BOLTON & MENK

Real People. Real Solutions.

June 2020

Wastewater Treatment Facility Plan

Grand Meadow, Minnesota

M24.119536

Submitted by:
Bolton & Menk, Inc.
2900 43rd Street NW
Suite 100
Rochester, MN 55901
P: 507-208-4332
F: 507-208-4155

Certification

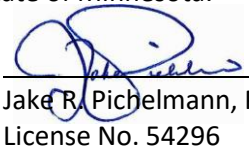
Wastewater Treatment Facility Plan

For

City of Grand Meadow, Minnesota
M24.119536

June 2020

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: 

Jake R. Pichelmann, P.E.
License No. 54296

Date: 06/15/2020

Table of Contents

Figures

Tables

Appendix

Page Intentionally Left Blank

I. INTRODUCTION

A. PURPOSE

This report provides the City of Grand Meadow, Minnesota with recommendations for wastewater treatment facility (WWTF) improvements to address the existing undersized infrastructure and future treatment requirements. Recommendations are based on input from City staff, a visual inspection of the infrastructure, and an evaluation of facility requirements in accordance with the current recommended practices. City officials are encouraged to use the information in this report to make informed decisions on future improvements to the Grand Meadow wastewater treatment system.

B. BACKGROUND

The Grand Meadow wastewater treatment facility is a stabilization pond system that was originally constructed in 1972 and is designated as a Class D treatment facility. The system consists of a primary and secondary pond cell with respective surface areas of 9.2 acres and 6.4 acres. The conveyance system consists of three lift stations with approximately 4,375 feet of force main and 34,000 feet (6.44 miles) of gravity sewer. The facility control discharges treated effluent to Deer Creek (SD002) in accordance with the National Pollution Discharge Elimination System (NPDES) Permit No. MN0023558. Deer Creek is designated as a Class 2B surface water.

Over the past 48 years, the existing facility has provided adequate treatment to meet NPDES discharge requirements. It should be noted however that the existing stabilization ponds are undersized, taking into consideration the average monthly flow from January of 2014 to October of 2019. It was found that 32 months had a flow greater than the design flow of 0.120 MGD.

The City of Grand Meadow has had ongoing issues with excessive infiltration and inflow (I&I) into their sanitary collection system during periods of high groundwater conditions and major rain events. The entry of clear water into the system can have negative impacts on treatment performance at the stabilization ponds. Excessive wastewater flows reduce the pond detention time and may require operators to discharge outside the acceptable periods specified by the MPCA. It may also result in the discharge of untreated pollutants that exceed permit limits.

In terms of condition, much of the existing equipment and mechanical components at the influent lift station are past their expected useful life and in need of replacement or rehabilitation. There is also the potential for more stringent treatment requirements for nutrients (i.e. nitrogen and phosphorus) over the next few permitting cycles, which the existing facility is not equipped to meet. In order to be proactive, the City of Grand Meadow has retained Bolton & Menk, Inc. to develop this Wastewater Facility Plan Report to explore alternatives that improve the existing system and provide the City a long-term solution for wastewater treatment.

C. REPORT ORGANIZATION

This report is organized into seven sections to adequately address the existing facility and proposed improvements. Section I is the introduction; Section II provides an analysis of current and future design criteria; Section III provides an evaluation of the existing wastewater facility and condition assessment; Section IV discusses the need for a project; Section V includes the alternatives considered and the associated cost analysis; Section VI covers recommendations, based on the cost analysis and project needs; and Section VII concludes the report.

Page Intentionally Left Blank

II. DESIGN CONDITIONS

A. GENERAL

The customers served by the existing facility and proposed treatment alternatives includes residents and businesses throughout the City of Grand Meadow in Mower County, Minnesota. Figure 2.1 illustrates the project planning area encompassed by this report and the improvements discussed herein.

Wastewater treatment facilities are typically designed based on a 20-year planning period, as it is generally not feasible to make frequent changes in the capacity of a wastewater treatment facility. In addition, a 20-year planning period is required for the project to be eligible for funding assistance with the MN Public Facilities Authority (PFA). For this evaluation a design year of 2040 will be used. Projected wastewater flows and loadings are determined using a combination of population trends and historical per capita flow and loading values.

B. POPULATION PROJECTIONS

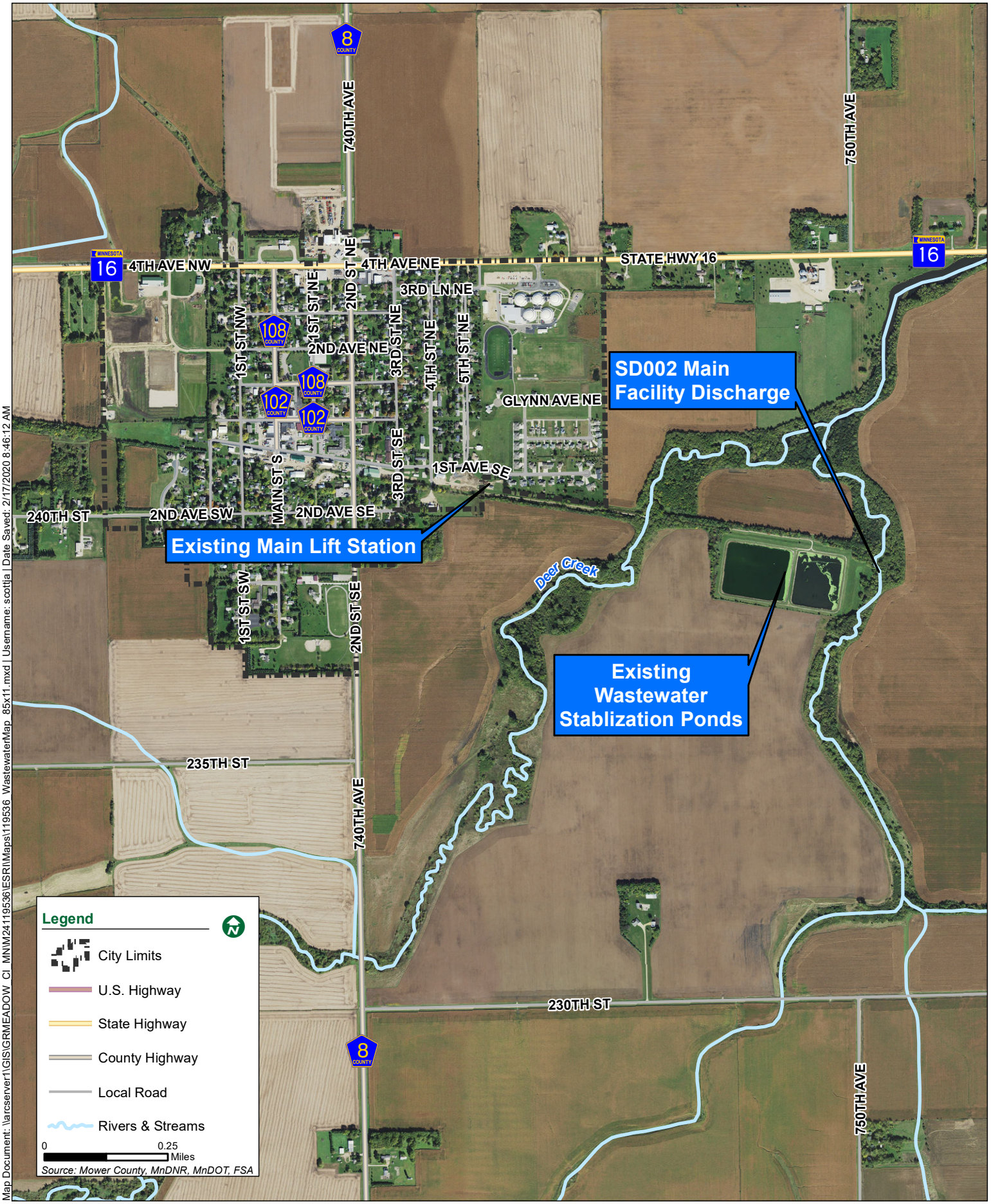
There are several methods available for predicting population trends for cities such as Grand Meadow. Historical city and county population trends are reviewed. Future trends can be predicted using a variety of mathematical projections including arithmetic, geometric, and linear regression methods. Additionally, the Minnesota State Demographic Center (SDC) publishes projection for all counties in Minnesota. The most recent projection by the SDC was completed in March 2017.

Tables 2.1 and Figure 2.2 show historical and projected population trends for the City of Grand Meadow and Mower County. The SDC projects the population of Mower County to decrease slightly over the design period. Historically, the City of Grand Meadow's population has increased by 28% between the years 2000 to 2018, equating to a roughly 1.6% annual increase in population. Based on discussions with city staff, Grand Meadow is expecting a continued annual growth of 1% through the 20-year design period. The selected 2040 design population used for analysis is 1,507.

Table 2.1 – Historical Population Data

Year	City of Grand Meadow	Mower County
2000	945	38,603
2005	935	38,965
2010	1,139	39,163
2015	1,164	39,181
2018	1,211	40,017
2020	1,235	38,999
2025	1,298	38,587
2030	1,365	38,062
2035	1,434	37,476
2040	1,507	36,836

Figure 2.1 - Grand Meadow Wastewater Facilities



Map Document: \\arcserver1\GIS\GRMEADOW_CI_MN\M24119536\ESRI\Maps\119536_WastewaterMap_85x11.mxd | Username: scottia | Date Saved: 2/17/2020 8:46:12 AM

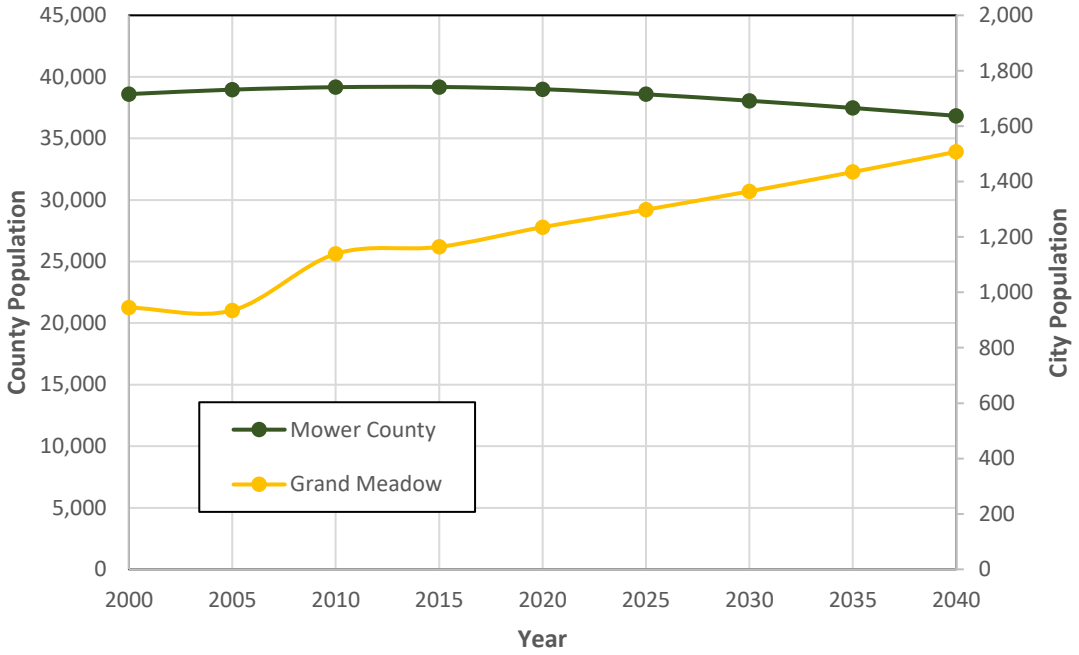


Figure 2.2 – City and County Population Projections

C. HISTORICAL FLOWS AND LOADINGS

1. Influent Flow Monitoring

The City of Grand Meadow records daily influent flows in monthly Discharge Monitoring Reports (DMRs) as required by the facility's NPDES permit. The recorded flows are used to evaluate current flow trends and develop future flow projections. A summary of average daily and monthly flows for the past six years is presented in Table 2.2. Figure 2.3 shows average daily and maximum flow trends over the same time frame. All monthly flow values which exceeded the average wet weather (AWW) design flow of the existing facility are bolded and italicized in Table 2.2, which consists of 32 months in the past six years (or 46 percent of all months). See the discussion following the table for more about these values.

Over the past six years, average annual flow has ranged from 0.103 MGD to 0.205 MGD, with no notable overall trend toward an increase or decrease in average flow. Seasonal spikes in flow are apparent between the months of March, April, May, and June. These seasonal spikes are correlated with an increase in precipitation, indicating infiltration and inflow is an issue in the collection system. Figure 2.4 shows monthly precipitation.

The MPCA has developed guidelines to provide a comprehensive and systematic approach to analyze I&I. These guidelines were used to determine if I&I is considered excessive in the City of Grand Meadow's wastewater collection system. The following are definitions of inflow and infiltration as provided by the MPCA guidelines:

- *Inflow* – water other than wastewater that enters a sewer system directly from sources such as roof leaders, foundation drains, yard drains, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, storm water runoff and other drainage structures.
- *Infiltration* – water other than wastewater that enters the sewer system from the ground through defective pipe, pipe joints and manholes.

- *Excessive Inflow* – Inflow is excessive if the quantity of flow during storm events that results in chronic operation problems related to hydraulic overloading of the treatment system or that results in a total flow of more than 275 gpcd (domestic and industrial base flow plus infiltration and inflow). Chronic operational problems may include surcharging, backups, bypasses, and overflows. The flow during storm events was determined using the maximum 30-day average flow over the past six years. September 2016 was selected. The population used in the per capita calculation is the 2016 State Demographic Center estimate of 1,175.

  400,000 gpd/1,175 people = 340 gpcd (excessive)

- *Excessive infiltration* – Infiltration is excessive if the quantity of flow is more than 120 gpcd (domestic base flow and infiltration). The year 2016 was selected. The population used in the per capita calculation is the 2016 State Demographic Center estimate of 1,175. The quantity of flow was determined using the annual average flow over the year 2016.

  163,000 gpd/1,175 people=139 gpcd (excessive)

Table 2.2 – Historical Wastewater Flow Grand Meadow, Minnesota														
	2014		2015		2016		2017		2018		2019		6-year	
Month	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)
January	0.050	0.060	0.060	0.070	0.090	0.120	0.120	0.170	0.070	0.100	0.110	0.150	0.083	0.112
February	0.090	0.480	0.060	0.060	0.090	0.160	**0.190**	0.650	0.060	0.070	0.090	0.160	0.097	0.263
March	0.080	0.180	0.080	0.110	**0.180**	0.320	**0.300**	0.630	0.080	0.100	**0.190**	0.410	0.152	0.292
April	**0.220**	0.450	**0.200**	0.510	**0.190**	0.380	**0.260**	0.420	**0.130**	0.190	**0.300**	0.420	0.217	0.395
May	**0.260**	0.540	**0.170**	0.230	**0.140**	0.180	**0.230**	0.330	**0.230**	0.420	**0.360**	0.880	0.232	0.430
June	**0.230**	0.840	**0.150**	0.230	0.120	0.160	**0.140**	0.190	**0.200**	0.410	**0.270**	0.640	0.185	0.412
July	**0.140**	0.280	0.100	0.150	0.110	0.220	0.110	0.220	**0.130**	0.180	0.100	0.200	0.115	0.208
August	0.060	0.090	0.080	0.120	0.120	0.180	0.090	0.110	0.080	0.100	0.100	0.240	0.088	0.140
September	0.080	0.110	0.090	0.150	**0.400**	1.400	0.070	0.080	**0.140**	0.290	**0.160**	0.570	0.157	0.433
October	0.080	0.110	0.060	0.080	**0.210**	0.360	0.100	0.160	**0.220**	0.320	**0.370**	1.000	0.173	0.338
November	0.070	0.080	0.070	0.090	**0.160**	0.270	0.080	0.090	**0.150**	0.210	--	--	0.106	0.270
December	0.060	0.070	0.110	0.210	**0.140**	0.190	0.070	0.080	0.120	0.210	--	--	0.100	0.210
Yearly Average/Max	**0.118**	**0.840**	**0.103**	**0.510**	**0.163**	**1.400**	**0.147**	**0.650**	**0.134**	**0.420**	**0.205**	**1.000**	**0.142**	**0.433**

(1) All the values that are bolded exceed the treatment facility's AWW design flows

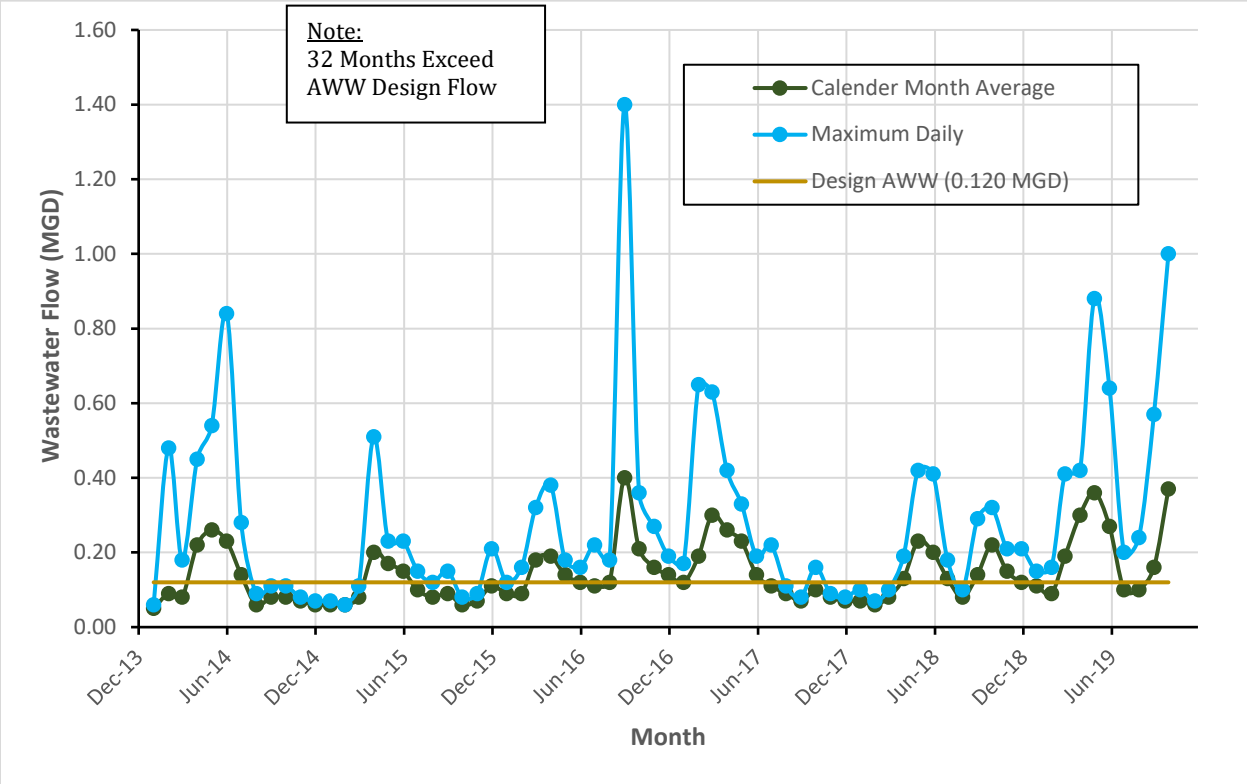


Figure 2.3 – Historical Wastewater Flows

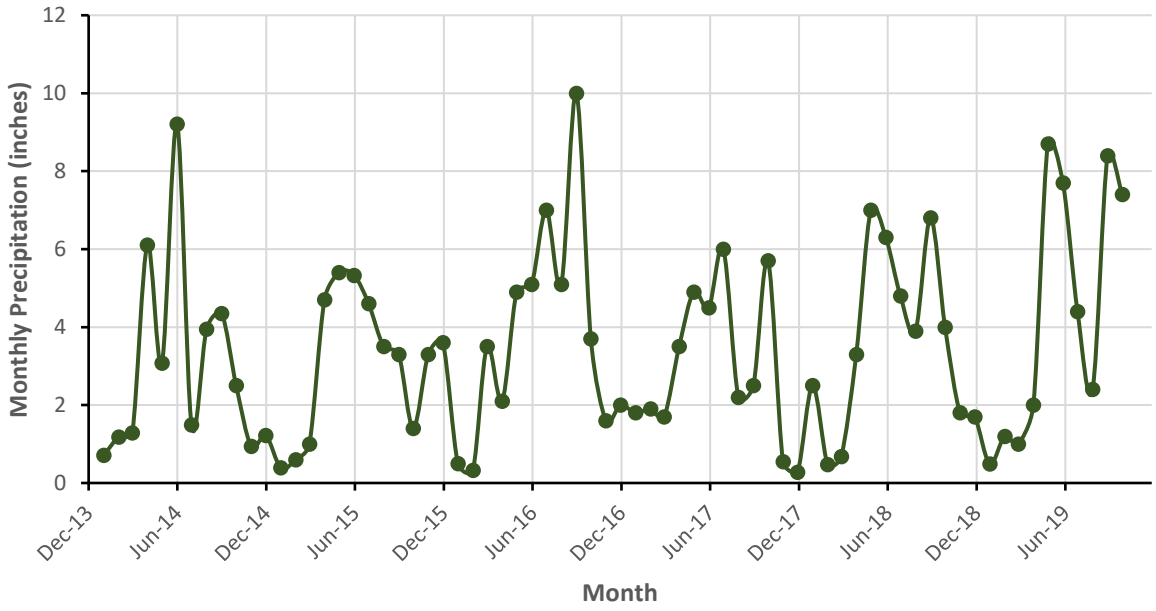


Figure 2.4 – Historical Monthly Precipitation

According to the MPCA criteria, inflow and infiltration is considered excessive in Grand Meadow's wastewater collection system. This is a common problem for many municipalities in Minnesota and is largely attributed to the City's aging and deteriorating collection system infrastructure. It has potential implications on wastewater treatment, especially concerning excessive inflow during storm events that may hydraulically overload the collection system and impact treatment performance. Based on Figure 2.3, the average wet weather design flow of the facility has been exceeded regularly in the past six years during periods of heavy precipitation (spring, summer, and early fall).

In order to reduce infiltration and inflow, the first step is to identify the source(s) of the issue. There are several methods available, including the following:

- *Residential/Commercial sump pump and foundation drain inspections* – involves taking an inventory of all residential sump pump and drain tile installation to verify non-discharge directly into the sanitary sewer system.
- *Smoke testing* – identifies sources of inflow and infiltration by setting up a blower and pumping a non-toxic, pressurized smoke through sewer mains and residential lines. The smoke helps identify any leaks or cross-connections in the sanitary sewer system.
- *Dye testing* – identifies sources of inflow by adding an NSF-approved tracing dye to potential cross-connections (storm sewer, foundation drains, etc.) to verify whether any specific drains flow to the sanitary sewer system.
- *Sewer televising* – identifies sources of inflow and infiltration by taking camera footage of the interior sanitary sewer piping. The camera footage helps identify broken or defective piping, offset joints, and potential cross-connections.
- *Manhole inspections* – involves taking an inventory of all sanitary manholes throughout the collections system to identify leaking joints, covers, and other installation or age-related issues.

2. Load Monitoring Data

The City of Grand Meadow monitors influent wastewater pollutant loadings at sample station WS 001 as required by the facility's NPDES discharge permit. The pollutant parameters include 5-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), total phosphorus (TP), total nitrogen (TN), total Kjeldahl nitrogen (TKN), total nitrite plus nitrate, and pH. A summary of historical monitoring data (January 2014 to September 2019) for $CBOD_5$, TSS, TN, and TP is presented in Table 2.3. Figures 2.5, 2.6, and 2.7 illustrate monthly fluctuations for $CBOD_5$, TSS, and TP, respectively.

The following is a short discussion on each pollutant parameter concerning historical monitoring trends:

- *$CBOD_5$:* Since January 2014, the average $CBOD_5$ concentration has been 127 mg/L, this is slightly below the design average concentration of 160 mg/L as outlined in the City's NPDES permit, although this value has been exceeded on individual months. The historical average $CBOD_5$ mass loading is 112 lbs/day. On a year-to-year basis, influent $CBOD_5$ concentration and loadings has seen no upward or downward trend.
- *TSS:* Influent TSS concentration has averaged 135 mg/L, with an average mass loading of 124 lbs/day. There has not been a notable increasing or decreasing trend for TSS loading in the past six years, and the existing facility does not have any design criteria for TSS.

- *Total Phosphorus:* Influent total phosphorus has averaged 6.23 mg/L, with an average mass loading of 5.97 lbs/day. There has not been a notable increasing or decreasing trend for phosphorus loading in the past six years, and the existing facility does not have any design criteria for total phosphorus.
- *Nitrogen:* The existing NPDES permit calls for the monitoring of TN, TKN, and total nitrite plus nitrate. The DMR data pertaining to these parameters only consists of four data points between June of 2018 and September of 2019. The average influent concentration and mass loadings for TN, TKN and total nitrite plus nitrate are respectively as follows:
    - TN: 31.33 mg/L, 40.03 lbs/day
    - TKN: 29.33 mg/L, 39.77 lbs/day
    - N+N: 1.72 mg/L, 2.92 lbs/day

The existing facility does not have any design criteria pertaining to Nitrogen species.

- *Pollutant Loading Rates:* Common per capita design loading rates for domestic wastewater, given by the Recommended Standards for Wastewater Facilities – 2014 Edition (commonly known as Ten State Standards), are the following rates:
    - 0.17-0.22 lbs. $CBOD_5$/capita/day
    - 0.20-0.25 lbs. TSS/capita/day
    - 0.036-0.046 lbs. TKN/capita/day
    - A common loading range for total phosphorus, according to Metcalf & Eddy (2013), is 0.003 to 0.010 lbs. TP/capita/day

Table 2.3 shows the average loading rates for Grand Meadow's wastewater based on historical monitoring data, which includes all residential, commercial, and industrial sources.

Table 2.3 – Historical Wastewater Loading
Grand Meadow, MN

Parameter	Unit	2014	2015	2016	2017	2018	2019	6-Year Average	Quarterly Max
Average Flow	MGD	0.118	0.103	0.163	0.147	0.134	0.205	0.142	--
$CBOD_5$	mg/L	141	148	77	244	93	63	127	248
	lbs/day	114	121	104	202	87	45	112	208
	lbs/capita/day	0.098	0.104	0.089	0.170	0.072	0.038	0.095	0.175
TSS	mg/l	155	183	85	169	144	73	135	312
	lbs/day	126	145	118	160	143	55	124	208
	lbs/capita/day	0.109	0.124	0.101	0.135	0.118	0.046	0.105	0.179
Total Phosphorus	mg/l	8.57	8.40	4.63	7.20	4.85	3.73	6.23	14.00
	lbs/day	6.86	6.98	7.01	7.27	5.00	2.71	5.97	11.26
	lbs/capita/day	0.0059	0.0060	0.0060	0.0061	0.0041	0.0023	0.0051	0.0095

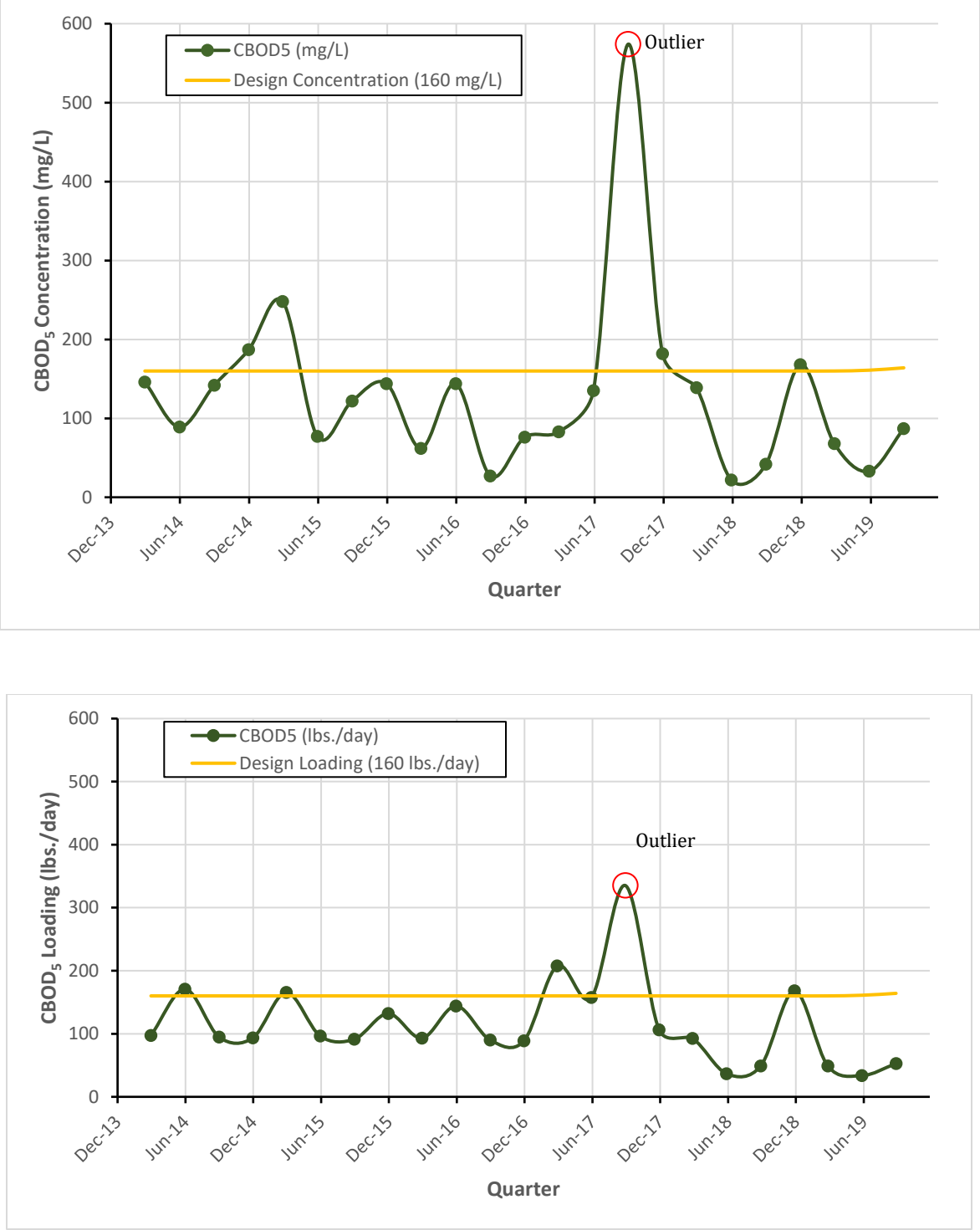
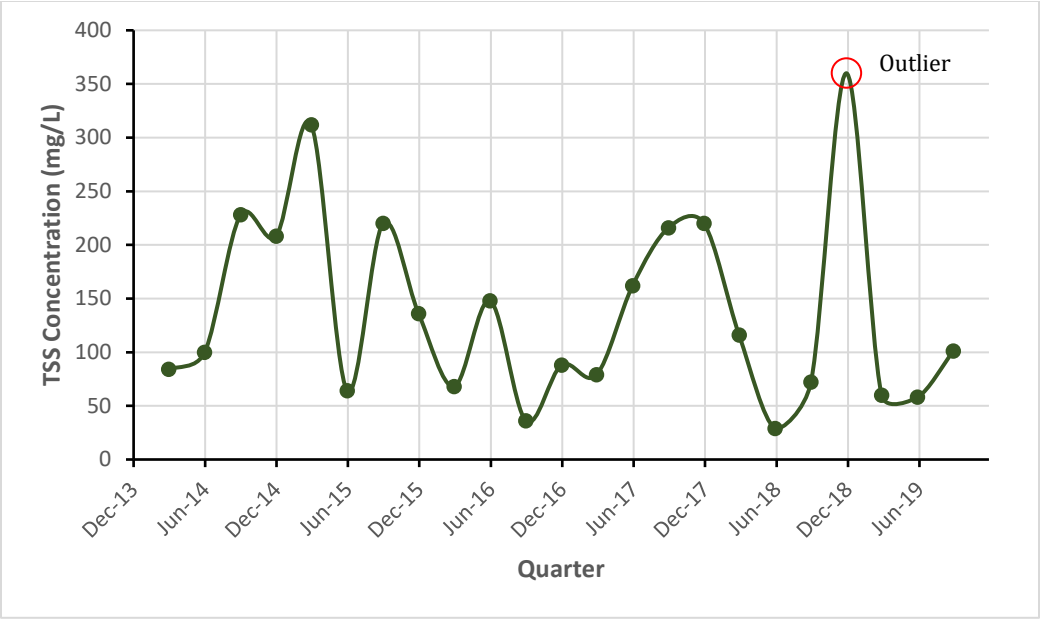


Figure 2.5 – Historical Influent $CBOD_5$ Concentration (A) and Mass Loading (B) at Wastewater Treatment Facility



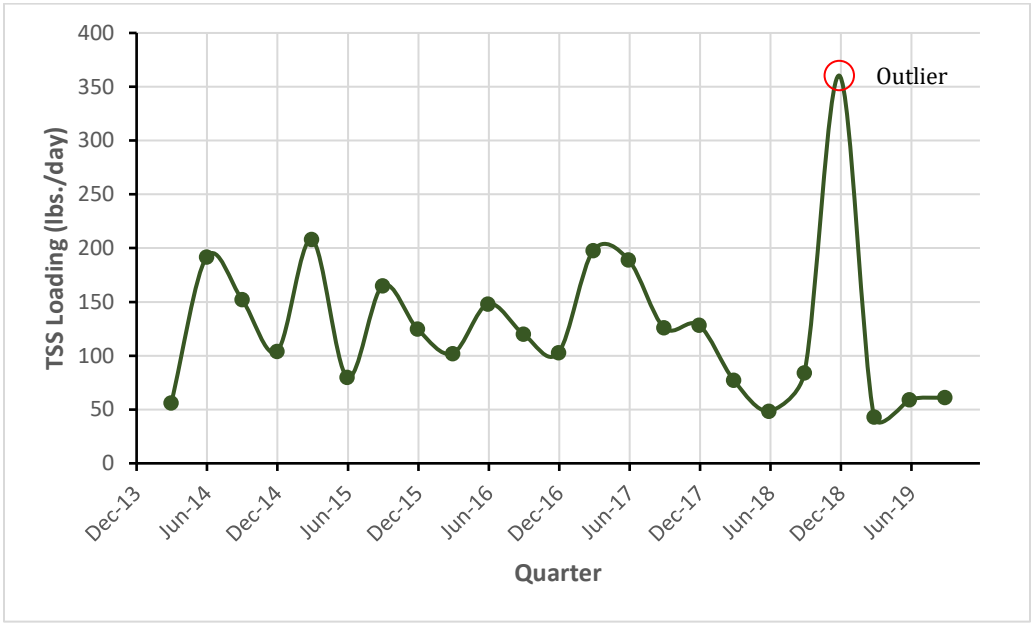
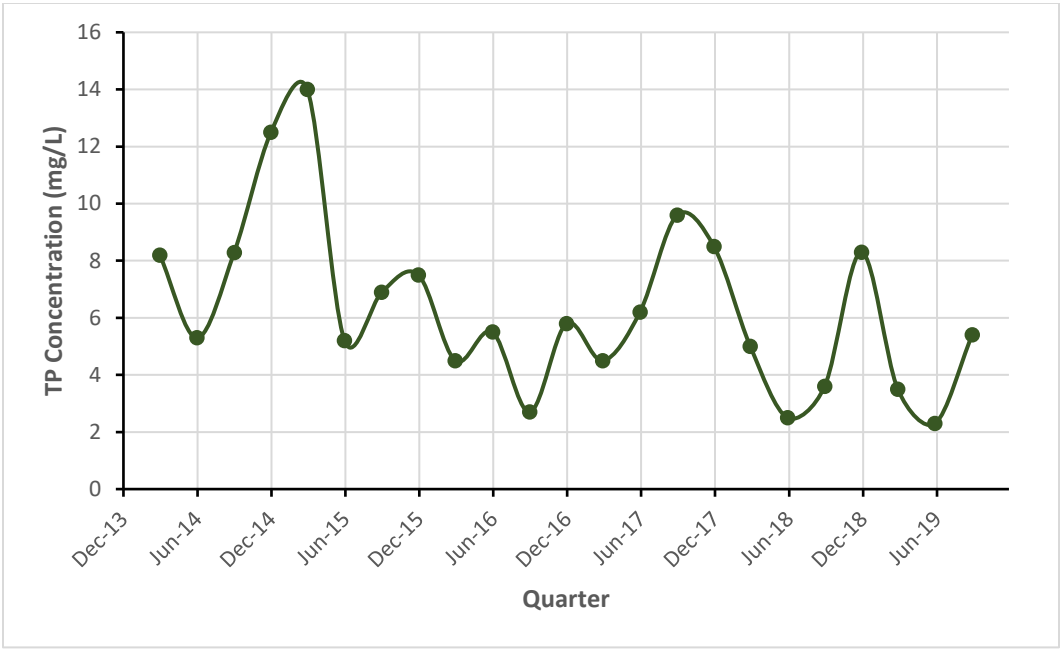


Figure 2.6 – Historical Influent TSS Concentration (A) and Mass Loading (B) at Wastewater Treatment Facility



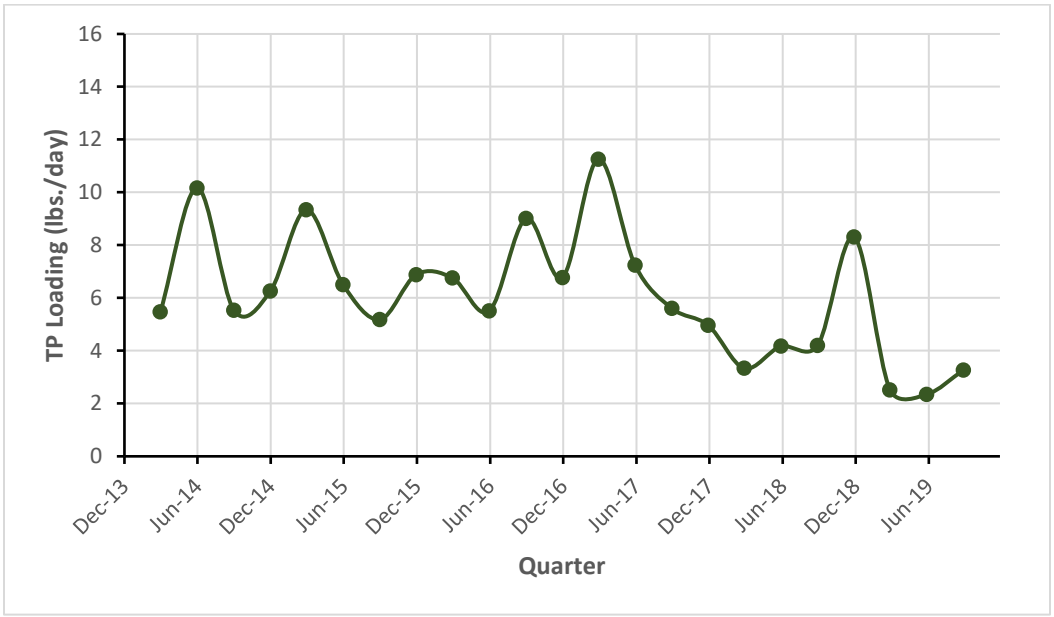


Figure 2.7 – Historical Influent TP Concentration (A) and Mass Loading (B) at Wastewater Treatment Facility

D. DESIGN FLOWS AND LOADINGS

The design flows and pollutant loadings are based on historical raw wastewater monitoring data, population projections, and industrial allocations.

1. Design Flows

The MPCA has guidelines for determining design wastewater flows for new or expanded treatment facilities. Flow projections are developed for different climatic conditions as described below.

- *Average Dry Weather (ADW) Flow* – the daily average flow when the groundwater is at or near normal and a runoff condition is not occurring.
- *Average Wet Weather (AWW) Flow* – the daily average flow for the wettest 30 consecutive days for mechanical plants or for the wettest 180 consecutive days for controlled discharge pond systems. The 180 consecutive days for pond systems should be based on either the storage period from approximately November 15 through May 15 or the storage period from approximately May 15 through November 15.
- *Peak Hourly Wet Weather (PHWW)* – the peak flow during the peak hour of the day at a time when the groundwater is high, and a five-year one-hour storm event is occurring.
- *Peak Instantaneous Wet Weather (PIWW)* – the peak instantaneous flow during the day at a time when the ground water is high, and a twenty-five year one-hour storm event is occurring.

The flow parameters described above are determined by following the procedures outlined in the MPCA document "Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants." Based on these guidelines, a detailed breakdown of the design flow analysis for the City of Grand Meadow's municipal treatment facility is presented in Table 2.4.

Table 2.4 – Determination of 20-Year Design Flows				
A)	**For Determination of Peak Hourly Wet Weather Design Flow (PHWW)**		**gpd**	**gpd**
1	Present peak hourly dry weather flow		299,600	299,600
2	Present peak hourly flow during high ground water period (no runoff)		572,000	572,000
3	Present peak hourly dry weather flow [same as (1)]	-	299,600	299,600
4	Present peak hourly infiltration	=	272,000	272,000
5	Present hourly flow during high ground water period and runoff at point of greatest distance between Curves Y and Z		N/A	N/A
6	Present hourly flow during high ground water (no runoff) at same time of day as (5) measurement	-	N/A	N/A
7	Present peak hourly flow	=	N/A	N/A
8	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event		297,600	297,600
9	Present peak hourly infiltration [same as (4)]		272,400	272,400
10	Peak hourly infiltration cost effective to eliminate	-	0	0
11	Peak hourly infiltration after rehabilitation (where rehabilitation is cost effective)	=	272,400	272,400
12	Present Peak hourly adjusted inflow [same as (8)]		297,600	297,600
13	Peak hourly inflow cost effective to eliminate	-	0	0
14	Peak hourly inflow after rehabilitation (where rehabilitation is cost effective)	=	297,600	297,600
15	Population increase of 296 @ 100 gpcd		74,000	74,000
16	Peak hourly flow from planned industrial increase		0	0
17	Estimated peak hourly flow from future unidentified industries		0	0
18	Peak hourly flow from other future increases		0	0
19	Peak hourly wet weather design flow [(1)+(11)+(14)+(15)+(16)+(17)+(18)]		***943,600***	***943,600***
B)	**For Determination of Peak Instantaneous Wet Weather Design Flow (PIWW)**		**gpd**	**gpd**
20	Peak hourly wet weather design flow [same as (19)]		943,600	943,600
21	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event [same as (8)]	-	297,600	297,600
22	Present peak inflow adjusted for a 25-year 1-hour rainfall event	+	432,726	432,726
23	Peak instantaneous wet weather design flow	=	***1,078,726***	***1,078,726***
C)	**For Determination of Average Dry Weather Design Flow (ADW)**		**gpd**	**gpd**
24	Present average dry weather flow		80,000	80,000
25	Population increase of 296 @ 100 gpcd	+	29,600	29,600
26	Average flow from planned industrial increase	+	0	0
27	Estimated average flow from other future unidentified industries	+	0	0
28	Average flow from other future increases	+	0	0
29	Average dry weather design flow [(24)+(25)+(26)+(27)+(28)]	=	***109,600***	***109,600***
D)	**For Determination of Average Wet Weather Design Flow (AWW)**		**gpd[(1)]**	**gpd[(2)]**
30	Present average dry weather flow		80,000	80,000
31	Average infiltration and inflow after rehabilitation (where rehabilitation is cost effective)	+	220,000	120,000
33	Population increase of 296 @ 100 gpcd	+	29,600	29,600
34	Average flow from planned industrial increase	+	0	0
35	Estimated average flow from future unidentified industries	+	0	0
36	Average flow from other future industries	+	0	0
37	30-day average wet weather design flow [(30)+(31)+(32)+(33)+(34)+(35)+(36)]	=	***329,600***	***229,600***

(1) 30-day AWW Design Flow (2) 180-day AWW Design Flow

2. Design Loadings

The City of Grand Meadow's wastewater treatment facility receives pollutant loading contributions from residential and commercial users.

a) Residential and Commercial Design Loadings

Design loadings from residential and commercial users are calculated by determining mass per capita (e.g. lbs/capita/day) values for $CBOD_5$, TSS, TKN, and total phosphorus. As previously discussed, common per capita design loading rates given by the Recommended Standards for Wastewater Facilities – 2014 Edition, are 0.17-0.22 lbs. $CBOD_5$/capita/day, 0.20-0.25 lbs. TSS/capita/day, and 0.036-0.046 lbs. TKN/capita/day. A common loading range for total phosphorus, according to Metcalf & Eddy (2013), is 0.003 to 0.010 lbs. TP/capita/day.

Residential and commercial design loadings are characterized by using the historical maximum quarterly values summarized in Table 2.3. Grand Meadow has been within the typical design loading range for most pollutants. TSS is an exception to this, which has historically been lower than the typical range. TKN and total phosphorus are on the upper end of their respective ranges. Table 2.5 summarized 20-year design loadings for residential and commercial users in Grand Meadow.

Table 2.5 – Residential and Commercial Design Loadings

Parameter	Per Capita Design Loading	Design Loadings
Design Population	--	1,507
$CBOD_5$,	0.18 lbs/capita/day (1)	271
TSS	0.18 lbs/capita/day (1)	271
TKN	0.046 lbs/capita/day (1)	69
TP	0.0095 lbs/capita/day(1)	14.3

(1) Design value based on historical monitoring data for maximum quarter.

b) Industrial Design Loadings

Currently, the City of Grand Meadow has no industrial users. Based on discussions with City staff, Grand Meadow is not anticipating any industrial users over the 20-year design period, therefore, no industrial loadings will be accounted for in the design.

c) Summary of Design Criteria

Table 2.6 summarizes the 20-year design flows and loadings to the Grand Meadow Wastewater Treatment Facility. These values will be used in subsequent sections to evaluate the existing treatment systems and to determine the necessary improvement alternatives.

Table 2.6 – Summary of Design Parameters			
Parameter	**Historical Monitoring**	**Existing Design**	**2040 Design**
Design Flow (MGD)			
ADW	0.080	--	0.110
180-Day AWW	0.200	0.120	0.230
30-Day AWW	0.300	--	0.330
PHWW	--	--	0.944
PIWW	--	--	1.079
Design Loading (lbs/day)			
$CBOD_{5,}$	208	160	271
TSS	208	--	271
TKN	56	--	69
TP	11.3	--	14.3

Page Intentionally Left Blank

III. EXISTING WASTEWATER FACILITIES

A. GENERAL

This section evaluates the condition and financial status of the existing treatment system, including a discussion on NPDES discharge permit requirements, historical treatment performance, and future considerations.

B. OVERVIEW OF SYSTEM

The City of Grand Meadow owns and operates a Class D wastewater treatment facility that treats domestic wastewater generated by residents and businesses throughout the city. The facility has a controlled discharge to Deer Creek (SD002) in accordance with National Pollution Discharge Elimination System (NPDES) Permit No. MN0023558. Deer Creek is a Class 2B, 3C, 4A, 4B, 5, 6 surface water suitable for aquatic life and recreation.

C. TREATMENT FACILITY DESCRIPTION

The Grand Meadow wastewater treatment facility was originally constructed in 1972 as a two-cell stabilization pond system. The wastewater collection system consists of three lift stations and approximately 4,375 feet of 4 and 6-inch force main and 34,000 feet (6.44 miles) of gravity sewer ranging from 6 to 15 inches.

The main influent lift station has a wet well where the influent water is deposited and a drywell that contains two lift pumps. The lift station also contains housing for the electrical equipment necessary to control the pumps and a stand-by emergency generator.

The influent lift station was improved in 1988 and recently in 2019. During the 1988 improvements, new pumps were installed along with new piping and fittings to accommodate the new pumps. A manhole was installed near the lift station along with approximately 1,000 linear feet of gravity sewer for bypassing excess flows directly to Deer Creek. In 2019, both lift station pumps were replaced. Figures 3.1 and 3.2, respectively, show the existing lift station and pumps.

The pond system is composed of a 9.2-acre primary cell and a 6.4-acre secondary cell for treatment. Wastewater effluent is discharged from the secondary pond twice a year during the appropriate discharge periods. Figures 3.3 and 3.4 show the existing stabilization pond system.

D. FACILITY CONDITION

In general, the Grand Meadow wastewater treatment facility is in fair condition and has some useful life remaining. The various components of the system are discussed in further detail below.

1. Main Lift Station

The Main Lift station was originally constructed in 1972 and received major upgrades in 1988. The structural components are 48 years old and is in poor to fair condition. The lift station sub-structure consists of below-grade concrete wet-well and dry-well structures. The wet-well receives raw wastewater from the City's gravity collection system, while the dry-well houses two (2) dry-pit submersible pumps that were installed in 2019. The above-grade structure consists of a precast building that houses the electrical components and standby emergency generator.

The precast building sits over the wet-well and dry-well structures. Although the occupiable building space is physically separated from the wet-well, the dry-well provides access to raw wastewater through the pumps, piping, and valves. Since the

building does not contain adequate ventilation, the entire occupiable space is classified as NEC Class 1, Division 2 for hazardous areas. The existing electrical equipment is obsolete and does not meet code requirements.

Although the existing lift station has been well-maintained, the general structure is nearing the end of its useful life of 50 to 60 years. A majority of the electrical and mechanical components need replacement. Due to the age of the structure and cost of rehabilitation efforts, we recommend demolishing the existing lift station and replacing with a new precast submersible-style lift station. This new installation would include a separate precast manhole structures to house the valves and magnetic flow meter.

The existing pumps are new and should have 20 years of useful life remaining. However, based on a hydraulic analysis of the existing forcemain, the new pumps likely have a limited capacity of approximately 460 to 500 gpm (each). The pump curves are relatively flat and, therefore, have an expected combined capacity of 520 to 540 gpm when pumping together. The City may be able to install larger impellers to increase flow capacity, but this would likely fall short of the projected peak hourly flow of 655 gpm. According to Ten State Design Standards, each pump must be able to match the peak hourly design flow. Upsizing the forcemain diameter is the only way to achieve the peak design flow with the existing pumps.

2. Forcemain

   The existing forcemain is constructed of 6 and 8-inch cast iron pipe. A majority of the existing pipe was installed in 1972 (48 years old). According to as-built drawings, the inlet piping to the secondary pond was upsized to 8-inch in 1988. The City experienced issues with the existing forcemain and pumping system in 2019 and televised a majority of the piping (approximately 2,500 LF). The only area that could not be televised was the stretch below the Deer Creek river crossing. The televising footage showed areas where the forcemain was underwater, but no obstructions or failures were found.

   The City has continued to experience issues with pumping capacity and have noted that they achieve little increase in flow capacity when operating both pumps. This is consistent with the hydraulic modeling, which showed a maximum combined pumping capacity of 520 to 540 gpm. This is only a modest 10 percent increase in capacity compared to operating a single pump. The existing 6-inch forcemain is hydraulically restrictive and undersized for the peak flow design conditions. We recommend replacing it with an 8-inch forcemain that will provide additional capacity and allow the City to use the new pumps into the future

3. Stabilization Ponds

   a) Condition

      The existing stabilization ponds were constructed in 1972 (48 years old) and are in fair condition. The primary and secondary ponds both have clay lining materials with riprap installed at the perimeter to mitigate erosion due to wave action. The forcemain contains a valve manhole that allows the operators to control the discharge of raw wastewater to the primary or secondary ponds. The system includes two concrete control structures for controlling the flow of treated wastewater to and from the ponds. The control structures and interior gates are in poor condition and should be replaced as part of improvements to the pond system. We also recommend placing additional riprap as needed along the perimeter of the dikes to fill in bare spots.

b) Capacity Issues

According to MPCA rules, stabilization ponds must be size sufficiently for at least 180 days of storage calculated at the design 180-day average wet-weather flow. The existing ponds are only sized to handle 0.120 MGD AWW flow. However, due to the City's ongoing issues with I&I, historical flows in the past six years have exceeded this value nearly 50 percent of the time. As a result, the operators have been forced on occasion to discharge outside of the acceptable periods specified by the MPCA.

The projected 20-year design AWW flow is 0.230 MGD, which includes additional flow due to expected population growth. If the City cannot reduce their wastewater flow back to the original design, a pond expansion will be necessary to ensure adequate storage of at least 180 days.

The City has also recently noted issues with sludge buildup near the inlet pipe in the primary pond. It is common for inert solids to settle out to the bottom of the ponds near the inlet. In general, pond systems accumulate solids over the course of their lifetime, which reduces the holding capacity and may impact treatment performance. The City recently conducted a solids inventory for the existing ponds. The average sludge accumulation in the Primary and Secondary Ponds was 11.72" and 5.55", respectively. Based on these measurements, the City does not need to consider dredging the ponds to increase the storage capacity since it's below the 2 to 6 feet operating range.

c) Seepage

Since the existing ponds were constructed prior to 1975, they must comply with a less restrictive seepage rate of 3,500 gallons per acre per day. Newer ponds must comply with a seepage rate of 500 gallons per acre per day. During the design phase, we recommend the City complete a water balance to ensure the seepage rate is not exceeded. Repairs to the existing clay liner (or installation of a new synthetic liner) may be necessary to reduce seepage rates.

Figure 3.1 – Existing Lift Station

Figure 3.2 – Existing Lift Station Pumps

Figure 3.3 – Existing Primary Stabilization Pond

Figure 3.4 – Existing Secondary Stabilization Pond

E. NPDES DISCHARGE PERMIT

1. Existing Permit

The treatment facility's effluent discharge is monitored and regulated in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. MN0023558. A summary of the current effluent limits is presented in Table 3.1, below.

Table 3.1 – NPDES Limits
Grand Meadow, MN

Parameter	Season	Limit Type	Limit(s)
$CBOD_5$	Jan-Dec	Monthly Ave.	25 mg/L (98.5 kg/d)
	Jan-Dec	Maximum Week Ave.	40 mg/L (157.6 kg/d)
Fecal Coliform	Apr-Oct	Monthly Ave. (Geometric)	200 #/100 mL
Flow	Jan-Feb, Jul, Aug	Monthly Ave. (Intervention)	Monitor Only
	Mar-Jun, Sep-Dec	Monthly Ave.	Monitor Only
NO_2+NO_3-N	Jan-Dec	Monthly Ave.	Monitor Only
NH_3-N	Jan-Jun, Jul-Dec	Monthly Ave.	Monitor Only
TKN	Jan-Dec	Monthly Ave.	Monitor Only
TN-N	Jan-Dec	Monthly Ave.	Monitor Only
DO	Jan-Dec	Monthly Min.	Monitor Only
pH	Jan-Dec	Monthly Min.	6.0
		Monthly Max.	9.0
TP-P	Jan-Dec	Monthly Ave.	Monitor Only
TDS	Jan-Jun, Jul-Dec	Monthly Ave.	Monitor Only
TSS	Jan-Dec	Monthly Ave	45 mg/L (177.4 kg/d)
	Jan-Dec	Maximum Week Ave.	65 mg/L (256.2 kg/d)

F. FUTURE CONSIDERATIONS

1. Preliminary Effluent Limits Request

A Preliminary Effluent Limits Review Request (PELRR) was submitted to the MPCA for the proposed 20-year design criteria and improvements. A copy of this request and the MPCA's response is included in Appendix B. The request included two different design scenarios: 1) expansion of the existing pond system to treat 20-year design flows and 2) construction of a new mechanical treatment facility.

Due to the expanded flow capacity, the pond system would receive phosphorus limit(s) in accordance with Minnesota Rules 7053.0255 Subpart 3A. The phosphorus limits will likely include a 1.0 mg/L concentration limit and the potential for a mass limit calculated at 180-day AWW design flow (or 6-inches of transfer). The City may qualify for less restrictive seasonal phosphorus limits (May 1 to September 30) based on Minnesota Rules 7053.0255 Subpart 4A.C. The revised permit will also include additional monitoring requirements for nitrogen compounds, total dissolved solids, mercury, and salty parameters.

If the City decides to construct a new mechanical treatment facility, these improvements will trigger lower concentration limits for $CBOD_5$ and TSS (15 mg/L and 30 mg/L, respectively), seasonal ammonia limits, and phosphorus limits. The new mechanical facility would be designed to remove these pollutants and include accommodations for total nitrogen removal if improved by the MPCA in future permitting cycles.

2. Anti-Degradation

The MPCA's response letter also discusses the potential need for an anti-degradation review. An anti-degradation review is triggered when a community is proposing to increase their pollutant loadings due to an expanded discharge to the environment. An anti-degradation review is a substantial valuation that must consider all beneficial use of the receiving water (i.e. Deer Creek), potential economic impacts, all possible treatment options, and the potential degradation of the environment due to the increased pollutant discharge.

The proposed improvements do not result in an increase in pollutant discharge to Deer Creek; therefore, an anti-degradation review is not needed for this project. The City's existing permit specifies maximum pollutant loadings based on 6-inches of transfer of the secondary stabilization pond. Regardless of whether the City decides to expand the pond system or construct a new mechanical facility, the maximum pollutant loadings will not be exceeded. The proposed improvements will improve the treatment performance and lower pollutant loadings compared to the existing system.

Expansion of the pond system will provide sufficient detention time to treat the City's high flows and ensure the operators do not have to discharge outside of the acceptable periods specified by the MPCA. The additional storage capacity will improve effluent quality, while the operators can continue to discharge the same amount of wastewater on a daily basis.

A new mechanical facility will have a continuous discharge and further improve the effluent quality to meet lower discharge limits than the existing pond system. The continuous discharge will result in less treated wastewater discharged to Deer Creek on a daily basis in comparison to the current controlled discharged pond system.

3. Phosphorus Limits

The City of Grand Meadow currently discharges to Deer Creek, which is a tributary to the Root River watershed. According to the MPCA's December 2017 watershed

analysis, the Root River currently does not exceed the response variable set forth by River Eutrophication Standards (RES) that would trigger a phosphorus limit for Grand Meadow. However, the Preliminary Effluent Limits received by the MPCA indicate a phosphorus concentration limit of 1.0 mg/L for the proposed expanded discharge in accordance with Minnesota Rules 7053.0255 Subpart 3A.

Based on historical treatment performance discussed in subsequent paragraphs, the existing pond facility would not be able to meet a phosphorus limit without significant process modifications or addition of chemical feed (e.g. ferric chloride or aluminum sulfate).

4. Nitrogen Limits

Over the next few permitting cycles, there is a potential for the MPCA to enforce total nitrogen limits in response to future developments in the Minnesota Nutrient Reduction Strategy. Based on our discussions with the MPCA in the past few years, limits for total nitrogen are likely to be implemented state-wide over the next 10 to 15 years. Based on historical treatment performance and process limitations, the City would not be able to meet discharge limits for total nitrogen or ammonia-N in any scenario due to technological limitations of the existing plant.

The Preliminary Effluent Limits received by the MPCA show that ammonia-N limits will be enforced if the City constructs a new mechanical treatment facility. The new mechanical facility will use the activated sludge process to oxidize ammonia-N to nitrate, which is accomplished by aerating the wastewater. This is the first step to achieving a total nitrogen limit.

The expanded pond system will not likely trigger ammonia limits. This is fortunate because pond systems have a very limited capacity to remove ammonia. Even if the pond expansion included aerators, the impacts of temperature and limited control over dissolved oxygen and mixing make it difficult to ensure consistent removal throughout the year.

If total nitrogen limits are enforced by the MPCA in the future, a new mechanical facility will require additional infrastructure to achieve denitrification (i.e. conversion of nitrate to nitrogen gas). In this process, nitrate-rich wastewater passes through a mixed tank that is absent of free oxygen. In this environment, bacteria utilize the bound oxygen in the nitrate compound and reduce it to nitrogen gas, which then off-gases to the atmosphere and is removed from the liquid stream. Design of the system is dependent on the specific total nitrogen entering the system and effluent limit. The design may include the following components:

- Anoxic tank and mixer(s)
- Recycle pump(s) and piping systems
- Supplemental carbon source

G. TREATMENT PERFORMANCE

The treatment facility's NPDES permit specifies pollutant discharge limits for $CBOD_5$, pH, fecal coliform and TSS. The facility also monitors dissolved oxygen, total phosphorus, total dissolved solids, and nitrogen compounds (total nitrogen-N, TKN, ammonia-N and nitrate + nitrite). Figures 3.5 through 3.10 show reported effluent discharge values for each of these pollutants since January 2014(to present). Nitrate + Nitrite, ammonia-N, TKN, total nitrogen-N, and TDS were not graphed due to limited availability of new data since monitoring began in May 2018. Instead, the existing data was averaged. Their averages were calculated to be 0.39 mg/L (Nitrate + Nitrite), 4.62 mg/L (ammonia-N), 6.63 mg/L (TKN), 55.47 (total nitrogen-N), and 530 mg/L (TDS).

In the timeline of January 2014(to present) the city has achieved nearly all discharge requirements. In September 2016, the facility appears to have exceeded the permitted fecal coliform value. The effluent phosphorus concentration ranged from 1.1 to 5.6 mg/L, indicating that the existing treatment facility is not equipped to remove phosphorus and would not meet limits if imposed in the next permit as indicated in the Preliminary Effluent Limit Request.

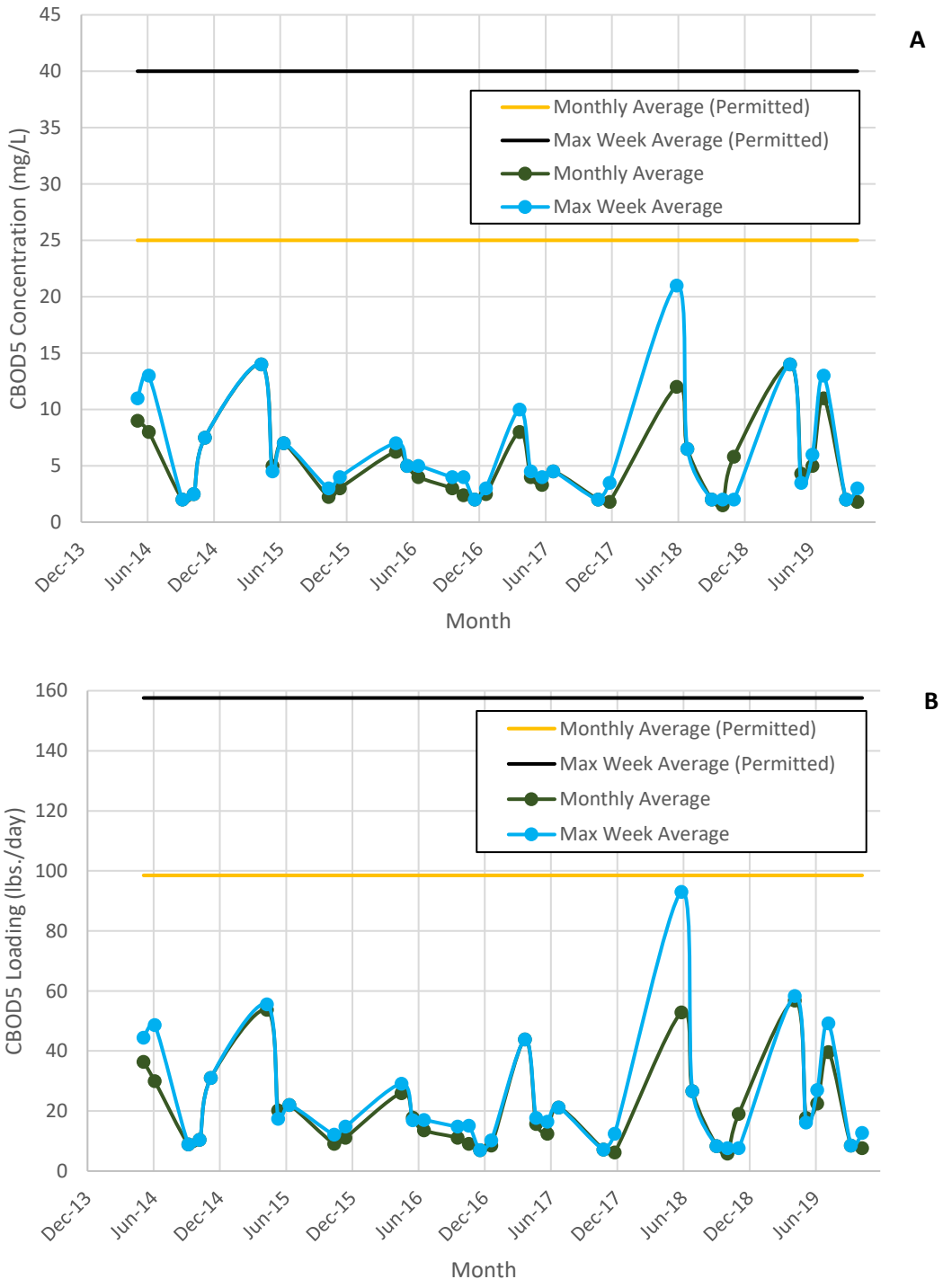
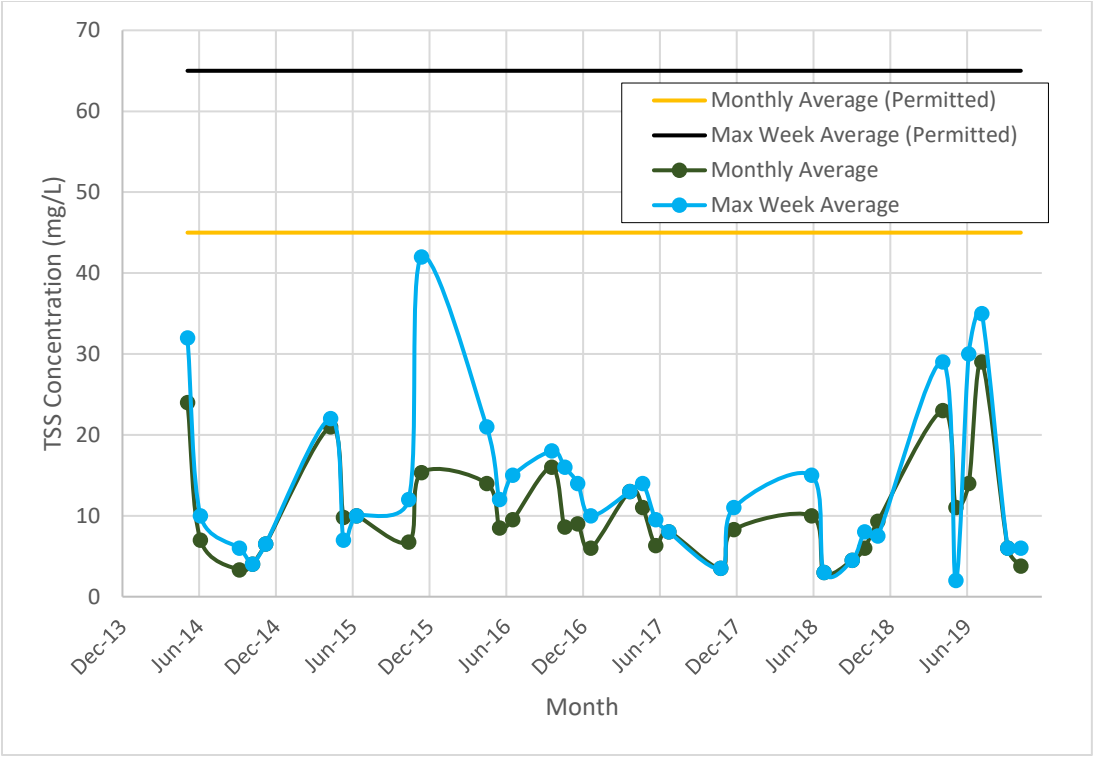


Figure 3.5 – Historical Effluent $CBOD_5$ Concentration (A) and Mass Loading (B) at Wastewater Treatment Facility



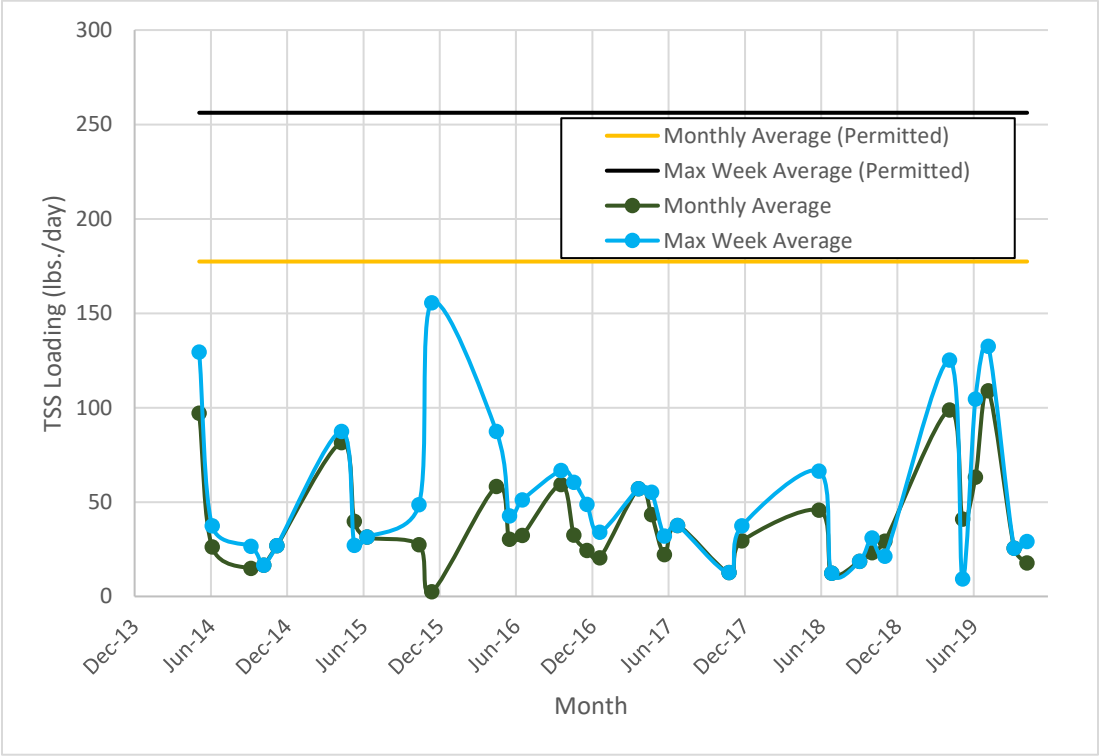
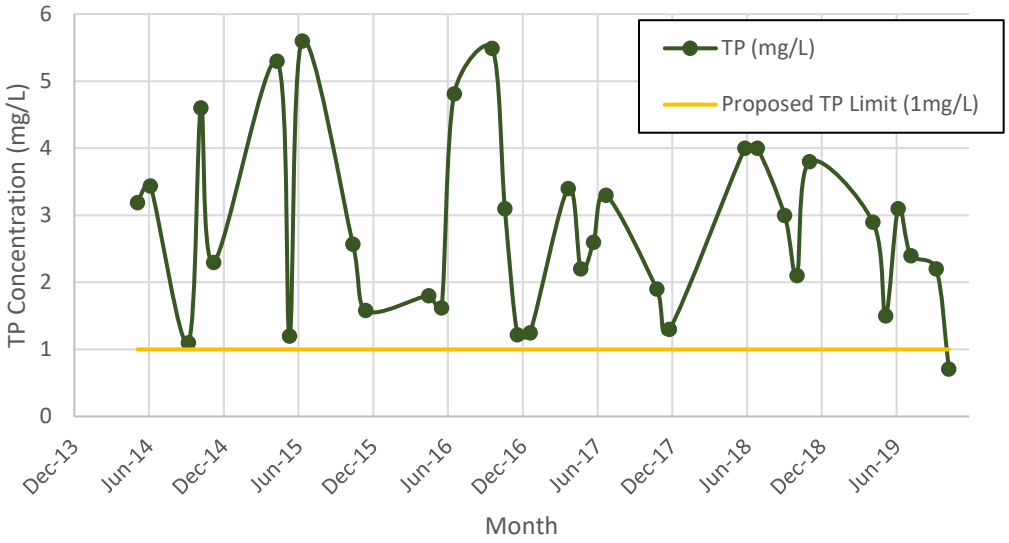


Figure 3.6 – Historical Effluent TSS Concentration (A) and Mass Loading (B) at Wastewater Treatment Facility



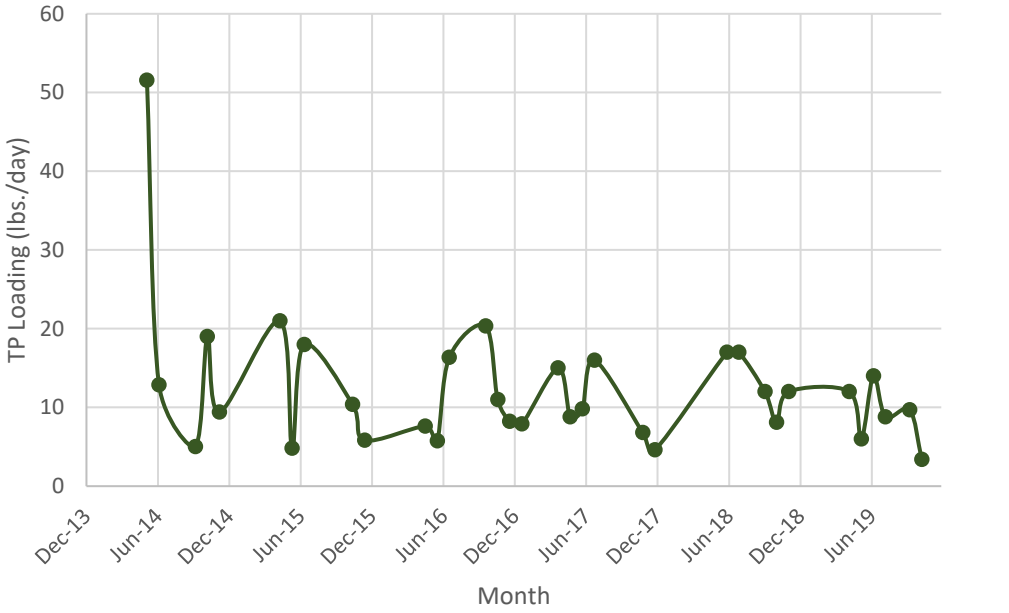


Figure 3.7 – Historical Effluent TP Concentration (A) and Mass Loading (B) at Wastewater Treatment Facility

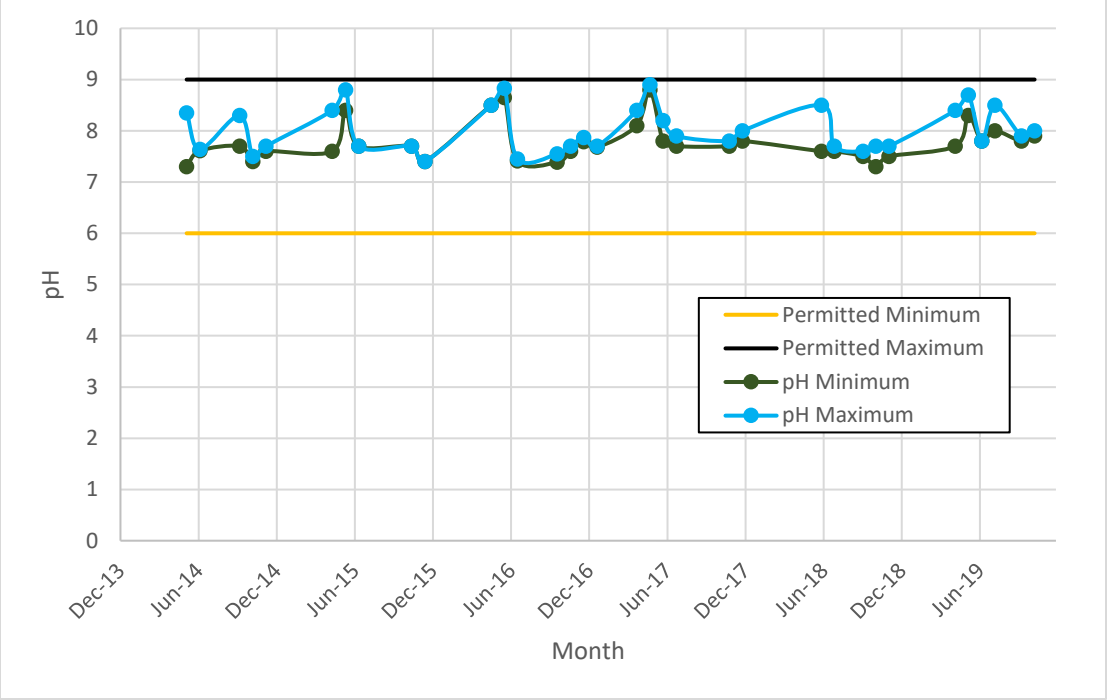


Figure 3.8 – Historical Effluent pH Values

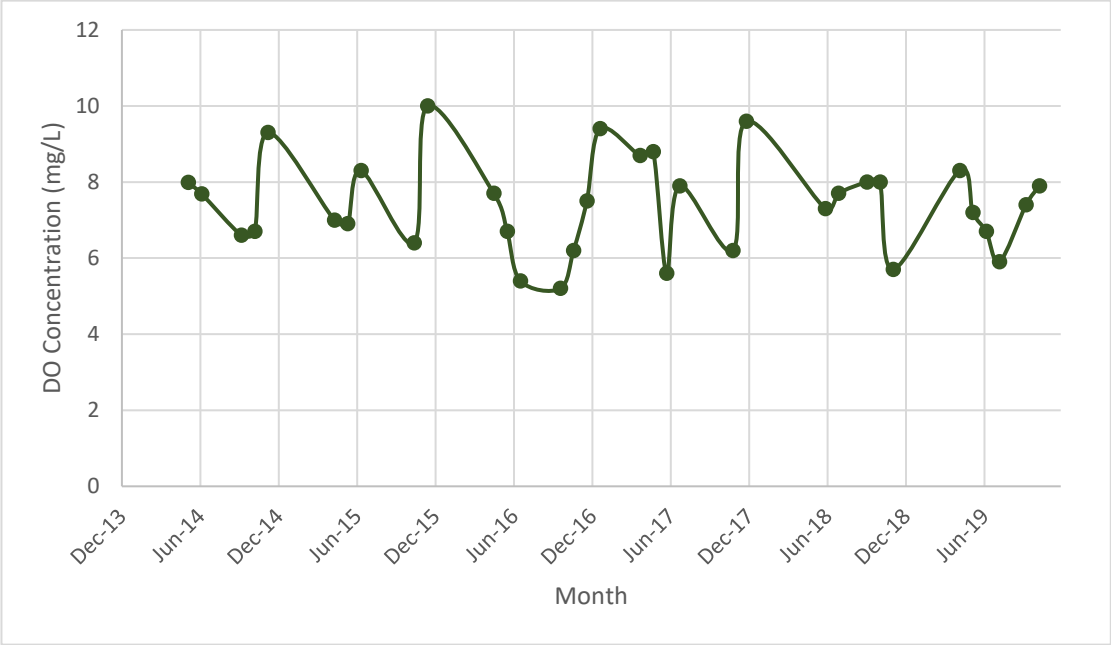


Figure 3.9 – Historical Effluent DO Values

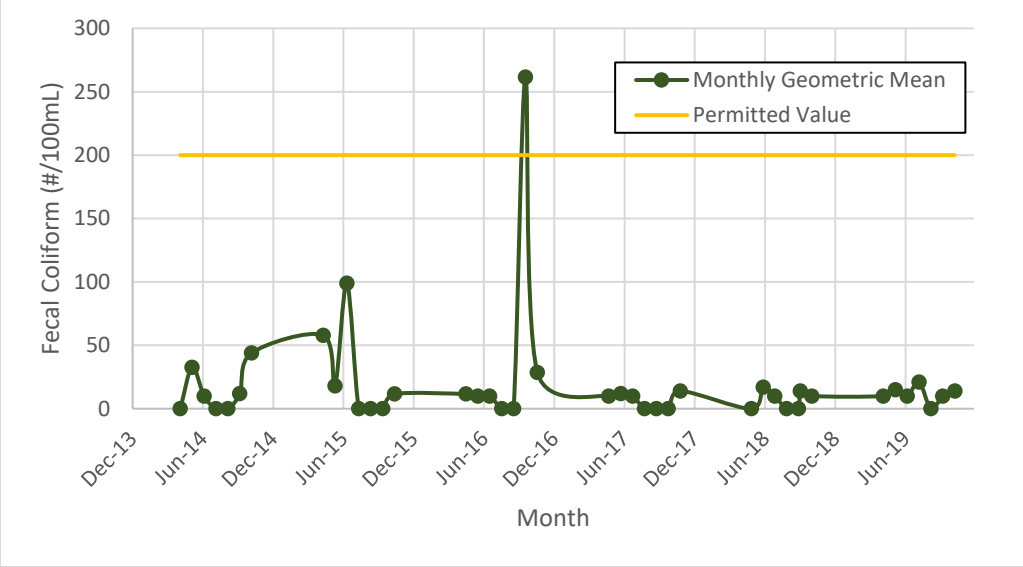


Figure 3.10 – Historical Effluent Fecal Coliform Values

H. FINANCIAL STATUS

The City's wastewater system expenditures are financed through revenue generated by residential and commercial sewer fees. Sewer usage fees are calculated based on monthly metered water usage. The current rate structure of a $6.53/dwelling unit sewer base rate and a $5.00/1,000 gallon rate fee was approved by the City for the 2020 billing cycle. Table 3.2 summarizes annual budget expenditures for the wastewater system. Appendix F includes a detailed breakdown of the current sewer rates and annual budget information.

Table 3.2 – Annual Expenditures and Revenues

Item	2018	2019	2020
Expenditure			
Salaries and Wages	$33,084	$34,077	$35,099
Testing	$3,343	$3,443	$3,547
Utilities	$8,711	$8,972	$9,241
Repairs and Maintenance	$6,873	$7,079	$7,292
Insurance	$3,569	$3,676	$3,786
Supplies	$5,624	$5,793	$5,967
Miscellaneous	$2,006	$2,066	$2,128
License and Permits	$1,450	$1,494	$1,538
Depreciation	$44,266	$45,594	$46,962
Total Annual Expenditures	$108,926	$112,194	$115,560
Revenues			
Total Annual Revenue	$130,736	$130,736	$130,736
Operating Income (+/-)	$21,810	$18,542	$15,176

IV. PROJECT NEED

A. HEALTH, SANITATION, AND SECURITY

In general, the City of Grand Meadow's existing 48-year-old stabilization pond system has performed adequately in meeting the requirements of the facility's current NPDES discharge permit. Based on historical monitoring data, the facility has exceeded limits for fecal coliform once in the past six years. This individual occurrence is not considered an acute health or sanitation concern. The fact that the facility performs as well as it does is a testament to the experience and ability of the operators. However, the facility is simply not equipped to meet more stringent discharge requirements, particularly for potential nutrient removal of phosphorus and nitrogen if imposed in the future. The existing facility is also severely hydraulically undersized in which the AWW design flow of 0.120 MGD has been surpassed 32 out of the past 70 months (46 percent of the time).

The City's aging collection system has issues with infiltration and inflow. The treatment facility has a designed bypass that allows the operators to discharge untreated wastewater to an unnamed ditch which is a tributary to Deer Creek. This is done in order to avoid hydraulically overloading the system and to prevent sewage backups. The operators have been forced to use this bypass on rare occasions during extreme precipitation events.

B. AGING INFRASTRUCTURE

1. Collection System

According to MPCA criteria, the City of Grand Meadow exceeds threshold values of excessive infiltration and inflow into their collection system. Excessive infiltration is largely attributed to the City's aging collection system infrastructure, including poor installation of newer PVC sewer mains and services as evident by the televising videos completed as part of the City-wide I&I investigation. Excessive inflow into the collection system include potential cross-connections with residential and commercial foundation drains and sump pump discharge. Section 51.062 of the City Ordinance strictly prohibits these types of connections, although excessive inflow is still an issue. Excessive I&I has implications on wastewater conveyance and treatment, especially concerning inflow during storm events that may hydraulically overload the collection system or impact treatment performance

2. Main Lift Station and Forcemain

The Main Lift Station was originally construction in 1972 and received upgrades in 1988. The existing structure is nearing the end of its useful life and needs significant improvements to the electrical and mechanical systems, which are currently not code compliant. The existing forcemain is largely 6-inch diameter cast iron and is hydraulically restrictive and undersized for current and future peak flows. In the past year, the City invested a significant amount of money to inspect the forcemain condition and install new pumps. These efforts have produced minimal improvements due to the physical restriction of the undersized forcemain.

3. Wastewater Treatment

The City's existing stabilization pond system was originally constructed in 1972 (48 years ago). Based on the evaluation presented in Sections 2 and 3, the existing pond system is undersized to handle current and future design flows and will require an expansion, unless the City can significantly reduce the current I&I issues. The historical 180-day AWW flow (i.e. average flow between November and May) experienced in the past six years has exceeded the current design flow by 67 percent. This increase in flow is largely attributed to excessive I&I.

The existing pond system also has age-related issues that need to be addressed. The existing concrete control structures are in poor condition and need replacement. The City may also need to dredge the existing ponds to remove excess solids accumulation that can reduce detention time and negatively impact treatment performance.

C. REASONABLE GROWTH

The City is expecting modest residential and commercial growth over the 20-year planning period. Therefore, a 1% annual growth is factored into the need for improvements to the collection system and wastewater treatment infrastructure. The city is not expecting any significant industrial growth over the 20-year planning period.

V. ALTERNATIVES AND COST ANALYSIS

A. GENERAL

Based on the detailed evaluation of design criteria and existing conditions presented in Sections 2 and 3 these sections discuss alternatives for both short-term and long-term improvements to the City of Grand Meadow's collection system and wastewater treatment infrastructure.

B. INFILTRATION AND INFLOW REDUCTION

According to the analysis in Section 2, the existing collection system exceeds MPCA threshold values of excessive infiltration and inflow. This has potential implications on wastewater treatment, especially concerning excessive inflow during storm events that may hydraulically overload the system and result in the bypass of untreated wastewater directly to Deer Creek.

1. Infiltration Reduction

   a) Pipe Rehabilitation

   Rehabilitation of the existing sewer mains could be implemented using cured-in-place pipe (CIPP). This construction method is executed by inserting a liner into the existing pipe which is inflated to match the existing pipe interior. This method can be used to line both mainline sewer as well as services.

   The primary advantage of sewer lining is the ability to seal joints and cracks in existing pipe without the need to replace overlying paved surfaces. Although CIPP lining sanitary main is more cost effective than pipe replacement and surface restoration the estimated cost of lining individual service lines far exceeds the respective cost for excavation and replacement. It is possible that segments of sanitary main with severe sags cannot be repaired using CIPP lining. Also, repairs would be required within the main in areas where the existing pipe is deteriorated to a point where it Is no longer structurally sound. These areas can be spot repaired with conventional excavation and replacement.

   Sanitary manhole rehabilitation can be accomplished through the installation of internal liner systems. Although several liner systems are available, internal, poured concrete liners are typically the most effective and should be planned where conventional excavation and replacement of structures is less cost effective.

   b) Pipe Replacement

   Another option to address infiltration into the existing main and services includes complete excavation and replacement. This method would include the removal of overlying surfaces, trench excavation, removal of the existing pipe, and installation of new gasketed-joint, PVC pipe. Sanitary service lines could also be replaced within the public right-of-way. Manhole structures can be replaced with new reinforced concrete structures with botted pipe connections.

   A significant portion of the cost associated with full depth reconstruction is replacement of paved surfaces. Despite these costs, full depth reconstruct ion is still typically more cost effective in areas where several sanitary service lines are present and requiring replacement.

   c) Inflow Reduction

   Sources of inflow include connection of foundation drains and sump pumps to the sanitary collection system.

d) Existing Sump Pump Ordinance

Section 51.062 of the City code strictly prohibits these types of connections. Existing structures subject to groundwater infiltration into basements must also have permanent systems in place for removal of water. The sewer ordinance allows inspections of new and existing building sewers. Properties found to be out of compliance with code requirements are given notice and are subject to the $100 monthly surcharge to the property owner's wastewater service bill until the sewer is brought into compliance.

e) Other Cross-Connections

Other sources of direct inflow may include cross-connections with storm sewer and other miscellaneous drain tile that are not found through residential and commercial inspections. These connections can be identified through sewer televising, smoke testing, and dye testing of the City-owned sanitary and storm sewer mains.

Individual property inspection programs can be completed to identify any illegal connections currently in place within the City. These programs can be completed city-wide or limited to suspect areas. Any properties found to be out of compliance are commonly given a period of time to remedy the issue. Once the repair is made, a second inspection of the home is commonly completed to verify that the improvements are in compliance with City code. Inspection programs are relatively low in cost and can be highly effective in eliminating inflow, if performed properly.

f) Sanitary sewer collection system construction would be phased in order to address the most deteriorated sections of the collection system first. Figure 5.1 shows the proposed construction phasing for the sanitary sewer collection system improvements.

C. MAIN LIFT STATION AND FORCEMAIN IMPROVEMENTS

The existing Main Lift Station is nearing the end of its useful life and needs significant improvements. Due to the age of the structure and high cost of rehabilitation efforts, we recommend demolishing the existing structure and replacing with a new precast submersible-style lift station located on the same property. The existing 6-inch cast iron forcemain is hydraulically restrictive and undersized to handle current and future peak flows. Therefore, we recommend abandoning the existing forcemain in place and installing a new 8-inch forcemain.

A summary of the proposed lift station and forcemain improvements are provided below. These improvements apply to all subsequent treatment alternatives discussed throughout the remainder of the report.

- Sanitary Sewer Modifications
    - Reroute the existing 10 and 15-inch diameter interceptor sewers to the new lift station wet-well structure.
    - Convert the existing lift station along First Avenue SE to a flow-through manhole structure and route new gravity sewer to the new Main Lift Station.
    - Abandon the existing bypass line and associated manhole structures. Bypassing will not be necessary as the new lift station will be designed to handle the peak hourly flow.

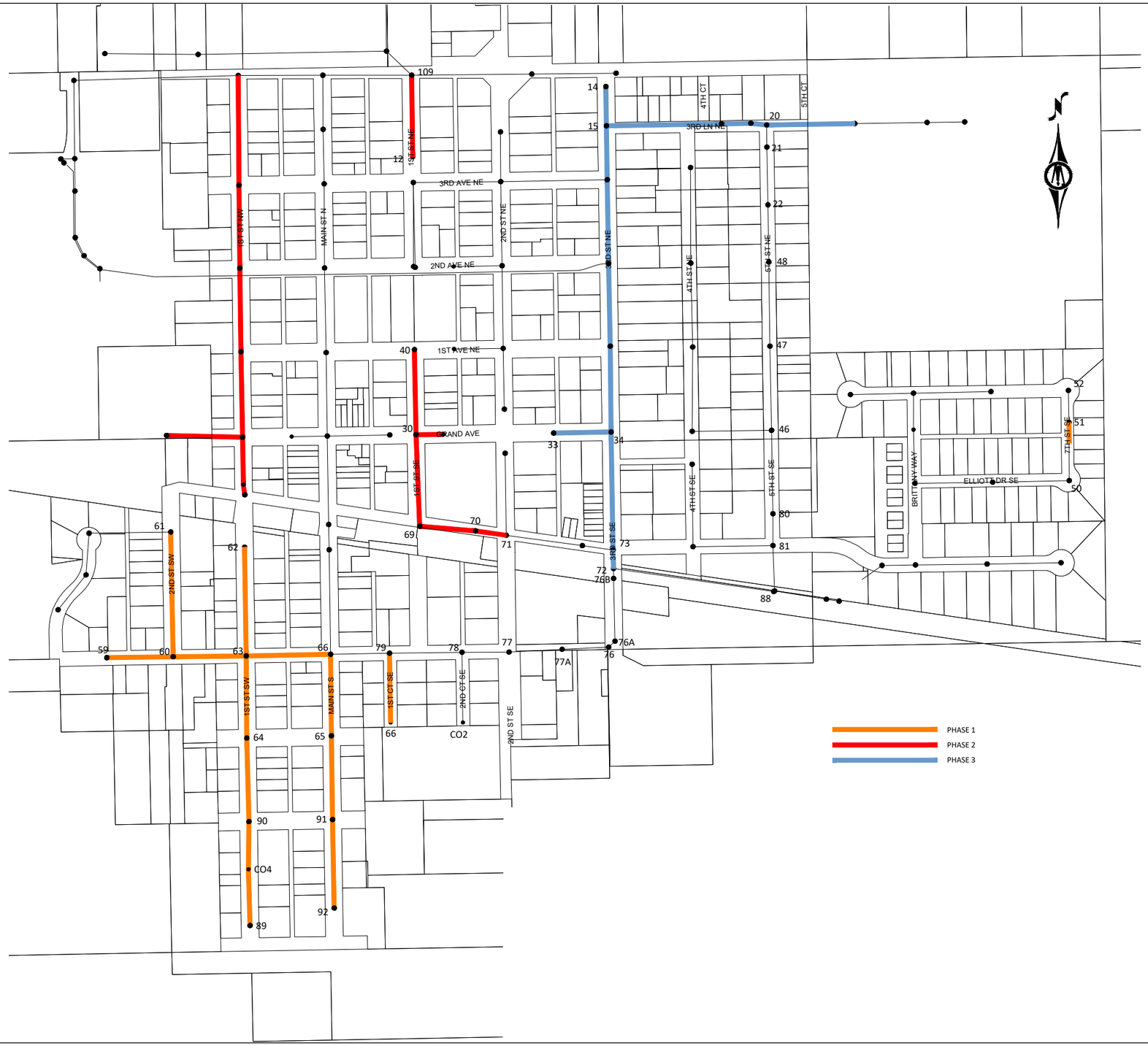
FIGURE 5.1 SANITARY SEWER COLLECTION SYSTEM IMPROVEMENTS

CITY OF GRAND MEADOW

LOCATION AND PHASING MAP

FEBRUARY 2020

BOLTON & MENK



H:\GRMEADOW_CI_MN\H19119535\CAD\C3D\Grand Meadow Facilitiy Plan Exhibit.dwg 2/12/2020 11:29:42 AM

Page Intentionally Left Blank

- New Main Lift Station
    - 6- or 8-foot diameter precast wet-well structure;
    - Discharge piping and valves;
    - 6-foot diameter valve vault structure;
    - 6-foot diameter metering vault structure with an 8-inch magnetic flow meter;
    - Dedicated control panel and alarm system;
    - New natural gas generator, pad-mounted on concrete slab;
    - Demolition of the existing lift station structure and precast building after the new lift station is operational.
- New Forcemain
    - Installation of approximately 3,000 LF of trenchless 8-inch (internal diameter) HDPE forcemain;
    - Abandon in place the existing 6-inch cast iron forcemain after the new lift station is operational.

D. GENERAL TREATMENT ALTERNATIVES

There are several categories of alternatives that are given consideration when determining effective wastewater treatment improvements. For the City of Grand Meadow, these general alternatives include:

- Expansion of the existing stabilization pond facility;
- Construction of a new mechanical treatment facility;
- Do nothing.

1. Expansion of Existing Stabilization Pond System

Due to excessive I&I and projected growth, the City of Grand Meadow will need to expand their existing pond capacity in order to meet minimum storage requirements (180 days) to treat the current and future 180-day design AWW flows. Preliminary Effluent Limits received from the MPCA also indicate that phosphorus limits will likely be imposed due to the expanded discharge per MN Rules 7053.0255. Beyond the pond expansion, the City will need to install additional infrastructure to achieve compliance with phosphorus. This may include a new chemical feed and mechanical mixing system installed within the secondary ponds, or a polishing clarifier to ensure removal of soluble phosphorus below the proposed 1.0 mg/L concentration limit.

The expanded pond system will not be capable of consistently achieving discharge limits for ammonia-N and total nitrogen if imposed by the MPCA in future permitting cycles. The City of Grand Meadow would then need to consider mechanical treatment for removal of nitrogen. In this scenario, the City would receive a compliance schedule to achieve nitrogen limits within a negotiable period of time – typically 5 to 10 years after the compliance schedule is issued. If the City has remaining debt service for the expanded pond system, the MPCA may honor the loan terms and structure the compliance schedule to coincide with full debt payment.

Due to the possibility of future nitrogen limits, this treatment alternative is considered to be a 20- to 25-year solution for the City of Grand Meadow.

2. Construction of a New Mechanical Treatment Facility

   The other general alternative is to construct a new mechanical treatment facility that is specifically designed to meet the City's current and future treatment needs, including phosphorus and ammonia removal. Since the timing and potential for total nitrogen limits is unknown, the new facility would be designed to accommodate phased construction for future total nitrogen removal.

   The City could also consider incorporating all current and future needs into a single construction project, which would include additional infrastructure needed to meet limits for total nitrogen. If this option is pursued, it is recommended that Grand Meadow consider the costs and benefits of a regulatory certainty agreement, which would typically have the facility accept a phosphorus limit of 1 mg/L and a total nitrogen limit of 10 mg/L. Such an agreement would lock in those limits for a period of 20 years, preventing more stringent limits from being imposed. It may also allow the City to qualify for a Point Source Implementation Grant (PSIG), which could offset some cost of a facility upgrade. These benefits are offset by the need for additional capital improvements, increased treatment process complexity, and increased operational costs. Due to the unforeseen nature of future limits, we recommend not pursuing a regulatory certainty agreement.

3. Do Nothing

   Based on the evaluation in Section 2 of this report, the "do nothing" treatment alternative is only viable if the City can eliminate their current issues with excessive infiltration and inflow. The historical 180-day AWW flow in the past six years has exceeded the current design flow by 67 percent. This is largely attributed to excessive I&I entering the collection system. Reducing current flows to the original design is likely unrealistic, especially considering the City is anticipating a 1% annual population growth over the 20-year design period. The City would need to invest in significant City-wide improvements to their collection system infrastructure to avoid the need for treatment improvements.

   Regardless of the current capacity issues, the existing treatment facility has age-related issues that need to be addressed in the near future, including replacement of existing concrete control structures.

E. DISCUSSION OF ALTERNATIVE TREATMENT OPTIONS

1. Mechanical Treatment Facility

   If the City of Grand Meadow elects to construct a new mechanical treatment facility, several different technologies may be considered for meeting current and future discharge requirements. The following paragraphs discuss an exhaustive list of these options. While many are not feasible this section is included to provide an overview of all systems considered.

   A mechanical treatment facility involves a combination of physical, biological, and chemical processes to achieve treatment objectives. Mechanical facilities may include a combination of the following treatment components: preliminary treatment, primary treatment, secondary treatment, tertiary treatment, disinfections, and biosolids handling and disposal. The general purpose and function of each of these components is described below.

   - *Preliminary Treatment* – involves the removal of constituents that can clog or damage equipment and interfere with downstream processes. These constituents may include inorganic solids such as rags, paper, wood, and garbage, as well as

oil and grease. General technologies utilized include screening and grit removal devices.

- *Primary Treatment* – involves the physical separation of suspended solids utilizing clarifier technology. This separation reduces solids not removed in preliminary processes, as well as removal of a portion of influent biochemical oxygen demand (BOD) that is associated with the organic solids removed in the primary treatment process.
- *Secondary Treatment* – involves the removal or reduction of contaminants that are not removed during primary treatment. This can be done through a combination of biological, physical, and chemical processes. Biological treatment involves the oxidation of pollutants such as organics and nitrogen through bacterial metabolism. Biological processes are often combined with physical processes such as clarification or membrane filtration to retain bacteria and remove suspended solids from the waste stream. Chemicals are commonly added to optimize the process or to help remove pollutants such as phosphorus. A wide variety of secondary treatment processes are utilized in the wastewater industry. Raw wastewater characteristics and flow rates dictate which processes are necessary.
- *Tertiary Treatment* – involves the use of advanced wastewater treatment technologies to further remove pollutants from wastewater. Tertiary treatment technologies include tertiary sand filtration, ion exchange, carbon adsorption, and membrane processes. Tertiary treatment is required for plants with very stringent total suspended solids, CBOD, TN and TP discharge limits. Tertiary treatment may also be required for removal of specific contaminants such as organic contaminants that are not removed in conventional biological secondary treatment or heavy metals.
- *Disinfection* – involves the destruction or inactivation of waterborne pathogens prior to discharging effluent to receiving waters for the purpose of minimizing public health threats. Disinfection can be done both chemically and physically. Chemical disinfection most commonly includes the use of chlorine-based products to destroy pathogens. Physical disinfection most commonly includes the use of ultraviolet irradiation (UV) to inactivate the pathogens' ability to replicate.
- *Biosolids Handling and Disposal* – involves the processing, storage, and disposal of biosolids generated at a wastewater treatment facility. Biosolids are derived from excess growth and subsequent disposal of bacteria and other microorganisms in the biological treatment process, as well as solids collected in the primary treatment process. Biosolids are collected and further stabilized through biological processes and stored/dewatered over the year to increase solids concentration. Depending on the degree of stabilization, biosolids are most commonly disposed through land application.

In most domestic wastewater treatment applications, biological secondary treatment is the key component in the process. Biological treatment generally utilizes either suspended growth or attached growth processes. In suspended growth systems, microorganisms responsible for the oxidation of pollutants are suspended in the wastewater through mixing and aeration. In attached growth systems the microorganisms become attached to a media where they are exposed to organic matter as wastewater flows by the media. There are also hybrid systems which utilize a combination of suspended growth and attached growth processes. Table 5.1 summarizes commonly used biological secondary treatment processes.

Table 5.1 – Mechanical Wastewater Treatment Processes	
Type	**List of Processes**
Suspended Growth	- Extended Aeration Activated Sludge - Oxidation Ditch - Membrane Bioreactor (MBR)
Attached Growth	- Trickling Filter - Rotating Biological Contactor (RBC)

Important criteria for selecting a treatment process include the following:

- Ability of process to meet effluent quality requirements;
- System reliability;
- Ability of process to maintain performance during hydraulic fluctuations;
- Capital costs;
- Operation and maintenance costs (O&M);
- System expandability to meet future capacity requirements;
- System adaptability to meet future effluent quality requirements.

The following paragraphs summarize the treatment processes listed in Table 5.1.

a) Extended Aeration Activated Sludge

Extended aeration activated sludge process utilizes an aeration system to provide dissolved oxygen for biological metabolism and mixing for suspended growth. Air is supplied from positive-displacement or centrifugal blowers and is dispersed in the aeration basins via a network of fine-pore diffusers that maximize oxygen transfer and provide mixing. In a typical activated sludge process, incoming wastewater undergoes screening and grit removal prior to aeration. From the aeration basins, wastewater is conveyed to the final clarifiers where solids and biomass are settled out and either recirculated back into the aeration basins or wasted to the biosolids handling system. Clarified effluent travels over the weirs and is conveyed to the disinfection system.

Extended aeration, which is a modification of conventional activated sludge treatment, eliminates the need for a primary clarifier and utilizes a larger aeration basin and longer solids retention. Extended aeration is known to produce high quality effluent and is a widely used, reliable technology. In addition, extended aeration systems are adaptable to achieve nutrient removal and produce a low level of sludge in comparison to the conventional activated sludge process. *For these reasons, extended aeration should be considered for the City of Grand Meadow's wastewater system improvements.*

b) Oxidation Ditch

The oxidation ditch process is a variation of the activated sludge process. The oxidation ditch process typically includes course screening, grit removal, one or more close loop aerated channels for biological treatment, secondary clarification, and disinfection. The closed-loop configuration is often called a "racetrack type" reactor, as wastewater travels in a circle until it is released from the reactor and travels to the secondary clarifiers.

Long solids retention times (SRTs) associated with oxidation ditch system allow for a high degree of nitrification. An oxidation ditch system can be operated to achieve partial denitrification with the addition of an anoxic tank and proper recirculation; however, TN removal can be difficult to control. Biological phosphorus removal is also possible with the addition of an anaerobic tank prior to the ditch. Key advantages include: low sludge production due to long solids retention times; adaptability to achieve nutrient removal; and common wall construction of racetrack tank design. Disadvantages include: potential freezing problems with surface aerators; relatively high maintenance requirements; larger land requirements (tanks need to be shallower since surface aeration is used); more difficult to control process compared to other activated sludge options; and the system is considered proprietary so limited equipment options are available. *Due to these reasons, the Oxidation Ditch process has been eliminated from consideration as it is similar to activated sludge and costs the same or more.*

c) Membrane Bioreactor

Membrane bioreactors (MBRs) utilize the extended aeration activated sludge treatment process. However, the major difference is that final clarifiers are replaced with micro- or ultrafiltration membranes for physical solids separation. The use of membranes for solids separation is advantageous in that system performance is not dependent on sludge settling characteristics, which can be problematic in conventional systems. Also, membranes remove virtually 100% of solids from the treated effluent and retain all biomass in the biological system. This allows the system to run at higher solids concentration and significantly longer SRTs without a reduction in performance – effectively reducing reactor size requirements and minimizing solids production.

Despite smaller land area requirements, membranes are expensive and need frequent replacement every 3 to 5 years. Capital costs are similar or slightly higher compared to conventional systems, but life-cycle costs are known to be higher due to membrane replacement. More importantly, operation and maintenance costs are much higher due to fouling control and chemical cleaning requirements. Fouling control can be difficult to manage since filterability is highly dependent on wastewater characteristics – especially temperature.

Although MBR systems are known to produce extremely high effluent quality, other activated sludge based systems can produce high effluent quality at a lower operating cost. MBR systems are most commonly used in low flow systems that have both space restrictions and require extremely high effluent quality. The City of Grand Meadow's situation is fairly conventional and does not fall under any of these requirements; *therefore, an MBR treatment system has been eliminated from further consideration.*

d) Trickling Filter

Trickling filters are non-submerged attached-growth treatment process which utilize rock or plastic media over which wastewater is continuously distributed. Treatment occurs as the wastewater flows over the attached biofilm and drains out of the bottom of the filter. In the process, organics and nutrients in the wastewater are utilized by the attached bacteria and removed from the effluent stream. The trickling filter process typically includes coarse screening, grit removal, multiple trickling filters, secondary clarification, and disinfection. Advantages include lower energy use compared to other systems and ease of operation. Disadvantages include potential for more odors, increased sensitivity to temperature changes, and potential for lower quality effluent at higher capital cost; *due to the potential for lower quality*

effluent without significant cost savings, this process will not be discussed further in this report.

e) Rotating Biological Contactor (RBC)

Rotating Biological Contactors (RBC) is an attached-growth process that utilizes a series of tanks equipped with rotating discs that are half-submerged in flowing wastewater. The discs provide an environment for bacteria to grow and utilize/remove nutrients in the wastewater that passes through the tanks. The unsubmerged portion of the rotating discs are exposed to oxygen which is needed for biological growth. The advantages of this process include low operating costs and ease of operation. RBCs are also capable of handling a wide range of flows, Disadvantages include freezing in the winter, potential oxygen limitations, frequent maintenance of shaft bearings and mechanical drive units, and costly/difficult replacement of damaged media. RBCs are also not well-suited to adapt to nutrient removal application and have limited process flexibility. Despite low operating costs and simplicity, the RBC process has a wide variety of limitations and is not well suited to adapt to future requirements; *for these reasons, the RBC process will not be discussed further in this report.*

f) Biosolids Handling and Disposal

Mechanical treatment facilities generate excess biosolids that must be removed from the system. Biosolids are derived from two primary sources: 1) excess biological growth wasted from the biological treatment process and 2) solids captured in primary treatment. Proper handling and disposal of biosolids is an important aspect of wastewater treatment. A method that is economical and acceptable to human health, the environment, and aesthetically must be selected.

Biosolids storage can be a major cost and economic handling and storage must be considered. Increasing the solids content of the sludge is a cost-effective way to help store and handle the solids.

Aerobic and anaerobic digestion are two common methods to thicken wastewater. The aerobic process provides a long retention time to allow endogenous respiration and decomposition of volatile organics, significantly reducing pathogens to produce Class B biosolids that can be used for agricultural applications. The digester would include piping and valves to decant supernatant from the tank back to the head of the treatment process – effectively concentrating the biosolids in the tank. Increasing solids concentration reduces storage volume and associated land disposal costs. The Aerobic digestion process is a simple, easy to operate process, therefore, *aerobic digestion should be considered for Grand Meadow's wastewater system improvements.*

Anaerobic digestion could also be considered as an alternative to aerobic digestion. Anaerobic digestion is a process that biological breaks down organic material in the absence of oxygen. The resulting byproducts include biogas, which is a combination of methane and carbon dioxide, and stabilized biosolids that have significant reductions in volatile solids and pathogens. However, anaerobic digestion is a complex process that requires expensive gas draw-off equipment and heating elements. It is usually used in combination with primary clarification due to the need to breakdown dense, less biodegradable organics. If the extended aeration process is used, primary clarifiers and anaerobic digesters are generally not required, therefore, *anaerobic digestion is eliminated from consideration.*

The most practiced disposal method for rural communities like Grand Meadow is land application. The City could contract with a licensed applicator for sludge

hauling and land application or have the City operators become certified in biosolids application and work with local farmers for sludge application in the fall and spring.

F. TREATMENT ALTERNATIVES CONSIDERED

A discussion of potential wastewater system improvements was conducted in Sections 5D and 5E of this report. Based on these discussions and knowledge of Grand Meadow's current and future treatment needs, the following treatment alternatives have been identified and will be considered throughout the rest of this report.

- Alternative No. 1 – Expansion of existing Stabilization Pond Facility (with Chemical Phosphorus Removal)
- Alternative No. 2 – Construct New Extended Aeration Activated Sludge Facility (with Chemical Phosphorus Removal)

The existing lift station and forcemain are past their useful lives and need to be replaced in the near future. Both alternatives include upgrading the main lift station and corresponding forcemain as discussed in Section 5C.

1. Alternative No. 1 – Expansion of existing Stabilization Pond Facility (with Chemical Phosphorus Removal)

   This alternative considers an expansion to the existing stabilization pond facility with efforts of prolonging the facility's service life another 20 to 25 years. The existing 48-year-old facility meets current permit limits; however, it is undersized and an increase in storage capacity is needed to meet future demand.

   This alternative involves the addition of a new primary and secondary cell to meet 180-day storage. The treatment of wastewater in stabilization ponds is based on a natural process which occurs in shallow ponds. To facilitate this process, the MPCA would require the primary and secondary ponds to be designed with a minimum depth of 2-feet, and a maximum depth of 6-feet allowing 4 vertical feet of storage throughout the system. The MPCA design standards also state that the maximum CBOD loading rate for the primary cells should not exceed 22 pounds of CBOD/acre/day.

   The pond bottom will be sealed with a geosynthetic liner. It shall be sealed such that seepage loss through the seal is as low as practicably possible. Permeability, durability, and integrity of the proposed material must be satisfactorily demonstrated for anticipated conditions. Seepage loss through the liner shall not exceed 500 gallons/acre/day in accordance with MPCA requirements. A minimum separation of four feet between the top of the pond seal and the maximum high-water table should be maintained. Drain tile may be required under the pond liner to permanently lower the groundwater table. This will be inspected during the design phase by taking soil borings or the proposed land area.

   The existing control structures are past their useful life and will need to be replaced. The City is expected to receive a phosphorus effluent limit. This will require chemical treatment in the form of ferric chloride or alum. Liquid chemical will be fed to the two (2) secondary ponds by a chemical feed skid located in a new heated enclosure. Chemical will be dispersed by in-pond mixers installed in the secondary ponds.

   The City of Grand Meadow according to a study performed by the Minnesota Department of Natural Resource is located in a karst prone region. Because of this, an expansion to the existing stabilization pond facility may be subject to intensive hydrogeologic site evaluation before approval. This may result in the utilization of additional lining materials beyond normal sealing requirements.

Expansion to the existing Stabilization Pond Facility would consist of the following components:

- Existing Stabilization Pond Facility Expansion
  - 9.8-acres primary cell (HDPE liner, existing ponds dikes will extend to proposed ponds dikes allowing vehicle access, fencing will be put up around perimeter of pond.)
  - 6.4-acres secondary cell (HDPE liner, existing ponds dikes will extend to proposed ponds dikes allowing vehicle access, fencing will be put up around perimeter of pond.)
  - Seven (7) Concrete control structures with hydraulic control gates
  - Chemical feed structure with chemical feed system, fiberglass enclosure, concrete foundation, concrete pad, and mechanical mixers installed in the secondary ponds.

As an alternative, the City could consider constructing a polishing clarifier in lieu of the in-pond mixing system. This option will increase the overall improvement costs but will provide the operators with increased control over phosphorus removal. Additional space can be provided if the City decides to implement this improvement in the future, if needed.

This alternative would require the procurement of approximately 25 acres of land adjacent to the existing facility site. This property is currently privately owned.

A second option would be to expand the pond system for 210-days of storage to avoid the summer period for River Eutrophication Standards (RES). This is an option if the City qualifies for a less restrictive seasonal phosphorus limit based on Minnesota Rules 7053.0255 Subpart 4A.C. The City will not know if this is a potential until the permitting process is underway with the Minnesota Pollution Control Agency (MPCA).

2. Alternative No. 2 – Construct New Extended Aeration Activated Sludge Facility (with Chemical Phosphorus Removal)

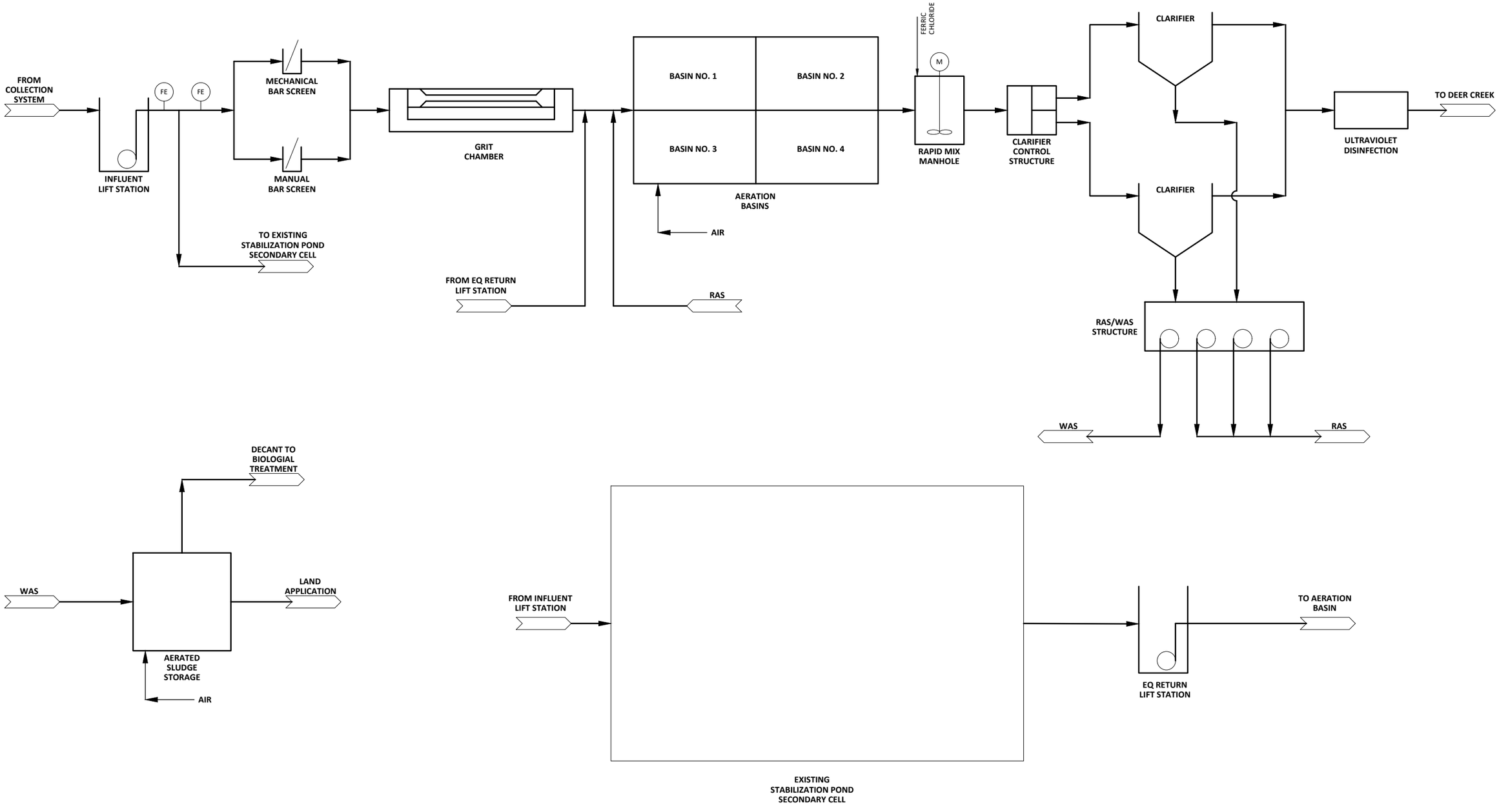
   This alternative involves the construction of a new extended aeration activated sludge treatment facility with infrastructure to achieve biological removal of ammonia and chemical removal of phosphorus. Figure 5.2 illustrates a general process flow diagram for this alternative. This alternative includes provisions to add infrastructure at a later date to achieve biological removal of total nitrogen if required by future permit regulations. Such provisions include space for future anaerobic and anoxic tanks, space for future chemical feed equipment, and piping stub-outs for future connections. These provisions are relatively inexpensive and do not require significant upfront capital, but rather foresight in the planning and design process. The final clarifiers and biosolids storage facilities will be sized to provide sufficient capacity for supplemental chemical phosphorus removal.

   This alternative recognizes that the existing facility is not capable of achieving total nitrogen limits if imposed in the next few permitting cycles. If this is the case, the investments made to expanding the existing pond system would be largely sunk costs. The expanded ponds could be integrated into a new facility as equalization basins, but the amount of excess storage would not be necessary. The existing ponds are already efficiently sized to serve this purpose. Flow equalization diverts the excess flow during peak flow events to the existing stabilization pond system, while maintaining a steady flow to the extended aeration facility.

   A new extended aeration facility would generally consist of the following major treatment components:

- Convert existing stabilization pond system into equalization storage
- Decommission the Existing Primary Stabilization Pond.
- New Pretreatment Structure
    - Channel-mounted mechanical fine screen, bypass channel with manual screen;
    - Grit removal channel with manual removal, bypass channel;
    - Parshall flume flow metering (3-inch throat);
    - Fiberglass enclosure over entire structure.
- New Aeration Basin Structure
    - Cast-in-place concrete aeration basin structure, 250,000-gallon total effective volume (approximately 45.5’ x 45.5’ x 16’ SWD);
    - Two (2) integral cast-in-place concrete control structures at influent and effluent of tank;
    - Hydraulic gates to control operation of basin (series vs. parallel flow options);
    - Submerged fine-pore membrane diffusers and associated header piping and valves;
    - Floating dissolved oxygen (DO) sensor;
    - Three (3) positive displacement blowers (390 scfm @ 8.1 psi) located in new Control Building.
- Rapid Mix Manhole
    - Precast concrete structure,
    - One (1) rapid mixer to incorporate chemical into the aeration basin effluent for phosphorus removal in the clarifiers.
- New Final Clarifier Splitter Structure
    - Cast-in-place concrete splitter structure with aluminum stop gates.
- Final Clarifiers
    - Two (2) 25-foot diameter center-feed style final clarifiers (sized for future supplemental phosphorus removal through chemical addition);
    - Center-drive and walkway
    - Submerged sludge collection mechanisms (suction header);
    - Integral rotating skimming mechanism and scum beach;
    - Aluminum dome covers.
    - As an alternative, the City may consider using rectangular clarifiers, which may have advantages in terms of saving space.

Page Intentionally Left Blank



BOLTON & MENK

1960 PREMIER DRIVE
MANKATO, MINNESOTA 56001
Phone: (507) 625-4171
Email: Mankato@bolton-menk.com
www.bolton-menk.com

DESIGNED	JJN
DRAWN	TMJ
CHECKED	JJN
CLIENT PROJ. NO.	M24.119536

NO.	ISSUED FOR	DATE

GRAND MEADOW, MINNESOTA
FACILITY PLAN
PROCESS FLOW DIAGRAM

FIGURE
5.2

Page Intentionally Left Blank

- Scum Manhole
    - 6-foot diameter precast concrete wet-well structure;
    - One (1) submersible scum pump with guiderails;
    - Discharge piping and valves.
- RAS/WAS Structure
    - Cast-in-place concrete structure that receives final clarifier sludge and is equipped with return and waste pumping;
    - Three (3) submersible return activated sludge (RAS) pumps rated for 172 gpm capacity;
    - One (1) submersible waste activated sludge (WAS) pump rated for 115 gpm capacity;
    - Discharge valves and metering would be in the new Control Building.
- New Control / UV Building
    - UV Disinfection room with dual-bank UV system (in series);
    - Electrical room that houses the facility's main electrical distribution and switchgear;
    - Blower room;
    - Office/laboratory area;
    - Bathroom;
    - Meter room for RAS and WAS pumping;
    - Mechanical room;
- New Sludge Storage Structure
    - Dual-chamber 915,000 gallon below-grade cast-in-place concrete tank (includes future storage space for phosphorus-related sludge through supplemental chemical feed);
    - Two (2) submersible sludge transfer pumps;
    - Two (2) designated blowers located in new Control Building;
    - Course-bubble aeration diffusers, header piping, and valves;
    - Decant piping and telescoping valves for supernatant draw-off;
    - As an alternative, the City may consider an above-grade storage tank, which has a similar price point.
- Installation of new emergency generator.

This alternative would require the procurement of approximately four (4) acres of land adjacent to the existing facility site to the west. This property is currently privately owned and would need to be procured by the city.

G. FINANCIAL CONSIDERATIONS

Published and unpublished data on costs for similar types of construction projects were used to prepare the opinion of costs presented herein. Annual inflation rates for this type of construction have ranged from approximately 3 to 5 percent in recent years. The cost opinions presented herein are intended for use as guidelines in the decision-making process. The accuracy of these cost opinions should be considered within +/-20% of the actual project costs, therefore, cost ranges are provided to account for uncertainty. Once preparation of final drawings and specifications is underway, the cost opinions would be refined.

1. Capital Cost Opinion

The opinion of probable costs for the wastewater treatment alternatives are provided in the following Tables. Preliminary cost for engineering, construction oversight, administration, and legal are included.

a) Collection System Improvements

The purpose of collection system improvements is to eliminate excessive infiltration into the wastewater system. Sanitary sewer main services within the public right-of-way can be replaced or lined as previously described in Section 5B. Cost estimates to implement these improvements are summarized in Table 5.2 below.

Table 5.2 – Opinion of Capital Costs - Collection System Improvements

Item	Sanitary Sewer Replacement & Rehabilitation
Estimated Construction Subtotal	$5,400,000
Contingency (20%)	$1,080,000
Estimated Construction	**$6,480,000**
Engineering, Admin, Legal	$1,620,000
Project Total	**$8,100,000**

b) Wastewater Treatment Improvements

Expansion to the existing treatment facility, Alternative No.1, provides the lowest up-front capital costs, with expected costs ranging from $4.5 to $5.6 million to expand the stabilization pond system to handle the 20-year design flows and proposed phosphorus limits. The estimate includes the lift station and forcemain improvements, as well as land acquisition costs for the City to procure 25 acres of adjacent land. Table 5.3 shows the cost breakdown for Alternative No.1.

Alternative No.2 considers building a new mechanical treatment facility that would meet current and future discharge limits, thus, upfront capital costs are much higher. Table 5.4 shows the cost breakdown for Alternative No.2. The expected costs for this alternative are expected to range from $12.7 to $15.6 million.

Table 5.3 – Opinion of Capital Cost - Alternative No.1 - Expansion of Existing Stabilization Pond Facility	
Item	**Cost**
Mobilization, Bonds, Insurance	$150,000
Demolition of Existing Lift Station	$30,000
Misc. Rehabilitation to Existing Ponds	$100,000
Influent Lift Station	$150,000
8-inch Force Main	$210,000
Pond Liner	$715,000
Earthwork and Base Material	$1,150,000
Access and Service Road	$15,000
Phosphorus Removal	
Chemical Feed System	$40,000
Pre-Engineered Fiberglass Enclosure	$40,000
Concrete Foundation & Pad	$15,000
Mechanical Mixers	$50,000
Electrical Work	$50,000
Seeding	$15,000
Control Structures & Hydraulic Gates	$150,000
Site Piping	$100,000
Aluminum Fencing & Gates	$75,000
Erosion Control	$25,000
Subtotal	**$3,080,000**
Contingency (30%)	$920,000
Construction Subtotal	**$4,000,000**
Land Acquisition ($10,000/acre)	$250,000
Legal, Engineering, and Administration (20%)	$800,000
TOTAL	**$5,050,000**
Expected Range	**$4.5 to $5.6 Million**

* If the City of Grand Meadow decides to construct an effluent polishing clarifier for removal of phosphorus, this will add an additional $500,000 - $1,000,000 to the capital costs.

** If the City needs to expand the pond storage capacity to 210-days to avoid the summer discharge period for River Eutrophication Standards (RES) for phosphorus, this will add an additional $500,000 - $1,000,000 to the capital costs.

Table 5.4 – Opinion of Capital Cost - Alternative No. 2 - Construction of New Extended Aeration Facility (with Chemical Phosphorus Removal)	
Item	**Cost**
Mobilization, Bonds, Insurance	$280,000
Demolition of Existing Lift Station	$30,000
Decommissioning Existing Primary Pond	$700,000
Conversion of Existing Secondary Pond to Equalization	$50,000
Influent Lift Station	$150,000
8-inch Force Main	$210,000
Influent Diversion Structure	$30,000
Equalization Return Pump Station	$75,000
Pretreatment Structure	$350,000
Biological Treatment	$500,000
Final Clarifier Splitter Structure	$40,000
Final Clarifiers & Domes	$450,000
Scum Manhole & Pumping	$50,000
RAW/WAS Structure & Pumping	$100,000
Control/UV Building & Equipment	$950,000
Chemical Phosphorus Removal Feed System	$40,000
Rapid Mix Manhole and Mixer	$30,000
Sludge Storage Tank & Equipment	$800,000
Process Piping, Valves, and Site Utilities	$1,150,000
Site Work, Fill Material, and Paving	$600,000
Painting	$175,000
HVAC & Plumbing	$580,000
Electrical, Instrumentation, & Controls	$1,600,000
Emergency Power Generation	$100,000
Subtotal	**$9,040,000**
Contingency (30%)	$2,710,000
Construction Subtotal	**$11,750,000**
Land Acquisition ($10,000/acre)	$40,000
Legal, Engineering, and Administration (20%)	$2,350,000
TOTAL	**$14,140,000**
Expected Range	**$12.7 to $15.6 Million**

2. Operation, Maintenance, and Replacement Costs (OM&R)

   Operation and maintenance costs can have a significant effect on the overall cost of wastewater treatment. Major components of the O&M Costs include employee salaries and benefits, administration, chemicals, utilities, and other non-capital related expenditures. Table 5.5 summarizes expected O&M costs for the wastewater treatment alternatives.

   Compared to the existing O&M costs, Alternative No.1 is expected to be similar except with additional chemical and electrical costs. Since the changes include updating the existing control structures, lift station, and force main along with an expansion to the existing stabilization ponds and the construction of a chemical feed system, repairs and maintenance costs may decrease with the new equipment. However, utility costs would be expected to increase with new chemical feed system. Alternative No.1 also includes an additional budget item for short-lived asset reserves, which is discussed more in subsequent paragraphs.

   Alternatives No.2 is expected to see higher utility costs due to the new aeration equipment, process pumping, and UV disinfection modules. Alternative No.2 has the highest overall O&M cost, which includes budgeted items for additional testing, biosolids handling, and the highest short-lived asset reserves.

   Short-lived assets are items that typically require replacement within a 15-year time frame. We recommend having an annual budget in place to help finance these items. Short-lived assets may include pumps, chemical feed equipment, mixers, and other equipment that may require replacement within the design life of the system. A breakdown of estimated short-lived asset reserve costs for each alternative is presented in Table 5.6. The total budgeted values for each alternative are included in Table 5.5.

Table 5.5 – Estimated Operation and Maintenance Costs
City of Grand Meadow, Minnesota

Item	2018	Alternative No.1 - Expansion	Alternative No.2 - Extended Aeration
Worker Compensation and Benefits	$33,084	$35,000	$60,000
Utilities	$8,711	$15,000	$75,000
Maintenance, Repairs, & Services	$6,873	$7,500	$15,000
Chemical	No Charge	$15,000	$20,000
Supplies and Equipment	$6,841	$7,500	$10,000
Insurance	$3,569	$4,000	$5,000
Permit Fees and Training	$1,450	$2,000	$2,500
Miscellaneous	$789	$1,000	$2,500
Testing (+/-)	$3,343	$3,500	$5,000
Biosolids Handling (+/-)	--	No Change	$30,000
Short-Lived Asset Reserve	--	$9,000	$38,000
Total	**$64,660**	**$99,500**	**$263,000**

Table 5.6 – Short-Lived Asset Reserves City of Grand Meadow, Minnesota					
Item	**Useful Life**	**Alternative No.1**		**Alternative No.2**	
		Total	**Annual**	**Total**	**Annual**
Raw Lift Station Pumps	15	$40,000	$2,667	$40,000	$2,667
Biological Treatment					
Air Diffusers	10	--	--	$25,000	$2,500
Submersible Pumps	15	--	--	$20,000	$1,333
Mixers	15	$50,000	$3,333	$20,000	$1,333
Biosolids Processing					
Ras Pumps	15	--	--	$60,000	$4,000
Was Pump	15	--	--	$40,000	$2,667
Scum Pumping	15	--	--	$20,000	$1,333
Biosolids Pumps(s)	15	--	--	$40,000	$2,667
Chemical Feed System					
Ferric Chloride	15	$40,000	$2,667	$40,000	$2,667
UV Disinfection	15	--	--	$75,000	$5,000
Miscellaneous					
Samplers	15	--	--	$20,000	$1,333
HVAC	10	--	--	$100,000	$10,000
Total			**$9,000**		**$38,000**

3. Annual Project Costs

Determination of annual project costs is a useful measure to compare multiple alternatives on a financial basis. Annual project cost is the sum of the anticipated OM&R costs and the annualize capital costs. Annualized capital costs represent the yearly sum of money needed to finance a capital expenditure over a specified period and interest rate (i.e. capital recovery). Annualized costs are calculated based on an assumed 20-year loan period at 3.0% annual interest. Table 5.7 summarizes annual project cost for each alternate.

Table 5.7 - Estimated Total Annual Costs City of Grand Meadow, Minnesota		
Item	**Alternative 1A – Expansion**	**Alternative 2 – Extended Aeration**
Total Project Capital Costs		
Collection System Improvements	$8,100,000	$8,100,000
Wastewater System Improvements	$5,050,000	$14,140,000
Total Project Capital Costs	**$13,150,000**	**$22,240,000**
Annualized Project Costs[(1)]		
Collection System Improvements	$545,000	$545,000
Wastewater System Improvements	$340,000	$950,000
Total Annualized Costs	**$885,000**	**$1,495,000**
Annual OM&R Costs	$99,500	$263,000
Annual Project Cost	**$984,500**	**$1,758,000**

[(1)] Annualized project costs are calculated over a 20-year loan period at 3.0% annual interest

4. Life-Cycle Cost Analysis

Life cycle cost analysis (LCCA) is useful for assessing the long-term cost effectiveness of a project. Life cycle costs of each alternative were determined by performing a present worth cost analysis over a 20-year period. A summary of this analysis is presented in Table 5.8 below. A detailed analysis for each alternative is in Appendix E. Present worth costs are defined by the following equation:

Present Worth Costs = Total Capital Costs

+ Present Worth of Future Replacement Costs

+ Present Worth of Future O&M Costs

+ Present Worth of Future Salvage Value

Salvage costs are determined using linear depreciation of all project-related infrastructure that is not considered a sunk (i.e. irrecoverable) cost after it is installed. For this analysis Alternative No.1 it is assumed that nutrient limits are not implemented within the next 20 years. This way the alternatives replacement and salvage costs are on the merits of the materials and equipment and not an outside force.

Table 5.8 – 20 Year Present Worth Analysis for Treatment Alternatives City of Grand Meadow, Minnesota		
Item	**Alternative No.1**	**Alternative No.2**
Total Capital Costs	$5,050,000	$14,140,000
Replacement Costs	$575,000	$1,255,000
Salvage Value	($1,091,000)	($4,567,000)
O&M Costs	$1,481,000	$3,913,000
20-year Life Cycle Costs	**$6,015,000**	**$14,741,000**

5. Impact to User Costs

Based on the projected capital and OM&R costs, Table 5.9 summarizes the projected user cost for each alternative. User costs were developed using the concept of the equivalent dwelling unit (EDU). Residential EDUs were based on the existing number of connections provided by the city. Commercial EDUs are calculated based on the ratio of residential and commercial water usage. This was done using historical billing information form 2019. The City of Grand Meadow charges identical rates to t\residential and commercial users, therefore billing information is directly proportional to actual water usage and can be used to calculate EDUs.

EDU Calculation:

Residential

Number of EDUs/Connections	444
2019 Total Water Usage	27,452,180 gallons

Commercial

Calculated EDUs	70
2019 Total Water Usage	4,311,000 gallons
Ratio of Res./Comm. Revenue	0.157
Total EDUs	**514**

Table 5.9 – Estimated User Costs
City of Grand Meadow, Minnesota

Item	Existing	Alternative No.1 -Expansion	Alternative No.2 – Extended Aeration
Annual Costs			
Collection System Improvements		$545,000	$545,000
Wastewater Treatment Improvements	--	$340,000	$950,000
Annual OM&R	$64,660	$99,500	$263,000
Total Annual Costs	**$64,660**	**$984,500**	**$1,758,000**
Residential EDU	444	444	444
Commercial EDU	70	70	70
Total EDUs	**514**	**514**	**514**
Monthly Cost Per EDU (Wastewater Only)	**$10.48**	**$71.25**	**$196.66**
Monthly Cost Per EDU (Wastewater & Collection System)	**$10.48**	**$159.61**	**$285.02**
Calculated Affordability Threshold			
2017 MHI = $56,591[(1)]	**$66.02**	**$66.02**	**$66.02**

[(1)] Monthly affordability calculated as 1.4% of medium household income

H. SUMMARY OF ADVANTAGES AND DISADVANTAGES

1. Alternative No. 1 – Expansion of Existing Stabilization Pond Facility

   a) Advantages

      (1) Expands the capacity of the existing pond system for treatment of current and future design flows and loadings. Provides infrastructure for removal of phosphorus if a limit is imposed by MPCA.

      (2) Lowest operations cost of the alternatives.

      (3) Ponds provide trouble free wastewater treatment when properly designed, constructed, operated and maintained.

      (4) Lowest overall life-cycle costs.

   b) Disadvantages

      (1) Increased odor potential.

      (2) Limited flexibility and reliability in the operations.

      (3) Cannot achieve removal of total nitrogen if a limit is imposed by the MPCA in future permit renewals.

2. Alternative No. 2 – Construct New Extended Aeration Facility

   a) Advantages

      (1) Provides the necessary infrastructure for another 50 to 60 years of treatment, with upgrades as needed.

      (2) Extended aeration activated sludge process is a robust, flexible treatment technology that would meet all the City's current treatment needs, while providing expandability to meet future needs.

      (3) Provides high level of operator control.

      (4) Provides provisions to expand the facility as needed in response to future treatment needs, if required.

      (5) The incremental costs to upgrade to biological nutrient removal in the future may be eligible for PSIG grant money without a regulatory certainty agreement.

      (6) Less land is required in comparison to Alternative No. 1

   b) Disadvantages

      (1) Increased capital costs compared to Alternative No. 1.

      (2) Increased OM&R costs compared to Alternative No. 1.

      (3) Increased life-cycle cost compared to Alternative No. 1.

Page Intentionally Left Blank

VI. RECOMMENDATIONS AND IMPLEMENTATION

A. GENERAL

Previous sections of this report evaluated two (2) alternatives for wastewater treatment improvements for the City of Grand Meadow, including collection system improvements to reduce excessive infiltration and inflow. This section will review the alternatives and provide a recommendation for wastewater system improvements based on both quantitative and qualitative factors, including financial considerations, reliability, expandability, and operation and maintenance considerations. Financing options and a proposed implementation schedule are also discussed.

B. DECISION MATRIX

Table 6.1 presents a decision matrix for the two (2) wastewater system improvements alternatives discussed in this report. Alternatives No. 2 provides the highest rating in terms of meeting current and future treatment needs while Alternative No.1 meets all current needs at the lowest capital and OM&R costs.

Table 6.1 - Decision Matrix
City of Grand Meadow, Minnesota

Item	Alternative 1 – Pond Expansion	Alternative 2 - Extended Aeration
Overall Ability to meet Improvement Needs	Good	Excellent
Expandability Potential	Good	Excellent
Ability to meet Current Discharge Limits	Excellent	Excellent
Ability to meet Future Discharge Limits	Poor	Excellent
Land Requirement	25 acres	4 acres
Estimated Capital Costs		
Collection System Improvements	$8,100,000	$8,100,000
Wastewater Treatment Improvements	$5,050,000	$14,140,000
Total Capital Costs	**$13,150,000**	**$22,240,000**
Total Annual Costs		
Collection System Improvements	$545,000	$545,000
Wastewater Treatment Improvements	$340,000	$950,000
Estimated OM&R Costs	$99,500	$263,000
Total Annual Costs	**$984,500**	**$1,758,000**
Estimate Life-Cycle Costs (Treatment Only)	$6,015,000	$14,741,000
Estimated Cost Per User (Wastewater Only)	$71.25	$196.66
Estimated Cost Per User (Wastewater & Collection System)	$159.61	$285.02

C. RECOMMENDED IMPROVEMENTS

1. Recommended Alternative

Based on the specific needs of the City of Grand Meadow and the preliminary cost analysis, the recommended alternative for wastewater treatment improvements is Alternative No.1 – Expansion of the Existing Stabilization Pond Facility (with Chemical Phosphorus Removal). We also recommend implementing a capital improvements plan to replace the aging sanitary collection system infrastructure to reduce excessive infiltration and inflow. A reduction in I & I flow could allow the City to construct a smaller pond expansion and save associated capital costs; therefore, it is necessary to phase these improvements.

Key highlights and advantages of the recommended improvements include the following:

- *Phase 1: Sanitary Collection System Improvements*
    - Sanitary collection system improvements are targeted to address the most deteriorated areas of the system.
    - The goal is to reduce I&I and potentially allow for the construction of a smaller pond expansion.
- *Phase 2: Wastewater Treatment Facility Improvements*
    - The proposed improvements follow efforts to reduce I&I into the collection system. The intent is to reduce the needed pond expansion and save associated capital costs.
    - Provides the City of Grand Meadow approximately another 20 years of wastewater treatment needs.
    - Lowest capital and O&M costs of the treatment alternatives.
    - Ponds provide trouble free wastewater treatment when properly designed, constructed, operated and maintained.
    - Lowest overall life-cycle costs.

The proposed sanitary collection system improvements are shown in Figure 5.1 in the previous section. A preliminary site plan of the proposed wastewater treatment improvements is presented in Figure 6.1. The proposed improvements would be in the adjacent property west of the existing primary cell. This property is privately owned. The new facility would be constructed while the existing primary and secondary cells are in full operation. The existing outfall SD002 would continue to be used.

2. Cost Summary

Table 6.2 provides a cost summary of the recommended Alternative No.1.

Table 6.2 – Cost Estimate Summary of Alternative No.1 City of Grand Meadow, Minnesota	
Item	**Cost**
Capital Costs	
Collection System Improvements	$8,100,000
Wastewater Treatment Improvements	$5,050,000
Total Project Capital Cost	**$13,150,000**
Annual Costs	
Collection System Improvements	$545,000
Wastewater Treatment Improvements	$340,000
Projected O&M Cost	$99,500
Total Annual Project Costs	**$984,500**
Estimated User Costs (Wastewater Only)	$71.25
Estimated User Costs (Wastewater & Collection System)	$159.61
Calculated Affordability Threshold[(1)]	
2017 ACS (MHI=$56,591)	$66.02

[(1)] Monthly affordability threshold calculated as 1.4% of medium household income

Figure 6.1 - Proposed Stabilization Ponds

D. FINANCING OPTIONS

There are several funding options the City of Grand Meadow can explore to help finance the proposed improvements:

1. Bonding

   The City could sell general obligation, local improvement, or revenue bonds in order to raise the capital costs to finance the treatment facility and collection system improvements. The proceeds of the bonds would need to be repaid, either through property taxes, assessments, or user charges to the system.

2. Assessment

   A portion of the capital costs of the project can be assessed to local property owners under Minnesota Statute 429. Using this method, a one-time assessment could be levied and repaid over a period of 10 to 20 years. This cost could help offset some monthly increases in user fees and permit use of general obligation bonding.

3. Rural Development (RD) Loan

   The United State Department of Agriculture (USDA) Office of Rural Development (RD) has a water and waste disposal program that provides low-interest loans and grant money for eligible communities under 10,000 population. In order to be considered for Rural Development financing, a Preliminary Engineering Report (PER) must be completed, which provides specific project and financial information for RD to consider. This is the intention of this report.

   Rural Development uses an Equivalent Dwelling Unit (EDU) calculation for assisting in determining the amount and type of funding for which a community is eligible. Proposed project costs and preliminary EDU calculations indicate a high likelihood that the proposed project would be eligible for both loan and grant financing. The projected costs are expected to exceed the City's affordability threshold of $70.74 per EDU, which is calculated as 1.5% of Grand Meadow's median household income (MHI) of $56,591 (per 2017 American Community Survey). The City would potentially be grant eligible for portions of the project that exceed this affordability threshold. Low-interest loans could potentially be used to pay for portions of the project below this threshold. Repayment of loans could be through an increase in local property tax rates, user fees, or assessments.

   Rural Development loan financing is a 40-year term. Interest rates currently vary between 1.625 to 2.750 percent and are based on the City's median household income. The City of Grand Meadow has a relatively high MHI; therefore, they would likely qualify for the higher market rate without discounts.

4. State Revolving Fund Loan (through PFA)

   The Clean Water Revolving Fund (CWRF) loan program was created under the State Revolving Fund (SRF) provisions in the Federal Clean Water Act to provide financial assistance for water pollution control projects. Minnesota's revolving loan program provides loans to municipalities for planning, design and construction of wastewater treatment projects. The loans are typically for a 20-year period at a 25 percent discount on market interest rates. The loan monies are administered through the Public Facilities Authority. To be eligible for PFA funding, the City must submit a Facilities Plan for review and approval by the Minnesota Pollution Control Agency.

   Revenue for loan repayment is typically generated by user rates, availability charges or assessment. In recent years, interest rates have been below two percent, and this has proven to be an excellent funding source for this type of project.

5. Small Cities Development Program

   The Small Cities Development Program provides federal grants from the US Department of Housing and Urban Development (HUD) to local units of the government on a competitive basis for a variety of community development projects. Eligible applicants include cities and townships with populations under 50,000 and counties with populations under 200,000.

   The proposed project must meet one of the three (3) national objectives:

   1. Benefit to low and moderately low-income persons;
   2. Elimination of slum and blight conditions; or
   3. Elimination of an urgent threat to public health or safety.

   In addition, the proposed activities must be eligible for funding, project needs must be documented, and the general public must be involved in the application preparation.

   Under this program, Small Cities Development Public Facility grants are available for wastewater treatment projects, including collection systems and treatment plants; freshwater projects, including wells, water towers, and distribution systems; storm sewer projects; flood control projects; and occasionally street projects. The maximum grant award for Public Facility project is $600,000.

6. Wastewater Infrastructure Funding (WIF) Program

   Supplemental assistance to municipalities is currently available through the wastewater infrastructure (WIF) program. The Public Facilities Authority (PFA) administers the WIF program to those communities that are applying for funding under the Clean Water Revolving Fund loan program or the United States Department of Agriculture Rural Economic and Community Development's (USDA/RECD) Water and Waste Disposal Loans and Grants Program.

   WIF funding provides income-based grants for portions of projects that exceed affordability criteria. The maximum WIF grant may not exceed 80% of the eligible costs, or a maximum of $5 million dollars.

   This program is income based. Since the proposed project costs would exceed the City's affordability threshold (calculated as 1.4% of MHI, or $66.02 per month for the average household), the project may be eligible for this financing source.

7. Economic Development Administration

   The Economic Development Administration (EDA) has a grant program, which is used to help communities develop the infrastructure required to attract or maintain businesses or industries. Grant sizes vary depending upon the community's need and the impact the project would have on the community. If the City of Grand Meadow expects to get an industry that provides jobs to its residents and has wastewater treatment need, the City may be eligible for an EDA Grant, or by leveraging existing industries it could also be eligible. Based on our discussion with City staff, Grand Meadow is not expected any significant commercial or industrial growth over the 20-year planning period, therefore the City would not be eligible for this financing option.

8. Point Source Implementation Grant (PSIG)

   The Point Source Implementation Grant (PSIG) is a grant program to assist and encourage communities to make infrastructure improvements in order to comply with new stringent NPDES permit limits, such as TMDL waste load requirements, phosphorus reduction requirements, and water quality-based effluent limits. The program is funded through the Clean Water Legacy Program and is competitive based on scoring from the

MPCA under the same criteria as the CWRF. The grant program provides 80% grant on eligible portions of the project up to a maximum of $7 million dollars.

The proposed alternative would potentially be eligible for this funding source due to the need to remove phosphorus according to the preliminary effluent limits received from the MPCA.

E. IMPLEMENTATION SCHEDULE

The proposed implementation schedule for the recommended project is presented in Table 6.3 below.

Table 6.3 – Project Implementation Schedule
City of Grand Meadow, Minnesota

Item	Date
Review with City/ Finalize Report	February 2020
Submit to MPCA	March 6, 2020
Deadline to Submit IUP Letter to PFA	June 5, 2020
Preliminary Approval by MPCA	June 30, 2020
Deadline to Submit PSIG Application to PFA	July 30, 2020
PFA Funding Lists Released	September 30, 2020
Design of Improvements	July 2020 - February 2021
Submit Plans and Specifications to MPCA	March 2021
Plan approval by MPCA	June 2021
Advertise for Bids	June 2021
Award Contact/Begin Construction	July - August 2021
Complete Construction and Closeout	December 2022

VII. CONCLUSIONS

A. GENERAL

Recommended wastewater system improvements for the City of Grand Meadow include the following phased improvements:

- *Phase 1: Sanitary Collection System Improvements and I&I Reduction*
- *Phase 2: Expansion of the Existing Stabilization Pond Facility (with Chemical Phosphorus Removal)*

Phasing these improvements is necessary to potentially reduce the proposed pond expansion needs and associated capital cost savings. The proposed pond expansion includes construction of an in-pond chemical feed system for chemical phosphorus removal. The use of a polishing clarifier or the expansion of the existing facility to 210-days of storage capacity (to avoid the summer discharge period for River eutrophication Standards) are both feasible alternatives for handling future phosphorus limits. The final design and selection of phosphorus removal technology will be dictated by the permit limits received by the MPCA. We also recommend updating the existing facility's outdated control structures, influent lift station, and force main. Details on the proposed improvements are discussed thoroughly in Sections 5 and 6 of this Facility Plan.

The proposed improvements will provide the capacity needed to meet current and future design flows. It will do this at the lowest capital cost amongst the alternatives presented in Sections 5 and 6 along with lowest operations and maintenance costs. Stabilization ponds are a relatively low maintenance treatment option that provide trouble free wastewater treatment. From a constructability standpoint, the proposed improvements are feasible and can be completed by traditional construction means and methods. The proposed improvements would fit west of the existing primary cell, which requires procurement of approximately 25-acres of privately-owned land. Selection of the project site will require design considerations for mitigating impacts to the surrounding flood plain. Grand Meadow is also located in a karst-prone region of the state, which may require a hydrogeological study and further design requirements to meet MPCA approval for expansion of the pond system.

After Submittal and approval of this Facility Plan to the Minnesota Pollution Control Agency (MPCA), we recommend the City should move forward with the preparation of construction plans and specifications. The City must also evaluate alternative funding options as discussed in Section 6D of this report. Depending on which funding option(s) are selected, Bolton & Menk will work with the City of Grand Meadow to secure these funds.

Page Intentionally Left Blank

Appendix A: Existing NPDES Permit

MINNESOTA POLLUTION CONTROL AGENCY

National Pollutant Discharge Elimination System/State Disposal System

MN0023558

Permittee:	City of Grand Meadow
Facility name:	Grand Meadow Wastewater Treatment Plant
Receiving water:	Deer Creek - Class 2B, 3C, 4A, 4B, 5, 6 water
City:	Grand Meadow **County:** Mower
Issuance date:	March 9, 2018
Expiration date:	February 28, 2023

The state of Minnesota, on behalf of its citizens through the Minnesota Pollution Control Agency (MPCA), authorizes the Permittee to operate a disposal system at the facility named above and to discharge from this facility to the receiving water named above, in accordance with the requirements of this permit.

The goal of this permit is to reduce pollutant levels in point source discharges and protect water quality in accordance with the U.S. Clean Water Act, Minnesota statutes and rules, and federal laws and regulations.

Although this permit is effective on the issuance date identified above, the limits and monitoring requirements are not effective until April 1, 2018. This permit expires at midnight on the expiration date identified above.

Signature: Theresa Haugen

This document has been electronically signed.

for the Minnesota Pollution Control Agency

Theresa Haugen
Pollution Control Specialist Principal
Water Section
Industrial Division

Submit eDMRs
Submit via the MPCA e-Services at
https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initiate=true

Submit other WQ reports to:
Attention: WQ Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Questions on this permit?
For eDMR and other permit reporting issues, contact:
Belinda Nicolas, 651-757-2613

For specific permit requirements, please refer to:
Cory Schultz, 507-206-2655

Wastewater Permit Program general questions, contact:
MPCA, 651-282-6143 or 800-657-3938.

Table of Contents

Page 2

1. Permitted facility description

The Grand Meadow Wastewater Treatment Facility (facility) is located at 204 1st Ave SE, Grand Meadow, Minnesota 55936, Mower County.

Major components of the facility include:
- Primary treatment - primary stabilization pond
- Pumping (Lift) Station
- Secondary Stabilization Pond

The application and plans indicate that the existing treatment system consists of two lift stations, approximately 3,800 feet of six-inch force main, and a two-cell stabilization pond system. This is a Class D facility.

The Facility has a controlled discharge (SD002) to an unnamed creek to Deer Creek (Class 2B water) and is designed to treat an average wet weather influent flow 0.120 million gallons per day with a five-day carbonaceous biochemical oxygen demand strength of 160 milligrams per liter. The primary and secondary pond cells have surface areas of 9.2 acres and 6.4 acres respectively, measured at the four-foot average operating level. The total detention period of the pond system is approximately 180 days.

The main lift station bypass is capable of discharging untreated wastewater to Deer Creek. This bypass is locked and manually controlled. There are no other bypass or overflow points known to exist in this treatment system. Because the city of Grand Meadow is located in an area of southeastern Minnesota where karstic geological characteristics are prevalent, the Permittee is required by an administrative order to develop a contingency plan which must be implemented in the event that the facility is affected by these characteristics.

The Facility is further described in plans and specifications on file with the MPCA (Permit Number 7224, dated March 8, 1972) and in an engineering report by the firm of Rieke-Carroll-Muller Associates, Inc., Hopkins, Minnesota.

Changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility are subject to antidegradation requirements found in Minn. R. 7050.0250 to 7050.0335.

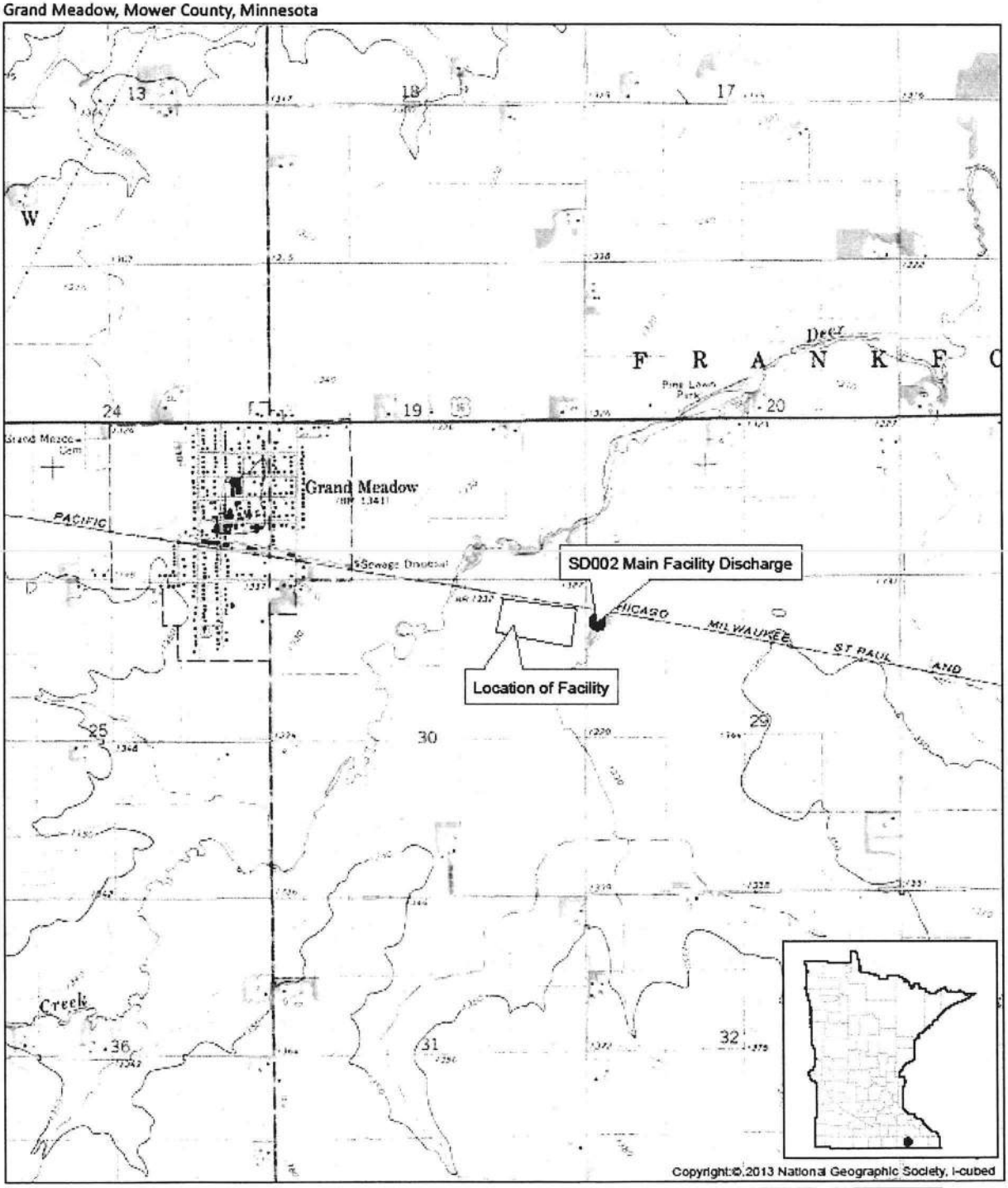
This Permit also complies with Minn. R. 7053.0275 regarding anti-backsliding.

Any point source discharger of sewage, industrial, or other wastes for which a National Pollutant Discharge Elimination System Permit has been issued by the MPCA that contains effluent limits more stringent than those that would be established by Minn. R. 7053.0215 to 7053.0265 shall continue to meet the effluent limits established by the permit, unless the permittee establishes that less stringent effluent limits are allowable pursuant to federal law, under section 402(o) of the Clean Water Act, United States Code, title 33, section 1342.

2. Location map of permitted facility

Topographic Map of Permitted Facility

MN0023558: Grand Meadow Wastewater Treatment Facility
T103N, R14W, Section 30
Grand Meadow, Mower County, Minnesota



Map produced by: MPCA Staff, 9/19/2016
Scale: 1:24,000

		Discharge limitations							Monitoring requirements			
Subject item	**Parameter**	**Quantity /Loading avg.**	**Quantity /Loading max.**	**Quantity /Loading units**	**Quality /Conc. min.**	**Quality /Conc. avg.**	**Quality /Conc. max.**	**Quality/ Conc. units**	**Frequency**	**Sample type**	**Effective period**	**Notes**
WS 001 Influent Waste Stream	Nitrite Plus Nitrate, Total (as N)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Mar, Jun, Sep, Dec	
WS 001 Influent Waste Stream	Nitrogen, Kjeldahl, Total					Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Mar, Jun, Sep, Dec	
WS 001 Influent Waste Stream	Nitrogen, Total (as N)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Mar, Jun, Sep, Dec	
WS 001 Influent Waste Stream	pH				Monitor only. calendar quarter minimum		Monitor only. calendar quarter maximum	standard units	once per quarter	Grab	Mar, Jun, Sep, Dec	
WS 001 Influent Waste Stream	Phosphorus, Total (as P)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	4-Hour Flow Composite	Mar, Jun, Sep, Dec	
WS 001 Influent Waste Stream	Precipitation		Monitor only. calendar month total	inches					once per day	Measurement	Jan-Dec	
WS 001 Influent Waste Stream	Solids, Total Suspended (TSS)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	4-Hour Flow Composite	Mar, Jun, Sep, Dec	

		Discharge limitations						Monitoring requirements				
Subject item	**Parameter**	**Quantity /Loading avg.**	**Quantity /Loading max.**	**Quantity /Loading units**	**Quality /Conc. min.**	**Quality /Conc. avg.**	**Quality /Conc. max.**	**Quality/ Conc. units**	**Frequency**	**Sample type**	**Effective period**	**Notes**
SD 002 Total Facility Discharge	Nitrogen, Total (as N)					Monitor only. calendar month average		milligrams per liter	once per month	Grab	Jan-Dec	
SD 002 Total Facility Discharge	Oxygen, Dissolved				Monitor only. calendar month minimum			milligrams per liter	twice per week	Grab	Jan-Dec	
SD 002 Total Facility Discharge	pH				6.0 calendar month minimum		9.0 calendar month maximum	standard units	twice per week	Grab	Jan-Dec	
SD 002 Total Facility Discharge	Phosphorus, Total (as P)	Monitor only. calendar month average		kilograms per day		Monitor only. calendar month average		milligrams per liter	twice per week	Grab	Jan-Dec	
SD 002 Total Facility Discharge	Solids, Total Dissolved (TDS)					Monitor only. calendar month average		milligrams per liter	once per half year	Grab	Jan-Jun, Jul-Dec (Jun, Dec)	
SD 002 Total Facility Discharge	Solids, Total Suspended (TSS)	177.4 calendar month average	256.2 maximum calendar week average	kilograms per day		45 calendar month average	65 maximum calendar week average	milligrams per liter	twice per week	Grab	Jan-Dec	
WS 001 Influent Waste Stream	BOD, Carbonaceous 05 Day (20 Deg C)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	4-Hour Flow Composite	Mar, Jun, Sep, Dec	
WS 001 Influent Waste Stream	Flow		Monitor only. calendar month total	million gallons		Monitor only. calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Jan-Dec	

7. Limits and monitoring

		Discharge limitations						Monitoring requirements				
Subject item	**Parameter**	**Quantity /Loading avg.**	**Quantity /Loading max.**	**Quantity /Loading units**	**Quality /Conc. min.**	**Quality /Conc. avg.**	**Quality /Conc. max.**	**Quality/ Conc. units**	**Frequency**	**Sample type**	**Effective period**	**Notes**
SD 002 Total Facility Discharge	BOD, Carbonaceous 05 Day (20 Deg C)	98.5 calendar month average	157.6 maximum calendar week average	kilograms per day		25 calendar month average	40 maximum calendar week average	milligrams per liter	twice per week	Grab	Jan-Dec	
SD 002 Total Facility Discharge	Fecal Coliform, MPN or Membrane Filter 44.5C					200 calendar month geometric mean		organisms per 100 milliliter	twice per week	Grab	Apr-Oct	
SD 002 Total Facility Discharge	Flow		Monitor only. calendar month total intervention	million gallons		Monitor only. calendar month average intervention	Monitor only. calendar month max intervention limit	million gallons per day	once per day	Measurement, Continuous	Jan-Feb, Jul, Aug	The intervention limit is zero million gallons per day. If a discharge occurs outside the acceptable discharge window, please refer to the Ponds - Discharges Outside Acceptable Discharge Periods section of your permit.
SD 002 Total Facility Discharge	Flow		Monitor only. calendar month total	million gallons		Monitor only. calendar month average	Monitor only. calendar month maximum	million gallons per day	once per day	Measurement, Continuous	Mar-Jun, Sep-Dec	
SD 002 Total Facility Discharge	Nitrite Plus Nitrate, Total (as N)					Monitor only. calendar month average		milligrams per liter	once per month	Grab	Jan-Dec	
SD 002 Total Facility Discharge	Nitrogen, Ammonia, Total (as N)					Monitor only. calendar month average		milligrams per liter	once per half year	Grab	Jan-Jun, Jul-Dec (Jun, Dec)	
SD 002 Total Facility Discharge	Nitrogen, Kjeldahl, Total					Monitor only. calendar month average		milligrams per liter	once per month	Grab	Jan-Dec	

6. Submittal action summary

SD 002	Effluent To Surface Water	
		Surface Discharge: Minor Stabilization Pond Effluent Requirements
	6.1.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
WS 001	Influent Waste	
		Waste Stream: Stabilization Pond Influent Requirements
	6.2.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
MN0023558	Grand Meadow WWTP	
		Phosphorus Management Plan
	6.3.1	The Permittee shall submit a phosphorus management plan: Due by 180 days after permit reissuance. [Minn. R. 7001]
		Pretreatment: Undelegated Requirements
	6.4.2	The Permittee shall submit a pretreatment annual report: Due by 31 days after the end of each calendar year following permit issuance if a SIU discharges to the POTW during a given calendar year. [Minn. R. 7049]
		Total Facility Requirements (NPDES/SDS)
	6.5.3	Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for permit reissuance: Due by 180 days prior to permit expiration. If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration. If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following (Minn. R. 7001.0040 and 7001.0160): a. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit; b. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit; c. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies. [Minn. R. 7001.0160]

		a. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit; b. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit; c. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies. [Minn. R. 7001.0160]

		information for the proposed additive. The aquatic toxicity information shall include at minimum the results of: a) a 48-hour LC50 or EC50 acute study for a North American freshwater planktonic crustacean (either Ceriodaphnia or Daphnia sp.) and b) a 96-hour LC50 acute study for rainbow trout, bluegill or fathead minnow or another North American freshwater aquatic species other than a planktonic crustacean; c. a complete product use and instruction label; d. the commercial and chemical names and Chemical Abstract Survey (CAS) number for all ingredients in the additive (If the MSDS does not include information on chemical composition, including percentages for each ingredient totaling to 100%, the Permittee shall contact the supplier to have this information provided); and e. The proposed method of application, application frequency, concentration, and daily average and maximum rates of use. Upon review of the information submitted regarding the proposed chemical additive, the MPCA may require additional information be submitted for consideration. This permit may be modified to restrict the use or discharge of a chemical additive and include additional influent and effluent monitoring requirements. Approval for the use of an additive shall not justify the exceedance of any effluent limitation nor shall it be used as a defense against pollutant levels in the discharge causing or contributing to the violation of a water quality standard. [Minn. R. 7001.0170]
	5.11.123	MPCA Initiated Permit Modification, Suspension, or Revocation. The MPCA may modify or revoke and reissue this permit pursuant to Minn. R. 7001.0170. The MPCA may revoke without reissuance this permit pursuant to Minn. R. 7001.0180. [Minn. R. 7001.0170, Minn. R. 7001.0180]
	5.11.124	TMDL Impacts. Facilities that discharge to an impaired surface water, watershed or drainage basin may be required to comply with additional permits or permit requirements, including additional restriction or relaxation of limits and monitoring as authorized by the CWA 303(d)(4)(A) and 40 CFR 122.44.l.2.i., necessary to ensure consistency with the assumptions and requirements of any applicable US EPA approved wasteload allocations resulting from Total Maximum Daily Load (TMDL) studies. [40 CFR 122.44(l)(2)(i)]
	5.11.125	Permit Transfer. The permit is not transferable to any person without the express written approval of the Agency after compliance with the requirements of Minn. R. 7001.0190. A person to whom the permit has been transferred shall comply with the conditions of the permit. [Minn. R. 7001.0150, 3(N)]
	5.11.126	Facility Closure. The Permittee is responsible for closure and post-closure care of the facility. The Permittee shall notify the MPCA of a significant reduction or cessation of the activities described in this permit at least 180 days before the reduction or cessation. The MPCA may require the Permittee to provide to the MPCA a facility Closure Plan for approval. Facility closure that could result in a potential long-term water quality concern, such as the ongoing discharge of wastewater to surface or ground water, may require a permit modification or reissuance. The MPCA may require the Permittee to establish and maintain financial assurance to ensure performance of certain obligations under this permit, including closure, post-closure care and remedial action at the facility. If financial assurance is required, the amount and type of financial assurance, and proposed modifications to previously MPCA-approved financial assurance, shall be approved by the MPCA. [Minn. Stat. ch. 116.07, 4]
	5.11.127	Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for permit reissuance: Due by 180 days prior to permit expiration. If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration. If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following (Minn. R. 7001.0040 and 7001.0160):

		compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these backup or auxiliary facilities are technically and economically feasible Minn. R. 7001.0150. subp. 3, item F. [Minn. R. 7001.0150, 3(F)]
	5.11.114	In the event of a reduction or loss of effective treatment of wastewater at the facility, the Permittee shall control production or curtail its discharges to the extent necessary to maintain compliance with the terms and conditions of this permit. The Permittee shall continue this control or curtailment until the wastewater treatment facility has been restored or until an alternative method of treatment is provided. [Minn. R. 7001.1090, 1(C)]
	5.11.115	Solids Management. The Permittee shall properly store, transport, and dispose of biosolids, septage, sediments, residual solids, filter backwash, screenings, oil, grease, and other substances so that pollutants do not enter surface waters or ground waters of the state. Solids should be disposed of in accordance with local, state and federal requirements. [40 CFR 503, Minn. R. 7041]
	5.11.116	Scheduled Maintenance. The Permittee shall schedule maintenance of the treatment works during non-critical water quality periods to prevent degradation of water quality, except where emergency maintenance is required to prevent a condition that would be detrimental to water quality or human health. [Minn. R. 7001.0150, 3(F), Minn. R. 7001.150, 2(B)]
	5.11.117	Control Tests. In-plant control tests shall be conducted at a frequency adequate to ensure compliance with the conditions of this permit. [Minn. R. 7001.0150, 3(F), Minn. R. 7001.150, 2(B)]
	5.11.118	Changes to the Facility or Permit. [Minn. R. 7001]
	5.11.119	Permit Modifications. Except as provided under Minnesota Statutes, section 115.07, subdivisions 1 and 3, no person required by statute or rule to obtain a permit may construct, install, modify, or operate the facility to be permitted, nor shall a person commence an activity for which a permit is required by statute or rule until the agency has issued a written permit for the facility or activity. Permittees that propose to make a change to the facility or discharge that requires a permit modification shall follow Minn. R. 7001.0190. If the Permittee cannot determine whether a permit modification is needed, the Permittee shall contact the MPCA prior to any action. It is recommended that the application for permit modification be submitted to the MPCA at least 180 days prior to the planned change. [Minn. R. 7001.0030]
	5.11.120	Plans, specifications and MPCA approval are not necessary when maintenance dictates the need for installation of new equipment, provided the equipment is the same design size and has the same design intent. For instance, a broken pipe, lift station pump, aerator, or blower can be replaced with the same design-sized equipment without MPCA approval. If the proposed construction is not expressly authorized by this permit, it may require a permit modification. If the construction project requires an Environmental Assessment Worksheet under Minn. R. 4410, no construction shall begin until a negative declaration is issued and all approvals are received or implemented. [Minn. R. 7001.0030]
	5.11.121	Report Changes. The Permittee shall give advance notice as soon as possible to the MPCA of any substantial changes in operational procedures, activities that may alter the nature or frequency of the discharge, and/or material factors that may affect compliance with the conditions of this permit. [Minn. R. 7001.0150, 3(M)]
	5.11.122	Chemical Additives. The Permittee shall receive prior written approval from the MPCA before increasing the use of a chemical additive authorized by this permit, or using a chemical additive not authorized by this permit, in quantities or concentrations that have the potential to change the characteristics, nature and/or quality of the discharge. The Permittee shall request approval for an increased or new use of a chemical additive at least 60 days, or as soon as possible, before the proposed increased or new use. This written request shall include at least the following information for the proposed additive: a. The process for which the additive will be used; b. Safety Data Sheet (SDS) which shall include aquatic toxicity, human health, and environmental fate

		[Minn. R. 7001.1090]
	5.11.108	Sampling of a release. Upon discovery of a release, the Permittee shall: a. Collect representative samples of the release. The Permittee shall sample the release for parameters of concern immediately following discovery of the release. The Permittee may contact the MPCA during business hours to discuss the sampling parameters and protocol. In addition, Fecal Coliform Bacteria samples shall be collected where it is determined by the Permittee that the release contains or may contain sewage. If the release cannot be immediately stopped, the Permittee shall consult with MPCA regarding additional sampling requirements. Samples shall be collected at least, but not limited to, two times per week for as long as the release continues. b. Submit the sampling results on the Release Sampling Form (http://www.pca.state.mn.us/index.php/view-document.html?gid=18867). The Release Sampling Form shall be submitted to the MPCA with the next DMR or within 30 days whichever is sooner. [Minn. R. 7001.1090]
	5.11.109	Bypass. [Minn. R. 7001]
	5.11.110	Anticipated bypass. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if the bypass is for essential maintenance to assure efficient operation of the facility. The permittee shall submit prior notice, if possible at least ten days before the date of the bypass to the MPCA. The notice of the need for an anticipated bypass shall include the following information: a. the proposed date and estimated duration of the bypass; b. the alternatives to bypassing; and c. a proposal for effluent sampling during the bypass. Any bypass wastewater shall enter waters of the state from outfalls specifically authorized by this permit. Therefore, samples shall be collected at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. [40 CFR 122.41(m)(2 and 3), Minn. R. 7001.1090, 1(J)]
	5.11.111	All other bypasses are prohibited. The MPCA may take enforcement action against the Permittee for a bypass, unless the specific conditions described in Minn. R. Ch. 7001.1090 subp. 1, K and 122.41(m)(4)(i) are met. In the event of an unanticipated bypass, the permittee shall: a. Take all reasonable steps to immediately end the bypass. b. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon commencement of the bypass. You may contact the MPCA during business hours at 800-657-3864 or 651-296-6300 (metro area). c. Immediately take action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies for implementation of abatement, clean-up, or remediation activities. d. Only allow bypass wastewater as specified in this section to enter waters of the state from outfalls specifically authorized by this permit. Samples shall be collected at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. The permittee shall also follow the reporting requirements for effluent violations as specified in this permit. [40 CFR 122.41(m)(4)(i), Minn. R. 7001.1090, 1(K), Minn. Stat. ch. 115.061]
	5.11.112	Operation and Maintenance. [Minn. R. 7001]
	5.11.113	The Permittee shall at all times properly operate and maintain the facilities and systems of treatment and control, and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The Permittee shall install and maintain appropriate backup or auxiliary facilities if they are necessary to achieve

		specified in this permit, the Permittee shall immediately make every effort to verify the violation by collecting additional samples, if appropriate, investigate the cause of the violation, and take action to prevent future violations. If the permittee discovers that noncompliance with a condition of the permit has occurred which could endanger human health, public drinking water supplies, or the environment, the Permittee shall within 24 hours of the discovery of the noncompliance, orally notify the commissioner and submit a written description of the noncompliance within 5 days of the discovery. The written description shall include items a. through e., as listed below. If the Permittee discovers other non-compliance that does not explicitly endanger human health, public drinking water supplies, or the environment, the non-compliance shall be reported during the next reporting period to the MPCA with its Discharge Monitoring Report (DMR). If no DMR is required within 30 days, the Permittee shall submit a written report within 30 days of the discovery of the noncompliance. This description shall include the following information: a. a description of the event including volume, duration, monitoring results and receiving waters; b. the cause of the event; c. the steps taken to reduce, eliminate and prevent reoccurrence of the event; d. the exact dates and times of the event; and e. steps taken to reduce any adverse impact resulting from the event. [Minn. R. 7001.150, 3(K)]
	5.11.104	Upset Defense. In the event of temporary noncompliance by the Permittee with an applicable effluent limitation resulting from an upset at the Permittee's facility due to factors beyond the control of the Permittee, the Permittee has an affirmative defense to an enforcement action brought by the Agency as a result of the noncompliance if the Permittee demonstrates by a preponderance of competent evidence: a. the specific cause of the upset; b. that the upset was unintentional; c. that the upset resulted from factors beyond the reasonable control of the Permittee and did not result from operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or increases in production which are beyond the design capability of the treatment facilities; d. that at the time of the upset the facility was being properly operated; e. that the Permittee properly notified the Commissioner of the upset in accordance with Minn. R. 7001.1090, subp. 1, item I; and f. that the Permittee implemented the remedial measures required by Minn. R. 7001.0150, subp. 3, item J. [Minn. R. 7001.1090]
	5.11.105	Release. [Minn. R. 7001]
	5.11.106	Unauthorized Releases of Wastewater Prohibited. Except for discharges from outfalls specifically authorized by this permit, overflows, discharges, spills, or other releases of wastewater or materials to the environment, whether intentional or not, are prohibited. However, the MPCA will consider the Permittee's compliance with permit requirements, frequency of release, quantity, type, location, and other relevant factors when determining appropriate action. [40 CFR 122.41, Minn. Stat. ch. 115.061]
	5.11.107	Discovery of a release. Upon discovery of a release, the Permittee shall: a. Take all reasonable steps to immediately end the release. b. Notify the Minnesota Department of Public Safety Duty Officer at 800-422-0798 or 651-649-5451 (metro area) immediately upon discovery of the release. You may contact the MPCA during business hours at 800-657-3864 or 651-296-6300 (metro area). c. Recover as rapidly and as thoroughly as possible all substances and materials released or immediately take other action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If the released materials or substances cannot be immediately or completely recovered, the Permittee shall contact the MPCA. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies (such as the Minnesota Department of Natural Resources and/or the Wetland Conservation Act authority) for implementation of additional clean-up or remediation activities in wetland or other sensitive areas.

		report or DMR to the MPCA upon discovery by the Permittee or notification by the MPCA that it has submitted an incomplete or incorrect report or DMR. The amended report or DMR shall contain the missing or corrected data along with a cover letter explaining the circumstances of the incomplete or incorrect report. If it is impossible to electronically amend the report or DMR, the Permittee shall immediately notify the MPCA and the MPCA will provide direction for the amendment submittals. [Minn. R. 7001.0150, 3(G)]
	5.11.95	Required Signatures. All DMRs, forms, reports, and other documents submitted to the MPCA shall be signed by the Permittee or the duly authorized representative of the Permittee. Minn. R. 7001.0150, subp. 2, item D. The person or persons that sign the DMRs, forms, reports or other documents shall certify that he or she understands and complies with the certification requirements of Minn. R. 7001.0070 and 7001.0540, including the penalties for submitting false information. Technical documents, such as design drawings and specifications and engineering studies required to be submitted as part of a permit application or by permit conditions, shall be certified by a registered professional engineer. [Minn. R. 7001.0540]
	5.11.96	Detection Level. The Permittee shall report monitoring results below the reporting limit (RL) of a particular instrument as "<" the value of the RL. For example, if an instrument has a RL of 0.1 mg/L and a parameter is not detected at a value of 0.1 mg/L or greater, the concentration shall be reported as "<0.1 mg/L." "Non-detected," "undetected," "below detection limit," and "zero" are unacceptable reporting results, and are permit reporting violations. Where sample values are less than the level of detection and the permit requires reporting of an average, the Permittee shall calculate the average as follows: a. If one or more values are greater than the level of detection, substitute zero for all nondetectable values to use in the average calculation.
		b. If all values are below the level of detection, report the averages as "<" the corresponding level of detection. c. Where one or more sample values are less than the level of detection, and the permit requires reporting of a mass, usually expressed as kg/day, the Permittee shall substitute zero for all nondetectable values. [Minn. R. 7001.0150, 2(B)]
	5.11.97	Records. The Permittee shall, when requested by the Agency, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit. [Minn. R. 7001.0150, 3(H)]
	5.11.98	Confidential Information. Except for data determined to be confidential according to Minn. Stat. ch. 116.075, subd. 2, all reports required by this permit shall be available for public inspection. Effluent data shall not be considered confidential. To request the Agency maintain data as confidential, the Permittee shall follow Minn. R. 7000.1300. [Minn. R. 7000.1300]
	5.11.99	Noncompliance and Enforcement. [Minn. R. 7001]
	5.11.100	Subject to Enforcement Action and Penalties. Noncompliance with a term or condition of this permit subjects the Permittee to penalties provided by federal and state law set forth in section 309 of the Clean Water Act; United States Code, title 33, section 1319, as amended; and in Minn. Stat. ch. 115.071 and 116.072, including monetary penalties, imprisonment, or both. [Minn. R. 7001.1090, 1(B)]
	5.11.101	Criminal Activity. The Permittee may not knowingly make a false statement, representation, or certification in a record or other document submitted to the Agency. A person who falsifies a report or document submitted to the Agency, or tampers with, or knowingly renders inaccurate a monitoring device or method required to be maintained under this permit is subject to criminal and civil penalties provided by federal and state law. [Minn. R. 7001.0150, 3(G), Minn. R. 7001.1090, 1(G and H), Minn. Stat. ch. 609.671, 1]
	5.11.102	Noncompliance Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [40 CFR 122.41(c)]
	5.11.103	Effluent Violations. If sampling by the Permittee indicates a violation of any discharge limitation

	5.11.85	Sampling. [Minn. R. 7001]
	5.11.86	Representative Sampling. Samples and measurements required by this permit shall be conducted as specified in this permit and shall be representative of the discharge or monitored activity. [40 CFR 122.41(j)(1)]
	5.11.87	Additional Sampling. If the Permittee monitors more frequently than required, the results and the frequency of monitoring shall be reported on the Discharge Monitoring Report (DMR) or another MPCA-approved form for that reporting period. [Minn. R. 7001.1090, subp. 1(E)]
	5.11.88	Certified Laboratory. A laboratory certified by the Minnesota Department of Health and/or registered by the MPCA shall conduct analyses required by this permit. Analyses of dissolved oxygen, pH, temperature, specific conductance, and total residual oxidants (chlorine, bromine) do not need to be completed by a certified laboratory but shall comply with manufacturers specifications for equipment calibration and use. [Minn. R. 4740.2010, Minn. R. 4740.2050 through 2120]
	5.11.89	Sample Preservation and Procedure. Sample preservation and test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and Minn. R. 7041.3200. [40 CFR 136, Minn. R. 7041.3200]
	5.11.90	Equipment Calibration: Flow meters, pumps, flumes, lift stations or other flow monitoring equipment used for purposes of determining compliance with permit shall be checked and/or calibrated for accuracy at least twice annually. [Minn. R. 7001.0150, 2(B and C)]
	5.11.91	Maintain Records. The Permittee shall keep the records required by this permit for at least three years, including any calculations, original recordings from automatic monitoring instruments, and laboratory sheets. The Permittee shall extend these record retention periods upon request of the MPCA. The Permittee shall maintain records for each sample and measurement. The records shall include the following information: a. the exact place, date, and time of the sample or measurement; b. the date of analysis; c. the name of the person who performed the sample collection, measurement, analysis, or calculation; d. the analytical techniques, procedures and methods used; and e. the results of the analysis. [Minn. R. 7001.0150, 2(C)]
	5.11.92	Completing Reports. The Permittee shall submit the results of the required sampling and monitoring activities on the forms provided, specified, or approved by the MPCA. The information shall be recorded in the specified areas on those forms and in the units specified. Required forms may include DMR Supplemental/Sample Value Form Individual values for each sample and measurement shall be recorded on the DMR Supplemental/Sample Value Form which, if required, will be provided by the MPCA. DMR Supplemental/Sample Value Forms shall be submitted with the appropriate DMRs. You may design and use your own supplemental form; however it shall be approved by the MPCA. Note: Required summary information shall also be recorded on the DMR. Summary information that is submitted ONLY on the DMR Supplemental/Sample Value Form does not comply with the reporting requirements. [Minn. R. 7001.1090, 1(D), Minn. R. 7001.150, 2(B)]
	5.11.93	Submitting Reports. DMRs, DMR supplemental forms and related attachments must be electronically submitted via the MPCA Online Services Portal after authorization is approved. DMRs and DMR Supplemental Forms shall be electronically submitted by the 21st day of the month following the sampling period or as otherwise specified in this permit. Electronic DMR submittal shall be complete on or before 11:59 PM of the 21st day of the month following the sampling period or as otherwise specified in this permit. A DMR shall be submitted for each required station even if no discharge occurred during the reporting period. Other reports required by this permit shall be postmarked by the date specified in the permit to: MPCA, Attn: WQ Submittals Center, 520 Lafayette Road North, St Paul Minnesota 55155-4194. [Minn. R. 7001..0150, Subp. 2(B), Minn. R. 7001..0150, Subp. 3(H)]
	5.11.94	Incomplete or Incorrect Reports. The Permittee shall immediately submit an electronically amended

		Total Facility Requirements (NPDES/SDS)
	5.11.71	Definitions. Refer to the 'Permit Users Manual' found on the MPCA website (www.pca.state.mn.us) for standard definitions. [Minn. R. 7001.]
	5.11.72	Incorporation by Reference. The following applicable federal and state laws are incorporated by reference in this permit, are applicable to the Permittee, and are enforceable parts of this permit: 40 CFR pts. 122.41, 122.42, 136, 403 and 503; Minn. R. pts. 7001, 7041, 7045, 7050, 7052, 7053, 7060, and 7080; and Minn. Stat. ch. 115 and 116. [Minn. R. 7001]
	5.11.73	Permittee Responsibility. The Permittee shall perform the actions or conduct the activity authorized by the permit in compliance with the conditions of the permit and, if required, in accordance with the plans and specifications approved by the Agency. [Minn. R. 7001.0150, subp. 3(E)]
	5.11.74	Toxic Discharges Prohibited. Whether or not this permit includes effluent limitations for toxic pollutants, the Permittee shall not discharge a toxic pollutant except according to Code of Federal Regulations, Title 40, sections 400 to 460 and Minnesota Rules 7050, 7052, 7053 and any other applicable MPCA rules. [Minn. R. 7001.1090, subp. 1(A)]
	5.11.75	Nuisance Conditions Prohibited. The Permittee's discharge shall not cause any nuisance conditions including, but not limited to: floating solids, scum and visible oil film, acutely toxic conditions to aquatic life, or other adverse impact on the receiving water. [Minn. R. 7050.0210, subp. 2]
	5.11.76	Property Rights. This permit does not convey a property right or an exclusive privilege. [Minn. R. 7001.0150, subp. 3(C)]
	5.11.77	Liability Exemption. In issuing this permit, the state and the MPCA assume no responsibility for damage to persons, property, or the environment caused by the activities of the Permittee in the conduct of its actions, including those activities authorized, directed, or undertaken under this permit. To the extent the state and the MPCA may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act. [Minn. R. 7001.0150, subp. 3(O)]
	5.11.78	The MPCA's issuance of this permit does not obligate the MPCA to enforce local laws, rules, or plans beyond what is authorized by Minnesota Statutes. [Minn. R. 7001.0150, subp. 3(D)]
	5.11.79	Liabilities. The MPCA's issuance of this permit does not release the Permittee from any liability, penalty or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit. [Minn. R. 7001.0150, subp. 3(A)]
	5.11.80	The issuance of this permit does not prevent the future adoption by the MPCA of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the Permittee. [Minn. R. 7001.0150, subp. 3(B)]
	5.11.81	Severability. The provisions of this permit are severable and, if any provisions of this permit or the application of any provision of this permit to any circumstance are held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. [Minn. R. 7001]
	5.11.82	Compliance with Other Rules and Statutes. The Permittee shall comply with all applicable air quality, solid waste, and hazardous waste statutes and rules in the operation and maintenance of the facility. [Minn. R. 7001]
	5.11.83	Inspection and Entry. When authorized by Minn. Stat. ch. 115.04; 115B.17, subd. 4; and 116.091, and upon presentation of proper credentials, the agency, or an authorized employee or agent of the agency, shall be allowed by the Permittee to enter at reasonable times upon the property of the Permittee to examine and copy books, papers, records, or memoranda pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveys and investigations, including sampling or monitoring, pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit. [Minn. R. 7001.0150, subp. 3(I)]
	5.11.84	Control Users. The Permittee shall regulate the users of its wastewater treatment facility so as to prevent the introduction of pollutants or materials that may result in the inhibition or disruption of the conveyance system, treatment facility or processes, or disposal system that would contribute to the violation of the conditions of this permit or any federal, state or local law or regulation. [Minn. R. 7001.0150, subp. 3(F)]

		[Minn. R. 7049]
	5.10.61	Monitoring of Significant Industrial Users. [Minn. R. 7049]
	5.10.62	The Permittee shall obtain from SIUs specific information on the quality and quantity of the SIU's discharges to the Permittee's POTW. Except where specifically requested by the Permittee and approved by the MPCA, this information shall be obtained by means of representative monitoring conducted by the Permittee or by the SIU under requirements imposed by the Permittee in the SIU's individual control mechanism. Monitoring performed to comply with this requirement shall include all pollutants for which the SIU is significant and shall be done at a frequency commensurate with the significance of the SIU. [Minn. R. 7049]
	5.10.63	Reporting and Notification. [Minn. R. 7049]
	5.10.64	The Permittee shall submit a pretreatment annual report: Due by 31 days after the end of each calendar year following permit issuance if a SIU discharges to the POTW during a given calendar year. [Minn. R. 7049]
	5.10.65	The Pretreatment Annual Report shall be submitted on forms provided by the agency or shall provide equivalent information. The Permittee shall submit the pre-treatment report to the following address: MPCA Attn: WQ Submittals Center 520 Lafayette Road North St. Paul, Minnesota 55155-4194. [Minn. R. 7049]
	5.10.66	The Permittee shall notify the MPCA in writing of any: a. SIU of the Permittee's POTW which has not been previously disclosed to the MPCA; b. anticipated or actual changes in the volume or quality of discharge by an industrial user that could result in the industrial user becoming an SIU as defined in this chapter; or c. anticipated or actual changes in the volume or quality of discharges by a SIU that would require changes to the SIU's required local limits. This notification shall be submitted within 30 days of identifying the IU as a SIU. Where changes are proposed, they shall be submitted prior to changes being made. [Minn. R. 7049]
	5.10.67	Upon notifying the MPCA of a SIU or change in a SIU discharge as required above, the Permittee shall submit the following information on forms provided by the agency or in a comparable format: a. the identity of the SIU and a description of the SIU's operation and process; b. a characterization of the SIU's discharge; c. the required local limits that will be imposed on the SIU; d. a technical justification of the required local limits; and e. a plan for monitoring the SIU which is consistent with monitoring requirements in this chapter. [Minn. R. 7049]
	5.10.68	In addition, the Permittee shall, upon request, submit the following to the MPCA for approval: a. additional information on the SIU, its processes and discharge; b. a copy of the individual control mechanism used to control the SIU; c. the Permittee's legal authority to be used for regulating the SIU; and d. the Permittee's procedures for enforcing the requirements imposed on the SIU. [Minn. R. 7049]
	5.10.69	The permittee shall notify MPCA of any of its industrial users that may be subject to national categorical pretreatment standards. [Minn. R. 7049]
	5.10.70	This permit may be modified in accordance with Minnesota Rules, ch. 7001 to require development of a pretreatment program approvable under the Federal General Pretreatment Regulation (40 CFR 403). [Minn. R. 7049]

		Pretreatment: Undelegated Requirements
	5.10.49	Pretreatment - Definitions. [Minn. R. 7049]
	5.10.50	An "Individual Control Mechanism" is a document, such as an agreement or permit that imposes limitations or requirements on an individual industrial user of the POTW. [Minn. R. 7049]
	5.10.51	"Significant Industrial User" (SIU) means any industrial user that: a. discharges 25,000 gallons per day or more of process wastewater; b. contributes a load of five (5) % or more of the capacity of the POTW; or c. is designated as significant by the Permittee or the MPCA on the basis that the SIU has a reasonable potential to adversely impact the POTW, or the quality of its effluent or residuals. [Minn. R. 7049]
	5.10.52	Pretreatment - Permittee Responsibility to Control Users. [Minn. R. 7049]
	5.10.53	It is the Permittee's responsibility to regulate the discharge from users of its wastewater treatment facility. The Permittee shall prevent any pass through of pollutants or any inhibition or disruption of the Permittee's facility, its treatment processes, or its sludge processes or disposal that contribute to the violation of the conditions of this permit or any federal or state law or regulation limiting the release of pollutants from the POTW. [Minn. R. 7049]
	5.10.54	The Permittee shall prohibit the discharge of the following to its wastewater treatment facility: a. pollutants which create a fire or explosion hazard, including any discharge with a flash point less than 60 degrees C (140 degrees F); b. pollutants which would cause corrosive structural damage to the POTW, including any waste stream with a pH of less than 5.0; c. solid or viscous pollutants which would obstruct flow; d. heat that would inhibit biological activity, including any discharge that would cause the temperature of the waste stream at the POTW treatment plant headwork's to exceed 40 degrees C (104 degrees F); e. pollutants which produce toxic gases, vapors, or fumes that may endanger the health or safety of workers; or f. any pollutant, including oxygen demanding pollutants such as biochemical oxygen demand, released at a flow rate or pollutant concentration that will cause interference or pass through. [Minn. R. 7049]
	5.10.55	The Permittee shall prohibit new discharges of non-contact cooling waters unless there is no cost effective alternative. Existing discharges of non-contact cooling water to the Permittee's wastewater treatment facility shall be eliminated, where elimination is cost-effective, or where an infiltration/inflow analysis and sewer system evaluation survey indicates the need for such removal. [Minn. R. 7049]
	5.10.56	If the Permittee accepts trucked-in wastes, the Permittee shall evaluate the trucked in wastes prior to acceptance in the same manner as it monitors sewered wastes. The Permittee shall accept trucked-in wastes only at specifically designated points. [Minn. R. 7049]
	5.10.57	Pollutant of concern means a pollutant that is or may be discharged by an industrial user that is, or reasonably should be of concern on the basis that it may cause the permittee to violate any permit limits on the release of pollutants. The following pollutants shall be evaluated to determine if they should be pollutants of concern: pollutants limited in this permit, pollutants for which monitoring is required in this permit, pollutants that are likely to cause inhibition of the Permittee's POTW, pollutants which may interfere with sludge disposal, and pollutants for which the Permittee's treatment facility has limited capacity. [Minn. R. 7049]
	5.10.58	Control of Significant Industrial Users. [Minn. R. 7049]
	5.10.59	The Permittee shall impose pretreatment requirements on SIUs which will ensure compliance with all applicable effluent limitations and other requirements set forth in this permit or any federal or state law or regulation limiting the release of pollutants from the POTW. These requirements shall be applied to SIUs by means of an individual control mechanism. [Minn. R. 7049]
	5.10.60	The Permittee shall not knowingly enter into an individual control mechanism with any user that would allow the user to contribute an amount or strength of wastewater that would cause violation of any limitation or requirement in the permit, or any applicable federal, state or local law or regulation.

	5.9.32	If the Permittee chooses to meet operator certification requirements through a contractual agreement, the Permittee shall provide a copy of the contract to the MPCA, WQ Submittals Center. The contract shall include the certified operator's name, certificate number, company name if appropriate, the period covered by the contract and provisions for renewal; the duties and responsibilities of the certified operator; the duties and responsibilities of the permittee; and provisions for notifying the MPCA 30 days in advance of termination if the contract is terminated prior to the expiration date. [Minn. R. 9400.0400, 1(A)]
	5.9.33	The Permittee shall notify the MPCA within 30 days of a change in operator certification or contract status. [Minn. R. 7001.0150, 3(F)]
	5.9.34	Ponds - Acceptable Discharge Periods. [Minn. R. 7001]
	5.9.35	Acceptable Discharge Periods are March 1 through June 15 and September 15 through December 31. [Minn. R. 7001.0150, 3(F)]
	5.9.36	Effluent limitations for this permit have been assigned based upon the assumption that the pond will be discharged no more than six (6) inches per day and that receiving waters exhibit favorable flow and reaeration characteristics during the acceptable discharge periods. [Minn. R. 7001.0150, 3(F)]
	5.9.37	Ponds - Discharges Outside Acceptable Discharge Periods. [Minn. R. 7001]
	5.9.38	For discharges occurring outside the acceptable discharge periods, refer to the "Stabilization Pond Guidance Discharge Guidance" located at www.pca.state.mn.us/water/wastewater.html#operation. If any of the discharge occurs outside of the acceptable discharge periods, the Permittee shall notify the MPCA of the potential noncompliance prior to discharge. The Permittee shall call the appropriate regional office and indicate that the call is for notification of a pond discharge. [Minn. R. 7001.0150, 3(F)]
	5.9.39	For any discharge outside of acceptable discharge periods or to an ice covered receiving water, an adequate dilution ratio is required. If an adequate dilution ratio is not available, receiving water monitoring is required. [Minn. R. 7001.0150, 3(F)]
	5.9.40	For any discharge outside of acceptable discharge periods or to an ice covered receiving water, the Permittee shall submit a "Discharge Evaluation Report" on a form provided in the "Stabilization Pond Discharge Guidance" located at www.pca.state.mn.us/water/wastewater.html#operation. [Minn. R. 7001.0150, 3(F)]
	5.9.41	Ponds - Discharge Rate. [Minn. R. 7001]
	5.9.42	The discharge rate shall be limited so as not to create a shock load on the receiving waters, disturb the pond bottom sediment in the area of the intake of the outfall structure or flood downstream properties. If the drawdown rate should exceed six (6) inches per day, call the MPCA at the appropriate regional office and indicate that the call is for notification of a pond discharge. [Minn. R. 7001.0150, 3(F)]
	5.9.43	Ponds - Pre-discharge Sampling. [Minn. R. 7001]
	5.9.44	If predischarge sample results indicate that one or more of the effluent limitations may be exceeded, the Permittee shall notify the MPCA of potential noncompliance prior to discharge. The Permittee shall call the MPCA at the appropriate regional office and indicate that the call is for notification of a pond discharge. [Minn. R. 7001.0150, 3(F)]
	5.9.45	Samples shall be taken from four sides of the pond and composited prior to discharge and analyzed for permitted parameters. This sampling shall be taken no more than two weeks prior to the beginning of the discharge; dissolved oxygen and pH (both are field tests) shall be taken no more than 24 hours prior to the beginning of the discharge. If more than two weeks pass prior to the beginning of discharge, additional predischarge samples shall be obtained and analyzed prior to discharge. [Minn. R. 7001.0150, 3(F)]
	5.9.46	Ponds - Observations. [Minn. R. 7001]
	5.9.47	The Permittee shall inspect the pond system weekly, and shall take measurements of pond water depth, estimate the coverage of aquatic plants, floating mats and ice cover on the surface of the ponds, and note odors, the condition of the dikes and the presence of muskrats. The Permittee shall maintain records of these weekly inspections for the last three (3) years, and submit the results on the Discharge Monitoring Report (DMR) supplemental form. [Minn. R. 7001.0150, 3(F)]
	5.9.48	The Permittee shall maintain daily precipitation records. [Minn. R. 7001.0150, 3(F)]

	5.7.23	The Permittee shall review their contingency plan at least annually. If substantial changes to the original plan are required, then a revised contingency plan shall be submitted to the MPCA. If the plan is updated to reflect minor changes such as changes in personnel or telephone numbers, then only an addendum with the revised information needs to be submitted. Submittals and questions should be directed to the MPCA Rochester office. [Minn. R. 7001]
		Phosphorus Management Plan
	5.8.24	The Permittee shall submit a phosphorus management plan: Due by 180 days after permit reissuance. [Minn. R. 7001]
	5.8.25	The Permittee shall prepare and submit to the MPCA, a Streamlined Phosphorus Management Plan (PMP) in accordance with requirement 5.8.24 above. The intent of the Streamlined PMP is to help maintain previous improvements and conduct ongoing evaluations to determine possible source reduction measures, operational improvements, and minor WWTP modifications that will reduce phosphorus loadings to the WWTP at a reasonable cost. Immediately upon submittal to the MPCA, the Permittee shall implement the PMP for the remainder of the permit. The Streamlined PMP should include, but not necessarily be limited to, an evaluation of the following and a plan to implement the necessary phosphorus management and reduction measures over the permit term: WWTP influent reduction measures: a. Re-evaluation of the phosphorus reduction potential of users; b. Determine which sources have the opportunity for further reduction of phosphorus (e.g., industrial, commercial, institutional, municipal, and others; c. Determine whether known sources (e.g., restaurant and food preparation) have adopted or can adopt phosphorus minimization and water conservation plans; and d. Re-evaluation of whether or not local limits on influent sources of excessive phosphorus are needed. This includes an evaluation of whether any existing local limits are appropriate. WWTP effluent reduction measures: a. Continued optimization of existing treatment processes; and b. An assessment of side stream loading and reductions options. PMP guidance can be found on the MPCA internet at http://www.pca.state.mn.us/enzq8fa or by contacting the compliance staff listed on the cover page of this permit. [Minn. R. 7001]
		Pond System
	5.9.26	Bypass Structures. [Minn. R. 7001]
	5.9.27	All structures capable of bypassing the treatment system shall be manually controlled and kept locked at all times. [Minn. R. 7001.0150, 3(F)]
	5.9.28	Sanitary Sewer Extension Permit. [Minn. R. 7001]
	5.9.29	The Permittee may be required to obtain a Sanitary Sewer Extension Permit from the MPCA for any addition, extension or replacement to the sanitary sewer. If a sewer extension permit is required, construction may not begin until plans and specifications have been submitted and a written permit is granted except as allowed in Minn. Stat. 115.07, Subd. 3(b). [Minn. R. 7001.0150, 3(F)]
	5.9.30	Operator Certification. [Minn. R. 7001]
	5.9.31	The Permittee shall provide a Class D state certified operator who is in direct responsible charge of the operation, maintenance and testing functions required to ensure compliance with the terms and conditions of this permit. [Minn. R. 9400.0400, 1(A)]

	5.5.2	Dissolved Oxygen and pH analyses shall be conducted within 15 minutes of Sample collection. [Minn. R. 7053]
	5.5.3	Representative Samples. [Minn. R. 7001]
	5.5.4	Samples and measurements required by this permit shall be representative of the monitored activity. [Minn. R. 7001]
	5.5.5	Surface Discharge Prohibitions. [Minn. R. 7001]
	5.5.6	Floating solids or visible foam shall not be discharged in other than trace amounts. [Minn. R. 7001]
	5.5.7	Oil or other substances shall not be discharged in amounts that create a visible color film. [Minn. R. 7001]
	5.5.8	The Permittee shall install and maintain outlet protection measures at the discharge stations to prevent erosion. [Minn. R. 7001]
	5.5.9	Winter Sampling Conditions. [Minn. R. 7001]
	5.5.10	The Permittee shall sample flows at the designated monitoring stations including when this requires removing ice to sample the water. If the station is completely frozen throughout a designated sampling month, the Permittee shall check the "No Discharge" box on the Discharge Monitoring Report (DMR) and note the ice conditions in Comments on the DMR. [Minn. R. 7001]
	5.5.11	Chlorine Addition Requirements. [Minn. R. 7001]
	5.5.12	If chlorine is added for any purpose, the Permittee shall monitor the discharge for Total Residual Chlorine once per day during chlorine usage.Â The Permittee shall report the monitoring data as a comment on the next submitted Discharge Monitoring Report for the affected station.Â The discharge shall not exceed a 0.038 mg/L Total Residual Chlorine limit. [Minn. R. 7001]
	5.5.13	Nitrogen Monitoring Requirements. [Minn. R. 7001]
	5.5.14	"Total Nitrogen" is to be reported as the summation of the Total Kjeldahl Nitrogen and Total Nitrite plus Nitrate Nitrogen values. [Minn. R. 7001]
	5.5.15	One grab sample of Total Nitrite plus Nitrate Nitrogen, Total Kjeldahl Nitrogen, and Total Nitrogen shall be collected per discharge event and reported on the DMR for the month the sample(s) was collected. One grab sample of Total Ammonia Nitrogen and Total Dissolved Solids shall be collected once during the spring discharge and once during the fall discharge. Spring discharge results shall be reported on the June DMR and fall discharge results shall be reported on the December DMR. If a spring and/or fall discharge does not occur, the Permittee shall attach a comment to the June and/or December DMR stating that no spring and/or fall discharge occurred. [Minn. R. 7001]
		Waste Stream Station General Requirements
	5.6.16	Analysis Requirements. [Minn. R. 7001]
	5.6.17	Dissolved Oxygen and pH analyses shall be conducted within 15 minutes of Sample collection. [Minn. R. 7053]
	5.6.18	Representative Samples. [Minn. R. 7001]
	5.6.19	Grab and composite samples shall be collected at a point representative of total influent flow to the system. [Minn. R. 7001]
	5.6.20	Nitrogen Monitoring Requirements. [Minn. R. 7001]
	5.6.21	"Total Nitrogen" is to be reported as the summation of the Total Kjeldahl Nitrogen and Total Nitrite plus Nitrate Nitrogen values. [Minn. R. 7001]
		Karst Requirements
	5.7.22	The Permittee shall conduct an inspection of the treatment site and surrounding vicinity on a daily basis, and shall report on the Discharge Monitoring Reports (DMRs) the occurrence of the inspection, any water level anomalies, and evidence of any karstic geological characteristics not previously reported or any change in characteristics previously reported. In the event that the treatment facility is determined to have been adversely affected by karstic geological characteristics, the Permittee shall initiate the procedures outlined in the Permittee's contingency plan developed pursuant to the requirements of the Administrative Order issued on February 25, 1993. [Minn. R. 7001]

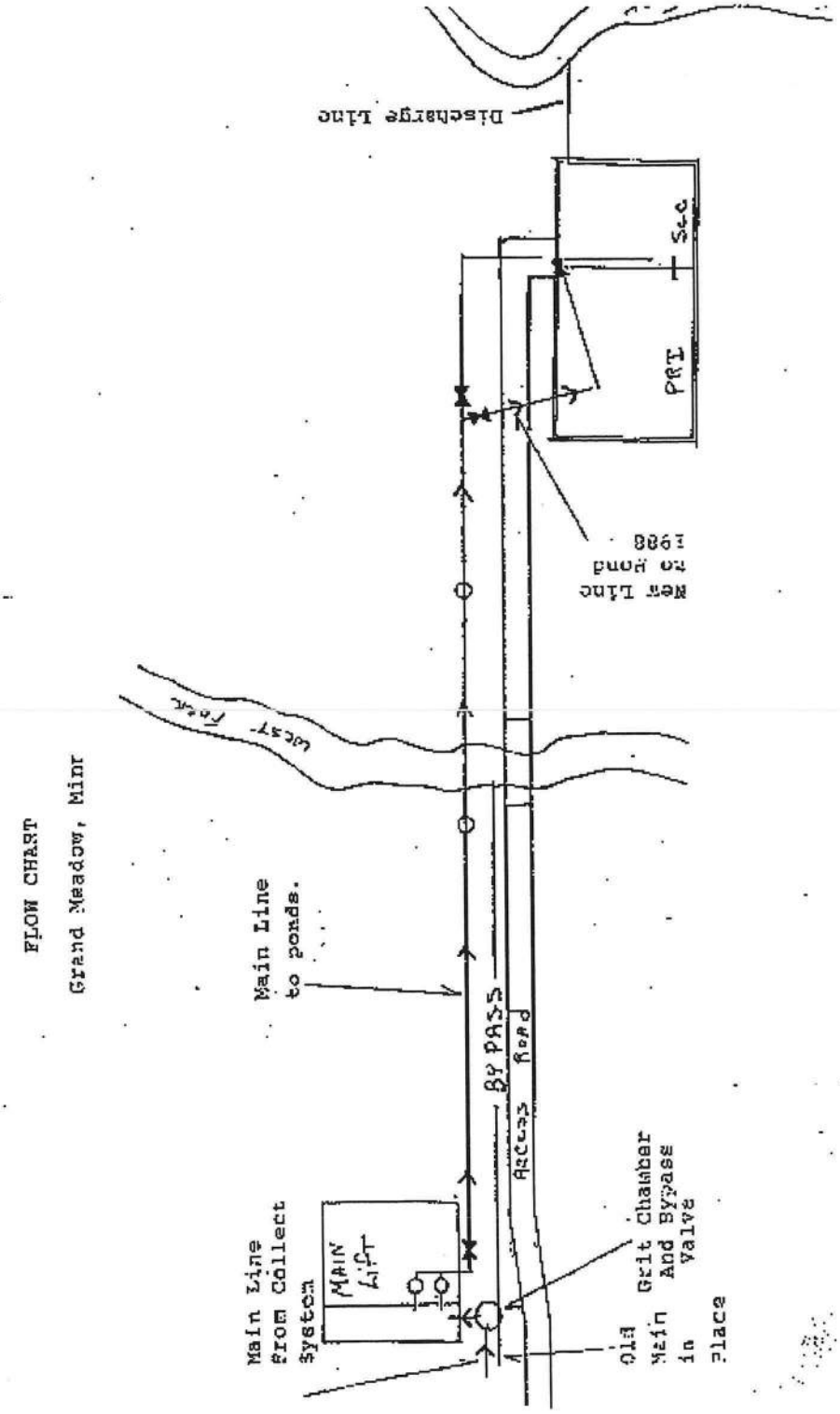
5. Permit requirements

SD 002	**Effluent To Surface Water**	
		Surface Discharge: Minor Stabilization Pond Effluent Requirements
	5.1.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	5.1.2	Sampling Location. [Minn. R. 7001.0150, Subp. 2(B)]
	5.1.3	Samples for Station SD002 shall be collected from the final cell outlet control structure. [Minn. R. 7001.0150, Subp. 2(B)]
	5.1.4	The Permittee shall submit monitoring results in accordance with the limits and monitoring requirements for this station. If conditions are such that no sample can be acquired, the Permittee shall report "No Flow" or "No Discharge" on Discharge Monitoring Report (DMR) and shall add a Comments attachment to the DMR detailing why the sample was not collected. [Minn. R. 7001.0150, Subp. 2(B)]
		Facility Specific Requirements
	5.2.5	One grab sample of Total Nitrite plus Nitrate, Total Kjeldahl Nitrogen and Total Nitrogen shall be collected per discharge event and reported on the Sample Values and DMR for the month the samples were collected. [Minn. R. 7001]
	5.2.6	One grab sample of Total Ammonia Nitrogen and Total Dissolved Solids shall be collected once during the spring discharge and once during the fall discharge. Spring discharge results shall be reported on the June DMR and fall discharge results shall be reported on the December DMR. The individual sample result should be included on the Sample Values form in the month that the sample was collected. If a spring and/or fall discharge does not occur, the Permittee shall include a comment with the June and/or December DMR stating that no spring and/or fall discharge occurred. [Minn. R. 7001]
	5.2.7	Parameters that have a monitoring frequency of once per half year and an effective period of Jan-Jun; July-Dec (Jun, Dec) may be taken any time during the half year, but must be reported on the designated month's DMR. [Minn. R. 7001]
WS 001	**Influent Waste**	
		Waste Stream: Stabilization Pond Influent Requirements
	5.3.1	The Permittee shall submit a monthly DMR: Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	5.3.2	Sampling Location. [Minn. R. 7001.0150, Subp. 2(B)]
	5.3.3	Samples for Station WS001shall be collected at a point representative of total influent flow to the system. [Minn. R. 7001.0150, Subp. 2(B)]
	5.3.4	The Permittee shall submit monitoring results in accordance with the limits and monitoring requirements for this station. If conditions are such that no sample can be acquired, the Permittee shall report "No Flow" or "No Discharge" on Discharge Monitoring Report (DMR) and shall add a Comments attachment to the DMR detailing why the sample was not collected. [Minn. R. 7001.0150, Subp. 2(B)]
		Facility Specific Requirements
	5.4.5	Parameters that have a monitoring frequency of once per quarter and an effective period of Mar, Jun, Sep, Dec may be taken any time during that calendar quarter, but must be reported on the designated month's DMR (e.g. the sample for the first calendar quarter of Jan-Mar will be reported on the March DMR). [Minn. R. 7001]
MN0023558	**Grand Meadow WWTP**	
		Surface Discharge Station General Requirements
	5.5.1	Analysis Requirements. [Minn. R. 7001]

4. Summary of stations and station locations

Station	Type of station	Local name	PLS location
SD 002	Effluent To Surface Water	Total Facility Discharge	T103N, R14W, S29, NW Quarter
WS 001	Influent Waste	Influent Waste Stream	T103N, R14W, S30, NE Quarter

3. Flow diagram



Appendix B: Preliminary Effluent Limits Request

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Preliminary Effluent Limit Review Request

EAO Effluent Limits Unit

Doc Type: Effluent Limit Standards Review

Purpose: This form is required for all preliminary effluent limit requests for: 1) new facilities with a surface water discharge; 2) where the design flow, outfall location, or quality of the effluent is changing for an existing facility with a surface water discharge; or 3) changes to treatment type that would impact quality of the effluent.

Complete application by typing or printing in black ink.
Instructions on page 3.

MPCA Use Only
MN
Application number
Date received

Contact Information

1. **Engineer or consultant or requester** Employer/Company: Bolton & Menk, Inc.
   Name: Jake Pichelmann Title: Environmental Project Engineer
   Mailing address: 2900 43rd Street NW Suite 100
   City: Rochester State: MN Zip code: 55901
   Phone: 507-208-4332 x2867 Fax: 507-208-4155 E-mail: Jakeb.Pichelmann@bolton-menk.com
2. **Permittee or Facility**
   Name: Grand Meadow Wastewater Treatment Facility County: Mower
   City: Grand Meadow State: MN Zip code: 55936
   NPDES/SDS Permit #: MN0023558 *(complete only for existing permitted facilities)*
   Address of facility *(if known)*:

Facility Information (If more space is needed, attach additional page(s) to the request.)

3. **Reason for request:** *(Describe in detail: design flow, outfall locations, and/or changes to treatment type impacting the quality of the effluent.)*
   The City of Grand Meadow is in the process of completing a wastewater facility plan. Historical monitoring data and future projections show that an increase in design flow is warranted. The City is considering the construction of a new extended aeration activated sludge facility.

4. **Identify design flows and waste flow type for the proposed facility:**
   See the Minnesota Pollution Control Agency (MPCA) website regarding Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants at: http://www.pca.state.mn.us/0agxb2d.

   For domestic wastewater facilities only
   Average Wet Weather Design Flow: 0.327 mgd (million gallons/day)
   Average Dry Weather Design Flow: 0.107 mgd (million gallons/day)
   Waste Flow Type: ☒ Continuous ☐ Controlled

   For industrial and other wastewater facilities only
   Maximum Daily Design Flow: _____ mgd (million gallons/day)
   Average Daily Design Flow: _____ mgd (million gallons/day)
   Waste Flow Type: ☐ Continuous ☐ Controlled ☐ Periodic/Seasonal ☐ Intermittent

Waste flow type: A description of the discharge type

Continuous: *Continuous, year-round discharge where flows occur without interruption throughout operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 122.2). Most domestic mechanical facilities are considered to have continuous discharges.*

Controlled: *Discharge permitted during pre-defined periods or windows which are generally during periods of higher receiving water flow and lower temperatures. For northern MN [MPCA regions I, II, III] these periods are 3/1-6/30 and 9/1-12/31. For southern MN [MPCA regions IV, V, Metro] these periods are 3/1-6/15 and 9/15-12/31. These discharges are almost exclusively stabilization ponds with controlled discharges in spring and fall.*

Intermittent: *Discharge that occurs sometimes, but not regularly (40CFR pt.122). Intermittent discharges occur infrequently and/or for short durations. Examples include water treatment plants with backwash discharge such as once every ten days or a few hours every week, and stormwater detention ponds with discharges that are precipitation dependent.*

Periodic/Seasonal: *Discharge that occurs regularly, but is not continuous all year, where discharge is intentional at specified times following treatment (e.g., monthly or seasonally) and of longer duration, as opposed to the short duration of intermittent discharges (40CFR 122). Examples include canning*

facilities that discharge process wastewater continuously during packing season (May-Sep or other months) and quarries and gravel mining operations. This excludes stabilization ponds with pre-defined discharge periods or windows.

5. **Facility description:** *(Provide a description of the proposed wastewater treatment facility, including the type of treatment units.)*

The City of Grand Meadow is considering the following treatment alternative:

Continuous Discharge: Construction of a new extended aeration activiated sludge facility that includes the following liquid-stream components: screening and grit removal, aeration basins, final clarification, and UV disinfection. The facility would also include biosolids processing infrastructure including aerobic digestion, aerated biosolids storage, and loadout for land application.

6. **Wetland impacts:** *(For new or expanded discharges, will construction or operation of the proposed facility result in wetland filling, drainage, excavation, or permanent inundation?)* ☐ Yes ☒ No If yes, please provide the following information:

a. Location of impacted wetland: _____

b. Acreage of impacted wetland: _____

c. Wetland type/classification: _____

(See U.S. Fish and Wildlife Service National Wetlands Inventory at http://www.fws.gov/wetlands/index.html.)

7. **Is the facility located on tribal land?** ☐ Yes ☒ No
If yes, also contact U.S. Environmental Protection Agency (EPA) Region V, John Coletti 312-886-6106.

8. **Identify all wastewater facility locations for which preliminary effluent limits are requested:**

County: Mower		City/Township: Grand Meadow		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T103 N	R14 ☐E ☒W	30	NE	NW

County:		City/Township:		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			

County:		City/Township:		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			

Existing/Proposed Surface Water Discharge

9. **Identify all surface water discharge locations for which preliminary effluent limits are requested:**

Complete the table for each surface water discharge point. If this is an existing facility, refer to the current National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permit for Station ID. For new facilities, enter as much information as available. If more space is needed for additional stations, attach additional pages.

The location of a surface water discharge is defined as the location where a wastewater discharge enters a surface water (not where the pipe leaves the wastewater facility structure). If a pipe extends out into a river or lake, the location is identified where the pipe leaves the shore and enters the body of water. If the discharge is to a tile line or storm sewer the location is identified where the tile line or storm sewer enters a surface water. If the discharge is into an open ditch or ravine, the location is identified as the point where the discharge leaves the pipe and enters the open ditch.

Station ID: SD 002

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T103N	R14 ☐E ☒W	29	NW	NW
Latitude	Longitude	Datum	Coordinate Collection Method	
43.701006	-92.548484	WGS84	Digitized	

Receiving Water Name: Deer Creek

Station ID: SD

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			
Latitude	Longitude	Datum	Coordinate Collection Method	

Receiving Water Name:

Surface water discharge locations for which preliminary effluent limits are requested - *continued*:

Station ID: SD

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			
Latitude	Longitude	Datum	Coordinate Collection Method	

Receiving Water Name:

Attachments

☒ Did you attach a map?

Attach a map, U.S. Geological Survey topographic map (7.5 minute series) or other map of comparable detail that shows surface water bodies, roads, and other pertinent landmarks. The map should show and label the exact location of the existing or proposed facility, and the location of all existing and proposed wastewater discharge points into receiving waters. Mark and label all surface water discharge locations at the point where the wastewater enters the receiving water. If the discharge is to a tile line or storm sewer, label the tile line or storm sewer and show its flow path to the receiving water.

Note: Please ensure this form and all applicable attachments are complete. **Please make a copy for your records.**

Application Fee

An application fee is required under Minn. Stat. § 116.07, subd. 4d (1990) and Minn. R. ch. 7002 (Permit Fee Rules). This application fee must be submitted with the application. The current application fee is $1,550 with the dollar amount determined by point assignments contained in the Permit Fee Rules. Please refer to the application fee table located at: http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-permits-and-forms/mpca-water-quality-permit-fees.html.

Submittal

Requests that are submitted without the required fee and attachments will be returned. Please make your check payable to the Minnesota Pollution Control Agency. Send the completed request, attachments, and check to:

Attn: Fiscal Services – 6th floor
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Contact Information

If you have questions or need further assistance, contact Steven Weiss at 651-757-2814 or Carol Sinden at 651-757-2727 Effluent Limits Unit, Environmental Analysis and Outcomes Division.

Instructions

Surface water discharge location example:

Station ID: SD *1*

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T 109 N	*R 28 ☐E ☐W*	*5*	*NW*	*NW*
Latitude	Longitude	Datum	Coordinate Collection Method	
44.271062	*-94.180317*	*NAD83*	*DOQ (aerial photo)*	

Receiving Water: *County Ditch 4*

A datum for latitude/longitude should be specified. For latitude/longitude coordinates, this will either be NAD83 or WGS84 (the default on most GPS units). NAD83 is preferred.

For latitude/longitude indicate the method of collection and the date of collection. Methods of collection include:

GPS – Survey Quality

GPS – Recreational Receiver WAAS enabled (Real Time Differential Corrected)
GPS – Recreational Receiver Uncorrected
GPS – Unknown
Digitized – Web Map Google / Yahoo / Microsoft
Digitized – Digital Raster Graph (DRG) (USGS 7.5 min topographic map 1:24,000 scale)
Digitized – Digital Ortho Quad (DOQ) (USGS aerial photo 1:24,000 scale)

Wastewater Facility Plan

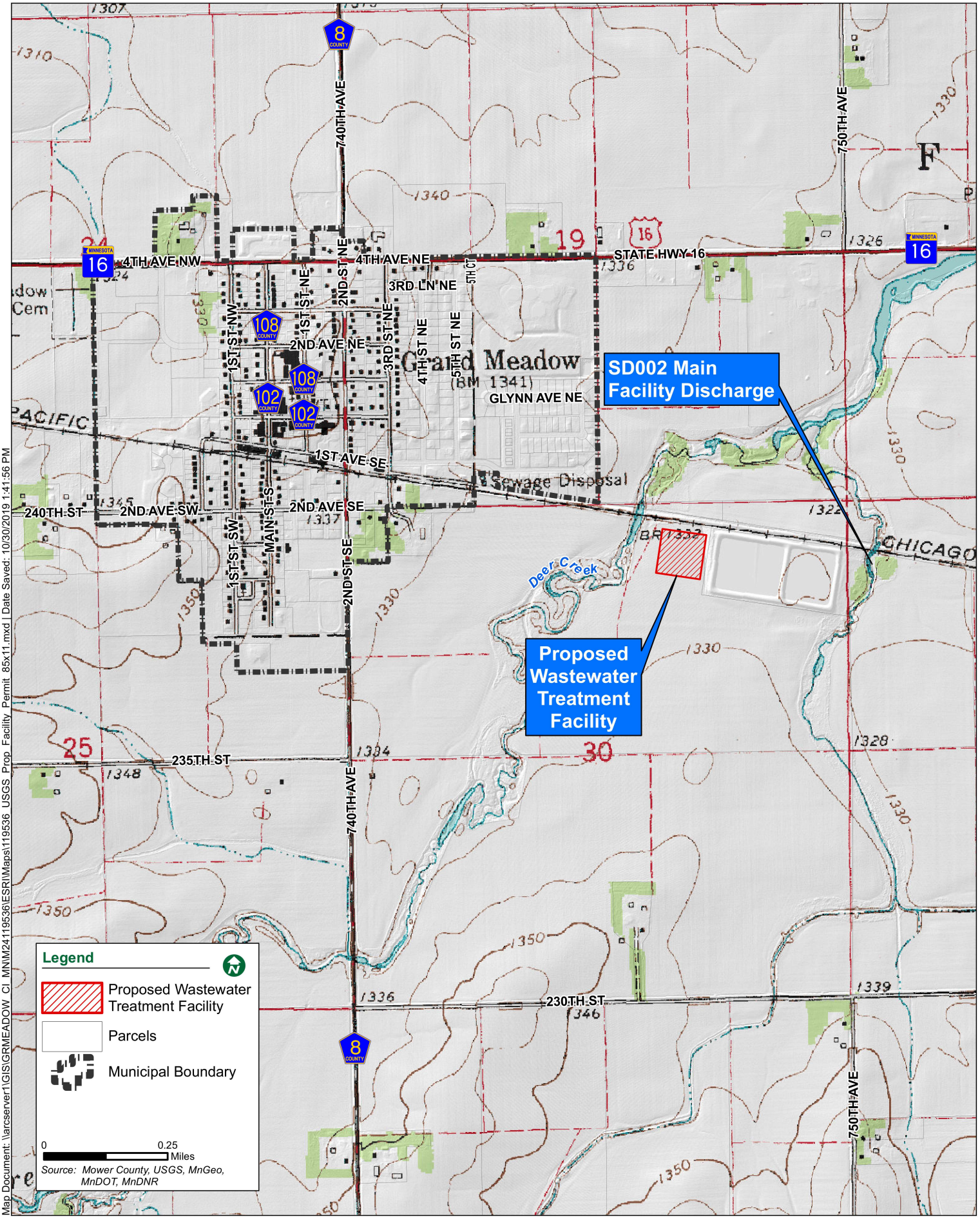
Grand Meadow, MN

Proposed Wastewater Treatment Facility

October 2019

BOLTON & MENK

Real People. Real Solutions.



Map Document: \\arcserver1\GIS\GRMEADOW_CI_MNM24119536\ESRI\Maps\119536_USGS_Prop_Facility_Permit_85x11.mxd | Date Saved: 10/30/2019 1:41:56 PM

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Preliminary Effluent Limit Review Request

EAO Effluent Limits Unit

Doc Type: Effluent Limit Standards Review

Purpose: This form is required for all preliminary effluent limit requests for: 1) new facilities with a surface water discharge; 2) where the design flow, outfall location, or quality of the effluent is changing for an existing facility with a surface water discharge; or 3) changes to treatment type that would impact quality of the effluent.

Complete application by typing or printing in black ink.
Instructions on page 3.

MPCA Use Only
MN
Application number
Date received

Contact Information

1. Engineer or consultant or requester Employer/Company: Bolton & Menk, Inc.

Name: Jake Pichelmann Title: Environmental Project Engineer

Mailing address: 2900 43rd Street NW Suite 100

City: Rochester State: MN Zip code: 55901

Phone: 507-208-4332 x2867 Fax: 507-208-4155 E-mail: Jakeb.Pichelmann@bolton-menk.com

2. Permittee or Facility

Name: Grand Meadow Wastewater Treatment Facility County: Mower

City: Grand Meadow State: MN Zip code: 55936

NPDES/SDS Permit #: MN0023558 *(complete only for existing permitted facilities)*

Address of facility *(if known)*:

Facility Information (If more space is needed, attach additional page(s) to the request.)

3. Reason for request: *(Describe in detail: design flow, outfall locations, and/or changes to treatment type impacting the quality of the effluent.)*

The City of Grand Meadow is in the process of completing a wastewater facility plan. Historical monitoring data and future projections show that an increase in design flow is warranted. The City is considering expanding the existing stabilization pond system.

4. Identify design flows and waste flow type for the proposed facility:

See the Minnesota Pollution Control Agency (MPCA) website regarding Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants at: http://www.pca.state.mn.us/0agxb2d.

For domestic wastewater facilities only

Average Wet Weather Design Flow: 0.227 mgd (million gallons/day)

Average Dry Weather Design Flow: 0.107 mgd (million gallons/day)

Waste Flow Type: ☐ Continuous ☒ Controlled

For industrial and other wastewater facilities only

Maximum Daily Design Flow: _____ mgd (million gallons/day)

Average Daily Design Flow: _____ mgd (million gallons/day)

Waste Flow Type: ☐ Continuous ☐ Controlled ☐ Periodic/Seasonal ☐ Intermittent

Waste flow type: A description of the discharge type

Continuous: *Continuous, year-round discharge where flows occur without interruption throughout operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 122.2). Most domestic mechanical facilities are considered to have continuous discharges.*

Controlled: *Discharge permitted during pre-defined periods or windows which are generally during periods of higher receiving water flow and lower temperatures. For northern MN [MPCA regions I, II, III] these periods are 3/1-6/30 and 9/1-12/31. For southern MN [MPCA regions IV, V, Metro] these periods are 3/1-6/15 and 9/15-12/31. These discharges are almost exclusively stabilization ponds with controlled discharges in spring and fall.*

Intermittent: *Discharge that occurs sometimes, but not regularly (40CFR pt.122). Intermittent discharges occur infrequently and/or for short durations. Examples include water treatment plants with backwash discharge such as once every ten days or a few hours every week, and stormwater detention ponds with discharges that are precipitation dependent.*

Periodic/Seasonal: *Discharge that occurs regularly, but is not continuous all year, where discharge is intentional at specified times following treatment (e.g., monthly or seasonally) and of longer duration, as opposed to the short duration of intermittent discharges (40CFR 122). Examples include canning*

facilities that discharge process wastewater continuously during packing season (May-Sep or other months) and quarries and gravel mining operations. This excludes stabilization ponds with pre-defined discharge periods or windows.

5. **Facility description:** *(Provide a description of the proposed wastewater treatment facility, including the type of treatment units.)*
The City of Grand Meadow is considering the following treatment alternative

Controlled Discharge: Expansion of the existing stabilization pond system, including construction of a new Primary Cell and new control structures.

6. **Wetland impacts:** *(For new or expanded discharges, will construction or operation of the proposed facility result in wetland filling, drainage, excavation, or permanent inundation?)* ☐ Yes ☒ No If yes, please provide the following information:
   a. Location of impacted wetland:
   b. Acreage of impacted wetland:
   c. Wetland type/classification:

(See U.S. Fish and Wildlife Service National Wetlands Inventory at http://www.fws.gov/wetlands/index.html.)

7. **Is the facility located on tribal land?** ☐ Yes ☒ No
If yes, also contact U.S. Environmental Protection Agency (EPA) Region V, John Coletti 312-886-6106.

8. **Identify all wastewater facility locations for which preliminary effluent limits are requested:**

County: Mower		City/Township: Grand Meadow		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T103 N	R14 ☐E ☒W	30	NE	NE

County:		City/Township:		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			

County:		City/Township:		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			

Existing/Proposed Surface Water Discharge

9. **Identify all surface water discharge locations for which preliminary effluent limits are requested:**

Complete the table for each surface water discharge point. If this is an existing facility, refer to the current National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permit for Station ID. For new facilities, enter as much information as available. If more space is needed for additional stations, attach additional pages.

The location of a surface water discharge is defined as the location where a wastewater discharge enters a surface water (not where the pipe leaves the wastewater facility structure). If a pipe extends out into a river or lake, the location is identified where the pipe leaves the shore and enters the body of water. If the discharge is to a tile line or storm sewer the location is identified where the tile line or storm sewer enters a surface water. If the discharge is into an open ditch or ravine, the location is identified as the point where the discharge leaves the pipe and enters the open ditch.

Station ID: SD 002

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T103N	R14 ☐E ☒W	29	NW	NW
Latitude	Longitude	Datum	Coordinate Collection Method	
43.701006	-92.548484	WGS84	Digitized	

Receiving Water Name: Deer Creek

Station ID: SD

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			
Latitude	Longitude	Datum	Coordinate Collection Method	

Receiving Water Name:

Surface water discharge locations for which preliminary effluent limits are requested - *continued*:

Station ID: SD

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			
Latitude	Longitude	Datum	Coordinate Collection Method	

Receiving Water Name:

Attachments

☒ Did you attach a map?

Attach a map, U.S. Geological Survey topographic map (7.5 minute series) or other map of comparable detail that shows surface water bodies, roads, and other pertinent landmarks. The map should show and label the exact location of the existing or proposed facility, and the location of all existing and proposed wastewater discharge points into receiving waters. Mark and label all surface water discharge locations at the point where the wastewater enters the receiving water. If the discharge is to a tile line or storm sewer, label the tile line or storm sewer and show its flow path to the receiving water.

Note: Please ensure this form and all applicable attachments are complete. **Please make a copy for your records.**

Application Fee

An application fee is required under Minn. Stat. § 116.07, subd. 4d (1990) and Minn. R. ch. 7002 (Permit Fee Rules). This application fee must be submitted with the application. The current application fee is $1,550 with the dollar amount determined by point assignments contained in the Permit Fee Rules. Please refer to the application fee table located at: http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-permits-and-forms/mpca-water-quality-permit-fees.html.

Submittal

Requests that are submitted without the required fee and attachments will be returned. Please make your check payable to the Minnesota Pollution Control Agency. Send the completed request, attachments, and check to:

Attn: Fiscal Services – 6th floor
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Contact Information

If you have questions or need further assistance, contact Steven Weiss at 651-757-2814 or Carol Sinden at 651-757-2727 Effluent Limits Unit, Environmental Analysis and Outcomes Division.

Instructions

Surface water discharge location example:

Station ID: SD *1*

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T 109 N	*R 28 ☐E ☐W*	*5*	*NW*	*NW*
Latitude	Longitude	Datum	Coordinate Collection Method	
44.271062	*-94.180317*	*NAD83*	*DOQ (aerial photo)*	

Receiving Water: *County Ditch 4*

A datum for latitude/longitude should be specified. For latitude/longitude coordinates, this will either be NAD83 or WGS84 (the default on most GPS units). NAD83 is preferred.

For latitude/longitude indicate the method of collection and the date of collection. Methods of collection include:

GPS – Survey Quality
GPS – Recreational Receiver WAAS enabled (Real Time Differential Corrected)
GPS – Recreational Receiver Uncorrected

GPS – Unknown
Digitized – Web Map Google / Yahoo / Microsoft
Digitized – Digital Raster Graph (DRG) (USGS 7.5 min topographic map 1:24,000 scale)
Digitized – Digital Ortho Quad (DOQ) (USGS aerial photo 1:24,000 scale)

Wastewater Facility Plan

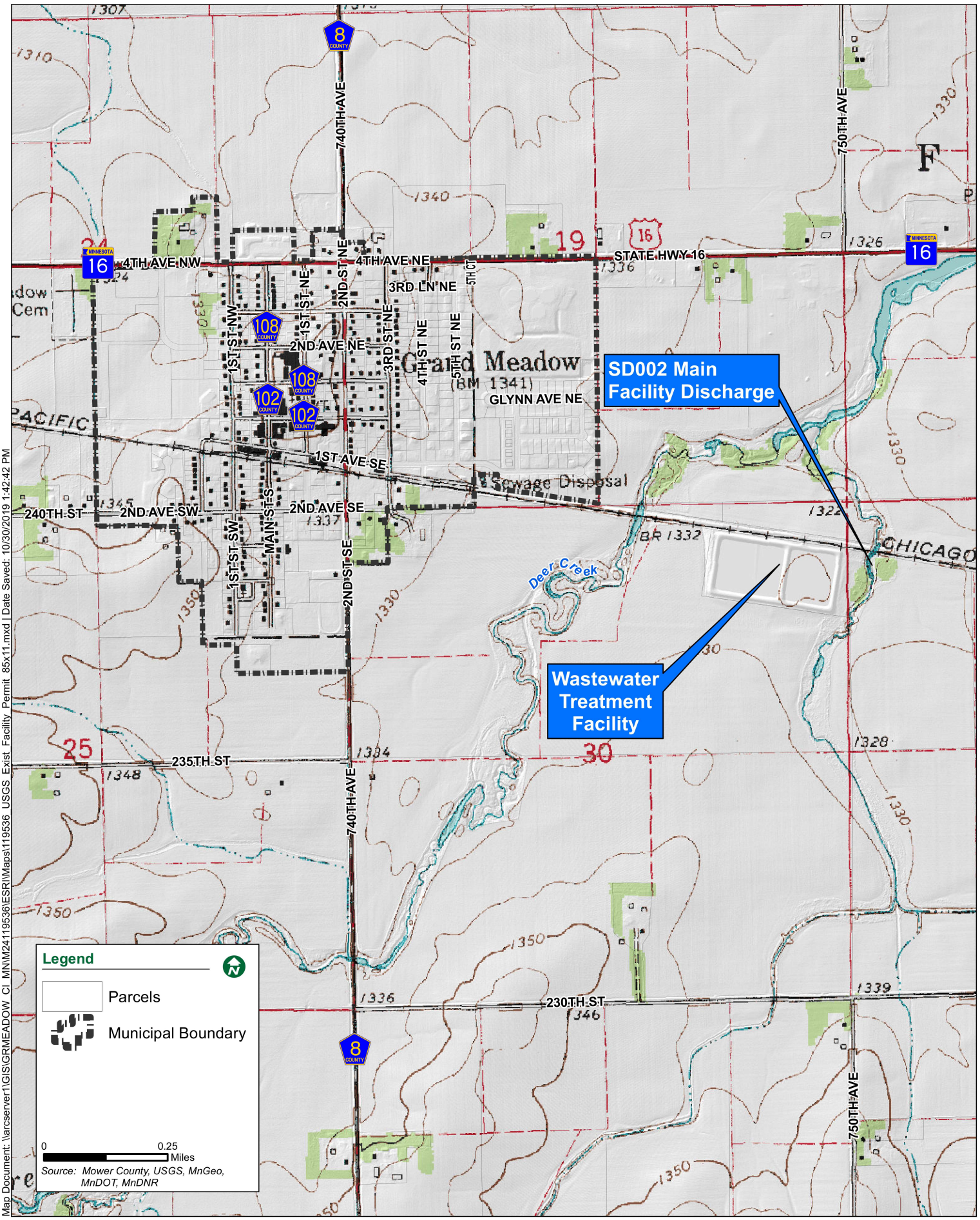
Grand Meadow, MN

Location Map

October 2019

BOLTON & MENK

Real People. Real Solutions.



MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

December 30, 2019

Jake Pichelmann
Bolton & Menk, Inc.
2900 43rd Street Northwest, Suite 100
Rochester, MN 55901

RE: Request for Preliminary Effluent Limitations Applicable to the Proposed Expansion at the City of Grand Meadow Wastewater Treatment Facility NPDES Permit No. MN0023558.

Dear Jake Pichelmann:

This is in response to your request of November 1, 2019, for preliminary effluent limitations applicable to a proposed expansion at the City of Grand Meadow wastewater treatment facility (WWTF). The preliminary effluent limitations for the proposed expansion are draft values and not finalized until the National Pollutant Discharge Elimination System (NPDES) permit process is completed. The City of Grand Meadow currently operates a stabilization pond system that discharges on a controlled basis to Deer Creek via an unnamed creek in Mower County, Minnesota. The current capacity of the WWTF is average wet weather flow (AWWF) of 0.120 million gallons per day (mgd).

DISCHARGE SCENARIOS

The preliminary effluent limitations request is for two different discharge scenarios. A controlled and a continuous discharge to Deer Creek via an unnamed creek in Mower County, Minnesota. The two discharge scenarios are:

1. Expansion of the existing stabilization pond system that discharges on a controlled basis through the existing outfall SD002 (T103N, R14W, S29) to Deer Creek. The capacity of the proposed expansion is AWWF of 0.227 mgd and average dry weather flow (ADWF) of 0.107 mgd.

2. A mechanical system that discharges on a continuous basis through outfall SD002 (T103N, R41W, S29) to Deer Creek. The capacity of the proposed WWTF is AWWF of 0.327 mgd and ADWF of 0.107 mgd.

The unnamed and Deer Creek in Mower County have been assigned use classifications of 2Bg, 3C, 4A, 4B, 5 and 6 waters of the state under Minn. R. ch. 7050. These multiple classifications include consideration for aquatic life and recreation, industrial consumption, agriculture and wildlife, aesthetic enjoyment and navigation, and other beneficial uses not specifically listed.

PRELIMINARY EFFLUENT LIMITATIONS

The preliminary effluent limitations for the proposed expansion at the Grand Meadow WWTF for the discharge scenarios are summarized in Table 1.

Table 1 - EFFLUENT LIMITATIONS

	EXISTING	OPTIONAL MASS CAP[1]	SCENARIO 1	SCENARIO 2
TREATMENT OPTION	STABILIZATION PONDS	STAB PONDS/ MECHANICAL	STABILIZATION PONDS	MECHANICAL SYSTEM
DISCHARGE TYPE	CONTROLLED	CONTR/CONTI	CONTROLLED	CONTINUOUS
AWWF, mgd	0.120	0.227 / 0.327	0.227	0.327
ADWF, mgd		0.107	0.107	0.107
River Flow (7Q10), cfs	0.97			
Dilution Ratio			0.3:1	0.2:1
Antidegradation Review Needed		YES		
Environmental Review Needed	NO			
Frozen Mass Limits Possible	YES			
Chloride Linkage	NO			
CBOD5-Ammonia Linkage Eligible	NO			
POLLUTANT/PARAMETER				
CBOD5, mg/L (kg/day)*	25 (98.58)	(98.58)/(6.80[2])	25 (**)	15 (18.54[4])
TSS, mg/L (kg/day)*	45 (177.45)	(177.45)/(13.61[3])	45 (**)	30 (37.08[5])
Fecal Coliform Organisms, orgs/100 mL[6]	200			
Ammonia-N (June 1 - September 30), mg/L, (kg/day)*	NA	NA/1.9 (2.35)	NA	1.9 (2.35)
Ammonia-N (October 1 - November 30), mg/L (kg/day)*	NA	NA/5.0 (6.18)	NA	5.0 (6.18)
Ammonia-N (December 1 - March 31), mg/L, (kg/day)*	NA	NA/8.5 (10.51)	NA	8.5 (10.51)
Ammonia-N (April 1 - May 31), mg/L, (kg/day)*	NA	NA/5.8 (7.17)	NA	5.8 (7.17)
pH (Standard Unit)	6.0 – 9.0			
Phosphorus, mg/L***		1.0		
Chloride	NA			

[1]Optional Mass Cap is the current mass limit assigned to the existing wastewater treatment facility included in the NPDES to be maintained in lieu of antidegradation analysis.
[2]The mass limit is calculated using the following equation (current AWWF, mgd) * 15 mg/L * 3.78 = (kg/day)
[3]The mass limit is calculated using the following equation (current AWWF, mgd) * 30 mg/L * 3.78 = (kg/day)
[4]The mass limit is calculated using the following equation (proposed AWWF, mgd) * 15 mg/L * 3.78 = (kg/day)
[5]The mass limit is calculated using the following equation (proposed AWWF, mgd) * 30 mg/L * 3.78 = kg/day
[6]Applicable from March 1 – October 31

*mass limits are in parenthesis (kg/day)
**mass limit for stabilization pond system is calculated using the discharge pond acreage and 6-inch daily drawdown.

***If a pond system is built, it would be preferable for the system to have sufficient storage to avoid the summer period (June to September) for river eutrophication standards. If a mechanical system is built, a 12-month moving average limit type is allowed if biological phosphorus removal is the primary phosphorus removal process.

MONITORING REQUIREMENTS
Monitoring for the listed parameters in the Table 2 will be required in addition to the NPDES permit monitoring requirements for the effluent limitations in Table 1.

Table 2 - MONITORING REQUIREMENTS

PARAMETER	INFLUENT (I)/EFFLUENT (E)	FREQUENCY
Ammonia Nitrogen	E	1 X half year, (Jan-Jun, Jul-Dec)[1] 1 X Month, (Mar, Sep)[2]
Nitrite + Nitrate Nitrogen	I/E	I: 1 X Quarter, (Mar, Jun, Sep, Dec)[1,2] E: 1 X Month, (Jan-Dec)1; 1 X Quarter, (Mar, Jun, Sep, Dec)[2]
Total Kjeldahl Nitrogen	I/E	I: 1 X Quarter, (Mar, Jun, Sep, Dec)[1,2] E: 1 X Month, (Jan-Dec)1; 1 X Quarter, (Mar, Jun, Sep, Dec)[2]
Total Nitrogen	I/E	I: 1 X Quarter, (Mar, Jun, Sep, Dec)[1,2] E: 1 X Month, (Jan-Dec)1; 1 X Quarter, (Mar, Jun, Sep, Dec)[2]
Total Dissolved Solids	E	1 X half year, (Jan-Jun, Jul-Dec)[1]
Total and Dissolved Mercury	E	1 X year (Jan-Dec)[1] 1 X year as a grab sample, Jul[2]
TSS sample associated with mercury – as a grab sample	E	1 X year (Jan-Dec)[1] 1 X year as a grab sample, Jul[2]
Salty Parameters	E	4 X Year[2]

[1]The monitoring frequency for the stabilization pond system option.
[2]The monitoring frequency for the mechanical system option.

ANTIDEGRADATION REQUIREMENT (Antidegradation Assessments and Capped Mass Limits)
Antidegradation is one of the fundamental protections in the Clean Water Act, and all newly issued or re-issued wastewater permits must comply with both state and federal antidegradation rules. The goal of antidegradation is to preserve waters of high quality and to ensure that they are not degraded unless balanced by important economic or social development.

For wastewater permitting, antidegradation concerns are triggered when a new discharge is proposed or when an existing discharger is proposing to increase the loading of any parameter of concern in its discharge. An antidegradation assessment is a substantial valuation that must consider all beneficial uses of the receiving water, potential economic impacts, all possible treatment options and the potential environmental degradation for every pollutant that triggers the need for an antidegradation assessment.

The proposed changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility are subject to antidegradation requirements found in Minn. R. ch. 7050 to Minn. R. 7050.0335.

In order to comply with the antidegradation requirements the permittee must choose one of the two following options:

1. "Cap" mass limit at their current levels in lieu of an antidegradation review.

2. Submit an antidegradation review that meets the antidegradation requirements in Minn. R. ch. 7050.

A full antidegradation review must be completed and approved in order to determine the final limits for the selected option.

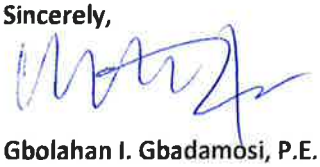
TOTAL MAXIMUM DAILY LOAD (TMDL) Requirements/Waste Load Allocation (WLA)
The proposed expansion of the city of Grand Meadow WWTF to a larger controlled discharge stabilization pond with an AWWF of 0.227 mgd or to a larger continuous discharge mechanical facility with an AWWF of 0.327 mgd. The TMDL/WLA would follow the process explained below:

For the stabilization pond systems, the E. coli and Total Suspended Solids (TSS) limits are based on the permitted daily maximum 6-inch discharge volume, which is calculated using the acreage of the secondary pond cell. Without knowing the acreage of the secondary pond, a calculation cannot be completed for the proposed expansion. An Expanded WLA Adjustment and Justification Memo would be written for the Root River Watershed TMDL Report for Bacteria, Nitrate and Suspended Solids and the Lower Mississippi River Basin – Regional Fecal Coliform TMDL after the secondary pond acreage is submitted by the Permittee.

For the mechanical systems, the E. coli and TSS limits are based on the AWWF of the system, therefore, the limits can be determined and WLAs estimated. For the proposed continuous discharge mechanical system, the AWWF would increase to 0.327 mgd. The proposed fecal coliform WLA for the Lower Miss TMDL would be 0.071 t-org/mo. The expansion of the WLA for the proposed WWTP is permitted. Expansion of the WLA will not contribute to the fecal coliform impairment in the Lower Mississippi River because the NPDES/State Disposal System Permit's fecal coliform permitted discharge limit of 200 organisms per 100 ml is consistent with the water quality standard.

If you have any questions or comments regarding this letter, please call me at 651-757-2381 or email me at gbolahan.gbadamosi@state.mn.us.

Sincerely,



Gbolahan I. Gbadamosi, P.E.
Engineer
Environmental Analysis and Outcomes Division

GIG:vs

Appendix C: MPCA Flow Determination Worksheet

Design flow and loading determination guidelines for wastewater treatment plants

Introduction

Determination of design flow and loadings is one of the most important items when planning a new or expanded wastewater treatment facility. Sound engineering judgement along with these minimum guidelines will determine the hydraulic and pollutant load capacity required by the proposed facility to meet all permitted limits.

All influent sources must be accounted for when completing design flow and loading determination including residential, seasonal, institutional, commercial, industrial, inflow, infiltration, any recycle streams, and any other unique aspect of flow and pollutant contributions. During the treatment facility design process, possible impacts of design flows and loadings on each upstream and downstream unit process should be considered.

Definitions

Existing flow data for critical low and peak wet weather events are used to estimate the following flow conditions critical to the design of wastewater treatment plants.

Term	Definition
ADW	**Average dry weather** flow is the daily average flow when the groundwater is at or near normal and a runoff condition is not occurring.
AWW	**Average wet weather** or peak month flow is the daily average flow for the wettest 30 consecutive days for mechanical plants or for the wettest 180 consecutive days for controlled discharge pond systems. The 180 consecutive days for pond systems should be based on either the storage period from approximately November 15 through May 15 or the storage period from approximately May 15 through November 15.
PHWW	**Peak hourly wet weather** **Existing collection system:** flow is the peak flow during the peak hour of the day at a time when the groundwater is high and a five-year one-hour storm event is occurring. To determine this five-year one-hour storm event for a specific location, please refer to Map Number 1. **New collection system:** 2.5 or higher multiplier or AWW for residential, commercial + peak hourly industrial. (Ten States Standards Figure 1, Chapter 10)
PIWW	**Peak instantaneous wet weather** **Existing collection system:** flow is the peak instantaneous flow during the day at a time when the ground water is high and a twenty-five year one-hour storm event is occurring. To determine the twenty-five year one-hour storm event for a specific location, please refer to Map Number 2. **New collection system:** 2.5 or higher multiplier or AWW for residential, commercial + peak hourly industrial. (Ten States Standards Figure 1, Chapter 10)

Minimum design requirements

Table 1 contains a summary of the minimum recommended flow and loading conditions for only a select group of processes. Specific design parameter details for individual treatment process units shall be in accordance with **Ten States Standards.**

Where the Minnesota Pollution Control Agency (MPCA) determines that the above design flow considerations will not provide adequate protection to the receiving waters, facility capacity in excess of peak instantaneous wet weather and/or organic loading calculation may be required.

Table 1: Design conditions summary.

Item	Design
Collection system	Must be capable of transporting all flow to the treatment facility without bypassing.
Lift station	Must be capable of transporting all flow to the treatment facility without bypassing.
Flow equalization basin	If PHWW/ADW > 3, or if PHWW/AWW > 3, flow equalization must be considered. If equalization is not provided, a discussion of how the facility will handle the transition in flow must be included. See flow equalization section of this document.
Facility piping and pumping	PIWW
Preliminary treatment unit (screens, grit removal, influent filters, etc.)	PIWW
Clarifiers (surface settling rate and weir loading rate)	PHWW + recirculation flow see "Ten States Standards"
Disinfection (detention time)	PHWW see (Ten States Standards)
Organic loading	Minimum BOD of 0.17 #pcd plus commercial, industrial, and other non-residential flow Minimum TSS of 0.20 #pcd plus commercial, industrial, and other non-residential flow

Design flows

Actual flow data should be used to determine design flow when possible. At a minimum, 100 gallons per capita per day should be used. Include the following information with design flow calculations.

- Data used and data excluded. At least 5-years of facility flow records should be evaluated. Extreme wet or dry weather events may be excluded where appropriate. Map 1 and 2 can be used to analyze wet weather events to determine if an event exceeds the rainfall event for design purposes.
- Water use information, particularly during dry weather flow periods.
- Total and per capita pollutant loadings during a range of flow events.
- Reliability of flow monitoring equipment, pump station performance and methods used to estimate flow reductions or contributions from inflow and infiltration.

Discussion of a method to use when existing flow data is and is not available is included below.

New treatment system and new collection system (no existing flow data)

Use Table 2 for flow calculations. Table 3 should be used to determine the design loadings for a new or upgraded wastewater treatment plant. Table 2 and 3 can also be found electronically in Excel format here: https://www.pca.state.mn.us/sites/default/files/wq-wwtp5-20a.xlsx

For mechanical plants, if the industrial flow varies during the day or week, the design flow should be based on the average flow on the peak day during the period when the industry or industries are operating. This condition is called "rated flow." For example, if the industry discharges 10,000 gallons over eight of the twenty-four hours, the rated flow is 30,000 gallons per day. For controlled discharge pond systems, if the industrial flow varies during the day or week, the average design flow may be based on a weekly average.

The MPCA may approve of an alternative flow design with appropriate justification. For determining the design of the collection system (including design flow), refer to Chapter 30 of Ten State Standards).

Some form of permit "control language" may be included for wastewater treatment facilities if the per capita design flow is less than what is recommended in this document. For this situation, it may become a permit violation when the permitted design flow is reached. Violation of the permitted flow could result in "no more connections" being allowed to the system, or the requirement for submittal of a report that examines the flow in comparison to the number of connections and the number of people using the system. The permittee could also be required to plan, design, and build additional treatment units upon reaching the design capacity.

Existing treatment systems and collection system (existing flow data)

For a mechanical plant, the attached Table 2 should also be used to determine the peak hourly wet weather flow, the peak instantaneous wet weather flow, the average dry weather flow, and the average wet weather flow.

Part A of Table 2 and Figure 1 are used to determine the peak hourly wet weather flow. The measured flow should be plotted for a twenty-four hour period when **groundwater is at or near normal and a runoff condition is not occurring** (Curve X on Figure 1). This should include flows data from overflows, bypasses, and emergency pumping events. The ground water elevation in relation to the sewer elevation should be noted. The present peak hourly dry weather flow is indicated by point (1) on Figure 1, and row 1 in Table 2.

The measured flow should be plotted for a twenty-four hour period when **groundwater is high and a runoff condition is not occurring** (Curve Y). This should include overflow, bypasses, and emergency pumping. The ground water elevation in relation to the sewer elevation should be noted. Point (2) on Figure 1 and row 2 in Table 2 is the peak hourly flow during a high groundwater period when a runoff condition is not occurring. The peak flow at point (2) minus the present peak hourly dry weather flow at point (1) is the peak hourly infiltration.

The measured flow should be plotted for a twenty-four hour period when the **groundwater is high and a runoff condition is occurring** (Curve Z). This should include flow data from overflows, bypasses, and emergency pumping events. The amount of rainfall and its duration should be plotted on the same graph. The peak inflow is represented by the greatest distance between Curve Y and Curve Z. The present hourly flow at the point of greatest distance between Curve Y and Z [point (5) on Figure 1 and row 5 in Table 2] minus the present hourly flow during high ground water at the same time of day on Curve Y [point (6) on Figure 1 and row 6 in Table 2] is the peak hourly inflow.

It may be necessary to adjust the measured flow based on a relationship between the data attained during a major storm event and the five-year one-hour designed storm event. Items (10) and (13) in Table 2 are determined through a cost effectiveness evaluation. The gallons per capita per day (gpcd) contribution for population increase in item (15), (25), (33), and (41) should all be 100 gpcd.

Part B of Table 2 determines the peak instantaneous wet weather flow. The present peak hourly inflow adjusted for a five-year one-hour rainfall event [see part A row (8)] is subtracted from the peak hourly wet weather flow [see part A row (19)]. To this number, add the present peak hourly inflow adjusted for a twenty-five year one-hour storm event. The resulting number is the peak instantaneous wet weather flow.

Part C of Table 2 determines the average dry weather flow. The present average dry weather flow (24) is the average flow received over a twenty-four hour period when the ground water is at or near normal and a runoff condition is not occurring. If the industrial flow varies during the day or week, the present average dry weather flow should be based on the average flow of the peak day during the period when the industry or industries are operating (rated flow). This also applies to the average flow from industrial increases.

Part D of Table 2 determines the thirty-day average wet weather design flow. The average infiltration and inflow after rehabilitation (where rehabilitation is cost effective) is the wettest thirty-day average. The amount of infiltration after rehabilitation averaged over the thirty wettest days should be the same or nearly the same as the peak infiltration after rehabilitation. This is due to the fact that the ground water could stay high for a fairly extended period of time. The amount of inflow after rehabilitation averaged over the thirty wettest days depends on the type of sources, their location, the amount of rainfall that affects the source, etc.

Part E of Table 2 correlates all related information that can impact the degree of accuracy of the determination of design flows. It is recommended that a minimum of six months of accurate data be recorded. Data associated with the critical peak wet weather flow events for a sustained wet weather period are essential for accurate estimation of design flows. Critical peak wet weather flow events typically occur in the spring (March-June) and must include the condition of high ground water with inflow.

Controlled discharge pond systems with existing sanitary sewer systems

The peak hourly wet weather and the peak instantaneous wet weather design flows to a pond system with an existing sanitary sewer system are arrived at in the same manner as in Parts A and B of the previous section. If the present industrial flow varies during the day or week, the present average dry weather flow (24) and (30) may be based on a weekly average. When computing the average wet weather flow, the average infiltration after rehabilitation (31), and the average inflow after rehabilitation (32) are averages over the wettest 180 consecutive days.

Flow equalization

This section applies to all treatment facilities except pond systems.

If the ratios described below are three or more, flow equalization should be considered. If flow equalization is not employed, an explanation must be provided describing how the facility will handle the transition from these average design flows to peak hourly wet weather design flow.

A. During a period of high ground water for that area and system, calculate the ratio of peak hourly wet weather design flow to average wet weather design flow [which is (19) divided by (37)]

B. During a normal ground water period, calculate the ratio of the peak hourly design flow during the five-year one-hour storm event [(1)+(14)+(15)+(17)+(18)] to the average dry weather design flow (29).

Infiltration and inflow

Infiltration and inflow (I/I) is a part of every collection system and must be taken into account in the determination of an appropriate design flow.

Inflow means water other than wastewater that enters a sewer system directly from sources such as roof leaders, foundation drains, yard drains, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, storm water runoff and other drainage structures.

Infiltration means water other than wastewater that enters the sewer system from the ground through defective pipe, pipe joints, and manholes.

Excessive infiltration means the quantity of flow that is more than 120 gpcd (domestic base flow and infiltration).

Excessive inflow means the quantity of flow during storm events that results in chronic operational problems related to hydraulic overloading of the treatment system or that results in a total flow of more than 275 gpcd (domestic and industrial base flow plus infiltration and inflow). Chronic operational problems may include surcharging, backups, bypasses, and overflows.

Bypasses/overflows and releases

Determining the design flow is one of the most challenging parts of the design process. It is not cost effective to design a system that can capture and treat flows from every extreme event, however, bypasses, overflows and releases of any kind are prohibited by permit and rules.

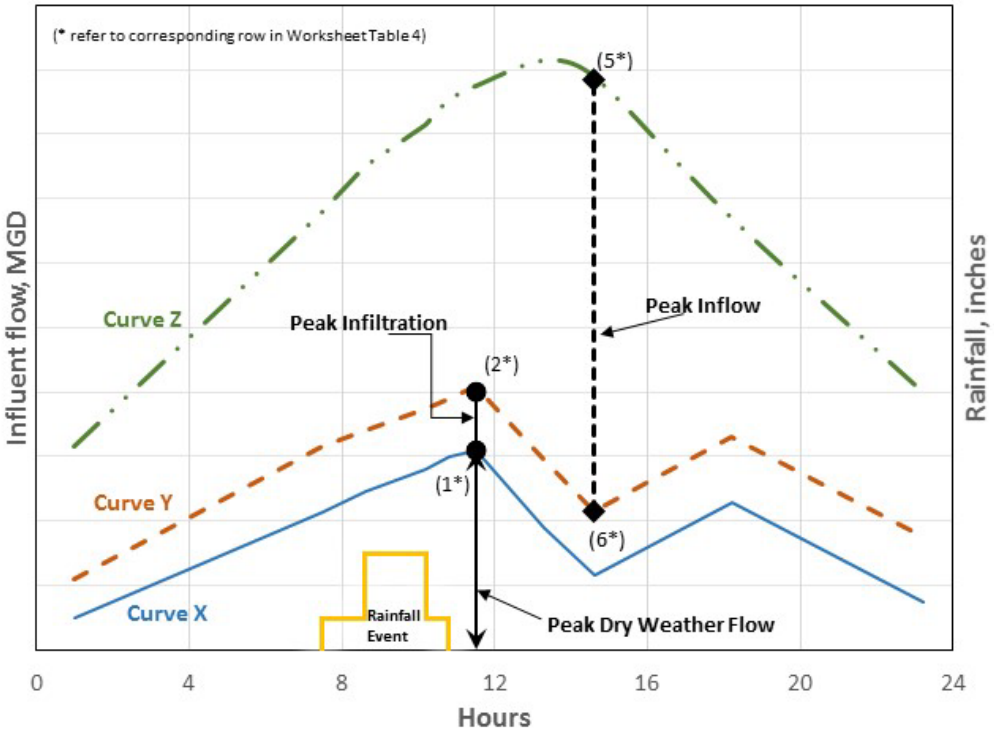
For more information

Please contact the engineer assigned to the project or district. If the engineer is unknown, contact the Customer Assistance Center.

MPCA 651-296-6300

Toll-free 800-657-3864

Figure 1: Determination of peak hourly flows before adjustment for storm event.



- Curve X: 24 hour flow with NORMAL groundwater conditions and no runoff
- Curve Y: 24 hour flow with HIGH groundwater conditions and no runoff
- Curve Z: 24 hour flow with HIGH groundwater conditions and runoff

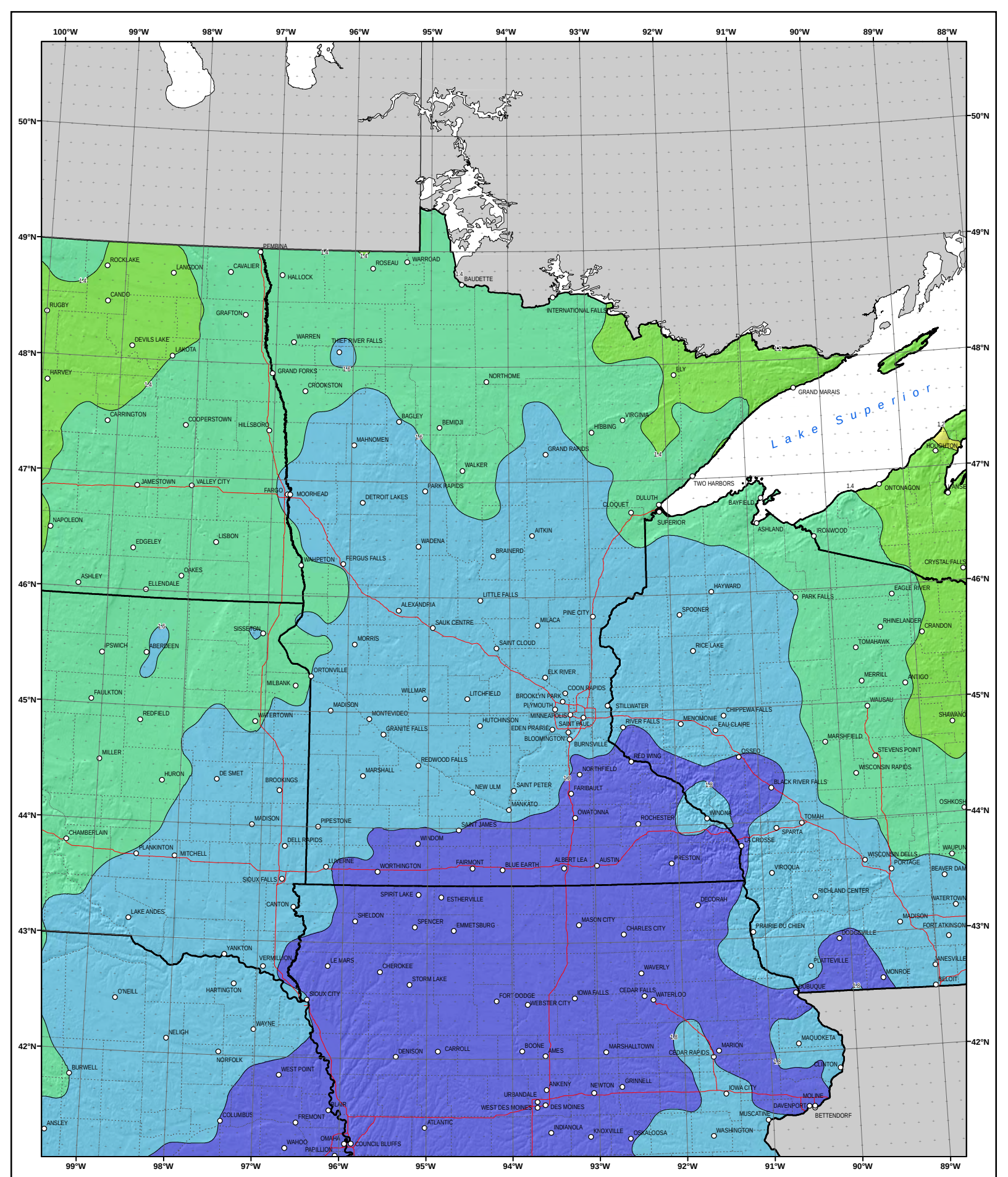
All of these flows should include any bypassing, overflows or bypass pumping.

For more detail see discussion in previous pages.

Note: All flow measurements taken at treatment plant with adjustments for bypasses, overflows and emergency pumping. Groundwater elevation in relation to sewers should be stated for several points in the sewer system. Dates of flow measurements should be stated.

Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants (Table 2 and 3): https://www.pca.state.mn.us/sites/default/files/wq-wwtp5-20a.xlsx

Map 1 and Map 2 are taken from the NOAA website. An interactive site specific map can also be used. Found here: https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mn



NOAA Atlas 14, Volume 8, Version 2
Midwestern States

MINNESOTA

Isopluvials of 5-year 60-minute precipitation in inches

SCALE 1:2,250,000

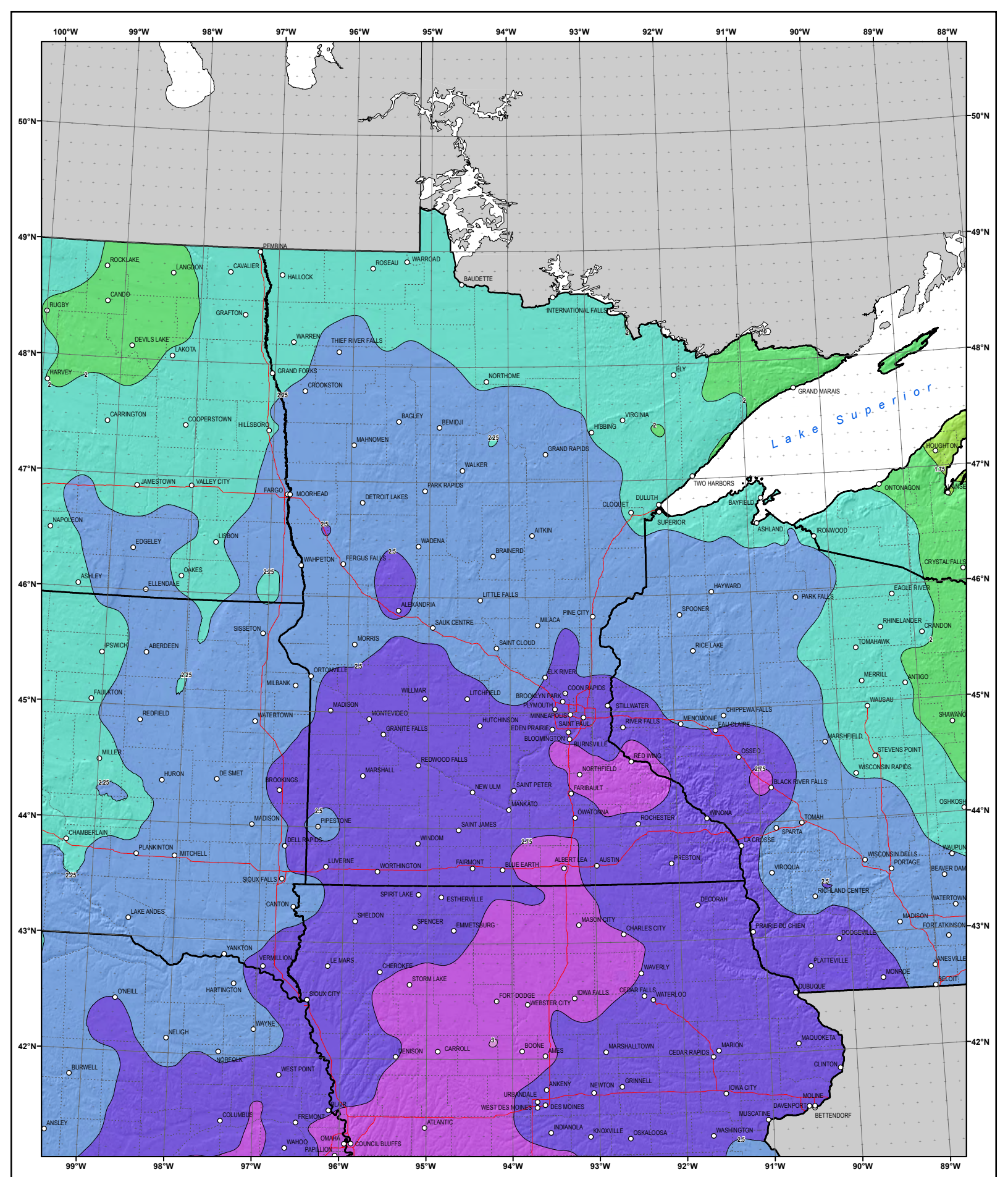
Prepared by U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
April 2013

0 5 10 20 30 Miles
0 10 20 40 60 Kilometers

Projection: Lambert Conformal Conic; Datum NAD83; Standard Parallels: 44°N and 48°N; Central Meridian 94.5°W.

0.47 - 0.60 | 0.61 - 0.80 | 0.81 - 1.00 | 1.01 - 1.20 | 1.21 - 1.40 | 1.41 - 1.60 | 1.61 - 1.80 | 1.81 - 2.00 | 2.01 - 2.20 | 2.21 - 2.40 | 2.41 - 2.45

Legend based on entire Volume 8 project area.



NOAA Atlas 14, Volume 8, Version 2
Midwestern States

MINNESOTA

Isopluvials of 25-year 60-minute precipitation in inches

SCALE 1:2,250,000

0.74 - 0.75 | 1.26 - 1.50 | 2.01 - 2.25 | 2.76 - 3.00
0.76 - 1.00 | 1.51 - 1.75 | 2.26 - 2.50 | 3.01 - 3.25
1.01 - 1.25 | 1.76 - 2.00 | 2.51 - 2.75 | 3.26 - 3.33

Legend based on entire Volume 8 project area.

0 5 10 20 30 Miles
0 10 20 40 60 Kilometers

Projection: Lambert Conformal Conic; Datum NAD83; Standard Parallels: 44°N and 48°N; Central Meridian 94.5°W.

Prepared by U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
April 2013

Design flow determination worksheet (30-day Average Wet Weather Design Flow)

Project name	City of Grand Meadow Facility Plan				Text input cell - green
Location	Grand Meadow, MN				Number input cell - blue
Completed by	Jason Neville	Date	1/27/2019		Calculation cell - no color
Consultant	Jake Pichelmann				

(A) Determination of peak hourly wet weather design flows (PHWW):	**action**	**Gallons per day**	**Source**
1 Present peak hourly dry weather flow		299,600	DMR Data
2 Present peak hourly flow during high ground water period (no runoff)		572,000	Estimate
3 Present peak hourly dry weather flow [same as (1)]	-	299,600	
4 Present peak hourly infiltration	=	272,400	Estimate
5 Present hourly flow during high ground water period and runoff at point of greatest distance between Curves Y and Z			Estimate
6 Present hourly flow during high ground water (no runoff) at same time of day as (5) measurement	-		Estimate
7 Present peak hourly inflow	=	-	Estimate
8 Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event		297,600	Estimate
9 Present peak hourly infiltration [same as (4)]		272,400	Estimate
10 Peak hourly infiltration cost effective to eliminate	-	-	
11 Peak hourly infiltration after rehabilitation (where rehabilitation is cost effective)	=	272,400	Estimate
12 Present peak hourly adjusted inflow [same as (8)]		297,600	Estimate
13 Peak hourly inflow cost effective to eliminate	-	-	
14 Peak hourly inflow after rehabilitation (where rehabilitation is cost effective)	=	297,600	Estimate
15 Population increase 296 persons @ 100 gpcd multiplied by 2.5 (peaking factor)		74,000	
16 Peak hourly flow from planned industrial increase		-	
17 Estimated peak hourly flow from future unidentified industries		-	
18 Peak hourly flow from other future increases		-	
19 Peak hourly wet weather design flow [(1)+(11)+(14)+(15)+(16)+(17)+(18)]	=	943,600	Estimate

(B) Determination of peak instantaneous wet weather design flow (PIWW):		Gallons Per Day	Source
20 Peak hourly wet weather design flow [same as (19)]		943,600	Estimate
21 Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event [same as (8)]	-	297,600	Estimate
22 Present peak inflow adjusted for a 25-year 1-hour rainfall event	+	432,726	Estimate
23 Peak instantaneous wet weather design flow	=	1,078,726	Estimate

(C) Determination of average dry weather design flow (ADW):		Gallons Per Day	Source
24 Present average dry weather flow		80,000	DMR Data
25 Population increase 296 persons @ 100 gpcd		29,600	
26 Average flow from planned industrial increase	+	-	
27 Estimated average flow from other future unidentified industries	+	-	
28 Average flow from other future increases	+	-	
29 Average dry weather design flow [(24)+(25)+(26)+(27)+(28)]	=	109,600	

(D) Determination of average wet weather design flow (AWW): **(30 day average for mechanical plants, 180 day average for controlled discharge ponds)**		Gallons Per Day	Source
30 Present average dry weather flow		80,000	DMR Data
31 Average infiltration after rehabilitation (where rehabilitation is cost effective)	+	88,000	Estimate
32 Average inflow after rehabilitation (where rehabilitation is cost effective)	+	132,000	Estimate
33 Population increase 296 persons @ 100 gpcd	+	29,600	
34 Average flow from planned industrial increase	+	-	
35 Estimated average flow from other future unidentified industries	+	-	
36 Average flow from other future increases	+	-	
37 Average wet weather design flow [(30)+(31)+(32)+(33)+(34)+(35)+(36)]	=	329,600	DMR Data

(E) Critical data (including a graphical display similar to Figure 1), methodology, and a discussion on the following items shall be included with the above calculations:

38 Dates during which actual flow data was recorded and its probable degree of accuracy.
39 Ground water elevation data relative to the collection system, during the time period when flow data was recorded.
40 Rainfall data during the time period when flow data was recorded and how the amount of rainfall compares to normal seasons.
41 Probable degree of accuracy of flow reduction due to proposed or completed I/I correction or elimination of bypasses.

Design flow determination worksheet (180-day Average Wet Weather Design Flow)

Project name	City of Grand Meadow Facility Plan				Text input cell - green
Location	Grand Meadow, MN				Number input cell - blue
Completed by	Jason Neville	Date	1/27/2020		Calculation cell - no color
Consultant	Jake Pichelmann				

(A) Determination of peak hourly wet weather design flows (PHWW):	**action**	**Gallons per day**	**Source**
1 Present peak hourly dry weather flow		299,600	DMR Data
2 Present peak hourly flow during high ground water period (no runoff)		572,000	Estimate
3 Present peak hourly dry weather flow [same as (1)]	-	299,600	
4 Present peak hourly infiltration	=	272,400	Estimate
5 Present hourly flow during high ground water period and runoff at point of greatest distance between Curves Y and Z			Estimate
6 Present hourly flow during high ground water (no runoff) at same time of day as (5) measurement	-		Estimate
7 Present peak hourly inflow	=	-	Estimate
8 Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event		297,600	Estimate
9 Present peak hourly infiltration [same as (4)]		272,400	Estimate
10 Peak hourly infiltration cost effective to eliminate	-	-	
11 Peak hourly infiltration after rehabilitation (where rehabilitation is cost effective)	=	272,400	Estimate
12 Present peak hourly adjusted inflow [same as (8)]		297,600	Estimate
13 Peak hourly inflow cost effective to eliminate	-	-	
14 Peak hourly inflow after rehabilitation (where rehabilitation is cost effective)	=	297,600	Estimate
15 Population increase 296 persons @ 100 gpcd multiplied by 2.5 (peaking factor)		74,000	
16 Peak hourly flow from planned industrial increase		-	
17 Estimated peak hourly flow from future unidentified industries		-	
18 Peak hourly flow from other future increases		-	
19 Peak hourly wet weather design flow [(1)+(11)+(14)+(15)+(16)+(17)+(18)]	=	943,600	Estimate

(B) Determination of peak instantaneous wet weather design flow (PIWW):		Gallons Per Day	Source
20 Peak hourly wet weather design flow [same as (19)]		943,600	Estimate
21 Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event [same as (8)]	-	297,600	Estimate
22 Present peak inflow adjusted for a 25-year 1-hour rainfall event	+	432,726	Estimate
23 Peak instantaneous wet weather design flow	=	1,078,726	Estimate

(C) Determination of average dry weather design flow (ADW):		Gallons Per Day	Source
24 Present average dry weather flow		80,000	DMR Data
25 Population increase 296 persons @ 100 gpcd		29,600	
26 Average flow from planned industrial increase	+	-	
27 Estimated average flow from other future unidentified industries	+	-	
28 Average flow from other future increases	+	-	
29 Average dry weather design flow [(24)+(25)+(26)+(27)+(28)]	=	109,600	

(D) Determination of average wet weather design flow (AWW): **(30 day average for mechanical plants, 180 day average for controlled discharge ponds)**		Gallons Per Day	Source
30 Present average dry weather flow		80,000	DMR Data
31 Average infiltration after rehabilitation (where rehabilitation is cost effective)	+	48,000	Estimate
32 Average inflow after rehabilitation (where rehabilitation is cost effective)	+	72,000	Estimate
33 Population increase 296 persons @ 100 gpcd	+	29,600	
34 Average flow from planned industrial increase	+	-	
35 Estimated average flow from other future unidentified industries	+	-	
36 Average flow from other future increases	+	-	
37 Average wet weather design flow [(30)+(31)+(32)+(33)+(34)+(35)+(36)]	=	229,600	DMR Data

(E) Critical data (including a graphical display similar to Figure 1), methodology, and a discussion on the following items shall be included with the above calculations:

38 Dates during which actual flow data was recorded and its probable degree of accuracy.
39 Ground water elevation data relative to the collection system, during the time period when flow data was recorded.
40 Rainfall data during the time period when flow data was recorded and how the amount of rainfall compares to normal seasons.
41 Probable degree of accuracy of flow reduction due to proposed or completed I/I correction or elimination of bypasses.

Appendix D: Budget Information and Sewer Rates

CITY OF GRAND MEADOW, MINNESOTA

FINANCIAL STATEMENTS

DECEMBER 31, 2018

CITY OF GRAND MEADOW, MINNESOTA
STATEMENT OF ACTIVITIES
For the Year Ended December 31, 2018
With Comparative Totals for the Year Ended December 31, 2017

Functions/Programs	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions
Governmental activities				
General government	$ 130,649	$ 46,718	$ 7,480	$
Public safety	410,597	217,721	32,537	
Public works	716,653		11,517	
Culture and recreation	152,742	3,307	54,316	
Economic development	26,893	1,560		
Interest and other fiscal charges	55,214			
Total governmental activities	1,492,748	269,306	105,850	
Business-Type activities:				
Water	188,457	146,819		
Sewer	117,776	130,736		
Total business-type activities	306,233	277,555		
Total	$ 1,798,981	$ 546,861	$ 105,850	$
General revenues				
General property taxes				
Tax increments				
Grants and contributions not restricted for specific programs:				
Local government aid and other state aids				
Interest income				
Miscellaneous				
Transfers				
Total general revenues and transfers				
Change in net position				
Net positions - Beginning				
Net position - Ending				

See Notes to the Financial Statements

CITY OF GRAND MEADOW, MINNESOTA
WATER AND SEWER FUND
Comparative Statement of Net Position
December 31, 2018 and 2017

	2018	2017
ASSETS		
Current Assets		
Cash	$	$ 26,511
Accounts receivable	30,260	17,623
Total Current Assets	30,260	44,134
Capital Assets		
Sewer and water system	2,613,815	2,613,815
Machinery and equipment	248,489	248,489
Total	2,862,304	2,862,304
Less: Accumulated depreciation	976,140	887,607
Net Property and Equipment	1,886,164	1,974,697
DEFERRED OUTFLOWS OF RESOURCES		
Deferred outflows from pension activity	14,390	5,148
Total Assets and Deferred Outflows of Resources	$ 1,930,814	$ 2,023,979
LIABILITIES AND NET POSITION		
Current Liabilities		
Accounts payable	$ 2,766	$ 2,116
Accrued liabilities	6,620	2,478
Due to other funds	39,626	
Current portion of bond payable	22,500	15,000
Total Current Liabilities	71,512	19,594
Noncurrent Liabilities		
Bond payable	680,000	702,500
Net pension liability	63,160	59,937
Total Noncurrent Liabilities	743,160	762,437
DEFERRED INFLOWS OF RESOURCES		
Deferred inflows from pension activity	15,091	2,219
NET POSITION		
Net investment in capital assets	1,183,664	1,257,197
Unrestricted	(82,613)	(17,468)
Total Net Position	1,101,051	1,239,729
Total Liabilities, Deferred Inflows of Resources and Net Position	$ 1,930,814	$ 2,023,979

See Notes to the Financial Statements

CITY OF GRAND MEADOW, MINNESOTA
WATER AND SEWER FUND
Combining Statement of Revenues, Expenses
and Changes in Net Position
For the Year Ended December 31, 2018
With Comparative Totals for the Year Ended December 31, 2017

	Water	Sewer	Total Water and Sewer Funds 2018	Total Water and Sewer Funds 2017
Operating Revenues				
Water and sewer service	$ 146,819	$ 130,736	$ 277,555	$ 317,241
Operating Expenses				
Salaries and wages	25,575	25,585	51,160	43,453
Payroll taxes	2,024	2,024	4,048	3,566
PERA contributions	5,411	5,411	10,822	5,860
Employee benefits	64	64	128	200
Testing	1,189	3,343	4,532	3,031
Utilities	21,943	8,711	30,654	26,943
Repairs and maintenance	46,485	6,873	53,358	12,935
Telephone				128
Insurance	1,841	3,569	5,410	7,879
Supplies	13,797	5,624	19,421	22,042
Meetings, conferences, and travel	580	300	880	1,967
Uniforms	496	315	811	577
Shop	9,835	902	10,737	797
License and permits	4,912	1,450	6,362	1,725
Miscellaneous	1,188	489	1,677	7,239
Depreciation	44,267	44,266	88,533	63,885
Total Operating Expenditures	179,607	108,926	288,533	202,227
OPERATING INCOME (LOSS)	(32,788)	21,810	(10,978)	115,014
Nonoperating Expenses				
Interest expense	(8,850)	(8,850)	(17,700)	(16,019)
Income (Loss) Before Transfers	$ (41,638)	$ 12,960	(28,678)	98,995
OTHER FINANCING USES				
Transfers Out			(110,000)	(104,000)
CHANGE IN NET POSITION			(138,678)	(5,005)
Net Position, Beginning of Year			1,239,729	1,244,734
Net Position, End of Year			$ 1,101,051	$ 1,239,729

See Notes to the Financial Statements

CITY OF GRAND MEADOW, MINNESOTA
WATER AND SEWER FUND
Statement of Cash Flows
For the Year Ended December 31, 2018
With Comparative Totals for the Year Ended December 31, 2017

	Business-Type Activities-Enterprise Funds Totals	
	2018	2017
Cash Flows From Operating Activities		
Cash received from customers	$ 264,918	$ 310,317
Cash paid to suppliers	(137,195)	(101,193)
Cash payments to employees for services	(51,160)	(43,453)
Net Cash Provided By Operating Activities	76,563	165,671
Cash Flows From Noncapital Financing Activities		
Transfers to other funds	(110,000)	(104,000)
Increase in due to other funds	39,626	
Net Cash Used In Noncapital Financing Activities	(70,374)	(104,000)
Cash Flows From Capital and Related Financing Activities		
Purchase of property and equipment		(51,440)
Principal payment on long-term debt	(15,000)	
Interest paid on debt	(17,700)	(16,019)
Net Cash Used In Capital and Related Financing Activities	(32,700)	(67,459)
NET DECREASE IN CASH AND CASH EQUIVALENTS	(26,511)	(5,788)
Cash and Cash Equivalents, Beginning	26,511	32,299
Cash and Cash Equivalents, Ending	$	$ 26,511

RECONCILIATION OF OPERATING INCOME (LOSS) TO NET CASH PROVIDED BY OPERATING ACTIVITIES

Operating Income (Loss)	$ (10,978)	$ 115,014
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation	88,533	63,885
Change in net pension liability	6,853	2,363
(Increase) Decrease In:		
Accounts receivable	(12,637)	(6,924)
Increase (Decrease) In:		
Accounts payable	650	(8,554)
Other liabilities	4,142	(113)
Net Cash Provided By Operating Activities	$ 76,563	$ 165,671

See Notes to the Financial Statements

5. Capital Assets (continued)

Business-type activities	Beginning Balance	Increases	Decreases	Ending Balance
Capital assets, being depreciated:				
Water and sewer system	$ 2,613,815	$	$	$ 2,613,815
Machinery and equipment	248,489			248,489
Total capital assets, being depreciated	2,862,304			2,862,304
Less accumulated depreciation for:				
Buildings and improvements	707,828	75,478		783,306
Machinery and equipment	179,779	13,055		192,834
Total accumulated depreciation	887,607	88,533		976,140
Total capital assets, being depreciated, net	1,974,697	(88,533)		1,886,164
Business-type activities capital assets, net	$ 1,974,697	$ (88,533)	$	$ 1,886,164

Business-Type Activities:	
Water and sewer utility fund	$ 88,533

7. Individual Fund Disclosures

The amounts due to and from other funds at December 31, 2018, at the individual fund level for year-end cash deficiencies are summarized below:

	Due From Other Funds	Due To Other Funds
General Fund	$ 39,626	$
Proprietary Fund		
Water and Sewer		39,626
Totals	$ 39,626	$ 39,626

Transfers, at the individual fund level, were as follows:

	Transfers In	Transfers Out
General Fund	$	$ 120,000
Special Revenue Funds		
Economic Development Authority	20,000	
Capital Projects Funds		
Capital Improvements	100,000	
Debt Service Funds		
GO Refunding Bonds 2010A	110,000	
GO Improvement Note of 2011A		3,556
GO Streets 2017A	3,556	
Proprietary Fund		
Water and Sewer		110,000
Totals	$ 233,556	$ 233,556

Excess expenditures over appropriateions at the individual fund level during 2018 is as follows:

General Fund	$ 1,809
Volunteer Ambulance Fund	(22,379)

At December 31, 2018 the following funds have deficit fund equity:

Volunteer Ambulance	$ (360,877)

Appendix E: Life Cycle Analysis

Alternative No. 1 - Expansion of Existing Stabilization Pond Facility					
Capital Costs	**Alternative 1**	**Useful Life**	**Replacement Costs**	**Salvage Value**	**Net Present Worth**
Mobilization, Bonds, Insurance	$150,000	--	--	--	$150,000
Demolition of Existing Lift Station	$30,000	--	--	--	$30,000
Misc. Rehabilitation to Existing Ponds	$100,000	--	--	--	$100,000
Influent Lift Station					
Precast Concrete, Earthwork, and Materials	$90,000	40	--	($45,000)	$45,000
Submersible Pumps & Guiderails	$40,000	20	$40,000	($40,000)	$40,000
Piping and Valves	$20,000	20	$20,000	($20,000)	$20,000
8-inch Force Main	$210,000	20	$210,000	($210,000)	$210,000
Pond Liner	$700,000	40	--	($350,000)	$350,000
Earthwork and Base Material	$1,000,000	--	--	--	$1,000,000
Access and Service Road	$10,000	40	--	($5,000)	$5,000
Phosphorus Removal					
Chemical Feed System	$40,000	20	$40,000	($40,000)	$40,000
Fiberglass Enclosure	$30,000	30	--	($10,000)	$20,000
Concrete Foundation & Pad	$15,000	40	--	($7,500)	$7,500
Mechanical Mixers	$50,000	20	$50,000	($50,000)	$50,000
Electrical Work	$50,000	40	--	($25,000)	$25,000
Seeding	$15,000	--	--	--	$15,000
Control Structures & Hydraulic Gates					
Precast Concrete, Earthwork, and Materials	$110,000	60	--	($73,333)	$36,667
Hydraulic Gates	$40,000	20	$40,000	($40,000)	$40,000
Site Piping	$100,000	20	$100,000	($100,000)	$100,000
Aluminum Fencing & Gates	$75,000	20	$75,000	($75,000)	$75,000
Erosion Control	$25,000	--	--	--	$25,000
Contigency (30%)	$870,000	--	--	--	$870,000
Land Acquisition ($10,000/acre)	$250,000	--	--	--	$250,000
Legal, Engineering, and Administration (20%)	$750,000	--	--	--	$750,000
Subtotal	$4,770,000		$575,000	($1,090,833)	**$4,254,167**
Annual Costs					
Operations & Maintenance	$99,500				**$1,480,309**
Total Estimated Life-Cycle Costs					**$5,734,475**

Alternative No. 2 - Construct New Extended Aeration Facility					
Capital Costs	Total Construction Costs	Useful Life	Replacement Costs	Salvage Value	Net Present Worth
Mobilization, Bonds, Insurance	$280,000	--	--	--	$280,000
Demolition of Existing Lift Station	$30,000	--	--	--	$30,000
Decommissioning Existing Primary Pond	$700,000	--	--	--	$700,000
Conversion of Existing Secondary Pond to Equalization	$50,000	--	--	--	$50,000
Influent Lift Station					
Precast Concrete, Earthwork, and Materials	$90,000	40	--	($45,000)	$45,000
Submersible Pumps & Guiderails	$40,000	20	$40,000	($40,000)	$40,000
Piping and Valves	$20,000	20	$20,000	($20,000)	$20,000
8-inch Force Main	$210,000	20	$210,000	($210,000)	$210,000
Influent Diversion Structure					
Precast Concrete, Earthwork, and Materials	$20,000	40	--	($10,000)	$10,000
Hydraulic Gates	$10,000	20	$10,000	($10,000)	$10,000
Equalization Return Pump Station					
Precast Concrete, Earthwork, and Materials	$45,000	40	--	($22,500)	$22,500
Submersible Pumps & Guiderails	$20,000	20	$20,000	($20,000)	$20,000
Piping and Valves	$10,000	20	$10,000	($10,000)	$10,000
Pretreatment Structure					
Building Construction, and Materials	$200,000	60	--	($133,333)	$66,667
Fiberglass Building Enclosure	$75,000	30	--	($25,000)	$50,000
Mechanical Fine Screen	$75,000	20	$75,000	($75,000)	$75,000
Biological Treatment					
Concrete, Earthwork, and Materials	$340,000	60	--	($226,667)	$113,333
Hydraulic Gates	$25,000	20	$25,000	($25,000)	$25,000
Fine-pore Membrane Diffusers, Piping, Valves	$25,000	20	$25,000	($25,000)	$25,000
Three (3) Positive Displacement Blowers	$60,000	20	$60,000	($60,000)	$60,000
Final Clarifier Splitter Structure	$30,000	50	--	($18,000)	$12,000
Final Clarifiers & Domes					
Concrete, Earthwork, and Materials	$175,000	60	--	($116,667)	$58,333
Clarifier Mechanisms and Drives	$125,000	20	$125,000	($125,000)	$125,000
Aluminum Domes	$100,000	30	--	($33,333)	$66,667
Scum Manhole & Pumping	$50,000	20	$50,000	($50,000)	$50,000
RAW/WAS Structure & Pumping					
Concrete, Earthwork, and Materials	$20,000	60	--	($13,333)	$6,667
Three (3) Submersible Pumps	$60,000	20	$60,000	($60,000)	$60,000
Telescopic Valves and Piping	$20,000	20	$20,000	($20,000)	$20,000
Control/UV Building & Equipment					
Building Construction, and Materials	$735,000	60	--	($490,000)	$245,000
Laboratory Equipment	$20,000	15	$20,000	($20,000)	$20,000
Automatic Sampling Equipment	$20,000	15	$20,000	($20,000)	$20,000
UV Equipment and Controls	$150,000	15	$150,000	($150,000)	$150,000
Chemical Phosphorus Removal Feed System	$40,000	20	$40,000	($40,000)	$40,000
Rapid Mix Manhole and Mixer					
Concrete, Earthwork, and Materials	$5,000	60	--	($3,333)	$1,667
Rapid Mixer	$15,000	20	$15,000	($15,000)	$15,000
Telescopic Valves and Piping	$10,000	20	$10,000	($10,000)	$10,000
Sludge Storage Tank & Equipment					
Concrete, Earthwork, and Materials	$687,000	60	--	($458,000)	$229,000
Dedicated Positive Displacement Blower	$40,000	20	$40,000	($40,000)	$40,000
Submersible Transfer Pumps	$40,000	20	$40,000	($40,000)	$40,000
Course-Bubble Aeration	$20,000	20	$20,000	($20,000)	$20,000
Process Piping, Valves, and Site Utilities	$1,000,000	40	--	($500,000)	$500,000
Site Work, Fill Material, and Paving	$500,000	40	--	($250,000)	$250,000
Painting	$150,000	20	$150,000	($150,000)	$150,000
HVAC & Plumbing	$500,000	30	--	($166,667)	$333,333
Electrical, Instrumentation, & Controls	$1,500,000	40	--	($750,000)	$750,000
Emergency Power Generation	$100,000	40	--	($50,000)	$50,000
Contigency (30%)	$2,530,000	--	--	--	$2,530,000
Land Acquisition ($10,000/acre)	$40,000	--	--	--	$40,000
Legal, Engineering, and Administration (20%)	$2,190,000	--	--	--	$2,190,000
Subtotal	$13,197,000		$1,255,000	($4,566,833)	$9,885,167
Annual Costs					
Operations & Maintenance	**$263,000**				$3,912,776
Total Estimated Life-Cycle Costs					$13,797,943

Appendix F: PPL Application and MPCA Forms

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF facilities plan submittal checklist

Clean Water Revolving Fund (CWRF) Program

Submissions Required for a Complete Facilities Plan
Minn. R. 7077.0272

Instructions: The Facilities Plan may be submitted via email at ppl.submittals.pca@state.mn.us (and one hard copy submitted to the assigned Minnesota Pollution Control Agency [MPCA] Review Engineer).

Facility information

Project name: City of Grand Meadow Wastewater Treatment Improvements
Proposed dates for construction: July 2021 - December 2022
City's authorized representative: Chris Hyrkas
Title: City Clerk/Treasure Telephone: (507)754-5280
Mailing address: 112 Grand Avenue East, Grand Meadow, MN 55936
City: Grand Meadow State: Minnesota Zip code: 55936
Technical agent or consulting engineer: Jake Pichelmann
Name of firm/organization: Bolton and Menk, Inc. Telephone: (507)208-4332;2867

Check yes or no for the following questions

Is the Facilities Plan signed by an engineer registered in the State of Minnesota? ☒ Yes ☐ No

Has the municipality in which the facility will be located held at least one public hearing to discuss the proposed project?

☒ Yes ☐ No If yes, what was the date the hearing was held: 02/18/2020

Check the boxes below if you have included the following items

If all of the following items are not included with the Facilities Plan, the Facilities Plan is incomplete and may be returned or filed until a complete submittal is received. Facilities Plan review will not begin until a complete submittal is received. Please see Minn. R. 7077.0272 for more information about the content of facilities plan.

The following forms can be found on the MPCA website at https://www.pca.state.mn.us/water/wastewater-financial-assistance.

- ☒ A completed *CWRF cost and effectiveness certification checklist* **provided by the MPCA**.
- ☒ A completed *CWRF B3 2030 exemption form* **provided by the MPCA**.
- ☒ A completed CWRF cost and effectiveness certification form **provided by the MPCA**.
- ☒ A summary of the public hearing documenting that the following items were discussed:
  - ☒ The various treatment alternatives considered
  - ☒ The location of the project site
  - ☒ The reasons for choosing the selected treatment method
  - ☒ The estimated sewer service charges
- ☒ A summary of the comments received at the public hearing and the action taken to address those comments.
- ☒ A complete list of addresses used for public notice purposes on a form **provided by the MPCA.**
- ☒ A copy of the resolution of the municipality's governing body adopting the facilities plan.
- N/A ☐ ~~A list of ordinances or intermunicipal agreements required for the implementation and administration of the project.~~
- N/A ☐ ~~A signed treatment agreement with each significant industrial user.~~
- ☒ For surface water dischargers only, a copy of the Preliminary Effluent Limits review letter **provided by the MPCA.**
  - Contact the MPCA to determine if a formal request for Preliminary Effluent Limits needs to be made for the project.
  - The alternatives analysis should address antidegradation requirements if the project is proposing an increase in flow or loading.
- ☒ A completed *Environmental Information Worksheet* **provided by the MPCA.**
- N/A ☐ ~~For individual sewage treatment systems that serve more than one structure, an assurance from the municipality stating that all property owners who will be served by the proposed system agree to be part of the system, to participate in the construction project, and to finance future operation, maintenance, and replacement of the system.~~
- ☒ Copies of all notifications, certifications, and comments received.

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Project Priority List (PPL)

Wastewater Application

1. **Applicant name:** City of Grand Meadow, Minnesota
   Project area: Wastewater Treatment Facility
   Town/city: Grand Meadow, MN
   Population: 1,211 (2018 State Demographic Center Population Estimates)
   County: Mower

2. **Contact person:** Chris Hyrkas
   Address: 112 Grand Avenue East, Grand Meadow, MN 55936
   Phone: (507)754-5280 Fax: (507)754-7280
   E-mail: cityclerk@cityofgrandmeadow.com

3. **Project consultants/Firm name (if applicable):** Bolton and Menk, Inc.
   Contact name: Jake Pichelmann
   Address: 2900 43rd Street NW Suite 100, Rochester, MN 55901
   Phone: (507)208-4332;2867 Fax: (507)208-4155
   E-mail: Jakeb.Pichelmann@bolton-menk.com

4.

Project area description:	☒ **Sewered:**	☐ **Unsewered** (submit map of project area)
a. Number of existing households:	Approx. 444	
b. Number of non-residential users:	Approx. 38	

Need or problem project addresses: (Check all that apply)

- ☐ Failing on-site systems # of failing systems:
- ☐ Connection to an existing system
- ☐ Rehab of an existing facility
- ☒ Rehab collection system
- ☒ Expansion of existing treatment plant
- ☐ New treatment and/or collection system
- ☐ Advanced treatment

5. **Please indicate if this project may be a Green Project Reserve (GPR) which are wastewater projects that are either categorical or non-categorical and have components or the entire project is applying to be determined GPR eligible.**

The U.S. Environmental Protection Agency (EPA) provided a guidance document listing examples of projects that will qualify for Green Project Reserve dollars. Below is a list of those examples. If the proposed project matches one or more of the examples, check the box next to the example that describes the project. For more information, see *CW Green Guidance* at http://www.pca.state.mn.us/water/wastewater-financial.html.

Categorical eligible project types

☐ 1. **Water Efficiency**

- ☐ a. Installation of water meters (applies only to drinking water distribution systems – contact the Minnesota Department of Health)
- ☐ b. Retrofit or replacement of water using fixtures, fittings, equipment or appliances
- ☐ c. Efficient landscape or agricultural irrigation equipment
- ☐ d. Systems to recycle gray water
- ☐ e. Reclamation, recycling, and reuse of existing rainwater, condensate, degraded water, stormwater, and/or wastewater streams.
- ☐ f. Collection system leak detection equipment
- ☐ g. Development and initial distribution of public education materials

☐ **2. Energy Efficiency**

- ☐ a. Energy efficient retrofits and upgrades to pumps and treatment processes
- ☐ b. Leak detection equipment for treatment works
- ☐ c. Producing clean power for 212 treatment works on site (wind, solar, hydroelectric, geothermal, biogas powered combined heat and power)
- ☐ d. Pro-rata share of capital costs for offsite publicly owned clean energy facilities that provide power to a treatment works.

☐ **3. Green Infrastructure**

- ☐ a. Implementation of comprehensive street tree or urban forestry programs, including expansion of tree box sizes to manage additional stormwater and enhance tree health.
- ☐ b. Implementation of green streets (combinations of green infrastructure practices in transportation rights-of-ways), for either new development, redevelopment or retrofits
- ☐ c. Implementation of water harvesting and reuse programs or projects, where consistent with state and local laws and policies.
- ☐ d. Implementation of wet weather management systems for parking areas which include: the incremental cost of porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness at one or more scales.
- ☐ e. Establishment and restoration of riparian buffers, floodplains, wetlands and other natural features.
- ☐ f. Downspout disconnection to remove stormwater from combined sewers and storm sewers.
- ☐ g. Comprehensive retrofit programs designed to keep wet weather out of all types of sewer systems using green infrastructure technologies and approaches.

☐ **4. Environmentally Innovative Projects**

- ☐ a. Green Infrastructure/Low Impact development stormwater projects
- ☐ b. Decentralized wastewater treatment and/or reuse projects that reduce energy consumption, recharge aquifers and reduce water withdrawals and treatment costs
- ☐ c. Projects that employ development and redevelopment practices that preserve or restore site hydrologic processes through sustainable landscaping and site design.
- ☐ d. Projects that use water balance approaches (water budgets) at the project, local or state level that preserve site, local or regional hydrology. Such an effort could pilot and show-case efforts to plan and manage in a concerted manner, surface and groundwater withdrawals, stream base flow (aquatic species protection), wetland and floodplain storage, groundwater recharge and regional or local reuse and harvesting strategies using a quantified methodology.
- ☐ e. Projects that demonstrate the energy savings and climate change implications of sustainable site design practices and the use of green infrastructure such as green roofs, increased tree canopy, reduced water consumption and potable water use due to sustainable site designs, rainwater harvesting and reuse and reductions in hard or infrastructure needed to manage stormwater and Combined Sewers Overflow (CSOs).
- ☐ f. Projects that demonstrate the differential uses of water based on the level of treatment and potential uses as a means to reducing the costs of treating all water to potable water standards.
- ☐ g. Projects that identify and quantify the benefits of using integrated water resources management approaches.

☐ **5. Non-categorical (describe)**

_____

_____

6. Possible solution and cost estimates (if known): _____

Phase 1: Collection system rehabilitation and improvements. Estimated capital costs = $8,100,000.

Phase 2: Expansion of existing stabilization pond facility and phosphorus removal. Estimated capital cost = $5,050,000

Total project capital costs: $13,150,000

7. Current project status: Planning phase

8. Desired construction start date, if financing is available (month/year): July 2021

NOTE: Required attachments for unsewered area projects. A map of the project service area which has an identifiable scale, identifies all the structures with wastewater flows, and has the maximum impact zone clearly encircled.

On behalf of an eligible project as their authorized authority, I hereby submit this application for placement on the PPL:

Print Authorized Representaive Name: Chris Hyrkas

Signature: Chris Hyrkas

Title: City Clerk/Treasure

Date: 3/04/20

For more information, contact:

Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324 or bill.dunn@state.mn.us
www.pca.state.mn.us/water/wastewater-financial.html

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

PPL Wastewater Existing Facility Improvements Scoring Worksheet

Project Priority List (PPL)
Minnesota Rule Chapter 7077.0117

Doc Type: PPL Points Determination

MPCA Use Only

Project Number
Staff Engineer
Total Points
Date

Facility Information (please print)

Project name: Wastewater Treatment and Collection System Improvements
Applicant name (if different): City of Grand Meadow, Minnesota
Contact name: Chris Hyrkas Title: CIty Clerk/Treasure
E-mail address: cityclerk@cityofgrandmeadow.com Phone: (507)754-5280

Instructions: This worksheet is used to score all requests for state financial assistance for wastewater improvement projects for Minnesota Pollution Control Agency (MPCA) permitted facilities. Scoring is based on the environmental criteria contained in Minnesota Rule Chapter 7077. The result of scoring is a ranked list called the Project Priority List (PPL) from which projects will be selected for funding.

Applicants must complete their sections of the worksheet and submit it with their requests for placement on the PPL. As part of completing the worksheet, the applicant must provide sufficient documentation to support the award of points. Complete application information is located on the MPCA website at http://www.pca.state.mn.us/ppl.

Complete this form if your proposal includes improvements to wastewater collection and/or treatment facilities that have an existing National Pollutant Discharge Elimination System (NPDES) Permit or a State Disposal System (SDS) Permit.

For more information, contact: Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324, Fax 651-297-8324, or bill.dunn@state.mn.us.

Applicant completes questions 15-40 and 85; MPCA completes 45-80, 90-95

Points

[15] Existing and proposed stabilization ponds located in karst areas and SDS facilities with high ground water table [subp. 6]

15.1 Does this project replace or rehabilitate stabilization ponds located over karst areas? ☒ Yes ☐ No

15.2 Does this project replace or rehabilitate wastewater treatment facilities having a disposal site (spray irrigation, rapid infiltration, etc.) with less than three feet of vertical separation from the treated wastewater discharge point to the seasonally high ground water table or to bedrock? ☐ Yes ☒ No

If Yes to either 15.1 or 15.2, enter 20 points 20

[20] Existing facility at or above 85% capacity [subp. 1]

Complete 20.1 *if project improves only the treatment facility or improves both the treatment facility and the collection facilities.*

20.1 Is this treatment facility at or above 85% of either its permitted hydraulic flow or organic loading capacity as determined by the last 12 month average wet weather flow (AWW) or average annual discharge, **and** will the project proposal appropriately resolve capacity issues either through expansion of treatment capacity or reduction of loadings? ☒ Yes ☐ No

Permitted hydraulic and/or organic loading capacity: 0.120 MGD (180-day AWW); 160 lbs/day (CBOD)

Actual hydraulic and/or organic loading capacity: 0.200 MGD (180-day AWW); 208 lbs/day (CBOD)

Complete 20.2 *if project improves only the collection facilities.*

20.2 Is this collection facility at or above 85% of the design peak instantaneous wet weather flow (PIWW) or provide documentation of other physical conditions, such as by-passing to show the peak flow has exceeded the design PIWW, **and** will the project proposal appropriately resolve capacity issues through expansion of collection facility capacity? ☒ Yes ☐ No

Design PIWW: None specified

Documented peak flow: 1.400 MGD (max day flow recorded in September 2016)

If Yes to either 20.1 or 20.2, enter 5 points | 5

Project name: Wastewater Treatment and Collection System Improvements | **Points**

[25] Existing age of treatment or collection facilities within the proposed project service area [subp. 2]
(*Age is determined by the construction year of all or a substantial portion of the existing facility addressed by project.)*

25.1 Last significant construction year of treatment or collection facilities, which are proposed to be repaired or replaced within the service area? ☒ Yes ☐ No

Enter Year: 1975

25.2 Are the facilities 20 years or more old? If yes, attach documentation of last significant construction year. ☒ Yes ☐ No

If Yes, enter 20 points | 20

[30] Existing excessive infiltration/inflow (i/i) with proposed reduction plan [subp. 3]

30.1 Does this facility have excessive infiltration or inflow? (Minn. R. 7077.0105, subp. 12 and 13)

Calculate infiltration: 139 gallon/capita/day — Greater than 120 gallon/capita/day? ☒ Yes ☐ No

Calculate inflow: 340 gallon/capita/day — Greater than 275 gallon/capita/day? ☒ Yes ☐ No

30.2 Does the proposal include measures to correct excessive infiltration or inflow? ☒ Yes ☐ No

If Yes to both 30.1 and 30.2, enter 15 points | 15

[35] Existing or proposed land (including sub-surface) discharge [subp. 4]

35.1 Does the facility currently land discharge treated wastewater effluent, will it continue to land discharge, **and** not create or contribute to known ground water nitrate levels over 10 mg/L? ☐ Yes ☒ No

35.2 Does the proposed alternative call for the consumptive use (nitrogen or volume) spray irrigation or on-land disposal systems, that are required by permit to denitrify (nitrate limit)? ☐ Yes ☒ No

If Yes to either 35.1 or 35.2, enter 20 points |

[40] Existing stringent limit that exceeds secondary treatment [subp. 5]

40.1 Is the existing facility currently subject to CBOD or TSS permit limits that are more stringent than secondary treatment (25 mg/l and 30 mg/l), or has an ammonia, total nitrogen or phosphorus limit? (Minn. R. 7050.0211) Exclude facilities discharging to Class 7 waters that are subject to 15 CBOD. ☐ Yes ☒ No

If Yes, enter 10 points |

[45] Existing effluent discharge violations *(Enforcement staff)* [subp. 7]

45.1 Is the existing facility on the Significant Noncompliance List (CFR, title 40, section 123.45, appendix A) **and** would the proposed project designed to eliminate the problem? ☐ Yes ☐ No

If Yes, enter 5 points |

[50] Existing repeated facility failures *(Enforcement staff)* [subp. 8]

50.1 Has the existing treatment or collection facility experienced bypasses, overflows and/or surcharges during two or more storm events within a 12-month period when operating at less than "peak instantaneous wet weather flow" **and** is the proposed project designed to eliminate such failures? ☐ Yes ☐ No

If Yes, enter 10 points |

[55] Existing discharge to outstanding resource value water (ORVW) or impaired water (*Effluent Limits Coord.)* [subp. 9]

55.1 Does the existing facility currently discharge into an ORVW or Impaired water? ☐ Yes ☐ No

If Yes, enter 5 points |

55.2 If yes, does the existing facility also have existing acute/chronic effluent discharge standards violations? (see question 45.1 or subp. 7)? ☐ Yes ☐ No

If Yes to both 55.1 and 55.2, enter 5 points |

55.3 If yes, does the existing facility also have existing chronic failures? (see question 50.1 or subp. 8) ☐ Yes ☐ No

If Yes to 55.1, 55.2, and 55.3, enter 5 points |

[60] Existing discharge near potable water intake (*Effluent Limits Coordinator)* [subp. 10]

60.1 Is there potable water intake within 25 miles downstream of the existing facility discharge? ☐ Yes ☐ No

If Yes, enter 5 points ☐

Project name: **Wastewater** Treatment and Collection System Improvements **Points**

[65] Existing endangered or threatened species (*Effluent Limits Coordinator)* [subp. 11]

65.1 Does the receiving water downstream from the existing facility discharge support any endangered or threatened species? ☐ Yes ☐ No

If Yes, enter 5 points ☐

[70] Proposed introduction of more stringent discharge limits for an existing facility (*Effluent Limits Coordinator)* [subp. 12]
Does this existing treatment facility need to meet more intensive and/or extensive wastewater treatment standards because of:

70.1 More stringent facility discharge limits as incorporated into MPCA permit revisions? ☐ Yes ☐ No

70.2 Discontinuation of an existing permit variance? ☐ Yes ☐ No

70.3 Need to treat additional hydraulic or organic loading capacities without increasing either the permitted frozen effluent mass limit or concentration of discharges to the receiving waters? ☐ Yes ☐ No

If Yes to 70.1, 70.2 or 70.3, enter 10 points ☐

[75] Existing receiving water classification *(Effluent Limits Coordinator)* [subp. 13]

Only the most strict classification can be used, 7 points maximum

75.1 Receiving water classification is 2A ☐ Yes ☐ No

If Yes to 75.1, enter 7 points ☐

75.2 Receiving water classification is 1, 2Bd ☐ Yes ☐ No

If No to 75.1 and Yes to 75.2, enter 5 points ☐

75.3 Receiving water classification is 2B, 2C, 2D ☐ Yes ☐ No

If No to 75.1 and 75.2 and Yes to 75.3, enter 3 points ☐

75.4 Receiving water classification is 7 ☐ Yes ☐ No

If No to 75.1, 75.2 and 75.3 and Yes to 75.4, enter 1 point ☐

[80] Project facility effluent to stream impact dilution ratio *(Effluent Limits Coordinator)* [subp. 14]

*For all discharges to rivers, streams, or ditches (flowing receiving water), calculate the facility effluent low flow by averaging the influent flow reported on the monthly discharge monitoring reports (DMRs) for the three consecutive months with the lowest **influent** flow in three climatic years, April 1 to March 31.*

80.1 What is the ratio of the **influent** low flow of the facility to the 7Q10 flow of the receiving water?

Dilution Ratio* = Wastewater Treatment Facility (WWTF) Low Flow (million gallons per day [mgd]) / Receiving water low flow (mgd)

(_____ mgd/ _____ mgd = Dilution Ratio) Dilution Ratio = ☐

*For all "Dilution Ratios" greater than 1.0 or if the 7Q10 receiving water flow = 0 mgd set dilution ratio = 1.0

Note: Round up calculated value for dilution ratio to the next whole number (e.g., 8.3 = 9). 15 x dilution ratio = ☐

[85] Proposed project implements corrective measures (*Effluent Limits Coordinator)* [subp. 15]

85.1 Will the project implement corrective measure(s) for problems identified in a study, such as: ☐ Yes ☒ No

- Clean Water Partnership Project
- Impaired Water Study
- EPA-approved Watershed Restoration Action Strategy
- Equivalent (other) study, e.g., County Water Plan

Type of Study: *Attach supporting documentation and identify relevant sections.*

If Yes, enter 5 points ☐

[90] Proposed project helps meet a total maximum daily load (TMDL) for a receiving water *(Effluent Limits Coord)* [subp. 16]

90.1 Does this project contribute to the achievement of a TMDL by being designed to reduce the discharge of pollutants as required by an Agency approved TMDL implementation plan or does the project require an National Pollutant Discharge Elimination System (NPDES) Permit or State Disposal System (SDS) Permit that will require the reduced discharge of pollutants based on a TMDL? ☐ Yes ☐ No

If Yes, enter 20 points ☐

Project name: **Wastewater** Treatment and Collection System Improvements **Points**

[95] Propose project points reduction for new/expanded discharges into specified waters *(Effluent Limits Coord)* [subp. 17]

95.1 Does the proposed project involve a new or expanded discharge* to one or more of the following specified waters? ☐ Yes ☐ No

a) Outstanding Resource Value Waters (Minn. R. 7050.0180)

b) Impaired waters (Section 303(d) of the Clean Water Act)

c) Classification 2A, lake, or wetland that exceeds 200,000 gallons per day

* If new permit requirements include frozen effluent mass limits from the existing permit, the facility is not defined as expanding and negative points will not be assigned.

If Yes, enter minus 5 points ☐

[100] Project includes wastewater reuse

100.1 Does the project include the beneficial use of treated wastewater effluent that will reduce or replace the use of a groundwater, surface water, or potable water source? ☐ Yes ☐ No

100.2 Do the project components needed to beneficially use treated wastewater effluent account for at least 20% of the total eligible project cost? ☐ Yes ☐ No

100.3 Does the project receive points under item 35 (Minn. R. 7077.0117, subp. 4) for land discharge? ☐ Yes ☐ No

If Yes to both 100.1 and 100.2, enter 30 points ☐

Total ☐

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Release Sampling Report

Wastewater Treatment Program

Doc Type: Discharge Monitoring Reports

Instructions: Report the sampling data for this release on the back side of this form, and submit this form electronically as an attachment to the Discharge Monitoring Report (DMR).

Facility name: CITY OF GRAND MEADOW **Facility address:** 204 1ST AVENUE S.E.

Duty Officer Report No.: 183267 Emily #77 **Permit No:** MN0023558

Release Information

1	Receiving waters:	DEER CREEK
2	Release start date:	5/27/2019
3	Release start time:	6:30pm
4	Release discovery date:	5/27/2019
5	Release discovery time:	6:15pm
6	Release anticipated?	☐ Yes ☑ No
7	Location of release:	LIFT STATION #1
8	Release related to wet weather?	☑ Yes ☐ No ☐ Unknown

Comments:

Note: The definition of an "anticipated bypass" is a known equipment shutdown.

Report the sampling data for this release on page two of this form.

Release Sampling Report

Facility name/address: GRAND MEADOW WWTP 112 GRAND AVE. E. GRAND MEADOW,MN. 55936

Permittee name/address: CITY OF GRAND MEADOW

Duty Officer Report No.: 183267

Preferred ID No: MN0023558

The following parameters are commonly required for facilities with domestic flow. For permitted facilities, the permit may require you to sample for additional parameters or multiple samples. Either add them at the bottom of this page or make additional copies of this page

Parameter	Value measured	Unit	Sample date (mm/dd/yyyy)	Sample Time
Precipitation [00193]	2.6	inches	5/27/2019	8:00pm
Flow [50050]	0.09	MG	5/27/2019	8:00pm
CBOD (20 Deg C) [80082]	31	mg/L	5/27/2019	8:00pm
TSS [00530]	33	mg/L	5/27/2019	8:00pm
pH [00400]	7.27	SU	5/27/2019	8:00pm
Phosphorus, Total (as P) [00665]	0.87	mg/L	5/27/2019	8:00pm
Fecal Coliform, MPN/Membrane Fltr 44.5C [48201]	>60,000	#/100 ml	5/27/2019	8:00pm
Discharge Duration [81381]	4	hours		
Discharge Duration [81381]	5/27/2019	day/mo		

Submit this form electronically as an attachment to the Discharge Monitoring Report (DMR).

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Release Sampling Report

Wastewater Treatment Program

Doc Type: Discharge Monitoring Reports

Instructions: Report the sampling data for this release on the back side of this form, and submit this form electronically as an attachment to the Discharge Monitoring Report (DMR).

Facility name: CITY OF GRAND MEADOW **Facility address:** 112 GRAND AVENUE E.

Duty Officer Report No.: 161225 **Permit No:** MN0023558

Release Information

1.	Receiving waters:	DEER CREEK
2.	Release start date:	09-22-2016
3.	Release start time:	5:30AM
4.	Release discovery date:	09-22-2016
5.	Release discovery time:	5:15AM
6.	Release anticipated?	☐ Yes ☒ No
7.	Location of release:	LIFT STATION
8.	Release related to wet weather?	☒ Yes ☐ No ☐ Unknown

Comments:

Note: The definition of an "anticipated bypass" is a known equipment shutdown.

Report the sampling data for this release on the back side of this form.

Release Sampling Report

Facility name: CITY OF GRAND MEADOW **Facility address:** 112 GRAND AVE E. GRAND MEADOW,MN. 55936

Duty Officer Report No.: 161225 **Permit No:** MN0023558

The following parameters are commonly required for facilities with domestic flow. For permitted facilities, the permit may require you to sample for additional parameters or multiple samples. Either add them at the bottom of this page or make additional copies of this page.

Parameter	Value measured	Unit	Sample date (mm/dd/yyyy)	Sample time
Precipitation [00193]	3.70	inches	09-22-16	
Flow [50050]	.41	MG	9-22-16	
CBOD (20 Deg C) [80082]	22	mg/L	09-22-16	8:00AM
TSS [00530]	32	mg/L	09-22-16	8:00AM
pH [00400]	6.92	SU	09-22-16	8:00AM
Phosphorus, Total (as P) [00665]	.70	mg/L	09-22-16	8:00AM
Fecal Coliform, MPN/Membrane Fltr 44.5C [48201]	600,000	#/100ml	09-22-16	8:00AM
Discharge Duration [81381]	7	hours		
Discharge Duration [81381]	1	day/mo		

Submit this form electronically as an attachment to the Discharge Monitoring Report (DMR).

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Release Sampling Repo

Wastewater Treatment Program

Doc Type: Discharge Monitoring Reports

Instructions: Report the sampling data for this release on the back side of this form, and submit this form electronically as an attachment to the Discharge Monitoring Report (DMR).

Facility name: CITY OF GRAND MEADOW **Facility address:** 204 1ST AVENUE S.E.

Duty Officer Report No.: 133859 **Permit No:** MN0023558

Release Information

1	Receiving waters:	DEER CREEK
2	Release start date:	5/19/2013
3	Release start time:	8:45pm
4	Release discovery date:	5/19/2013
5	Release discovery time:	8:45pm
6	Release anticipated?	☐ Yes ☑ No
7	Location of release:	LIFT STATION #1
8	Release related to wet weather?	☑ Yes ☐ No ☐ Unknown

Comments:

CALLED DUTY OFFICER JOHN#22 @ 8:45pm ON 5/19/13 ABOUT BYPASSING DUE TO HEAVY RAINS AND FLOODING

Note: The definition of an "anticipated bypass" is a known equipment shutdown.

Report the sampling data for this release on page two of this form.

Release Sampling Report

Facility name/address: GRAND MEADOW WWTP 112 GRAND AVE. E. GRAND MEADOW,MN. 55936

Duty Officer Report No.: 133859

Permittee name/address: CITY OF GRAND MEADOW

Preferred ID No: MN0023558

The following parameters are commonly required for facilities with domestic flow. For permitted facilities, the permit may require you to sample for additional parameters or multiple samples. Either add them at the bottom of this page or make additional copies of this page

Parameter	Value measured	Unit	Sample date (mm/dd/yyyy)	Sample Time
Precipitation [00193]	2.75	inches	5/20/2013	8:00am
Flow [50050]	0.06	MG	5/20/2013	8:00am
CBOD (20 Deg C) [80082]	41	mg/L	5/20/2013	8:00am
TSS [00530]	55	mg/L	5/20/2013	8:00am
pH [00400]	7.16	SU	5/20/2013	8:00am
Phosphorus, Total (as P) [00665]	2.68	mg/L	5/20/2013	8:00am
Fecal Coliform, MPN/Membrane Fltr 44.5C [48201]	60,000	#/100 ml	5/20/2013	8:00am
Discharge Duration [81381]	15	hours		
Discharge Duration [81381]	MAY 19-20, 2013	day/mo		

Submit this form electronically as an attachment to the Discharge Monitoring Report (DMR).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN STREET
CHICAGO, ILLINOIS 60604

June 4, 1975

Honorable Alva Andrew
Mayor, City of Grand Meadow
Grand Meadow, MN 55936

Re: Treatment Works Grant
Final Field Inspection
C 270694

Dear Mayor Andrew:

This is to advise the final on-site inspection of the subject treatment works project has been scheduled for the date listed below. The principal purposes of the inspection will be to assess the operability of the completed facilities, evaluate your compliance with the conditions of the grant award with special emphasis on the operation and maintenance aspects, determine, subject to audit verification, the final eligible project costs, and compute the final grant amount. Accordingly, please have the following items available for review:

1. The fiscal and accounting records pertaining to the separate project construction account and the correlating bills, invoices, cancelled checks, etc., for the engineering, legal, and administrative services rendered, for which you intend to request grant participation. This information should be sufficiently detailed to clearly identify who performed the service, what the service entailed, when it was provided, and how it relates to the construction of the eligible project. Lacking such identification, the cost will not be eligible.

2. The approved project plans and specifications, reports on material tests, State-approved Operation and Maintenance Manual, and laboratory records.

3. A completed copy of the Municipal Waste Inventory Data Sheet, enclosed in duplicate.

Please be sure the officials responsible for the project records and the operation and maintenance of the completed facilities are available during the inspection and, at your discretion, other individuals, including your consulting engineer. Contact will be made at the City Hall on Wednesday June 18, 1975, at 1:30 P.M.

Very truly yours,

Arthur Kawataehi

Arthur S. Kawataehi
Staff Engineer

Enclosure (2)

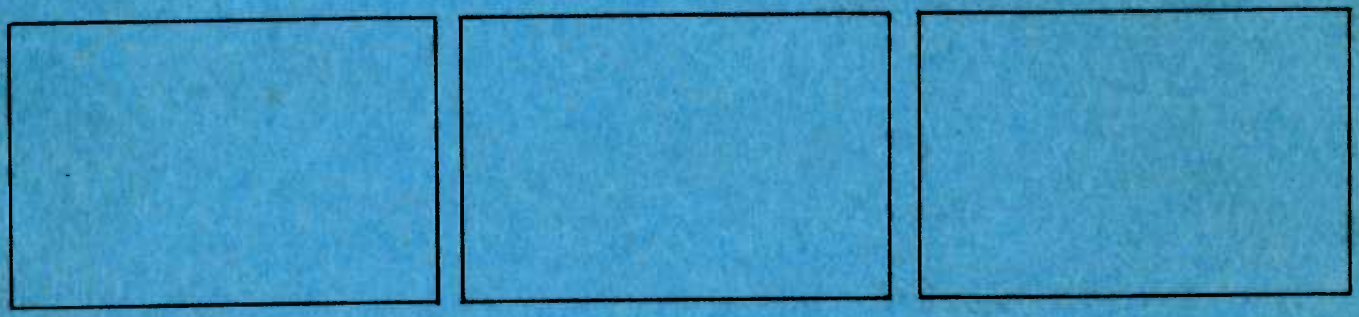
cc: State
Engineer, w/Enclosure

F.L.-11 (06-06-74)

Roger Hagen

SPECIFICATIONS

STABILIZATION POND
EROSION CONTROL



GRAND MEADOW, MINNESOTA
C 270694

RIEKE CARROLL MULLER ASSOCIATES INC.
ARCHITECTS · ENGINEERS · SURVEYORS · PLANNERS

FILE No. 836

NOVEMBER, 1975

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF cost and effectiveness checklist

Clean Water Revolving Fund (CWRF) Program

Instructions: This checklist must be used with the Minnesota Pollution Control Agency (MPCA) *Minnesota Clean Water Revolving Fund (CWRF) cost and effectiveness guidance* document dated March 2018. The guidance document assists the consulting engineer in completing the cost and effectiveness analysis required by the Federal Water Pollution Control Act (FWPCA) Section 602(b)(13). The cost and effectiveness analysis for a project must be further documented in the project Facilities Plan. This checklist is also an attachment to the MPCA *Facilities Plan submittal checklist.*

Project information

Project name: Wastewater System Improvements Date submitted (mm/dd/yyyy): 3/3/2020

City: Grand Meadow, Minnesota

City's authorized representative: Chris Hyrkas

Consulting engineer: Jake R. Pichelmann, P.E.

Cost analysis items

Cost analysis items to be completed for all CWRF wastewater projects.

Section		Yes	No
II.	Does the project owner have an Asset Management system in place? Where is the Asset Management system documented in the Facilities Plan:	☐	☒
IVA.	Did the Facilities Plan address Energy Conservation Opportunities? Where is the Energy Conservation discussion documented in the Facilities Plan:	☐	☒
IVB.	Did the Facilities Plan address Renewable Energy Opportunities? Where is the Renewable Energy discussion documented in the Facilities Plan:	☐	☒
IV.C.i.	Has the Facilities Plan analyzed Water Reuse options? Where is the Water Reuse options analysis documented in the Facilities Plan:	☐	☒
IV.C.ii.	Has the Facilities Plan analyzed installation of Water Efficient Devices? Where is the use of Water Efficient Devices analysis documented in the Facilities Plan:	☐	☒
IV.C.iii.	Has the Facilities Plan analyzed installation of new Water Meters or replacement of existing Water Meters? Where is the installation of new or replacement Water Meters analysis documented in the Facilities Plan: *Chapter V.C - Proposed Main Lift Station improvements include installation of new magnetic flowmeter for metering wastewater flow to the ponds.*	☒	☐
IV.C.iv.	Has the Facilities Plan considered or completed Water Audits and/or Conservation Plan? Where is the discussion of Water Audits and/or Conservation Plan documented in the Facilities Plan:	☐	☒
IV.D.	Did the Facilities Plan for the project complete a Buildings, Benchmark, and Beyond (B3) Sustainable Building (SB) Wastewater Treatment Plant (WWTP) or B3 SB 2030 *WWTP exemption form*? Where is the B3 SB 2030 *WWTP exemption form* documented in the Facilities Plan: *Appendix F*	☒	☐

Nonmonetary analysis items **Applicable**: **Yes** ☐ **No** ☒

Nonmonetary analysis items to be completed for all new wastewater treatment facilities with design average wet weather (AWW) flow of greater than 100,000 gallons per day, or significant upgrades meaning work on three or more major treatment units for any wastewater treatment facilities with a design AWW flow of greater than 1 million gallons per day.

Section		Yes	No
V.A.i.	Does the Facilities Plan analyze the project sustainability and climate resilience? Where is the discussion on project sustainability and climate resilience documented in the Facilities Plan:	☐	☐
V.A.ii.	Does the Facilities Plan analyze how a project addresses Water Quality objectives? Where is the discussion on how the project addresses Water Quality objectives documented in the Facilities Plan:	☐	☐
V.A.iii.	During the project planning process, did the owner consider project alternatives, such as consolidation or regionalization with another or other service area? Where is the discussion on how the project addresses possible consolidation or regionalization documented in the Facilities Plan:	☐	☐
V.B.i.	Is the project location and physical aspects discussed in the Facilities Plan? Where is the discussion on the project location and physical aspects located in the Facilities Plan:	☐	☐
V.B.ii.	Is the project reliability discussed in the Facilities Plan? Where is the discussion on the project reliability located in the Facilities Plan:	☐	☐
V.B.iii.	Is the project feasibility and operability discussed in the Facilities Plan? Where is the discussion on the project feasibility and operability located in the Facilities Plan:	☐	☐
V.C.i.	Are possible water conservation practices, water reuse and/or water recapture opportunities discussed in the Facilities Plan? Where is the discussion on the project water conservation practices, water reuse, and/or water recapture opportunities located in the Facilities Plan:	☐	☐
V.C.ii.	Are possible energy conservation practices discussed in the Facilities Plan? Where are the possible energy conservation practices discussed in the Facilities Plan:	☐	☐
V.C.iii.	Are possible opportunities to recover and recycle or reuse other resources discussed in the Facilities Plan? Where are possible opportunities to recover and recycle or reuse other resources options discussed in the Facilities Plan:	☐	☐
V.C.iv.	Are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan? Where are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan:	☐	☐
V.C.v.	Are possible other environmental impacts of the project discussed in the Facilities Plan? Where are the possible other environmental impacts of the project discussed in the Facilities Plan:	☐	☐

Section		Yes	No
V.D.i.	Are possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan? Where are the possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan:	☐	☐
V.D.ii.	Are possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan? Where are the possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan:	☐	☐
V.D.iii.	Are there possible environmental justice issues which may be considered for the project discussed in the Facilities Plan? Where are the possible environmental justice issues which may be considered for the project discussed in the Facilities Plan:	☐	☐
V.D.iv.	Are there possible acceptability or affordability issues which may be considered for the project discussed in the Facilities Plan? Where are the possible acceptability or affordability issues which may be considered for the project discussed in the Facilities Plan:	☐	☐

Integrating cost and effectiveness analysis **Applicable: Yes ☐ No ☒**

Integrating cost and effectiveness analysis to be completed for all new wastewater treatment facilities with design AWW flow of greater than 100,000 gallons per day, or significant upgrades meaning work on three or more major treatment units for any wastewater treatment facilities with a design AWW flow of greater than 1 million gallons per day.

Section		Yes	No
VI.	Has an integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project been completed in the Facilities Plan? Where is the integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project discussed/located in the Facilities Plan?	☐	☐

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF cost and effectiveness certification form

Clean Water Revolving Fund (CWRF) Program

Federal Water Pollution Control Act Section 602(b)(13)
and Minn. R. 7077.0272, subp. 2.D. or 7077.0277, subp. 2.C.

Instructions: The project representative must check boxes 1), 2), and either Z) or ZZ) below, and the form must be signed by both the Project Representative and the Professional Engineer for the project.

☒ 1) The municipality has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which the assistance is sought under the Clean Water Revolving Fund (Minn. Stat. § 446.07); and

☒ 2) The municipality has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, conservation, and energy conservation[Z&ZZ], taking into account:

a) The cost of constructing the project or activity.
b) The cost of operating and maintaining the project or activity over the life of the project or activity.
c) The cost of replacing the project or activity.

☒ Z) If this project exempt from Building, Benchmarks, and Beyond (B3) provisions of the Sustainable Building (SB) 2030 Guidelines (B3 SB 2030) Wastewater Treatment Plants (WWTP) Review (attach a completed *B3 SB 2030 exemption form*).

☐ ZZ) If this project not exempt from B3 SB 2030 WWTP Review.

Project information

Municipality name: City of Grand Meadow, Minnesota

Project number: _____

Certification

We certify that the project has completed requirements (1 and 2, and either Z or ZZ) as checked above.

Project Representative

Print name: Chris Hyrkas

Signature: _____

Date (mm/dd/yyyy): 3/05/2020

Professional Engineer

Print name: Jake Pichelmann

Signature: _____

Date (mm/dd/yyyy): 3/3/2020

Footnote: If ZZ) is checked, the Professional Engineer has submitted a Facilities Plan to the B3 SB 2030 WWTP Review and will consider the Review water and energy conservation recommendations.

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF B3 SB 2030 exemption form

Clean Water Revolving Fund (CWRF) Program
Wastewater Projects
(Minn. Stat. § 216B.241, sub. 1-10 and 16B, sub. 1-4)

Instructions: If at least one of the "**Yes**" statements is checked, the project is considered to have completed these requirements and is not required to submit additional information to meet the Building, Benchmarks, and Beyond (B3) provisions of the Sustainable Building (SB) 2030 Guidelines (B3 SB 2030). Sign and send the completed form to the Minnesota Pollution Control Agency (MPCA) project engineer.

If the answer to **all of the statements is** "**No**", the project will submit a preliminarily approved Facilities Plan [Minn. R. 7077.0272] to B3 SB 2030 Wastewater Treatment Plant Review. Sign and send the completed form to the MPCA project engineer.

Project information

Project name: CIty of Grand Meadow, MN - Wastewater Facility Plan

MPCA review engineer: _____ MPCA project number: _____

Exempt criteria

	Yes	No
1. The project is limited to environmental study.	☐	☒
2. The project is limited to planning and design.	☐	☒
3. The project is for emergency/disaster relief and/or protection.	☐	☒
4. The project is limited to minor modifications to an existing treatment facility.	☐	☒
5. The project is limited to modifications within a new or an existing building less than 10,000 square feet.	☐	☒
6. The project is limited to a new or existing collection system including lift stations.	☒	☐
7. The project is limited to pond system.	☒	☐
8. The project is limited to installation of a backup power generator.	☐	☒
9. The project is limited to a stormwater project	☐	☒

If "Yes" to any of 1- 9 above, please provide a brief written description of the project and complete the Certification Statement below.

The City of Grand Meadow is in the process of completing a wastewater facility plan. The City is considering expanding the existing stabilization pond system along with improving their sanitary sewer system. HIstorical monitoring data and future projections show that the current pond facility is undersized. An Inflow and Inflitration investigation was performed in 2019 and findings show that the current sanitary collection system has high amounts of inflow and infiltration and is in need of improvements.

Certification statement

I certify that the information provided on this form is complete and accurate and that this project:

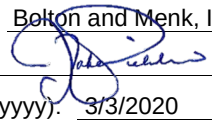
☒ Meets the exempt criteria established by the Minnesota Pollution Control Agency.

☐ Does not meet the exempt criteria and a preliminary approved Facilities Plan will be sent to the B3 SB 2030 Wastewater Treatment Plant Review

Project Representative or Professional Engineer

Print name: Jake Pichelmann

Organization: Bolton and Menk, Inc.

Signature: 

Date (mm/dd/yyyy): 3/3/2020

Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

State Revolving Fund

Schedule of Completion Facilities Plan Form

Minnesota Rules 7077.0280, Subp. 2.B.

Municipality Name: City of Grand Meadow, MN

Project Number:

Activity		Proposed Completion Date (Month/Year)
1.	Municipality Issues Engineering Contract to Begin Facilities Plan Work	August 2019
2.	Complete Facilities Plan Contents (see Minn. R. 7077.0272, subp. 2)	March 2020
3.	Complete Facilities Plan Supplement Contents (see Minn. R. 7077.0272, subp. 2a)	March 2020
4.	Complete Public Hearing (see Minn. R. 7077.0272, subp. 3)	February 2020
5.	Municipality Submits Complete Facilities Plan to MPCA	March 2020

Print Authorized Representative Name: Chris Hyrkas

Title: City Clerk/Treasurer

Signature: Chris Hyrkas

Date: 3/04/20

CITY OF GRAND MEADOW, MINNESOTA

RESOLUTION 2020 - 003

STATE OF MINNESOTA)
COUNTY OF MOWER)
CITY OF GRAND MEADOW)

ADOPTION OF WASTEWATER TREATMENT FACILITY PLAN

WHEREAS, the City Council of the City of Grand Meadow recognizes the need to upgrade its Wastewater Treatment Facility and Collection System Infrastructure in order to address aging infrastructure, excessive infiltration and inflow, and future treatment requirements; and

WHEREAS, Bolton & Menk, Inc. has been retained as Consulting Engineers to prepare a Wastewater Treatment Facility Plan for the purpose of submitting such plan to the Minnesota Pollution Control Agency (MPCA); and

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF GRAND MEADOW:

1. The City Council does hereby adopt the proposed Wastewater Treatment Facility Plan as presented by Bolton & Menk, Inc. as consulting Engineers.

2. The appropriate City Officials are hereby authorized and directed to submit the City's Wastewater Treatment Facility Plan to the Minnesota Pollution Control Agency (MPCA) for review and approval.

Adopted by the Council this 18th day of February 2020.

Signed: Sandra Fenton
Sandy Fenton – Mayor

Attest: Chris Hyrkas
Chris Hyrkas – City Clerk/Treasurer

BOLTON & MENK
Real People. Real Solutions.

2900 43rd Street NW
Suite 100
Rochester, MN 55901

Ph: (507) 208-4332
Fax: (507) 208-4155
Bolton-Menk.com

February 4, 2020

Mower County Independent
135 East Main Street
PO Box 89
LeRoy, MN 55951
evansppc@mediacombb.net

RE: Wastewater Facility Plan
City of Grand Meadow, MN
BMI Project No: M24.119536

To Whom It May Concern:

Please publish the enclosed Notice of Hearing on Improvement regarding the above referenced project on the following dates:

Thursday, February 6, 2020

Please send the City of Grand Meadow two copies of the Affidavit of Publication and bill the City of Grand Meadow for the same at:

City of Grand Meadow
Attn: Chris Hyrkas
PO Box 38
112 Grand Avenue East
Grand Meadow, MN 55936
Phone: 507-754-5280

Also, please send Bolton & Menk, Inc. one copy of the Affidavit of Publication.

Bolton & Menk, Inc.
2900 43rd Street NW, Suite 100
Rochester, MN 55901

Please acknowledge this email with a reply for proof of receipt.

NOTICE OF A PUBLIC HEARING ON THE WASTEWATER TREATMENT FACILITY PLAN

NOTICE IS HEREBY GIVEN that on the 18th day of February 2020 at 6:00 p.m., the City of Grand Meadow will conduct a public hearing on the Wastewater Treatment Facility Plan and Adjoining Systems.

The hearing will be held in the Grand Meadow Community Center located at 116 Grand Avenue East, Grand Meadow, Minnesota. Persons unable to attend the hearing may send written testimony to the City Clerk's office prior to the meeting.

Copies of the Facility Plan are available for public inspection in the City Clerk's office, 112 Grand Avenue East, Grand Meadow, Minnesota, during business hours.

Information regarding various treatment alternatives considered, the reasons for choosing the selected alternative, the location of the proposed project site, and the estimated sewer service charges will be discussed at the hearing.

Chris Hyrkas
City Clerk

Mower County Independent

Phone: 507-324-5325 Fax: 507-324-5267 P.O. Box 89, LeRoy, MN 55951

AFFIDAVIT OF PUBLICATION

To: City of Grand Meadow

Re: Public Hearing Wastewater Treatment Facility Plan Improvement

STATE OF MINNESOTA)
) ss.
COUNTY OF MOWER)

Konnie Schmidt, being first duly sworn, on oath states as follows:

1. I am the official employee of the Mower County Independent. I have personal knowledge of the facts stated in this Affidavit, which is made pursuant to Minnesota Statutes §331A.07.

2. The newspaper has complied with all of the requirements to constitute a qualified newspaper under Minnesota law, including those requirements found in Minnesota Statutes §331A.02.

3. The dates upon which the public notice attached was published in the newspaper are as follows:

Once each week for 1 successive weeks; that it was first so published on Thursday, the 6th day of February 2020, and thereafter on Thursday of each week to and including the _____ day of _____, 20__.

4. The publisher's lowest rate paid by commercial users for comparable space, as determined pursuant to §331A.06, is $4.50 per column inch.

5. Mortgage Foreclosure Notices. Pursuant to Minnesota Statutes §580.033 relating to the publication of mortgage foreclosures notices: The newspaper's known office of issue is located in Mower County. The newspaper complies with the conditions described in §580.033, subd. 1, clause (1) or (2). If the newspaper's known office of issue is located in a county adjoining the county where the mortgaged premises or some part of the mortgages premises described in the notice are located, a substantial portion of the newspaper's circulation is in the latter county.

FURTHER YOUR AFFIANT SAITH NOT.

Konnie Schmidt

Mower County Independent, Konnie Schmidt

Subscribed and sworn to before me on this 6th day of February 2020.

JOSHUA BRUCE DIEMER
Notary Public-Minnesota
My Commission Expires Jan 31, 2021

Notary Public _____

Back To Your Roots Country Market now open in GM Business Center

By Candy Czernicki
Cczernicki@yahoo.com

If you're looking for spice blends without preservatives or fillers, coffee and non-preservative-laden creamer, or Uncle Buster's famous barbecue sauce, now you've got a Grand Meadow source.

Jim Koelsch has moved Back To Your Roots Country Market into the Grand Meadow Business Center, 209 2nd Avenue NE. He named it with "the theme of being healthier, more natural," he said.

Uncle Buster, for those who might remember, is Buster Johnson—Koelsch's uncle by marriage.

"I'm blessed that he allowed me to have the recipe," he said. "I've never been turned down to put it on the [store] shelf after I gave them a taste to seal the deal."

Koelsch has always had an interest in cooking, smoking and grilling, he said, and "I don't like fillers and preservatives. I'm working toward a healthier solution." He's been playing with his recipes to get them to his satisfaction.

"The taco seasoning, the first time it was so hot I couldn't stand it. It took three tries," he said. The finished product contains chili powder, cumin powder, salt, onion powder, oregano leaf powder, paprika, pepper and coriander. It only requires two tablespoons for one pound of ground meat, along with three-fourths cup of water.

Koelsch started BTYR two years ago and is moving from another production facility to Grand Meadow.

"I have family in the area," he said. "My wife is from down there. And the rent was a big incentive to do that. You can't spend $1,500-$2,000 a month in rent when you're starting out."

Koelsch is working on a barbecue rub and chicken seasoning, as well as an eggs-optional pancake batter. He put a touch of vanilla in a hot chocolate mix and "has almost got it down," he said. He makes his own fish batter but hasn't packaged it yet. He is also working on a prime rib rub and a sugar-free barbecue sauce, as well as dips.

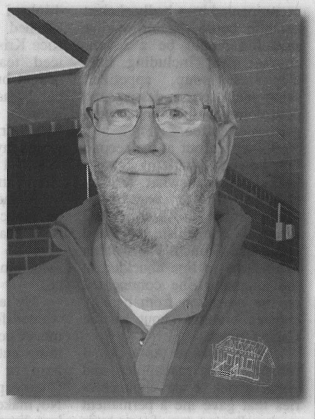
"I try to make a quality product," he said. "If you eat bad food, if affects the energy you have. I'm very basic. People never leave my house hungry." A significant weight loss spurred Koelsch to eat healthier, and now he is trying to help other people eat better.

"I don't mind trying to be creative," he said. "It's fun to do demos and see what people really want."

Nutritional information for the products is not yet available – "I'm not at the point of a lab," Koelsch said. But ingredients are listed on the packaging.

For now, the store is open by appointment at 507-951-9726 or on the web at www.btyrcountrymarket.com.

Back To Your Roots Country Market



Pictured is Jim Koelsch of Back To Your Roots Country Market, GM Business Center's newest tenant.

NOTICE OF A PUBLIC HEARING ON THE WASTEWATER TREATMENT FACILITY PLAN

NOTICE IS HEREBY GIVEN that on the 18th day of February 2020 at 6:00 p.m., the City of Grand Meadow will conduct a public hearing on the Wastewater Treatment Facility Plan and Adjoining Systems.

The hearing will be held in the Grand Meadow Community Center located at 116 Grand Avenue East,Grand Meadow, Minnesota. Persons unable to attend the hearing may send written testimony to the City Clerk's office prior to the meeting.

Copies of the Facility Plan are available for public inspection in the City Clerk's office, 112 Grand AvenueEast, Grand Meadow, Minnesota, during business hours.

Information regarding various treatment alternatives considered, the reasons for choosing the selectedalternative, the location of the proposed project site, and the estimated sewer service charges will bediscussed at the hearing.

~ Chris Hyrkas
City Clerk

LeRoy Girl Scouts looking for new troop leader

Continued From Page 1

The new leader wouldn't be entirely without a support system, Dahl says. The Girl Scouts organization has a curriculum, which leaders can follow. The organization also offers assistance when there are questions with a team of people responding to emails and phone calls. Dahl says there is also a large online database with information.

And every year might bring a new dynamic.

"The girls change each year, depending on who decides to stay out for another year and who decided to join," Dahl says. "Generally, they're an easy group. Just like in any classroom, you're going to have some that are goofier and some that are more engaged than others. But they're a good group."

Asked to describe the personality the new leader should have, Dahl says her successor should be upbeat and pleasant, yet willing and able to set firm limits and boundaries, while also having fun with the kids.

"The new leader should be excited to be there, organized and creative."

Dahl says she really enjoyed working with her group.

"My favorite thing was to see the kids' creativity, engagement and to see relationships form," she says. "They are working to create their own identities, and that's really fun to see."

As Dahl wraps her time at the helm, she's cherishing the memories.

"I got to know some wonderful kids in our community, kids I wouldn't have otherwise been able to know. It differently gives you a different perspective on kids once you feel like you're helping them learn important skills and information."

Anyone interest in taking on the leadership of Troop 44572

LCT Children's Theater set for Sunday, Feb. 9

Get ready for some interesting Theater!

The LeRoy Community Theater will present the Annual Children's Theater Show on Sunday afternoon, Feb. 9 at 2 p.m. in the LeRoy Community Center.

Three plays will be presented. They are "The Elves and the Shoemaker," "Four Little Kittens" and "Old Mother Hubbard."

Students involved are Chloe Collier, Max Reburn, Ella Bridge, Hunter Hanson, Soren Saterdalen, Catrina Main and Mia Nagel. They would really like the public to come and see how all the hard work they've done is paying off.

This year's staff includes Pat Utz, Gaye Stockdale and Alice Kempe. Admission is a free will donation.

Bring the family! These plays can be enjoyed by both adults and kids!

BOLTON & MENK

Real People. Real Solutions.

Wastewater Facility Plan
City of Grand Meadow, Minnesota

Public Hearing

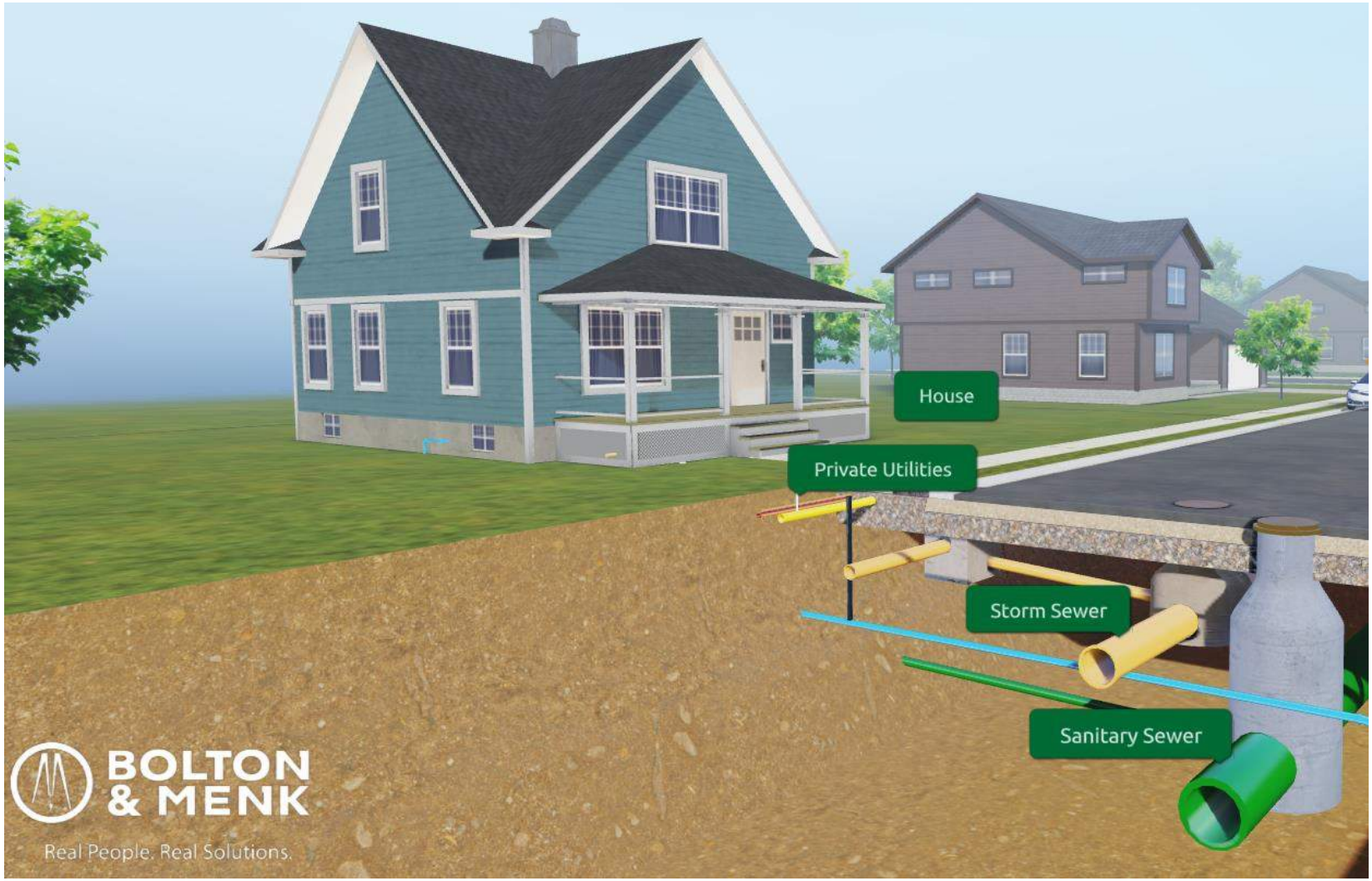
February 18, 2020

Presented by:
Jake Pichelmann, P.E., Project Engineer
Bryan Holtz, City Engineer

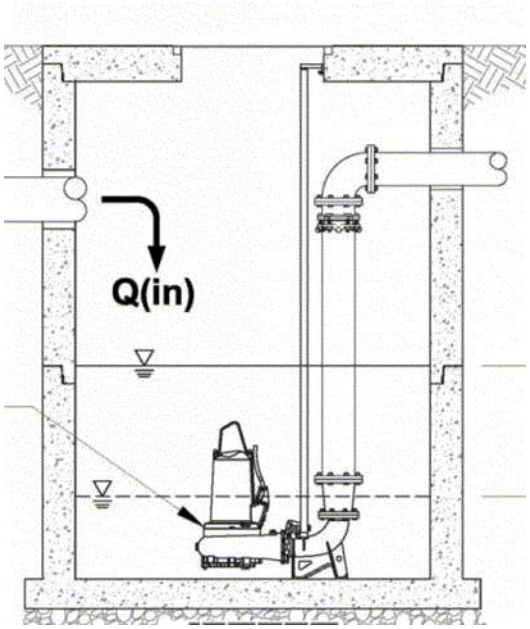
Presentation Overview

- How it Works
- Purpose of Facility Plan
- Project Needs
- Alternatives & Cost Analysis
- Recommendations
- User Rates & Funding
- Schedule
- Questions

How it Works


House
Private Utilities
Storm Sewer
Sanitary Sewer
BOLTON & MENK
Real People. Real Solutions.

How it Works



Main Lift Station

Stabilization Ponds

Deer Creek

When it Doesn't Work!

Purpose of Facility Plan

- 20-year long-term planning
- Report evaluates:
  - 20-year flows & loadings
  - Existing infrastructure condition
  - Sizing and capacity issues
  - Future permit regulations
- Recommended improvements
- Required for MPCA approval & funding
- Does not lock City into any commitments

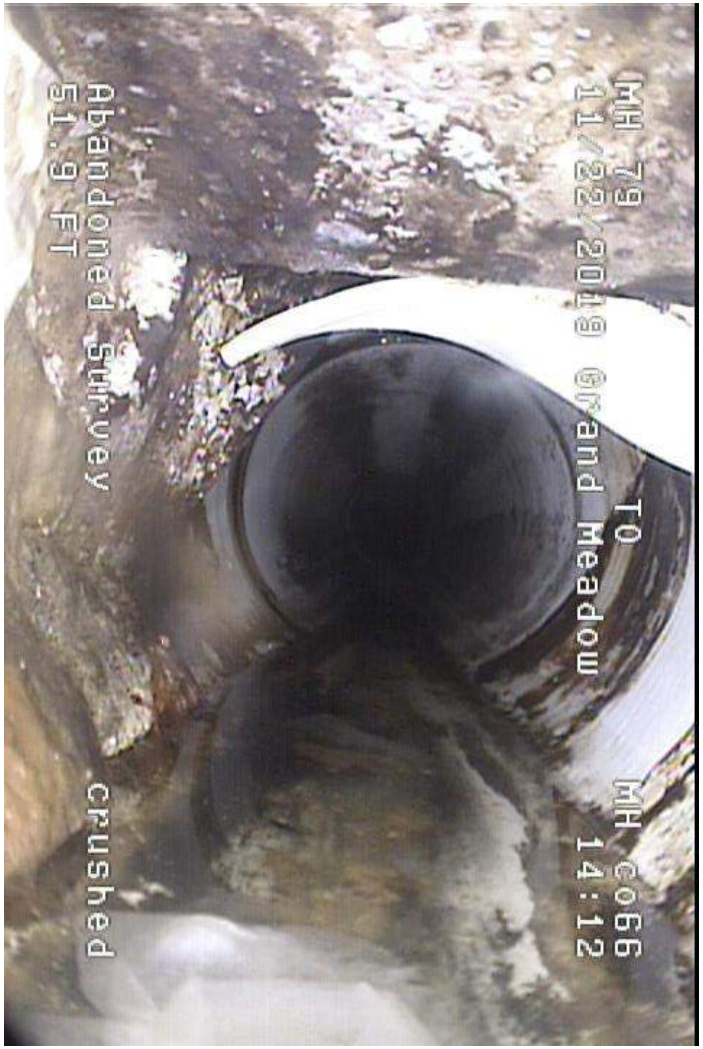
Project Needs

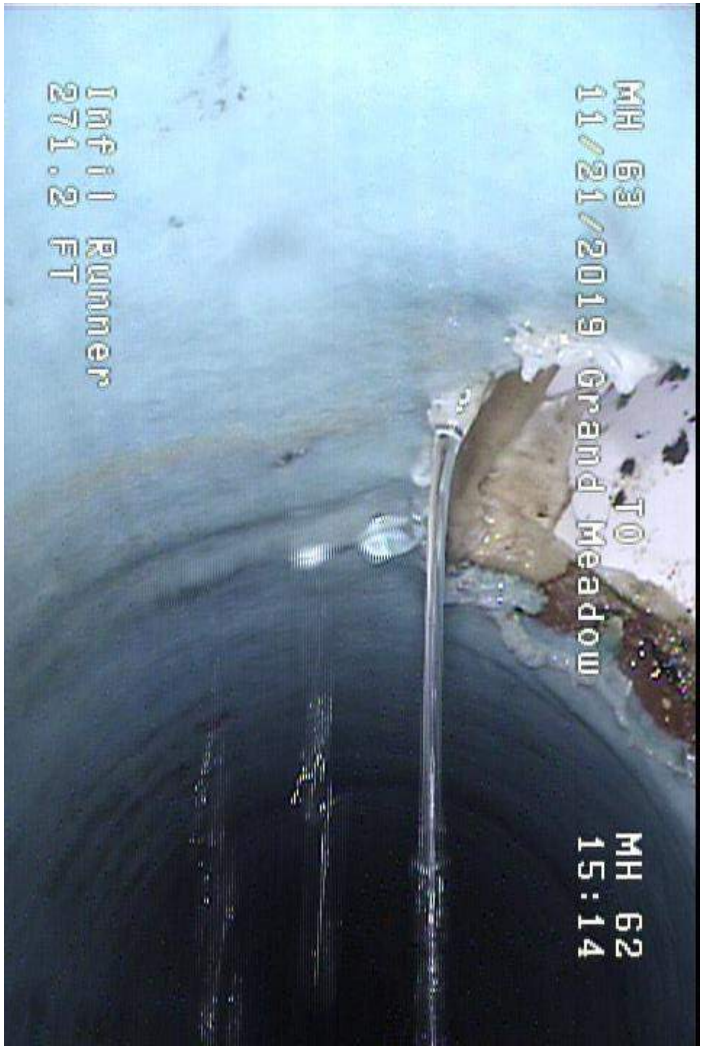
- Aging infrastructure
  - Constructed 1972 (48 years old); well-maintained
  - Lift station replacement
  - Misc. pond rehabilitation
- Capacity issues
  - Excessive infiltration & inflow
  - Existing forcemain too small
  - Undersized pond storage
- Future permit regulations
  - Phosphorus limits (next permit)
  - Nitrogen limits (10-15 years)

Main Lift Station

Wastewater Ponds

Collection System





Collection System

Summary of Treatment Alternatives

- *Alternative No. 1*
  - Expansion of pond system
  - In-pond phosphorus removal
  - 20-year solution
- *Alternative No. 2* →
  - Construct new Activated-Sludge based mechanical treatment system
  - Phosphorus removal
  - Long-term solution (+20 years)
- "Do Nothing" not a viable option
  - Lift station & forcemain replacement
  - Need significant I&I reduction
  - Population growth expected

Alternative No. 1

- Expansion of Pond System
  - New Main Lift Station
  - 8-inch force main
  - 9.8-acre Primary Pond
  - 6.4-acre Secondary Pond
  - Phosphorus removal system
  - Rehab existing ponds
- 20 to 25 acres land needed
- Cannot meet future nitrogen limits
- 20-year solution

Table 5.3 - Opinion of Capital Cost - Alternative No.1 - Expansion of Existing Stabilization Pond Facility

Item	Cost
Mobilization, Bonds, Insurance	$150,000
Demolition of Existing Lift Station	$30,000
Misc. Rehabilitation to Existing Ponds	$100,000
Influent Lift Station	$150,000
8-inch Force Main	$210,000
Pond Liner	$715,000
Earthwork and Base Material	$1,150,000
Access and Service Road	$15,000
Phosphorus Removal	
Chemical Feed System	$40,000
Pre-Engineered Fiberglass Enclosure	$40,000
Concrete Foundation & Pad	$15,000
Mechanical Mixers	$50,000
Electrical Work	$50,000
Seeding	$15,000
Control Structures & Hydraulic Gates	$150,000
Site Piping	$100,000
Aluminum Fencing & Gates	$75,000
Erosion Control	$25,000
Subtotal	**$3,080,000**
Contingency (30%)	$920,000
Construction Subtotal	**$4,000,000**
Land Acquisition ($10,000/acre)	$250,000
Legal, Engineering, and Administration (20%)	$800,000
TOTAL	**$5,050,000**
Expected Range	**$4.5 to $5.6 Million**

Alternative No. 2

- Construct New Mechanical Treatment Facility
  - Main Lift Station / Forcemain
  - Convert pond to EQ storage
  - Pretreatment
  - Biological treatment
  - Clarification
  - UV Disinfection
  - New Control Building
- Higher capital and O&M costs
- More complex process
- Long-term solution (+20 years)

Table 5.4 - Opinion of Capital Cost - Alternative No. 2 - Construction of New Extended Aeration Facility (With Chemical Phosphorus Removal)

Item	Cost
Mobilization, Bonds, Insurance	$280,000
Demolition of Existing Lift Station	$30,000
Decommissioning Existing Primary Pond	$700,000
Conversion of Existing Secondary Pond to Equalization	$50,000
Influent Lift Station	$150,000
8-inch Force Main	$210,000
Influent Diversion Structure	$30,000
Equalization Return Pump Station	$75,000
Pretreatment Structure	$350,000
Biological Treatment	$500,000
Final Clarifier Splitter Structure	$40,000
Final Clarifiers & Domes	$450,000
Scum Manhole & Pumping	$50,000
RAW/WAS Structure & Pumping	$100,000
Control/UV Building & Equipment	$950,000
Chemical Phosphorus Removal Feed System	$40,000
Rapid Mix Manhole and Mixer	$30,000
Sludge Storage Tank & Equipment	$800,000
Process Piping, Valves, and Site Utilities	$1,150,000
Site Work, Fill Material, and Paving	$600,000
Painting	$175,000
HVAC & Plumbing	$580,000
Electrical, Instrumentation, & Controls	$1,600,000
Emergency Power Generation	$100,000
Subtotal	**$9,040,000**
Contingency (30%)	$2,710,000
Construction Subtotal	**$11,750,000**
Land Acquisition ($10,000/acre)	$40,000
Legal, Engineering, and Administration (20%)	$2,350,000
TOTAL	**$14,140,000**
Expected Range	**$12.7 to $15.6 Million**

Collection System

- Replace deteriorated and leaking sewer piping / manholes
- Reduce excessive infiltration & inflow (clear water)
- Re-construction of street surfaces

Table 5.2- Opinion of Capital Costs - Collection System Improvements	
Item	**Sanitary Sewer Replacement & Rehabilitation**
Estimated Construction Subtotal	$5,400,000
Contingency (20%)	$1,080,000
Estimated Construction	**$6,480,000**
Engineering, Admin, Legal	$1,620,000
Project Total	**$8,100,000**


PHASE 1
PHASE 2
PHASE 3
1ST AVE NE
2ND AVE NE
3RD AVE NE
GRAND AVE
MAIN ST N
1ST ST NW
2ND ST NW
1ST ST SW
2ND ST SW
MAIN ST S
1ST CT SE
2ND CT SE
2ND ST SE
1ST ST NE
2ND ST NE
3RD ST NE
4TH ST NE
5TH ST NE
3RD CT NE
4TH CT NE
5TH CT NE
3RD ST SE
4TH ST SE
5TH ST SE
ELLIOTT DR SE
BRITT HWY
CO2
CO4

Recommendations

- Phased improvements
- New Main Lift Station and Forcemain
- Collection system improvements
  - Annual capital improvements
  - Sump pump inspections
  - Televising / smoke testing
- Alternative No. 1 – Expansion of Pond System
  - Lowest capital and O&M costs
  - Provides another 20 years of treatment
  - Familiarity with process
  - Achieves phosphorus removal
  - Future upgrades needed for nitrogen removal

User Rates & Funding

- Existing user rates = $31.53 / month (5,000 gal usage)
- New user rates based on affordability
  - Affordability = 1.4% x Median Household Income (MHI)
  - New User Rates = **$65 to 70 / month**
- City pays low-interest loans up to affordability threshold
- Grant-eligible above affordability threshold
- Grant-eligible for phosphorus removal costs

MINNESOTA
PUBLIC FACILITIES AUTHORITY

Funding Options

- MN Public Facilities Authority (PFA)
  - Clean Water Revolving Fund (CWRF)
    - Low-interest loans, 20-30 years, 1-3% interest
    - Eligibility based on MPCA scoring criteria
  - Water Infrastructure Fund (WIF)
    - Income-based grant program (>1.4% MHI)
    - 80% grant on eligible costs, $5 million max
  - Point Source Implementation Grant (PSIG)
    - Treatment-based grant program
    - 80% grant on eligible costs, $7 million max
- USDA Rural Development (RD)
  - Long-term loans, income-based interest
  - Income-based grant program (>1.5% MHI)

Schedule

Implementation Schedule City of Lanesboro, Minnesota	
Item	**Date**
Public Hearing / Council Approval	February 18, 2020
Submit Report to MPCA	March 6, 2020
Submit Intended Use Plan (IUP) Letter to PFA	June 5, 2020
Preliminary Approval by MPCA	June 30, 2020
PSIG Grant Application	July 2020
PFA Intended Use Plan	September 2020
Design Phase (*Based on Funding Availability*)	Early as Fall 2020
Construction Phase (*Based on Funding Availability*)	Early as Spring 2021

****Design & construction based on funding availability****

Questions?

Jake Pichelmann, P.E.
jakeb.pichelmann@bolton-menk.com
(612) 750-6505

Bryan Holtz
bryan.holtz@bolton-menk.com
(507) 993-1112

PUBLIC HEARING Q&A

Question 1: Was regionalization with another nearby community considered as a potential alternative?

Answer 1: Regionalization was considered early in the facility planning process, but was not addressed directly in the report. Based on the size of Grand Meadow and proximity to nearby communities, regionalization was not deemed to be cost-effective or feasible.

Spring Valley is the largest nearby community, but they have their own issues with infiltration and inflow and do not have the extra capacity to treat Grand Meadow's peak wastewater flow. This would also require over 10 miles of force main and significantly larger pumping infrastructure, which would not save costs relative to the proposed pond expansion alternative.

NOTICE OF A PUBLIC HEARING ON THE WASTEWATER TREATMENT FACILITY PLAN

NOTICE IS HEREBY GIVEN that on the 18th day of February 2020 at 6:00 p.m., the City of Grand Meadow will conduct a public hearing on the Wastewater Treatment Facility Plan and Adjoining Systems.

The hearing will be held in the Grand Meadow Community Center located at 116 Grand Avenue East, Grand Meadow, Minnesota. Persons unable to attend the hearing may send written testimony to the City Clerk's office prior to the meeting.

Copies of the Facility Plan are available for public inspection in the City Clerk's office, 112 Grand Avenue East, Grand Meadow, Minnesota, during business hours.

Information regarding various treatment alternatives considered, the reasons for choosing the selected alternative, the location of the proposed project site, and the estimated sewer service charges will be discussed at the hearing.

Chris Hyrkas
City Clerk

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Environmental Information Worksheet (EIW) form

Clean Water State Revolving Fund Program

Minnesota Rule Chapter 7077.0272, subp. 2.a.F.
Minnesota Rule Chapter 7077.0277, subp. 3.E.

Doc Type: Wastewater Point Source

Eligible applicants seeking funds for clean water (stormwater and wastewater) projects through the Clean Water State Revolving Fund (commonly referred to as the CWSRF Program) are required by Minn. R. ch. 7077.0272, subp. 2.a. F. and Minn. R. ch. 7077.0277, subp. 3.E., to complete an Environmental Information Worksheet (EIW). This information will be used to assess environmental impacts, if any, caused by the project.

Questions: Contact Review Engineer or Bill Dunn at 651-757-2324 or bill.dunn@state.mn.us.

1. Project title: Grand Meadow Wastewater Treatment Facility Plan

2. Proposer: City of Grand Meadow

Contact person: Teresa Burgess, PE, CPESC

Title: Senior Project Engineer

Address: 1960 Premier Drive

Mankato, MN 56001

Phone: 507-625-4171 ext. 2638

Fax: 507-625-4177

3. Project location: County: Mower City/Twp: Grand Meadow

____ 1/4 ____ 1/4 Section: 19, 30 Township: 103 Range: 14

Tables, Figures, and Appendices attached to the EIW:

- County map showing the general location of the project;
- United States Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable);
- Site plan showing all significant project and natural features.

4. Description:

a. Provide a project summary of 50 words or less.

The project includes expansion of the Existing Stabilization Pond Facility (with Chemical Phosphorus Removal) and rehabilitation of aging sanitary collection system infrastructure in order to reduce excessive infiltration and inflow.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

The project includes expansion of the Existing Stabilization Pond Facility with chemical phosphorus removal and rehabilitation of aging sanitary collection system infrastructure in order to reduce excessive infiltration and inflow (I&I). The pond expansion includes addition of a new primary and secondary cell to meet 180-day storage, replace existing control structures, and install in-pond mixers in the secondary ponds. Collection system rehabilitation will use cured-in-place pipe where feasible, but open cut methods will be necessary for point repairs.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

This project as proposed is intended to help the City address the existing undersized infrastructure and future treatment requirements, provide phosphorus removal, and correct infiltration and inflow (I&I) in the existing system.

d. Are future stages of this development including development on any outlots planned or likely to happen? ☐ Yes ☒ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

The project as proposed will provide for system expansion to accommodate future development, however, the intent of this project is to address existing needs.

e. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No
If yes, briefly describe the past development, timeline and any past environmental review.

NA

5. Project magnitude data

Total Project Area (acres) 42 or Length (miles) _____
Number of Residential Units: Unattached NA Attached NA maximum units per building NA
Commercial/Industrial/Institutional Building Area (gross floor space): total square feet NA
Indicate area of specific uses (in square feet): NA

Office		Manufacturing	
Retail		Other Industrial	
Warehouse		Institutional	
Light Industrial		Agricultural	
Other Commercial (specify)			

Building height NA If over 2 stories, compare to heights of nearby buildings NA

6. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

Unit of government	Type of application	Status
MPCA	NPDES Permit	Future
MPCA	Plan & Specification Certification	Future
MPCA	Construction Stormwater Permit	Future

7. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

The new pond is an area of existing agriculture. This area is adjacent to the existing wastewater treatment facility on the north, east, and south. The site abuts Deer Creek on the west side. . The collection system improvements are adjacent to urban areas that are currently served by the existing wastewater treatment collection system.

8. Cover types. Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Types 1-8 wetlands			Lawn/landscaping		
Wooded/forest	1.7	0	Impervious Surfaces	0.5	0.7
Brush/grassland			Other (describe)	17.2-Ponds	33.9-Ponds
Cropland	15.2	0			
			Total	34.6	34.6

9. Fish, wildlife, and ecologically sensitive resources.

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

The Northern Long-eared Bat and Prairie Bush-clover were identified as threatened species that may be found in the area. No designated critical habitats has been designated for these species. There are no known Northern Long-eared Bat hibernaculum or maternity roost trees in the county. The Prairie Bush-clover is native to tallgrass prairies. The plants are generally 9-18-inches in height. Neither the Northern Long-eared Bat nor the Prairie Gush-clover are likely to be found on the limits of the proposed project.

There are no known Birds of Conservation Concern with a range that includes the project area. Nor is the Bald Eagle known to be found in the project area. The project is located in an urban area. It is unlikely that migratory birds or Bald Eagles would nest in the project limits.

Construction noise may temporarily displace animals and birds from the project area and areas directly adjacent. Once construction is completed any displaced species will likely return.

A copy of the USFWS Species Determination Letter and USFWS Verification Letter regarding Northern Long-eared Bats is also attached.

No mitigation measures for endangered and threatened species are proposed with this project.

b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? ☒ Yes ☐ No
If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the Minnesota Department of Natural Resources (DNR) Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: GIS Shapefiles
Describe measures to minimize or avoid adverse impacts.

Two additional species not discussed in paragraph 9.a. above were identified in the GIS Shapefiles: Blanchard's Cricket Frog and Suckermouth Minnow.

The only known populations in Minnesota of Blanchard's Cricket Frogs are found in Hennepin and Winona Counties. The frogs prefer muddy shorelines with emergent vegetation. They inhabit shallow wetlands, lakes, streams, or rivers. A review of the National Wetlands Inventory shows that there are wetlands near the project, but none found in the project limits.

The Suckermouth Minnow prefers turbid streams with gravel substrates. Deer Creek is located west of the proposed pond site. No work in the creek is proposed with this project.

The project SWPPP will include redundant erosion control to protect the wetlands and creek from sediment migration. Possible methods include maintaining a buffer of existing vegetation and silt fence.

10. Physical impacts on water resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No
If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

NA

11. Water use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☐ Yes ☒ No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

NA

12. Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☒ Yes ☐ No
If yes, identify the district and discuss project compatibility with district land use restrictions.

The project is located in the regulated floodway. A copy of the FEMA Firmette is attached. The project design will be in compliance with floodway regulations.

13. Water surface use. Will the project change the number or type of watercraft on any water body? ☐ Yes ☒ No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

NA

14. Erosion and sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: **34.6** Acres: **60,000** cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

A construction stormwater pollution prevention plan (SWPPP) will be developed during design. The SWPPP will take into account the project phasing, expected precipitation, and area soils. The SWPPP will include best management practices such as perimeter sediment control, construction exit, and prompt site stabilization.

15. Water quality – surface-water runoff.

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.

Stormwater from the pond expansion site currently sheet flows to Deer Creek located to the west of the project. Stormwater that falls on the new pond will be discharged to Deer Creek with the wastewater facility discharge. Stormwater that falls outside the new pond will sheet flow to Deek Creek. The project will improve effluent quality from the existing wastewater treatment facility. The collection system areas currently sheet flow to the gutter and then enter the municipal stormwater system. The collection system improvements will not change the rate or volume of flow from existing.

A construction SWPPP will be in place during construction. No operational SWPPP is proposed with this project.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

Stormwater from the pond expansion site will enter Deer Creek. The project will improve the effluent from the existing plant and therefore improve water quality in Deer Creek. Stormwater from the collection system improvement areas enters the municipal stormwater system. This project will not change the volume or quality of stormwater that enters the municipal stormwater system.

16. Water quality – wastewater.

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

This project will not create any new wastewater. The 6-year average influent characteristics are: Average Flow 0.142 MGD, CBOD5 112 lbs/day, TSS 124 lbs/day, and Total Phosphorus 5.97 lbs/day.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

The project as proposed will have design loadings of:

Parameter	*Per Capita Design Loading*	*Design Loadings*
Design Population	*NA*	*1,507*
CBOD5	*0.18 lbs/capita/day*	*271*
TSS	*0.18 lbs/capita/day*	*271*
TKN	*0.046 lbs/capita/day*	*69*
TP	*0.0095 lbs/capita/day*	*14.3*

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

NA

d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

NA

17. Geologic hazards and soil conditions.

a. Approximate depth (in feet) to Groundwater 46 minimum; *46* average.
Bedrock: *13* minimum; *13* average.

Describe any of the following geologic site hazards to groundwater and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

The City of Grand Meadow according to a study performed by the Minnesota Department of Natural Resource is located in a karst prone region. Because of this, an expansion to the existing stabilization pond facility may be subject to intensive hydrogeologic site evaluation before approval. This may result in the utilization of additional lining materials beyond normal sealing requirements. An intensive hydro-geological site evaluation may include seismic and resistivity studies of the site.

b. Describe the soils on the site, giving U.S. Soil Conservation Service (SCS) classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

The soils that can be expected to be found on the site are: 88 - Clyde silty clay loam, 0 to 3 percent slopes, 483A - Waukee loam, 0 to 2 percent slopes, 485 - Lawler silt loam, and 699A - Rossfield silt loam, 0 to 2 percent slopes. The soils have a moderate to moderately high ability to transmit water. The construction SWPPP will include spill response and storage requirements to minimize potential for groundwater contamination.

18. Solid wastes, hazardous wastes, storage tanks.

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

The project will not create any new sources of solid or hazardous wastes. There are no known storage tanks on the site and none are proposed with the project. The Contractor will be required to store any wastes generated during construction and dispose properly.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

Based on historical treatment performance the existing pond facility would not be able to meet a phosphorus limit without significant process modifications or addition of chemical feed. Possible chemical use includes ferric chloride or aluminum sulfate.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

No onsite petroleum tanks are existing or proposed with this project.

19. Traffic. Parking spaces added: *NA* Existing spaces (if project involves expansion): *NA*
Estimated total average daily traffic generated: *NA* Estimated maximum peak hour traffic generated (if known) and its timing: *NA* Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

NA

20. Vehicle-related air emissions. Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult *Environmental Assessment Worksheet (EAW) Guidelines* about whether a detailed air quality analysis is needed.

Vehicle related air emissions and dust will increase during construction, but will return to normal levels upon completion of the work.

21. Stationary source air emissions. Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

The project as proposed does not create any new stationary souces of air emissions.

22. Odors, noise, and dust. Will the project generate odors, noise or dust during construction or during operation? ☒ Yes ☐ No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Noise, dust, and odors will be generated during the construction process. The impact to the area will be mitigated by limiting work hours and use of dust control.

23a. Nearby resources. Are any of the following resources on or in proximity to the site? Projects should search the Minnesota State Historic Preservation Office's (SHPO) National Register of Historic Places database.

***Note:** Project proposers must contact the SHPO at datarequestshpo@mnhs.org to request a database review to obtain information on any known historical or archaeological sites in the project area. Include a copy of correspondence with SHPO with the submittal of this EIW form.

a. Archaeological, historical, or architectural resources? ☐ Yes ☒ No
b. Prime or unique farmlands or land within an agricultural preserve? ☐ Yes ☒ No
c. Designated parks, recreation areas, or trails? ☐ Yes ☒ No
d. Scenic views and vistas? ☐ Yes ☒ No
e. Other unique resources? ☐ Yes ☒ No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

NA

23b. Section 106 Review (36 CFR 800) is required for all CWRF projects. The following forms can be found on the MPCA Wastewater and Stormwater Financial Assistance website at https://www.pca.state.mn.us/ppl. Select Clean Water Revolving Fund tab; then scroll to Facilities Plan and Facilities Plan Supplement for Wastewater Treatment Systems heading.

a. Project is exempt from review (attach completed *Exemption Checklist*) ☐ Yes ☒ No
b. Project is required to complete further Section 106 Review: ☒ Yes ☐ No
    a. SHPO
    b. Tribal consultation
    c. Other Consulting parties

24. Visual impacts. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☐ Yes ☒ No

If yes, explain.

NA

25. Compatibility with plans and land use regulations. Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☐ Yes ☒ No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

NA

26. Impact on infrastructure and public services. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☐ Yes ☒ No

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

NA

27. Cumulative impacts. Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

There are no known cumulative impacts due to this project.

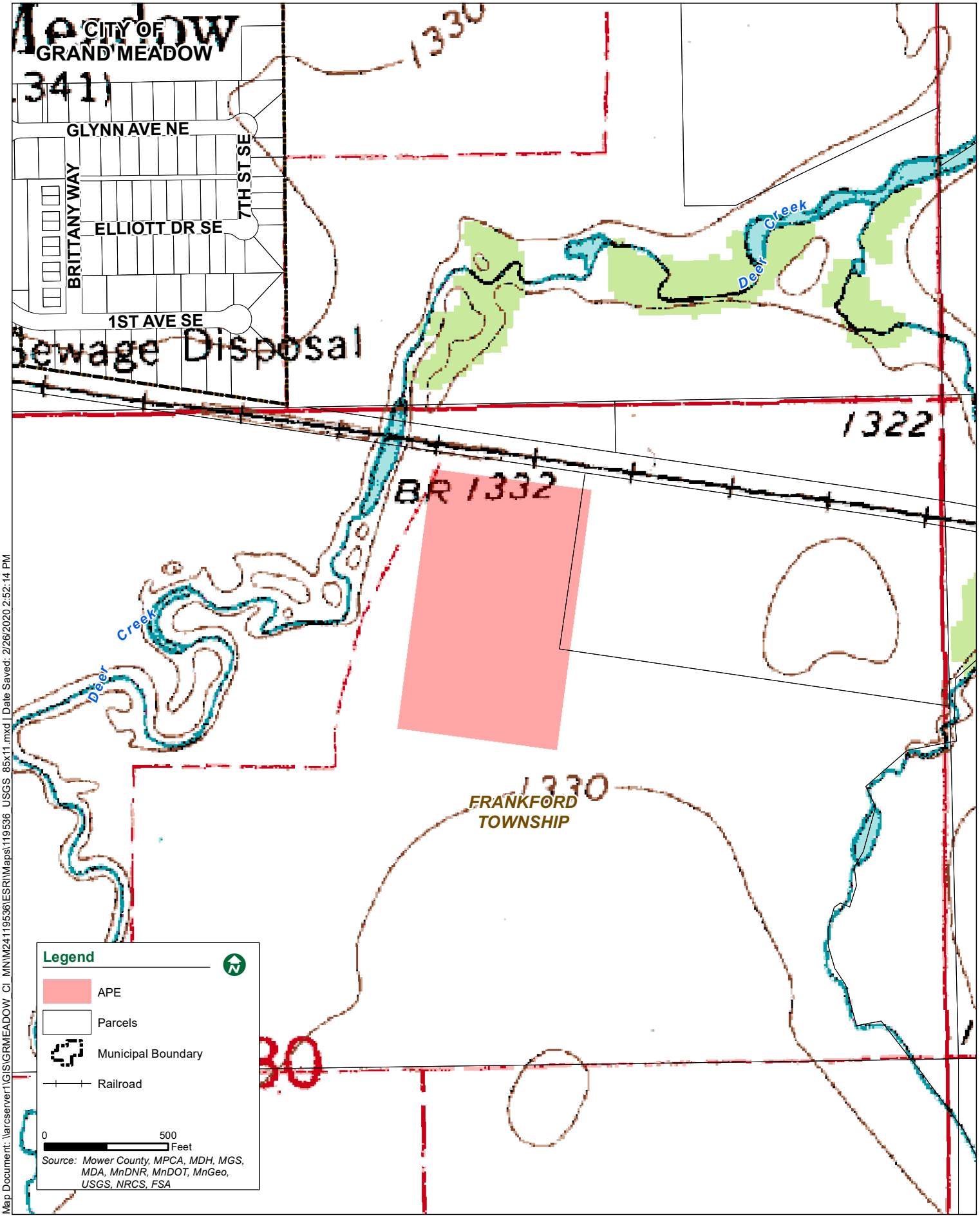
28. Other potential environmental impacts. If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

There are no other environmental impacts that were not discussed in this report.

29. Summary of issues. List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

The project will allow the City to meet NPDES effluent requirements and reduce I&I in the system. The improvments to the wastewater treatment facility will improve the water quality of the effffluent discharged by the existing wastewater treatment facility to Deek Creek.

Page Intentionally Left Blank



Map Document: \\arcserver1\GIS\GRMEADOW_CI_MNM24119536\ESRI\Maps\119536_USGS_85x11.mxd | Date Saved: 2/26/2020 2:52:14 PM

2021 Improvements

City of Grand Meadow

2019 FSA Aerial

February 2020

BOLTON & MENK

Real People. Real Solutions.

Map Document: \\arcserver1\GIS\GRMEADOW_CI_MNM24119536\ESRI\Maps\119536_Aerial_85x11.mxd | Date Saved: 2/26/2020 2:29:08 PM

2021 Improvements

City of Grand Meadow

DWSMA and County Well Index

February 2020

BOLTON & MENK

Real People. Real Solutions.

Map Document: \\arcserver1\GIS\GRMEADOW_CI_MNM24119536\ESRI\Maps\119536_DWSMA_Wells_85x11.mxd | Date Saved: 2/26/2020 2:32:53 PM

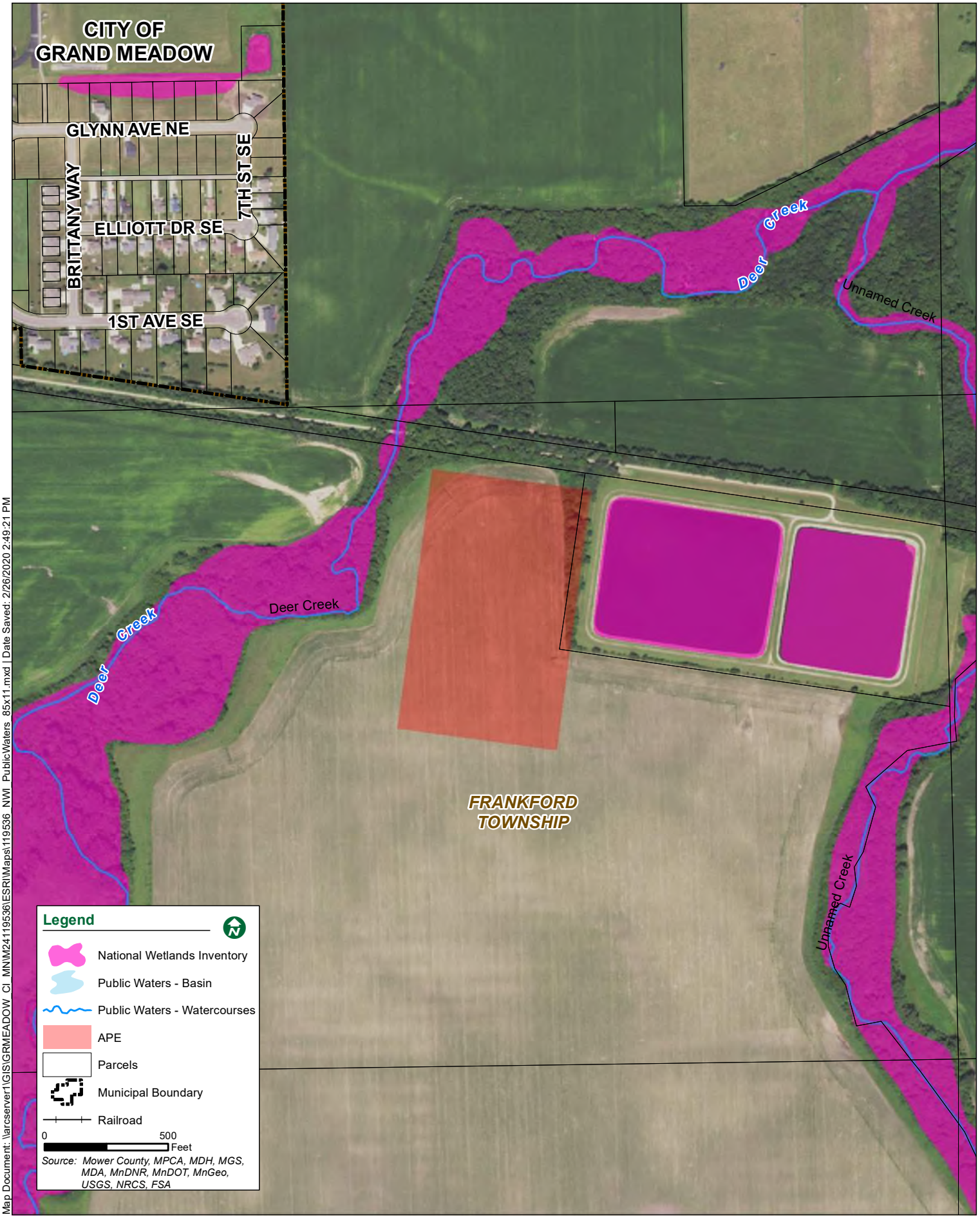
2021 Improvements

City of Grand Meadow

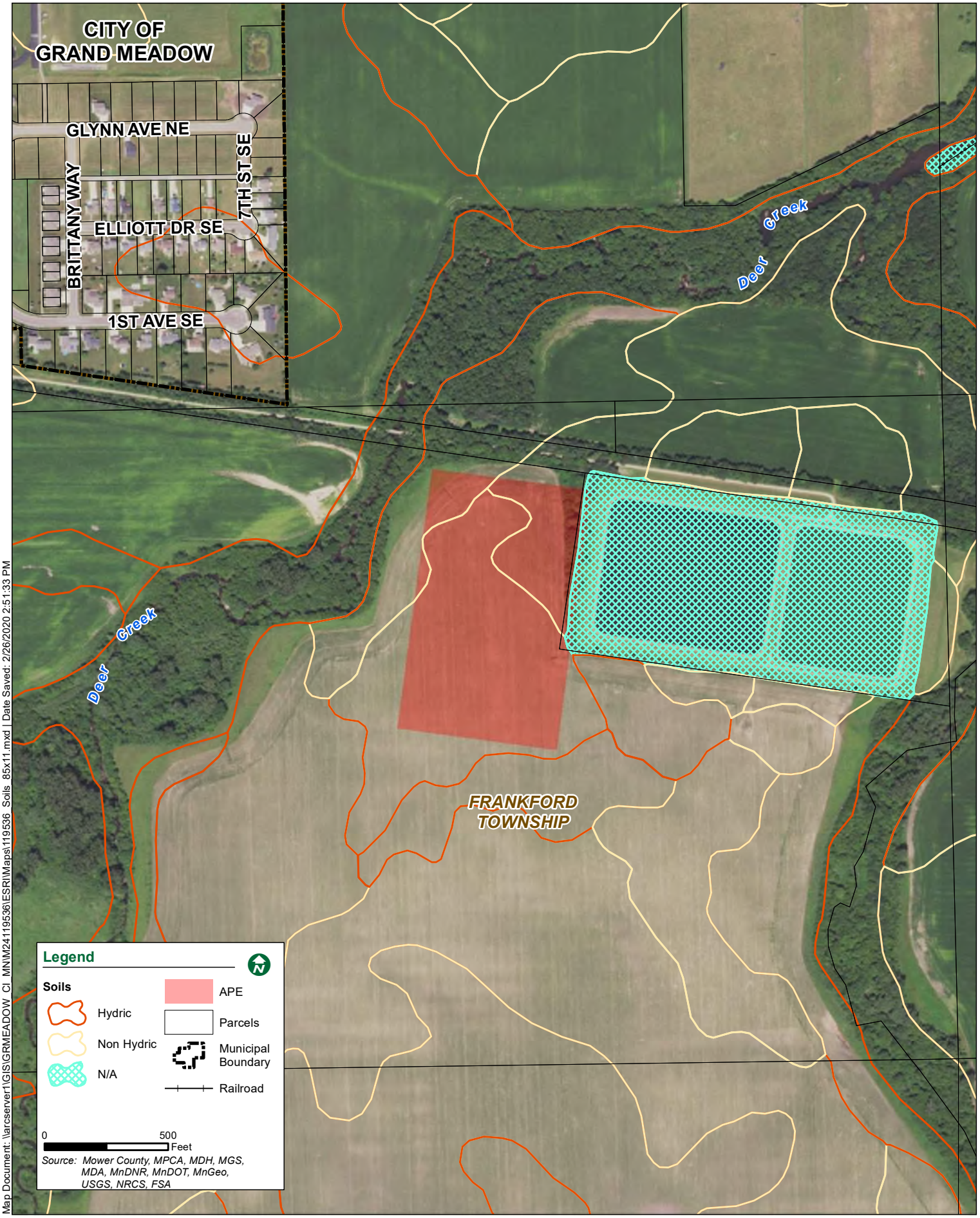
National Wetlands Inventory and Public Waters

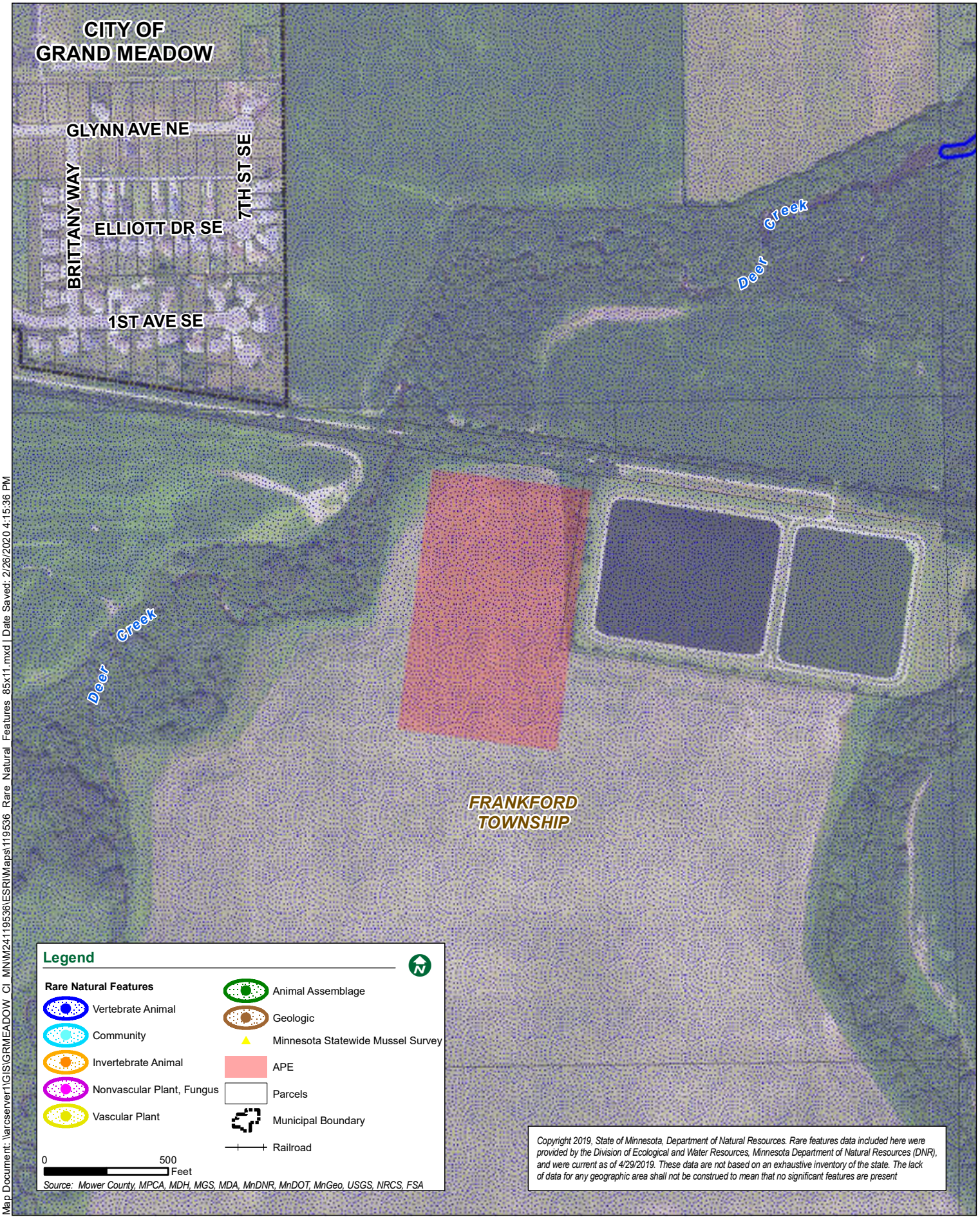
February 2020

BOLTON & MENK
Real People. Real Solutions.



Map Document: \\arcserver1\GIS\GRMEADOW_CI_MNM24119536\ESRI\Maps\119536_NWI_PublicWaters_85x11.mxd | Date Saved: 2/26/2020 2:49:21 PM





Legend

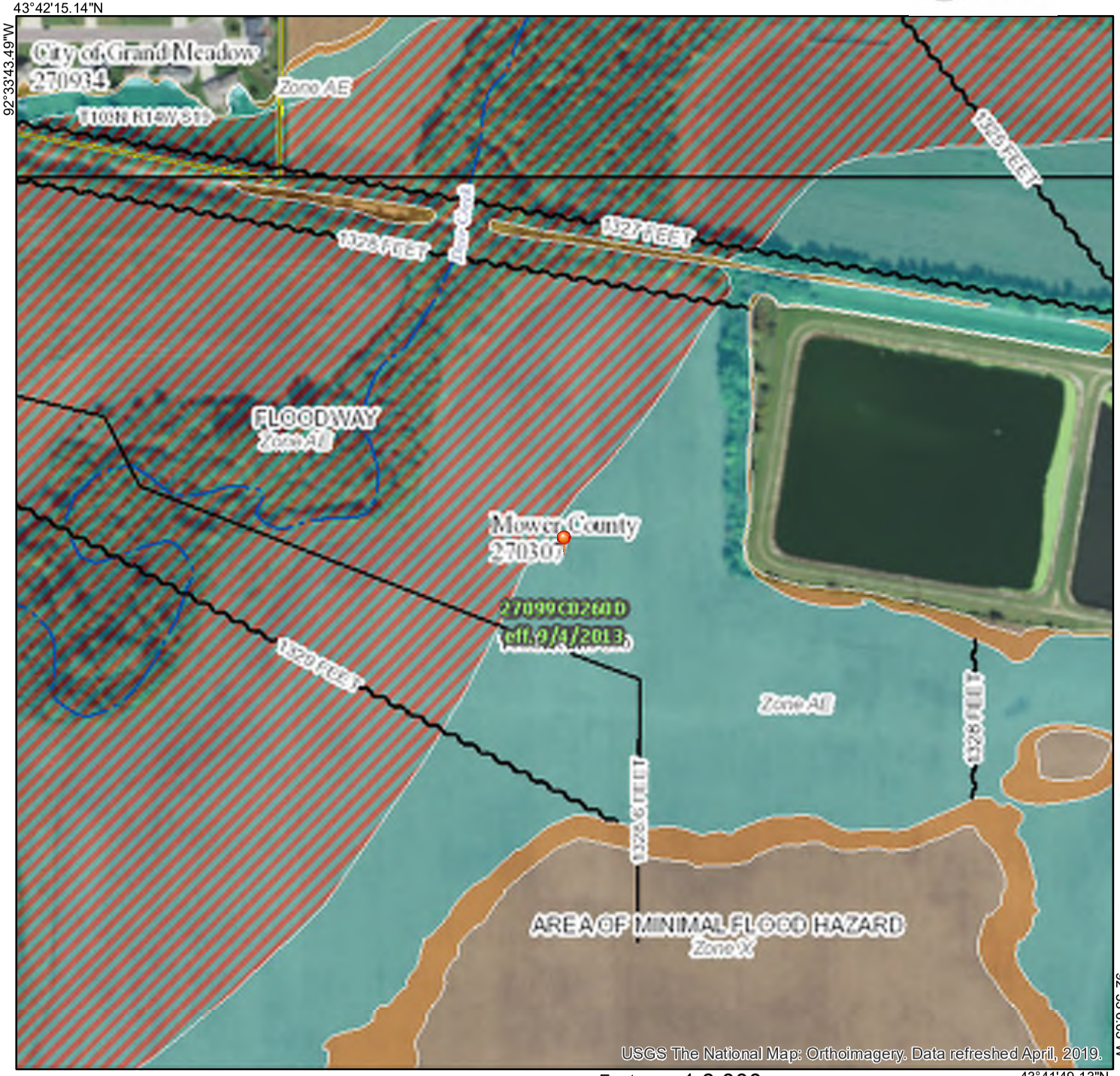
Rare Natural Features
- Vertebrate Animal
- Community
- Invertebrate Animal
- Nonvascular Plant, Fungus
- Vascular Plant
- Animal Assemblage
- Geologic
- Minnesota Statewide Mussel Survey
- APE
- Parcels
- Municipal Boundary
- Railroad

0 500 Feet

Source: Mower County, MPCA, MDH, MGS, MDA, MnDNR, MnDOT, MnGeo, USGS, NRCS, FSA

Map Document: \\arcserver1\GIS\GRMEADOW_CI_MNM24119536\ESRI\Maps\119536_Rare_Natural_Features_85x11.mxd | Date Saved: 2/26/2020 4:15:36 PM

National Flood Hazard Layer FIRMette



FEMA

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 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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 3/1/2020 at 6:56:45 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.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
Phone: (952) 252-0092 Fax: (952) 646-2873
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: March 01, 2020
Consultation Code: 03E19000-2020-SLI-0762
Event Code: 03E19000-2020-E-02423
Project Name: Grand Meadow Wastewater Treatment Facility Plan

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the action area the area that is likely to be affected by your proposed project. The list also includes any designated and proposed critical habitat that overlaps with the action area. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representatives) must consult with the Service if they determine their project may affect listed species or critical habitat. Agencies must confer under section 7(a)(4) if any proposed action is likely to jeopardize species proposed for listing as endangered or threatened or likely to adversely modify any proposed critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - http://www.fws.gov/midwest/endangered/section7/s7process/index.html. This website contains step-by-step instructions that will help you

determine if your project will have an adverse effect on listed species or critical habitat and will help lead you through the Section 7 process.

For all **wind energy projects** and **projects that include installing towers that use guy wires or are over 200 feet in height**, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within the action area.

Although no longer protected under the Endangered Species Act, be aware that bald eagles (*Haliaeetus leucocephalus*) are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act *(*16 U.S.C. 703 *et seq*), as are golden eagles (*Aquila chrysaetos*). Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near a bald eagle nest or winter roost area, see our Eagle Permits website at http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html. The information available at this website will help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
(952) 252-0092

Project Summary

Consultation Code: 03E19000-2020-SLI-0762

Event Code: 03E19000-2020-E-02423

Project Name: Grand Meadow Wastewater Treatment Facility Plan

Project Type: WASTEWATER FACILITY

Project Description: The project includes expansion of the Existing Stabilization Pond Facility with chemical phosphorus removal and rehabilitation of aging sanitary collection system infrastructure in order to reduce excessive infiltration and inflow (I&I). The pond expansion includes addition of a new primary and secondary cell to meet 180-day storage, replace existing control structures, and install in-pond mixers in the secondary ponds. Collection system rehabilitation will use cured-in-place pipe where feasible, but open cut methods will be necessary for point repairs.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.7006905844881N92.55381173419387W

Counties: Mower, MN

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Prairie Bush-clover *Lespedeza leptostachya* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4458	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

MIGRATORY BIRD INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
Phone: (952) 252-0092 Fax: (952) 646-2873
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: March 01, 2020
Consultation Code: 03E19000-2020-TA-0762
Event Code: 03E19000-2020-E-02424
Project Name: Grand Meadow Wastewater Treatment Facility Plan

Subject: Verification letter for the 'Grand Meadow Wastewater Treatment Facility Plan' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Teresa Burgess:

The U.S. Fish and Wildlife Service (Service) received on March 01, 2020 your effects determination for the 'Grand Meadow Wastewater Treatment Facility Plan' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Prairie Bush-clover, *Lespedeza leptostachya* (Threatened)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Grand Meadow Wastewater Treatment Facility Plan

2. Description

The following description was provided for the project 'Grand Meadow Wastewater Treatment Facility Plan':

> The project includes expansion of the Existing Stabilization Pond Facility with chemical phosphorus removal and rehabilitation of aging sanitary collection system infrastructure in order to reduce excessive infiltration and inflow (I&I). The pond expansion includes addition of a new primary and secondary cell to meet 180-day storage, replace existing control structures, and install in-pond mixers in the secondary ponds. Collection system rehabilitation will use cured-in-place pipe where feasible, but open cut methods will be necessary for point repairs.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.7006905844881N92.55381173419387W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service’s PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR

§17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

   No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

    No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

2

2. If known, estimated acres of forest conversion from April 1 to October 31

2

3. If known, estimated acres of forest conversion from June 1 to July 31

2

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?
0

Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

State Environmental Review Process (SERP) Mailing List Form

Clean Water State Revolving Fund Program

Minnesota Rules 7077.0272, subp. 2.a.A.
Minnesota Rules 7077.0277, subp. 3.B.

Doc Type: Wastewater Point Source

Instructions: This is the complete mailing list that the Minnesota Pollution Control Agency (MPCA) will use to public notice the Environmental Summary or other environmental review documents. Please type names and addresses on this form and return to the MPCA staff engineer. This list should be considered minimum. If a more substantial mailing list is available for the Public Participation Program, it should be added to this mailing list. **Please return this mailing list in MS Word format only.**

Example address blocks:

The Honorable Mark Anderson
Minnesota State Senator
135 State Office Building
St. Paul, MN 55113

Marv Johnson, City Administrator
City of Willmar
236 Oriole Avenue
Willmar, MN 55699

Municipality name: City of Grand Meadow **Project number:**

Contact name: Teresa Burgess **Phone number:** 507-625-4171
(person completing the form)

Public notice address information

1.	**The Honorable State Senator:**	**6.**	**City Administrator/Clerk:**
	Senator Dan Sparks 95 University Avenue W. Minnesota Senate Bldg, Room 2201 St. Paul, MN 55155		Chris Hyrkas City Clerk/Treasure 112 Grand Avenue East Grand Meadow, MN 55936
2.	**The Honorable State Representative:**	**7.**	**Engineering Consultant:**
	Rep. Jeanne Poppe (DFL) District: 27B 487 State Office Building St. Paul, MN 55155		Jake Pichelmann Bolton & Menk, Inc. 2900 43rd St NW #100 Rochester, MN 55901 Bryan Holtz Bolton & Menk, Inc. 2900 43rd St NW #100 Rochester, MN 55901
3.	**The Honorable County Board Chair:**	**8.**	**County Planning and Zoning Office:**
	District #2 Polly Glynn, Vice Chair P.O. Box 301 Grand Meadow, MN 55936		Public Works 1105 8th Avenue NE Austin, MN 55912
4.	**The Honorable Mayor:**	**9.**	**Watershed District (if established):**
	Dennis Berge 112 Grand Avenue East Grand Meadow, MN 55936		
5.	**Township Board Clerk:***	**10.**	**Regional Development Commission:**

***Include if any portion of the project (including the facility, interceptor, influent or outfall lines) will be located in the township(s).*

To add rows, place your cursor in the last row of the second column and hit tab.

Interested citizens:	**Interested groups:** (i.e., homeowners associations, environmental, business, civic, etc., organizations)
Teresa Burgess Bolton & Menk, Inc. 1960 Premier Drive Mankato, MN 56001	Mower County SWCD 1408 21st Ave. NW Austin, MN 55912

To add rows, place your cursor in the last row of the second column and hit tab.

Property owners:

Property owner list should include all property owners of the site to be, or which has been previously acquired. For pond systems, include the property owner(s) of the pond site, spray irrigation site(s) and all property owners of homes within one-fourth mile of the pond site and any clusters of homes within one-half mile of the pond site.

Federal agencies:

ATTN: Field Supervisor
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 American Boulevard East
Bloomington, MN 55425-1665

ATTN: Environmental Compliance Chief
U.S. Army Corps of Engineers
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, MN 55101-1678

ATTN: Regional Environmental Officer
Federal Emergency Management Agency
Region V Office
536 South Clark Street, 6th Floor
Chicago, IL 60605

State agencies:

ATTN: Environmental Review Supervisor
MN Department of Natural Resources
Division of Ecological and Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155 -4025

ATTN: Manager of Government Programs and Compliance
MN Historical Society
Minnesota Historic Preservation Office
345 West Kellogg Boulevard
St. Paul, MN 55102-1906

ATTN: Cultural Resource Director
MN Indian Affairs Council
161 St. Anthony Avenue, Suite 919
St. Paul, MN 55103

MPCA regional office(s):

MPCA Rochester office 18 Wood Lake Drive SE Rochester, MN 55904	