards the south to the effluent pit. Along the way, Mr. Dolgner identified the old leach field that the Kingston WWTP originally discharged to (Photograph 15 in Attachment A). While viewing the leach field, EPA inspectors noticed plastic chemical drums/containers arranged around a power pole just to the west of the leach field. Mr. Dolgner told EPA that he thought the drums surrounded the power pole to prevent a lawn mower from hitting the pole and the drums had been there for as long as he could remember. EPA checked the drums and determined that they were filled with liquid. Mr. Dolgner thought that the drums might be filled with water, but he was unsure. Labels on the drums indicated that the drums were used at one time to contain aluminium sulfate solution.

Next, EPA and Mr. Dolgner walked to the effluent pit. At the effluent pit, Mr. Dolgner removed the cover to allow EPA to look in at the pit (Photograph 18 and 19 in Attachment A). Mr. Dolgner explained that he covers the effluent pit because the pit can freeze in the winter and cause a disruption that would not allow the WWTP to discharge effluent. EPA also observed the effluent flow meter readout screen on the west wall of the WWTP building (Photograph 17 in Attachment A). EPA and Mr. Dolgner then walked to the effluent wet well that was located south of the WWTP building. Mr. Dolgner removed the effluent wet well manhole cover to allow EPA to observe the wet well (Photograph 20 in Attachment A).

EPA and Mr. Dolgner then left this portion of the Kingston WWTP and drove 5 minutes to the north to the Kingston village hall building to view the WWTP backup generator (Photograph 21 in Attachment A). Mr. Dolgner informed EPA that this backup diesel generator that can power the WWTP and the three lift stations located within the Kingston sewer collection system. Next, EPA and Mr. Dolgner drove to the east to observe the lift station (Photograph 22 and 23 in Attachment A) and the septic tank (Photograph 24 in Attachment A). EPA learned from Mr. Dolgner that the lift station at this location could pump about 2,200 gallons per minute to the Kingston WWTP. Mr. Dolgner also explained to EPA how the three septic tanks were arranged and how United would pump solids out of the septic tank.

Then, EPA and Mr. Dolgner drove a short distance north to view one of the Kingston sewer collection system lift station locations. In Doc Meyers Community Park, EPA observed the lift station location (Photograph 25 in Attachment A). Next, EPA and Mr. Dolgner drove west to 550 Main Street to view the last lift station within Kingston (Photographs 26 and 27 in Attachment A). At both of these locations, EPA did not notice or observe any evidence of a

discharge or spill in and around the lift stations. EPA and Mr. Dolgner then drove to the Kingston WWTP Outfall 001 discharge location. Mr. Dolgner showed EPA that the discharge occurred just downstream of a private bridge over the Grand River on the south side of the bank. At this location, EPA observed white bubbles that appeared more numerous than in other locations in the Grand River. Mr. Dolgner also explained that he did the WET sampling upstream of the discharge location on the Grand River, as required by the WPDES permit.

Then, EPA and Mr. Dolgner drove approximately 7 miles to the east to the Markesan WWTP in order to observe the Markesan WWTP laboratory where the majority of Kingston's compliance sampling analysis occurred. After arriving at the Markesan WWTP laboratory at approximately 1:00 pm, EPA inspectors met Jeff Heberer, the Markesan Water/Wastewater Superintendent. While at the laboratory, EPA asked Mr. Dolgner how the samples were dropped off. Mr. Dolgner told EPA that usually the samples were either turned over to someone in the lab or dropped off into the sampling storage refrigerator in the laboratory. Mr. Heberer then showed EPA the sampling storage refrigerator, which included a calibrated thermometer inside (Photograph 30 in Attachment A). Mr. Dolgner did add that there were a few times where he had dropped off the sample in the exterior sampling cooler in the Markesan WWTP parking lot. Mr. Heberer indicated that this storage cooler did not have temperature control. EPA then asked about if the Kingston WWTP compliance samples were ever received by the Markesan WWTP laboratory frozen; both Mr. Dolgner and Mr. Heberer said that the Kingston WWTP compliance samples had never been frozen before analysis.

EPA inspectors then continued to ask Mr. Dolgner and Mr. Heberer questions regarding the Kingston WWTP sampling including go over the sampling procedure and sampling sheets that are filled out and act as a chain of custody form. Mr. Heberer informed EPA that Matt Mace, a Markesan WWTP employee, does most of the sample analysis in the Markesan WWTP laboratory. Mr. Heberer then showed EPA a summary sheet of the results of the Kingston WWTP 2025 WWTP. Overall, the Markesan WWTP laboratory appear to be clean and well organized.

Closing Conference

Mr. Middleton began the closing conference in the Markesan WWTP laboratory at approximately 1:30 pm. Mr. Middleton, Mr. Nguyen, and Mr. Small, Mr. Dolgner, and Mr. Heberer were all present for the closing conference. After thanking Mr. Dolgner and Mr. Heberer for their time, EPA then went over the preliminary concerns it found during its inspection, some of which are listed below. EPA also told Mr. Dolgner that it would develop an inspection report that summarized its inspection of this facility and anticipated that it would provide a copy of the report to him in approximately 60 days. After EPA confirmed that it had not obtained any information or taken any pictures that were considered CBI, the closing conference ended at approximately 1:36 pm.

EPA ended the inspection and exited the facility at approximately 1:40 pm.

AREAS OF CONCERN:

EPA has identified 16 areas of concern based on findings during the inspection of the Kingston WWTP. An enumerated list of the areas of concern are listed below:

1. Biochemical Oxygen Demand 5-Day Exceedances: Kingston WWTP has reported 23 WPDES permit exceedances related to the Kingston WWTP's BOD₅ effluent limits in the last five years. EPA is concerned that the exceedances typically occur each year in the April to June timeframe; suggesting that something is occurring with the lagoon ponds at this time of year that leads to the effluent limit exceedances.
2. Total Ammonia-Nitrogen Exceedances: Kingston WWTP has reported 33 WPDES permit exceedances related to the Kingston WWTP's ammonia-nitrogen effluent limits in the last five years. EPA is concerned that the exceedances occur each year in the colder months of the year.
3. Total Phosphorous Issues
 - a. Total Phosphorous Exceedances: Kingston WWTP has reported 21 WPDES permit exceedances related to the Kingston WWTP's Phosphorous effluent limits in the last five years. EPA notes that the phosphorous effluent limits have ceased since Kingston WWTP use of ferric acid.
 - b. EPA is unclear what the status is of water quality based effluent limit (WQBEL) for total phosphorus, including the schedule for required submittals and which submittals have been made in Section 5.0 in Kingston WWTP's WPDES permit. In addition, it is unclear if Kingston WWTP has utilized or looked to Water Quality Trading or the Watershed Adaptive Management Options, pursuant to Section 2.2.1.4 of the WPDES permit.
 - c. Given the use of ferric acid, EPA notes that more material may be settling out within the lagoon ponds. This may fill up the lagoon ponds faster than what occurred before the use of ferric acid.
4. 85% Removal of TSS and BOD₅: Section 6.4.6 of Kingston WWTP's WPDES permit requires that the average effluent concentrations of BOD₅ and TSS shall not exceed 15% of the average influent concentrations. EPA has calculated that the Kingston WWTP has met this requirement 24 out of 39 months for BOD₅ and none of the months for TSS since 2022. Note that the TSS requirement would not apply to the Kingston WWTP if the Kingston WWTP received a variance for TSS granted under NR 210.07(2), Wis. Adm. Code, pursuant to Kingston WWTP's WPDES permit.

5. 24-Hour Flow Proportional Sampling: Section 2.2.1 of Kingston WWTP's WPDES permit requires 24-hour proportional sampling for total ammonia-nitrogen and total phosphorous. "24-hour composite sample" is defined in Wisconsin *NR 218.04* as "a combination of individual samples taken at intervals of not more than one hour such that the volumes of each of the individual samples and of the combination are proportional to the volumes of flow during each interval and during the 24-hour period respectively." During the inspection, it was unclear if Mr. Dolgner was regularly performing 24-hour flow proportional sampling for total ammonia-nitrogen and total phosphorous. The Kingston WWTP also did not possess a composite sampler. When 24-hour flow proportional sampling was attempted in the past, Mr. Dolgner indicated he would visit the wastewater treatment plant throughout the 24-hour sampling period and take a sample every 1-2 hours. EPA is concerned that this procedure does not meet the Wisconsin requirements and Kingston WWTP does not have the equipment to perform the required 24-hour proportional sampling properly.

6. Duckweed and Algae Build-up: During the inspection, Mr. Dolgner indicated that duckweed builds up in the lagoon ponds throughout the summer into early fall. Since duckweed can lower the dissolved oxygen within the lagoon ponds and, therefore, effect the treatment efficacy of the lagoon ponds, the duckweed must be controlled. EPA is concerned that the Kingston WWTP only removes the duckweed in the fall and does not employ other methods to control duckweed when it starts to accumulate.

In addition, EPA observed some algae build-up in the southwest corner of Lagoon Pond #2. Aerated lagoons should not have a build-up of algae. Since algae can raise the amount of TSS and BOD5 levels, especially when it begins to die, EPA is concerned about its presence in the Kingston WWTP. EPA is unclear if the Kingston WWTP has employed any measure, such as copper sulfate, to control the build-up of algae.

7. Lagoon Ponds Detention Time: EPA learned from Mr. Dolgner during the inspection that he had estimated the detention time of the Kingston WWTP lagoon ponds to be 105 days. The "Operation of Municipal Wastewater Treatment Plants Manual of Practice" (Water Environmental Federation MOP 11) indicates a normal detention time range of 3 to 10 days for aerated lagoons (page 799). EPA is concerned that the elevated detention time of the Kingston WWTP lagoon ponds may have caused/contributed to some of the WPDES permit effluent limit exceedance issues and the algae/duckweed build-up in the lagoon ponds.
8. pH Sampling: When Mr. Dolgner performs the pH WPDES permit compliance sampling, the time when the sample was taken and when the sample analysis was performed was not recorded. Therefore, EPA was unable to determine if the required holding time of 15 minutes, as specified in 40 C.F.R. Part 136, was met.

9. Lack of Operator License: Section 6.2.9 of the Kingston WWTP WPDES permit indicates the operation of the facility's wastewater treatment shall be by or under the supervision of a state certified operator, as required by NR 108.06(2), Wis. Adm. Code. During the inspection, the EPA learned that Mr. Dolgner operator certification had expired, and the Kingston WWTP did not employ any other state certified operator.
10. Chemical Drum Storage Outside: During the inspection, EPA observed chemical drums/storage containers oriented around a power pole in between the Kingston WWTP and the leach field (Photograph 16 in Attachment A). The drums were labeled to contain aluminium sulfate and EPA confirmed that there was still liquid in the drums. Mr. Dolgner was not sure what was in these drums. If the drums still did contain aluminium sulfate, EPA would be concerned about the spill potential associated with the drums stored in this manner.
11. Chain of Custody/Bench Sheet/Compliance Sample Processing: EPA observed the following concerns within the chain of custody/bench sheet sampling document filled out by Kingston WWTP and Markesan WWTP:
 - a. There is no recorded analysis time for the samples. EPA, therefore, cannot confirm that the required applicable holding time for the sample parameters, as specified in 40 C.F.R. Part 136, was met.
 - b. Although the Markesan WWTP laboratory does record the temperature of the sample in the provided chain of custody, the document does not confirm that the other preservation requirements for the total phosphorus and ammonia-nitrogen were met.
 - c. If the samples were dropped off to a person by Mr. Dolgner, that person is not identified in this document.
 - d. The person who performed the compliance sample analysis is not identified in this document.
12. Use of the Exterior Sampling Cooler at the Markesan WWTP: During the inspection, Mr. Dolgner indicated that rarely Kingston WWTP samples were left in the exterior sampling cooler at the Markesan WWTP. Since there is no cooling element or temperature monitoring in the exterior sampling cooler, EPA is concerned that the required sample preservation temperature could not be maintained for compliance samples stored in this cooler.
13. Backup WWTP Operator/Sampler: There is not a proper contingency plan for WWTP operation and WPDES compliance sampling in the case of Mr. Dolgner's absence or unavailability.

14. Operation and Maintenance Activities: Given the concerns in #13, above, EPA is concerned that if Mr. Dolgner was not available to perform the Kingston WWTP maintenance activities, there may be an issue to determine what needed maintenance activities to be done and how that maintenance would be done.
15. WWTP Effluent Discharge in Grand River: At Outfall 001 (Kingston WWTP treated effluent discharge to the Grand River), EPA observed numerous small white bubbles around the submerged discharge pipe (Photograph 28 in Attachment A). It was unclear if the presence of these white bubbles was because of the composition of the discharge or because of the submerged discharge being discharged to the Grand River under pressure. Section 6.4.4 of Kingston WWTP's WPDES permit indicates that "there shall be no discharge of floating solids or visible foam other than trace amounts."
16. Capacity, Management, Operation and Maintenance Program: During the inspection, Mr. Dolgner told EPA that the Kingston WWTP did not have a CMOM Program. Section 6.3.2. of the Kingston WWTP's WPDES permit requires that the permittee "shall develop and maintain written documentation of the CMOM program components in NR 210.23 Wis Adm. Code." The components of a CMOM program are identified in NR 210.23(4) and include goals, organization, legal authority, operation and maintenance, design and performance standards, and an overflow emergency response plan. It is unclear if the Kingston WWTP has developed all of the components of a CMOM program and has written CMOM program documentation.

LIST OF ATTACHMENTS:

- A. Inspection Photograph Log

Attachment A: Village of Kingston WWTP Inspection Photograph Log
U.S. EPA Inspection – May 1, 2025
All photos taken by Eric Small, Physical Scientist, U.S. EPA and Keith Middleton,
Environmental Engineer, U.S. EPA
Camera: Pentax WG-1



1: IMGP0001

Description: Influent into Kingston WWTP from Septic Tank

Location: Kingston WWTP

Camera Direction: N/A

Date/Time: 5/01/2025 at 10:18 A.M.



2: IMGP0002

Description: Lagoon Pond #1 with Aerators

Location: Kingston WWTP

Camera Direction: Northwest

Date/Time: 05/01/2025 at 10:19 A.M.



3: IMGP0003

Description: Lagoon Pond #1 with Aerators

Location: Kingston WWTP

Camera Direction: Northwest

Date/Time: 05/01/2025 at 10:19 A.M.



4: IMGP0004

Description: Lagoon Pond #1 with Aerators

Location: Kingston WWTP

Camera Direction: Northwest

Date/Time: 05/01/2025 at 10:19 A.M.



5: IMGP0005

Description: Aeration Blower Motors

Location: Kingston WWTP

Camera Direction: N/A - Inside

Date/Time: 05/01/2025 at 10:28 A.M.



6: IMGP0006

Description: WWTP Ferric Acid Dosing Setup

Location: Kingston WWTP

Camera Direction: N/A - Inside

Date/Time: 05/01/2025 at 10:29 A.M.



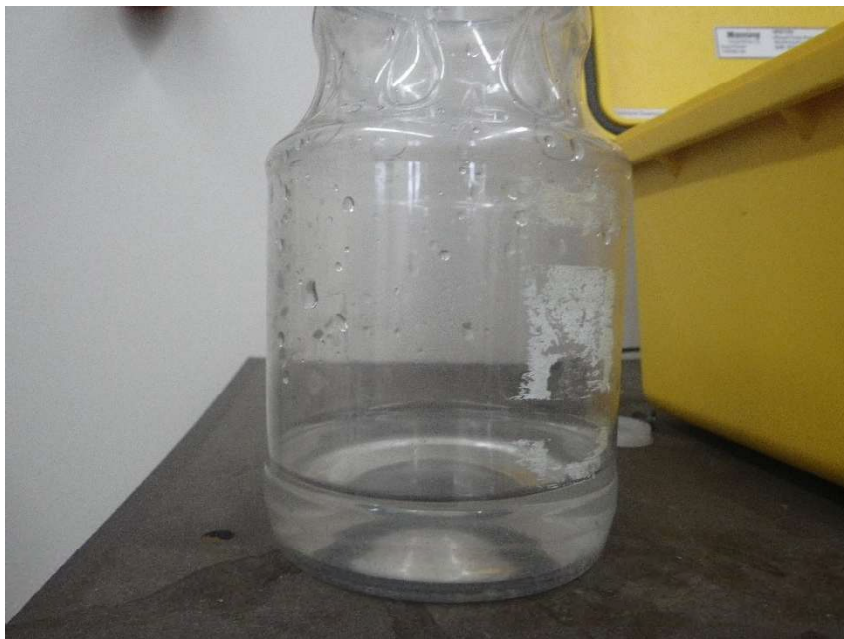
7: IMGP0007

Description: Effluent Compliance Sampling Location

Location: Kingston WWTP

Camera Direction: N/A - Inside

Date/Time: 05/01/2025 at 10:34 A.M.



8: IMG0008

Description: WWTP Sample Effluent

Location: Kingston WWTP

Camera Direction: N/A - Inside

Date/Time: 05/01/2025 at 10:45 A.M.

FACILITY Lu6000

SAMPLE DATE 4/9/25

SAMPLE TIME 6:00 pm

SAMPLED BY 31

DATE SAMPLE DELIVERED TO LAB 4/9/25

TIME SAMPLE DELIVERED TO LAB 6:30 pm

SAMPLE DELIVERED TO LAB BY 31

WAS SAMPLE RECEIVED ON ICE (YES) or NO AND

TEMPERATURE OF SAMPLE RECEIVED 3

BOD RESULTS using ANALYTICAL METHOD 5210B
 Influent [ki] 105 mg/l
 Effluent [ke] 19 mg/l

SUSPENDED SOLIDS RESULTS using METHOD 2540D
 Influent [ki] 18 mg/l
 Effluent [ke] 2 mg/l

AMMONIA NITROGEN RESULTS using METHOD Hach 10205
 Influent [ki] 25.861 mg/l LOD 2.3
 Effluent [ke] 20.337 mg/l LOQ 7.7

TOTAL PHOSPHORUS RESULTS using METHOD 4500-P-E
 Influent [ki] 2.169 mg/l LOD 0.150
 Effluent [ke] 0.303 mg/l LOQ 0.500

QC Exceedance _____

MARKESAN LAB # 424004680

9: IMGP0009

Description: WWTP Compliance Sampling **Benchsheet**

Location: Kingston WWTP

Camera Direction: N/A - Inside

Date/Time: 05/01/2025 at 11:16 A.M.



10: IMGP0010

Description: Lagoon Pond #1

Location: Kingston WWTP

Camera Direction: West

Date/Time: 05/01/2025 at 11:57 A.M.



11: IMGP0011

Description: Control Structure Between Lagoon Pond #1 and Lagoon Pond #2

Location: Kingston WWTP

Camera Direction: N/A

Date/Time: 05/01/2025 at 11:59 A.M.



12: IMGP0012

Description: Lagoon Pond #2

Location: Kingston WWTP

Camera Direction: Northwest

Date/Time: 05/01/2025 at 12:00 P.M.



13: IMGP0013

Description: Lagoon Pond #2

Location: Kingston WWTP

Camera Direction: North

Date/Time: 05/01/2025 at 12:01 P.M.



14: IMGP0014

Description: Lagoon Pond #2

Location: Kingston WWTP

Camera Direction: West

Date/Time: 05/01/2025 at 12:03 P.M.



15: IMGP0015

Description: Leach Field

Location: Kingston WWTP

Camera Direction: East

Date/Time: 05/01/2025 at 12:04 P.M.



16: IMGP0016

Description: Assorted Chemical Drums

Location: Kingston WWTP

Camera Direction: East

Date/Time: 05/01/2025 at 12:06 P.M.



17: IMGP0017

Description: Effluent Flow Meter Read-Out

Location: Kingston WWTP

Camera Direction: East

Date/Time: 05/01/2025 at 12:08 P.M.



18: IMGP0018

Description: Effluent Pit

Location: Kingston WWTP

Camera Direction: N/A

Date/Time: 05/01/2025 at 12:09 P.M.



19: IMGP0019

Description: Covered Effluent Pit

Location: Kingston WWTP

Camera Direction: N/A

Date/Time: 05/01/2025 at 12:10 P.M.



20: IMGP0020

Description: Effluent Wet Well

Location: Kingston WWTP

Camera Direction: N/A

Date/Time: 05/01/2025 at 12:12 P.M.



21: IMGP0021

Description: Backup WWTP Diesel Generator

Location: Kingston Village Hall

Camera Direction: East

Date/Time: 05/01/2025 at 12:29 P.M.



22: IMGP0022

Description: Lift Station From Septic Tank to Kingston WWTP

Location: Septic Tank Location

Camera Direction: N/A

Date/Time: 05/01/2025 at 12:33 P.M.



23: IMGP0023

Description: Lift Station From Septic Tank to Kingston WWTP

Location: Septic Tank Location

Camera Direction: Southeast

Date/Time: 05/01/2025 at 12:35 P.M.



24: IMGP0024

Description: Village of Kingston Main Lift Station

Location: Septic Tank Location

Camera Direction: Southeast

Date/Time: 05/01/2025 at 12:36 P.M.



25: IMGP0025

Description: Doc Meyers Community Park Lift Station

Location: Doc Meyers Community Park

Camera Direction: n/a

Date/Time: 05/01/2025 at 12:39 P.M.



26: IMGP0026

Description: Main Street Lift Station

Location: 550 Main Street

Camera Direction: North

Date/Time: 05/01/2025 at 12:43 P.M.



27: IMGP0027

Description: Main Street Lift Station

Location: 550 Main Street

Camera Direction: n/a

Date/Time: 05/01/2025 at 12:43 P.M.



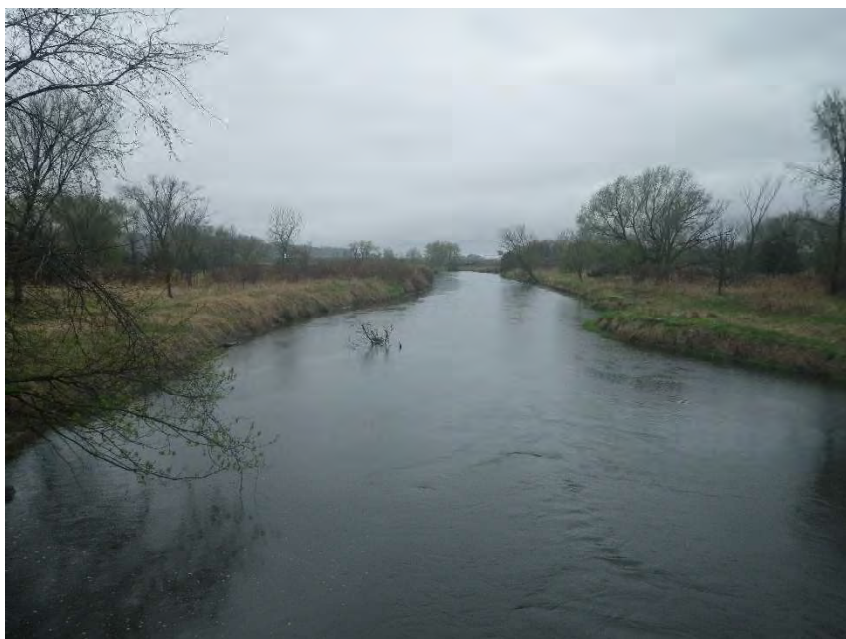
28: IMGP0028

Description: Outfall 001 Effluent Location

Location: Outfall 001

Camera Direction: West

Date/Time: 05/01/2025 at 12:46 P.M.



29: IMGP0029

Description: Grand River; Downstream of Outfall 001

Location: Outfall 001

Camera Direction: West

Date/Time: 05/01/2025 at 12:46 P.M.



30: IMGP0030

Description: Sampling Refrigerator with Thermometer

Location: Markesan WWTP Department Lab

Camera Direction: N/A - Inside

Date/Time: 05/01/2025 at 1:06 P.M.



31: IMGP0031

Description: Bottles Used for Two-Point pH Calibration

Location: Markesan WWTP Department Lab

Camera Direction: n/a

Date/Time: 05/01/2025 at 1:08 P.M.

2025 Kingston Testing Results									
Date	BOD		S.S		Ammonia		Phosphorus		
	INF	EFF	INF	EFF	INF	EFF	INF	EFF	
1-3-25	81	23	18	12	37.994	30.568	5.326	1.662	
1-8-25	97	21	26	20	32.796	37.599	5.290	1.618	
1-15-25	136	17	28	14	46.570	46.312	6.400	2.097	
1-21-25	113	24	26	14	47.495	48.160	6.525	2.165	
1-29-25	121	23	42	22	31.947	42.278	6.066	2.385	
2-5-25	113	20	28	18	44.520	46.476	6.811	1.893	
2-12-25	272	27	18	22	43.710	42.603	7.174	1.832	
2-21-25	125	27	30	24	42.432	45.040	6.028	2.317	
3-6-25	120	32	22	23	34.351	44.222	6.222	2.230	
3-8-25	124	59	22	37	44.873	32.203	6.384	2.906	
3-12-25	110	17	24	40	53.175	75.679	5.474	1.865	
3-14-25	122	39	30	20	36.724	32.100	6.290	1.732	
3-26-25	112	32	14	11	29.448	31.246	4.347	1.920	
4-2-25	95	24	16	7	31.436	35.707	5.436	2.343	
4-9-25	105	19	18	2	25.821	20.557	2.169	0.308	
4-16-25	117	47	16	7	31.691	14.046	2.914	0.845	
4-23-25	133	41	26	12	34.044	8.420	3.773	0.662	
4-30-25					31.691	4.057	5.163	0.912	

32: IMG0032

Description: Kingston WWTP Sampling Results

Location: Markesan WWTP Department Lab

Camera Direction: n/a

Date/Time: 05/01/2025 at 1:12 P.M.



33: IMGP0033

Description: Exterior Sampling Cooler at Markesan Wastewater Treatment Plant

Location: Markesan WWTP Department

Camera Direction: West

Date/Time: 05/01/2025 at 1:37 P.M.

APPENDIX D

SITE MAPS



Project Location Map

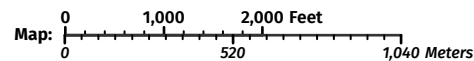


Legend: (some map layers may not be displayed)

-  Latest Leaf Off Index
-  Latest Leaf Off Imagery

Notes:



Map: 

Service Layer Credits:
Latest Leaf Off, DNR Detailed Feature VTL (WTM):

Map projection: NAD 1983 HARN Wisconsin TM

This map is a product generated by a DNR web mapping application.

This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: <https://dnr.wisconsin.gov/legal>

Date Printed: 8/25/2026 1:08 PM





Floodplain Map

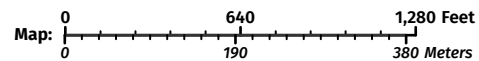


Legend: (some map layers may not be displayed)

-  24K Lakes and Open Water
-  Latest Leaf Off Index
-  Latest Leaf Off Imagery

Notes:



Map: 

Service Layer Credits:
Latest Leaf Off, DNR Detailed Feature VTL (WTM):

Map projection: NAD 1983 HARN Wisconsin TM

This map is a product generated by a DNR web mapping application.

This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: <https://dnr.wisconsin.gov/legal>

Date Printed: 8/25/2026 10:53 AM



Legend: (some map layers may not be displayed)

Wetland Class Points

 Excavated pond

 Wetland Class Areas

 24K Lakes and Open Water

 Latest Leaf Off Index

Latest Leaf Off Imagery

Notes:



Map: 0 230 460 Feet
0 60 120 Meters

Service Layer Credits:
Latest Leaf Off: , DNR Detailed Feature VTL (WTM): , Wetland Inventory NWI: Calvin Lawrence, Dennis Weise, Nina Rihn

Map projection: NAD 1983 HARN Wisconsin TM

This map is a product generated by a DNR web mapping application.

This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: <https://dnr.wisconsin.gov/legal>.

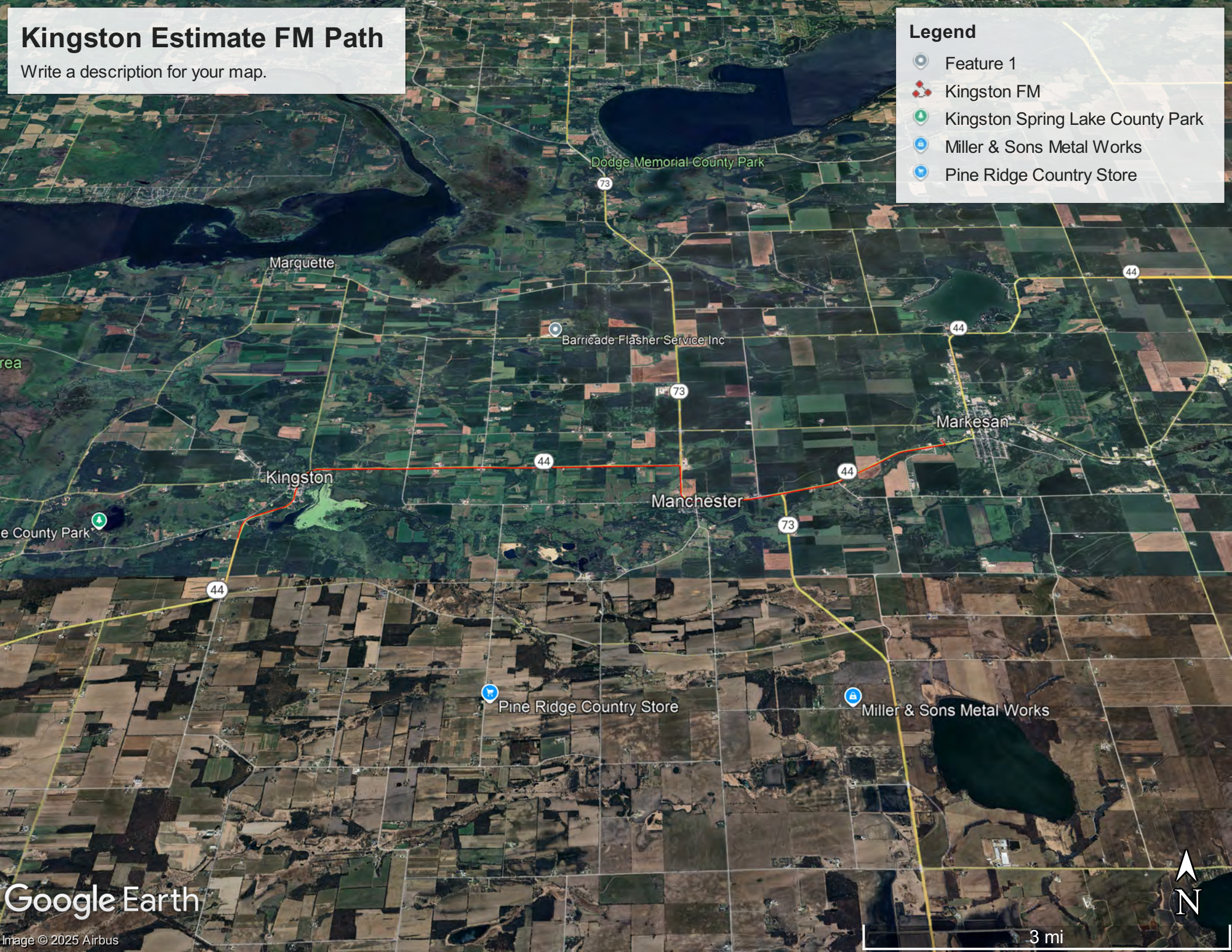
Date Printed: 8/25/2026 10:55 AM

Kingston Estimate FM Path

Write a description for your map.

Legend

- Feature 1
- Kingston FM
- Kingston Spring Lake County Park
- Miller & Sons Metal Works
- Pine Ridge Country Store



APPENDIX E

FLOW AND LOADING DATA

Kingston WWTP Flow and Loading
Design Year 2046
Current Census Population (2026) 431
Projected Population (2046) 382
Percent Change -11%



Base Loadings	Base Data		Flow			BOD5			TSS			TKN*			Phosphorus*		
	Quantity	Units	Rate	Units	Flow (MGD)	Rate	Units	Loading (lbs/d)	Rate	Units	Loading (lbs/d)	Rate	Units	Loading (lbs/d)	Rate	Units	Loading (lbs/d)
Population	431	Persons	41.9	gpcd	0.018	115	mg/L	17	24	mg/L	4	24	mg/L	3.6	3.7	mg/L	0.6
Future Increases																	
Population Change	-49	Persons	41.9	gpcd	-0.002	115	mg/L	-2	24	mg/L	0	24	mg/L	-0.4	3.7	mg/L	-0.1
Projections																	
Average Design					0.016	115		15	24		3	24		3.2	3.7		0.5

*Assumed low strength concentration value from Metcalf & Eddy (2014), *Wastewater Engineering: Treatment and Resource Recovery*, Table 3-18

Flow Peaking Factors	
Average Daily Base Flow	1
Maximum Monthly Flow	1.91
Maximum Weekly Flow	3.61
Maximum Daily Flow	15.50

I&I Analysis				
Condition	Flow	Units	Dry Weather <120 gpcd?	Wet Weather <275 gpcd
Dry Weather	0.016	MGD		
Dry Weather	37.4	gpcd	Yes	
Wet Weather	0.019	MGD		
Wet Weather	40.2	gpcd		Yes
I&I Analysis	0.003	MGD		
I&I Analysis	7.7	gpcd		

Flows and Loadings		
Parameter	Current	Projected
Average Daily Base Flow (MGD)	0.018	0.016
Maximum Monthly Flow (MGD)	0.034	0.031
Maximum Weekly Flow (MGD)	0.065	0.058
Maximum Daily Flow (MGD)	0.280	0.248
NR110.15 Max Hour Peaking Factor	5	5
Peak Hour (NR 110.15) (MGD)	0.09	0.08
Average BOD5 (lbs/d)	17	15
Peak Month BOD5 (lbs/d)	40	35
Peak Day BOD5 (lbs/d)	123	109
Average TSS (lbs/d)	4	3
Peak Month TSS (lbs/d)	11	9
Peak Day TSS (lbs/d)	120	107
Average TKN (lbs/d)	3.6	3.2
Average Phosphorus (lbs/d)	0.6	0.5

APPENDIX F

PRELIMINARY NRCS WEB SOIL SURVEY INVESTIGATION

Soil Map—Green Lake County, Wisconsin



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

8/3/2026
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Green Lake County, Wisconsin

Survey Area Data: Version 20, Sep 10, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7535B	Gotham loamy fine sand, 2 to 6 percent slopes	20.9	86.0%
7535C	Gotham loamy fine sand, 6 to 12 percent slopes	0.5	1.9%
7741B	Oakville fine sand, 2 to 6 percent slopes	2.9	12.1%
Totals for Area of Interest		24.3	100.0%

APPENDIX G

WASTEWATER TREATMENT PLANT ALTERNATIVES COST ESTIMATES

Kingston WWTP Facility Plan Capital Cost Alternative Analysis

**Estimate of Probable Costs:
Alternative 2 - Regionalization
Kingston, WI**

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL PRICE
General					
1	Mobilization	1	LS	\$298,000	\$298,000
2	General Conditions	1	LS	\$213,000	\$213,000
Force Main					
3	4" PVC Directionally Drilled Force Main	44100	LF	\$72	\$3,153,200
4	Air Release Manholes	8	EA	\$11,000	\$88,000
5	Crushed Aggregate Base Course	200	CY	\$44	\$8,800
6	Hot Mix Asphalt Pavement	50	Ton	\$130	\$6,500
7	Turf Establishment	1500	SY	\$2	\$3,300
8	Meter Manhole	1	LS	\$16,500	\$16,500
Lift Station					
9	Lift Station Wet Well and Valve Vault	1	LS	\$11,000	\$11,000
10	Lift Station Pumps	3	EA	\$44,000	\$132,000
11	Flow Monitoring Equipment, Instrumentation and Controls, Installation	1	LS	\$385,000	\$385,000
12	Silt Fence	1400	LF	\$3	\$4,700
13	Allowance for SCADA & Pump Control Panels	1	LS	\$11,000	\$11,000
14	Modification of Existing Plant Outfall	1	LS	\$33,000	\$33,000
15	Lift Station Installation	1	LS	\$207,515	\$207,600
WWTP Decommissioning					
16	Sludge Removal	1	LS	\$77,000	\$77,000
17	Septic Tank Bypassing and Process Piping	1	LS	\$110,000	\$110,000
CONSTRUCTION SUBTOTAL					\$4,758,600
Contingency					\$476,000
Engineering Design					\$192,500
RPR					\$380,688
Legal					\$96,000
Funding Admin					\$20,800
Bonding					\$143,000
Interim Interest					\$143,000
Financial Consultant					\$96,000
TOTAL ESTIMATED COST (ROUNDED):					\$6,307,000

Kingston WWTP Facility Plan Capital Cost Alternative Analysis
Estimate of Probable Costs:
Alternative 3 - Upgrade Existing Facility with Absorption Ponds
Kingston, WI

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
General					
1	Mobilization	1	LS	\$96,000	\$96,000
2	General Conditions	1	LS	\$69,000	\$69,000
3	Septic Tank Bypassing and Process Piping	1	LS	\$110,000	\$110,000
Aeration System Upgrades					
4	Sludge Removal	1	LS	\$77,000	\$77,000
5	Aeration System (Diffusers, Piping, Blowers, Baffle)	1	LS	\$184,800	\$184,800
6	Aeration System Installation	1	LS	\$71,148	\$71,200
Absorption Ponds					
7	Earthwork	12600	CY	\$19	\$235,700
8	Bulk Demolition	11000	LF	\$23	\$254,100
9	Pump Flow Control Valve	2	EA	\$7,175	\$14,400
10	Process Piping and Valves	1	LS	\$187,000	\$187,000
11	Valve Vault	1	LS	\$16,500	\$16,500
12	Topsoil Stockpile and Respread, with Seeding and Fertilizer	1	LS	\$8,800	\$8,800
13	Rip-Rap	700	CY	\$154	\$107,800
14	Crushed Stone	250	CY	\$66	\$16,500
15	Absorption Ponds Installation	1	LS	\$78,348	\$78,400
CONSTRUCTION SUBTOTAL					\$1,527,200
Contingency					\$153,000
Engineering Design					\$192,500
RPR					\$122,176
Legal					\$31,000
Funding Admin					\$20,800
Bonding					\$46,000
Interim Interest					\$46,000
Financial Consultant					\$31,000
TOTAL ESTIMATED COST (ROUNDED):					\$2,170,000

Kingston WWTP Facility Plan Capital Cost Alternative Analysis
Estimate of Probable Costs:
Alternative 4 - Upgrade Existing Facility with Subsurface Absorption
Kingston, WI

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
General					
1	Mobilization	1	LS	\$103,000	\$103,000
2	General Conditions	1	LS	\$74,000	\$74,000
3	Septic Tank Bypassing and Process Piping	1	LS	\$110,000	\$110,000
Aeration System Upgrades					
4	Sludge Removal	1	LS	\$77,000	\$77,000
5	Aeration System (Diffusers, Piping, Blowers, Baffle)	1	LS	\$184,800	\$184,800
6	Aeration System Installation	1	LS	\$71,148	\$71,200
Subsurface Absorption Cells					
7	Subsurface Absorption Pilot Testing	1	LS	\$330,000	\$330,000
8	Earthwork	6000	CY	\$19	\$112,200
9	Bulk Demolition	11000	LF	\$23	\$254,100
10	Process Piping and Valves	1	LS	\$187,000	\$187,000
11	Valve Vault	1	LS	\$16,500	\$16,500
12	2" PVC Perforated Pipe	11000	LF	\$2	\$24,200
13	Pump Flow Control Valve	2	EA	\$7,175	\$14,400
14	Subsurface Absorption Cells Installation	1	LS	\$87,665	\$87,700
CONSTRUCTION SUBTOTAL					\$1,646,100
Contingency					\$165,000
Engineering Design					\$192,500
RPR					\$131,688
Legal					\$33,000
Funding Admin					\$20,800
Bonding					\$50,000
Interim Interest					\$50,000
Financial Consultant					\$33,000
TOTAL ESTIMATED COST (ROUNDED):					\$2,323,000

Present Worth Analysis

Kingston, WI

CURRENT MARKET INTEREST RATE $i =$ 4.3%
 Number of Years, $n =$ 20 years

Alternative 2		Alternative 3		Alternative 4	
Initial Capital Costs =	\$6,307,000	Initial Capital Costs =	\$2,170,000	Initial Capital Costs =	\$2,323,000
Annual Operations & Maintenance Costs =	\$10,000	Annual Operations & Maintenance Costs =	\$9,000	Annual Operations & Maintenance Costs =	\$9,000
Future Salvage Value =	\$0	Future Salvage Value =	\$0	Future Salvage Value =	\$0
Present Worth of 20 years of O & M =	\$133,000	Present Worth of 20 years of O & M =	\$120,000	Present Worth of 20 years of O & M =	\$120,000
		$PW = \frac{\text{Annual OM} \times (1+i)^n - 1}{i \times (1+i)^n}$			
Present Worth of 20 yr Salvage Value =	\$0	Present Worth of 20 yr Salvage Value =	\$0	Present Worth of 20 yr Salvage Value =	\$0
		$PW = \frac{FSV^*}{(1+i)^n} \times 1$			
Alternative 2 Total Present Worth =	\$6,440,000	Alternative 3 Total Present Worth =	\$2,290,000	Alternative 4 Total Present Worth =	\$2,443,000

Alternative 2 - Regionalization

User Rate Impact 55% of Market, 50% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 4,207,000
Number of Payments:	20
Annual Interest Rate:	2.365%
Annual Payment Amount:	\$ 266,438
Quarterly Payment Amount:	\$ 66,609

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 408.65 /User per Quarter
Monthly Sewer Rate Increase:	\$ 136.22 /User per Month
O & M Increase	\$ 10,000.00 /Year
Quarterly Bill	\$ 15.34 /User per quarter
Monthly Bill	\$ 5.11 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 141.33 Per Month
Proposed Monthly Bill	\$ 184.54 Per user
Percent Increase	327%

User Rate Impact 55% of Market, 0% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 6,307,000
Number of Payments:	20
Annual Interest Rate:	2.365%
Annual Payment Amount:	\$ 399,435
Quarterly Payment Amount:	\$ 99,859

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 612.63 /User per Quarter
Monthly Sewer Rate Increase:	\$ 204.21 /User per Month
O & M Increase	\$ 10,000.00 /Year
Quarterly Bill	\$ 15.34 /User per quarter
Monthly Bill	\$ 5.11 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 209.32 Per Month
Proposed Monthly Bill	\$ 252.54 Per user
Percent Increase	484%

User Rate Impact 100% of Market, 0% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 6,307,000
Number of Payments:	20
Annual Interest Rate:	4.3%
Annual Payment Amount:	\$ 476,492
Quarterly Payment Amount:	\$ 119,123

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 730.82 /User per Quarter
Monthly Sewer Rate Increase:	\$ 243.61 /User per Month
O & M Increase	\$ 10,000.00 /Year
Quarterly Bill	\$ 15.34 /User per quarter
Monthly Bill	\$ 5.11 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 248.72 Per Month
Proposed Monthly Bill	\$ 291.93 Per user
Percent Increase	576%

Alternative 3 - Upgrade Existing Facility with Absorption Ponds

User Rate Impact 55% of Market, 50% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 1,085,000
Number of Payments:	20
Annual Interest Rate:	2.365%
Annual Payment Amount:	\$ 68,715
Quarterly Payment Amount:	\$ 17,179

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 105.39 /User per Quarter
Monthly Sewer Rate Increase:	\$ 35.13 /User per Month
O & M Increase	\$ 9,000.00 /Year
Quarterly Bill	\$ 13.80 /User per quarter
Monthly Bill	\$ 4.60 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 39.73 Per Month
Proposed Monthly Bill	\$ 82.95 Per user
Percent Increase	92%

User Rate Impact 55% of Market, 0% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 2,170,000
Number of Payments:	20
Annual Interest Rate:	2.365%
Annual Payment Amount:	\$ 137,430
Quarterly Payment Amount:	\$ 34,358

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 210.78 /User per Quarter
Monthly Sewer Rate Increase:	\$ 70.26 /User per Month
O & M Increase	\$ 9,000.00 /Year
Quarterly Bill	\$ 13.80 /User per quarter
Monthly Bill	\$ 4.60 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 74.86 Per Month
Proposed Monthly Bill	\$ 118.08 Per user
Percent Increase	173%

User Rate Impact 100% of Market, 0% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 2,170,000
Number of Payments:	20
Annual Interest Rate:	4.3%
Annual Payment Amount:	\$ 163,943
Quarterly Payment Amount:	\$ 40,986

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 251.45 /User per Quarter
Monthly Sewer Rate Increase:	\$ 83.82 /User per Month
O & M Increase	\$ 9,000.00 /Year
Quarterly Bill	\$ 13.80 /User per quarter
Monthly Bill	\$ 4.60 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 88.42 Per Month
Proposed Monthly Bill	\$ 131.63 Per user
Percent Increase	205%

Alternative 4 - Upgrade Existing Facility with Subsurface Absorption

User Rate Impact 55% of Market, 50% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 1,161,500
Number of Payments:	20
Annual Interest Rate:	2.365%
Annual Payment Amount:	\$ 73,560
Quarterly Payment Amount:	\$ 18,390

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 112.82 /User per Quarter
Monthly Sewer Rate Increase:	\$ 37.61 /User per Month
O & M Increase	\$ 9,000.00 /Year
Quarterly Bill	\$ 13.80 /User per quarter
Monthly Bill	\$ 4.60 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 42.21 Per Month
Proposed Monthly Bill	\$ 85.42 Per user
Percent Increase	98%

User Rate Impact 55% of Market, 0% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 2,323,000
Number of Payments:	20
Annual Interest Rate:	2.365%
Annual Payment Amount:	\$ 147,120
Quarterly Payment Amount:	\$ 36,780

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 225.64 /User per Quarter
Monthly Sewer Rate Increase:	\$ 75.21 /User per Month
O & M Increase	\$ 9,000.00 /Year
Quarterly Bill	\$ 13.80 /User per quarter
Monthly Bill	\$ 4.60 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 79.82 Per Month
Proposed Monthly Bill	\$ 123.03 Per user
Percent Increase	185%

User Rate Impact 100% of Market, 0% Principal Forgiveness

Payment Frequency:	Monthly
Compounding:	Annually
Loan Amount:	\$ 2,323,000
Number of Payments:	20
Annual Interest Rate:	4.3%
Annual Payment Amount:	\$ 175,502
Quarterly Payment Amount:	\$ 43,875

$$P = \frac{r * PV}{1 - (1 + r)^{-n}}$$

Number of users	163 Users
Quarterly Sewer Rate Increase:	\$ 269.17 /User per Quarter
Monthly Sewer Rate Increase:	\$ 89.72 /User per Month
O & M Increase	\$ 9,000.00 /Year
Quarterly Bill	\$ 13.80 /User per quarter
Monthly Bill	\$ 4.60 /User per Month
Existing Cost	\$ 43.21 /month
Total Increase	\$ 94.33 Per Month
Proposed Monthly Bill	\$ 137.54 Per user
Percent Increase	218%

APPENDIX H

NHI ENDANGERED RESOURCES REVIEW



Endangered Resources Preliminary Assessment

Created on **8/25/2026**. This report is good for one year after the created date.

DNR staff will be reviewing the ER Preliminary Assessments to verify the results provided by the Public Portal. ER Preliminary Assessments are only valid if the project habitat and waterway-related questions are answered accurately based on current site conditions. If an assessment is deemed invalid, a full ER review may be required even if the assessment indicated otherwise.

Results

A search was conducted of the NHI Portal within a 1-mile buffer (for terrestrial and wetland species) and a 2-mile buffer (for aquatic species) of the project area. Based on these search results, below are your follow-up actions.

No further action is necessary.

This project is covered by the Broad Incidental Take Permit/Authorization for No/Low Impact Activities (No/Low BITP/A) (<https://dnr.wi.gov/topic/ERReview/ITNoLowImpact.html>). This BITP/A covers projects that the DNR has determined will have no impact or a minimal impact to endangered and threatened species in the state. Due to this coverage under the No/Low BITP/A, a formal review letter is not needed and there are no actions that need to be taken to comply with state endangered species laws, any take that may result from the proposed project is permitted/authorized.

A copy of this document can be kept on file and submitted with any other necessary DNR permit applications to show that the need for an ER Review has been met. This notice only addresses endangered resources issues. This notice does not constitute DNR authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the DNR and/or other permitting authorities.

Project Information

Landowner name	Village of Kingston
Project address	1050 South St, Kingston, WI
Project description	WWTP Upgrades

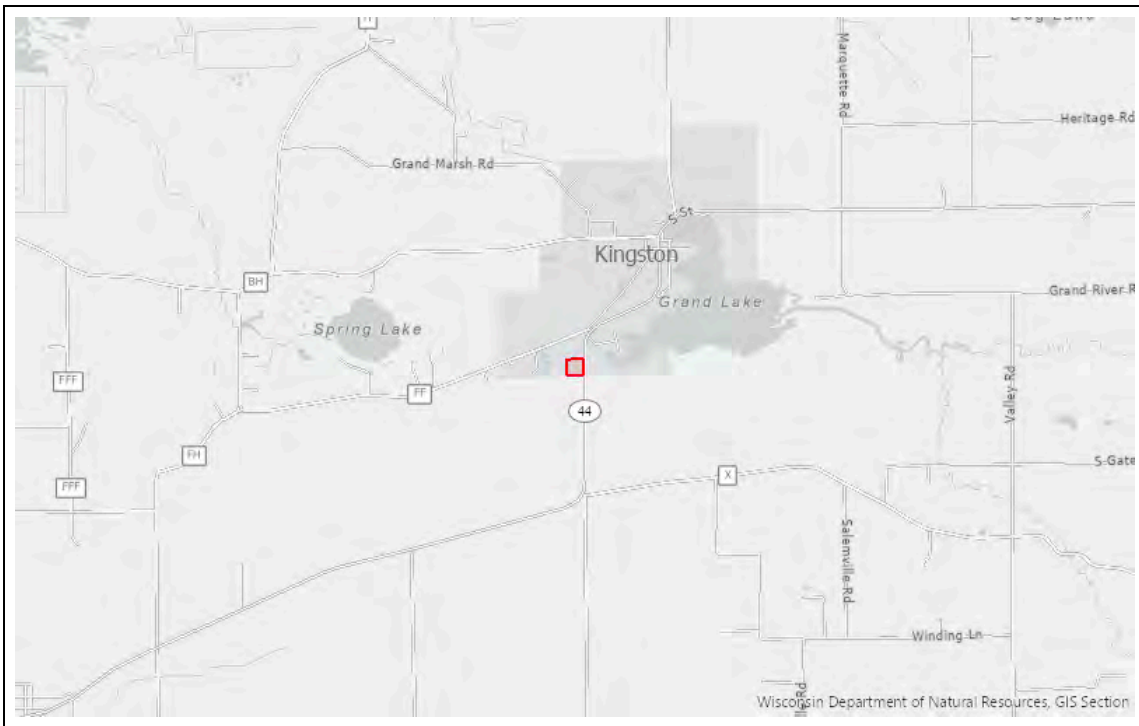
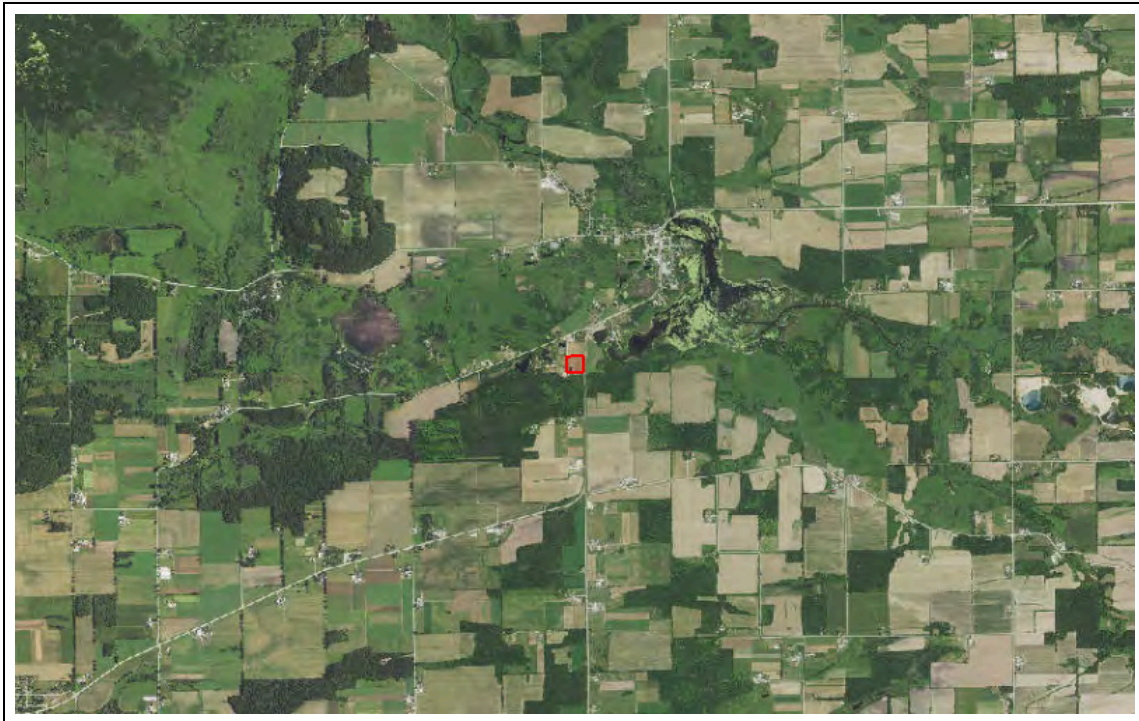
Project Questions

Does the project involve a public property?	No
Is there any federal involvement with the project?	No
Is the project a utility, agricultural, forestry or bulk sampling (associated with mining) project?	No
Is the project property in Managed Forest Law or Managed Forest Tax Law?	No
Project involves tree or shrub removal?	No
Is project near (within 300 ft) a waterbody or a shoreline?	No
Is project within a waterbody or along the shoreline?	No

Does the project area (including access routes, staging areas, laydown yards, select sites, source/fill sites, etc.) occur **entirely within** one or more of the following habitats?

Urban/residential	No
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Manicured lawn	Yes
Artificial/paved surface	No
Agricultural land	No
Areas covered in crushed stone or gravel	No



The information shown on these maps has been obtained from various sources, and is of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. Users of these maps should confirm the ownership of land through other means in order to avoid trespassing. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: <http://dnr.wi.gov/legal/>.

<https://nhiportal.dnr.wi.gov/public>

101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921

APPENDIX I

PROPOSED SITE PLAN



ENGINEERS - SURVEYORS - ARCHITECTS

770 Technology Way
Chippewa Falls, WI 54729
Phone: 715.861.5226
www.cbssquaredinc.com

DRAWN BY: KMK
DATE: 08/25/2026
CHECKED BY: APR
HORIZ. SCALE: 1" = 30'
VERT. SCALE:
PROJECT NO. KINGV26002

REVISIONS
DATE: DESCRIPTION:

KINGSTON WWTP
REHABILITATION
KINGSTON, WI

PROPOSED SITE PLAN

SHEET

C102

