

Facility Plan

Amery WWTP Facility Plan

Amery, WI

AMERY 160422 | January 27, 2023



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Facility Plan

Amery WWTP Facility Plan
Amery, WI

Prepared for:
City of Amery
Amery, Wisconsin

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I, Jeremiah Wendt, NE, SD, WI, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Jeremiah Wendt, PE
Senior Engineer

E-40472 January 27, 2023
PE Number Date



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Executive Summary

The City of Amery's Wastewater Treatment Plant (WWTP) currently consists of fine screening, grit removal, an anaerobic selector tank, a two-ring oxidation ditch, one final clarifier, ultraviolet (UV) disinfection, sludge storage, centrate storage, and sludge thickening. Most of the WWTP was constructed in the mid-1940s to late 1960s with significant upgrades occurring in 1995, and still achieves good treatment. The influent flow and biochemical oxygen demand (BOD) loading to the plant is approaching design conditions.

As discussed in Section 5, the Amery WWTP has several unit processes that have either exceeded their useful life, are operating over design capacity, or experience operational issues. Alternatives for ensuring reliable treatment into the future are developed in this section. Multiple options for WWTP Improvements were analyzed, including a no-improvement alternative, relocating to new site, and upgrading at the existing location.

It is recommended, based on the monetary and non-monetary evaluations and owner preference, that the City of Amery select Alternative 4a: Upgrading the Existing WWTP utilizing a Sequencing Batch Reactor (SBR). This alternative will provide reliable treatment and allow for future growth.

The new WWTP would consist of similar unit processes as the existing plant, including a new fine screen and grit removal, an SBR, replacement in kind of the existing UV disinfection system and sludge thickening system, and retrofit of existing tankage for sludge and centrate storage. A new preliminary treatment building will also be constructed to house the new fine screen and grit removal

The preliminary layout of the proposed SBR is composed of two square basins, each having a length and width of approximately 40 feet, where equalization, primary clarification, biological treatment and clarification can all be achieved in a single reactor vessel, eliminating the need for clarifiers. Details of the SBR design will be further developed during the design phase.

The total capital cost for Alternative 4a is \$10,865,000. This includes construction costs and design and construction engineering.

A setback distance of 500 feet is required for any mechanical treatment facility, per Wisconsin Administrative Code Section NR 110.15. The City of Amery's current WWTP site does not meet this requirement, so the waiver provisions within NR 110.15(3)(d)2 would need to be utilized. The City will make reasonable attempts to execute agreements with property owners within 500 feet of the WWTP, indicating their consent to the construction and operation of the WWTP on the current site. The City will also enact a zoning ordinance which prohibits future construction within the applicable separation distances to prevent future encroachment.

The City of Amery intends to apply for funding from the Clean Water Fund Program to finance these upgrades. This program allows municipalities to receive financial assistance in the form of subsidized loans, principal forgiveness to reduce the size of a loan or a combination of the two to keep project costs low.

Initial sampling indicates that the current WWTP (and the proposed WWTP) is capable of meeting the proposed E. Coli limits that are outlined in the current WPDES permit. As such, no additional compliance schedule milestones should be necessary for that specific requirement.

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Facility Plan

Amery WWTP Facility Plan

Prepared for City of Amery

1 Introduction

1.1 Purpose and Scope

The City of Amery owns and operates a Wastewater Treatment Plant (WWTP) that consists of fine screening, grit removal, an anaerobic selector tank, a two-ring oxidation ditch, one secondary clarifier, ultraviolet (UV) disinfection, sludge thickening, and sludge/centrate storage.

The original treatment plant was constructed in 1948 and consisted of primary treatment with pre-aeration and sludge digestion. Major upgrades were completed in the mid-1960's transforming the WWTP into a secondary treatment plant with the addition of an oxidation ditch and a new secondary clarifier. More modifications and additions were made in 1995, including: headworks(fine screening and grit removal), anaerobic selector tank, UV disinfection and sludge thickening. Considering the most recent upgrades were made nearly 25 years ago, and the oxidation ditch substantially predates that, the treatment plant now requires upgrades primarily due to age, condition, safety issues, and operational issues. In addition, the plant has a compliance schedule in its current permit to transition from fecal coliform effluent limits to E. coli effluent limits. The Wisconsin Pollutant Discharge Elimination System (WPDES) permit issued in October 2020 is included as Appendix A. New planning effluent limits have been requested and will be discussed in the following sections.

Based on this Facility Plan and after approval from the City and WDNR, design plans and specifications for the upgrade will be prepared. After approval, the project will be then bid for construction. The City anticipates using The Clean Water Fund to finance the project.

This WWTP Facility Plan is prepared per the WDNR regulations (NR 110). A 20-year planning design life is used, with the design year being 2040. Cost estimates for a physical upgrade of the plant are included, along with a present worth analysis.

1.2 Location

The City of Amery is situated in Polk County in northwestern Wisconsin. The WWTP is located at the end of Valley Street on the east bank of the Apple River, within a developed residential area. The planning area will remain within the corporate limits of the City of Amery. The WWTP currently discharges treated effluent to the Apple River in the larger St. Croix drainage basin.

1.3 Project History

The WWTP was constructed over 70 years ago with last major upgrades 20 years ago, centered around an oxidation ditch treatment system. The WWTP was designed for an average annual design flow of 0.4 MGD and biochemical oxygen demand (BOD) loading of 760 lb/day. The

Department of Administration (DOA)'s projection for 2020 will serve as the current population, 3,120 people. Amery currently partners with the West Central Wisconsin Regional Biosolids Facility (WCWRBF) in Ellsworth to treat and dispose of biosolids, with centrate returned back to Amery's WWTP.

2 Existing Conditions

2.1 Environmental Setting

2.1.1 Transportation

The City of Amery is located alongside of the Apple River, located off of State Highway 46. The WWTP is located in the southern portion of the city, accessed by residential streets.

2.1.2 Climate

The average annual temperature for the City of Amery is 43.50 degrees Fahrenheit. The average July high is 81 degrees Fahrenheit, and the average January low is 5 degrees Fahrenheit. Average annual precipitation is 31 inches. Average annual snowfall is 45 inches.

2.1.3 Geography and Geology

In general, Polk County is strongly affected by thick glacial deposits. The City of Amery lies mostly within a pervious glacial active area and contains deposits by meltwater from the Superior Lobe. The direction of the outwash surface slope occurs towards the southeast. The project area is composed of noncalcareous pebbly sand where cobbles and boulders are commonly present. According to the United States Geological Survey (USGS) Topographical Map of the City of Amery, the elevation in the planning area varies between 1,080 and 1,050 feet Mean Sea Level (MSL).

The City of Amery is mainly composed of sandy and silt loam, considered to be well drained soil on plane or curving ridgetops of glacial moraines.

2.1.4 Water Supply and Groundwater Setting

Polk County contains many rivers and lakes that offer an ample supply of surface water. Most groundwater in Polk County is obtained from sand and gravel aquifers or sandstone aquifers. Groundwater in Polk County is generally of very good quality and is suitable for most purposes. This type of sand offers large quantities of water to wells for Polk County's domestic, agricultural, municipal and industrial users.

2.1.5 Air Quality

A review of USEPA Air Quality map indicates the Amery planning area is classified as attainment/unclassified, indicating good air quality.

2.2 Demographics & Land use

Demographic and water usage data for the City was collected from a combination of a review of the 2020 City of Amery Municipal Joint Water and Sewer Utility PSC report, and data collected from annual budgeting for the sewer utility. Table 1 below shows a breakdown of the water usage within the City by user class.

Table 1 – Water Usage Within the City by User Class

User Class	Residential	Commercial	Industrial	Public Authority
Number of Users	1,110	150	22	31
Average Annual Water Usage (MG)	43.83	21.83	15.50	7.67
Average Daily Water Usage (MG)	0.12	0.060	0.042	0.021
Percent of Total Water Sales	50	25	17	8.6

2.3 Population

The DOA's projection for the City of Amery will be used as the current 2020 population, estimated at 3,120 people.

2.4 Existing Collection System

Based on The City's Compliance Maintenance Annual Report (CMAR), Amery has approximately 40 miles of sanitary sewer and nine lift stations.

The city budgets annually to televise and clean sections of sewers and is working towards reducing the amount of I/I at the WWTP. The City's sewer use ordinance prevents the discharge of storm, drainage, ground, and unpolluted water into the sanitary sewers. Amery's 2020 CMAR report is included as Appendix C.

2.5 Existing Wastewater Loadings

Wastewater flows and loadings are taken from October of 2019 through December 2021 from the monthly Discharge Monitoring Reports (DMRs) supplied by the City. Because the influent sampler was unable to provide accurate data from January 2019 to September 2019, only data collected after this point was used in calculating existing loadings for a more accurate representation. Table 2 summarizes existing loadings to date. Other than the minimal amount of septic tank waste, there are currently no non-domestic strength users large or heavy users in the system. Since accurate influent flow data cannot be measured at Amery's WWTP, effluent flow is used as effluent and influent data are similar in most cases.

A graphical summary of the treatment plant's monthly influent flow is presented in Figure 1. A graphical summary of influent Total Suspended Solids (TSS) and BOD is presented in Figure 2.

Table 2 – WWTP Influent Flow and Loading Summary

Influent Summary	Units	Oct-Dec 2019	2020	2021	Current Year (Estimate Oct 2019-Dec 2021)
Flow					
Minimum Month	MGD	0.328	0.270	0.231	0.231
Average Annual	MGD	0.373	0.341	0.290	0.335
Maximum Month	MGD	0.443	0.416	0.395	0.443
Maximum Week	MGD	0.527	0.534	0.430	0.534
Peak Day	MGD	0.676	0.714	0.501	0.714
Peak Hour ¹	MGD				1.37
BOD (lb/d)					
Average Annual	lb/d	498	496	495	496
Maximum Month	lb/d	501	682	746	746
Maximum Week	lb/d	713	903	961	961
Peak Day	lb/d	847	1400	1181	1400
TSS (lb/d)					
Average Annual	lb/d	943	855	694	831
Maximum Month	lb/d	1073	1620	1247	1620
Maximum Week	lb/d	1547	2036	1687	2036
Peak Day	lb/d	1915	3089	2102	3089
BOD (mg/L)					
Average Annual	mg/L	159	171	196	175
Maximum Month	mg/L	181	224	237	237
Maximum Week	mg/L	232	302	351	351
Peak Day	mg/L	259	523	551	551
TSS (mg/L)					
Average Annual	mg/L	294	292	270	285
Maximum Month	mg/L	310	458	349	458
Maximum Week	mg/L	483	679	464	679
Peak Day	mg/L	713	1010	785	1010

Notes:

¹Peak hour PF is calculated based on Table 1 from 10 States Standards formula using a 3,120 population served and an average design flow of 0.400 MGD

The average daily wastewater flow and loadings are divided out over the current population of Amery (3,120) resulting in an average per capita flow of 107 gpd, an average per capita BOD of 0.16 lb/day, and an average per capita TSS of 0.27 lb/day. These values are within the expected range for a mainly residential community.

2.5.1 Inflow and Infiltration Analysis

An evaluation of infiltration and inflow (I/I) into the City of Amery’s wastewater collection system has been studied and explained below. The I/I study was conducted to determine if excess clearwater from groundwater and stormwater are significant enough to raise concerns.

Infiltration and inflow can enter the system in two ways. Infiltration occurs when groundwater seeps into sewer pipes through cracks, leaks or unsealed manholes, while inflow occurs as a result of stormwater such as rainfall, snowfall or snowmelt. These two sources can significantly impact the total quantity of water entering a WWTP.

The United States Environmental Protection Agency (EPA) has several documents to assist in determining whether I/I at wastewater treatment plants should be considered excessive. The following passages utilize the EPA’s guide for calculating infiltration and inflow.

2.5.1.1 Baseflow Determination

The Wisconsin Public Service Commission (PSC) provides reliable water usage data, a resource used in evaluating I/I contributions. The average daily water usage in million gallons per day (MGD) from 2018 to 2020 is provided in Table 3.

Table 3 – PSC Water Use Data from 2018 to 2020 MGD

PSC Water Use Data from 2018 to 2020 (MGD)				
	2018	2019	2020	3-year Average
Residential (R)	0.116	0.114	0.120	0.117
Commercial (C)	0.056	0.060	0.060	0.059
Industrial (I)	0.038	0.039	0.042	0.040
Public Authority (PA)	0.027	0.029	0.021	0.026
Total	0.238	0.242	0.243	0.242
Total (R, C, and PA)	0.200	0.202	0.201	0.202

The baseflow value is calculated as the sum of residential, and commercial, and public sources averaged over the 3-year period. The City of Amery’s baseflow is determined to be 0.202 MGD. Using the DOA’s 2020 population served, this would equate to 64.7 gpcd from 2018 to 2020. It is important to note determining the exact baseflow for a community is extremely difficult as flows are typically higher than the flow received at the wastewater treatment plant.

2.5.1.2 EPA I/I Calculation

The EPA handbook states that rehabilitation of sanitary sewer systems exhibiting less than 6,000 gallons of I/I flow per day per inch-miles of collection pipe is not cost effective. The City of Amery has approximately 40 miles of primarily 8-inch sanitary sewer pipes. Based on the City of Amery’s 320-inch-miles, 1,920,000 gpd of I/I would be considered non-excessive for the collection system. The maximum monthly flow from 2019 and 2021 was in 2019, with a flow of

0.443 MGD. Subtracting the maximum monthly flow from the estimated wastewater baseflow of 0.202 MGD calculated the maximum total I/I flow of 0.241 MGD. Comparing this value to the EPA's allowable I/I of 1.92 MGD demonstrates I/I is well below the acceptable limit. Even the peak day flow of 0.714 MGD falls well within the acceptable parameter for this EPA guideline.

The EPA handbook also states that infiltration is non-excessive if the 7-14-day average dry weather domestic wastewater flow does not exceed 120 gallons per capita per day (gpcd) during periods of high groundwater. The period of analysis (2019-2021) was one of high groundwater for this region, signified by the levels of the lakes that surround the City of Amery. Due to the City being situated around these lakes, groundwater levels remain fairly steady throughout the year. Even with this period of fairly consistent high groundwater, average flows were only 0.335 MGD. Based on a population of 3,120 people, the per capita flow rate is approximately 107 gpcd, lower than the 120 gpcd standard set by the EPA, even with the inclusion of wet weather flows.

The EPA handbook titled Sewer System Infrastructure Analysis and Rehabilitation states the total I/I is non-excessive if the total daily flow during a storm does not exceed 275 gpcd. Using the City of Amery's current population of 3,120, the allowable amount of I/I would be 0.858 MGD. As shown in Table 1, the current peak day flow rate is 0.714 MGD, also within the EPA standard.

Evidence shows inflow and Infiltration (I/I) does occur in the collection system, though not a level that is cost-effective to address at a large scale within the collection system. The City of Amery states most problems occur at sump pump connections, manholes, and sewer mains installed below the groundwater elevation. The City replaced the Main Street sewer main in 2021 and continues to address known I/I sources as opportunities arise, which should result in a reduction of I/I over time.

2.6 Existing WWTP

Flow enters the WWTP through a gravity sewer, flows through the fine screen and grit removal system, and then through a channel where influent flow is measured in a Parshall flume. Occasionally, periods of high flow occur which have caused surcharge within the Parshall flume, resulting in inaccurate influent flow metering. Flow proceeds to the influent wet well. Influent pumps located in a room adjacent to the lab and office area, convey the flow from the wet well to the anaerobic selector tank. Flow proceeds by gravity into the oxidation ditch where the biological treatment takes place before flowing to the final clarifier. Treated flow is then transferred through a Parshall Flume and is sampled by an automatic sampler prior to entering the UV disinfection chamber. Treated effluent is then discharged into the Apple River.

A current process flow diagram for Amery's WWTP is presented in Figure 3.

A site plan of the WWTP is attached as Figure 4.

2.6.1 Preliminary Treatment

Wastewater enters the plant through a manhole on the north side of the treatment facility, flowing under the oxidation ditch, into the influent channel where the fine screen and grit removal unit processes are located. The fine screen is a Rotamat Complete Plant Unit, model number 31 CP-1.0 supplied by Lakeside Equipment, Inc. The maximum flow capacity for this unit is 695 gpm (1 MGD). The screen is equipped with a 1/4-inch perforated drum that removes non-biodegradable solids before entering downstream unit treatment processes. An integral

screenings washpress transports, cleans, and dewater screenings, discharging into a two-wheeled dumpster. The fine screen along with the Preliminary Treatment building itself is in good condition. The screen produces approximately two dumpsters of screenings each week. Although the screw dewater the screenings, operators have experienced issues with screenings being discharged that are too wet. In addition, modifications should be considered to enhance safety. Currently, workers need to utilize a crane to lift the dumpsters of screenings and grit to the second floor, creating a safety risk for workers. The fine screening unit process should be replaced with a unit that automatically conveys screenings to the level at which they will be disposed.

If the Rotamat Unit requires maintenance, a bypass channel is available in this room. The inlet trough also has a slide gate with an overflow notch cut into it as a passive bypass.

Similar to the fine screening process, the grit removal process includes the removal of smaller inorganic material that has passed through the fine screening process. After passing through the fine screen, the remaining flow enters the grit chamber, where velocity is slowed to allow grit material to settle. A conveyor then transports the grit solids into the discharge chute. This discharged material is then transported to the landfill by the same process described above for the screenings.

2.6.2 Influent Flow Measurement

Amery's WWTP has one, 3-inch parshall flume with an ultrasonic level sensor that measures the total flow entering the plant. The recommended flow range for this size flume is 0.018 MGD to 0.743 MGD. Based on the estimated peak hourly flow, the flume is undersized for current flows.

2.6.3 Influent Sampler

The influent flow is sampled by an automatic composite sampler - ISCO model number 3010 - located in the laboratory room.

2.6.4 Influent Pumping

Following flow measurement, wastewater proceeds to the influent wet well. Amery's WWTP currently has two influent pumps located within their electrical control room that draw raw wastewater from the wet well. The location of these pumps and the access hatch to the influent wet well may present issues meeting current electrical codes. The pumps are 7.5 horsepower, self-priming centrifugal pumps, both model number T4A3-B and are manufactured by Gorman Rupp Co. Both pumps are operated by VFDs and have the capability to pump at a range from 175 gpm at 14 feet of total dynamic head (TDH) to 600 gpm at 21 feet TDH.

Though the pumps are in good condition, there are periods of flow when the current pumps cannot keep up, resulting in surcharging of the Parshall Flume and the preliminary treatment area.

Amery's WWTP does have an influent raw bypass pump located in the grit removal room with a 300 gpm capacity, but it is unknown how often and how long the bypass pump runs during high flow events. It should be noted that when this pump does operate, unscreened influent is conveyed directly to the oxidation ditch.

2.6.5 Anaerobic Selector Tank

The influent pumps convey screened and degritted wastewater from the wet well to the anaerobic selector tank. The tank has a volume of 88,000 gallons while operating with a side water depth (SWD) of 13.5 feet. The tank is 30 feet by 30 feet divided into three separate sections by concrete walls. In addition to the influent flow, and Return Activated Sludge (RAS) from the clarifier, an internal mixed liquor recycle (MLR) flow is pumped into this tank from the oxidation ditch. There are three submersible mixers, one in each section of the tank mixing the incoming wastewater with the RAS and MLR flow. This tank is the start of biological treatment process, and the heart of the biological phosphorus removal (BPR) process, which performs very well, resulting in very low effluent phosphorus without the need for chemical addition. The anaerobic selector tank itself is in good condition and sized appropriately for the current flows and loadings.

A bypass is available if the anaerobic tank ever requires maintenance. There are two valves near the front of the tank that can be utilized to allow flow to bypass the anaerobic tank.

2.6.6 Oxidation Ditch

Wastewater then flows to the oxidization ditch, which is made up of two rings, the inner ring operated partially under anoxic conditions, and the outer ring (including a portion of the inner ring) containing the aerobic process. These two ditches are separated by an 8-inch reinforced concrete wall with a 113-foot radius.

The anoxic portion of the ditch is operated such that no free dissolved oxygen is available. The purpose of this phase of treatment is to remove excess forms of oxygen (primarily in the form of nitrate) in the mixed liquor before being pumped into the anaerobic selector tank. The MLR pumped back to the anaerobic tank is located at the end of the anoxic portion of the ditch. The anoxic to anaerobic pump is a five-horsepower submersible pump capable of pumping 800 gpm at 30 feet of TDH.

The aerobic zone is the existing outer ring of the ditch, plus a portion of the inner ditch. The outer ditch has a diameter of 271 feet. Typical operating water levels vary from 3 to 3.5 feet but with a maximum side-water depth (SWD) of 4 feet. There is a recycle pump that conveys up to 600 gpm from the aerobic ditch back to the anoxic portion of the ditch.

The oxidization ditch was built in the mid-1960's when the plant was converted to a secondary treatment facility. The oxidation ditch has outlasted its useful life. The large shallow ditch lends itself to freezing in the winter and makes maintaining minimum dissolved oxygen (DO) levels difficult. The concrete lining the ditches is in fair to poor condition. In addition to the age, condition and operational challenges, there are significant safety concerns as there is no guardrail along the inside or outside of the oxidation ditch, and adjacent vegetated slopes could easily lead to an operator slipping into the ditch while performing maintenance activities.

2.6.7 Chemical Feed System

Although the Amery WWTP does have a chemical feed system, chemical is not currently added to remove phosphorus. The chemical feed system is not used unless achieving the required limits establish by WDNR cannot be met with biological phosphorus removal.

2.6.8 Final Clarification

Amery's WWTP currently has two final clarifiers available but only one is in use. The original rectangular clarifier is in the treatment building but is not used under normal conditions. The newer clarifier, the one currently utilized, is a 45-foot diameter circular tank with a 12-foot SWD, with a 140,000 gallon volume. All equipment included was provided by Envirodyne Systems. This final clarifier is designed to settle mixed liquor suspended solids (MLSS) by gravity, separating the bacteria mass from the treated effluent. Both clarifiers are in good condition.

2.6.9 Return Activated Sludge Process

Once sludge is collected at the bottom of the final clarifier, a gravity pipe (with a valve to control the RAS rate) conveys the sludge to the sludge wet well. From here it can be returned to one of two different return points. Typically, the RAS pump returns RAS from the sludge wet well back to the anoxic zone of the oxidation ditch, below the covered bridge. The alternate return location is in the anaerobic selector tank. Valves on the RAS line can be manipulated to allow the RAS to enter the anaerobic selector tank through the influent line.

2.6.10 UV Disinfection

Effluent that overflows the secondary clarifier weirs flows to the UV room at the north end of the plant. Amery's WWTP utilizes a Trojan Technologies, Inc. 3000-B UV system, model number PDCB – Bank B 5UVMB / 4-64. The equipment serves as an effective effluent disinfectant prior to discharge to the Apple River. This technology provides ultraviolet radiation to destroy cellular genetic material in bacteria and viruses preventing the reproduction of new bacteria or virus. The UV system at Amery's WWTP was designed to disinfect an average flow of 0.400 MGD with a peak hydraulic capacity of 1.00 MGD. Effluent TSS concentrations should be less than 30 mg/L for the UV system to work effectively. A 3-inch Parshall flume and ultrasonic level sensor measure the discharge flow. Staff typically clean the bulbs once a month, but sometimes as often as once a week. As a result of the WWTP staff's maintenance, the UV system is in good condition. However, it should be noted that the estimated peak hour flow currently exceeds the rated hydraulic capacity of the UV Disinfection System and effluent Parshall flume.

2.6.11 Sludge Thickening Process

Sludge is first settled in the final clarifier, and then flows to the sludge wet well. A waste activated sludge (WAS) five-horsepower pump draws a portion of that sludge to the rotary drum thickener (RDT). Polymer is injected in line with the sludge just before the headbox of the RDT. This box dissipates energy and allows the polymer to further mix with the sludge floc and is then discharged to the RDT. Here solids are caught, while filtrate passes through and collects in the underlying tray and conveyed back to the front of the plant. Spray bars are installed to clean the screen, to prevent clogging so that excess water can pass through the screen. The current RDT is over 25 years old, and is a model that is not enclosed, resulting in a spray of mist into the room while the unit is in operation.

2.6.12 Sludge Storage and Centrate Receiving

A 7.5 horsepower progressive cavity pump located in the sludge thickening room transfers thickened sludge from the transfer pit to the steel sludge storage silo through a 4-inch pipe. This pump also mixes the sludge. In addition, the tank is also provided with a 360-degree mixing nozzle to help the mixture of sludge to prevent heavy build up. The sludge silo has a

50,000 gallon capacity and a diameter of 25 feet with a 15 foot SWD. It should be noted that the WWTP is not required to provide 180 days of sludge storage onsite since the WCWRBF meets that requirement on Amery's behalf. Sludge is hauled from this tank to the WCWRBF via tanker truck. Although the sludge storage silo is still functional, the tank is deteriorating, and has several perforations all the way through the steel near the top of the tank. Additionally, staff feels that the tank is undersized, particularly during spring months when road weight limit restrictions dictate that smaller loads be hauled. Doubling the storage capacity would allow operators additional flexibility and eliminate the need to build up solids within the treatment process during times when hauling is limited. The pumping/mixing system that serves the sludge storage silo is also in need of upgrade. Staff have experienced operational issues, frozen pipes, and seal water problems with the current pump/mixing system which is located in an underground vault adjacent to the sludge storage tank.

After trucks deliver sludge to the WCWRBF, trucks then return to Amery's WWTP with centrate. Centrate is discharged into a duplex lift station with two Flygt submersible pumps and then pumped into a centrate storage silo, adjacent to the sludge storage silo. It is then returned to the system through the influent manhole in front of the plant via a gravity drain. The gravity drain does not allow for a more controlled way to be released back into the plant. The centrate silo has a diameter of 20 feet with a 15-foot depth, and a volume of approximately 25,000 gallons. The tank itself is in fair condition, but future sizing will be considered when making plant modifications.

2.7 Existing WWTP Characteristics and Performance

According to the City of Amery's 2020 CMAR report (Appendix C), the WWTP scores an "A" in most categories except for a "C" in the financial category

Effluent DMR data from 2018 to December 2021 was reviewed and is summarized in Table 4. A graphical summary on a monthly average basis for effluent TSS, BOD, and TP is presented in Figure 5, Figure 6, and Figure 7.

Table 4 – Effluent Flow and Loading Summary

Effluent Summary	Units	2019	2020	2021	Current Year Estimate (2019-2021)
Flow					
Minimum Month	MGD	0.292	0.270	0.231	0.231
Average Annual	MGD	0.377	0.341	0.290	0.336
Maximum Month	MGD	0.460	0.416	0.395	0.460
Maximum Week	MGD	0.527	0.534	0.430	0.534
Peak Day	MGD	0.811	0.714	0.501	0.811
BOD (mg/L)					
Average Annual	mg/L	10	8	7	8
Maximum Month	mg/L	15	16	9	16
Maximum Week	mg/L	24	29	13	29
Peak Day	mg/L	35	40	19	40

Table 4 (Continued) – Effluent Flow and Loading Summary

TSS (mg/L)					
Average Annual	mg/L	8	4	5	5
Maximum Month	mg/L	19	6	6	19
Maximum Week	mg/L	31	10	11	31
Peak Day	mg/L	33	15	21	33
Phosphorus (mg/L)					
Average Annual	mg/L	0.7	0.2	0.4	0.4
Maximum Month	mg/L	2.8	0.4	1.7	2.8
Maximum Week	mg/L	8.5	0.7	7.1	8.5
Peak Day	mg/L	8.5	0.7	7.1	8.5
Phosphorus (lb/d)					
Average Annual	lb/d	2	1	1	1
Maximum Month	lb/d	9	1	4	9
Maximum Week	lb/d	29	3	18	29
Peak Day	lb/d	29	3	18	29

3 Design Criteria

3.1 Design Year

To comply with typical facility planning periods, A 20-year design period is used in the alternatives analysis that follows. The design year for the purpose of this report is 2042, though it should be noted that DOA does not currently forecast beyond 2040. Intermediate projections using five-year increments are also included.

3.2 Future Population

As mentioned, DOA’s projection for the City of Amery will be used as the current 2020 population, estimated at 3,120 people. The City of Amery is estimated to increase to a population of 3,460 in 2035, a 10.9 percent increase. Because the population is expected to slightly decrease in 2040 to a population of 3,410, the 2035 population of 3,460 will be used as the design basis to adjust for the maximum expected population within the next 20 years. Currently, the WWTP does not serve any major industrial contributors and does not anticipate significant wet industry in the future. However some growth is anticipated, particularly within the industrial park addition that is currently underway. Future projections at the WWTP will include an additional 10 percent loading for industrial or commercial growth. A summary of DOA future projections and industrial/commercial growth in five-year increments to 2040 are shown in Table 5.

Table 5 – Population Projection Summary

City of Amery	2010 Census	2015 Proj.	2020 Proj.	2025 Proj.	2030 Proj.	2035 Proj.	2040 Proj.	Current Population to 2035 ¹
Population	2,902	2,930	3,120	3,295	3,425	3,460	3,410	
% Difference		0.96%	6.48%	5.61%	3.95%	1.02%	-1.45%	10.90%

¹Population 2035 will be used as design period due to highest population occurring in 2035 within 20-year design period

3.3 Future Wastewater Flow & Loading Projections

A summary of future wastewater flows and loadings calculated using DOA’s 10.9 percent future population growth with an additional 10 percent unknown industry, is shown in Table 6.

Table 6 – WWTP Influent Design Year 2042 Characteristics

FLOW	2019- 2021	DOA Projection (10.90%)	+10% Unknown Industry
Minimum Month	0.231	0.257	0.282
Average Annual	0.336	0.372	0.410
Maximum Month	0.460	0.510	0.561
Maximum Week	0.534	0.592	0.651
Peak Day	0.811	0.899	0.989
Peak Hour	1.37	1.519	1.671
BOD (lb/d.)	Oct. 2019- Nov. 2021	DOA Projection (10.90%)	+10% Unknown Industry
Average Annual	496	550	605
Maximum Month	746	828	910
Maximum Week	961	1065	1172
Peak Day	1400	1553	1708
TSS(lb/d.)	Oct. 2019- Nov. 2021	DOA Projection (10.90%)	+10% Unknown Industry
Average Annual	831	921	1013
Maximum Month	1620	1796	1976
Maximum Week	2036	2258	2484
Peak Day	3089	3425	3768

3.4 Effluent Requirements

As part of a facility plan subject to Chapter NR 110, Wisconsin Admin. Code, the City has requested planning effluent limits for their WWTP as required to upgrade their current treatment plant. A review of the proposed service area, population projection and design flows have been completed to assist the WDNR in determining appropriate effluent limits. A summary of the planning effluent limitations for Amery’s WWTP are provided in Table 7.

Table 7 – New WPDES Effluent Limitations

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
BOD5, Total	Monthly Avg	30 mg/L	3/ Week	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	45 mg/L	3/ Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	3/ Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/ Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	5/ Week	Grab	
pH Field	Daily Max	9.0 su	5/ Week	Grab	
Phosphorus, Total	Monthly Avg	1.6 mg/L	Weekly	24-Hr Flow Prop Comp	The technology-based limit for phosphorus is an alternative effluent limit (AEL) based on biological phosphorus removal. Influent mass phosphorus monitoring paired with the respective effluent data is required during the reissued permit term to demonstrate biological phosphorus removal is occurring at the minimum 90% mass reduction rate per s. NR 217.04(2)2, Wis. Adm. Code.
Phosphorus, Total	Monthly Avg	6.6 lb/d	Weekly	24-Hr Flow Prop Comp	The Lake St Croix Nutrient Total Maximum Daily Load (TMDL) report specifies a phosphorus waste load allocation (WLA) of 1,628 pounds per year annually for the City of Amery, resulting in the monthly average mass limit of 6.6 lbs/day.
Fecal Coliform – Interim Limit	Geometric Mean	400 #/100 ml	Monthly	Grab	Only applies during May through September.
E. coli – Final Limit	Geometric Mean	126 #/100 ml	Monthly	Grab	Only applies during May through September. Additional final limit: No more than 10 percent of E. coli bacteria samples collected in any calendar month may exceed 410 count/100 mL

According to the planning effluent limits from WNDR, no changes from the current permit have been proposed. Though copper, chloride and ammonia are not limited, Amery is still required to monitor these parameters. Total Kjeldahl Nitrogen and Total Nitrogen monitoring will still be

recommended for all minor municipal permittees. A full memorandum of the new recommended effluent limitations can be found in Appendix D.

It should be noted that the City’s WPDES Permit includes two limits for Phosphorus – a mass - based WLA of 6.6 lb/d as part of the Lake St. Croix (TMDL), and a technology-based AEL of 1.6 mg/L, which is contingent on the facility continuing to biologically remove phosphorus at a minimum mass reduction rate of 90%.

Using the projected annual average flow rate of 0.41 MGD, the concentration associated with the TMDL-based mass loading rate would be 1.93 mg/L of Total Phosphorus. At this flow rate, the AEL of 1.6 mg/L is still more stringent. However, at the projected maximum month flow rate of 0.561 MGD, the concentration associated with the TMDL-based mass loading rate would be 1.41 mg/L, making it more stringent than the AEL.

The crossover flow rate, where the TMDL mass limit becomes more restrictive than the AEL concentration limit is 0.495 MGD. While the difference in the effective concentration limit at max month flow is not a substantial difference, plant staff should be aware of the limitations, and how the facility’s flow impacts them. Further, because the AEL is less stringent, the WWTP should continue to rely on BPR in all alternatives evaluated.

3.5 E. coli Compliance Schedule

The compliance schedule for effluent limitations of E. coli from Amery’s current WPDES permit found in Table 8. Based on the E. coli samples collected to date, the City anticipates that both the current and upgraded WWTP will be able to meet the E. coli limitations, and thus requests removal of the remainder of the compliance schedule.

Table 8 – WPDES E. coli Compliance Schedule

Required Action	Due Date
Status Update	4/30/2022
Final Plans and Specifications	3/31/2023
Treatment Plant Upgrade to Meet Limitations	9/30/2023
Construction Upgrade Progress Report	9/30/2024
Complete Construction	3/31/2025
Achieve Compliance	4/30/2025

4 Description of Wastewater Treatment Alternatives

4.1 General

Several unit process deficiencies have been identified in the following sections and will also be addressed as part of each overall treatment alternative. As noted above, BPR will be utilized in all alternatives considered to ensure that the WWTP can utilize the AEL of 1.6 mg/L for Total Phosphorus.

4.2 Summary of Existing Facility Age, Condition and Capacity Related Upgrades

The following equipment and unit processes have deficiencies related to age, condition or capacity, and will be incorporated into the recommended alternative:

- Influent Sewer – One of the influent sewers to the site is an inverted siphon crossing of the Apple River to the west of the WWTP site. Due to the age and difficulty with cleaning or televising this line, the City plans to either line or replace the inverted siphon in conjunction with the WWTP Improvements.
- Influent Fine Screening – Hydraulic capacity is inadequate for current and future peak hour flows. Capacity will be addressed. The existing method to convey screenings poses a safety hazard to operations staff. Consideration will be given to improve screenings handling procedures.
- Grit Removal – Grit collected also poses a safety hazard to workers. Consideration will be given to improve grit handling procedures.
- Influent Flow Measurement – Hydraulic capacity is inadequate for current and future peak hour flows. Capacity will be addressed.
- Influent Pumping – Firm pumping capacity of existing pumps is inadequate for current and future peak hour flows. Firm pumping capacity will be addressed.
- Oxidation Ditch – Will need to be replaced due to age, condition, operational issues and safety concerns.
- Ultraviolet Disinfection – Hydraulic capacity is inadequate for current and future peak hour flows. This process will be replaced in its current location.
- Effluent Flow Measurement - Hydraulic capacity is inadequate for current and future peak hour flows. Capacity will be addressed.
- Sludge Thickening – Equipment will be replaced in kind due to age and operator safety concerns with spray/mist escaping current system.
- Sludge/Centrates Storage – Will need to be replaced due to condition of tank and need for additional storage capacity.

4.3 Alternative 1: No Construction

This option would keep the WWTP same as it is now. The WWTP was designed for an average annual design of 0.400 MGD and a BOD loading of 760 lb/day. The current average BOD loading to the plant is 496 lb/day based on current year estimates. Although the average flow of the plant is not at its maximum capacity, peak flow events have overwhelmed the screening, flow measurement, influent pumping and UV disinfection processes and will continue to do so more regularly as flows increase.

The 2042 design year flows and loadings will cause further complications with the existing treatment plant, making it difficult for the plant to last the next 20 years.

Without an upgrade, the WWTP will continue to deteriorate, eventually leading to significant failure of structures and equipment, and endangering the safety of operators and the public. Due to these factors, and the limitations that this alternative place on the City's future growth, this alternative is not considered feasible and was not evaluated further.

4.4 Alternative 2: New WWTP at New Site

The City could consider construction of a new WWTP at a new site location. However, the capital cost of constructing a new WWTP on a new site will be similar to construction on the existing site, and there will be substantial additional cost involved to convey wastewater to the new site. In addition, the City will need to purchase land in order to construct a new WWTP at the new location. Lastly, either an effluent pump station and force main to discharge to the existing outfall, or a new outfall and discharge permit would be required from DNR, which may include more stringent effluent limitations.

This option is not considered feasible for the City due to high cost and was not evaluated further.

4.5 Alternative 3: Regionalization

Alternative 3 consists of regionalizing the wastewater treatment for Amery by coming to an agreement with a nearby utility to construct infrastructure to send Amery's collected wastewater to another plant with available capacity for treatment. The nearest WWTP is in Clear Lake, over 6 miles in a straight line, but closer to 10 miles using a likely forcemain route. Not only does this distance, and the cost of conveying wastewater over it, present a substantial hurdle, but the Village of Clear Lake does not have the capacity to accept the flow and loading that the City of Amery would send. Other nearby plants present even greater distances and capacity-related challenges. As such, this alternative is not considered feasible and was not evaluated further.

4.6 Alternative 4: Upgrades to Existing WWTP

4.6.1 Alternative 4A: Sequencing Batch Reactor (SBR)

This alternative would include the following:

- Line or replace influent inverted siphon.
- Replace the current oxidation ditch process with an SBR located to the east of the current plant.
- Replace the current preliminary treatment and influent pumping system with new fine screening, grit removal and influent pumping located adjacent to the new SBR structure. This building would also house the blowers, valving, and associated electrical components for the new SBR system.
- Rehabilitate the current administrative building in its current location. The removal of process equipment within this space would free up additional area for storage/maintenance activities.
- Convert the existing circular final clarifier to serve as the sludge storage tank.
- Convert the existing anaerobic selector tank to serve as the centrate storage tank.
- Replace the existing UV disinfection system in the same location, with channel modifications necessary to address capacity issues.
- Replace RDT with new sludge thickening unit in the same location.
- Replace other outdated and undersized equipment throughout the plant.

Alternative 4A proposes that the City of Amery replace the current oxidation ditch treatment process with an SBR. Instead of separate tanks for treatment and final clarification with

continuous flow through the system, an SBR system would instead consist of basins that would in sequence fill, have a period of aerated treatment, settle sludge, and decant treated supernatant.

Sludge recycle and wasting would be performed via submersible pumps at the bottom of the SBR tanks. SBR plants typically have multiple basins operating in parallel, which gives them built in resiliency in case basins need to be taken down for maintenance. The SBR proposed in this alternative would be constructed on City property east of the current WWTP.

New headworks would be constructed adjacent to the SBR. Installing a vertical fine screen would save on space and be easier to access for maintenance, and a vortex grit removal system with grit classifier would produce a drier, more consistent product that is easier to handle. Discharge from the proposed screen and grit removal system would be at grade. New influent pumps would match new hydraulic conditions and increase efficiency. Separate space within this new headworks structure would house the blowers, valves and electrical components that make up the ancillary components of the SBR system.

Since the existing circular clarifier and anaerobic selector tank are in sound structural condition, and would provide additional capacity over the current sludge and centrate storage tanks, they would be converted to serve for sludge and centrate storage. Their location adjacent to the existing administrative building makes for convenient location of all solids handling facilities together, with new pumps and controls to be housed in that existing building. Figure 8 shows a preliminary layout of Alternative 4A.

4.6.2 Alternative 4B: Oxidation Ditch (Evoqua)

Alternative 4B would consist of the following upgrades/alterations to the WWTP:

- Line or replace influent inverted siphon.
- Replace the current oxidation ditch process with a new Evoqua oxidation ditch, sized for future flows and loadings and located on City property east of the existing WWTP.
- Implement new controls and instrumentation scheme to allow for greater automation of the treatment process and increase monitoring capabilities.
- Replace the current preliminary treatment and influent pumping system with new fine screening, grit removal and influent pumping located adjacent to the new oxidation ditch structure. This building would also house the associated electrical components for the new oxidation ditch system.
- Rehabilitate the current administrative building in its current location. The removal of process equipment within this space would free up additional area for storage/maintenance activities.
- Convert the existing circular final clarifier to serve as the sludge storage tank.
- Convert the existing anaerobic selector tank to serve as the centrate storage tank.
- Replace the existing UV disinfection system in the same location, with channel modifications necessary to address capacity issues.
- Replace RDT with new sludge thickening unit in the same location.
- Replace other outdated and undersized equipment throughout the plant.

Alternative 4B proposes keeping the same basic treatment process within the WWTP by constructing a new oxidation ditch. The new oxidation ditch would be sized for the flows and

loadings outlined above and located on City property east of the existing WWTP. The new plant would have increased efficiency through upgrading treatment equipment and control.

Similar to Alternative 4A, Alternative 2 also includes replacing the headworks and rehabilitating the existing administrative building, as well as retrofitting the existing circular clarifier for sludge storage and the anaerobic selector tank for centrate storage. This alternative will utilize an Evoqua Oxidation Ditch that is composed of a three-channel configuration with a 104 feet overall length and 80 feet overall width. The site will utilize two new secondary clarifiers adjacent to the proposed oxidation ditch. Figure 9 shows a preliminary site plan of Alternative 4B.

4.6.3 Alternative 4C: Oxidation Ditch (Tri-Oval)

Alternative 4C would consist of the following upgrades/alterations to the WWTP:

- Line or replace influent inverted siphon.
- Replace the current oxidation ditch process with a new Aeration Industries Tri-Oval oxidation ditch, sized for future flows and loadings and located on City property east of the existing WWTP.
- Implement new controls and instrumentation scheme to allow for greater automation of the treatment process and increase monitoring capabilities.
- Replace the current preliminary treatment and influent pumping system with new fine screening, grit removal and influent pumping located adjacent to the new oxidation ditch structure. This building would also house the associated electrical components for the new oxidation ditch system.
- Rehabilitate the current administrative building in its current location. The removal of process equipment within this space would free up additional area for storage/maintenance activities.
- Convert the existing circular final clarifier to serve as the sludge storage tank.
- Convert the existing anaerobic selector tank to serve as the centrate storage tank.
- Replace the existing UV disinfection system in the same location, with channel modifications necessary to address capacity issues.
- Replace RDT with new sludge thickening unit in the same location.
- Replace other outdated and undersized equipment throughout the plant.

Alternative 4C proposes keeping the same basic treatment process within the WWTP by constructing a new oxidation ditch. The new oxidation ditch would be sized for the flows and loadings outlined above and located on City property east of the existing WWTP. The new plant would have increased efficiency through upgrading treatment equipment and control.

Similar to Alternative 4A and 4B, Alternative 4C also includes replacing the headworks and rehabilitating the existing administrative building, as well as retrofitting the existing circular clarifier for sludge storage and the anaerobic selector tank for centrate storage. This alternative will utilize an Aeration Industries Tri-Oval Oxidation Ditch. Similar to the Evoqua Oxidation Ditch configuration, this oxidation ditch is an oval design, but with a 90-foot straight length and a single channel width of 20 feet. The site layout also includes two new clarifiers adjacent to the oxidation ditch. Figure 10 shows a preliminary site plan for Alternative 4C.

5 Alternatives Analysis

5.1 Alternative 4A

The advantages of Alternative 4A are:

- Expands treatment capacity to accommodate current and future flows.
- SBR plants are lower footprint than other options and would work well with current space restrictions.
- Additional SBR basins can be added in the future to accommodate further increases in flows and loadings.
- SBRs typically can handle slug flows well if properly sized, this would likely allow the WWTP to accept hauled waste, potentially adding another revenue stream.
- Upgrades and updates current equipment and facilities:
 - New blowers and pumps will result in energy cost savings and lower maintenance requirements.
 - Controls and instrumentation allow for more automation of the treatment process, as well as greater ability to monitor treatment performance in real time.
 - Fine screen and grit removal upgrades would improve treatment performance, improve ease of maintenance, and further protect downstream treatment processes.
 - Maximize use of existing administrative building and other tanks suitable for reuse.

The disadvantages of Alternative 4A are:

- High capital cost.
- Site space restrictions mean that new processes would have to be constructed within 500' of existing residences.
- New treatment process would require extensive training for WWTP personnel to learn the new system.

5.2 Alternative 4B/4C

The advantages of Alternative 4B and 4C are very similar, and include:

- Expands treatment capacity to accommodate current and future flows.
- Maintains existing treatment process scheme that is familiar to WWTP personnel.
- Upgrades and updates current equipment and facilities:
 - New aerators and pumps will result in energy cost savings and lower maintenance requirements.
 - Controls and instrumentation allow for more automation of the treatment process, as well as greater ability to monitor treatment performance in real time.
 - Fine screen and grit removal upgrades would improve treatment performance, improve ease of maintenance and further protect downstream treatment processes.
 - Maximize use of existing administrative building and other tanks suitable for reuse.
- Reconfiguration of existing activated sludge and clarifier structure provides expanded sludge storage and treatment capabilities.

The disadvantages of Alternative 4B/4C are:

- High capital cost.
- Site space restrictions mean that new processes would have to be constructed within 500' of existing residences.
- Additional tankage is required to continue providing reliable biological phosphorus removal.

5.3 Cost Effective Analysis

A cost-effectiveness analysis is performed to determine which wastewater treatment alternative will minimize total resource cost for the design life of the facilities and remain compatible with water quality goals. Using the present worth analysis method, future costs are reduced to their present worth cost and summarized for each alternative. Future expenses are converted to a present worth cost at the beginning of the planning period. The planning period is a time span for which alternative wastewater collection and treatment facilities are evaluated for cost effectiveness. Typically, a 20-year planning period is selected which corresponds to the design life of much of the process equipment.

The total capital investment includes:

1. Initial capital construction costs plus engineering, legal, and administrative costs.
2. The capital costs necessary for major equipment replacement during the planning period. All future costs are discounted to the present using a single payment present worth factor computed at 2.625 percent, the present federally mandated discount rate. This yields the amount of money that must be theoretically invested at 2.625 percent when the project is initially constructed so that the capital required for equipment replacement would be available when such expenditures are required.

The salvage value at the end of the planning period, which represents a credit, must also be considered in the present worth costs. Structures and equipment with a service life extending beyond the 20-year planning period are considered to have a salvage value. Straight line depreciation methods are used to determine the salvage value for these components. The single payment present worth factor computed at 2.625 percent is also applied to the total salvage value. The resulting present worth is subtracted from the present worth cost for each alternative.

The values of operation and maintenance costs that occur during the planning period are discounted to a present worth. The value of operation and maintenance costs that occur during the planning period is obtained by multiplying the estimated average operation and maintenance expenses during the 20-year planning period by a series present worth factor computed at 2.625 percent. This yields the amount of money that must be theoretically invested at 2.625 percent when the project is initially constructed so that the annual operation and maintenance expenses can be paid each year for the 20-year facilities design life.

Inflation of costs during the planning period was not considered in the analysis as specified in the Environmental Protection Agency (EPA) guidelines. Therefore, all costs quoted are based on March 2022 costs including future replacement costs and salvage values. The employed assumption is that all prices involved will tend to change by approximately the same percentage; thus, the results and conclusions drawing from the present worth cost analysis will not be affected by changes in the general level of prices.

Table 9 presents a summary of the present worth comparison of alternatives - detailed present worth cost estimates for each alternative are found in Appendix E.

Table 9 – 20-Year Present Worth Summary of Alternatives

Alternative	Initial Capital Cost	Present Worth of Annual Cost	Present Worth of 20-Year Salvage Value	20-Year Net Present Cost Worth
Alternative 4A	\$10,865,000	\$2,309,000	\$(1,145,000)	\$12,029,000
Alternative 4B	\$13,721,000	\$2,547,000	\$(1,811,000)	\$14,457,000
Alternative 4C	\$13,255,000	\$2,436,000	\$(1,577,000)	\$14,114,000

5.4 Non- Monetary Comparison

5.4.1 Primary Environmental Impacts

Each alternative, with the exclusion of Alternative 1, will be able to achieve the goals for providing adequate wastewater treatment for current permit limits once the new facilities are completed, which will maintain the current quality of the Apple River.

Each alternative, with the exception of Alternatives 1-3, has construction occurring on the current City-owned property. Specifically in Alternatives 4A-C, the site would only be moving 250 feet to the east of the existing site, therefore, minimal impact is expected.

There is one stream crossing included, of the influent sewer to the plant, but this work is anticipated to be completed by either lining the existing pipe or boring a new pipe. Either method will have very minimal impact on the stream itself and would not require Chapter 30 permitting.

Construction impacts will include noise in the local area of the project, as well as air-emissions from construction equipment, but are expected to be similar to other construction projects. The entire construction area is previously disturbed, and currently in use as a WWTP, so there will be no negative impacts on flora, fauna, agricultural land or cultural, historic or archaeological features. The net impact on scenic/aesthetic features will be a net positive, as the portions of the existing WWTP that are closest to and most visible from the Apple River (the existing oxidation ditch) will be removed, and the area restored with vegetation.

According to FEMA's National Flood Hazard Map, floodplains are present on the west side of the current plant near the river, although do not continue to the proposed construction area for Alternatives 4A-C. The National Flood Hazard Map can be seen Figure 11.

Figure 12 shows the wetland/wetland indicator soils mapping for the site. It should be noted that there are no mapped wetlands within the site. Wetland indicator soils do cover a portion of the site adjacent to the Apple River. However, the proposed disturbance does not extend beyond the existing perimeter driveway, so wetland impacts are not anticipated. As part of the design, the City will submit the project as part of the Wetland Identification Program to ensure DNR concurrence.

An Endangered Resources Preliminary Assessment was performed for the proposed project, which indicated that the project would be covered by the Broad Incidental Take Permit/Authorization for No/Low Impact Activities provided that the US Fish and Wildlife Service

guidelines for Bald Eagle Management are adhered to. The findings of the assessment are included as Appendix F.

5.4.2 Secondary Environmental Impacts

While the City of Amery is projected to grow over the next twenty years, this growth is not the only factor, or even the principal factor in the need to upgrade the WWTP. The project is also driven by factors such as operator/public safety and the condition of the existing facility. A failure of the existing facility due to its age and condition will have a much larger environmental impact than the expected growth anticipated over the design life of the new facility.

5.4.3 Reliability of Treatment

Each alternative, with the exception of Alternative 1, will provide greater reliability of treatment over the existing WWTP. Because Alternatives 1-3 were not given further consideration due to lack of feasibility, the analysis will only focus on Alternatives 4A-C.

Alternative 4A does require a level of understanding of SBRs in terms of automatic operation techniques, but once mastered, there is operational flexibility and control. Alternative 4B and 4C offer an added measure of reliability with the robust nature of the oxidation ditch and the continuous discharge eliminates the periodic effluent surge, unlike SBRs.

While the current staff has experience operating an oxidation ditch, the current configuration is so dissimilar to a modern oxidation ditch that much of this experience may not be applicable. With either an oxidation ditch or SBR, the City will have better reliability of treatment than its current state.

6 Recommended Alternative and Implementation Plan

Based on the monetary, non-monetary and owner preferences presented in Section 5 and Section 6, it is recommended the City of Amery select Alternative 4A: SBR. This alternative will allow room for expansion with population increase and the above analysis demonstrates that it is the most cost-effective option.

SEH recommends implementing this alternative as a single project as opposed to a phased series of projects based on the condition and capacity limitations of a number of the existing unit treatment processes. The estimated project cost is \$9,305,000 including contingencies, engineering, administration and legal fees.

6.1 Description of Recommended Plan

The recommended alternative includes the following improvements:

- Construct new preliminary treatment building, including fine screening, grit removal, bypass channel, influent pumping, SBR blowers, valves and controls.
- Modify current administrative building to remove existing headworks, make provisions for centrate and sludge pumping, and maximize storage/maintenance space
- Construct a new Two-Basin Sequencing Batch Reactor (SBR)
- Convert the existing clarifier for sludge storage

- Convert the existing selector tank for centrate storage
- Replace the existing UV disinfection system in the same location, with channel modifications necessary to address capacity issues.
- Replace RDT with new sludge thickening unit in the same location.

6.2 NR110.15 Setback Requirements & Waiver Process

All parcels within the project area are owned by the City of Amery. The recommended alternative would require a 500-foot set-back for any mechanical treatment facility, per Admin. Code NR 110.15.

When reviewing a 500-foot set back from all existing private properties and commercial buildings, there is no area on the owner's property where upgrade and construction would meet NR 110.15 code.

In this case, the City of Amery will need to work with the WDNR for a waiver to the setback requirements since the alternative proves to be the most cost-effective. Specifically, NR 110.15(3)(d)2 indicates that the owner must make reasonable attempts to obtain an agreement from any affected property owner who will be notified of the possibility of nuisance from operation of the wastewater treatment plant. This will include consent to the construction and operation of the wastewater treatment plant. The City of Amery will then have to enact a zoning ordinance which prohibits future construction within the applicable separation distances to prevent future encroachment.

Figure 12 shows a 500-foot setback from the proposed WWTP - which also show the private residences and commercial buildings that will need to be communicated with. The setback also establishes land that will then be prohibited for future development due to the new zoning ordinances.

6.3 Implementation Schedule

The anticipated implementation schedule is outlined below:

- | | |
|--|----------------|
| • Conduct Public Hearing on Facility Plan | January 2023 |
| • Submit Facility Plan to WDNR | January 2023 |
| • WDNR Approval of Plan | April 2023 |
| • Begin Design | September 2022 |
| • Submit ITA/PERF to WDNR | October 2022 |
| • Submit Drawings and Specifications to WDNR | September 2023 |
| • WDNR Approval of Drawings and Specifications | December 2023 |
| • Award of Construction Contract | February 2024 |
| • Start Construction | March 2024 |
| • End Construction/Startup | June 2025 |

6.4 Project Cost and Funding

The City is pursuing financial assistance from the WDNR Clean Water Fund Loan Program (CWFLP). The CWFLP provides subsidized interest rate loans and principal forgiveness to municipalities seeking to fund wastewater infrastructure projects. Based on current estimates the City of Amery would be eligible for 25 percent principal forgiveness, up to a maximum of

\$2,000,000. The remainder of the project amount would be funded at a subsidized interest rate equal to 55 percent of the market rate.

6.5 Estimated User Rate Impact

The City of Amery currently charges a fixed quarterly sewer charge of \$42.27 for a 3/4-inch water meter, plus \$5.33 per 1,000 gallons of water used. Based on current average residential usage of 2,700 gallons of water per month, the average annual residential sewer bill is \$341.77.

Assuming the proposed project is funded by the Clean Water Fund, and financed over 20 years, the current interest rate would be 55 percent of the market rate, or 2.145 percent. Based on the proposed

estimated capital cost of \$10,865,000, less \$2,000,000 in principal forgiveness, the annual debt service for the WWTP improvements would be approximately \$550,000. In addition, the annual electrical cost is expected to increase from \$50,000 to \$76,000, and the equipment replacement cost is expected to be an additional \$59,000 annually. The City's sewer budget currently has approximately \$135,000 in revenue available for debt service, resulting in an annual budgetary impact is an increase of \$500,000.

While the details of user charge changes will need to be calculated, for the purposes of this exercise, it is assumed that the debt service payment will be added to the fixed charge, allocated to the approximately 1,300 sewer users in the City of Amery equally. This amounts to an additional annual cost of \$319, or \$80 per quarter for a new fixed charge of \$122.08. Adding the additional operational costs (\$85,000) to the flow charge, based on a total annual flow of 88,825 (1,000 gallons) results in an increase of \$0.96 per 1,000 gallons, for a total flow charge of \$6.29.

With the assumptions outlined above, the total annual impact on an average residential user will be an increase of \$350.35 to a total annual cost of \$692.12. Based on Amery's FY 2023 Median Household Income (MHI) of \$55,764, this represents 1.2 percent of MHI.

6.6 Institutional Responsibility

The City of Amery's financial, legal, and institutional authority for implementing the proposed project is vested in the Wisconsin Statutes. To meet the water pollution control requirements of the DNR and the EPA over the twenty-year design life, the City must construct the proposed wastewater treatment upgrades.

7 Public Participation

7.1 Public Hearing

A public hearing for the recommended alternative was held on January 18, 2023 in compliance with NR 110.09 requirements. Minutes of that meeting are included as Appendix G.

VA/jw/hbh

Figures

Figure 1 – Average Monthly Influent Flow

Figure 2 – Average Monthly Influent TSS-BOD

Figure 3 – Process Flow Diagram

Figure 4 – Existing WWTP Diagram

Figure 5 – Average Monthly Effluent TSS

Figure 6 – Average Monthly Effluent BOD

Figure 7 – Average Monthly Effluent TP

Figure 8 – Alternative 4A – SBR

Figure 9 – Alternative 4B – Orbal Oxidation Ditch

Figure 10 – Alternative 4C – Tri-Oval Oxidation Ditch

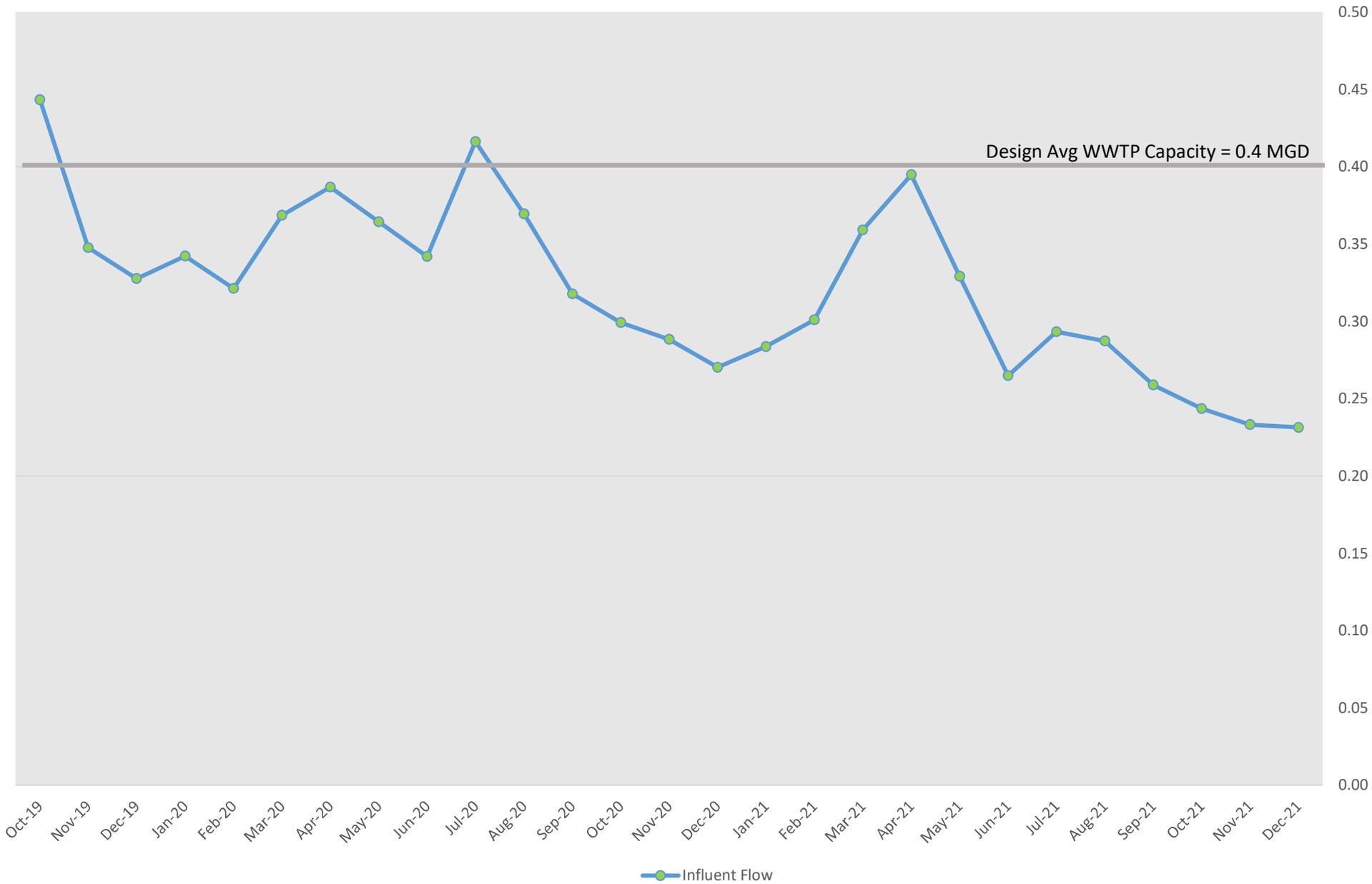
Figure 11 – National Flood Hazard Map

Figure 12 – Wetland Map

Figure 13 – NR 110.15 WWTP Setback

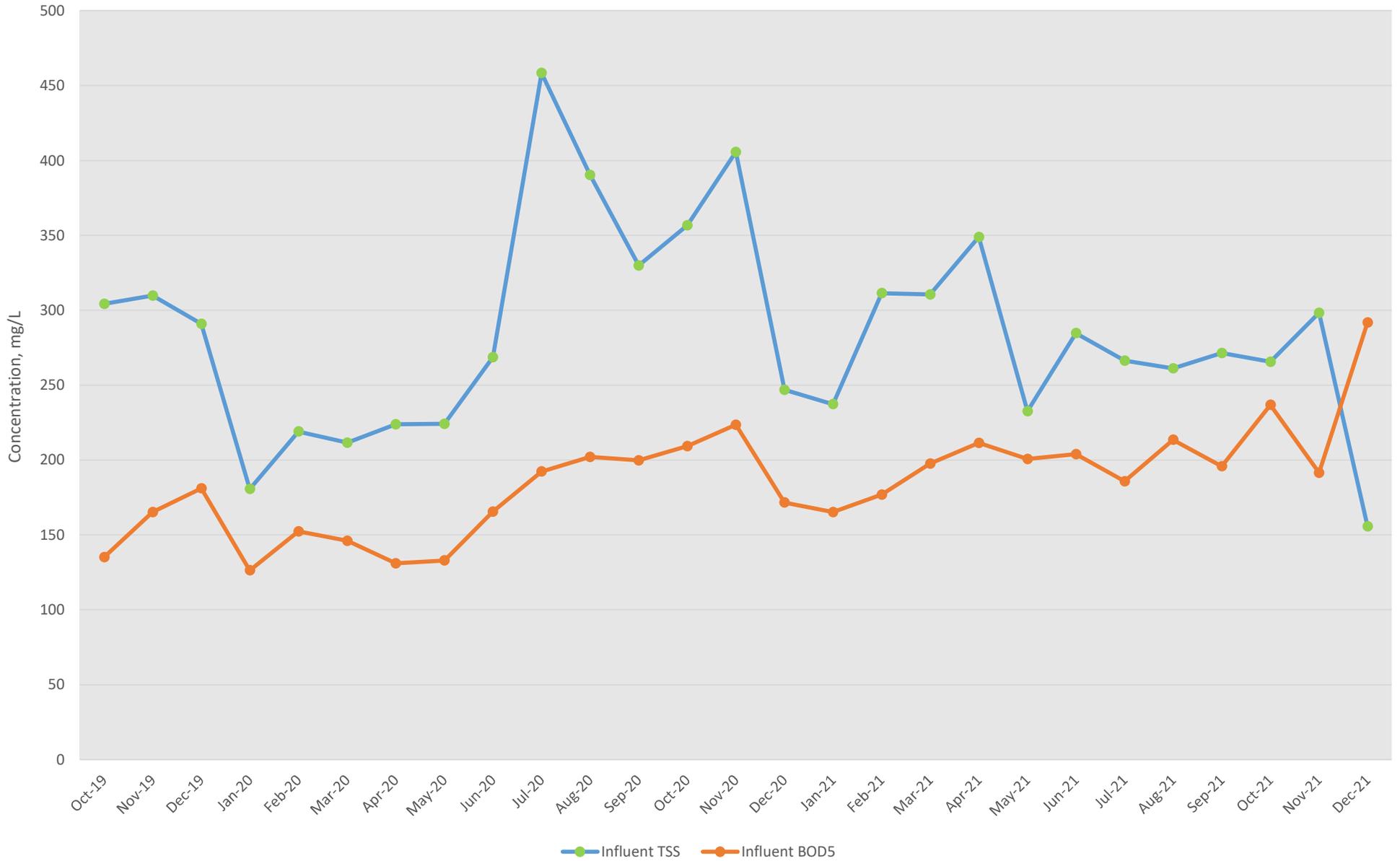
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Figure 1: Amery, WI WWTP
Average Monthly Influent Flow
October 2019- December 2021

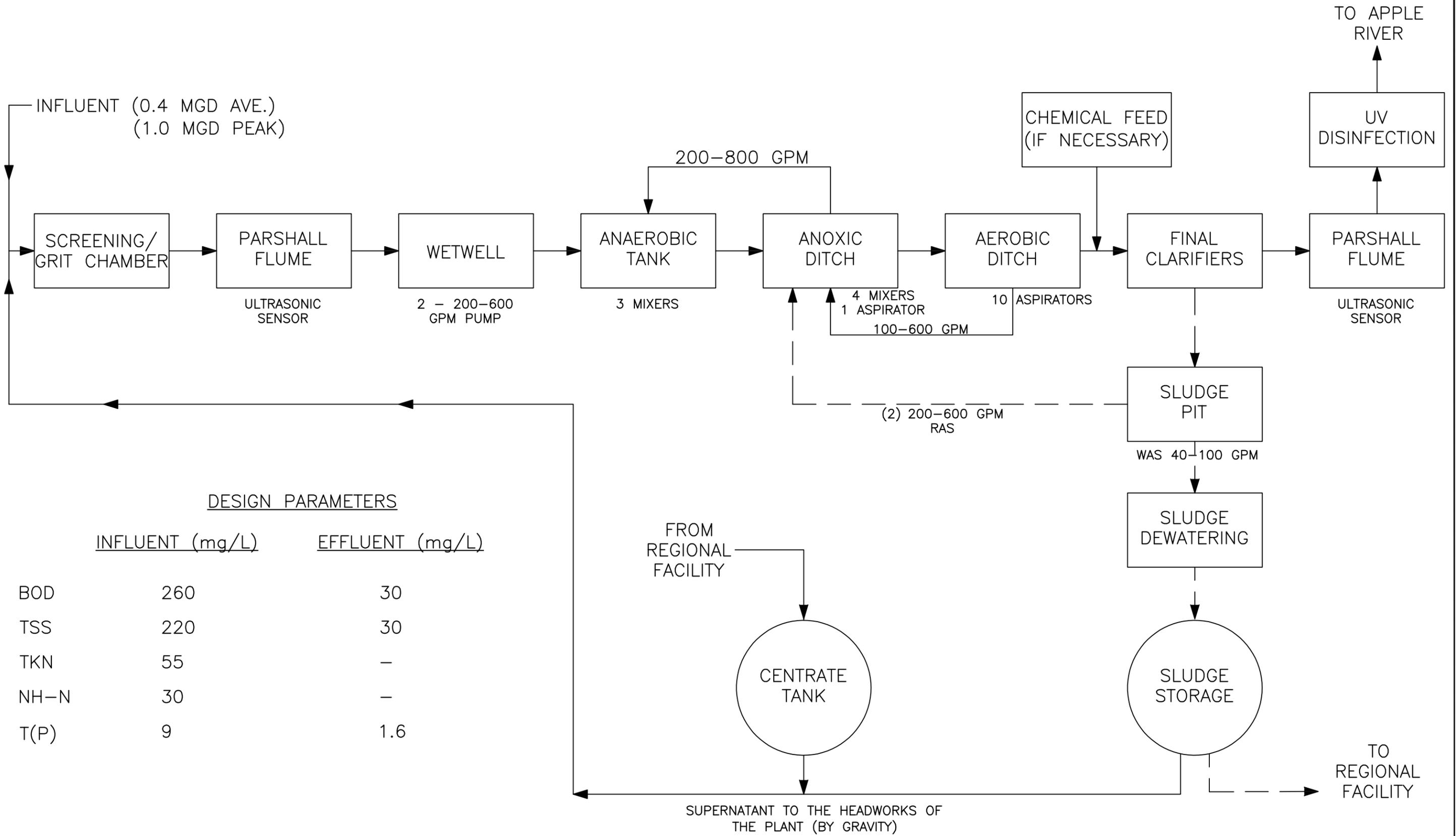


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Figure 2: Amery, WI WWTP
Average Monthly Influent TSS & BOD
October 2019- December 2021



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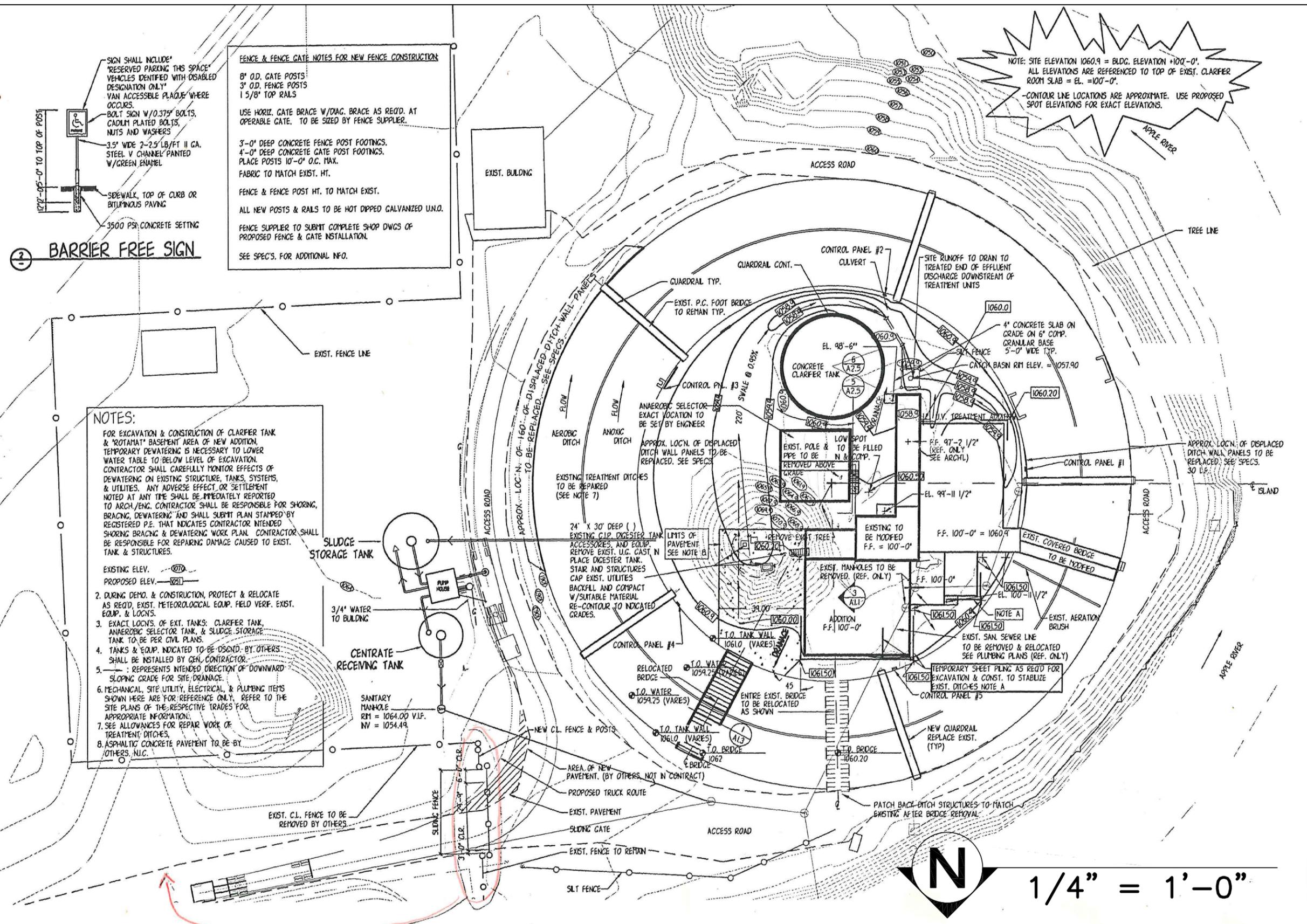


DESIGN PARAMETERS

	<u>INFLUENT (mg/L)</u>	<u>EFFLUENT (mg/L)</u>
BOD	260	30
TSS	220	30
TKN	55	—
NH-N	30	—
T(P)	9	1.6



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BARRIER FREE SIGN

12" x 12" x 1/2" TO TOP OF POST

3500 PSI CONCRETE SETTING

SIDEWALK, TOP OF CURB OR BITUMINOUS PAVING

3.5" WIDE 2-2.5 LB/FT II GA. STEEL V CHANNEL PAINTED W/GREEN ENAMEL

BOLT SIGN W/0.375" BOLTS, CADMIUM PLATED BOLTS, NUTS AND WASHERS

VEHICLES IDENTIFIED WITH DISABLED DESIGNATION ONLY

RESERVED PARKING THIS SPACE

SIGN SHALL INCLUDE:

VAN ACCESSIBLE PLACQUE WHERE OCCURS

FENCE & FENCE GATE NOTES FOR NEW FENCE CONSTRUCTION

8" O.D. GATE POSTS
3" O.D. FENCE POSTS
1 5/8" TOP RAILS

USE HORIZ. GATE BRACE W/DIAG. BRACE AS REQ'D. AT OPERABLE GATE. TO BE SIZED BY FENCE SUPPLIER.

3'-0" DEEP CONCRETE FENCE POST FOOTINGS.
4'-0" DEEP CONCRETE GATE POST FOOTINGS.
PLACE POSTS 10'-0" O.C. MAX.
FABRIC TO MATCH EXIST. HT.

FENCE & FENCE POST HT. TO MATCH EXIST.

ALL NEW POSTS & RAILS TO BE HOT DIPPED GALVANIZED UN.O.

FENCE SUPPLIER TO SUBMIT COMPLETE SHOP DWGS OF PROPOSED FENCE & GATE INSTALLATION.

SEE SPECS. FOR ADDITIONAL INFO.

NOTES:

FOR EXCAVATION & CONSTRUCTION OF CLARIFIER TANK & "ROTAMAT" BASEMENT AREA OF NEW ADDITION, TEMPORARY DEWATERING IS NECESSARY TO LOWER WATER TABLE TO BELOW LEVEL OF EXCAVATION. CONTRACTOR SHALL CAREFULLY MONITOR EFFECTS OF DEWATERING ON EXISTING STRUCTURE, TANKS, SYSTEMS, & UTILITIES. ANY ADVERSE EFFECT OR SETTLEMENT NOTED AT ANY TIME SHALL BE IMMEDIATELY REPORTED TO ARCH/ENG. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING, BRACING, DEWATERING AND SHALL SUBMIT PLAN STAMPED BY REGISTERED P.E. THAT INDICATES CONTRACTOR INTENDED SHORING BRACING & DEWATERING WORK PLAN. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE CAUSED TO EXIST. TANK & STRUCTURES.

EXISTING ELEV.

PROPOSED ELEV.

2. DURING DEMO. & CONSTRUCTION, PROTECT & RELOCATE AS REQ'D. EXIST. METEOROLOGICAL EQUIP. FIELD VERIF. EXIST. EQUIP. & LOCNS.

3. EXACT LOCNS. OF EXIST. TANKS: CLARIFIER TANK, ANAEROBIC SELECTOR TANK, & SLUDGE STORAGE TANK TO BE PER CIVIL PLANS.

4. TANKS & EQUIP. INDICATED TO BE DEMO'D. BY OTHERS SHALL BE INSTALLED BY GEN. CONTRACTOR.

5. : REPRESENTS INTENDED DIRECTION OF DOWNWARD SLOPING GRADE FOR SITE DRAINAGE.

6. MECHANICAL, SITE UTILITY, ELECTRICAL, & PLUMBING ITEMS SHOWN HERE ARE FOR REFERENCE ONLY. REFER TO THE SITE PLANS OF THE RESPECTIVE TRADES FOR APPROPRIATE INFORMATION.

7. SEE ALLOWANCES FOR REPAIR WORK OF TREATMENT DITCHES.

8. ASPHALTIC CONCRETE PAVEMENT TO BE BY OTHERS, N.I.C.

3/4" WATER TO BUILDING

SLUDGE STORAGE TANK

CENTRATE RECEIVING TANK

SANITARY MANHOLE
RIM = 1064.00 V.I.P.
NV = 1054.49

NOTE: SITE ELEVATION 1060.9 = BLDG. ELEVATION +10'-0".
ALL ELEVATIONS ARE REFERENCED TO TOP OF EXIST. CLARIFIER ROOM SLAB = EL. = 100'-0".

-CONTOUR LINE LOCATIONS ARE APPROXIMATE. USE PROPOSED SPOT ELEVATIONS FOR EXACT ELEVATIONS.

N

1/4" = 1'-0"



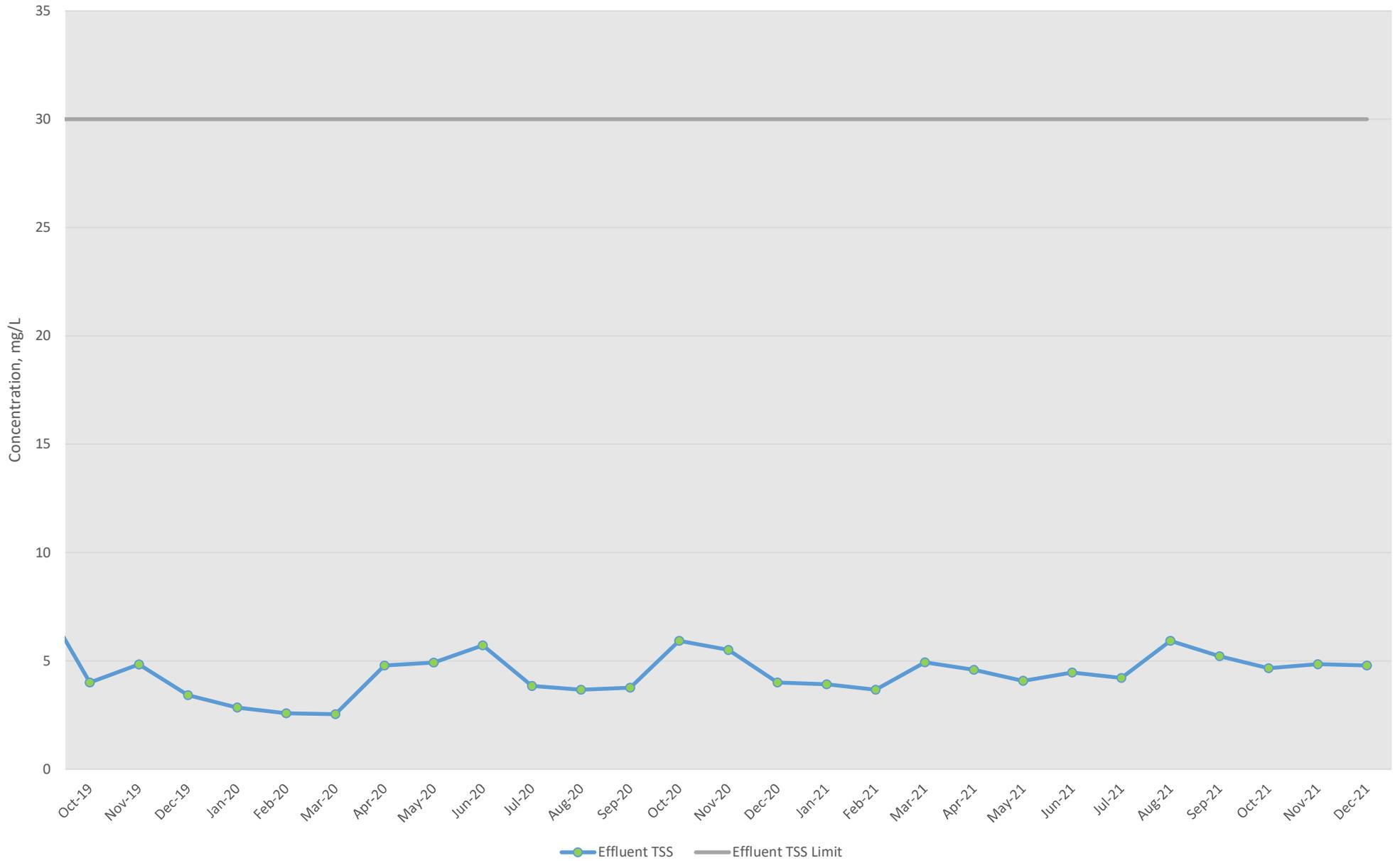
AMERY, WISCONSIN
EXISTING WWTP SITE PLAN

FILE NO.
AMERY 160422

FIGURE NO.
4

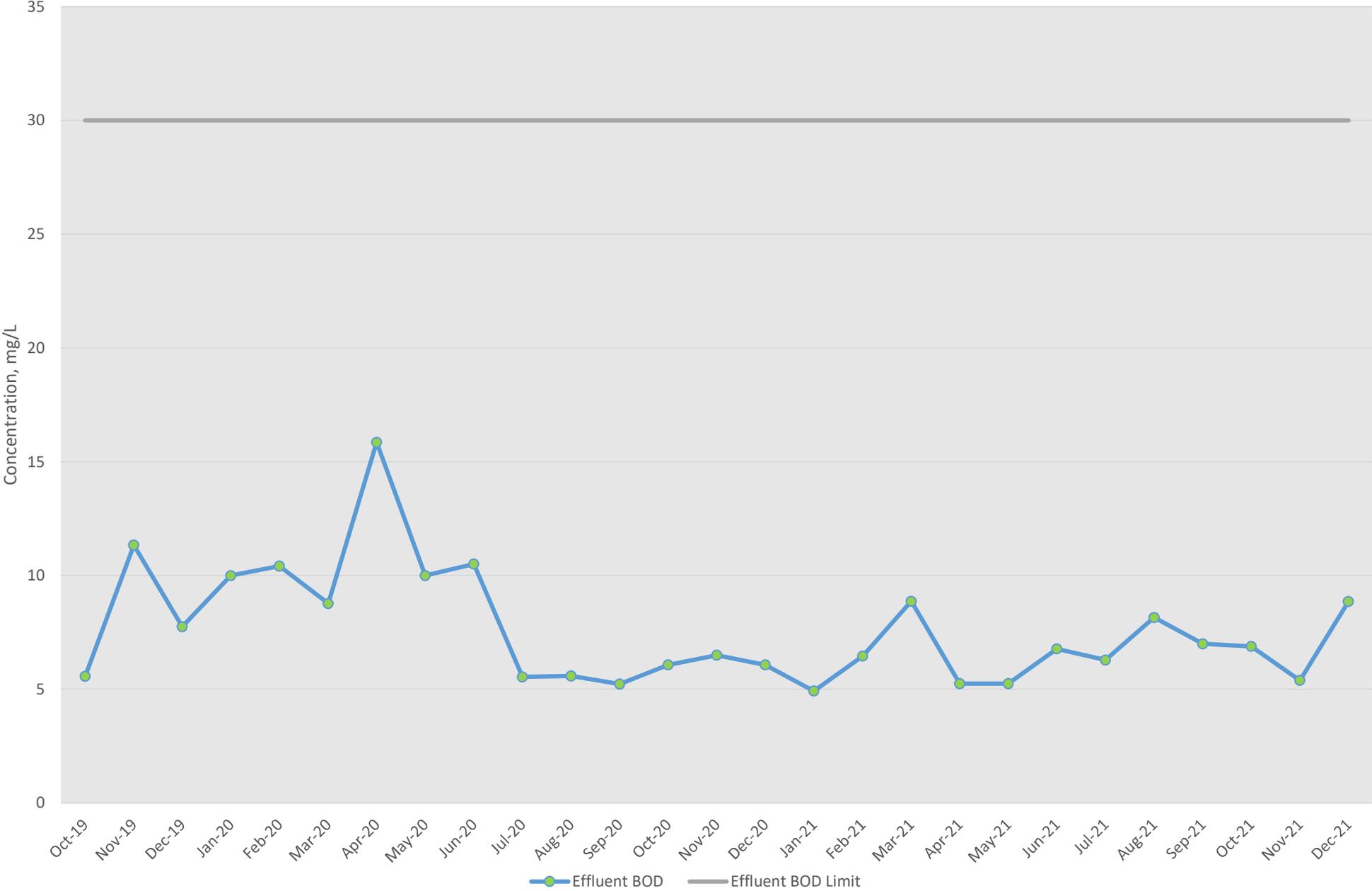
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Figure 5: Amery, WI WWTP
Average Monthly Effluent TSS
October 2019-December 2021



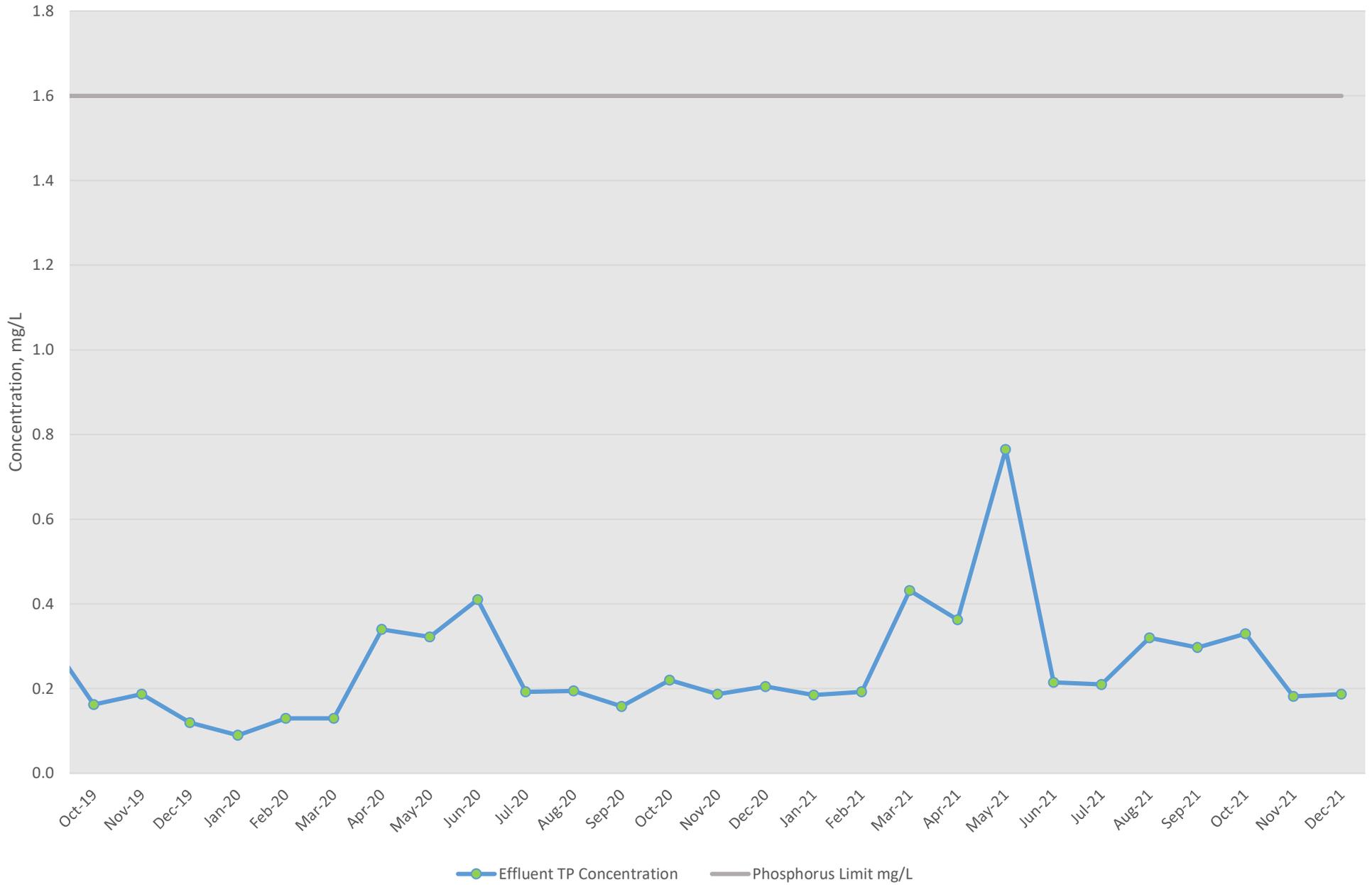
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Figure 6: Amery, WI WWTP
Average Monthly Effluent BOD
October 2019 - December 2021

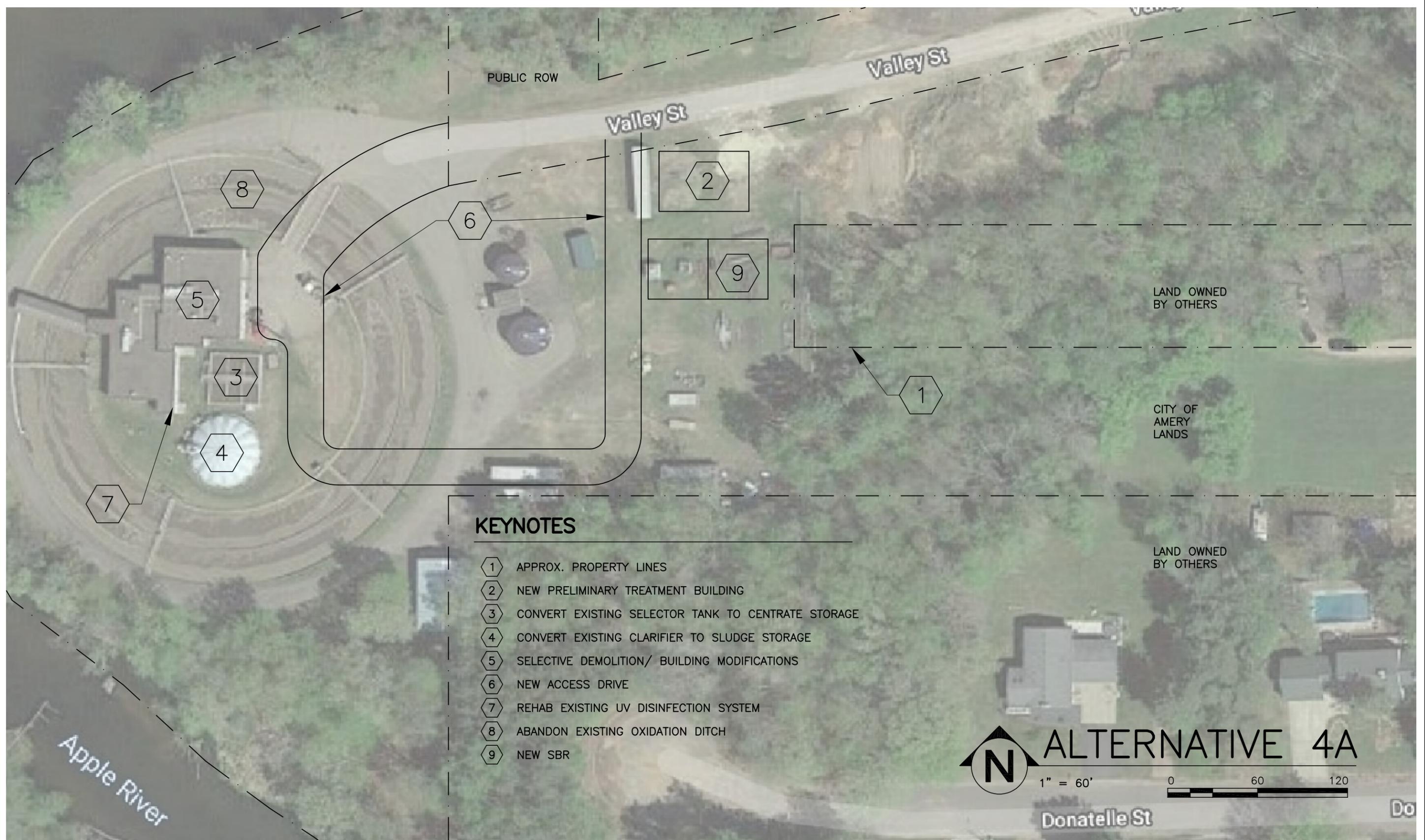


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Figure 7: Amery, WI WWTP
Average Monthly Effluent Total Phosphorus
October 2019 - December 2021



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KEYNOTES

- 1 APPROX. PROPERTY LINES
- 2 NEW PRELIMINARY TREATMENT BUILDING
- 3 CONVERT EXISTING SELECTOR TANK TO CENTRATE STORAGE
- 4 CONVERT EXISTING CLARIFIER TO SLUDGE STORAGE
- 5 SELECTIVE DEMOLITION/ BUILDING MODIFICATIONS
- 6 NEW ACCESS DRIVE
- 7 REHAB EXISTING UV DISINFECTION SYSTEM
- 8 ABANDON EXISTING OXIDATION DITCH
- 9 NEW SBR



ALTERNATIVE 4A

1" = 60'

0 60 120

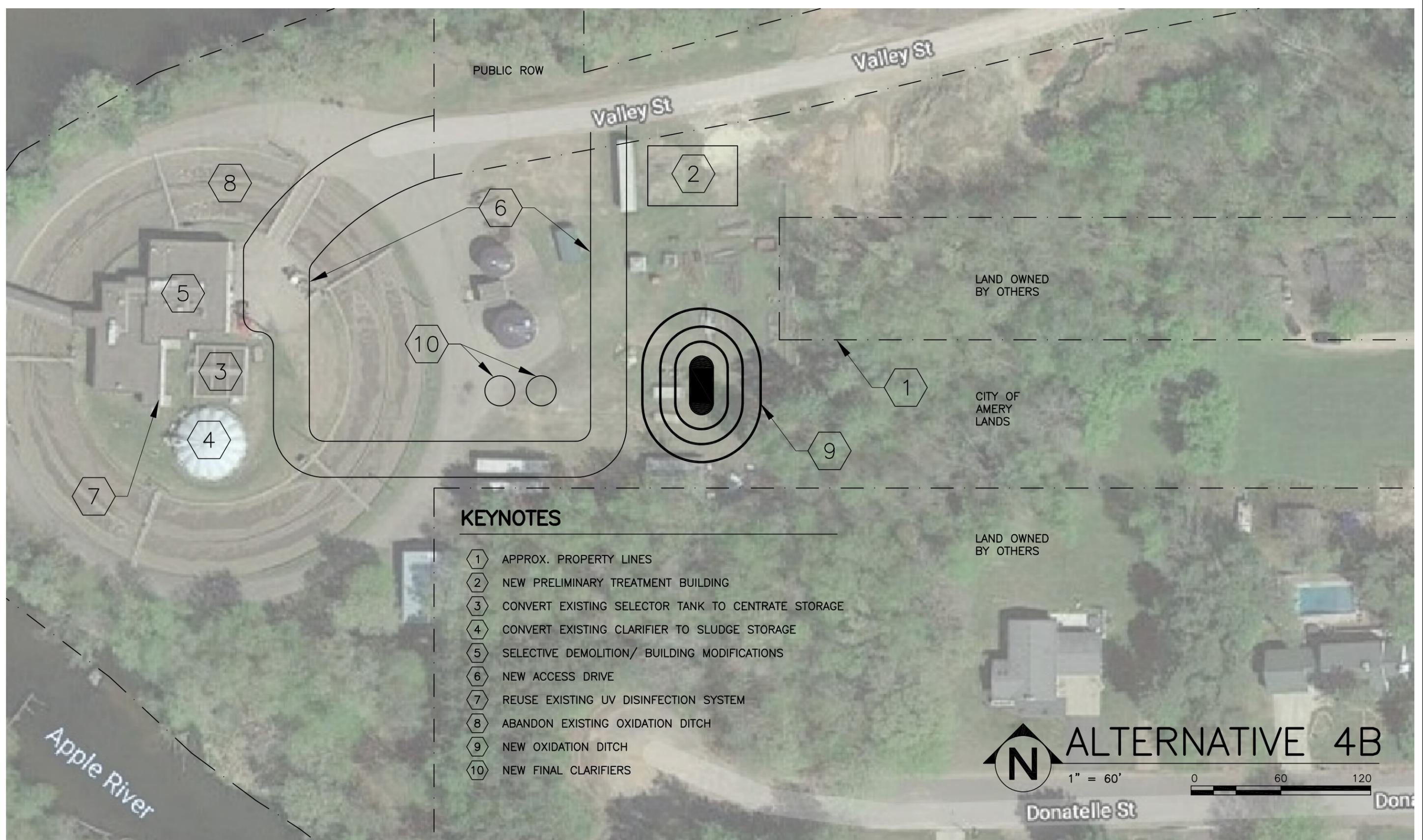


AMERY, WISCONSIN
 ALTERNATIVE 4A - SBR

FILE NO.
 AMERY 160422

FIGURE NO.
 8

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KEYNOTES

- 1 APPROX. PROPERTY LINES
- 2 NEW PRELIMINARY TREATMENT BUILDING
- 3 CONVERT EXISTING SELECTOR TANK TO CENTRATE STORAGE
- 4 CONVERT EXISTING CLARIFIER TO SLUDGE STORAGE
- 5 SELECTIVE DEMOLITION/ BUILDING MODIFICATIONS
- 6 NEW ACCESS DRIVE
- 7 REUSE EXISTING UV DISINFECTION SYSTEM
- 8 ABANDON EXISTING OXIDATION DITCH
- 9 NEW OXIDATION DITCH
- 10 NEW FINAL CLARIFIERS

ALTERNATIVE 4B

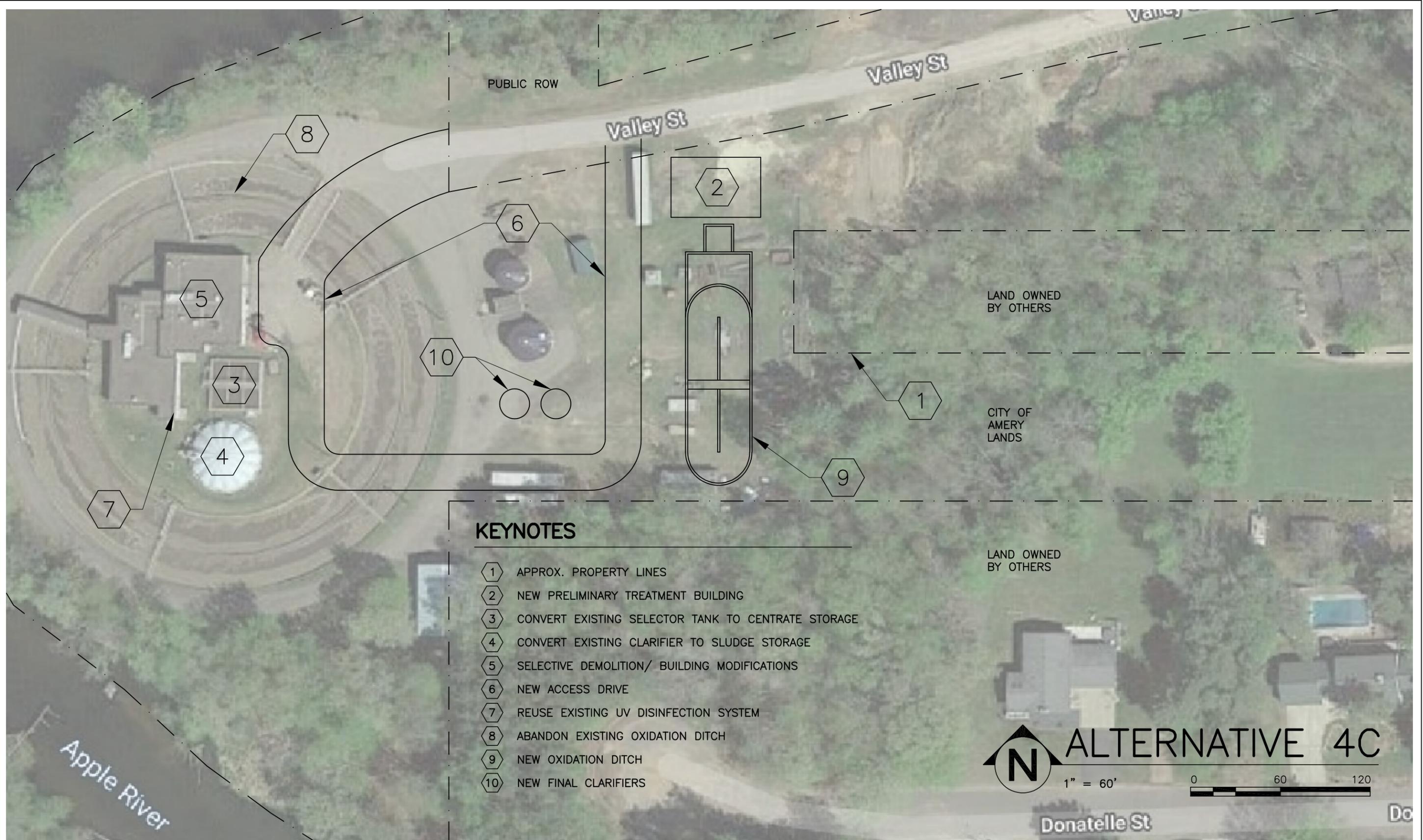
1" = 60'

0 60 120

Donatelle St



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KEYNOTES

- ① APPROX. PROPERTY LINES
- ② NEW PRELIMINARY TREATMENT BUILDING
- ③ CONVERT EXISTING SELECTOR TANK TO CENTRATE STORAGE
- ④ CONVERT EXISTING CLARIFIER TO SLUDGE STORAGE
- ⑤ SELECTIVE DEMOLITION/ BUILDING MODIFICATIONS
- ⑥ NEW ACCESS DRIVE
- ⑦ REUSE EXISTING UV DISINFECTION SYSTEM
- ⑧ ABANDON EXISTING OXIDATION DITCH
- ⑨ NEW OXIDATION DITCH
- ⑩ NEW FINAL CLARIFIERS

ALTERNATIVE 4C

1" = 60'

0 60 120



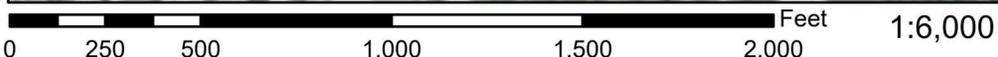
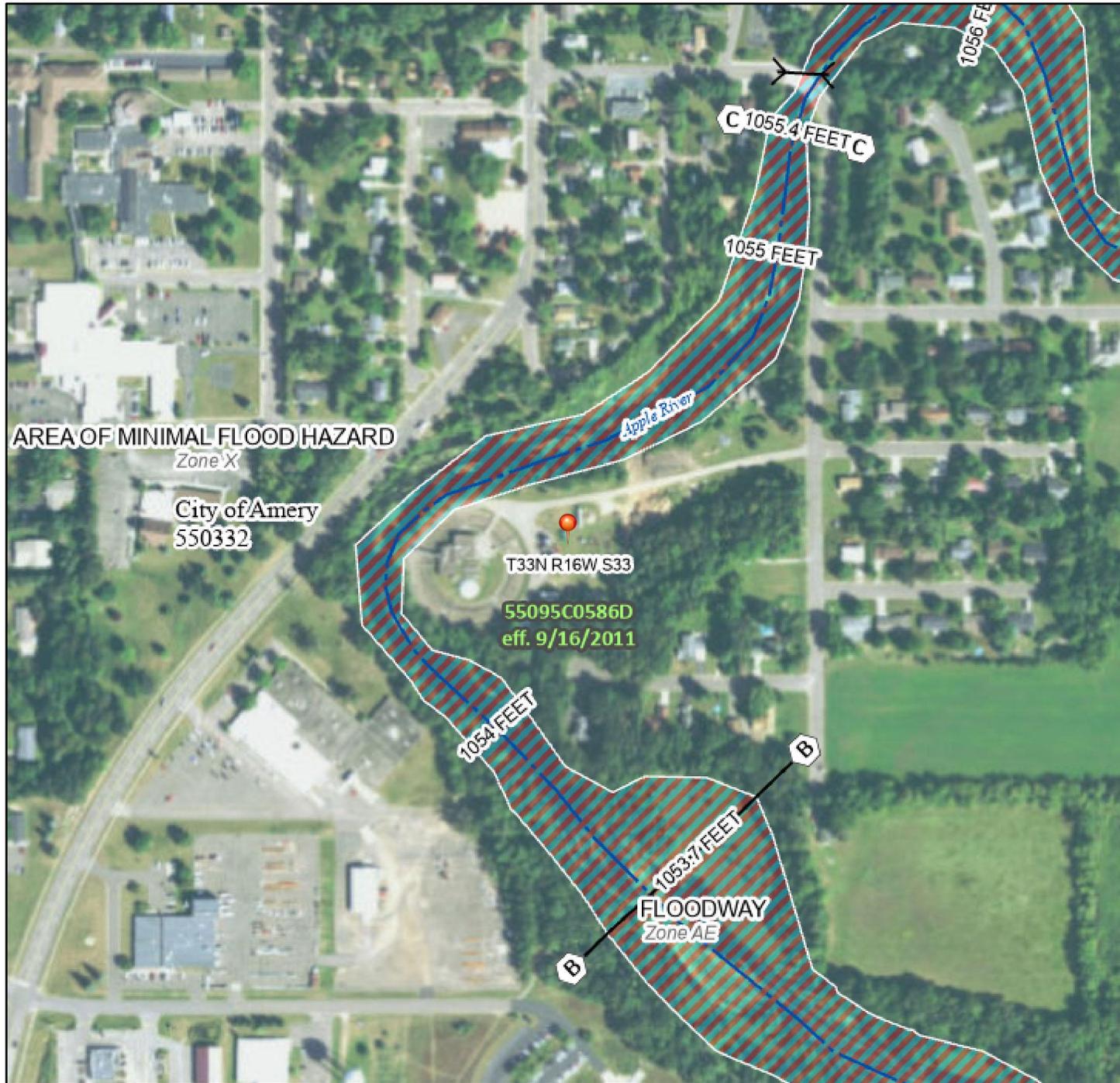
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National Flood Hazard Layer FIRMMette



Figure 11

92°22'1"W 45°18'17"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/15/2021 at 4:55 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



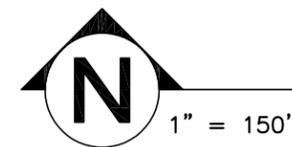
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KEYNOTES

- 1 500' SET BACK
- 2 APPROX. NEW STRUCTURE LOCATION
- 3 EXISTING STRUCTURE IMPROVEMENTS



SET BACKS

1" = 150'



AMERY, WISCONSIN
 NR 110.15 WWTP SETBACK

FILE NO.
 AMERY 160422

FIGURE NO.
 13

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Appendix A

2020 Amery WPDES Permit

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WPDES PERMIT

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

CITY OF AMERY

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

100 VALLEY STREET, AMERY, WISCONSIN

to

**THE APPLE RIVER IN THE LOWER APPLE RIVER WATERSHED OF THE ST. CROIX DRAINAGE
BASIN – POLK COUNTY**

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 _____
Michelle Balk
Wastewater Field Supervisor - NOR

Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - October 01, 2020

EXPIRATION DATE - September 30, 2025

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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	Representative influent samples shall be collected after the parshall flume prior to the wet well.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BOD ₅ , Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

2 Surface Water Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
001	Representative 24-hour flow proportional samples shall be collected in the U.V. Room at the start of the final channel. Representative grab samples shall be collected at the flow monitoring site. The permittee is authorized to discharge to the Apple River in Polk County.

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	Continuous	Continuous	
BOD ₅ , Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Phosphorus, Total	Monthly Avg	1.6 mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	6.6 lbs/day	Weekly	Calculated	See the "Lake St. Croix TMDL Phosphorus Allocation" subsection for more information.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculated as a 12-month rolling sum. See the "Lake St. Croix TMDL Phosphorus Allocation" subsection for more information.

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Weekly	Grab	Interim limit effective May - September annually until the final E. coli limit goes into effect per the "Effluent Limitations for E. coli" Schedule.
E. coli		#/100 ml	Weekly	Grab	Monitoring only May - September annually until the final limit goes into effect per the "Effluent Limitations for E. coli" Schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit Effective May - September annually per the "Effluent Limitations for E. coli" Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit Effective May - September annually per the "Effluent Limitations for E. coli" Schedule. See the "E. coli Percent Limit" section below. Enter the result in the DMR on the last day of the month.
Nitrogen, Ammonia (NH ₃ -N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the "Total Nitrogen Testing" subsection for testing schedule.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the "Total Nitrogen Testing" subsection for testing schedule.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Total Nitrogen = Total Nitrogen Kjeldahl (mg/L) + Nitrate+ Nitrogen (mg/L). See the "Total Nitrogen Testing" subsection for testing schedule.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Sampling is required during the 2022 calendar year.
Copper, Total Recoverable		µg/L	Monthly	24-Hr Flow Prop Comp	Sampling is required during the 2022 calendar year.

2.2.1.1 Annual Average Design Flow

The annual average design flow of the permittee's wastewater treatment facility is 0.4 MGD.

2.2.1.2 Lake St. Croix TMDL Phosphorus Allocation

The Lake St Croix Nutrient Total Maximum Daily Load (TMDL) report specifies a phosphorus waste load allocation (WLA) of 1,628 pounds per year annually for the City of Amery, resulting in the monthly average mass limit of 6.6 lbs/day.

Calculation and reporting of the total mass of phosphorus discharged over the past 12 months is also required for comparison with the WLA to track progress in overall TMDL point source reductions.

Calculations needed to determine compliance with the wasteload allocation are:

- **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.
- **12-Month Rolling Sum of Total Monthly Discharge (lbs/year):** Total monthly discharge = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34. Then sum the most recent 12 consecutive months of Total Monthly Discharges. This value should be reported on the eDMR on the last day of each month.

2.2.1.3 *E. coli* Percent Limit

No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 #/100 ml. Bacteria samples may be collected more frequently than required. All samples shall be reported on the monthly discharge monitoring reports (DMRs). The following calculation should be used to calculate percent exceedances.

$$\frac{\text{\# of Samples greater than 410 \#/100}}{\text{Total \# of samples}} \times 100 = \% \text{ Exceedance}$$

2.2.1.4 Total Nitrogen Testing

Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrite+Nitrate (mg/L).

Total Nitrogen monitoring shall take place once a year during rotating quarters in order to collect seasonal information about the discharge.

- April – June 2021
- January – March 2022
- October – December 2023
- July – September 2024
- April – June 2025

Testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the requirements for 2024. For example, the next test would be required July - September 2026.

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, Waste Type/Sample Contents and Treatment Description (as applicable)
002	Representative samples shall be collected from the outfall at the end of the dewatering machine. All sludge is transferred to the West Central Wisconsin Biosolids Facility in Ellsworth WI. Amery WWTF shall provide the Department with the annual metals analysis required by the Biosolids facility and the one time Radium 226 result.

3.2 Monitoring Requirements and Limitations

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

3.2.1 Sampling Point (Outfall) 002 - Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Radium 226 Dry Wt		pCi/g	Once	Composite	Sampling is required once during the permit term.

3.2.1.1 Sludge Transport to Another Facility

When sludge is hauled to another facility, the permittee is required to submit **Other Methods of Disposal or Distribution Report Form 3400-52** to the Department electronically by January 31, following each year sludge is hauled. A **General Sludge Management Information Form 3400-48** shall be submitted prior to any significant sludge management changes.

4 Schedules

4.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli 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

Required Action	Due Date
<p>Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.</p>	11/21/2020
<p>Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than April 30, 2022. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations.</p> <p>The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than April 30, 2022.</p> <p>If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by April 30, 2022 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule ('Submit Facility Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', 'Construction Upgrade Progress Report', 'Complete Construction', 'Achieve Compliance').</p> <p>FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance.</p> <p>If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than April 30, 2025.</p>	10/31/2021
<p>Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.</p>	04/30/2022
<p>Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.</p>	03/31/2023
<p>Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans</p>	09/30/2023

and schedule from the Department pursuant to s. 281.41, Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. 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.	
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2024
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2025
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2025

5 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).

5.1 Reporting and Monitoring Requirements

5.1.1 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.

5.1.2 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.

5.1.3 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.

5.1.4 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.

5.1.5 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.

5.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings or electronic data records 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.

5.1.7 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.

5.1.8 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.

5.2 System Operating Requirements

5.2.1 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.**

5.2.2 Flow Meters

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

5.2.3 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 500-555, Wis. Adm. Code.

5.2.4 Sludge Management

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

5.2.5 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.

5.2.6 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.

5.2.7 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.

5.2.8 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.

5.2.9 Ammonia Limit Not Needed - Continue to Optimize Removal of Ammonia

Applying the procedures in s. NR 106.05, Wis. Adm. Code, to ammonia data that is representative of the current operations of the wastewater treatment plant resulted in a determination that ammonia effluent limits are not necessary in this permit. Pursuant to NR 106.33, throughout the term of this permit, the wastewater treatment plant shall continue to be operated in a manner that optimizes the removal of ammonia within the design capabilities of the wastewater treatment plant.

5.2.10 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. 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.

5.2.11 Operator Certification

The wastewater treatment facility shall be under the direct supervision of a state certified operator. In accordance with s. NR 114.53, Wis. Adm. Code, every WPDES permitted treatment plant shall have a designated operator-in-charge holding a current and valid certificate. The designated operator-in-charge shall be certified at the level and in all subclasses of the treatment plant, except laboratory. Treatment plant owners shall notify the department of any changes in the operator-in-charge within 30 days. Note that s. NR 114.52(22), Wis. Adm. Code, lists types of facilities that are excluded from operator certification requirements (i.e. private sewage systems, pretreatment facilities discharging to public sewers, industrial wastewater treatment that consists solely of land disposal, agricultural digesters and concentrated aquatic production facilities with no biological treatment).

5.3 Sewage Collection Systems

5.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

5.3.1.1 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.

5.3.1.2 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.

5.3.1.3 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.

5.3.1.4 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.

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

- The permittee shall have written documentation of the Capacity, Management, Operation and Maintenance (CMOM) program components in accordance with s. NR 210.23(4), 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 implement a CMOM program in accordance with s. NR 210.23, Wis. Adm. Code.
- 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.

5.3.3 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.

5.4 Surface Water Requirements

5.4.1 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.

5.4.2 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.

5.4.3 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.

5.4.4 Visible Foam or Floating Solids

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

5.4.5 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.

5.4.6 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.

5.4.7 Fecal Coliform

The monthly limit for fecal coliform shall be expressed as a geometric mean. In calculating the geometric mean, a value of 1 is used for any result of 0.

5.4.8 *E. coli*

The monthly limit for *E. coli* shall be expressed as a geometric mean. In calculating the geometric mean, a value of 1 is used for any result of 0.

5.4.9 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitations for Fecal Coliform (interim) and *E. coli* apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

5.5 Land Application Requirements

5.5.1 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.

5.5.2 General Sludge Management Information

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

5.5.3 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.

5.5.4 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.

5.5.5 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) =

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

5.5.6 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

5.5.7 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.

5.5.8 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.

5.5.9 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) (1), Wis. Adm. Code.

5.5.10 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.

5.5.11 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.

5.5.12 Sludge Hauling

The permittee is required to submit Form 3400-52 to the Department. If sludge is hauled to another facility, information shall include the quantity of sludge 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 sludge is hauled.

6 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Effluent Limitations for E. coli -Status Update	November 21, 2020	7
Effluent Limitations for E. coli -Operational Evaluation Report	October 31, 2021	7
Effluent Limitations for E. coli -Submit Facility Plan	April 30, 2022	7
Effluent Limitations for E. coli -Final Plans and Specifications	March 31, 2023	7
Effluent Limitations for E. coli -Treatment Plant Upgrade to Meet Limitations	September 30, 2023	8
Effluent Limitations for E. coli -Construction Upgrade Progress Report	September 30, 2024	8
Effluent Limitations for E. coli -Complete Construction	March 31, 2025	8
Effluent Limitations for E. coli -Achieve Compliance	April 30, 2025	8
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	10
General Sludge Management Form 3400-48	prior to any significant sludge management changes	18
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	18
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	19
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	19
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	9

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:

Northern Region - Spooner, 810 W. Maple Street, Spooner, WI 54801-1255

Appendix B

Amery CMOM

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Overflow Emergency Response Plan

Unanticipated collection system events are going to happen. The better prepared we are the more efficient and effective we will be. This section of our CMOM Program will address a few of the overflow and emergency situation we can expect. Also included are various contact information that may be helpful.

Lift Station Emergency Plans

Lift Stations are visited every day and inspected through a daily log, see Operation & Maintenance. All Lift Station are linked to an alarm system that will contact wastewater personnel 24 hours per day, if there is equipment failure. All lift station are equipped with more pumps than are required for normal flows, so if one pump fails the other pump will operate until the failed pump is repaired. Our lift stations have emergency backup generators and are tested every month. Also the wastewater plant has an emergency generator. If in case of a mechanical failure there are two methods we would use to get the sewage to the wastewater plant. At the lift stations we can transport the sewage with a septic hauling truck, see septic haulers. The other option Lift Stations will require temporary pumping through over ground to the wastewater plant or a manhole, see Emergency Pumping Contractors.

Emergency Pumping Contractors'

- Lincoln Contractor Supply, Inc. Wausau, WI. 715-359-6111
- . Electric Pumps , New Prague, MN 952-758-6600

Septic Haulers

GILLE SEPTIC

715-268-4333

Toombs Septic Service. 715-263-4333

STEP 1: LIST SYSTEM AND CONTACT INFORMATION

System Information

Public Water System (PWS) ID Number	AMERY		
System Name	AMERY UTILITIES		
Town/City	AMERY		
Telephone Numbers	715-268-7527	System Telephone	715-554-0170 Evening/Weekend Telephone
Other Contact Information	715-268-7480 System Fax	amerysafety@yahoo.com Email	
Population Served and Number of Service Connections	2920 People Served	3,34	Connections
System Owner			
Name, title, and telephone number of person responsible for maintaining this emergency contact list	Jeff Mahoney Utilities Superintendent	Name and title	715-268-7527 Telephone

System Employee Contact Information

NAME	TITLE	DAY PHONE	AFTER HOURS PHONE	CELL PHONE
Jeff Mahoney	Utility Superintendent	715-268-7527	715-268-4303	715-554-0170
Jeremy Wood	Operator 1	715-268-7527	715-554-1394	715-554-1394
Ross Fleischauer	Operator 2	612-207-8460	612-207-8460	612-207-8460
Josh Anderson	Operator 2	715-554-4016	715-554-4016	715-554-4016
Josh Buhr	Operator 2	715-607-0184	715-607-0184	715-607-0184
Nick Waterman	Operator 2	715-554-4004	715-554-4004	715-554-4004
John Rodke	Operator 2	715-682-7058	715-685-9892	715-292-8687

Customer Sanitary Blockage Complaint

- Upon arrival determine if blockage is in City's main. ● If not in City main notify customer.
- If blockage is in City main, is it causing an overflow? ● If an overflow is accruing, refer to Sanitary Overflow Response.
- Clear City main.
- Notify customer.
- Do not volunteer or disown City liability.
- Give customer handout, What to do when you have a sewer back up.
- Fill out and file AMERY Water & Wastewater Utility Call — Out Request Form.

What to do when you have had a sewer back up,

Municipal employees have checked the sanitary mains for problems and have determined there is not a problem in the mains and appear to be in your private sanitary lateral. It is highly recommended that you take the following suggestions.

1. Minimize loss and health effects
 - a. Keep children, pets and others out of the overflow.
 - b. Electrical appliances in affected areas present an electrical hazard!

- c. Immediately turn off any dishwasher, wash machine, shower, bathtub, toilet or other water fixture.
 - d. Turn off circuit breaker to affected areas.
 - e. Turn off gas or other fuel source to your furnace or heater and hot water heater.
 - f. Take photos of affected areas.
 - g. Move uncontaminated property away from overflow area.
2. Sewage and floodwaters contain bacteria and other hazardous microorganisms. These can be transmitted by touching contaminated items or by tracking them into uncontaminated areas on shoes. Frequent hand washing with hot soapy water is an important preventative measure.
3. Municipal employees cannot work or clean private laterals. It is highly recommended you contact a local plumber to resolve cause of back up; you may also want to contact a cleaning service to clean affected areas.

**Amery WATER & WASTEWATER UTILITY CALL-OUT
REQUEST REPORT**

CALLER/CONTACT IDENTIFICATION:

Name: _____ Call Taken By: _____
 call Taken By: _____

Address: _____ Date: _____

Phone: _____ Time: _____

PROBLEM IDENTIFICATION:

Address/Location of Problem: _____

Nature of Problem: _____

Does it fall within emergency call-out parameters: Y / N

CALL-OUT APPROVAL:

Supervisor Notified: _____ Name: _____ Time: _____ Approved: Y / N

EMPLOYEES CALLED:

	Time:	Took Call	Comments
1.	_____		
2.	_____		
3.	_____		
4.	_____		

EMPLOYEE REPORT:

Operator Responding to Call:

Date:

If the problem was within the utility property, fill out the back of report as well.

T
i
m
e

Arrived at Treatment Plant:

Time Arrived at Problem Location:

Evaluation of Problem:

Action Taken:

Time Departed Problem Location:

Time Departed Treatment Plant:

Notified Answering Service of Departure: **Y / N**

SUPERVISOR'S REVIEW:

Evaluation or Follow-up Needed:

Sanitary Overflow Response

, Upon arrival assess the severity of spill and determine the manpower and equipment needed.

- Clear blockage and restore flow.
- Contain spill and return to system.
- Prevent contact between public and spill.
- If in traffic area utilize barricades and cones.

, Solids and debris material should be raked up, bagged and disposed of.

- Flush with water and disinfect if needed.

, Remove barricades and cones.

- Notify Wisconsin Department of Natural Resources, the Utility Supervisor is responsible for notification of regulatory agencies.

Notice: Under s-283.55 (1)(dm), Wis. Stats. , and in accordance with reporting requirements in your WPDES permit, permittees shall provide the following notices if a sanitary sewer overflow or treatment facility overflow occurs:

- Within 24 hours of the occurrence, notify the DNR regional wastewater staff by telephone (FAX, email or voice mail, if staff are unavailable).
- Within 5 days of the occurrence, provide a written report describing the overflow, including all information requested on this form. The permittee is required to submit this form or other equivalent written notification to the DNR Regional Office (Refer to GP WI-0047341-05 sections 3.2, 3.4, and 3.5.)

• Public notification. Date How?

• Regional wastewater treatment facility notification. Date [2 Not applicable

• Drinking water intake owner notification. Date _____ Not applicable

Failure to notify the Department as specified may result in fines up to \$10,000 for each day of violation [s, 283.91(2), Wis. Stats.]. Personally identifiable information will be used for program administration and will also be made available to requesters as required under Wisconsin Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

Instructions: Use this form to report all SSO, or TFO occurrences. Attach additional information as necessary to explain or document the overflow. For the purpose of this report, an overflow is defined as the discharge of sewage from the collection system or at the treatment facility other than from the permitted outfall to a surface water and/or ground due to circumstances such as those identified by the check boxes in the overflow details section of this form.

Use one form per occurrence. A single occurrence may be more than one day if the circumstance causing the overflow or bypass results in a discharge duration more than 24-hours. If there is a stop and restart of the overflow or bypass within 24-hours, but it's caused by the same circumstances, report it as one occurrence. If the discharges are separated by more than 24 hours, they should be reported as separate occurrences.

Notification Information Permittee (Facility Name)	Overflow Reported to DNR	
	Date	Time O pm
Person Representing Permittee Who Contacted DNR	DNR Office and Person Contacted ████████████████████	

Overflow Details (Refer to GP WI-0047341-05 section 3.2 and NR210.21 Wis. Adm. Code.)

1 . Location of the Overflow (complete a separate form for each discharge location)

2. Provide the name of the local receiving water that the wastewater enters, which could be a nearby stream, river, lake, or wetland. If discharge does not enter directly into a surface water, but indirectly by way of a ditch or storm sewer, trace the path of the ditch or storm sewer to find the receiving water. (check all that apply)

C] Runs on ground and absorbs into the soil.
 Ditch. Name of surface water it drains to:

C] Storm sewer. Name of surface water it drains to:

C] Surface water direct discharge:

Other, describe:

Start Date	Time (to nearest 15 minutes) O am O pm	End Date	Time (to nearest 15 minutes) O am O pm
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3. Duration of the Overflow (hours and minutes)

Estimated Volume of Wastewater Discharged (gallons)

Note: The duration of the overflow equals the estimated time when the overflow began and stopped when sewage may have discharged, and is not the same as the length of time precipitation occurred. The volume of all overflow discharges shall be reported as a numerical value (do not report "unknown"). The potential overflow volume may be calculated knowing the flow capacity of the sewer and the overflow duration.

4. Identify the sewer system or treatment facility component from which the discharge occurred. Check all that apply and explain in number 11.

Manhole C] Permanent overflow structure [2 Other (describe below) :

Lift station Broken pipe

5. The estimated date and time when the overflow began and stopped or will be stopped:

Sanitary Sewage Overflow Notification Summary Report

Form 3400-184 (R 1 1/13) Page 2 of 2

The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information. Circumstances causing the overflow: (check all that apply)

- | | | |
|---|--|--------------------------|
| Rain Equipment Failure | <input type="checkbox"/> Power Outage | <input type="checkbox"/> |
| Soil Moisture Widespread Flooding | <input type="checkbox"/> Plugged Sewer | <input type="checkbox"/> |
| [2 Snow Melt Other (explain in number 11) | <input type="checkbox"/> Broken Sewer | <input type="checkbox"/> |

Note: Flooding should only be indicated as a cause if there is significant flooding that is caused by high river, stream, or lake water levels, not just localized high water in the street.

Document the weather conditions if it contributed to the cause of the overflow. The wet weather data should include the cumulative amount of precipitation that caused the overflow.

Date and Duration of Rainfall

Start Date	Time (to nearest 15 minutes) O am O pm	End Date	Time (to nearest 15 minutes) O am O pm
Amount of Rainfall (nearest rain gauge to 0.1 inch accuracy)		Amount of Snow Melt (estimated inches melted)	

Contributing Soil Conditions (saturated, frozen, soil type)

7. Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps.

8. A description of the actual or potential for human exposure and contact with the wastewater from the overflow.

9. Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps.

10. 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 SSO and were within the same area of the sewage collection system as the SSO.

Number Location

11. The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event 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. (Refer to GP WI-0047341-05 section 22)

Report Completed By

Authorized Representative Name (Print)

Title

Signature of Authorized Representative

Date

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Agency	Coverage Area	Phone
Centers for Disease Control & Prevention (CDC)	Nationwide	770-488-7100
Di er's Hotline	Statewide	800-242-8511
Environmental Protection Agency (EPA)	Nationwide	800-426-4791
Federal Bureau of Investigation (FBI)	National Office	202-324-3000
	State Office	414-276-4684
Information Sharing and Analysis Center (ISAC)	Nationwide	202-331-0479
National S ill Res onse Center	Nationwide	800-424-8802
Wis. De t. of Health & Famil Services	Statewide	800-222-1222
Wis. Emergenc Mana ement Agency	Statewide	800-943-0003
Wis. Emergenc Police Services	Statewide	715-834-8541
	East Central Region	920-929-3730
	Northeast Region	715-845-9517
	Northwest Region	715-635-8704
	Southeast Region	262-782-1515
	Southwest Region	608-242-3336
	West Central Region	715-839-3825
Wis. Rural Water Association	Statewide	715-344-7778
Wis. State Lab of Hygiene	Statewide	608-263-3280
Wis. State S ill Res onse	Statewide	800-943-0003
Wis. State Patrol Headquarters (Madison)	Statewide	608-266-3212
Wis. State Patrol- District 1 Office (DeForest)	Columbia, Dane, Grant, Green, Iowa, LaFayette, Sauk and Rock Counties	846.8500
Wis. State Patrol- District 2 Office (Waukesha)	Jefferson, Kenosha, Milwaukee, Racine, Walworth and Waukesha Counties	262-785-4700
Wis. State Patrol- District 3 Office (Fond du Lac)	Brown, Calumet, Dodge, Door, Fond du Lac, Kewaunee, Manitowoc, Outagamie, Ozaukee, Sheboygan, Washington and Winnebago Counties	920-929-3700

Wis. State Patrol- District 4 Office (Wausau)	Adams, Florence, Forest, Green Lake, Langlade, Lincoln, Marathon, Marinette, Marquette, Menominee, Oconto, Oneida, Portage, Shawano, Vilas Waupaca, Waushara and Wood Counties	715-845-1143
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Wis. State Patrol- District 5 Office (Tomah)	Crawford, Jackson, Juneau, LaCrosse, Monroe, Richland and Vernon Counties	608-374-0513
Wis. State Patrol- District 6 Office (Eau Claire)	Buffalo, Chippewa, Clark, Dunn, Eau Claire, Pierce, Pepin, St. Croix, Taylor and Trempealeau Counties	715-839-3800
Wis State Patrol- District 7 Office (Spooner)	Ashland, Barron, Bayfield, Burnett, Douglas, Iron, Polk, Price, Rusk, Sawyer and Washburn Counties	715-635-2141

WISCONSIN COUNTIES EMERGENCY NUMBERS

*Most local and county law enforcement agencies in Wisconsin use 911 for emergency phone calls. The numbers shown below are for daytime, non-emergency situations.

Coun	Emergency Management	Sheriff Dept.	Public Health Dept.
Adams	608-3394248	608-339-3304	608-339-4253
Ashland	715-685-7647	715-685-	715-682-7004
Barron	715-537-6595	715-537-5814	715-537-6502
Bayfield	715-373-6113	715-373-5515	715-373-6109
Brown	920.448-4270	920-448.4200	920-448-6400
Buffalo	608-685-6298	608-685-4433	608-685-4412
Burnett	715- 2171	715-349_2121	715-349_2145
Calumet	920-849_1473	920-849-2335	920-849_1432
Chippewa	715-726-7727	715-726-7701	715-726-7799
Clark	743-5100	715-743-4350	715-743-5105

Columbia	608-742-4166	608-742-4166	608-742-9227
Crawford	608-266-0266	608-326-8414	608-326-0229
Dane	266-4330	608-284-6800	608-242-6200
Dodge	920-386-3880	920-386-3726	920-386-3670
Door	920-746-7101	920-746-2400	920-746-2234
Douglas	715-395-1391	715-395-1371	715-395-1404
Dunn	715-232-6897	715-232-1348	715-232-2388
Eau Claire	715-839-4736	715-839-4709	715-839-4718
Florence	715-528-3346	715-528-3346	715-528-4837
Fond du Lac	920-929-2911	920-929-3390	920-929-3085
Forest	478-3430	715-478-3331	715-478-3371
Grant	608-723-7171	608-723-2157	608-723-6416
Green	608-328-9415	608-328-9400	608-328-9390
Green Lake	920-361-5416	920-294-	920-294-4070
Iowa	608-935-0329	608-935-5827	608-935-2810
Iron	715-561-3266	715-561-3800	715-561-2191
Jackson	715-284-0263	715-284-5357	715-284-4301

Count	Emergency Management	Sheriff Dept.	Public Health Dept.
Jefferson	920-674-7260	920-674-7310	920-674-7275
Juneau	608-847-9393	608-847-5649	608-847-9373
Kenosha	262-605-7900	262-605-5101	262-605-6700
Kewaunee	920-487-2940	920-388-7177	920-388-7160
LaCrosse	608-789-4811	608-785-9629	608-785-9872
Lafayette	608-776-4870	608-776-4870	608-776-4800
Lansdale	715-627-6257	715-627-6411	715-627-6250
Lincoln	715-536-6228	715-536-6272	715-536-0307
Manitowoc	920-683-4207	920-683-4200	920-683-4155

Marathon	715-261-1229	715-261-1200	715-261-1900
Marinette	715-732-7660	715-732-7626	715-732-7700
Marquette	608-297-9125	608-297-2115	608-297-9116
Menominee	715-799 3024	715-799-3357	715-799-3861
Milwaukee	414-278-4709	414-278-4700	414-289-6816
Monroe	608-269-8711	608-269-2117	608-269-8666
Oconto	920-834-6850	920-834—6919	920-834-7000
Oneida	715-369-6125	715-361-5100	715-369-6111
Outaouais	920-832-5148	920-832-5605	920-832-5100
Ozaukee	262-284-8397	262-284-7172	262-284-8170
Pequin	715-672-8897	715-672-5944	715-672-5961
Pierce	715-273-6751	715-273-5051	715-273-6755
Polk	715-485-9280	715-485-8300	715-485-8500
Portage	715-346 —1398	715-346-1400	715-345-5350
Price	715-339-2663	715-339-3011	715-339-3054
Racine	262-636-3515	262-636-3211	262-636-9201
Richland	608-647-	608-647-2106	608-647-8821
Rock	608-757-7900	608-757-2244	608-757-5440
Rusk	715-532-2121	715-532-2189	715-532-2299
Saint Croix	715-386-4718	715-386-4701	715-246-8263
Sauk	608-355-4410	608-355-3207	608-355-3290
Saukville	715-634-2004	715-634.4858	715-634-4874
Shawano	715-526.6774	715-526-3111	715-526-2822
Sheboygan	920-459_3360	920-459-3111	9204594382
Taylor	715-748-3503	715-748-2200	715-748-1410
Trempealeau	715-538-2311	715-538-4509	715-538-2311
Vernon	608-637-5267	608-637-2123	608-637-5251
Vilas	715-479 3690	715-479 4441	715-479 3656
Walworth	262-741-4616	262-741-4400	262-741_3200
Washburn	715-468 —4730	715- 4700	715-635-4400
Washington	262-335-4399	262-335-4388	262-335-4462
Waukesha	262-548-7580	262-548-7117	262-547-3388
Waukegan	715-258-4464	715-258-4466	715-258-6300
Waushara	920-787-0412	920-787-3321	920-787-4661
Winnebago	920-236-7463	920-236-7300	920-232-3000
Wood	715-421-8500	715-421-8700	715-421-8911



Federal Bureau of Investigation Department of Homeland Security



August 3, 2004

SUBJECT: Suspicious Activity Reporting Criteria for Infrastructure Owners and Operators

FOR: Information Sharing and Analysis Centers (ISACs), State Homeland Security Advisors, Government First Responders, Security Managers, and Facility Operators

DHS and FBI encourage recipients of this memorandum to report information concerning suspicious or criminal activity to their local FBI Joint Terrorism Task Force (JTTF) — the regional phone numbers can be found online at <http://www.fbi.gov/contact/fo/fo.htm> — and the Homeland Security Operations Center (HSOC) or the National Infrastructure Coordination Center (MCC), a sub-element of the HSOC in support of the private sector and critical infrastructures. The I-ISOC can be reached via telephone at 202-282-8101 or by email at I-ISCenter@dhs.gov; and the NICC/HSOC can be reached via telephone at 202-282-9201 or via email at NICC@dhs.gov.

Each report submitted should include the date, time, location, type of surveillance, number of people and type of equipment used for the activity, the name of the submitting company and a designated point of contact (POC).

Overview

DHS and FBI request that the owners and operators of the nation's critical infrastructure/key resource facilities (see Appendix), provide reporting to the above offices on the following types of suspicious activities potentially indicative of pre-operational terrorist planning:

Surveillance/Probing Activity

- Report attempts to test or conduct reconnaissance of security operations at critical infrastructure/key resource facilities, high profile venues or sector-specific events.
- Report any persons showing uncommon interest in security measures or personnel, entry points or access controls, or perimeter barriers such as fences or walls.

- Report any persons showing uncommon interest in critical infrastructure/key resource facilities, networks, or systems (e.g. photographing or videotaping assets).

I

- Report any theft of or missing official company identification documents, uniforms, credentials, or vehicles necessary for accessing critical infrastructure/key resource facilities or sector-specific events.
- Report all suspicious attempts to recruit employees or persons knowledgeable about key personnel or critical infrastructure/key resource facilities, networks, or systems.
- Report any theft, purchase, or suspicious means of obtaining plans, blueprints, alarm system schematics, or similar physical security-related or sensitive information related to a facility with critical infrastructure/key resource facilities and systems.
- Report any discovery of documents (particularly foreign language products) containing pictures or drawings of critical infrastructure/key resource facilities or systems.
- Report any persons near critical infrastructure/key resource facilities who do not fit the surrounding environment, such as individuals wearing improper attire for conditions or not normally present in the area (such as, homeless persons, street vendors, demonstrators, or street sweepers).
- Report pedestrian surveillance near critical infrastructure/key resource facilities involving any surveillance activity of sensitive operations, including photography, videotaping, or extensive note-taking/use of audio recorder (regardless of the number of individuals involved), or mobile surveillance by cars, trucks, motorcycles, boats or small aircraft.

Threats/Warnings

- Report all threats/warnings that could affect the reliability and operation of the nation's critical infrastructures/key resources.
- Report discoveries of website postings which make violent threats specific to critical infrastructures or sector specific events.

For comments or questions related to the content or dissemination of this memorandum, please contact the DIIS/Information Analysis and Infrastructure Protection Directorate's Requirements Division at DHS.IAIP@DHS.GOV.

APPENDIX

CRITICAL INFRASTRUCTURES AND KEY RESOURCE FACILITIES ¹

Critical Infrastructures

- Banking and Finance
- Chemical
- Defense Industrial Base
- Electric Power
- Emergency Services
- Food/Agriculture
- Information Technology
- National Monuments and Icons ●
- Oil and Natural Gas
- Postal and Shipping
- Public Health
- Telecommunications
- Transportation (Rail/Mass Transit, Maritime, Aviation, Highway) ●
- Water

Key Resource Facilities

- Commercial Facilities
- Dams
- Government Facilities
- Nuclear Reactors/Materials

1

Under the Homeland Security Act, which references the definition in the USA PATRIOT Act, the term "critical infrastructure" means "systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters." The Act defines "key resources" as "publicly or privately controlled resources essential to the minimal operations of the economy and government."

AMERY Water and Wastewater Utility Telephone Greeting

Water Plant

Phone Number 715.682.7054 Normal Business Hours Greeting

From 7:00AM to 3:30PM the phone rings 4 times. The following greeting will be heard:

"Hello, you have reached the Amery Water Treatment Plant. We are unavailable to take your call at this time. If you are reporting a water leak, frozen water service, or a sanitary sewer back-up please press 4. If you would like to leave a message, please press 3. To hear these options again, please press 9. Thank you for calling."

Phone Number 715.682.7054 After Hours Greeting

Starting at 3:30 PM until 7:00 AM Monday — Friday and all day Saturday and Sunday, the following greeting will be heard:

"Hello, you have reached Amery Water and Wastewater 24 hour emergency number. If you are reporting a water leak, frozen water service, or a sanitary sewer back-up please press 1. If you are using a rotary phone, please stay on the line and you will be transferred. If this is not a water or sewer emergency and you would like to leave a message, press 3. Thank you for calling."

Phone Number 715.268.7427 Call Routin

press 1, or stay on the line, call forwarded to the
STAND BY PHONE

Phone Number 715,268.7411 Greeting

The greeting is the following:

"Hello, if you have reached this message and it this is an emergency please hang up and call 911. If this is not an emergency and you would like to leave a message please leave your name and phone number after the beep. A utility operator will contact you during normal business hours. Thank you."

Updated May 1, 2013

Public Service Commission of Wisconsin Emergency Contact List

(Please make contact in the order listed)
7/1/15

CONTACT NAME	WORK NO.	HOME/CELL NO.
Bob Seitz	(608) 267-7899	(608) 235-8007
Elizabeth N	(608) 267-35	(608) 774-1099
Elizabeth N	(608) 267-78	(608) 516-3205
Jim Lepinski	(608) 266-0478	(608) 235-3555
Mohammed Monawer	(608) 267-9813	(608) 515-3534
Jeff Ripp	(608) 266-3905	(716) 704-9207
Akanksha Pachpinde	(608) 266-9658	(608) 235-3555
Jeff Kitsembel	(608) 267-5814	(608) 873-5603
Marcus Hawkins	(608) 267-9813	(262) 620-4229
Jeff Ripp	(608) 266-0478	(608) 515-3534
Jim Lepinski	(608) 267-9304	(608) 235-3555
Jim Lepinski	(608) 267-9813	(608) 235-3555
Normumever	(608) 266-9658	(608) 235-3555
Jeff Ripp	(608) 267-1207	(608) 235-2415
Jeff Kitsembel	(608) 267-1475	(608) 335-2415
Tom Stemrich	(608) 267-7866	(608) 515-3534
Jeff Murley	(608) 267-3374	(608) 873-5603
Tom Reisdorf	(608) 267-9813	(608) 212-6352 or 628-4543
Dagmar Vanek	(608) 266-3555	(608) 212-7428
Jeff Kluge	(608) 266-3555	(608) 212-7428
Jeff Ripp	(608) 266-3555	(608) 212-6354
Sarah Klein	(608) 266-3555	(608) 576-7856
Steve Kemna	(608) 266-3768	(608) 219-5887
	(608) 266-3768	(608) 515-3534

Capacity Assurance

Is the assessment of sewer collection system to convey wastewater for new connections and the knowledge of problem areas?

- ' We have current and up to date sewer maps.
- ' We have current manhole location maps.
- ' We have lift station pump and wet well capacity information.
- ' We have lift station O & M manuals.
- ' We maintain documentation of overflow structures.

Items we have knowledge of but must document and map better are.

- Areas of flat sewers.
- Areas of heavy root growth.
- Areas of excessive I / I.
- Sewers with severe defects that affect flow capacity.
- Sewers and manholes with severe corrosion.
- Areas with chronic basement backups or SSO's.

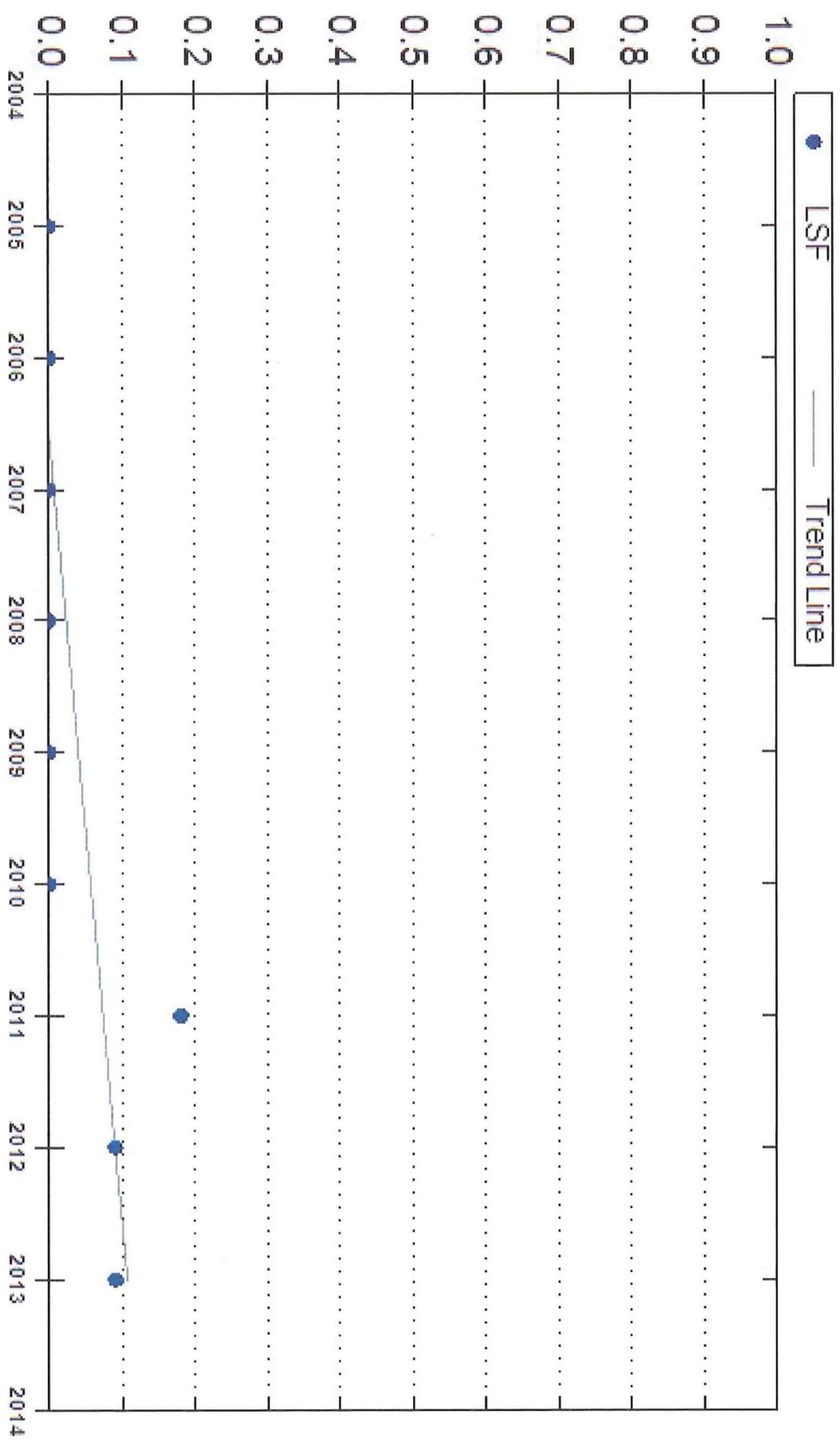
Self-Audits

From time to time the City has done studies and inspection of the sanitary sewer system. The following reports and

documentation of these studies are available from the Utilities Office.

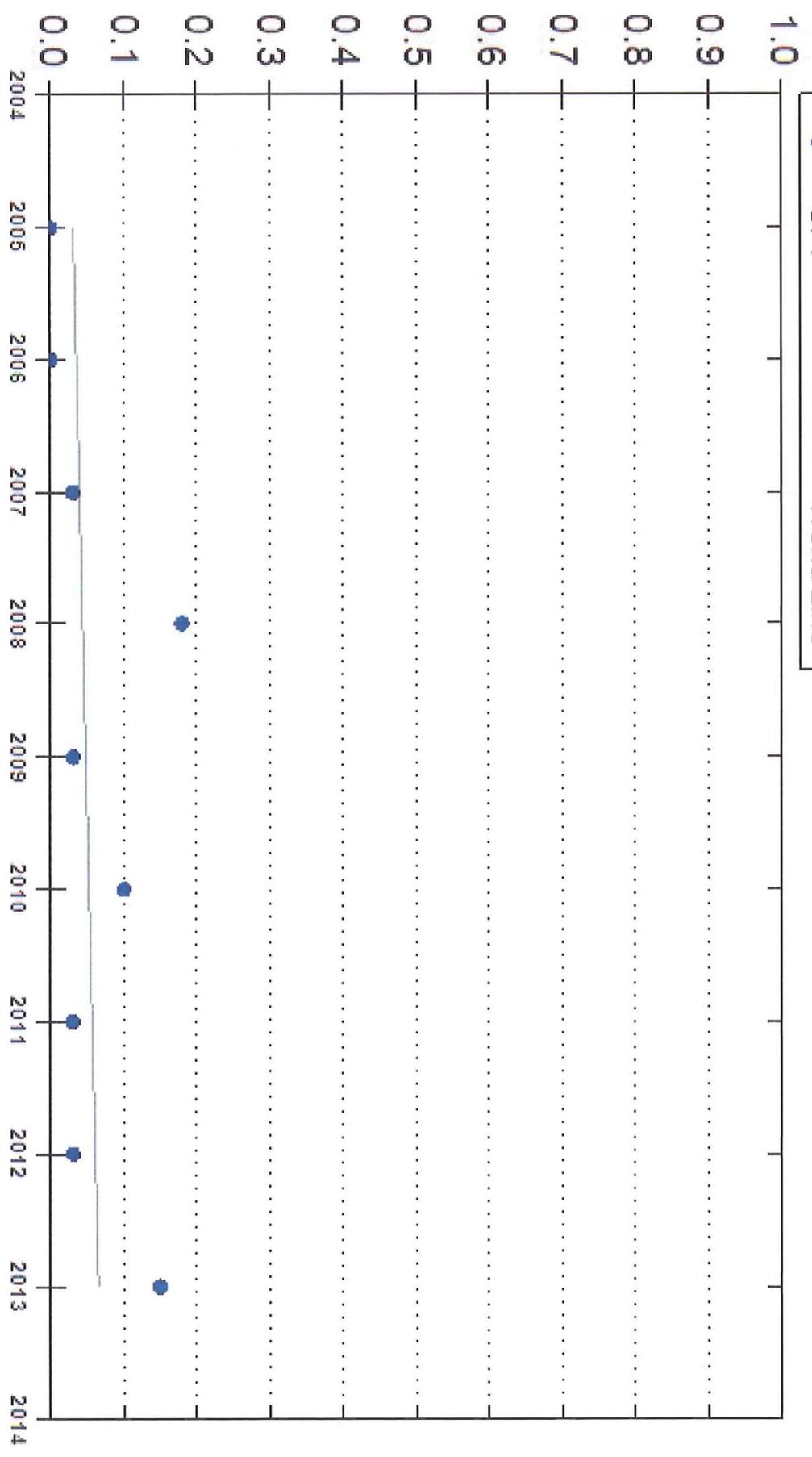
- City of AMERY Comprehensive Plan
- 2007 Sanitary Sewer Inspection
- 2009 Inflow/infiltration Study
- 2011 Sanitary Sewer Television Inspection
- 2011 Manhole Inspection
- 2011 Wastewater Utility Master Plan

Collection System O&M Performance Indicators: LSF - Lift Station Failures



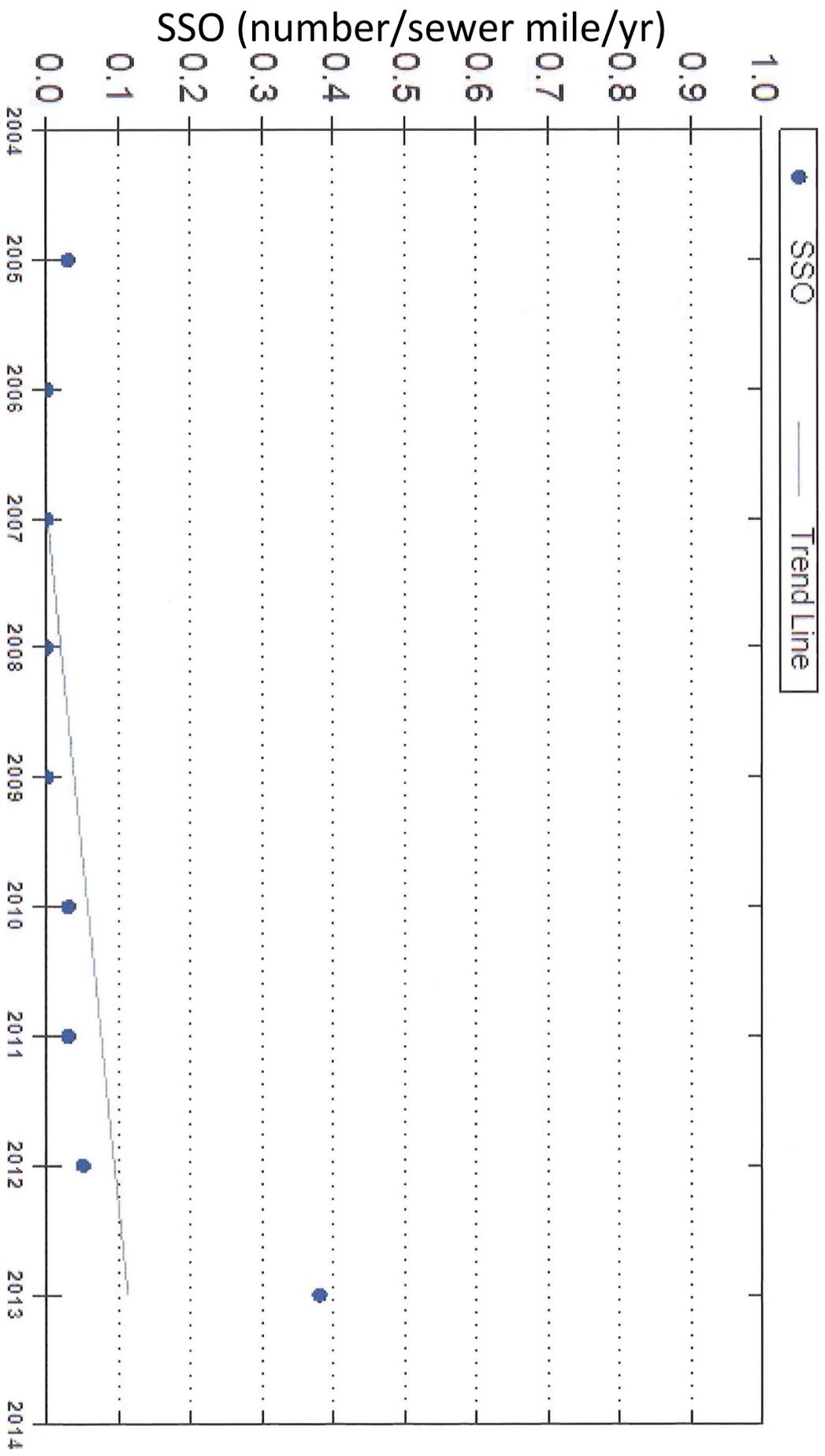
**Collection System O&M Performance Indicators:
SPF - Sewer Pipe Failures**

SPF (pipc failures/sewer milc/yr)

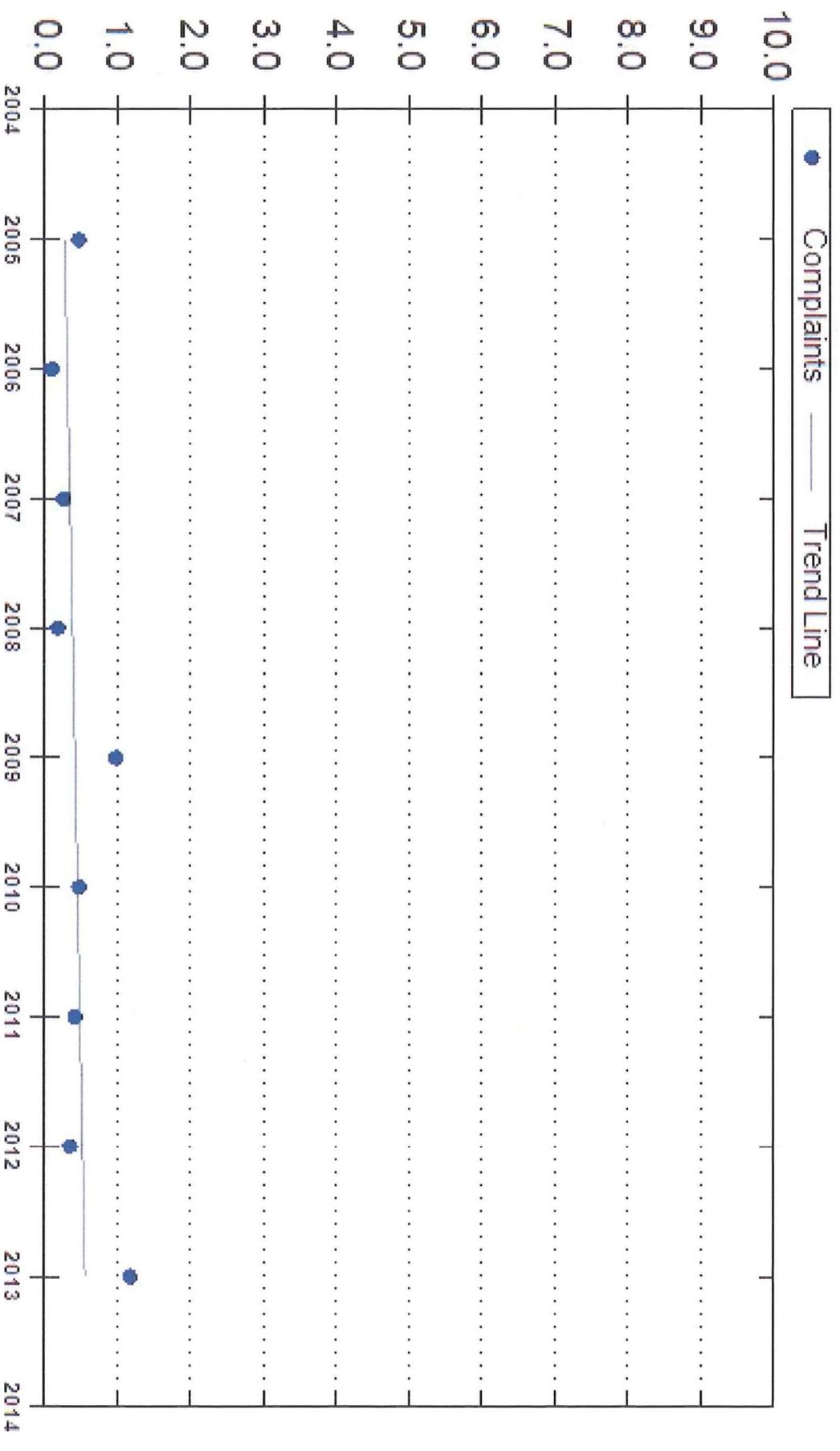


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Collection System O&M Performance Indicators: SSO - Sanitary Sewer Overflows



Collection System O&M Performance Indicators: Complaints





CMOM and Collection System O&M References

Municipal Sewer & Water Magazine Cole Publishing Inc., P.O. Box 220, Three Lakes, WI 54562 www.mswmag.com

Guide for Evaluating Capacity, Management, Operations and Maintenance (CMOM)

Programs for Sanitary Sewer Collection

Systems (2003) United States Environmental Protection Agency, Washington D.C. http://www.epa.gov/npdes/pubs/cmom_guide_for_collection_systems.pdf

Capacity, Management, Operations and Maintenance (CMOM) Program Self Assessment Checklist (2003) United States Environmental Protection Agency, Washington D.C.

<http://www.epa.gov/npdes/pubs/cmomselfreview.pdf>

Operation and Maintenance of Wastewater Collection Systems, Volumes I and II: A Field Study Training Program (2003) Office of Water Programs, California State University, Sacramento, CA

<http://www.owp.csus.edu/training/courses/wastewater/index.php>

Collection System Operation and Maintenance

Training Videos Office of Water Programs, California State University, Sacramento, CA <http://www.owp.csus.edu/training/courses/wastewater/index.php>

Collection Systems: Methods for Evaluating and Improving Performance (1998) Office of Water Programs, California State University, Sacramento, CA <http://www.owp.cus.edu/training/courses/wastewater/index.php>

Wastewater Collection Systems Management,

COMPLIANCE MAINTENANCE ANNUAL REPORT

Manual of Practice 7 (2009) Water Environment
Federation, Arlington, VA <http://www.wef.org/publications/>

Collection System Basic Manual (1995) Minnesota
Pollution Control Agency, Fiscal Services 6th Floor,
520 Lafayette Rd N, St.Paul, MN 55155. 651-296-
8868.

Optimizing Operation, Maintenance and
Rehabilitation of Sanitary Sewer Collection
Systems (2002) New England Interstate Water
Pollution Control Commission (NEIWPC)
<http://www.neiwpc.org/omrmanual.asp>

Optimization of Collection System
Maintenance Frequencies and System
Performance (1999) American Society of
Civil Engineers, USEPA Cooperative Agreement
0<824902-01-0 [http://www.epa.gov/npdes/pubs/optimization-
finalreport.pdf](http://www.epa.gov/npdes/pubs/optimization-finalreport.pdf)

Guide to Managing Peak Wet Weather
Flows in Municipal Wastewater Collection
and
Treatment Systems (2006) Water Environment
Federation, Alexandria, VA
<http://www.wef.org/publications/>

Existing Sewer Evaluation and Rehabilitation
- MOP FD-6 (2009) Water Environment Federation,
Alexandria, VA <http://www.wef.org/publications/>

Private Property Virtual Library Water Environment
Federation, Arlington, VA
http://www.wef.org/Utility/ppvl_main_page.asp

CMAR, Compliance Maintenance Annual Report

The Compliance Maintenance Program is one of the successful cornerstones of the Wisconsin Department of Natural Resources regulatory Wisconsin Pollutant Discharge Elimination System (WPDES Program). The web-based Compliance Maintenance Annual Report (CMAR) is a self-evaluation report and grading system for Wisconsin's domestic wastewater treatment plants and collection systems. The questions in the CMAR are to guide operators in developing a CMOM Program, and in the operation & maintenance and financial management of their collection system.

Appendix C

2020 Amery CMAR

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Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

Influent Flow and Loading

1. Monthly Average Flows and BOD Loadings

1.1 Verify the following monthly flows and BOD loadings to your facility.

Influent No. 701	Influent Monthly Average Flow, MGD	x	Influent Monthly Average BOD Concentration mg/L	x	8.34	=	Influent Monthly Average BOD Loading, lbs/day
January	0.3423	x	126	x	8.34	=	361
February	0.3213	x	152	x	8.34	=	408
March	0.3685	x	146	x	8.34	=	449
April	0.3869	x	131	x	8.34	=	423
May	0.3644	x	133	x	8.34	=	404
June	0.3420	x	166	x	8.34	=	472
July	0.4162	x	192	x	8.34	=	668
August	0.3695	x	202	x	8.34	=	623
September	0.3177	x	200	x	8.34	=	529
October	0.2993	x	209	x	8.34	=	522
November	0.2883	x	224	x	8.34	=	537
December	0.2703	x	169	x	8.34	=	381

2. Maximum Monthly Design Flow and Design BOD Loading

2.1 Verify the design flow and loading for your facility.

Design	Design Factor	x	%	=	% of Design
Max Month Design Flow, MGD	.4	x	90	=	0.36
		x	100	=	.4
Design BOD, lbs/day	867	x	90	=	780.3
		x	100	=	867

2.2 Verify the number of times the flow and BOD exceeded 90% or 100% of design, points earned, and score:

	Months of Influent	Number of times flow was greater than 90% of	Number of times flow was greater than 100% of	Number of times BOD was greater than 90% of design	Number of times BOD was greater than 100% of design
January	1	0	0	0	0
February	1	0	0	0	0
March	1	1	0	0	0
April	1	1	0	0	0
May	1	1	0	0	0
June	1	0	0	0	0
July	1	1	1	0	0
August	1	1	0	0	0
September	1	0	0	0	0
October	1	0	0	0	0
November	1	0	0	0	0
December	1	0	0	0	0
Points per each		2	1	3	2
Exceedances		5	1	0	0
Points		10	1	0	0
Total Number of Points					11

11

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

3. Flow Meter

3.1 Was the influent flow meter calibrated in the last year?

- Yes Enter last calibration date (MM/DD/YYYY)

- No

If No, please explain:

4. Sewer Use Ordinance

4.1 Did your community have a sewer use ordinance that limited or prohibited the discharge of excessive conventional pollutants ((C)BOD, SS, or pH) or toxic substances to the sewer from industries, commercial users, hauled waste, or residences?

- Yes

- No

If No, please explain:

4.2 Was it necessary to enforce the ordinance?

- Yes

- No

If Yes, please explain:

5. Septage Receiving

5.1 Did you have requests to receive septage at your facility?

Septic Tanks Holding Tanks Grease Traps

- Yes

- Yes

- Yes

- No

- No

- No

5.2 Did you receive septage at your facility? If yes, indicate volume in gallons.

Septic Tanks

- Yes gallons

- No

Holding Tanks

- Yes gallons

- No

Grease Traps

- Yes gallons

- No

5.2.1 If yes to any of the above, please explain if plant performance is affected when receiving any of these wastes.

6. Pretreatment

6.1 Did your facility experience operational problems, permit violations, biosolids quality concerns, or hazardous situations in the sewer system or treatment plant that were attributable to commercial or industrial discharges in the last year?

- Yes

- No

If yes, describe the situation and your community's response.

6.2 Did your facility accept hauled industrial wastes, landfill leachate, etc.?

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p> <p>If yes, describe the types of wastes received and any procedures or other restrictions that were in place to protect the facility from the discharge of hauled industrial wastes.</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	
--	--

Total Points Generated	11
Score (100 - Total Points Generated)	89
Section Grade	B

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

Effluent Quality and Plant Performance (BOD/CBOD)

1. Effluent (C)BOD Results

1.1 Verify the following monthly average effluent values, exceedances, and points for BOD or CBOD

Outfall No. 001	Monthly Average Limit (mg/L)	90% of Permit Limit > 10 (mg/L)	Effluent Monthly Average (mg/L)	Months of Discharge with a Limit	Permit Limit Exceedance	90% Permit Limit Exceedance
January	30	27	10	1	0	0
February	30	27	10	1	0	0
March	30	27	9	1	0	0
April	30	27	16	1	0	0
May	30	27	10	1	0	0
June	30	27	11	1	0	0
July	30	27	6	1	0	0
August	30	27	6	1	0	0
September	30	27	5	1	0	0
October	30	27	6	1	0	0
November	30	27	7	1	0	0
December	30	27	6	1	0	0

* Equals limit if limit is <= 10

Months of discharge/yr	12		
Points per each exceedance with 12 months of discharge		7	3
Exceedances		0	0
Points		0	0
Total number of points			0

NOTE: For systems that discharge intermittently to state waters, the points per monthly exceedance for this section shall be based upon a multiplication factor of 12 months divided by the number of months of discharge. Example: For a wastewater facility discharging only 6 months of the year, the multiplication factor is $12/6 = 2.0$

1.2 If any violations occurred, what action was taken to regain compliance?

2. Flow Meter Calibration

2.1 Was the effluent flow meter calibrated in the last year?

Yes Enter last calibration date (MM/DD/YYYY)

2020-07-23

No

If No, please explain:

3. Treatment Problems

3.1 What problems, if any, were experienced over the last year that threatened treatment?

infiltration

4. Other Monitoring and Limits

4.1 At any time in the past year was there an exceedance of a permit limit for any other pollutants such as chlorides, pH, residual chlorine, fecal coliform, or metals?

Yes

No

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

<p>If Yes, please explain:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
<p>4.2 At any time in the past year was there a failure of an effluent acute or chronic whole effluent toxicity (WET) test?</p> <p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p> <p>If Yes, please explain:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
<p>4.3 If the biomonitoring (WET) test did not pass, were steps taken to identify and/or reduce source(s) of toxicity?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input checked="" type="radio"/> N/A</p> <p>Please explain unless not applicable:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

Effluent Quality and Plant Performance (Total Suspended Solids)

1. Effluent Total Suspended Solids Results

1.1 Verify the following monthly average effluent values, exceedances, and points for TSS:

Outfall No. 001	Monthly Average Limit (mg/L)	90% of Permit Limit >10 (mg/L)	Effluent Monthly Average (mg/L)	Months of Discharge with a Limit	Permit Limit Exceedance	90% Permit Limit Exceedance
January	30	27	3	1	0	0
February	30	27	3	1	0	0
March	30	27	3	1	0	0
April	30	27	5	1	0	0
May	30	27	5	1	0	0
June	30	27	6	1	0	0
July	30	27	4	1	0	0
August	30	27	4	1	0	0
September	30	27	4	1	0	0
October	30	27	6	1	0	0
November	30	27	6	1	0	0
December	30	27	4	1	0	0

* Equals limit if limit is <= 10

Months of Discharge/yr	12		
Points per each exceedance with 12 months of discharge:	7	3	
Exceedances	0	0	
Points	0	0	
Total Number of Points		0	

NOTE: For systems that discharge intermittently to state waters, the points per monthly exceedance for this section shall be based upon a multiplication factor of 12 months divided by the number of months of discharge.

Example: For a wastewater facility discharging only 6 months of the year, the multiplication factor is $12/6 = 2.0$

1.2 If any violations occurred, what action was taken to regain compliance?

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

Effluent Quality and Plant Performance (Phosphorus)

1. Effluent Phosphorus Results

1.1 Verify the following monthly average effluent values, exceedances, and points for Phosphorus

Outfall No. 001	Monthly Average phosphorus Limit (mg/L)	Effluent Monthly Average phosphorus (mg/L)	Months of Discharge with a Limit	Permit Limit Exceedance
January	1.6	0.090	1	0
February	1.6	0.130	1	0
March	1.6	0.130	1	0
April	1.6	0.340	1	0
May	1.6	0.323	1	0
June	1.6	0.410	1	0
July	1.6	0.193	1	0
August	1.6	0.195	1	0
September	1.6	0.158	1	0
October	1.6	0.220	1	0
November	1.6	0.188	1	0
December	1.6	0.204	1	0
Months of Discharge/yr			12	
Points per each exceedance with 12 months of discharge:				10
Exceedances				0
Total Number of Points				0

0

NOTE: For systems that discharge intermittently to waters of the state, the points per monthly exceedance for this section shall be based upon a multiplication factor of 12 months divided by the number of months of discharge.

Example: For a wastewater facility discharging only 6 months of the year, the multiplication factor is $12/6 = 2.0$

1.2 If any violations occurred, what action was taken to regain compliance?

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

Biosolids Quality and Management

1. Biosolids Use/Disposal

1.1 How did you use or dispose of your biosolids? (Check all that apply)

- Land applied under your permit
- Publicly Distributed Exceptional Quality Biosolids
- Hauled to another permitted facility
- Landfilled
- Incinerated
- Other

NOTE: If you did not remove biosolids from your system, please describe your system type such as lagoons, reed beds, recirculating sand filters, etc.

1.1.1 If you checked Other, please describe:

2. Land Application Site

2.1 Last Year's Approved and Active Land Application Sites

2.1.1 How many acres did you have?

acres

2.1.2 How many acres did you use?

acres

2.2 If you did not have enough acres for your land application needs, what action was taken?

2.3 Did you overapply nitrogen on any of your approved land application sites you used last year?

Yes (30 points)

No

2.4 Have all the sites you used last year for land application been soil tested in the previous 4 years?

Yes

No (10 points)

N/A

0

3. Biosolids Metals

Number of biosolids outfalls in your WPDES permit:

3.1 For each outfall tested, verify the biosolids metal quality values for your facility during the last calendar year.

3.1.1 Number of times any of the metals exceeded the high quality limits OR 80% of the limit for molybdenum, nickel, or selenium = 0

Exceedence Points

0 (0 Points)

1-2 (10 Points)

> 2 (15 Points)

3.1.2 If you exceeded the high quality limits, did you cumulatively track the metals loading at each land application site? (check applicable box)

Yes

No (10 points)

N/A - Did not exceed limits or no HQ limit applies (0 points)

N/A - Did not land apply biosolids until limit was met (0 points)

3.1.3 Number of times any of the metals exceeded the ceiling limits = 0

Exceedence Points

0 (0 Points)

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
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<p>○ 1 (10 Points) ○ > 1 (15 Points) 3.1.4 Were biosolids land applied which exceeded the ceiling limit? ○ Yes (20 Points) ● No (0 Points) 3.1.5 If any metal limit (high quality or ceiling) was exceeded at any time, what action was taken? Has the source of the metals been identified? <input style="width: 100%; height: 20px;" type="text"/></p>	0
<p>4. Pathogen Control (per outfall): 4.1 Verify the following information. If any information is incorrect, use the Report Issue button under the Options header in the left-side menu. 4.2 If exceeded Class B limit or did not meet the process criteria at the time of land application. 4.2.1 Was the limit exceeded or the process criteria not met at the time of land application? ○ Yes (40 Points) ● No If yes, what action was taken? <input style="width: 100%; height: 20px;" type="text"/></p>	0
<p>5. Vector Attraction Reduction (per outfall): 5.1 Verify the following information. If any of the information is incorrect, use the Report Issue button under the Options header in the left-side menu. 5.2 Was the limit exceeded or the process criteria not met at the time of land application? ○ Yes (40 Points) ● No If yes, what action was taken? <input style="width: 100%; height: 20px;" type="text"/></p>	0
<p>6. Biosolids Storage 6.1 How many days of actual, current biosolids storage capacity did your wastewater treatment facility have either on-site or off-site? ○ >= 180 days (0 Points) ○ 150 - 179 days (10 Points) ○ 120 - 149 days (20 Points) ○ 90 - 119 days (30 Points) ○ < 90 days (40 Points) ● N/A (0 Points) 6.2 If you checked N/A above, explain why. <input style="width: 100%; height: 20px;" type="text" value="hauled all sludge to ellsworth bio facility"/></p>	0
<p>7. Issues 7.1 Describe any outstanding biosolids issues with treatment, use or overall management: <input style="width: 100%; height: 20px;" type="text"/></p>	

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

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Staffing and Preventative Maintenance (All Treatment Plants)

<p>1. Plant Staffing</p> <p>1.1 Was your wastewater treatment plant adequately staffed last year?</p> <ul style="list-style-type: none">● Yes○ No <p>If No, please explain:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Could use more help/staff for:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>1.2 Did your wastewater staff have adequate time to properly operate and maintain the plant and fulfill all wastewater management tasks including recordkeeping?</p> <ul style="list-style-type: none">● Yes○ No <p>If No, please explain:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	
<p>2. Preventative Maintenance</p> <p>2.1 Did your plant have a documented AND implemented plan for preventative maintenance on major equipment items?</p> <ul style="list-style-type: none">● Yes (Continue with question 2) <input type="checkbox"/><input type="checkbox"/>○ No (40 points) <input type="checkbox"/><input type="checkbox"/> <p>If No, please explain, then go to question 3:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>2.2 Did this preventative maintenance program depict frequency of intervals, types of lubrication, and other tasks necessary for each piece of equipment?</p> <ul style="list-style-type: none">● Yes○ No (10 points) <p>2.3 Were these preventative maintenance tasks, as well as major equipment repairs, recorded and filed so future maintenance problems can be assessed properly?</p> <ul style="list-style-type: none">● Yes<ul style="list-style-type: none">○ Paper file system○ Computer system● Both paper and computer system○ No (10 points)	0
<p>3. O&M Manual</p> <p>3.1 Does your plant have a detailed O&M and Manufacturer Equipment Manuals that can be used as a reference when needed?</p> <ul style="list-style-type: none">● Yes○ No	
<p>4. Overall Maintenance /Repairs</p> <p>4.1 Rate the overall maintenance of your wastewater plant.</p> <ul style="list-style-type: none">○ Excellent● Very good○ Good○ Fair○ Poor <p>Describe your rating:</p> <div style="border: 1px solid black; padding: 5px;">down time for repairs were done in timely manner and minimal</div>	

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Total Points Generated	0
Score (100 - Total Points Generated)	100
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Operator Certification and Education

1. Operator-In-Charge

1.1 Did you have a designated operator-in-charge during the report year?

- Yes (0 points)
- No (20 points)

Name:

JEFF L MAHONEY

Certification No:

30937

0

2. Certification Requirements

2.1 In accordance with Chapter NR 114.56 and 114.57, Wisconsin Administrative Code, what level and subclass(es) were required for the operator-in-charge (OIC) to operate the wastewater treatment plant and what level and subclass(es) were held by the operator-in-charge?

Sub Class	SubClass Description	WWTP	OIC		
		Basic	OIT	Basic	Advanced
A1	Suspended Growth Processes	X		X	
A2	Attached Growth Processes				
A3	Recirculating Media Filters				
A4	Ponds, Lagoons and Natural				
A5	Anaerobic Treatment Of Liquid				
B	Solids Separation	X		X	
C	Biological Solids/Sludges	X		X	
P	Total Phosphorus	X		X	
N	Total Nitrogen				
D	Disinfection	X		X	
L	Laboratory				
U	Unique Treatment Systems				
SS	Sanitary Sewage Collection	X	NA	NA	NA

0

2.2 Was the operator-in-charge certified at the appropriate level and subclass(es) to operate this plant? (Note: Certification in subclass SS is required 5 years after permit reissuance and is basic level only.)

- Yes (0 points)
- No (20 points)

3. Succession Planning

3.1 In the event of the loss of your designated operator-in-charge, did you have a contingency plan to ensure the continued proper operation and maintenance of the plant that includes one or more of the following options (check all that apply)?

- One or more additional certified operators on staff
- An arrangement with another certified operator
- An arrangement with another community with a certified operator
- An operator on staff who has an operator-in-training certificate for your plant and is expected to be certified within one year
- A consultant to serve as your certified operator
- None of the above (20 points)

If "None of the above" is selected, please explain:

0

4. Continuing Education Credits

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4.1 If you had a designated operator-in-charge, was the operator-in-charge earning Continuing Education Credits at the following rates?

OIT and Basic Certification:

- Averaging 6 or more CECs per year.
- Averaging less than 6 CECs per year.

Advanced Certification:

- Averaging 8 or more CECs per year.
- Averaging less than 8 CECs per year.

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Score (100 - Total Points Generated)	100
Section Grade	A

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Financial Management

<p>1. Provider of Financial Information</p> <p>Name: <input style="width: 150px;" type="text" value="Ben Jansen"/></p> <p>Telephone: <input style="width: 150px;" type="text" value="715-268-3413"/> (XXX) XXX-XXXX</p> <p>E-Mail Address (optional): <input style="width: 300px;" type="text" value="ben.jansen@amerywi.gov"/></p>													
<p>2. Treatment Works Operating Revenues</p> <p>2.1 Are User Charges or other revenues sufficient to cover O&M expenses for your wastewater treatment plant AND/OR collection system ?</p> <p>● Yes (0 points) <input type="checkbox"/><input type="checkbox"/></p> <p>○ No (40 points)</p> <p>If No, please explain:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>2.2 When was the User Charge System or other revenue source(s) last reviewed and/or revised? Year: <input style="width: 100px;" type="text" value="2017"/></p> <p>○ 0-2 years ago (0 points) <input type="checkbox"/><input type="checkbox"/></p> <p>● 3 or more years ago (20 points) <input type="checkbox"/><input type="checkbox"/></p> <p>○ N/A (private facility)</p> <p>2.3 Did you have a special account (e.g., CWFPP required segregated Replacement Fund, etc.) or financial resources available for repairing or replacing equipment for your wastewater treatment plant and/or collection system?</p> <p>● Yes (0 points)</p> <p>○ No (40 points)</p>	20												
<p>REPLACEMENT FUNDS [PUBLIC MUNICIPAL FACILITIES SHALL COMPLETE QUESTION 3]</p>													
<p>3. Equipment Replacement Funds</p> <p>3.1 When was the Equipment Replacement Fund last reviewed and/or revised? Year: <input style="width: 100px;" type="text" value="2020"/></p> <p>● 1-2 years ago (0 points) <input type="checkbox"/><input type="checkbox"/></p> <p>○ 3 or more years ago (20 points) <input type="checkbox"/><input type="checkbox"/></p> <p>○ N/A</p> <p>If N/A, please explain:</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>													
<p>3.2 Equipment Replacement Fund Activity</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">3.2.1 Ending Balance Reported on Last Year's CMAR</td> <td style="width: 5%; text-align: center;">\$</td> <td style="width: 35%; text-align: right;"><input style="width: 100%;" type="text" value="225,000.20"/></td> </tr> <tr> <td>3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.)</td> <td style="text-align: center;">\$</td> <td style="text-align: right;"><input style="width: 100%;" type="text" value="0.00"/></td> </tr> <tr> <td>3.2.3 Adjusted January 1st Beginning Balance</td> <td style="text-align: center;">\$</td> <td style="text-align: right;"><input style="width: 100%;" type="text" value="225,000.20"/></td> </tr> <tr> <td>3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)</td> <td style="text-align: center;">+</td> <td style="text-align: right;"><input style="width: 100%;" type="text" value="56,000.00"/></td> </tr> </table>	3.2.1 Ending Balance Reported on Last Year's CMAR	\$	<input style="width: 100%;" type="text" value="225,000.20"/>	3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.)	\$	<input style="width: 100%;" type="text" value="0.00"/>	3.2.3 Adjusted January 1st Beginning Balance	\$	<input style="width: 100%;" type="text" value="225,000.20"/>	3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)	+	<input style="width: 100%;" type="text" value="56,000.00"/>	
3.2.1 Ending Balance Reported on Last Year's CMAR	\$	<input style="width: 100%;" type="text" value="225,000.20"/>											
3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.)	\$	<input style="width: 100%;" type="text" value="0.00"/>											
3.2.3 Adjusted January 1st Beginning Balance	\$	<input style="width: 100%;" type="text" value="225,000.20"/>											
3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)	+	<input style="width: 100%;" type="text" value="56,000.00"/>											

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3.2.5 Subtractions from Fund (e.g., equipment replacement, major repairs - use description box 3.2.6.1 below*) -

\$ 153,266.20

3.2.6 Ending Balance as of December 31st for CMAR Reporting Year

\$ 127,734.00

All Sources: This ending balance should include all Equipment Replacement Funds whether held in a bank account(s), certificate(s) of deposit, etc.

3.2.6.1 Indicate adjustments, equipment purchases, and/or major repairs from 3.2.5 above.

lift station remodels

3.3 What amount should be in your Replacement Fund?

\$ 100,000.00

0

Please note: If you had a CWFPP loan, this amount was originally based on the Financial Assistance Agreement (FAA) and should be regularly updated as needed. Further calculation instructions and an example can be found by clicking the SectionInstructions link under Info header in the left-side menu.

3.3.1 Is the December 31 Ending Balance in your Replacement Fund above, (#3.2.6) equal to, or greater than the amount that should be in it (#3.3)?

- Yes
- No

If No, please explain.

4. Future Planning

4.1 During the next ten years, will you be involved in formal planning for upgrading, rehabilitating, or new construction of your treatment facility or collection system?

- Yes - If Yes, please provide major project information, if not already listed below.
- No

Project #	Project Description	Estimated Cost	Approximate Construction Year
1	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
2	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
3	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
4	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
5	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
6	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
7	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018

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8	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
9	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
10	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018
11	award engineering proposals for existing plant growth needs review. significant subdivision additions, including 1 new lift station. up grade 2 lift station air ejection systems. acquire additional real estate for plant growth.	2000000	2018

5. Financial Management General Comments

ENERGY EFFICIENCY AND USE

6. Collection System

6.1 Energy Usage

6.1.1 Enter the monthly energy usage from the different energy sources:

COLLECTION SYSTEM PUMPAGE: Total Power Consumed

Number of Municipally Owned Pump/Lift Stations:

	Electricity Consumed (kWh)	Natural Gas Consumed (therms)
January	4,060	
February	3,800	
March	3,285	
April	2,994	
May	2,648	
June	2,520	
July	2,074	
August	1,830	
September	1,570	
October	1,677	
November	1,943	
December	3,075	
Total	31,476	0
Average	2,623	0

6.1.2 Comments:

6.2 Energy Related Processes and Equipment

6.2.1 Indicate equipment and practices utilized at your pump/lift stations (Check all that apply):

- Comminution or Screening
- Extended Shaft Pumps
- Flow Metering and Recording
- Pneumatic Pumping

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- SCADA System
- Self-Priming Pumps
- Submersible Pumps
- Variable Speed Drives
- Other:

6.2.2 Comments:

6.3 Has an Energy Study been performed for your pump/lift stations?

No

Yes

Year:

By Whom:

Describe and Comment:

6.4 Future Energy Related Equipment

6.4.1 What energy efficient equipment or practices do you have planned for the future for your pump/lift stations?

7. Treatment Facility

7.1 Energy Usage

7.1.1 Enter the monthly energy usage from the different energy sources:

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TREATMENT PLANT: Total Power Consumed/Month

	Electricity Consumed (kWh)	Total Influent Flow (MG)	Electricity Consumed/Flow (kWh/MG)	Total Influent BOD (1000 lbs)	Electricity Consumed/Total Influent BOD (kWh/1000lbs)	Natural Gas Consumed (therms)
January	47,520	10.61	4,479	11.19	4,247	1,459
February	46,240	9.32	4,961	11.83	3,909	1,377
March	46,560	11.42	4,077	13.92	3,345	1,141
April	46,640	11.61	4,017	12.69	3,675	910
May	53,520	11.30	4,736	12.52	4,275	475
June	46,080	10.26	4,491	14.16	3,254	27
July	51,760	12.90	4,012	20.71	2,499	1
August	47,840	11.45	4,178	19.31	2,477	1
September	48,480	9.53	5,087	15.87	3,055	2
October	44,240	9.28	4,767	16.18	2,734	12
November	45,600	8.65	5,272	16.11	2,831	392
December	53,440	8.38	6,377	11.81	4,525	1,070
Total	577,920	124.71		176.30		6,867
Average	48,160	10.39	4,705	14.69	3,402	572

7.1.2 Comments:

7.2 Energy Related Processes and Equipment

7.2.1 Indicate equipment and practices utilized at your treatment facility (Check all that apply):

- Aerobic Digestion
- Anaerobic Digestion
- Biological Phosphorus Removal
- Coarse Bubble Diffusers
- Dissolved O2 Monitoring and Aeration Control
- Effluent Pumping
- Fine Bubble Diffusers
- Influent Pumping
- Mechanical Sludge Processing
- Nitrification
- SCADA System
- UV Disinfection
- Variable Speed Drives
- Other:

7.2.2 Comments:

7.3 Future Energy Related Equipment

7.3.1 What energy efficient equipment or practices do you have planned for the future for your treatment facility?

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<div data-bbox="121 199 1461 262" style="border: 1px solid black; height: 30px;"></div>	
<p>8. Biogas Generation</p> <p>8.1 Do you generate/produce biogas at your facility?</p> <ul style="list-style-type: none"><input checked="" type="radio"/> No<input type="radio"/> Yes <p>If Yes, how is the biogas used (Check all that apply):</p> <ul style="list-style-type: none"><input type="checkbox"/> Flared Off<input type="checkbox"/> Building Heat<input type="checkbox"/> Process Heat<input type="checkbox"/> Generate Electricity<input type="checkbox"/> Other: <div data-bbox="159 724 1461 777" style="border: 1px solid black; height: 25px;"></div>	
<p>9. Energy Efficiency Study</p> <p>9.1 Has an Energy Study been performed for your treatment facility?</p> <ul style="list-style-type: none"><input checked="" type="radio"/> No<input type="radio"/> Yes <p><input type="checkbox"/> Entire facility</p> <p>Year: <input data-bbox="240 1087 511 1129" style="width: 167px; height: 20px;" type="text"/></p> <p>By Whom: <input data-bbox="284 1165 552 1207" style="width: 165px; height: 20px;" type="text"/></p> <p>Describe and Comment:</p> <div data-bbox="146 1249 1461 1302" style="border: 1px solid black; height: 25px;"></div> <p><input type="checkbox"/> Part of the facility</p> <p>Year: <input data-bbox="240 1375 511 1417" style="width: 167px; height: 20px;" type="text"/></p> <p>By Whom: <input data-bbox="284 1453 552 1495" style="width: 165px; height: 20px;" type="text"/></p> <p>Describe and Comment:</p> <div data-bbox="146 1537 1461 1589" style="border: 1px solid black; height: 25px;"></div>	

Total Points Generated	20
Score (100 - Total Points Generated)	80
Section Grade	C

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Sanitary Sewer Collection Systems

1. Capacity, Management, Operation, and Maintenance (CMOM) Program

1.1 Do you have a CMOM program that is being implemented?

- Yes
- No

If No, explain:

1.2 Do you have a CMOM program that contains all the applicable components and items according to Wisc. Adm Code NR 210.23 (4)?

- Yes
- No (30 points)
- N/A

If No or N/A, explain:

1.3 Does your CMOM program contain the following components and items? (check the components and items that apply)

- Goals [NR 210.23 (4)(a)]

Describe the major goals you had for your collection system last year:

continuing upgrade lift stations, televising and jetting sewer mains, repair manholes. gps mapping valves manholes.

Did you accomplish them?

- Yes
- No

If No, explain:

- Organization [NR 210.23 (4) (b)]

Does this chapter of your CMOM include:

- Organizational structure and positions (eg. organizational chart and position descriptions)
- Internal and external lines of communication responsibilities
- Person(s) responsible for reporting overflow events to the department and the public

- Legal Authority [NR 210.23 (4) (c)]

What is the legally binding document that regulates the use of your sewer system?

code of ordinances

If you have a Sewer Use Ordinance or other similar document, when was it last reviewed and revised? (MM/DD/YYYY) 2004-03-15

Does your sewer use ordinance or other legally binding document address the following:

- Private property inflow and infiltration
- New sewer and building sewer design, construction, installation, testing and inspection
- Rehabilitated sewer and lift station installation, testing and inspection
- Sewage flows satellite system and large private users are monitored and controlled, as necessary
- Fat, oil and grease control
- Enforcement procedures for sewer use non-compliance

- Operation and Maintenance [NR 210.23 (4) (d)]

Does your operation and maintenance program and equipment include the following:

- Equipment and replacement part inventories
- Up-to-date sewer system map

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- A management system (computer database and/or file system) for collection system information for O&M activities, investigation and rehabilitation
- A description of routine operation and maintenance activities (see question 2 below)
- Capacity assessment program
- Basement back assessment and correction
- Regular O&M training

Design and Performance Provisions [NR 210.23 (4) (e)]

What standards and procedures are established for the design, construction, and inspection of the sewer collection system, including building sewers and interceptor sewers on private property?

- State Plumbing Code, DNR NR 110 Standards and/or local Municipal Code Requirements
- Construction, Inspection, and Testing
- Others:

Overflow Emergency Response Plan [NR 210.23 (4) (f)]

Does your emergency response capability include:

- Responsible personnel communication procedures
- Response order, timing and clean-up
- Public notification protocols

Training

Emergency operation protocols and implementation procedures

Annual Self-Auditing of your CMOM Program [NR 210.23 (5)]

Special Studies Last Year (check only those that apply):

- Infiltration/Inflow (I/I) Analysis
- Sewer System Evaluation Survey (SSES)
- Sewer Evaluation and Capacity Management Plan (SECAP)
- Lift Station Evaluation Report
- Others:

0

2. Operation and Maintenance

2.1 Did your sanitary sewer collection system maintenance program include the following maintenance activities? Complete all that apply and indicate the amount maintained.

Cleaning	<input style="width: 60px; text-align: right;" type="text" value="20"/>	% of system/year
Root removal	<input style="width: 60px; text-align: right;" type="text" value="20"/>	% of system/year
Flow monitoring	<input style="width: 60px; text-align: right;" type="text" value="100"/>	% of system/year
Smoke testing	<input style="width: 60px; text-align: right;" type="text" value="0"/>	% of system/year
Sewer line televising	<input style="width: 60px; text-align: right;" type="text" value="20"/>	% of system/year
Manhole inspections	<input style="width: 60px; text-align: right;" type="text" value="20"/>	% of system/year
Lift station O&M	<input style="width: 60px; text-align: right;" type="text" value="365"/>	# per L.S./year
Manhole rehabilitation	<input style="width: 60px; text-align: right;" type="text" value="6"/>	% of manholes rehabbed
Mainline rehabilitation	<input style="width: 60px; text-align: right;" type="text" value="4"/>	% of sewer lines rehabbed
Private sewer inspections	<input style="width: 60px; text-align: right;" type="text" value="0"/>	% of system/year

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Private sewer I/I removal % of private services
 River or water crossings % of pipe crossings evaluated or maintained

Please include additional comments about your sanitary sewer collection system below:

3. Performance Indicators

3.1 Provide the following collection system and flow information for the past year.

Total actual amount of precipitation last year in inches
 Annual average precipitation (for your location)
 Miles of sanitary sewer
 Number of lift stations
 Number of lift station failures
 Number of sewer pipe failures
 Number of basement backup occurrences
 Number of complaints
 Average daily flow in MGD (if available)
 Peak monthly flow in MGD (if available)
 Peak hourly flow in MGD (if available)

3.2 Performance ratios for the past year:

Lift station failures (failures/year)
 Sewer pipe failures (pipe failures/sewer mile/yr)
 Sanitary sewer overflows (number/sewer mile/yr)
 Basement backups (number/sewer mile)
 Complaints (number/sewer mile)
 Peaking factor ratio (Peak Monthly:Annual Daily Avg)
 Peaking factor ratio (Peak Hourly:Annual Daily Avg)

4. Overflows

LIST OF SANITARY SEWER (SSO) AND TREATMENT FACILITY (TFO) OVERFLOWS REPORTED **

Date	Location	Cause	Estimated Volume
None reported			

** If there were any SSOs or TFOs that are not listed above, please contact the DNR and stop work on this section until corrected.

5. Infiltration / Inflow (I/I)

5.1 Was infiltration/inflow (I/I) significant in your community last year?

- Yes
- No

If Yes, please describe:

5.2 Has infiltration/inflow and resultant high flows affected performance or created problems in your collection system, lift stations, or treatment plant at any time in the past year?

- Yes

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<p><input type="radio"/> No</p> <p>If Yes, please describe:</p> <p>affects settling fecal and phosphorus removal</p> <p>5.3 Explain any infiltration/inflow (I/I) changes this year from previous years:</p> <p>getting better replaced some manholes identified with holes in covers and sump pump plumbing changes</p> <p>5.4 What is being done to address infiltration/inflow in your collection system?</p> <p>up grading sewer lines or lining them as identified as problem. continue reminding public and checking sump pump plumbing</p>	
---	--

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 **2020**

Grading Summary

WPDES No: 0020125

SECTIONS	LETTER GRADE	GRADE POINTS	WEIGHTING FACTORS	SECTION POINTS
Influent	B	3	3	9
BOD/CBOD	A	4	10	40
TSS	A	4	5	20
Phosphorus	A	4	3	12
Biosolids	A	4	5	20
Staffing/PM	A	4	1	4
OpCert	A	4	1	4
Financial	C	2	1	2
Collection	A	4	3	12
TOTALS			32	123
GRADE POINT AVERAGE (GPA) = 3.84				

Notes:

- A = Voluntary Range (Response Optional)
- B = Voluntary Range (Response Optional)
- C = Recommendation Range (Response Required)
- D = Action Range (Response Required)
- F = Action Range (Response Required)

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 2020

Resolution or Owner's Statement

Name of Governing
Body or Owner:

city of amery

Date of Resolution or
Action Taken:

2021-05-05

Resolution Number:

03-2021

Date of Submittal:

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO SPECIFIC CMAR SECTIONS (Optional for grade A or B. Required for grade C, D, or F):

Influent Flow and Loadings: Grade = B

Effluent Quality: BOD: Grade = A

Effluent Quality: TSS: Grade = A

Effluent Quality: Phosphorus: Grade = A

Biosolids Quality and Management: Grade = A

Staffing: Grade = A

Operator Certification: Grade = A

Financial Management: Grade = C

Alot of lift station upgrades

Collection Systems: Grade = A

(Regardless of grade, response required for Collection Systems if SSOs were reported)

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO THE OVERALL GRADE POINT AVERAGE AND ANY GENERAL COMMENTS

(Optional for G.P.A. greater than or equal to 3.00, required for G.P.A. less than 3.00)

G.P.A. = 3.84

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 2020

DNR Response to Resolution or Owner's Statement

Name of Governing
Body or Owner:

city of amery

Date of Resolution or
Action Taken:

2021-05-05

Resolution Number:

03-2021

Date of Submittal:

6/14/2021

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO SPECIFIC CMAR SECTIONS (Optional for grade A or B. Required for grade C, D, or F):

Influent Flow and Loadings: Grade = B

Permittee Response:

DNR Response:

Effluent Quality: BOD: Grade = A

Permittee Response:

DNR Response:

Effluent Quality: TSS: Grade = A

Permittee Response:

DNR Response:

Effluent Quality: Phosphorus: Grade = A

Permittee Response:

DNR Response:

Biosolids Quality and Management: Grade = A

Permittee Response:

DNR Response:

Staffing: Grade = A

Permittee Response:

DNR Response:

Operator Certification: Grade = A

Compliance Maintenance Annual Report

Amery City Of

Last Updated: Reporting For:
6/14/2021 2020

Permittee Response:	
DNR Response:	
<input type="text"/>	
Financial Management: Grade = C	Permittee Response:
Alot of lift station upgrades	DNR Response:
	<input type="text"/>
Updating user system charges and sewer ordinances may help with upgrades in your system.	
Collection Systems: Grade = A (Regardless of grade, response required for Collection Systems if SSOs were reported)	Permittee Response:
	DNR Response:
	<input type="text"/>
ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO THE OVERALL GRADE POINT AVERAGE AND ANY GENERAL COMMENTS	
(Optional for G.P.A. greater than or equal to 3.00, required for G.P.A. less than 3.00)	
G.P.A. = 3.84	
Permittee Response:	
DNR G.P.A. Response:	
<input type="text"/>	
DNR CMAR Overall Response:	
<input type="text"/>	
Thank you for your submittal of the annual CMAR. The overall GPA of 3.84, is a score reflective of a well operated system. Please review comments made in other sections of this CMAR. Thank you for your continued efforts to maintain permit compliance and ultimately keep Wisconsin's water clean. Jordan Englebert, wastewater engineer, Spooner.	
DNR Reviewer: Englebert, Jordan	Phone: (715) 635-4053
Address: 810 W Maple Street, Spooner, WI 54801	Date: 7/8/2021

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Appendix D

Amery Effluent Limits Memo

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CORRESPONDENCE/MEMORANDUM

DATE: January 12, 2022

TO: Ashley Brechlin – WY/3

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Planning Water Quality-Based Effluent Limitations for the City of Amery
WPDES Permit No. WI-0020125

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for facility planning for the City of Amery in Polk County. This municipal wastewater treatment facility (WWTF) discharges to the Apple River, located in the Lower Apple River Watershed in the St. Croix River Basin. This discharge is included in the Lake St. Croix TMDL as approved by EPA. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
BOD ₅			45 mg/L	30 mg/L	1
TSS			45 mg/L	30 mg/L	1
pH	9.0 s.u.	6.0 s.u.			1
Ammonia Nitrogen					1,2
Bacteria					
Interim Limit Fecal Coliform				400 #/100 mL geometric mean	1,3
Final Limit <i>E. coli</i>				126 #/100 mL geometric mean	
Phosphorus					
TBEL WQBEL				1.6 mg/L 6.6 lbs/day	1,4
Copper (Total Recoverable)					1,2
Chloride					1,2
Nitrite + Nitrate					1,5
Nitrogen, Total Kjeldahl					1,5
Total Nitrogen					1,5

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
4. The technology based limit for phosphorus is an alternative effluent limit (AEL) based on biological phosphorus removal. Influent mass phosphorus monitoring paired with the respective effluent data is required during the reissued permit term to demonstrate biological phosphorus

removal is occurring at the minimum 90% mass reduction rate per s. NR 217.04(2)2, Wis. Adm. Code.

5. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen (total kjeldahl nitrogen and nitrate/nitrite) monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (all expressed as N).

The recommended limits meet the expression of limits requirements in ss. NR 106.07 and NR 205.065(7) and additional limits are not required.

The test for antidegradation is whether any of the effluent limitations is an increased discharge as defined in ch. NR 207, Wis. Adm Code, because this facility is an existing discharge. "Increased discharge" means any change in concentration, level or loading of a substance which would exceed an effluent limitation specified in a current WPDES permit. No effluent limitations outlined above would constitute an increased discharge as defined in ch. NR 207, Wis. Adm. Code, as they are equal to the existing permit limitations. Therefore, the limits do not change due to this consideration.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, Thermal Table, & Map

PREPARED BY:  Date: 1/12/2021
Benjamin Hartenbower, PE,
Water Resources Engineer

E-cc: Jordan Englebert, Wastewater Engineer – NOR/Spooner
Michelle Balk, Regional Wastewater Supervisor – NOR/Spooner
Michael Polkinghorn, Water Resources Engineer – NOR/Rhineland
Diane Figiel, Water Resources Engineer – WY/3

Attachment #1
**Water Quality-Based Effluent Limitations for
 City of Amery**

WPDES Permit No. WI-0020125

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description

The City of Amery wastewater treatment facility (WWTF), constructed in 1996, is designed to treat 0.40 MGD of influent and currently treats on average 0.35 MGD (April 2015 – December 2019). The facility consists of preliminary screening/grit chamber removing debris and gravel from the wastewater prior to entering the treatment system. Wastewater enters an anaerobic contact tank where it mixes with activated sludge floc which assists in breaking down the organic matter. The activated sludge floc is composed of settled solids containing naturally occurring bacteria recycled from the treatment system. The wastewater is then pumped to an anoxic ditch followed by an oxidation ditch where organic matter is further broken down by bacteria and micro-organisms naturally found within the wastewater. The wastewater is sent to the final clarifiers where remaining solids are settled out and passed through ultraviolet disinfection (May – September).

Sludge generated from the clarifiers that is not returned to the contact tank as activated sludge is dewatered and stored until it is hauled to the West Central Wisconsin Biosolids Facility (WCWBF) in Ellsworth Wisconsin for regional storage, treatment, and disposal. The WCWBF accepts sludge from 20 western Wisconsin wastewater treatment facilities where sludge is further dewatered, mixed with lime and fly ash, and utilized as a lime supplement on farmland. Supernatant generated from the dewatering process is returned to the head of the facility for treatment.

The City of Amery requests new effluent limits as part of a facility planning study for any new or modified sewerage system project subject to ch. NR 110, Wis. Adm. Code. The initial intent of the facility plan is to upgrade or replace the current treatment plant, while utilizing the same discharge location to east bank of the Apple River approximately 100 feet southwest of the final clarifier.

Existing Permit Limitations

The current permit, expiring on September 30, 2025, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
BOD ₅			45 mg/L	30 mg/L	1
TSS			45 mg/L	30 mg/L	1
pH	9.0 s.u.	6.0 s.u.			1
Ammonia Nitrogen					1, 4
Bacteria					
Interim Limit Fecal Coliform				400 #/100 mL geometric mean	2

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Final Limit <i>E. coli</i>				126 #/100 mL geometric mean	
Phosphorus TBEL WQBEL				1.6 mg/L 6.6 lbs/day	1, 3
Copper (Total Recoverable)					1, 5
Chloride					1, 5
Nitrite + Nitrate					6
Nitrogen, Total Kjeldahl					6
Total Nitrogen					6

Footnotes:

1. No changes from the current permit
2. Bacteria limits apply during the disinfection season of May through September. The fecal coliform interim limit will apply until the end of the compliance schedule when *E. coli* limits take effect. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
3. The technology based limit for phosphorus is an alternative effluent limit (AEL) based on biological phosphorus removal. Influent mass phosphorus monitoring paired with the respective effluent data is required during the reissued permit term to demonstrate biological phosphorus removal is occurring at the minimum 90% mass reduction rate per s. NR 217.04(2)2.
4. Monthly ammonia nitrogen monitoring is recommended throughout the permit term. Accurate effluent pH monitoring is also needed to determine the applicable daily maximum ammonia nitrogen limitation to determine reasonable potential at the next permit issuance.
5. Monitoring at a frequency to ensure that 11 samples are available at the next permit issuance.
6. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen (total kjeldahl nitrogen and nitrate/nitrite) monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (all expressed as N).

Receiving Water Information:

- Name: Apple River
 - WBIC: 2614000
 - Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm water sport fish community, non-public water supply.
 - Low Flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are from USGS for Station NW ¼, SW ¼, Section 33, T33N – R16W, where Outfall 001 is located.
 - 7-Q₁₀ = 23 cfs (cubic feet per second)
 - 7-Q₂ = 49 cfs
 - Harmonic Mean Flow = 76 cfs using a drainage area of 250 mi²
- The Harmonic Mean has been estimated based on average flow and the 7-Q₁₀ using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

Attachment #1

- Hardness = 153 mg/L as CaCO₃. This value represents the geometric mean of data (n = 6) from WET testing during April 1998 – July 2008.
- % of low flow used to calculate limits in accordance with s. NR 106.06 (4) (c) 5., Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from the Apple River at Bridge Street is used for this evaluation (SWIMS ID#: 10034723). The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen and phosphorus are described later.
- Multiple dischargers: None in vicinity.
- Impaired water status: Upstream of the discharge the Apple River Flowage is listed as impaired for total phosphorus. Downstream the Apple River is not listed under the Clean Water Act (CWA) Section 303(d). Lake St. Croix, approximately 45 miles downstream, is listed as impaired for total phosphorus and this discharge is included in the Lake St. Croix TMDL.

Effluent Information:

- Design Flow Rate(s):
 - Current Annual average = 0.40 MGD (Million Gallons per Day)
 - Annual average is proposed to increase to 0.413 MGD
 - Weekly average is proposed to increase to 0.642 MGD
 - Daily maximum is proposed to increase to 0.975 MGDFor reference, the actual average flow from April 2015 – December 2019 was 0.35 MGD.
- Hardness = 185 mg/L as CaCO₃. This value represents the geometric mean of data (n = 4) from the permit application monitoring during October 2019.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water Source (Wastewater): Domestic wastewater with no industrial contributors.
- Water Source (Potable): City of Amery
- Total Phosphorus Wasteload Allocation: 739 kg/year, 4.5 lbs/day (*Lake St. Croix Nutrient Total Maximum Daily Load, May 2012, page 74*).
- Additives: None used at the facility. Potable water source uses polyphosphate, fluoride, and chlorine gas.
- Effluent characterization: Representative effluent data for the City of Amery was the same used in the most recent WQBEL memorandum signed on June 17, 2020. Effluent data for ammonia and phosphorus were adjusted to include results updated to September 2021.

**PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN**

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Adm. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q₁₀ receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(\text{WQC}) (Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)}{Q_e}$$

Where:

WQC = Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Q_s = average minimum 1-day flow which occurs once in 10 years (1-day Q₁₀)
 if the 1-day Q₁₀ flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q₁₀).

Q_e = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

C_s = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for the City of Amery and the limits are set based on two times the acute toxicity criteria.

The following tables list the calculated water quality-based effluent limitations for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):

RECEIVING WATER FLOW = 18.4 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MAX. EFFL. LIMIT*	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340	680	136	1.0		1.0
Cadmium	185	20.9	41.7	8.3	<3		
Chromium	185	2,988	5,968	1,194	<6		
Copper	185	27.8	55.4			15	13
Lead	185	194	387.5	77.5	<1		
Nickel	185	791	1579	316	<8		
Zinc	185	206	412	82.5	48		48
Chloride (mg/L)		757	1,514	303	236		260

* The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q₁₀ flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC):

RECEIVING WATER FLOW = 5.8 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD. mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152.2		1,522	304	1.0	
Cadmium	153	3.44		34.4	6.9	<3	
Chromium	153	187.21		1,871	374	<6	
Copper	153	14.9		148.9			11
Lead	153	42.25		422.3	84.5	<1	
Nickel	153	74.82		748	150	<8	
Zinc	153	174.66		1,746	349	48	
Chloride (mg/L)		395	5.12	3,903	781	236	

Monthly Average Limits based on Wildlife Criteria (WC):

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC):

RECEIVING WATER FLOW = 19.0 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370		11,390	2,278	<3
Chromium (+3)	3,818,000		117,534,694	23,506,939	<6
Lead	140		4,310	862	<1
Nickel	43,000		1,323,728	264,746	<8

Monthly Average Limits based on Human Cancer Criteria (HCC):

RECEIVING WATER FLOW = 19.0 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		409	81.9	1.0

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because only one substance for which Human Cancer Criteria exists was detected, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations:

Based on a comparison of the effluent data and calculated effluent limitations, **the proposed increased effluent flow will not trigger limitations for toxic substances. The monitoring for chloride and copper is recommended to continue as recommended in the previous WQBEL evaluation (June 2020).**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR CONVENIONAL POLLUTANTS

In establishing Biochemical Oxygen Demand (BOD₅) limitations, the primary intent is to prevent a lowering of dissolved oxygen levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b), Wis. Adm. Codes. The 26-lb method is the most frequently used approach for calculating BOD₅ limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

$$\frac{26 \text{ lbs/day}}{\text{ft}^3/\text{sec}} * \frac{1 \text{ day}}{86,400 \text{ sec}} * \frac{454,000 \text{ mg}}{\text{lbs}} * \frac{1 \text{ ft}^3}{28.32 \text{ L}} = 4.8 = 2.4 * 2 \text{ mg/L}$$

The 4.8 has been calculated by taking 2.4 which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed in order to meet the 5 mg/L standard for warm water streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24°C summer value for warm water streams. Adjustments for temperature are made using the following equation:

$$k_t = k_{24} (0.967^{(T-24)})$$

Where k_{24} = 26 lbs of BOD/day/cfs

Calculations based on Full Assimilative Capacity at 7Q10 Conditions:

$$Limitation(mg/L) = 2.4(DO_{stream} - DO_{std}) \left(\frac{(7Q_{10} + Q_{eff})}{Q_{eff}} \right) (0.967^{(T-24)})$$

Where:

Q_{eff} = effluent design flow = 0.413 MGD

DO_{stream} = background dissolved oxygen = 7 mg/L

DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5.0 mg/L

7-Q₁₀ = 23 cfs

T = Receiving water temperature from s. NR 102.25

BOD Effluent Limitations (26 LB Method)		Jan	Feb	Mar	Apr	May	Jun
Background Information:	7-Q ₁₀ (cfs)	23	23	23	23	23	23
	River Temperature (°C)	0.6	1.1	3.3	8.9	14.4	18.9
Dissolved Oxygen mg/L:	Effluent	6.00	6.00	6.00	6.00	6.00	6.00
	Background	7.00	7.00	7.00	7.00	7.00	7.00
	Mix DO	6.97	6.97	6.97	6.97	6.97	6.97
	Criteria	5.00	5.00	5.00	5.00	5.00	5.00

Attachment #1

Weekly Ave BOD Effluent Limitations	Concentration Limits (mg/L)	385	378	350	291	241	208
	Mass (lbs/d)	1325	1301	1207	1002	831	716

BOD Effluent Limitations (26 LB Method)		Jul	Aug	Sept	Oct	Nov	Dec
Background Information:	7-Q ₁₀ (cfs)	23	23	23	23	23	23
	River Temperature (°C)	20.6	19.4	15.6	10.0	4.4	1.7
Dissolved Oxygen mg/L:	Effluent	6.00	6.00	6.00	6.00	6.00	6.00
	Background	7.00	7.00	7.00	7.00	7.00	7.00
	Mix DO	6.97	6.97	6.97	6.97	6.97	6.97
	Criteria	5.00	5.00	5.00	5.00	5.00	5.00
Weekly Ave BOD Effluent Limitations	Concentration Limits (mg/L)	197	204	233	280	338	371
	Mass (lbs/d)	677	703	801	965	1163	1277

Due to the amount of upstream dilution in the limit calculation, the DO level is unlikely to drop below the standard as a result of any reasonably expected increase in BOD load from this discharge. For this receiving water classification, **the current BOD₅ limits of 45 mg/L weekly average and 30 mg/L monthly average based on ch. NR 210, Wis. Adm. Code are expected to be protective of water quality.**

TOTAL SUSPENDED SOLIDS (TSS)

No water quality criteria are currently available for TSS so evaluations of assimilative capacity do not apply for ch. NR 207. The suspended solids limitations are primarily given to maintain or improve water clarity, or in accordance with s. NR 102.04, Wis. Adm. Code, to prevent objectionable deposits on shores or beds of receiving waters. Due to the amount of upstream dilution, **the current TSS limits of 45 mg/L weekly average and 30 mg/L monthly average based on ch. NR 210, Wis. Adm. Code are expected to be protective of water quality.**

pH

The pH limitations are required under s. NR 102.04(4)(c), Wis. Adm. Code, where the effluent pH cannot change the ambient pH range by 0.5 units or be outside the range of 6.0 - 9.0 s.u. **Therefore, a daily pH range of 6.0 - 9.0 s.u. is recommended.**

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation:

Attachment #1

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - \text{pH})})] + [B \div (1 + 10^{(\text{pH} - 7.204)})]$$

Where:

A = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
 pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. Representative effluent data for the City of Amery was the same used in the most recent WQBEL memo signed on June 17, 2020. A value of 7.27 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.27 s.u. into the equation above yields an ATC = 27.25 mg/L.

Potential Changes to Daily Maximum Ammonia Nitrogen Effluent Limitations:

Subchapter IV of ch. NR 106, Wis. Adm. Code (effective September 1, 2016) specifies methods for the use of the 1-Q₁₀ receiving water low flow to calculate daily maximum ammonia nitrogen limits if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q₁₀ (estimated as 80 % of 7-Q₁₀) and the 2×ATC approach are shown below.

	Ammonia Nitrogen Limit mg/L
2×ATC	55
1-Q ₁₀	809

The 2×ATC method yields the most stringent limits for City of Amery. Presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table is not necessarily recommended in the permit, but it is presented herein for informational purposes.

Daily Maximum Ammonia Nitrogen Limits – WWSF, WWFF & LFF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code. The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warm Water Sport Fish Community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

$$CTC = E \times \{ [0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})] \} \times C$$

Where:

pH = the pH (s.u.) of the receiving water,

E = 0.854,

C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or

C = $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and

T = the temperature (°C) of the receiving water – (Early Life Stages Present), or

T = the maximum of the actual temperature (°C) and 7 - (Early Life Stages Absent)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are believed to be present in the Apple River, based on data in the fisheries database and the previous WQBEL memorandum. Therefore “ELS Present” criteria will apply January – September and “ELS Absent” criteria will apply October – December for a WWSF classification.

The “default” basin assumed values are used for Temperature, pH and background ammonia concentrations, because minimum ambient data is available. These values are shown in the table below, with the resulting criteria and effluent limitations.

Apple River (WWSF)		Spring	Summer	Fall	Winter
		April – May	June – Sept.	Oct. – Dec.	Jan. – Mar.
Effluent Flow	Qe (MGD)	0.413	0.413	0.413	0.413
Background Information	7-Q ₁₀ (cfs)	23	23	23	23
	7-Q ₂ (cfs)	49	49	49	49
	Ammonia (mg/L)	0.04	0.04	0.03	0.08
	Average Temperature (°C)	12	19	5	2
	Maximum Temperature (°C)	14	21	10	3
	pH (s.u.)	8.09	8.08	8.06	7.90
	% of Flow used	50	100	25	25
	Reference Weekly Flow (cfs)	12	23	5.8	5.8
Reference Monthly Flow (cfs)	21	42	10	10	

Attachment #1

Apple River (WWSF)		Spring	Summer	Fall	Winter
		April – May	June – Sept.	Oct. – Dec.	Jan. – Mar.
Criteria mg/L	4-day Chronic				
	Early Life Stages Present	5.32	3.66	5.57	6.99
	Early Life Stages Absent	5.50	3.66	7.45	11.36
	30-day Chronic				
	Early Life Stages Present	2.13	1.46	2.23	2.80
	Early Life Stages Absent	2.20	1.46	2.98	4.54
Effluent Limitations mg/L	Weekly Average				
	Early Life Stages Present	100	134		69
	Early Life Stages Absent			74	
	Monthly Average				
	Early Life Stages Present	70	94		47
	Early Life Stages Absent			51	

Effluent Data:

Nineteen samples for ammonia nitrogen were reported June 2009 – September 2021. The following table evaluates the statistics, with those results being compared to the calculated limits to determine the need to include ammonia limits in the City of Amery permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P₉₉) values for ammonia and comparing the daily maximum values to the daily maximum limit.

Sample Date	Ammonia Nitrogen mg/L	Sample Date	Ammonia Nitrogen mg/L
06/10/2009	2.2	01/05/2021	1.7
06/17/2009	6	02/09/2021	2.5
06/24/2009	11	03/16/2021	10
06/30/2009	4.7	04/20/2021	12.8
02/21/2018	1.5	05/25/2021	26.7
06/13/2018	29.3	06/29/2021	19.5
09/26/2018	15.8	07/28/2021	15.4
11/07/2018	5.9	08/17/2021	15.5
11/22/2020	0.1	09/28/2021	2.3
12/20/2020	0.1		
1-day P ₉₉ = 43.9			
4-day P ₉₉ = 24.3			
30-day P ₉₉ = 14.0			
Mean = 9.6			
Std = 8.9			
Sample size (n) = 19			
Range = 0.1 – 29.3			

Conclusions and Recommendations:

After comparison of the effluent concentration with the calculated limitations, **the proposed increased effluent flow will not trigger limitations for ammonia nitrogen. The monitoring for ammonia nitrogen is recommended to continue as recommended in the previous WQBEL evaluation (June 2020).**

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

Because the City of Amery's permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit.

These limits are required during May through September. No changes are recommended to the current recreational period and the required disinfection season.

The current permit includes a compliance schedule to meet these limits. During the compliance schedule, an interim limit applies to prevent back-sliding from the current level of disinfection during the compliance schedule period. The proposed increased effluent flow will not affect the current disinfection requirements.

PART 6 – PHOSPHORUS

Technology Based Phosphorus Limit:

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

The City of Amery exceeded the 150 lbs. per month threshold and has an alternative effluent limit (AEL) of 1.6 mg/L in the current permit based on biological phosphorus removal in s. NR 217.04(2)(a)2, Wis. Adm. Code. Influent mass phosphorus monitoring paired with the respective effluent data is required to demonstrate biological phosphorus removal is occurring at the minimum 90% mass reduction rate as required in s. NR 217.04(2)2, Wis. Adm. Code. In addition, the need for a WQBEL for phosphorus must be considered

Water Quality-Based Effluent Limits (WQBEL):

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

The Lake St. Croix TMDL report was written to ensure that phosphorus water quality criteria are attained in Lake St. Croix and are not necessarily protective of phosphorus water quality of other surface waterbodies in the TMDL area. Therefore, the need for a phosphorus WQBEL as described in s. NR 217.13, Wis. Adm. Code, must be considered in addition to any limits required by the TMDL report.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.100 mg/L applies for Apple River.

The conservation of mass equation is described in s. NR 217.13 (2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs):

$$\text{Limitation} = [(WQC)(Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)] / Q_e$$

Where:

WQC = 0.100 mg/L for Apple River.

Qs = 100% of the 7-Q₂ of 49 cfs

Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code

Qe = effluent flow rate = 0.413 MGD = 0.64 cfs

f = the fraction of effluent withdrawn from the receiving water = 0

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall equal the median of at least four samples collected during the months of May through October, and that all samples collected during a 28-day period shall be considered as a single sample and the average of these concentrations used to determine a median. Averaging begins at date of the first sample in the range of May through October.

A previous evaluation resulted in a WQBEL of 3.0 mg/L using a background concentration of 0.064 mg/L. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. Additional data were considered in estimating the background phosphorus concentration.

A review of all available in stream total phosphorus data from May 2012 – September 2012 (n = 5) stored in the Surface Water Integrated Monitoring System database indicates the median background total phosphorus concentration in Apple River at Bridge Street (SWIMS ID#: 10034723) is 0.064 mg/L, approximately 0.4 miles upstream from the point of discharge to Apple River.

Substituting a median value of 0.064 mg/L into the limit calculation equation above, the calculated limit is 2.9 mg/L.

Effluent Data:

The following table summarizes effluent total phosphorus monitoring data from January 2016 – September 2021.

Attachment #1

	Phosphorus mg/L
1-day P ₉₉	4.15
4-day P ₉₉	2.32
30-day P ₉₉	1.04
Mean	0.52
Std	0.94
Sample size	297
Range	0.05 – 8.54

Reasonable Potential Determination:

Since the 30-day P₉₉ of reported effluent total phosphorus data is less than the calculated WQBEL, the discharge does not have a reasonable potential to cause or contribute to an exceedance of the water quality criterion. **Therefore, a WQBEL is not required based on s. NR 217.13, Wis. Adm. Code.**

TMDL Limits:

The Lake St. Croix TMDL established a waste load allocation (WLA) for the City of Amery of 1,628 lbs/year and 4.5 lbs/day. The monthly average limit of 6.6 lbs/day was determined in the WQBEL memorandum signed on August 15, 2014. (August 2014). The multiplier of 1.47 was chosen as described in the Department TMDL Implementation guidance using a coefficient of variation (CV) of 0.6 and thrice weekly effluent monitoring.

This TMDL-based WQBEL will be re-evaluated if the annual WLA is not being met as described in the prior stated guidance. Rolling 12-month sums can be compared directly to the annual wasteload allocation. In this case, the peak rolling sum of 808 lbs/yr (December 2018 – November 2019) is less than the annual WLA of 1,628 lbs/yr. **Therefore, the City of Amery is meeting their annual WLA and the TMDL-based WQBEL of 6.6 lbs/day as a monthly average will be continued in the reissued permit.**

**PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR THERMAL**

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off the proposed daily maximum of 0.975 MGD and the proposed weekly average of 0.642 MGD.

Attachment #1

Month	Calculated Effluent Limit	
	Weekly Average Effluent Limitation (°F)*	Daily Maximum Effluent Limitation (°F)
JAN	NA	120
FEB	NA	120
MAR	NA	120
APR	96	120
MAY	106	120
JUN	NA	120
JUL	NA	120
AUG	NA	120
SEP	NA	120
OCT	NA	120
NOV	101	120
DEC	NA	120

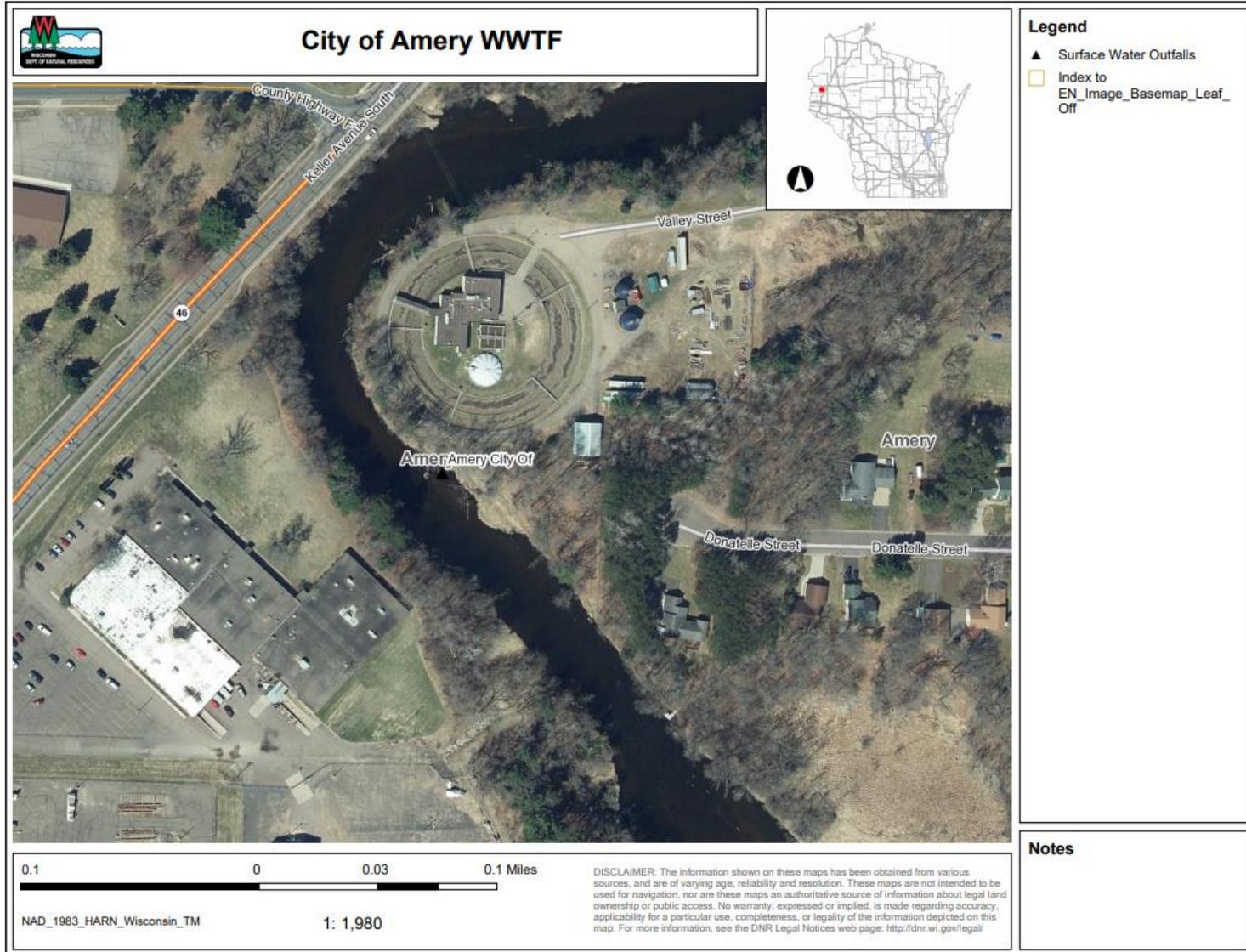
*NA denotes "Not Applicable" when the calculated limit is greater than or equal to 120 °F.

Temperature Limits for Receiving Waters with Unidirectional Flow

(calculation using default ambient temperature data)

Facility:	City of Amery	7-Q₁₀:	23	cfs
Outfall(s):	001	Dilution:	25%	
Date Prepared:	11/24/2021	f:	0	
Design Flow (Q_e):	0.41	Stream type:	Small warm water sport or forage fish community ▼	
Storm Sewer Dist.	0	Q_s:Q_e ratio:	9.0	:1
	MGD	Calculation Needed?	YES	
	ft			

Month	Water Quality Criteria			Receiving Water Flow Rate (Q _s) (cfs)	Representative Highest Effluent Flow Rate (Q _e)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	T _a (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)		7-day Rolling Average (Q _{esl}) (MGD)	Daily Maximum Flow Rate (Q _{ea}) (MGD)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	33	49	76	23	0.642	0.975	0			NA	120
FEB	34	50	76	23	0.642	0.975	0			NA	120
MAR	38	52	77	23	0.642	0.975	0			NA	120
APR	48	55	79	23	0.642	0.975	0			96	120
MAY	58	65	82	23	0.642	0.975	0			106	120
JUN	66	76	84	23	0.642	0.975	0			NA	120
JUL	69	81	85	23	0.642	0.975	0			NA	120
AUG	67	81	84	23	0.642	0.975	0			NA	120
SEP	60	73	82	23	0.642	0.975	0			NA	120
OCT	50	61	80	23	0.642	0.975	0			NA	120
NOV	40	49	77	23	0.642	0.975	0			101	120
DEC	35	49	76	23	0.642	0.975	0			NA	120



Appendix E

Cost Estimate Breakdown

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Project Name:	WWTP Design	1/18/2023
Project Location:	Amery WWTP	
Project Number	AMERY 160422	

	Alternative 4a: SBR	Alternative 4b: Orbal Oxidation Ditch	Alternative 4c: Tri-Oval Oxidation Ditch
PROCESS	\$ 2,155,864.04	\$ 2,575,803.56	\$ 2,612,460.02
STRUCTURAL	\$ 1,846,000.00	\$ 2,920,225.00	\$ 2,544,000.00
CIVIL	\$ 600,279.61	\$ 824,404.28	\$ 773,469.00
ARCHITECTURAL	\$ 1,350,000.00	\$ 1,350,000.00	\$ 1,350,000.00
MECHANICAL	\$ 431,172.81	\$ 515,160.71	\$ 522,492.00
PROCESS PIPING	\$ 754,552.41	\$ 901,531.25	\$ 914,361.01
ELECTRICAL	\$ 1,077,932.02	\$ 1,287,901.78	\$ 1,306,230.01
Construction Subtotal	\$ 8,215,800.89	\$ 10,375,026.58	\$ 10,023,012.04
Construction Contingency	\$ 1,232,370.13	\$ 1,556,253.99	\$ 1,503,451.81
Probable Construction Cost	\$ 9,448,000	\$ 11,931,000	\$ 11,526,000
Engineering, Admin, Legal	\$ 1,417,000	\$ 1,790,000	\$ 1,729,000
Replacement Cost, \$/yr	\$ 73,886.00	\$ 88,238.00	\$ 89,490.78
Electrical consumption, kW/hrs per day	2,082	2,112	1,879
Utility electricity unit, \$/kWhr	\$ 0.10	\$ 0.10	\$ 0.10
Electrical Cost, \$/day	\$ 208.24	\$ 211.18	\$ 187.92
Electrical Cost, \$/yr	\$ 76,009.13	\$ 77,081.52	\$ 68,589.49
Equipment Life	20 years		
Interest	2.6% percent		
Engineering Economy Weight (P/A)	15.4		
Initial Capital Cost	\$ 10,865,000	\$ 13,721,000	\$ 13,255,000
Present Worth Maintenance Cost	\$ 1,138,000	\$ 1,359,000	\$ 1,379,000
Present Worth Electrical Cost	\$ 1,171,000	\$ 1,188,000	\$ 1,057,000
Salvage Value	\$ (1,145,000)	\$ (1,811,000)	\$ (1,577,000)
Net Present Worth	\$ 12,029,000	\$ 14,457,000	\$ 14,114,000

Cost Estimate for Construction of AQUA Aerobics SBR Facility

Notes:

Please use the weight factor table located to the right of the cost estimate table

⁽¹⁾ Weight factor accounts for City Cost Index Correction, Installation, Location, and/or Contractor Overhead/Profit

⁽²⁾ If possible, identify taxes separately.

Item No.	Item	Division	Quantity	Units	Unit Cost	Installed or Equipment	Weight Factor ⁽¹⁾	Tax ⁽²⁾	Adjusted Unit Cost	Total Cost
PROCESS										
1	Influent/Effluent Flow Meter		2	LS	\$ 8,320	Equipment	1.46		\$ 12,172	\$ 24,344
2	Influent Pumps		2	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 76,076
3	Fine Screen		1	LS	\$ 137,280	Equipment	1.46		\$ 200,841	\$ 200,841
4	Grit Removal Equipment		1	LS	\$ 243,360	Equipment	1.46		\$ 356,036	\$ 356,036
5	SBR Equipment (includes Inf Valves, Mixers, Decanters, Blowers, Diffusers, WAS pumps, Controls)		1	LS	\$ 592,800	Equipment	1.46		\$ 867,266	\$ 867,266
6	Automatic Composite Samplers		2	EA	\$ 8,320	Equipment	1.10		\$ 9,152	\$ 18,304
7	Sludge Storage Mixing		1	LS	\$ 52,000	Equipment	1.46		\$ 76,076	\$ 76,076
8	Sludge/Centrate Pumps		3	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 114,114
9	Sludge Thickening Equipment		1	LS	\$ 142,000	Equipment	1.46		\$ 207,746	\$ 207,746
10	UV Disinfection Equipment		1	LS	\$ 147,000	Equipment	1.46		\$ 215,061	\$ 215,061
STRUCTURAL										
11	Concrete Walls and Slabs - SBR		1000.0	CY	\$ 1,100	Installed	1.00		\$ 1,100	\$ 1,100,000
12	Structural Excavation / Backfill SBR		3600.0	CY	\$ 60	Installed	1.00		\$ 60	\$ 216,000
13	Concrete for Below Grade Portion - Headworks Building		400.0	CY	\$ 1,100	Installed	1.00		\$ 1,100	\$ 440,000
14	Structural Excavation / Backfill - Headworks Building		900.0	CY	\$ 60	Installed	1.00		\$ 60	\$ 54,000
15	Stairway		2	EA	\$ 9,000	Installed	1.00		\$ 9,000	\$ 18,000
16	Handrails		240	LF	\$ 75	Installed	1.00		\$ 75	\$ 18,000
CIVIL										
22	Civil Site Work (15% of Process and Structural)		1	LS	\$ 600,280	Installed	1.00		\$ 600,280	\$ 600,280
ARCHITECTURAL										
32	Headworks Building incl Electrical, Blowers (60x40) \$250/ sq.ft		2400	SF	\$ 250	Installed	1.00		\$ 250	\$ 600,000
33	Existing Building Selective Demo/Rehab		1	LS	\$ 750,000	Installed	1.00		\$ 750,000	\$ 750,000
MECHANICAL										
42	20% of Process Equipment Cost		1	LS	\$ 431,173	Installed	1.00		\$ 431,173	\$ 431,173
PROCESS PIPING										
52	35% of Process Equipment Cost		1	LS	\$ 754,552	Installed	1.00		\$ 754,552	\$ 754,552
ELECTRICAL										
62	50% of Process Equipment Cost		1	LS	\$ 1,077,932	Installed	1.00		\$ 1,077,932	\$ 1,077,932
Cost Estimate for Construction of AQUA Aerobics SBR Facility									Subtotal	\$ 8,215,801

Item No.	Item	Quantity Running	Power	Units	Quantity	Units	Unit Cost	KW-HR per Day	Daily Cost	Annual Cost
	Positive Displacement Blowers (3)	2	40 HP		59.66	kW	\$0.100	1431.7	\$143.17	\$ 104,517
	SBR Mixers (2)	2	7.5 HP		11.19	kW	\$0.100	268.5	\$26.85	\$ 19,597
	SBR Sub. Pumps (2)	2	2.4 HP		3.58	kW	\$0.100	7.2	\$0.72	\$ 523
	Grit Dry-Pump	1	10 HP		7.46	kW	\$0.100	7.5	\$0.75	\$ 272
	Fine Screen Motor	1	2 HP		1.49	kW	\$0.100	6.0	\$0.60	\$ 218
	Influent Pumps	1	20 HP		14.91	kW	\$0.100	357.9	\$35.79	\$ 13,065
	Sludge/Centrate Pumps	1	5 HP		3.73	kW	\$0.100	3.7	\$0.37	\$ 136
			HP		0.00	kW	\$0.100	0.0	\$0.00	\$ -

2082.4 \$ 138,328

Annual Repair / Replacement Cost:										
	Influent/Effluent Flow Meter		2	LS	\$ 8,320	\$ 16,640				
	Influent Pumps		2	EA	\$ 26,000	\$ 52,000				
	Fine Screen		1	LS	\$ 137,280	\$ 137,280				
	Grit Removal Equipment		1	LS	\$ 243,360	\$ 243,360				
	SBR Equipment (includes Inf Valves, Mixers, Decanters, Blowers, Diffusers, WAS pumps, Controls)		1	LS	\$ 592,800	\$ 592,800				
	Automatic Composite Samplers		2	EA	\$ 8,320	\$ 16,640				
	Sludge Storage Mixing		1	LS	\$ 52,000	\$ 52,000				
	Sludge/Centrate Pumps		3	EA	\$ 26,000	\$ 78,000				
	Sludge Thickening Equipment		1	LS	\$ 142,000	\$ 142,000				
	UV Disinfection Equipment		1	LS	\$ 147,000	\$ 147,000				

\$ 73,886

Cost Estimate for Construction of an **Orbal Oxidation Ditch**

Notes:

Please use the weight factor table located to the right of the cost estimate table

⁽¹⁾ Weight factor accounts for City Cost Index Correction, Installation, Location, and/or Contractor Overhead/Profit

⁽²⁾ If possible, identify taxes separately.

Item No.	Item	Division	Quantity	Units	Unit Cost	Installed or Equipment	Weight Factor ⁽¹⁾	Tax ⁽²⁾	Adjusted Unit Cost	Total Cost
PROCESS										
1	Influent/Effluent Flow Meter		2	LS	\$ 8,320	Equipment	1.46		\$ 12,172	\$ 24,344
2	Influent Pumps		2	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 76,076
3	Orbal Oxidation Ditch Equipment		1	LS	\$ 327,600	Equipment	1.46		\$ 479,279	\$ 479,279
4	Grit Removal Equipment		1	LS	\$ 243,360	Equipment	1.46		\$ 356,036	\$ 356,036
5	Fine Screen		1	LS	\$ 137,280	Equipment	1.46		\$ 200,841	\$ 200,841
6	Final Clarifier		2	LS	\$ 237,120	Equipment	1.46		\$ 346,907	\$ 693,813
7	Automatic Composite Samplers		2	EA	\$ 8,320	Equipment	1.10		\$ 9,152	\$ 18,304
8	Sludge Storage Mixing		1	LS	\$ 52,000	Equipment	1.46		\$ 76,076	\$ 76,076
9	Sludge/Centrates Pumps		3	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 114,114
10	RAS/WAS Pumps		3	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 114,114
11	Sludge Thickening Equipment		1	LS	\$ 142,000	Equipment	1.46		\$ 207,746	\$ 207,746
12	UV Disinfection Equipment		1	LS	\$ 147,000	Equipment	1.46		\$ 215,061	\$ 215,061
STRUCTURAL										
13	Concrete Walls and Slabs - Oxidation Ditch, Clarifier		1900.0	CY	\$ 1,100	Installed	1.00		\$ 1,100	\$ 2,090,000
14	Concrete for Below Grade Portion - Headworks Building		400.0	CY	\$ 1,100	Installed	1.00		\$ 1,100	\$ 440,000
15	Structural Excavation & Backfill - Headworks Building		900.0	CY	\$ 60	Installed	1.00		\$ 60	\$ 54,000
16	Structural Excavation & Backfill- Oxidation Ditch, Clarifier		5200.0	CY	\$ 60	Installed	1.00		\$ 60	\$ 312,000
17	Stairway		2	EA	\$ 9,000	Installed	1.00		\$ 9,000	\$ 18,000
18	Handrails		83	LF	\$ 75	Installed	1.00		\$ 75	\$ 6,225
CIVIL										
23	Civil Site Work (15% of Process and Structural)		1	LS	\$ 824,404.28	Installed	1.00		\$ 824,404	\$ 824,404
ARCHITECTURAL										
33	Headworks Building including electrical, RAS/WAS Pumping (60x40) 250\$ sq.ft		2400	SF	\$ 250	Installed	1.00		\$ 250	\$ 600,000
34	Existing Building Selective Demo/Rehab		1	LS	\$ 750,000	Installed	1.00		\$ 750,000	\$ 750,000
Cost Estimate for Construction of an Orbal Oxidation Ditch									Subtotal	\$ 10,375,027

Item No.	Item	Quantity Running	Power	Units	Quantity	Units	Unit Cost	KW-HR per Day	Daily Cost	Annual Cost
	Direct Drive Reducers w/ Motors and Torque Arms	2	10 HP		14.91	kW	\$0.100	357.9	\$35.79	\$ 13,065
	Direct Drive Reducers w/ Motors and Torque Arms	2	20 HP		29.83	kW	\$0.100	715.9	\$71.59	\$ 26,129
	Sludge/Centrates Pumps	1	5 HP		3.73	kW	\$0.100	89.5	\$8.95	\$ 3,266
	Grit Dry-Pump	1	10 HP		7.46	kW	\$0.100	179.0	\$17.90	\$ 6,532
	Fine Screen Motor	1	2 HP		1.49	kW	\$0.100	35.8	\$3.58	\$ 1,306
	Clarifier H30 Motor	2	0.5 HP		0.75	kW	\$0.100	17.9	\$1.79	\$ 653
	Influent Pumps	1	20 HP		14.91	kW	\$0.100	357.9	\$35.79	\$ 13,065
	RAS/WAS Pumps	2	10 HP		14.91	kW	\$0.100	357.9	\$35.79	\$ 13,065

2111.8 \$ 77,082

Annual Repair / Replacement Cost:										
	Influent/Effluent Flow Meter		2	LS	\$ 8,320	\$ 16,640				
	Influent Pumps		2	EA	\$ 26,000	\$ 52,000				
	Orbal Oxidation Ditch Equipment		1	LS	\$ 327,600	\$ 327,600				
	Grit Removal Equipment		1	LS	\$ 243,360	\$ 243,360				
	Fine Screen		1	LS	\$ 137,280	\$ 137,280				
	Final Clarifier		2	LS	\$ 237,120	\$ 474,240				
	Automatic Composite Samplers		2	EA	\$ 8,320	\$ 16,640				
	Sludge Storage Mixing		1	LS	\$ 52,000	\$ 52,000				
	Sludge/Centrates Pumps		3	EA	\$ 26,000	\$ 78,000				
	RAS/WAS Pumps		3	EA	\$ 26,000	\$ 78,000				
	Sludge Thickening Equipment		1	LS	\$ 142,000	\$ 142,000				
	UV Disinfection Equipment		1	LS	\$ 147,000	\$ 147,000				
\$ 88,238										

Cost Estimate for Construction of Tri-Oval Oxidation Ditch

Notes:

Please use the weight factor table located to the right of the cost estimate table

⁽¹⁾ Weight factor accounts for City Cost Index Correction, Installation, Location, and/or Contractor Overhead/Profit

⁽²⁾ If possible, identify taxes separately.

Item No.	Item	Division	Quantity	Units	Unit Cost	Installed or Equipment	Weight Factor ⁽¹⁾	Tax ⁽²⁾	Adjusted Unit Cost	Total Cost
PROCESS										
1	Influent/Effluent Flow Meter		2	LS	\$ 8,320	Equipment	1.46		\$ 12,172	\$ 24,344
2	Influent Pumps		2	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 76,076
3	Tri-Oval Oxidation Ditch Equipment		1	LS	\$ 352,656	Equipment	1.46		\$ 515,935	\$ 515,935
4	Grit Removal Equipment		1	LS	\$ 243,360	Equipment	1.46		\$ 356,036	\$ 356,036
5	Fine Screen		1	LS	\$ 137,280	Equipment	1.46		\$ 200,841	\$ 200,841
6	Final Clarifier		2	LS	\$ 237,120	Equipment	1.46		\$ 346,907	\$ 693,813
7	Automatic Composite Samplers		2	EA	\$ 8,320	Equipment	1.10		\$ 9,152	\$ 18,304
8	Sludge Storage Mixing		1	LS	\$ 52,000	Equipment	1.46		\$ 76,076	\$ 76,076
9	Sludge/Centrates Pumps		3	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 114,114
10	RAS/WAS Pumps		3	EA	\$ 26,000	Equipment	1.46		\$ 38,038	\$ 114,114
11	Sludge Thickening Equipment		1	LS	\$ 142,000	Equipment	1.46		\$ 207,746	\$ 207,746
12	UV Disinfection Equipment		1	LS	\$ 147,000	Equipment	1.46		\$ 215,061	\$ 215,061
STRUCTURAL										
13	Concrete Walls and Slabs - Oxidation Ditch, Clarifier		1600	CY	\$ 1,000	Installed	1.00		\$ 1,000	\$ 1,600,000
14	Concrete for Below Grade Portion - Headworks Building		400	CY	\$ 1,100	Installed	1.00		\$ 1,100	\$ 440,000
15	Structural Excavation & Backfill - Headworks Building		900	CY	\$ 60	Installed	1.00		\$ 60	\$ 54,000
16	Structural Excavation & Backfill - Oxidation Ditch, Clarifier		7100	CY	\$ 60	Installed	1.00		\$ 60	\$ 426,000
17	Stairway		2	EA	\$ 9,000	Installed	1.00		\$ 9,000	\$ 18,000
18	Handrails		80	LF	\$ 75	Installed	1.00		\$ 75	\$ 6,000
CIVIL										
23	Civil Site Work (15% of Process and Structural)		1	LS	\$ 773,469	Installed	1.00		\$ 773,469	\$ 773,469
ARCHITECTURAL										
33	Headworks Building, including electrical, RAS/WAS Pumping (60x40)		2400	SF	\$ 250	Installed	1.00		\$ 250	\$ 600,000
34	Existing Building Selective Demo/Rehab		1	LS	\$ 750,000	Installed	1.00		\$ 750,000	\$ 750,000
MECHANICAL										
43	20% of Process Equipment Cost		1	LS	\$ 522,492	Installed	1.00		\$ 522,492	\$ 522,492
Process Piping										
53	35% of Process Equipment Cost		1	LS	\$ 914,361	Installed	1.00		\$ 914,361	\$ 914,361
ELECTRICAL										
63	50% of Process Equipment Cost		1	LS	\$ 1,306,230	Installed	1.00		\$ 1,306,230	\$ 1,306,230
Cost Estimate for Construction of Tri-Oval Oxidation Ditch									Subtotal	\$ 10,023,012

Item No.	Item	Quantity Running	Power	Units	Quantity	Units	Unit Cost	KW-HR per Day	Daily Cost	Annual Cost
	Aspirating Aerator	1		5 HP	3.73	kW	\$0.100	89.5	\$8.95	\$ 3,266
	Anoxic Basin Mixer	1		10 HP	7.46	kW	\$0.100	179.0	\$17.90	\$ 6,532
	Aerobic Basin Aerators	3		20 HP	44.74	kW	\$0.100	1073.8	\$107.38	\$ 39,194
	Aerobic Basin Blower	3		4 HP	8.95	kW	\$0.100	214.8	\$21.48	\$ 7,839
	Sludge/Centrates Pumps	1		5 HP	3.73	kW	\$0.100	89.5	\$8.95	\$ 3,266
	Grit Dry-Pump	1		10 HP	7.46	kW	\$0.100	179.0	\$17.90	\$ 6,532
	Fine Screen Motor	1		2 HP	1.49	kW	\$0.100	35.8	\$3.58	\$ 1,306
	Clarifier H30 Motor	2		0.5 HP	0.75	kW	\$0.100	17.9	\$1.79	\$ 653
	Influent Pumps	1		20 HP	14.91	kW	\$0.100	357.9	\$35.79	\$ 13,065
	RAS/WAS Pumps	2		10 HP	14.91	kW	\$0.100	357.9	\$35.79	\$ 13,065

1879.2 \$ 94,719

Annual Repair / Replacement Cost:					
Influent/Effluent Flow Meter	0	2	LS	\$ 8,320	\$ 16,640
Influent Pumps	0	2	EA	\$ 26,000	\$ 52,000
Tri-Oval Oxidation Ditch Equipment	0	1	LS	\$ 352,656	\$ 352,656
Grit Removal Equipment	0	1	LS	\$ 243,360	\$ 243,360
Fine Screen	0	1	LS	\$ 137,280	\$ 137,280
Final Clarifier	0	2	LS	\$ 237,120	\$ 474,240
Automatic Composite Samplers	0	2	EA	\$ 8,320	\$ 16,640
Sludge Storage Mixing	0	1	LS	\$ 52,000	\$ 52,000
Sludge/Centrates Pumps	0	3	EA	\$ 26,000	\$ 78,000
RAS/WAS Pumps	0	3	EA	\$ 26,000	\$ 78,000
Sludge Thickening Equipment	0	1	LS	\$ 142,000	\$ 142,000
UV Disinfection Equipment	0	1	LS	\$ 147,000	\$ 147,000
				\$	89,491

Appendix F

Endangered Resources Preliminary Assessment

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Endangered Resources Preliminary Assessment

Created on **1/26/2023**. 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 next steps.

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>) **provided that the follow-up actions below are implemented**. 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 only the actions listed below need to be followed to comply with state and/or federal endangered species laws, any take that may result from the proposed project is permitted/authorized for state-listed species.

Follow up actions:

The Bald Eagle (*Haliaeetus leucocephalus*) is Federally protected by the Bald & Golden Eagle Protection Act. An eagle nest has been recorded within 1 mile of the project area. Visit the USFWS Bald Eagle Management website (<https://fws.gov/story/do-i-need-eagle-take-permit>) for detailed guidelines and conservation measures for your specific project activity.

Visiting the website and following USFWS guidance will satisfy the project's Endangered Resources requirements.

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	City of Amery
Project address	100 Valley Street, Amery, WI 54001
Project description	Improvements at existing WWTP site including removal of existing oxidation ditch, remodel of existing control building and adjacent clarifier/tank, and construction of new headworks and sequencing batch reactor structures.

Project Questions

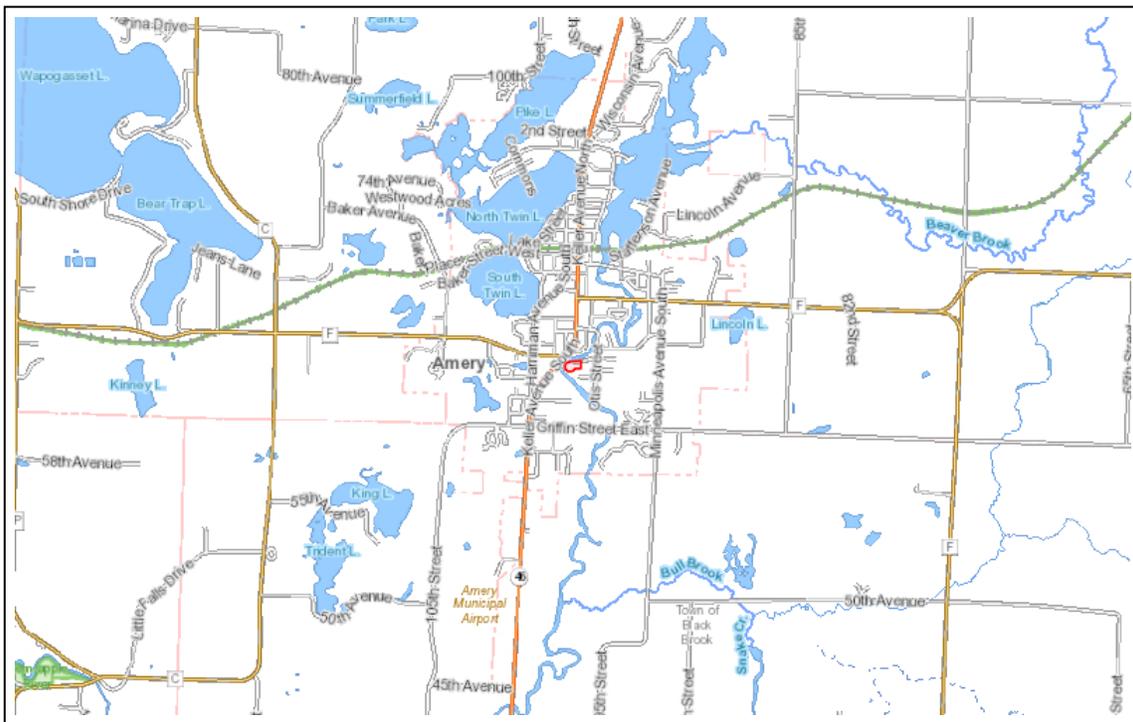
Does the project involve a public property?	Yes
Is there any federal involvement with the project?	Yes
Is the project a utility, agricultural, forestry or bulk sampling (associated with mining) project?	Yes
Is the project property in Managed Forest Law or Managed Forest Tax Law?	No
Project involves tree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

Public Portal ID: **81LaphUy1**

1/26/2023, 10:13:23 AM

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



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://dnrx.wisconsin.gov/nhiportal/public>

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Appendix G

Public Hearing Information

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NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN to all persons in the City of Amery that a public hearing will be held on Wednesday, January 18, 2023, at the Amery City Center, 104 Maple Street West, immediately following the Committee of the Whole Meeting, to inform the public and to solicit comments on the Wastewater Treatment Plant (WWTP) Facility Plan.

The Amery WWTP was originally constructed in over fifty years ago. Due to the age and condition of the WWTP, upgrades are needed for the WWTP to remain in compliance. The City's recommendation is to upgrade all portions of the treatment plant and locate the upgrade adjacent to the existing WWTP.

NOTICE IS FURTHER GIVEN that a Draft copy of the WWTP Facility Plan is available for viewing after Tuesday January 3, 2023, during business hours at the City Hall and on the City of Amery's website www.amerywi.gov.

WNAXLP

AMERY SPECIAL CITY COUNCIL PROCEEDINGS
January 18th, 2023

The Amery City Council met on January 18th, 2023 at the Amery City Center. Council President, Sarah Flanum called the meeting to order at 6:21 P.M.

Roll Call: City Clerk-Treasurer, Jansen conducted roll call.

Present: Mayor, Chad Leonard (Zoom); Council President, Sarah Flanum; and Alderpersons; Sharon Marks; Eric Elkin; Mike Manor; Mykaela Thompson; and Rick Van Blaricom.

Staff Present: City Administrator, Patty Bjorklund; Clerk-Treasurer, Ben Jansen; Deputy Clerk-Treasurer, Taylor Larson; Interim Police Chief, Jason Hickok; Fire Chief, Chuck Frohn; Library Director, Heather Wiarda and Public Works Director, Jeff Mahoney.

New Business

- 1. Public Hearing – Wastewater Treatment Plant Design** – Jeremiah Wendt from S.E.H. gave a presentation about the proposed treatment plant design.

Motion by Alderperson, Elkin; seconded by Alderperson, Manor; to open the Public Hearing at 6:55 P.M.

Roll Call Vote

Ayes – Marks, Van Blaricom, Thompson, Leonard, Flanum, Manor, Elkin.

Nays – None

Motion Carried.

No comment was heard from the public about the treatment plant design.

Motion by Alderperson, Elkin; seconded by Alderperson, Thompson; to go close the Public Hearing at 6:57 P.M.

Roll Call Vote

Ayes – Marks, Van Blaricom, Thompson, Leonard, Flanum, Manor, Elkin.

Nays – None

Motion Carried.

Motion by Alderperson, Elkin; seconded by Alderperson, Marks; to approve the proposed Wastewater Treatment Plant Design.

Ayes – 6

Nays – 0

Motion Carried.

Resolution 01-2023 – Resolution Providing for the Sale of Approximately \$5,000,000 Sewerage System Revenue Bond Anticipation Notes – Justin Fischer from Baird Capital was present on Zoom to give a brief overview of the borrowing schedule and purpose of the bond.

Motion by Alderperson, Elkin; seconded by Alderperson, Thompson; to approve Resolution 01-2023 as written.

Ayes – 6

Nays – 0

Motion Carried.

Pay Application #5 for S. Industrial Park – This item was previously approved at Committee of the Whole and is now being brought forward for full approval.

Motion by Alderperson, Van Blaricom; seconded by Alderperson, Manor, to approve Pay Application #5 as written.

Ayes – 6

Nays – 0

Motion Carried.

Motion by Alderperson, Manor; seconded by Alderperson, Thompson; to adjourn at 7:17 P.M.

Ayes – 6

Nays – 0

Motion carried.

Respectfully submitted,

Ben Jansen, MPA
Clerk-Treasurer
January 20th, 2023.

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