Crystal Township

Clean Water State Revolving Fund Project Plan

WASTEWATER COLLECTION, LIFT STATIONS, AND TREATMENT SYSTEM IMPROVEMENTS

DRAFT

PREPARED FOR:

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DATE: APRIL 2024
PROJECT NO.: 861970

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EXECUTIVE SUMMARY

This Project Plan was completed to qualify for financing through the Clean Water State Revolving Fund (CWSRF) for improvements to the Crystal Township wastewater collection system. The Project includes improvements to the existing manholes, lift stations, and the wastewater treatment facility. The SRF program assists municipalities in financing certain utility improvements projects over a 20- or 30-year term at favorable interest rates – typically between 1.875% and 2.5%. As such, projects reflect the long-term needs of the community.

The Crystal Township wastewater collection and treatment system – operated by the Crystal Sewer District – provides sewage collection and treatment services to portions of Crystal Township in the vicinity of Crystal Lake and Duck Lake.

This CWSRF Project Plan is the first step in an application for financing of the necessary improvements. This report presents the results of the engineering and scientific evaluations performed to determine the need for the project, develop alternatives to remedy identified problems, and to define the scope of the recommended/selected alternative. Background information on the existing system is also provided along with the rationale used to define alternative projects that are capable of meeting the long-term wastewater treatment needs of the Township. The viable alternatives are evaluated and compared as to their financial and technical feasibility with regard to implementation.

This Project will focus on the most critical and urgent needs including manhole access, manhole soil / water intrusion, aging and unreliable lift stations, and continued reliable wastewater treatment operations.

Three (3) alternatives were considered for evaluation to address the project objectives. The Recommended Alternative includes manhole rehabilitation, replacement of two lift stations, and rehabilitation of select assets at the wastewater treatment plant (WWTP).

The average cost to users to finance the proposed project entirely through the CWSRF Program is estimated at $22.50 per month per Residential Equivalent Unit (REU). Actual monthly costs will vary depending on the final loan amount principal forgiveness/grant funding availability, financing terms, and individual usage and community rate structure.

I. INTRODUCTION

Crystal Township is located in the eastern portion of Michigan's Montcalm County to the northwest of Carson City (see Figure A1 and Figure A2). The Township, with a population of approximately 2,644 people (as of the 2022 American Community Survey based on 2020 census data)[1] owns and operates its sanitary sewer collection system and wastewater treatment plant (WWTP) through the Crystal Sewer District. The average household size is estimated as 2.63 persons per household (1,007 total households with an estimated additional 380 unoccupied housing units for a vacancy rate of approximately 27%)[2].

The WWTP, the lift stations, and the majority of sewers serving the Crystal Lake area were constructed in 1977. The sewers serving the area between Norwest Tack Road and Pine Grove Road were added in 2001. The sewers and lift stations serving the Duck Lake area were constructed in 2005.

The collection system assets are adjacent to approximately 1,230 parcels with serviceable structures on them (including a mobile home park with approximately 150 housing units) plus another 270 undeveloped parcels that could be served without extending any public sewers. Most parcels in the service area are single-family residences, and the non-residential parcels/structures that are served are assumed to average out to approximately 1 residential equivalent unit (REU) each. Based on this, the maximum number of REUs that could be serviced is estimated as 1,380. However, there are also serviceable structures that are not connected to the system. The Township currently bills 1,066 customers for sanitary sewer service. This number reflects unconnected buildings and the Township-wide housing unit vacancy rate of 27%. The 1,066 customers is equivalent to approximately 2800 persons based on the estimated household size of 2.63 persons per household.

The collection system includes approximately 5.2 miles of predominantly 8-inch and 10-inch PVC sewers and 2.65 miles of force mains from lift stations (LS) – with diameters of 2-inches to 12-inches – and grinder pump stations (GPS) – with diameters of 2-inches or smaller. There are 14 LS (plus 1 at the WWTP) and approximately 28 GPS. There are approximately 283 gravity sewer manholes and approximately an additional 64 structures such as cleanouts and chambers for various valves throughout the collection system. There are additional structures present at the WWTP. A map of the Crystal Township wastewater collection and treatment system is included as Figure A3, located in Appendix A.

Wastewater is collected throughout the service area and is pumped to the Crystal Sewer District WWTP (located at 3042 S Miner Road) and the effluent is discharged seasonally to on-site irrigation fields. The WWTP was originally constructed in 1977 and included a 12-inch influent force main, four lagoon cells with cell-to-cell transfer piping, and an irrigation pump station with discharge to three irrigation fields. Since the original construction, minor improvements have been completed as existing facilities deteriorated (e.g. valve and pump station improvements), but generally, the process has remained the same. The WWTP operates under the jurisdiction of NPDES permit (MI0057088 v3) which allows for discharges to the Smith Drain and to groundwater (the current NPDES permit includes provisions which were previously included in a separate groundwater discharge permit which was superseded in 2015). A copy of the permit is included in Appendix B.

The purpose of this Project Plan is to fulfill and document the fulfillment of requirements found in the state statutes (MCL§324.5303) and rules that govern the Clean Water State Revolving Fund (CWSRF) and the Strategic Water Quality Initiation Fund (SWQIF) programs (Michigan Administrative Code R323.952).

In addition, this Project Plan provides a basis for ranking the Township's proposed wastewater system improvements in comparison to projects by other municipalities in a project priority listing for a low-interest SRF

[1] The estimated population in 2017 was 2,679 resulting in a -1.3% growth in population for the most recent 5-year interval that data was available or a -0.2% annual growth rate.
[2] The relatively high vacancy rate is likely, in part, due to the seasonal nature of many housing units around the lakes.

loan. This is a financially attractive program where municipalities across Michigan compete for limited funds based on the merits of their proposed projects.

The scope of this Project Plan includes a summary of current issues with sewers, manholes, pump/lift stations, and treatment facilities owned and operated by the Township / Sewer District and the development of projected population growth and the wastewater needs of the service area for the 20-year planning period. The Project Plan identifies principal alternatives to meet the current and future wastewater needs and evaluates the environmental impacts of the recommended alternative.

The Project Plan presents projected user costs necessary to operate the utility and repay the low-interest loan for the recommended alternative. The availability of the Project Plan for review at the Crystal Township Hall (as well as an electronic copy of the Project Plan itself) and the time and date of a scheduled public meeting were posted on the Township's website. A summary of public participation and public comments solicited by the Township regarding the Project Plan and Recommended Alternative will be included in Appendix F.

The format of this report follows the project planning guidelines for Clean Water Revolving Funds (CWSRF and SWQIF) prepared by the Michigan Department of Environmental, Great Lakes and Energy (EGLE), Revolving Loan Section. Section II presents extensive background information including a description of the community, the study area characteristics, a description of the existing wastewater facilities, and the need for the project. Section III presents alternatives for resolution of the problems. Sections IV, V, and VI further evaluate the Recommended Alternative, including a detailed description, evaluation of environmental impacts and mitigation measures. Section VII presents the public participation measures taken throughout the duration of the project.

II. PROJECT BACKGROUND

The Crystal WWTP operates under the jurisdiction of the Michigan Department of Environment, Great Lakes & Energy (EGLE). The WWTP is subject to both general standards and specific permit requirements under the National Pollutant Discharge Elimination System (NPDES). The State of Michigan has primacy for implementing these rules.

A review of wastewater collection and treatment system was conducted in preparation of preparing this Project Plan. The collection system was found to be generally in good / fair condition, but poor / failing conditions were documented at various manholes, lift stations, and WWTP assets.

Addressing the poor / failing assets will improve reliability and capacity of pumping and / or treatment systems and manhole rehabilitation will extend the useful life of the assets and the connected sewers and will also improve WWTP performance during wet weather by reducing inflow/infiltration (I/I) of ground- and storm water into the collection system.

A. Study Area Characteristics

1. Delineation of Study Area

The Study Area includes the Crystal Sewer District Service Area which is comprised of a portion of Crystal Township in the vicinity of Crystal Lake and Duck Lake. The Township / Sewer District collection system is shown in Figure A3, in Appendix A. Figure A3 also identifies the location of the lift stations and the WWTP.

B. Environmental Setting

1. Cultural Resources

A search of the Michigan State Housing Development Authority Historic Sites Online website indicated no State or Federal listed historic sites in Crystal Township.

A letter requesting review with respect to impacts to known historical and archeological sites will be sent to the State Historic Preservation Office (SHPO). A copy of the r letter and Part 106 application is included in Appendix C.

Letters requesting review with respect to impacts on tribally important cultural or religious sites were sent to each of the following Native American tribes associated with Montcalm County (according to the State of Michigan); Little River Band of Ottawa Indians, and Grand Traverse Band of Ottawa and Chippewa Indians, Little Traverse Bay Bands of Odawa Indians. Copies of the letters are included in Appendix C.

2. The Natural Environment

<u>Climate</u>

Climatological data for the area is based on information from the Michigan State University Climatology Program for a weather station in Alma, Michigan. The average January climatic conditions include average minimum temperatures of 13.9° F and average maximum temperatures of 29.8° F. The average July climatic conditions include average minimum temperatures of 58.4° F and average maximum temperatures of 83.0° F. The average rainfall is 33.01 inches per year and the average annual snowfall is 38.6 inches per year.

These climate conditions, specifically the winter conditions and design frost levels, would have equal design and construction impacts on all the principal alternatives and equally affect the length of construction seasons for all alternatives.

Air Quality

Air quality impacts due to construction dust and emissions in the area due to construction equipment would be temporary and similar for the principal alternatives.

Wetlands

A wetlands map was generated using USFWS National Wetlands Inventory data. The map is included in Appendix A as Figure A4. The types of waterbodies / wetlands in the township include: lake, freshwater pond, freshwater emergent, freshwater forested/shrub, and some unclassified ('other'). No riverine wetlands were contained in the data set but the rivers and creeks are shown on the map and included in the classification.

It is not anticipated that this project will have any long-term impacts on area wetlands. The wetlands adjacent to the WWTP site or other collection system assets will not be affected during the construction of the improvements.

A request for review of any potential impacts to land-water interfaces has been sent to EGLE. A copy of the request is included in Appendix C.

The proper permits will be acquired before construction commences.

Floodplains

The Federal Emergency Management Agency (FEMA) Flood Map Service Center indicates that no flood studies have been conducted for the area.

A request for review of any potential impacts to floodplains was sent to EGLE. A copy of the request to EGLE is included in Appendix C. If necessary, appropriate permits will be acquired before any construction commences.

Special Designation Rivers (Trout, Natural, Wild & Scenic)

The Wild and Scenic Rivers Act, as amended by the Michigan Scenic Rivers Act of 1991, prohibits federal assistance to a project which will have a direct and adverse effect on the values for which a river segment listed in the National Wild and Scenic Rivers System or designated for study on the National Rivers Inventory was established.

Rivers located within Crystal Township are not listed on the National Wild and Scenic Rivers System website, administered by the National Park System, or on the Michigan Natural Rivers System found on the Michigan Department of Natural Resources website.

Major Surface Waters

The most noticeable natural features in the vicinity of the service area are Crystal Lake and Duck Lake. The lakes are in the headwaters of Fish Creek which flows south to the Maple River near Matherton in eastern Ionia County. The Maple River, which extends upstream to the east (Shiawassee County), then flows into the Grand River near Muir (also in eastern Ionia County). The Grand River continues to the west and flows through Jackson and continues north and to the west, eventually emptying into Lake Michigan near Grand Haven.

Recreational Facilities

The Township operates three outdoor recreation facilities:

- Crystal Township Park and Beach is seven acres on the on the eastern shore of Crystal Lake along Lakeview Street between West Lake Street and Elm Street.
- South Pier Park is a public access and boat launch location for Crystal Lake on South Shore Drive near Lyons Street. It has a single pier, parking for approximately 5 vehicles with trailers, and restroom facilities.

- Noll Park is 18 acres located at 8356 Colby Road, adjacent to the Township Fire Hall and includes baseball/softball fields, tennis and pickleball courts, and an ice skating rink (during the winter).

The Township is also responsible for maintaining two cemeteries (Crystal/Spencer and Burke) and operates the Crystal Community Library at the corner of Lakeview Street and West Lake Street and the community center at 217 West Park Street.

The Michigan Department of Natural Resources (MDNR) operates two boat launches in the township: the Crystal Lake Boat Launch, located at 426 North Shore Drive, has parking for up to 25 vehicles with trailers, two piers, and restroom facilities; the Duck Lake Boat Launch, located at 1925 Waterview Way, has parking for up to 9 vehicles with trailers, one pier, and restroom facilities.

Other privately owned recreation facilities include: the South Shore Campground, Rainbow Gardens Roller Rink and Event Center, Crystal Moter Speedway (with camping), and Fairway Farms driving range

No improvements proposed in this Plan are anticipated to impact any of these facilities. Possible short-term disruptions (e.g. road closure for construction) may occur depending on the nature and location of the individual proposed actions.

Topography and Geology

Figure A5 shows the existing topography contours based on USGS data. The elevation in the township in the vicinity of the collection and treatment system ranges from roughly 765 feet to 850 feet.

The regional geology for the area is based on a review of the Quaternary Geology of Michigan Map (W.R. Farrand, 1982), see Figure A6; and the Bedrock Geology of Michigan Map (MDNR Geological Survey Division, 1987), see Figure A7.

The general geology of the township in the vicinity of the service area is characterized by coarse- and fine-textured glacial tills and end moraines as well as glacial outwash and postglacial alluvium which overlie the Saginaw Formation and ‘red beds’ (sedimentary layers of sandstone, siltstone, and/or shale).

Soils

Figure A8 shows the Soil Survey Geographic (SSURGO) data from the USDA National Resources Conservation Service (NRCS) web soil survey website. The major soil types in the township in the vicinity of the collection and treatment system include loams and mucks in the vicinity of Crystal Lake and sands, loamy sands, and complexes in the vicinity of Duck Lake.

Agricultural Resources

Figure A9 shows the Farmland Classification soil types in the township as identified in the NRCS data discussed above. Most of the area is at least ‘Farmland of Local Importance’ with significant areas of ‘Prime Farmland’ in the vicinity of Crystal Lake.

Because the proposed work is focused on existing sanitary sewer assets and existing lift station locations, the proposed principal alternatives are not anticipated to have impacts on agricultural resources.

The biosolids (sludge) generated at the WWTP are settled in the secondary lagoons (Cells No. 2 and. 3). At the appropriate time, the sludge will be removed from the cells and its final disposition will be determined at that time.

Flora and Fauna

A USFWS Section 7 review was initiated using the US Fish and Wildlife Service Information for Planning and Consultation tool. According to the USFWS Official Species List, there are three federally listed endangered species (Indiana Bat, Northern Long-eared Bat, Karner Blue Butterfly), one proposed endangered species (Tricolored Bat), one threatened species (Eastern Massasauga rattlesnake), one candidate species (Monarch

Butterfly), and one experimental population species in the area (Whooping Crane). A copy of the preliminary list is included in Appendix C.

Because the proposed work is focused on existing sanitary sewer assets, it was determined that no impacts to federally listed endangered or threatened species are anticipated.

A request to MNFI was sent to confirm that no State listed species would be impacted. A copy of the request and is included in Appendix C.

Unique Natural Features

A request was sent to the MNFI for review considering potential impacts to rare species or unique natural features. The request and response are included in Appendix C.

Dam Safety

Because the proposed work involves repairs to the lagoon berms and the lagoons enclose more than 5 acres, the EGLE Dam Safety program was contacted. The request letter and response are included in Appendix C.

3. Land Use in the Study Area

Much of the sanitary service area is considered 'urban' based on the high density of development along the shores of Crystal Lake and Duck Lake. These areas are primarily residential with commercial and institutional parcels/areas throughout. Adjacent land uses include 'agricultural', 'forested', 'wetlands', and 'water'. The current land use map from the Montcalm County 2013 General Plan is included as Figure A10 in Appendix A.

The Township and County do not have zoning ordinances but the Montcalm County 2013 General Plan documents 'Sensitive Lands' and recommends that these areas be protected. The Sensitive Areas map from the General Plan is included as Figure A11 for reference.

4. Surface and Ground Waters

The majority of the Township and the entirety of the sanitary service area is in the Maple River watershed and the Fish Creek Subwatershed. Much of the service area adjacent to the lakes runoff directly to the lakes. Lake outflows and other surface drainage is provided by enclosed and open channel County Drains including: Loon Lake Drain, Tow Drain, Smith Consolidated Drain, Frisbie Drain, Crystal Lake Drain, Fuller Extension Drain, Sigsby Drain, Drake Bros Drain, Manzer Drain, and the Manzer and Shelden Drain. The Maple River flows into the Grand River that eventually empties into Lake Michigan.

Water service in the sanitary service area is provided through private wells, as such there are no Type I municipal water wells. There are approximately 14 Type II wells that serve businesses, schools, campgrounds, trailer parks, and other similar facilities.

C. Population Data

Crystal Township wastewater treatment currently serves approximately 1,066 REUs (equivalent to approximately 2800 people). The Township has a recent annual growth rate of -0.2% (as discussed in the introduction section). The annual growth rate for Montcalm County from 2000-2022 of 0.44% was used to account for changes in population trends and provide a conservative estimate for the 2045 planning estimate of 1,180 REUs.

D. Economic Characteristics

Table 1 summarizes employment within the Township according to the USCB 2022 ACS estimates.

Table 1. Crystal Township Occupation		
	Persons	**% of Total**
OCCUPATION		
Management, Professional and Related	273	23.9%
Services	237	20.8%
Sales and Office	229	20.1%
Natural Resources, Construction and Maintenance	126	11.0%
Production, Transportation and Material Moving	277	24.3%
Total	**1,142**	**100%**
INDUSTRY		
Agricultural, Forestry, Fishing and Hunting, and Mining	58	5.1%
Construction	63	5.5%
Manufacturing	360	31.5%
Wholesale Trade	12	1.1%
Retail Trade	153	13.4%
Transportation and Warehousing and Utilities	32	2.8%
Information	0	0.0%
Finance, Insurance, Real Estate and Rental and Leasing	37	3.2%
Professional, Scientific, Management, Administrative, and Waste Management Services	76	6.7%
Educational, Health and Social Services	249	21.8%
Arts, Entertainment, Recreation, Accommodation, and Food Services	55	4.8%
Other Services (Except Public Administration)	17	1.5%
Public Administration	30	2.6%
Total	**1,142**	**100%**

Median income statistics from the 2022 ACS estimates list the median household income for the Township at $59,375. The average household size for the township is 2.63. Table 2 shows the per capita and median household income for Crystal Township compared to Montcalm County and the State of Michigan.

Table 2. Median Household Income (2022)		
Unit (Average Household Size)	**Per Capita Income**	**Median Household Income**
Crystal Township (2.63 persons)	$22,576	$59,375
Montcalm County (2.58 persons)	$24,018	$61,967
State of Michigan (2.40 persons)	$27,911	$66,986

E. Existing Facilities

1. Collection System

Construction of the collection system first began in 1977, which included most of the current system in the Crystal Lake area. A minor extension was constructed in the 2001 in this area and the Duck Lake portion of the system was built in 2005.

The collection system currently consists of approximately 5.2 miles of gravity sewers, which consist primarily of polyvinyl chloride (PVC) at 8-inch and 10-inch diameters. There are an additional 3.6 miles (approximate) of force mains (ranging in diameter from 2 to 12 inches) that route wastewater from pump/lift stations and grinder pumps to downstream gravity areas and ultimately the treatment facility.

All wastewater generated in the Crystal Lake area is pumped to the WWTP via the Sidney Lift Station (LS-01) while all wastewater generated in the Duck Lake area is pumped to the WWTP via the Waterview LS (LS-13).

2. Lift Stations

The Township currently owns and maintains 14 'major' lift stations throughout the collection system in addition to one (1) at the WWTP. The Crystal Lake area LSs were built in 1997 while those in the Duck Lake area were built in 2005. Table 3 presents details on each lift station.

Table 3. Lift Stations

Number and Name	Location	Year Built	Rehab. Year	Design Capacity (gpm)*	Drawdown Tests (gpm)
#1 – Sidney Lift Station	8155 Sidney Road	1977		770	
#2 – South Shore E LS	2818 S Shore Drive	1977		330	
#3 – South Shore W LS	2403 S Shore Drive	1977		310	
#4 – Caroline LS	2270 Caroline Drive	1977		240	
#5 – Strait Tow S LS	2136 Strait Tow Blvd.	1977		200	
#6 – Strait Tow N LS	1978 Strait Tow Blvd.	1977		155	
#7 – Elm LS	Elm St @ Lakeview St NW	1977		340	
#8 – Oak LS	319 Oak Street	1977		65	
#9 – North Shore E LS	355 N Shore Drive	1977		240	
#10 – North Shore C LS	433 N Shore Drive	1977		160	
#11 – North Shore W LS	1000 N Shore Drive	1977		25	
#12 – WWTP LS	3042 Miner Rd	1977		25	
#13 – Waterview LS	1947 Waterview Way	2005		330	
#14 – Karen LS	1578 Karen Drive	2005		95	
#15 – Shepherd LS	1338 Shepherd Drive	2005		530	

*design capacity is the firm capacity (with largest pump out of service)

The Township also maintains approximately 28 smaller grinder pump stations, most serving individual structures.

3. Wastewater Treatment Plant

The Crystal Sewer District Wastewater Treatment Plant is located in Crystal Township at 3042 Miner Road, Crystal, MI 48818. The WWTP is a lagoon plant authorized to process an average of 127,000 gallons per day of raw sewage and it is comprised of four lagoon cells.

Influent wastewater arrives at the WWTP through a 12-inch force main into the air break manhole with piping that connects to Cell No. 1 inlet structure and the Cell No. 2 inlet structure. During normal operation, this structure directs flow into Cell No. 1. Valves are adjacent to this structure and allow for controlling flow routing. An intermediate control structures then route the wastewater from Cell No. 1 to Cell No. 2 and/or Cell No. 3 for sludge settling. Another intermediate control structure controls the routing of wastewater from Cell No. 2 and Cell No. 3 to Cell No. 4 for polishing and storage of effluent prior to discharge. The discharge from Cell No. 4 is controlled by an outlet structure the directs flow to the irrigation pump building where one dual-speed irrigation pump is located. LS-12 collects wastewater from the irrigation pump building and maintenance building and discharges to Cell No. 2.

At the appropriate time, sludge will be removed from the cells and its final disposition will be determined at that time.

In accordance with the groundwater discharge limits, the facility is authorized to discharge 46.4 million gallons per year (MGY) between May and October (limited to 3.6 inches per irrigation field and a maximum of 0.72 MGD). Treated effluent from the Cell No. 4 is pumped to one of three irrigation fields where the effluent percolates through the soil and into the groundwater for final disposal.

The facility relies on crop uptake as a means of providing the necessary treatment of Total Inorganic Nitrogen (TIN) and phosphorus from the effluent. The wetted area is farmed to promote nutrient uptake.

4. Condition Assessment

Collection System

An assessment of the collection system conditions was done through manhole inspections.

The Township wastewater collection system manholes were found in varying degrees of condition. Approximately half of the MHs were not easily accessible due to being buried under turf, gravel, or asphalt. Fifty percent (50%) of those assessed indicated a possibility for surface runoff into the MH at the casting and approximately 80% of those assessed had indications of previous or ongoing inflow/infiltration of groundwater into the structure.

Lift Stations

The fifteen (15) Township lift stations are in varying degree of condition. Assessments of the conditions were documented through field visits. The conditions of the various components of the lift stations are presented in Table 4.

The conditions assessment, coupled with historical service requirements and operator information concerning the reliability of the various stations, identified LS-07 and LS-11 as the most urgent needs in terms of continued reliable operations of the various lift stations. The valves and valve chambers at the other ten collection system lift stations are in fair condition and also critical to keeping the lift stations operational during regular maintenance that will continue to increase in frequency as the lift stations continue to age and deteriorate.

Table 4. Lift Station Conditions

Station Name	Wet Well	Discharge Piping	Pumps	Valve Chamber	Valves	Electrical	Telemetry & Controls	Site	Building
#1 – Sidney Lift Station	G	G	F	F	U	F	F	F	-
#2 – South Shore E LS	F	G	F	F	U	F	F	F	-
#3 – South Shore W LS	G	G	F	F	U	F	F	F	-
#4 – Caroline LS	U	U	F	F	U	F	F	F	-
#5 – Strait Tow S LS	G	G	F	F	U	F	F	F	-
#6 – Strait Tow N LS	G	G	F	U	U	F	F	F	-
#7 – Elm LS	F	G	F	U	U	F	F	F	-
#8 – Oak LS	G	G	F	F	U	G	F	F	-
#9 – North Shore E LS	G	G	F	F	U	F	F	F	-
#10 – North Shore C LS	G	G	F	F	U	F	F	F	-
#11 – North Shore W LS	F	G	F	U	U	P	P	F	-
#12 – WWTP LS	U	U	F	U	U	F	F	F	-
#13 – Waterview LS	G	E	F	F	U	G	F	G	-
#14 – Karen LS	G	G	F	F	U	G	F	G	-
#15 – Shepherd LS	G	G	F	F	U	G	F	G	-

E = Excellent/New; G = Good; F = Fair; P = Poor; V = Very Poor; - = Not Applicable; U - Unknown

WWTP

The air gap structure at the WWTP was re-lined in 2011. However, due to its age (built in 1977) and the harsh conditions in which it operates, the structure is in very poor condition. There is no screening mechanism currently in place to prevent inorganic debris from entering the cells, so rags are accumulated within the structure. The valves adjacent to the structure have not been operated in many years and their functionality is unknown.

Both intermediate control structures were constructed in 1977 and upgraded with 12” plug valves in 2004. The associated assets of both cells are in poor condition. All transfer piping at the WWTP is ductile iron pipe (DIP) and is in poor condition.

The outlet control structure, located on the west end of Cell No. 4 controls the effluent flow from the WWTP. The assets associated with the outlet control structure are generally in poor to fair condition. The concrete structure remains in fair condition, but the piping is in poor condition, as is the case for many of the structures.

The lagoon cells' berms were in fair to poor condition at the time of the site visit. Excessive vegetation growth and erosion were observed on the west side of all four cells. Stone was placed on portions of the berms in 2022 for further erosion prevention.

The irrigation pump was recently rebuilt. There is no redundant pump installed in the case of failure of the primary irrigation pump. Additionally, the pump discharge piping in the wet well effluent piping is in very poor condition.

New drives, sprinklers, rims, and tires were replaced in one of the two irrigation systems earlier this year and it nearing the end of its operable life span.

5. Current Wastewater Flows

Average Influent Flows

The WWTP does not measure influent flows but daily effluent flows are available for the months of June/July through September. The nature of the plant operations and the monitoring means that numerous days are sometimes averaged together. It appears that the methodology has been recently updated and thus only the most recent months are considered in estimating the average flow to the WWTP at approximately 90,000 gpd.

Wet Weather Flow – Infiltration and Inflow Evaluation

While data for analysis is limited, most of the available data is relative (i.e. showing increases and decreases even if not accurate). As such, a simple qualitative assessment of I/I reveals that following rain events of approximately 1 inch (or more), the effluent flows tend to increase, sometimes up to 4 times the flow rate that existed prior to the rain event. This corresponds to observations of staff at the plant and servicing lift stations / sewer assets during rain events.

Additionally, the staff and inspectors noted increased observation of I/I in MHs near the lakes as opposed to those in higher areas. The limited nature of storm sewer infrastructure or observations of connected downspouts during field investigations, along with the spatial differences, suggests the I/I present in the system is largely due to subsurface flows (e.g. groundwater)[3].

F. Need for the Project

Collection System

To provide reliable access to the manholes and pipes, to ensure continued structural integrity of the manhole structures, and to minimize unwanted surface runoff and groundwater from entering the collection system, it is prudent to: 1) adjust the manhole rims so that they are at the ground surface and that the surrounding ground surface discourages the routing of surface water towards the MH; and 2) line the manholes to minimize groundwater infiltration through defects and the soil that is eroded and carried into the MH along with the groundwater infiltration.

[3] The construction date of the system is near the time when connecting sump pumps to the sanitary system became a prohibited practice, so it is possible that some I/I is associated with them.

Lift Stations

The following summarizes the proposed lift station improvements to ensure continued collection system operation:

- Replacement of the lift stations that scored the lowest on the condition assessment:
  - Elm Lift Station (LS-07)
  - North Shore West Lift Station (LS-11)
- Rehabilitation of valves and chambers at the other ten (10) lift stations built in 1977

WWTP

The following summarizes the proposed WWTP improvements to ensure continued wastewater treatment for the customers of the sewer district and environmental protection:

- Rehabilitation/replacement of the control structures and associated piping and valves
- Installation of mechanical influent screening
- Replacement of influent flow meter
- Replacement of the irrigation pump electrical gear
- Lagoon berm maintenance
- Improvements to the existing irrigation system including irrigation pump replacement, irrigation field rehabilitation, and irrigation distribution system replacement[4].

1. Compliance Status

The Crystal Sewer District WWTP operates under NPDES permit MI0057088 v3 which was updated (from v2) and re-issued in 2015 and has been extended past its 2018 expiration to provide the WWTP with continued coverage. The requirements in the previously held Groundwater Discharge Permit GW1810210 were rolled into the NPDES permit during the 2015 update to simplify regulatory compliance for the facility. A copy of the current NPDES permit is included in Appendix B.

2. Noncompliance, Exceedance and Orders

Recent issues with the WWTP, lift stations, and collection system are presented below.

WWTP

Discharge Monitoring Reports (DMRs) from Spring 2019 through Spring 2022 were reviewed as part of this evaluation. Overall, the treatment plant has performed well with very few exceedances. It was observed that the Total Inorganic Nitrogen (TIN) levels exceeded permit limits for the final effluent and in the groundwater monitoring wells on a few occasions. A majority of the final effluent exceedances occurred during the early spring before the ponds were not warm enough to complete the nitrification/denitrification process. Effluent monitoring well exceedances were reportedly caused by runoff from a neighboring farm spreading manure.

Crystal Township is not currently under a consent order.

Lift Stations

There have been no documented unauthorized discharges from lift stations.

[4] For the land treatment system to be able to function properly, the application of effluent must be evenly distributed across the site. Overloading or underloading, any portion of the system may result in malfunction and potentially lead to groundwater impacts.

Collection System

There have been no documented unauthorized discharges from collection system assets.

3. Water Quality Problems

There are no identified major point sources or non-point sources of pollution from on-site system, storm water runoff, industries, or agriculture within the service area. There is one open Part 213 Leaking Underground Storage Tank (LUST) documented in the service area and one Part 201 Site of Environmental Contamination. There are also three closed Part 213 LUSTs.

Total Maximum Daily Loads (TMDLs) impacting the service area are the statewide E. coli TMDL issued in 2019 and the statewide PCB TMDL issued in 2017.

4. Projected Needs for the Next 20 Years

The proposed rehabilitation projects are needed to address reliability concerns

5. Project Objectives

The Township anticipates funding of all or part the proposed improvements and rehabilitation efforts through the CWSRF program while using local funds and cash reserves for other collection system needs that were not documented in this plan. Collectively, the improvements support the following objectives:

- Provide reliable wastewater service to the customers.
- Rehabilitate/repair high priority areas of existing wastewater infrastructure with known deficiencies.
- Provide pumping facilities capable of consistent reliable service.
- Minimize financial burden to the sewer system users.
- Minimize environmental impact during construction of the improvements project.
- Minimize environmental impact of lift station operations.

6. Future Environment Without the Proposed Project

If the project is not completed, the condition of assets will continue to degrade, eventually leading to service interruptions and potential unauthorized discharges. Addressing these issues is also fundamental to reducing I/I in the wastewater collection system and avoiding future discharges that are not compliance with the WWTP permit.

III. Analysis of Alternatives

A. Identification and Evaluation of Potential Alternatives

Alternatives to accomplish needed improvements to the Township's wastewater collection system and lift stations were developed and evaluated based on their ability to meet the scope of the project while remaining within financial, regulatory, and technical constraints. Project objectives include:

- Provide reliable wastewater service to the customers.
- Rehabilitate/repair high priority areas of existing wastewater infrastructure with known deficiencies.
- Provide pumping and conveyance facilities capable of consistent reliable service.
- Minimize financial burden to the sewer system users.
- Minimize environmental impact during construction of the improvements project.
- Minimize environmental impact of lift station operations.

Three alternatives were developed for Crystal Township's wastewater collection, lift stations, and treatment systems improvements project.

1. No Action
2. Regional Alternative
3. Rehabilitate/Replace Critical Infrastructure

The alternatives are described in detail in the following report subsections. Each alternative was initially screened based on effectiveness, constructability, and financial requirements. Feasible alternatives were then subjected to a comprehensive evaluation with attention to detailed economic, technical, environmental, and public concerns.

Financial analysis of feasible alternatives followed a net present worth methodology. Capital costs, operations, maintenance and replacement costs, and salvage values were determined separately and discounted back to present value. The sum of these costs represents the net present worth of the project.

1. Alternative 1 – No Action

Alternative 1 includes continuing to operate the Township's existing wastewater collection and conveyance facilities with no improvements. This Alternative does not meet the project objectives, as aging and deficient infrastructure would not be addressed, resulting in the potential for future SSOs and service interruption. As such, the "No Action" Alternative is not a feasible alternative and not considered further. There is a cost associated with the "No Action" alternative, although it is difficult to quantify.

2. Alternative 2 – Regional Alternative

The Township is part of a generally low density development region. There is not enough concentrated development in neighboring areas to support a regional approach to wastewater collection and treatment. Regionalizing the Township's collection system / lift stations is not a feasible alternative and is not considered further (the closest wastewater facility is roughly 6 miles away).

3. Alternative 3 – Rehabilitate/Replace Critical Infrastructure

Alternative 3 was developed to address known manhole, lift station, and WWTP deficiencies. Significant improvements are required at critical locations in the collection system for reliable wastewater collection and conveyance without improvements.

Alternative 3 includes the following improvements[5]:

Collection System:

- Adjustment of manhole rims for access and reduced surface water runoff
- Lining of manholes for structural integrity and reduced I/I

Lift Stations:

- Replacement of the lift stations that scored the lowest on the condition assessment:
  - Elm Lift Station (LS-07)
  - North Shore West Lift Station (LS-11)
- Rehabilitation of valves and chambers at the other ten (10) lift stations built in 1977

WWTP:

- Rehabilitation/replacement of the control structures and associated piping and valves
- Installation of mechanical influent screening
- Replacement of main lift station flow meter
- Replacement of the irrigation pump electrical gear.
- Lagoon berm maintenance
- Improvements to the existing irrigation system including irrigation pump replacement, irrigation field rehabilitation, and irrigation distribution system replacement.

B. Analysis of Principal Alternatives

Only one feasible alternative was developed that met the project objectives. This alternative was analyzed further and is summarized in the following sections: Alternative 3 – Rehabilitate Critical Infrastructure

1. Environmental Impacts/Land Requirements

All proposed improvements will be completed on existing infrastructure within rights-of-way, utility easements, and pump station sites.

2. Potential Construction Issues

As much as possible, these projects and other projects identified to be in the area during the project time frame should be coordinated to avoid digging up the same section of roadway more than one.

[5] If appropriate, alternate rehabilitation methods will be considered during preliminary design and less expensive options may be utilized if appropriate. Additionally, the cost includes cleaning the asset in preparation for the rehabilitation action, where appropriate.

3. Sustainability Considerations

Motor efficiencies and the best duty points will be considered when selecting replacement pumps for the pump station improvements.

4. The Monetary Evaluation

The monetary evaluation includes a present worth analysis. This analysis does not identify the source of funds but compares cost uniformly for each alternative over the 20-year planning period. The present worth is the sum which, if invested now at a given interest rate, would provide the same funds required to pay projected costs within the planning period. The total present worth, used to compare the alternatives, is the sum of the initial capital cost, plus the present worth of Operation, Maintenance, and Replacement (OM&R) costs, minus the present worth of the salvage value of the facility at the end of the 20-year planning period.

The salvage value is calculated at the end of 20 years where portions of the project structures or equipment may have a salvage value, which is determined by using straight-line depreciation. In general, gravity sewer and forcemain have a useful life of 50-75 years, concrete structures and process piping have a useful book life of 30-50 years and mechanical and electrical equipment has a useful book life of 10-20 years.

The cost of labor, equipment and materials is not escalated over the 20-year life since it assumes any increase in these costs will apply equally to all alternatives. The interest charge during construction (capitalized interest) would not significantly influence the comparison of alternatives and was not included in the cost-effectiveness analysis.

To ensure uniformity of the cost comparisons, the following cost comparison details were specifically addressed and were applied in the present worth analysis as per the EGLE guidance.

- Capital costs were included for all identified improvements.
- Sunk costs were excluded from the present worth cost. Sunk costs for the project include existing land, existing waterworks facilities, and outstanding bond indebtedness.
- Operation, Maintenance, and Replacement, (OM&R) costs were not included in the present worth cost, as the Recommended Alternative is not expected to impact OM&R costs.
- The economic comparison is based on a 20-year planning period and a discount rate of 2.0%, per OMB Circular No. A-94 for Calendar Year 2023.
- Salvage values were included in the present worth cost.
- Energy costs escalation was assumed equal between the alternatives and therefore are not adjusted over the 20-year period.

The opinion of probable cost for Alternative 3, the only feasible alternative is $6.1 million. A detailed breakdown of project costs is included in Appendix D.

5. The Environmental Evaluation

The major environmental impacts were analyzed for the principal alternative. The principal alternative includes construction throughout the collection system and at existing pump station sites and the treatment plant to correct known issues. Mitigation measures will be designed and implemented as required for the construction phase of the project, including dust control and erosion control activities, and restoration. Because construction is limited to the existing infrastructure, no substantial indirect, direct, and cumulative impacts were identified.

6. Implementability and Public Participation

The draft Project Plan was placed on display for 15 days prior to the scheduled Public Meeting, which is scheduled for late April 2024.

A Public Meeting was held to discuss project alternatives in terms of effectiveness, constructability, project costs, anticipated user rates and environmental Impacts. The public notice was published on the Crystal Township website. Public input presented at the Public Meeting will be considered during the review of the principal alternatives. Minutes as well as a copy of the presentation slides from the Public Meeting will be included in Appendix F.

7. Technical and Other Considerations

Infiltration and Inflow Removal

Rehabilitation of manhole castings and lining of the internal structures will result in some reduction of I/I through these defects which will lower pumping wear and tear and energy costs (through reduce pumped volumes at the lift stations) and the overall volume of wastewater received at the WWTP (further lowering associated costs).

Growth Capacity

The Township has a generally stable population and is not expected to experience much, if any growth, over the 20-year planning period. The population has decreased marginally as of late. Being conservate, we can apply the recent overall County annual growth rate of 0.44% to the 2022 population estimate of 2,640 people to get an estimate of 2,900 persons at the year 2044 with the maximum seasonal service population of approximately 4,000. The existing wastewater infrastructure is adequately sized to handle this size service population.

Reliability

The purpose of the proposed rehabilitation projects is to increase wastewater collection and conveyance reliability.

Alternative Sites and Routings

There are no alternative sites or routings within the Principal Alternative. The sewer and lift station rehabilitation and replacement work will be carried out in portions of the existing sanitary sewers located within utility rights-of-way and existing easements.

IV. RECOMMENDED ALTERNATIVE

Based on the Analysis of Alternatives, it was determined that Alternative 3 – Rehabilitate Critical Infrastructure is the Recommended Alternative.

Additional discussion of the implementation of the Recommended Alternative is presented below.

A. Description of the Recommended Alternative

The objectives of the wastewater collection and treatment system improvements project are identified as:

- Provide reliable wastewater service to the customers.
- Rehabilitate/repair high priority areas of existing wastewater infrastructure with known deficiencies.
- Provide pumping facilities capable of consistent reliable service.
- Minimize financial burden to the sewer system users.
- Minimize environmental impact during construction of the improvements project.
- Minimize environmental impact of lift station operations.

Only one feasible alternative was developed. Additional discussion of Recommended Alternative No. 3 is presented below.

A. Description of Improvements

Alternative 3 was developed to address known manhole, lift station, and WWTP deficiencies. Significant improvements are required at critical locations in the collection system for reliable wastewater collection and conveyance.

Alternative 3 includes the following improvements[6]:

Collection System:

- Adjustment of manhole rims for access and reduced surface water runoff
- Lining of manholes for structural integrity and reduced I/I

Lift Stations:

- Elm Lift Station (LS-07) – REPLACEMENT
- North Shore West Lift Station (LS-11) – REPLACEMENT
- Rehabilitation of valves and chambers at the other ten (10) collection system lift stations

WWTP:

- Rehabilitation/replacement of the control structures and associated piping and valves
- Installation of mechanical influent screening
- Replacement of influent flow meter
- Replacement of the irrigation pump electrical gear

[6] If appropriate, alternate rehabilitation methods will be considered during preliminary design and less expensive options may be utilized if appropriate. Additionally, the cost includes cleaning the asset in preparation for the rehabilitation action, where appropriate.

- Lagoon berm maintenance
- Improvements to the existing irrigation system including irrigation pump replacement, irrigation field rehabilitation, and irrigation distribution system replacement.

8. Project Maps

A Project Location Map showing the location of recommended improvements is included in Appendix A, Figure A12.

9. Sensitive Features and Mitigation

It is not anticipated that the Recommended Alternative will have permanent negative impacts to sensitive areas (wetlands, floodplains, or habitat for endangered species). Proposed construction is limited to existing treatment and pumping facilities and existing sewer infrastructure is within rights-of-way and easement locations. All work will be performed in accordance with necessary permit requirements.

10. Estimated Schedule for Design and Construction

Table 5 presents the proposed project schedule, which follows the SRF FY2025 Q4 milestone schedule.

Table 5. Proposed Schedule for Design and Construction

Anticipated Date	Activity
May 2024	Submit Final CWSRF Project Plan to EGLE
October 2024	Proceed with Preparation, Preliminary Design, Survey
January 2025	Begin Detailed Design
May 2025	Finalize Design and Submit Permit Applications
August 2025	EGLE Approval of Plans & Specs
August 2025	SRF Loan Closing
October 2025	Begin Construction
November 2026	Complete Construction

11. Cost Summary

The estimated project cost is $6.1 million with a net present worth (NPW) of $5.8 million for the Recommended Alternative. Appendix D shows the breakdown of the project costs, as well as NPW calculations.

B. Authority to Implement the Recommended Alternative

Implementation of a selected alternative is the responsibility of Crystal Township. A public meeting will be held on April 29, 2024, at which time it is anticipated that the Board will select the alternative for implementation pending project funding.

C. User Costs

Crystal Township funds wastewater operations entirely through user fees. Revenue is generated based on a flat monthly sewer charge of $60 per quarter (equivalent to $20 per month) per residential equivalent unit (REU).

Table 6 compares the anticipated Monthly Sewer Bill for a typical residential customer before and after implementing the Recommended Alternative project.

Table 6. Comparison of Monthly Sewer Increase for a typical resident user

	FYE 2024 w/o Project	FYE 2024 With Project
Monthly Charge	$ 20.00	$ 49.00

Assumptions:

- *$6.1 million SRF Loan, 20 years at 2.0% interest.*
- *The Recommended Alternative increases the monthly sewer charge by $29.00 based on 1,066 REUs*
- *Rates estimated based on terms presented above. Final rate analysis will be performed by Financial Advisor during application process.*

The Recommended Alternative is anticipated to increase the monthly user cost for a typical resident by approximately $29.00over the anticipated FY2024 charges without the project. The Township will be working with a certified Municipal Financial Advisor to determine the best approach to phase in sewer rate increases. The increased cost stated in this Project Plan is an estimate and does not consider grant eligibility or other items which may impact the rate structure.

D. Overburdened Community

Part 53, of the NREPA, provides for several benefits to municipalities who meet the state's criteria for significantly overburdened community status. Those benefits include additional priority points, extended loan terms, and potential for principal forgiveness and/or grant funding.

Part 53, of the NREPA, provides for several benefits to municipalities who meet the state's criteria for disadvantaged community status. Those benefits include additional priority points and extended loan terms. The preliminary Overburdened Community Status calculation (Appendix E) indicates that Crystal Township does qualify as overburdened. EGLE will make the final determination.

E. Useful Life

Crystal Township intends to secure either a 20-year or 30-year SRF loan for the construction of the Recommended Alternative. The weighted useful life for the Alternative 3 has been calculated to be 31 years, which is greater than either loan period. The weighted useful life is the total of all calculated life values (each asset's dollar value times its estimated useful life) divided by the total estimate of all the project dollars spent on those assets. This analysis verifies that the components of the selected alternative will cost-effectively address collection and conveyance requirements for the term of the loan. It is not anticipated that all of the pump station equipment will last the entirety of the planning period. The Township will have to annually reserve funds to account for some equipment replacement.

V. ENVIRONMENTAL IMPACTS

A. Description of the Impacts

The potential environmental impacts of the Recommended Alternative are evaluated in this section of the project plan. The analyses of impacts are divided into direct, indirect, and cumulative impacts. Direct environmental impacts are those that are directly attributable to the construction and operation of the project. Indirect impacts are caused by the project but are removed in time and/or distance and are often considered secondary in nature. Cumulative impacts are those impacts that increase in magnitude over time, or result from individually minor, but collectively significant actions.

1. Beneficial and Adverse Impacts

A discussion of the full range of potential impacts (i.e., direct, indirect and cumulative) must identify the nature of the impacts in terms of both beneficial and adverse impacts. The following section will describe the positive and negative impacts resulting from the selected alternative with special emphasis on cultural or environmentally sensitive resources.

2. Short-Term and Long-Term Impacts

The analysis includes trade-offs between short-term uses and the maintenance enhancement of long-term productivity and vice versa.

3. Irreversible or Irretrievable Resources

The analysis of the environmental impacts also includes any irreversible commitments or use of irretrievable resources, such as the commitment of construction materials, energy, and land to the proposed project.

B. Analysis of the Impacts

1. Direct Impacts

Direct impacts are the environmental impacts directly attributive to the construction and operation of the project. The effects of the proposed project are considered for each of the following environmental factors:

Historic, Archaeological, Geological, Cultural or Recreational

There are no known issues with the proposed project sites. The proposed project will affect only existing utility rights-of-way, existing utility easements, and Township-owned pump station sites. No landscape changes are proposed, and the sites will be restored to pre-project conditions.

It is not anticipated that the proposed project will impact tribally important cultural or religious sites of the following Native American tribes associated with Montcalm County; Little River Band of Ottawa Indians, and Grand Traverse Band of Ottawa and Chippewa Indians, Little Traverse Bay Bands of Odawa Indians These tribes will be contacted by EGLE to review the proposed sites if deemed necessary.

The proposed alternative includes reconstruction of existing lift stations and updates to assets at the WWTP. Non-intrusive construction methods will be utilized if appropriate. Manhole rehabilitation is also planned; however, this will be performed in existing utility rights-of-way and easements. No long-term impacts to the natural setting of Project Area are anticipated.

Natural Setting and Sensitive Ecosystems

The proposed alternative includes rehabilitation of existing collection system sewer manholes. This will be performed in existing utility rights-of-way and easements. No long-term impacts to the natural setting of, or sensitive ecosystems in, Project Area are anticipated.

Existing and Future Quality of Surface Water and Groundwater

The primary goal of the project is to improve the reliability of the existing wastewater service. This protects surface water quality from discharges that may occur if wastewater collection system assets fail. The proposed project is not anticipated to cause negative changes to the quality of nearby surface or groundwaters. Appropriate controls will be maintained during construction to ensure continuity of service and the minimization of construction-related runoff to nearby waterbodies and conveyances.

Consumption of Materials, Land, Energy, Construction and Operation

Construction materials, public funds, energy, and manpower will be consumed to construct and operate the proposed improvements. No known shortages of these items exist, nor is it expected that a shortage of these items will result from implementing this project.

The chemicals used during the construction include: cleaning / etching agents for assets which will be discharged directly into the wastewater collection system of which it is a part; mortar / concrete which will set into the construction (with any excess being dried and landfilled appropriately); pipe-lining compounds which will set into the construction with excess being discharged directly into the wastewater collection system of which the asset is a part of; post-sandblasting waste will be vacuum-collected and landfilled; paint compounds will set into the coating and washing / unusable excess will be disposed of properly (according to the composition of the compound); fertilizers used after the seeding and mulching of disturbed areas from the construction operations.

Energy (both electrical and fossil fuels) will be used during the construction of the improvements.

Human, Social and Economic Impacts

There will be no dislocation of people during the construction. Work at various sections of the collection system will be coordinated with planned road reconstruction, where feasible, to minimize impacts to site / business access and traffic patterns / routing.

Employment of some residents by the contractor(s) is a possibility for certain construction operations.

Construction and Operational Impacts

A minor impact on local traffic may occur during the construction of the proposed wastewater collection system improvements. During construction, equipment will increase local noise and dust levels during operations. There will be a short-term adverse impact on air quality during the construction phase due to dust and construction equipment emissions generated during the excavation operations.

2. Indirect Impacts

Indirect impacts are those caused by the proposed project but removed in time and/or distance. Indirect impacts are often secondary in nature and are generally caused by residential and/or commercial development made possible by the project.

Examples of indirect impacts include undirected growth including additional traffic, over-extended public services, or heavy financial burden on existing and future residents for the cost of the utilities. It is not expected that the proposed project would cause any significant undirected growth that would result in changes to population density or types of developments found throughout the Township, including residential, commercial, and industrial areas.

Transportation and infrastructure are already in place within the service area, and the proposed wastewater system improvements will only serve to enhance the existing infrastructure.

The proposed project will not result in any changes in anticipated land use.

There are no anticipated indirect impacts due to changes to the natural setting or sensitive ecosystems or jeopardy to any endangered species resulting from potential secondary growth.

There are no anticipated changes in air or water quality stemming from any primary or potential secondary development resulting from the improvements.

Improvements that reduce I/I and improve lift station operations should result in minor long-term reductions in electricity consumption due to reduced pumping and more efficient operations.

No additional generation of wastes is anticipated as a result of the proposed project.

3. Cumulative Impacts

There are no anticipated cumulative impacts that would increase in magnitude over time or result from individually minor, but collectively significant actions of the project. There is no anticipated new infrastructure proposed in conjunction with the proposed wastewater system improvements.

VI. MITIGATION

A. General

Structural and non-structural measures which avoid, eliminate, or mitigate adverse impacts on the environment need to be identified in the project plan. The cost of mitigation was considered during the financial analysis and is included in the unit costs and lump sum prices developed during the capital cost evaluation for the principal alternatives.

The structural measures involve the specific design and construction of the improvements while the non-structural measures involve regulatory, institutional, governmental, or private plans, policies, or regulations of the Township. Mitigation of short-term, long-term, and indirect impacts must be considered in the project plan.

B. Short-Term Construction-Related Mitigation

1. Traffic and Safety Hazard Control

Traffic control and maintaining access to homes and businesses will be the responsibility of the Contractor. However, access to all homes and businesses will be maintained and emergency vehicle access will be ensured throughout construction. Residents will be notified when construction work is scheduled in their area. Traffic detour signs and flag control will be incorporated to provide non-local traffic with the information they need to navigate the construction site and to travel safely.

Construction site safety is the responsibility of the Contractor. The Contractor will be required to have only trained persons performing all phases of the work. The Contractor will also be required to comply with the Occupational Safety & Health Act (OSHA), including using back up alarms on all equipment, having employees trained in hazard control, and maintaining materials safety data sheets (MSDS) for materials that may be used or handled by construction personnel.

2. Dust Control

Construction activities will result in increased dust in the vicinity of the construction sites during the length of the proposed construction. Mitigation measures to minimize the negative effect of dust on residents and construction workers will be defined in the project specifications. It is anticipated that dust control will be provided by the application of water and/or dust palliative during dry and dusty periods. The Contractor will be required to control dust in accordance with methods described in the project specifications.

3. Noise Control

Noise levels will increase temporarily during construction of the proposed project. Construction activities will only be allowed during the hours approved by the Township and would be subject to all local noise control ordinances. Construction workers and site visitors may be required to wear earplugs to minimize the effects of long-term noise during the construction operations.

4. Soil Erosion/Sedimentation Control

The Contractor will be required to obtain a soil erosion and sedimentation control permit from the local agency prior to the start of the work.

It is anticipated that mitigation measures that may be utilized will include silt fence, straw bales, rip rap, geotextile fabric, and other such methods, as appropriate.

5. Restoration of Disturbed Areas

As previously stated, the project specifications will require the Contractor to provide and maintain access at all times to homes and businesses. Traffic control, including signage and personnel, must be provided. Restoration of disturbed areas will be defined in the specifications. Restoring disturbed lawn areas, roadways, existing utilities, etc. will be completed in a timely fashion and in accordance with the project specifications.

6. Service Disruption

Potential minor service disruptions are anticipated during construction. Bypass pumping may be required on a temporary basis during improvements.

C. Mitigation of Long-Term Impacts

1. General Construction

Mitigation measures would be developed to ensure that sensitive environments do not suffer permanent damage. Every effort will be made to avoid potential long-term or irreversible adverse impacts during the construction of the wastewater system improvements.

The construction work will incorporate best management practices for installing pipelines or disturbing the earth. Wetland, floodplain, and inland stream mitigation would be handled through the permit process. If impacts cannot be avoided, mitigation measures will be used. The design and project specifications will include the proper use of physical measures to reduce soil erosion to a manageable level and any disturbed slope areas will be immediately seeded, mulched and/or sodded to prevent soil erosion and/or sedimentation.

2. Site and Routing Decisions

All treatment plant and pump/lift station construction activities proposed in the recommended alternative are located within the existing Township-owned WWTP and//or pump/lift station sites. Other collection system rehabilitation work is expected to be contained within existing utility right-of-way and easement areas. Where traffic must be re-routed for construction, the Township will work closely with the Montcalm County Road Commission and Michigan Department of Transportation (MDOT) to develop detours.

3. Operational Impacts

No operational impacts have been identified.

D. Mitigation of Indirect Impacts

1. Master Plan and Zoning

Despite having no overarching zoning by the Township or County, the area has been relatively stable with respect to development and population growth. As such, unrestricted growth is not anticipated with or without the proposed project.

VII. PUBLIC PARTICIPATION

A. Public Meetings on Project Alternatives

A Public Hearing for the CWSRF Project Plan will be held on April 29, 2024 to discuss the need for the project, principal alternatives, environmental impacts, description of the Recommended Alternative and associated cost estimates and user charge, and schedule of the proposed project. A copy of the public notice, public comments, presentation and resolution will be included in Appendix F.

B. Public Meeting

A public meeting on project alternatives and user costs will be held on April 29, 2024 at the Crystal Township Hall.

1. Public Meeting Advertisement

The public meeting will be / was advertised in a local newspaper (*The Daily News*) for the Montcalm Country area. A copy of the public hearing notice will be / is included in Appendix F.

Copies of the Draft Project Plan detailing the proposed project were available for inspection at the Crystal Township Hall and on the Township's website as stated in the public hearing notice.

2. Public Meeting Minutes

Meeting minutes from the public meeting will be included in Appendix F of the Final Project Plan.

3. Public Hearing Contents

The following items will be / were discussed at the public hearing:

- Project background.
- A description of the wastewater treatment needs and problem areas.
- A description of the principal alternatives considered.
- A breakdown of capital costs and OM&R costs for each of the principal alternatives.
- Proposed method of financing.
- Comparison of environmental impacts for the principal alternatives.
- Recommended Alternative.
- Proposed monthly user costs for the implementation of the Recommended Alternative for the average residential customer.

4. Comments Received and Answered

Any comments from the public received before, or during the Public Meeting will be addressed as a part of the Question and Answer portion of the presentation.

5. Adoption of the Project Plan

The official period for receiving comments will end at the close of the public meeting. After the close of the public comment period, the Recommended Alternative is expected to be selected for implementation by the Crystal Township Board. A copy of the Township's resolution to adopt the Project Plan and to implement the selected alternative will be included in Appendix F.

APPENDIX A – MAPS AND FIGURES

FIGURE A1. LOCATION OF MONTCALM COUNTY

Map Layers

- Crystal Township Boundary
- County Boundary
- Waterbodies
- Roads

Crystal Lake

Duck Lake

Carson City

Klees
Saint Charles
Kimball
West County Line
Lumberjack
Waldron
Crystal
Blackmer
Douglass
Stanton
Washington
Spencer
Topper
Old Camp
Pakes
Fillmore
Rashelle
Pine Grove
Senator
Lake Senator
Swan Lake BAS
Eldred
Fairview
Kay Jean
Richard Gary
Crystal Lake N BAS
Canal
Hill
Peterman
Shore
Spinnaker
Norwest
Tack
Clinton
Sunset
Spring
Oak
Wiser
Miner
Gregory
Paula Rae
Bonnie Lou
Merle
Michelle
Karen
Colonel Point
Shephard
Lakewood
Beach
Waterview
Duck Lake BAS
Duckland
Humphrey
Colby
Sandra Lou
Pierce
Smith
Lake
Park
Lincoln
Mill
Pine
Myers
Clinton
Division
Lakeview
Pearl
Belding
Main
Steffey
Mildred
Katheryn
Strait Tow
Cove
Caroline
Allen
Shore
Owosso
Portland
Stanton
Alma
Ithaca
Lansing
Old Quarterline
Sidney
Roggy
Frost
Add
Mount Hope
Nickerson
Buchanan
Woods
Bennett
Holland Lake
Bollinger
Johnson
Sloan
Kickland
Muskrat
Hayes
Beardsley
Patmos
Nelson
Easy
Condensery
Grant
Sessions
Garfield
Butternut
Blue Water
Garlock
Williams
Olive
Grove
Linden
Mercantile
Division
Pine
Carson
Sherman
Main
Elm
Maple
Walnut
Abbott
Miner
West
Elizabeth
City Park
Bloomer
Bussell
3rd
4th
5th
6th
7th
1st
2nd
4th
Montcalm
Mount Hope
Eagle
Cleveland

FIGURE	A2
NORTH	0 1,500 3,000 SCALE IN FEET
DRAWN BY	KJP
DATE	3/21/2024
PROJECT NO.	861970
SCALE	1:40,000
FILE LOCATION	
SOURCES	

Crystal Township

Township Overview

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
- Force Main
- Gravity Sewer
- Service Area
- WWTP

Wastewater Collection and Treatment System

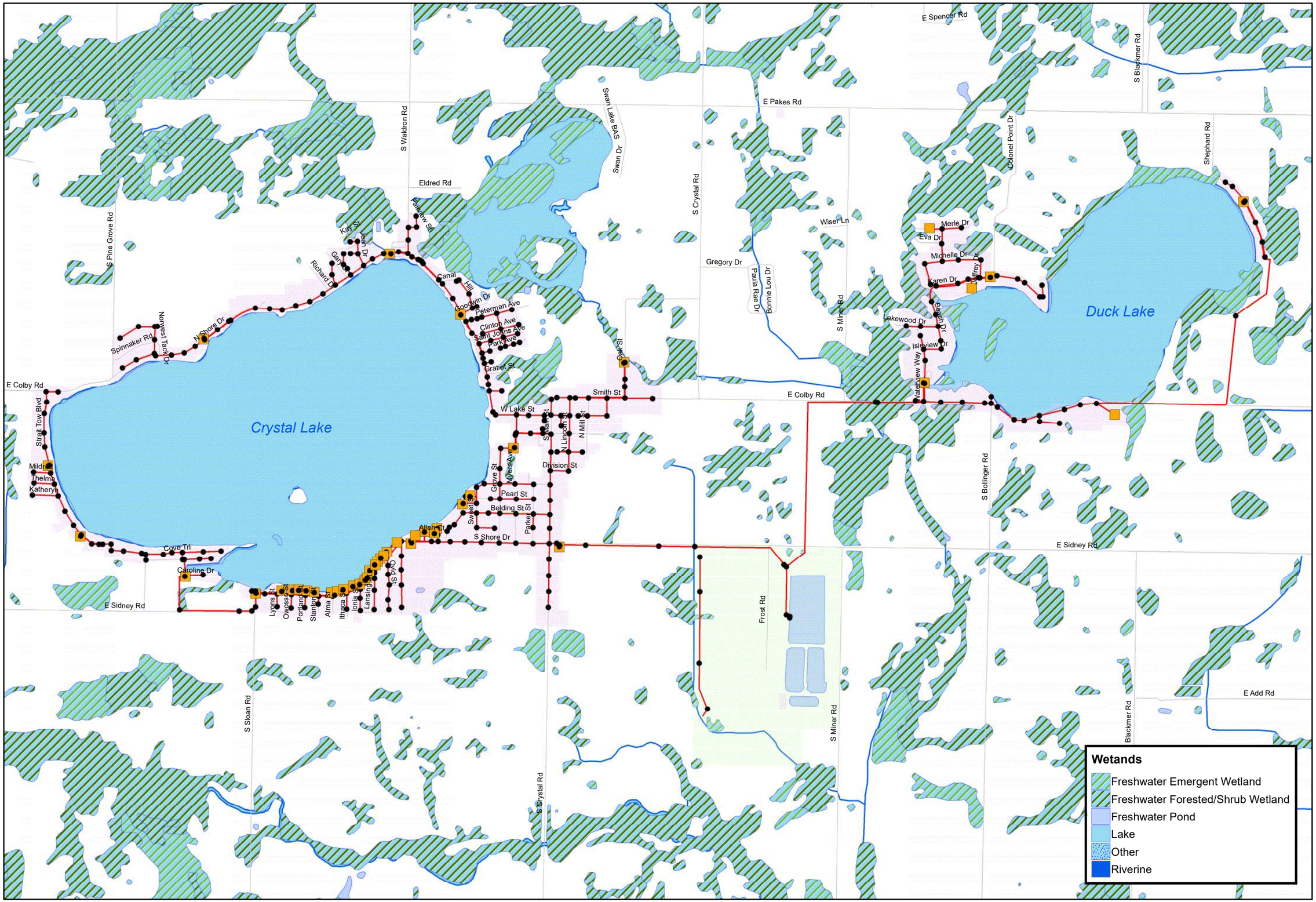
Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	3/25/2024
PROJECT NO.	SCALE
861970	1:19,000
FILE LOCATION	
--	
SOURCES	
--	

N

0 500 1,000
SCALE IN FEET

PAGE
A3



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Wetlands and Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	3/26/2024
PROJECT NO.	SCALE
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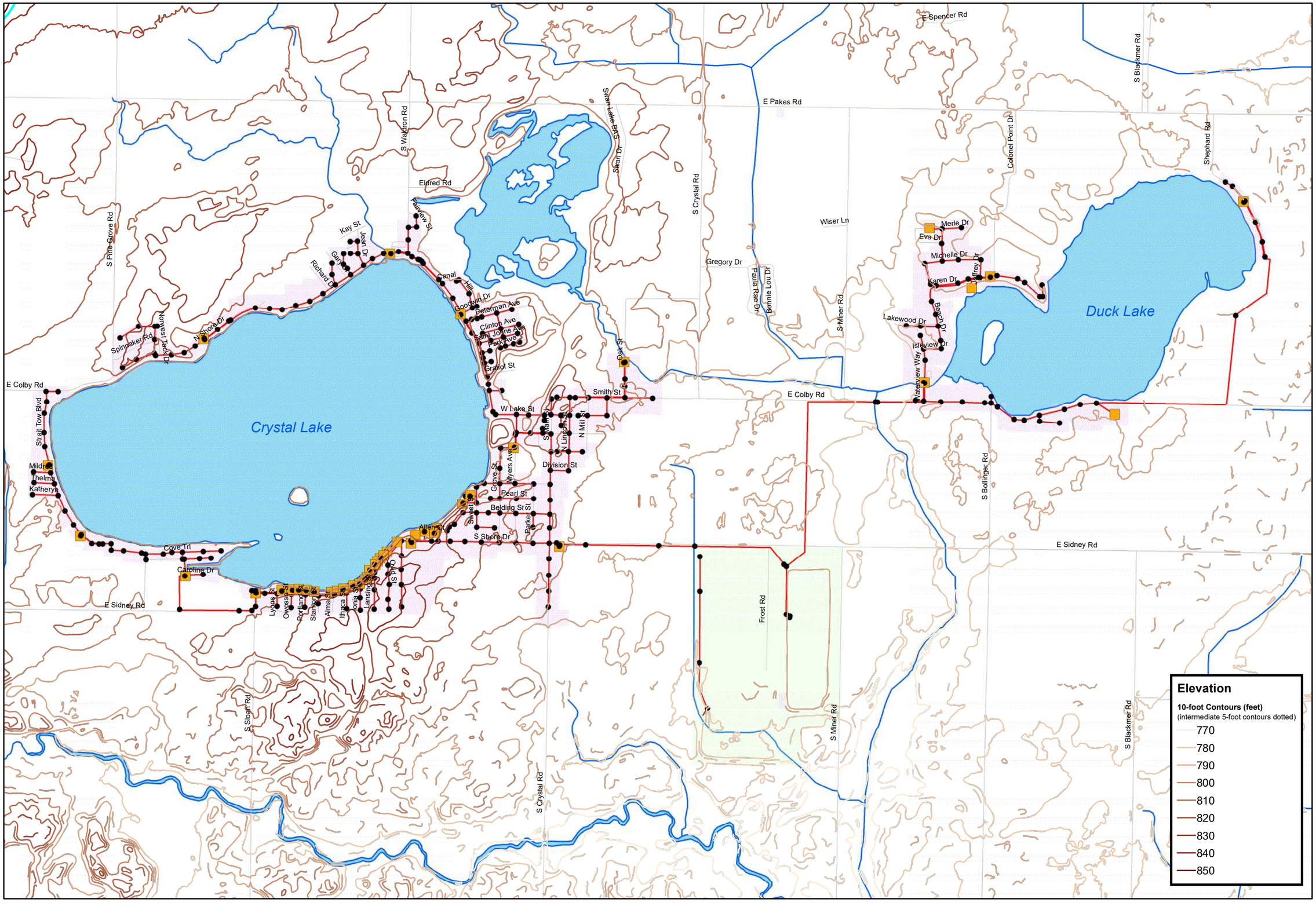

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Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
- Force Main
- Gravity Sewer
- Service Area
- WWTP

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Surface Elevation and Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
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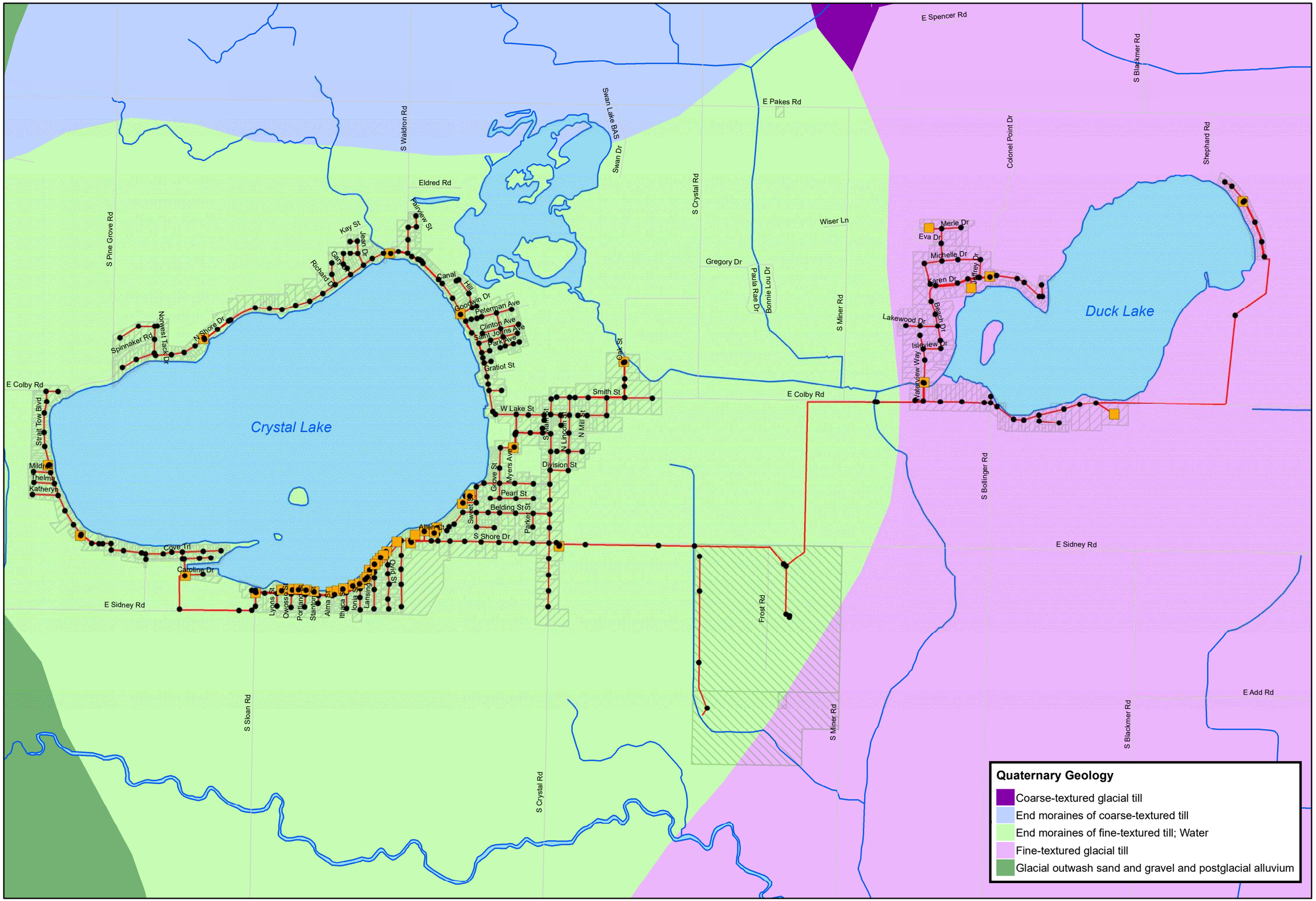

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DESIGN. BUILD. OPERATE.

Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
- Force Main
- Gravity Sewer
- Service Area
- WWTP

Quaternary Geology and Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	3/29/2024
PROJECT NO.	SCALE
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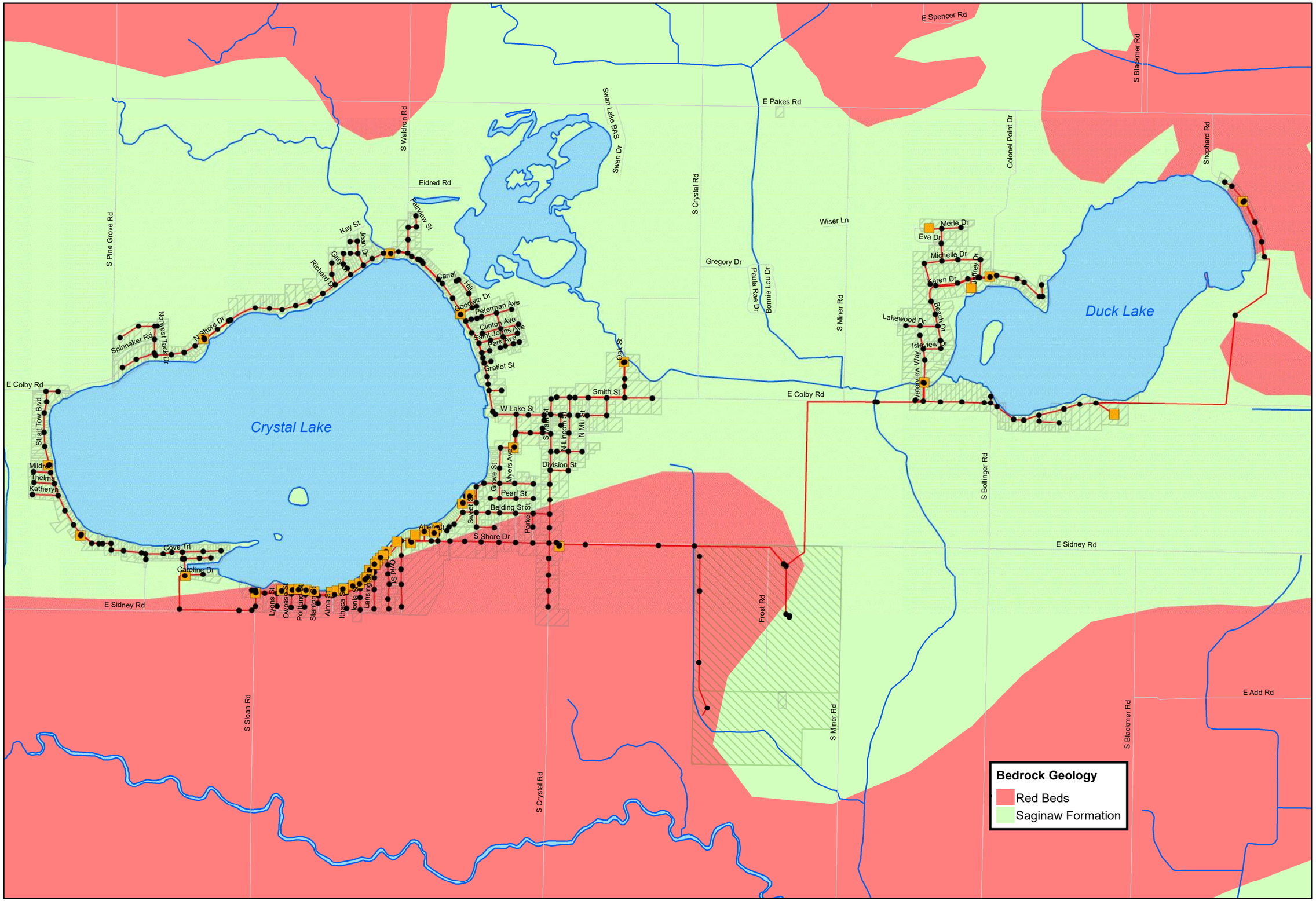

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DESIGN. BUILD. OPERATE.

Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
- Force Main
- Gravity Sewer
- Service Area
- WWTP

Bedrock Geology and Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	4/1/2024
PROJECT NO.	SCALE
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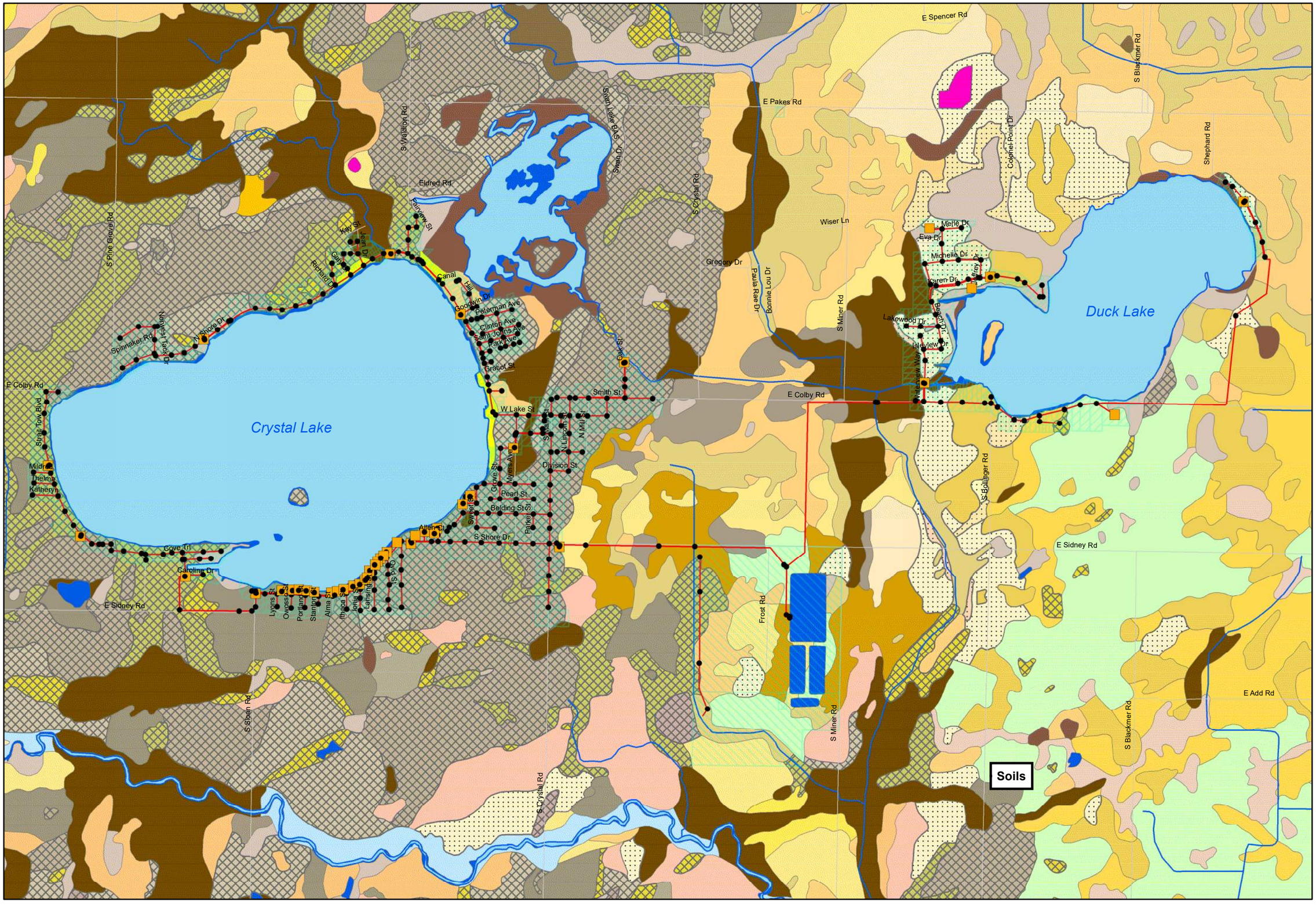

FLEIS&VANDENBRINK
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Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
- Force Main
- Gravity Sewer
- Service Area
- WWTP

Soils and Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	4/1/2024
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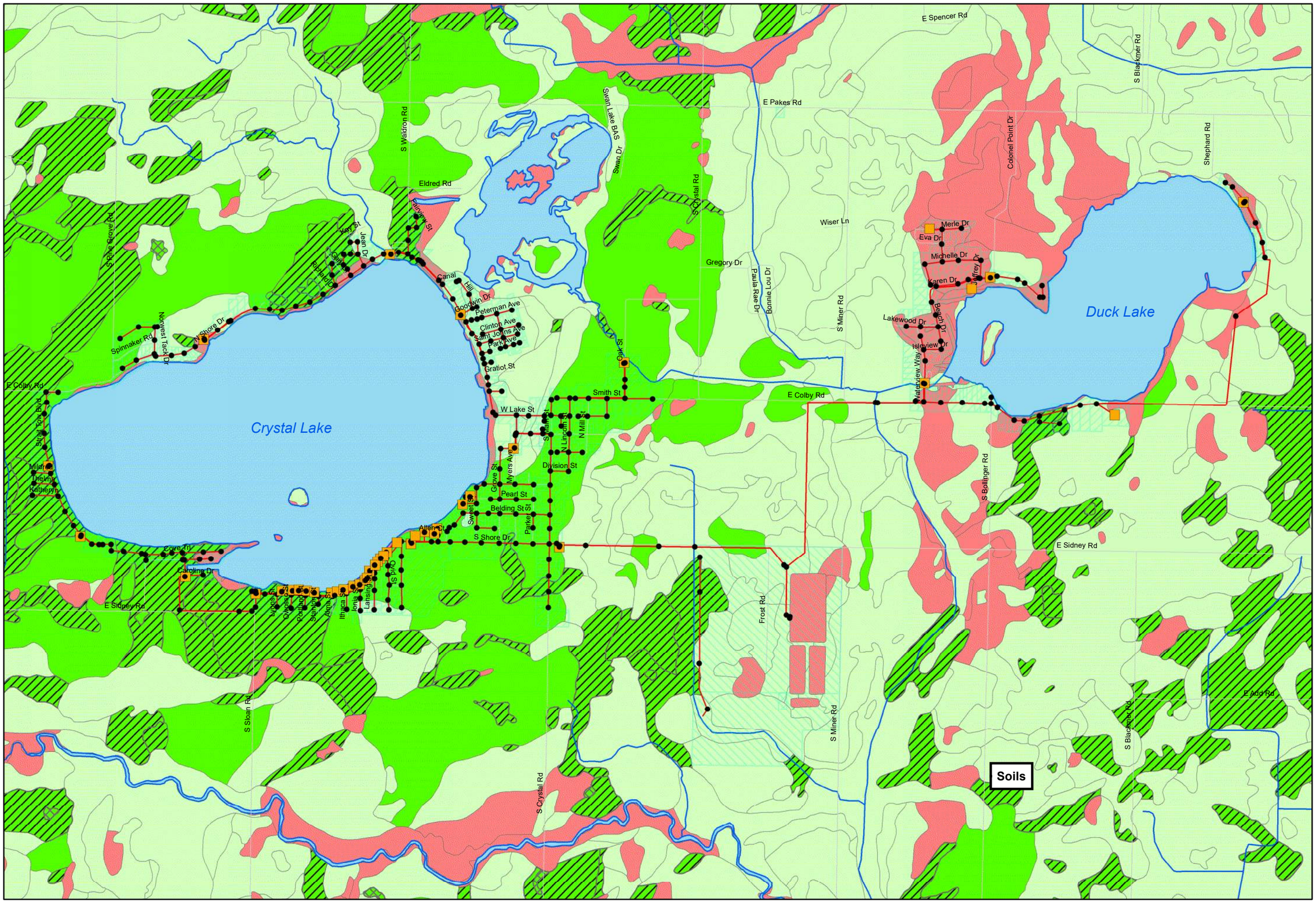

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DESIGN. BUILD. OPERATE.

Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
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- Gravity Sewer
- Service Area
- WWTP

Farmland Classification and Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	4/2/2024
PROJECT NO.	SCALE
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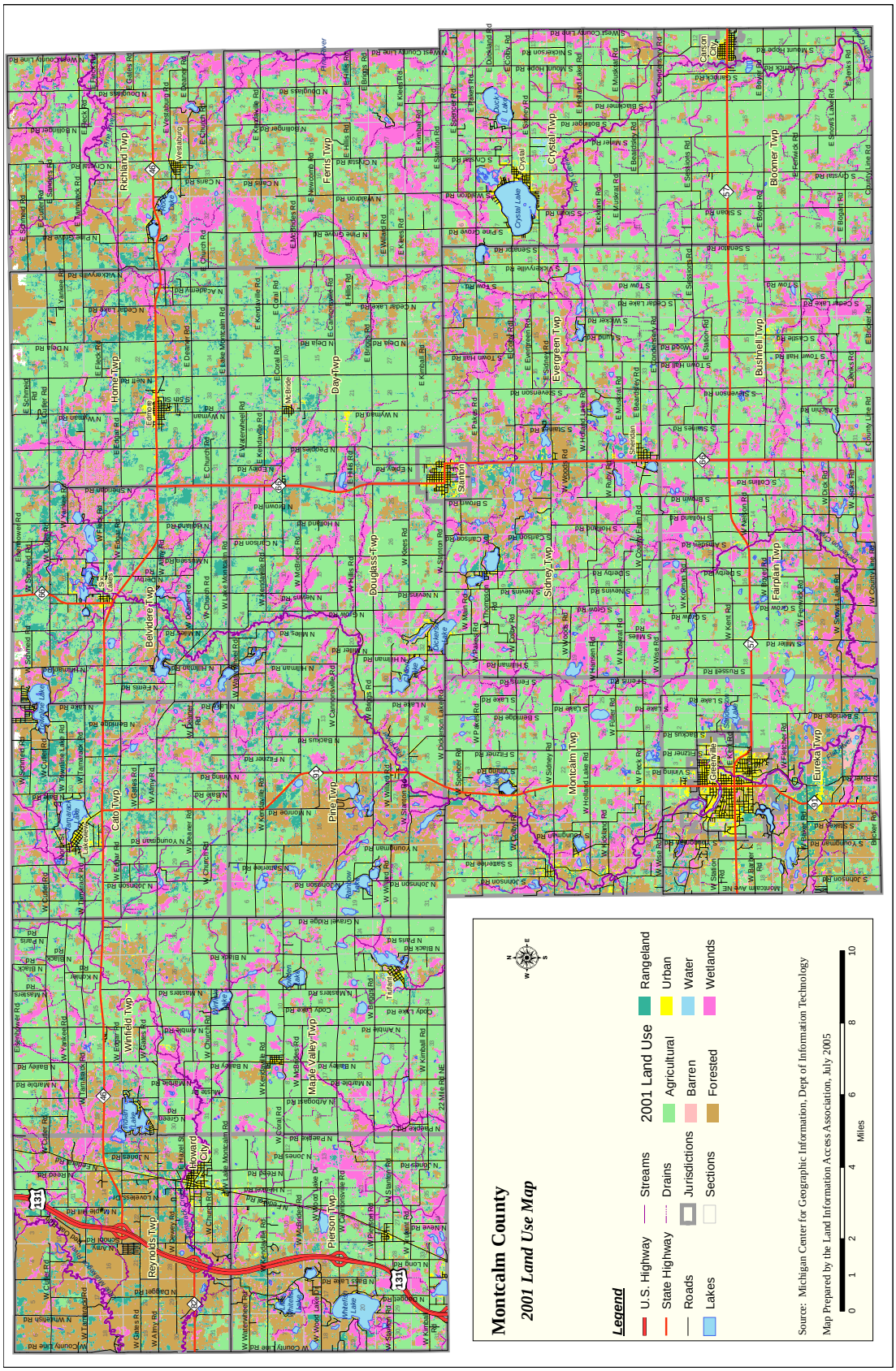
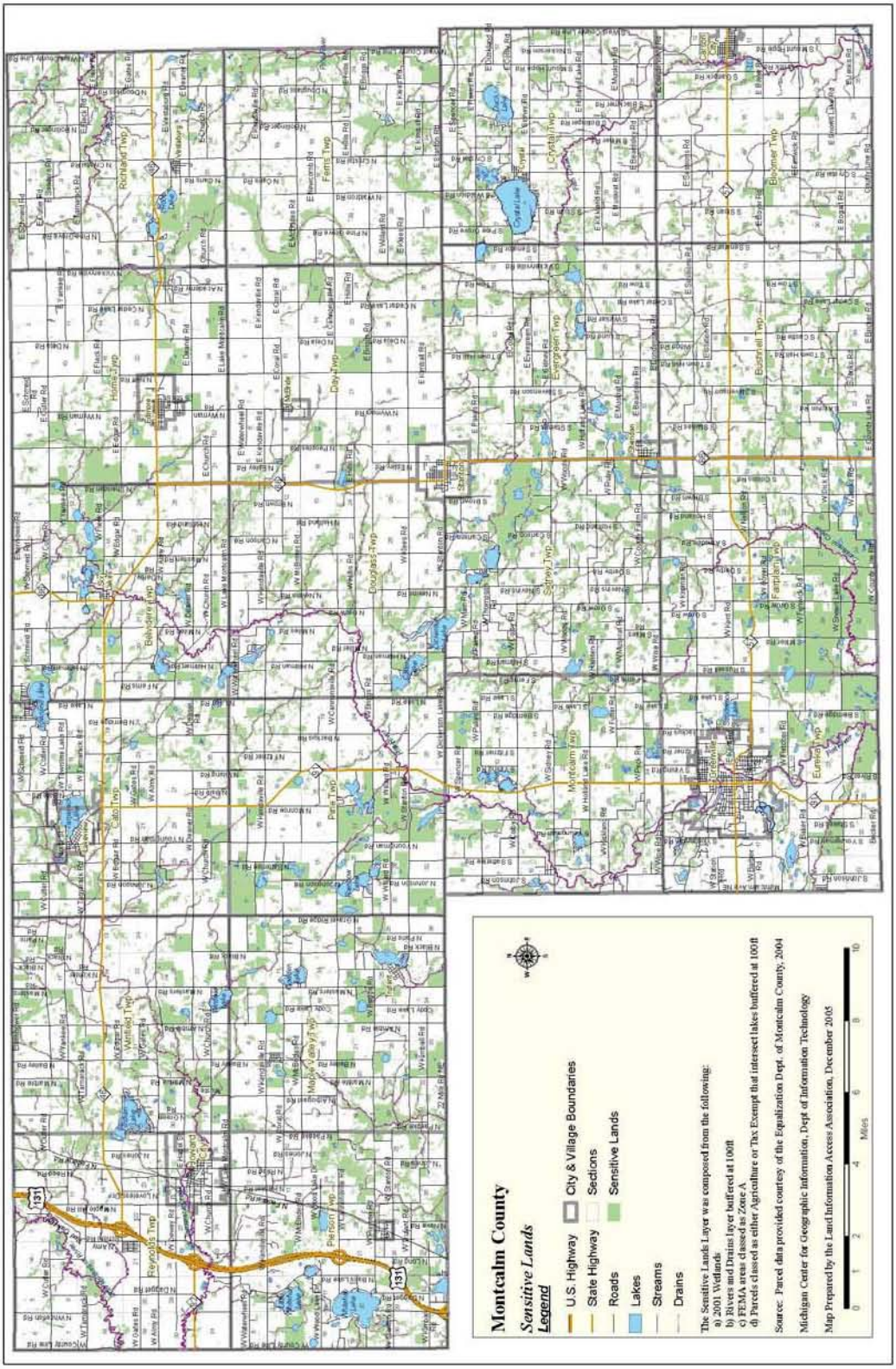
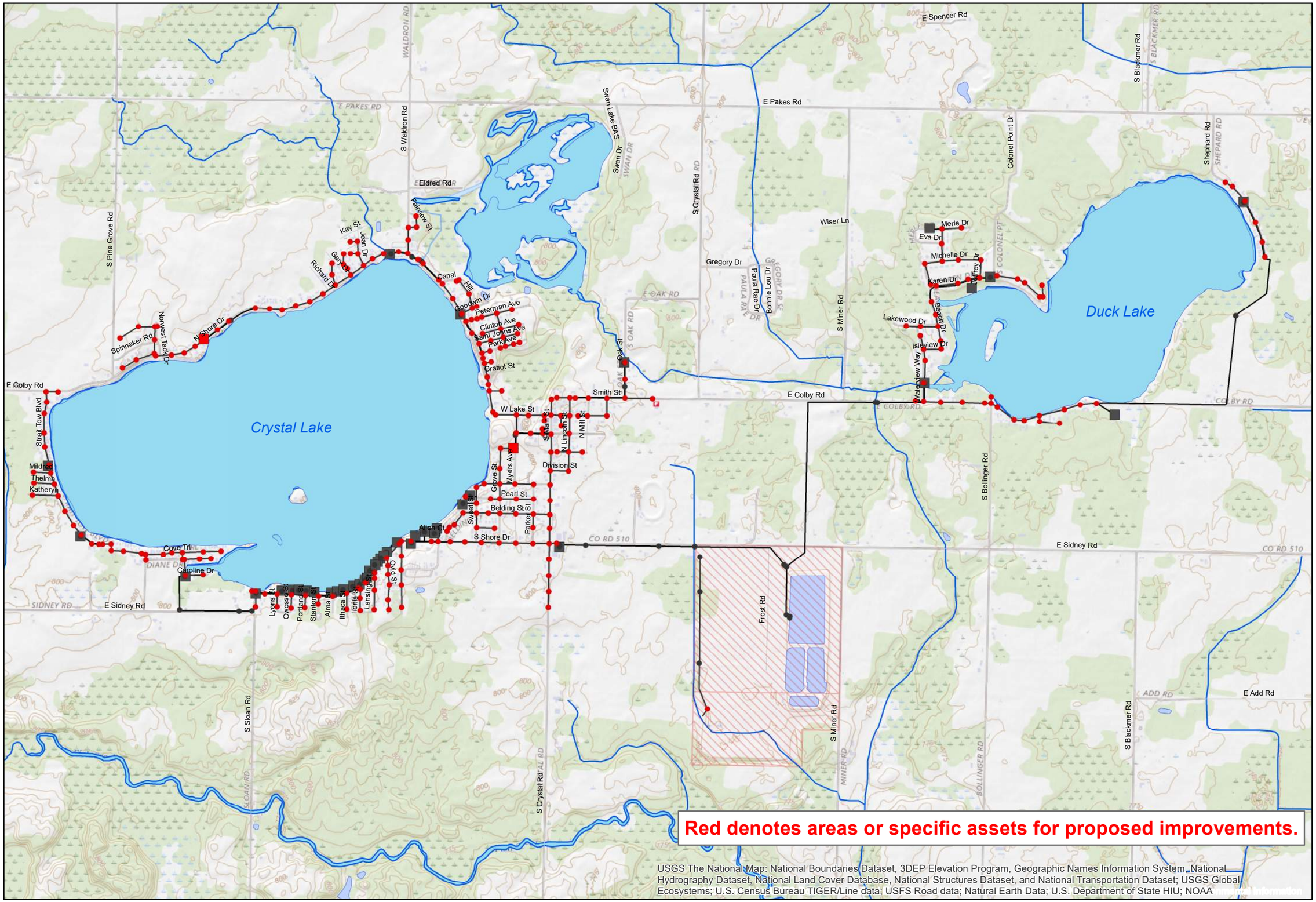
Map 5-2
Existing Land Use/Land Cover



Map 5-4
Montcalm County Sensitive Lands





FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes / Other
- Force Main
- Gravity Sewer
- WWTP

Proposed Improvements to Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	4/5/2024
PROJECT NO.	SCALE
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APPENDIX B – NPDES PERMIT

PERMIT NO. MI0057088

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1251 *et seq*., as amended; the "Federal Act"); Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2011-1,

Montcalm County Drain Commissioner
211 West Main Street
PO Box 368
Stanton, Michigan 48888

is authorized to discharge from the **Montcalm County-Crystal Lake Wastewater Treatment Plant** located at

3042 Miner Road
Crystal, Michigan 48818

designated as **Montcalm CDC-Crystal Lk WWTP**

to the receiving water named Smith Drain and to the groundwater of the State of Michigan in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on July 3, 2013.

This permit takes effect on March 1, 2015. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date this permit shall supersede NPDES Permit No. MI0057088, expiring October 1, 2013 and Groundwater Permit No. GW1810210, expiring May 1, 2014.

This permit and the authorization to discharge shall expire at midnight, **October 1, 2018**. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application which contains such information, forms, and fees as are required by the Department of Environmental Quality (Department) by **April 4, 2018**.

Issued: February 23, 2015

Original Permit Signed by Philip Argiroff
Philip Argiroff, Chief
Permits Section
Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by January 15 for notices mailed by December 1. The fee is due no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Minor, less than 1 MGD (Individual Permit)

In accordance with Section 324.3132 of the NREPA, the permittee shall make payment of an annual biosolids land application fee to the Department if the permittee land applies biosolids. In response to the Department's annual notice, the permittee shall submit the fee, which shall be postmarked no later than January 31 of each year.

In accordance with Section 324.3122 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each December 15th the permit is in effect regardless of occurrence of the discharge of wastewater to the groundwaters of the state. The permittee shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by March 1st for notices mailed by January 15th. The fee is due no later than 45 days after receiving the notice for notices mailed after January 15th.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Grand Rapids District Supervisor of the Water Resources Division. The Grand Rapids District Office is located at State Office Building, Fifth Floor, 350 Ottawa N.W., Unit 10, Grand Rapids, Michigan 49503-2341, Telephone: 616-356-0500, Fax: 616-356-0202.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environmental Quality, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

Section A. Limitations and Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 001A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge treated sanitary wastewater from Monitoring Point 001A through Outfall 001. Outfall 001 discharges to the Smith Drain. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	---	4	---	---	mg/l	Weekly	Grab
Total Suspended Solids	---	---	---	---	10	---	---	mg/l	Weekly	Grab
Ammonia Nitrogen (as N)										
May 1 – May 31	---	---	---	---	4	---	---	mg/l	Weekly	Grab
Jun. 1 – Sep. 30	---	---	---	---	0.5	---	---	mg/l	Weekly	Grab
Oct. 1 – Oct. 31	---	---	---	---	2	---	---	mg/l	Weekly	Grab
Total Phosphorus (as P)	---	---	---	---	0.5	---	---	mg/l	Weekly	Grab
Fecal Coliform Bacteria	---	---	---	---	200	400	---	cts/100 ml	Weekly	Grab
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.5	---	9.0	S.U.	Weekly	Grab
Dissolved Oxygen	---	---	---	---	4.0	----	----	mg/l	Weekly	Grab

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity itself: 75 MGY.

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling
All samples shall be taken of the final effluent following subsurface filtration. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative of the final effluent. All parameters listed in Part I.A.1. shall be measured during the authorized land application period.

PART I

Section A. Limitations and Monitoring Requirements

c. Irrigation Periods
There shall be no wastewater application to the irrigation fields from November 1 through April 30 unless authorized by the Department.

d. Discharges Outside of Acceptable Discharge Periods
For discharges outside the acceptable discharge periods, the permittee shall notify the Department of the potential noncompliance prior to discharge, in accordance with Part 1.A.5. of this permit.

2. Facility Operation and Maintenance

The permittee shall comply with the inspection, operation and maintenance program requirements specified below. An alternate facility operations program may be approved by the Department.

a. Lagoon Inspection
The permittee shall inspect the lagoon facilities three (3) times weekly year-round unless otherwise authorized by the Department. These inspections shall include:

1) the lagoon dikes for vegetative growth, erosion, slumping, animal burrowing or breakthrough, and condition of lagoon liner;

2) the lagoon for growth of aquatic plants, offensive odors, insect infestations, scum, floating sludge, and septic conditions;

3) the depth of the water in each cell and the freeboard;

4) the control structures and pump stations to ensure that valves, gates and alarms are set correctly and properly functioning;

5) the lagoon security fence and warning signs; and

6) analysis for Dissolved Oxygen in each lagoon cell at least one (1) time weekly, except when the lagoons are ice-covered. The data shall be kept as retained self-monitoring. See Part II.C.3.

The permittee shall initiate steps to correct any condition that is not in accordance with the facility maintenance program outlined in Part I.A.2.b. of this permit. A record of the inspections shall be maintained by the permittee for a period of three (3) years.

PART I

Section A. Limitations and Monitoring Requirements

b. Facility Maintenance
The permittee shall implement a Facility Maintenance Program that incorporates the following management practices unless otherwise authorized by the Department.

1) Vegetation shall be maintained at a height not more than six (6) inches above the ground on lagoon dikes and around the fencing.

2) At all times, the facility shall be maintained to prevent the negative effects of floating material and/or water perimeter emergent rooted aquatic plants on Dissolved Oxygen concentrations, treatment efficiency, nuisance organisms, offensive odors, or other measurable impacts. However, in no case, even without demonstrated impact, shall the floating material and/or water perimeter emergent rooted aquatic plants exceed 40 percent cover.

3) Dike damage due to erosion or animal burrowing shall be corrected immediately and steps taken to prevent occurrences in the future.

4) The integrity of the lagoon liner shall be protected. Liner damages shall be corrected immediately and steps taken to prevent future occurrences.

5) The occurrence of scum, floating sludge, offensive odors, insect infestations, and septic conditions shall be minimized.

6) A schedule for the inspection and maintenance of the collection system, lift stations, mechanical and electrical systems, transfer stations, and control structures shall be developed and implemented.

c. Lagoon Drawdown Conditions
The permittee shall observe the following conditions when drawing down a cell for transfer or discharge unless otherwise authorized by the Department.

1) Water discharged shall be removed from the surface two (2) feet of the cell at a rate of less than one (1) foot per day.

2) The permittee shall maintain a minimum of two (2) feet of freeboard in all cells at all times.

3) The permittee shall maintain a minimum of two (2) feet of water in all cells at all times.

3. Groundwater Monitoring for Lagoon Exfiltration/Leakage

If it is determined that the permittee needs to conduct an exfiltration/leakage test on the wastewater stabilization lagoon, the permittee may be required to install groundwater monitoring wells and conduct groundwater monitoring. The intent of such monitoring, if required, will be to demonstrate that the lagoons have not impacted, and are not likely to impact surface waters, in accordance with the Part 4, Water Quality Standards (Part 4 Rules), promulgated under Part 31, Water Resources Protection, of the NREPA, or groundwater above the standard described in R 323.2222 of Part 22, Groundwater Quality Administrative Rules (Part 22 Rules), promulgated pursuant to Part 31. Information that may be considered by the Department in making this determination include, but is not limited to: the date when the lagoon was constructed; construction design methods and materials, including whether liner specifications meet R 323.2237 of the Part 22 Rules or providing equivalency as allowed in R 323.2237; and indications of whether there is a direct vent to surface waters and if such vent complies with surface water quality standards.

If the Department determines the permittee needs to conduct groundwater monitoring to verify and assure that leakage from the lagoons to the groundwaters and/or surface waters of the state is not causing unacceptable impacts, the following conditions shall apply:

PART I

Section A. Limitations and Monitoring Requirements

a. The permittee shall install groundwater monitoring wells around the perimeter of the lagoons to document both groundwater water quality impacts and groundwater flow. A plan for the monitoring wells shall be submitted to the Department for approval within 90 days of notification by the Department. Within 90 days of approval of the plan, unless the Department approves an extended period (not to exceed 180 days), the groundwater monitoring wells shall be installed.

b. The permittee shall submit a groundwater monitoring plan to the Department for approval within 90 days notification by the Department. This groundwater monitoring plan may be submitted as part of the monitoring well work plan. The monitoring plan shall include monitoring of the groundwater elevation and the following parameters: total phosphorus, dissolved phosphorus, total inorganic nitrogen, sodium, chloride, pH, and specific conductance. Monitoring shall be conducted quarterly until the permittee is notified by the Department that the monitoring can end or be reduced.

c. The permittee shall begin implementation of the monitoring plan within 90 days of approval of the monitoring plan, or upon installation of the monitoring well, whichever occurs last. The result of the monitoring shall be submitted to the Department quarterly.

d. Upon written notification by the Department that unacceptable leakage is impacting surface waters and/or groundwater, the permittee shall develop a work plan to address the leakage. Within 6 months of such notification, the permittee shall submit an approvable lagoon leakage remediation work plan to the Department. The purpose of the work plan is to control exfiltration from the lagoon treatment system. The study shall include remediation methods, procedures, time schedules, and staff, as appropriate.

e. The permittee shall begin implementation of the lagoon leakage remediation work plan within 30 days of approval of the work plan.

f. The permittee shall complete implementation of the lagoon leakage remediation work plan and submit an approvable final report with supporting data to the Department on or before within one year of approval of the work plan. The final report shall include a plan and schedule for continued maintenance and monitoring of the lagoon treatment system.

4. Request for Discharge of Water Treatment Additives

In the event a permittee proposes to discharge water additives, the permittee shall submit a request to discharge water additives to the Department for approval. Such requests shall be sent to the Permits Section, Water Resources Division, Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan 48909, with a copy to the Department contact listed on the cover page of this permit. Instructions to submit a request electronically may be obtained via the Internet (http://www.michigan.gov/deqnpdes; then click on Applicable Rules and Regulations which is under the Information banner and then click on Water Treatment Additive Discharge Application Instructions). Written approval from the Department to discharge such additives at specified levels shall be obtained prior to discharge by the permittee. Additional monitoring and reporting may be required as a condition for the approval to discharge the additive.

A request to discharge water additives shall include all of the following water additive usage and discharge information:

a. Safety Data Sheet (formerly known as Material Safety Data Sheet);

b. the proposed water additive discharge concentration with supporting calculations;

c. the discharge frequency (i.e., number of hours per day and number of days per year);

d. the monitoring point from which the product is to be discharged;

e. the type of removal treatment, if any, that the water additive receives prior to discharge;

PART I

Section A. Limitations and Monitoring Requirements

f. product function (i.e. microbiocide, flocculant, etc.);

g. a 48-hour LC_{50} or EC_{50} for a North American freshwater planktonic crustacean (either *Ceriodaphnia sp., Daphnia sp., or Simocephalus sp*.); and

h. the results of a toxicity test for one (1) other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of R 323.1057(2) of the Water Quality Standards.

Prior to submitting the request, the permittee may contact the Permits Section by telephone at 517-284-5568 or via the Internet at the address given above to determine if the Department has the product toxicity data required by items g. and h. above. If the Department has the data, the permittee will not need to submit product toxicity data.

5. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated sewage, including sanitary sewer overflows (SSO) and combined sewer overflows (CSO), or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the entity responsible for the sewer system shall immediately, but not more than 24 hours after the discharge begins, notify, by telephone, the Department, local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located that the discharge is occurring.

The permittee shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittee's discharge of combined sewage, and if those municipalities wish to be notified in the same manner as specified above, the permittee shall provide such notification. Such notification shall also include a daily newspaper in the county of the affected municipality.

At the conclusion of the discharge, written notification shall be submitted in accordance with and on the “Report of Discharge Form” available via the internet at: http://www.deq.state.mi.us/csosso/, or, alternatively for combined sewer overflow discharges, in accordance with notification procedures approved by the Department.

In addition, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated sewage or partially treated sewage occurs, the permittee shall test the affected waters for *Escherichia coli* to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement, if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event. The results of this testing shall be submitted with the written notification required above, or, if the results are not yet available, submit them as soon as they become available. This testing is not required, if the testing has been waived by the local health department, or if the discharge(s) did not affect surface waters.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

PART I

Section A. Limitations and Monitoring Requirements

6. Facility Contact

The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address and telephone number of the new facility contact).

a. The facility contact shall be (or a duly authorized representative of this person):
- for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
- for a partnership, a general partner,
- for a sole proprietorship, the proprietor, or
- for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager or other duly authorized employee.

b. A person is a duly authorized representative only if:
(1) the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
(2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section obviates the permittee from properly submitting reports and forms as required by law.

7. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated Rule 299.2953, requires that the permittee file with the Department, on forms prescribed by the Department, reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state.

Since this permit includes modifications to the monitoring requirements in the previously-issued permit, the previously approved treatment facility monitoring program shall be revised. Within thirty (30) days of the effective date of this permit, the permittee shall submit to the Department a revised treatment facility monitoring program to meet this requirement. Upon approval by the Department the permittee shall implement the revised treatment facility monitoring program. The reporting forms and guidance are available on the DEQ web site at http://www.michigan.gov/deq/0,1607,7-135-3313_44117---,00.html. The permittee may use alternative operating forms if they are consistent with the approved monitoring program. These forms shall be maintained on site and shall be provided to the Department for review upon request. These treatment facility monitoring records shall be maintained for a minimum of three years.

PART I

Section C. Industrial Waste Pretreatment Program

1. Industrial Waste Pretreatment Program

It is understood that the permittee does not receive the discharge of any type or quantity of substance which may cause interference with the operation of the treatment works; and, therefore, the permittee is not required to immediately develop an industrial pretreatment program in accordance with Section 307 of the Federal Act. The permittee is required to comply with Section 307 of the Federal Act upon accepting any such discharge for treatment. The permittee is required to notify the Department within thirty days if any user discharges or proposes to discharge such wastes to the permittee for treatment.

Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

a. pollutants which cause pass through or interference;

b. pollutants which create a fire hazard or explosion hazard in the sewerage system, including, but not limited to wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;

c. pollutants which will cause corrosive structural damage to the sewerage system; but in no case, discharges with pH less than 5.0, unless the works is specifically designed to accommodate such discharges;

d. solid or viscous pollutants in amounts which will cause obstruction to the flow in the sewerage system resulting in interference;

e. any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment plant;

f. heat in amounts which will inhibit biological activity in the treatment plant resulting in interference; but in no case, heat in such quantities that the temperature at the treatment plant exceeds 40 degrees Centigrade (104 degrees Fahrenheit) unless the Department, upon request of the permittee, approves alternate temperature limits;

g. pollutants which result in the presence of toxic gases, vapors or fumes within the sewerage system in a quantity that may cause acute worker health and safety problems; and

h. any trucked or hauled pollutants, except at discharge points designated by the permittee.

If information is gained by the Department that the permittee receives or is about to receive industrial wastes, then this permit may be modified in accordance with applicable laws and rules to incorporate the requirements of Section 307 of the Federal Act.

PART I

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

A permittee seeking authorization to land apply bulk biosolids or prepare bulk biosolids for land application shall develop and submit a Residuals Management Program (RMP) to the Department (see Part I.D.1.e) for approval. Effective upon Department approval of the permittee's RMP, the permittee is authorized to land apply bulk biosolids or prepare bulk biosolids for land application in accordance with the requirements established in R323.2401 through R323.2418 of the Michigan Administrative Code (Part 24 Rules) which can be obtained via the internet (http://www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids, then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen). The permittee's approved RMP, and any approved modifications thereto, are enforceable requirements of this permit. Incineration, landfilling and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this permit.

a. RMP Approval and Implementation
A permittee seeking approval of an RMP shall submit the RMP to the Department (see Part I.D.1.e) at least 180 days prior to the land application of biosolids. The permittee may utilize the RMP Electronic Form which can be obtained via the internet (http://www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids then click on RMP Electronic Form which is under the Downloads banner in the center of the screen) or obtain detailed requirements from the Department. The RMP shall become effective and shall be implemented by the permittee upon written approval by the Department.

b. Annual Report
On or before October 30 of each year, the permittee shall submit an annual report to the Biosolids Program, Water Resources Division, Department of Environmental Quality, P.O. Box 30458, Lansing, MI 48909-7958 for the previous fiscal year of October 1 through September 30. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Biosolids Annual Report Form which can be obtained via the internet (http:/www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids then click on Biosolids Annual Report Form which is under the Downloads banner in the center of the screen) or from the Department.

c. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department (see Part I.D.1.e.) for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

d. Recordkeeping
Records required by the Part 24 Rules shall be kept for a minimum of five years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

e. Contact Information
RMP related submittals to the Department shall be to the Grand Rapids District Supervisor of the Water Resources Division. The Grand Rapids District Office is located at State Office Building, Fifth Floor, 350 Ottawa N.W., Unit 10, Grand Rapids, Michigan 49503-2341, Telephone: 616-356-0500, Fax: 616-356-0202.

PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means $100/LC_{50}$ where the LC_{50} is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of section 9110 of Part 91 of the NREPA to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means 100/MATC or $100/IC_{25}$, where the maximum acceptable toxicant concentration (MATC) and IC_{25} are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

PART II

Section A. Definitions

Daily concentration is the sum of the concentrations of the individual samples of a parameter divided by the number of samples taken during any calendar day. If the parameter concentration in any sample is less than the quantification limit, regard that value as zero when calculating the daily concentration. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations (except for pH and dissolved oxygen). When required by the permit, report the maximum calculated daily concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the Discharge Monitoring Reports (DMRs).

For pH, report the maximum value of any *individual* sample taken during the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs and the minimum value of any *individual* sample taken during the month in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. For dissolved oxygen, report the minimum concentration of any *individual* sample in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environmental Quality.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

Discharge point is the location where the point source discharge is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

EC_{50} means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

Fecal coliform bacteria monthly
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

PART II

Section A. Definitions

Fecal coliform bacteria 7-day
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned sample is a composite sample with the sample volume proportional to the effluent flow.

General permit means a National Pollutant Discharge Elimination System permit issued authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

PART II

Section A. Definitions

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC_{50} means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body's legal authority.

MGD means million gallons per day.

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the seven day period was partially in each of two months, the monthly average shall be reported on the DMR of the month in which the last day of discharge occurred.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR. If the seven day period was partially in each of two months, the monthly average shall be reported on the DMR of the month in which the last day of discharge occurred..

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a publicly-owned treatment works as defined in the Code of Federal Regulations at 40 CFR 122.2.

PART II

Section A. Definitions

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Federal Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Federal Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Outfall is the location at which a point source discharge enters the surface waters of the state.

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation activities under Part 615, Part 631, or Part 632 pursuant to the provisions of section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's National Pollutant Discharge Elimination System permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment works.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

PART II

Section A. Definitions

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by State or Federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface or ground waters of this state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials Significant Materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111 of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

PART II

Section A. Definitions

Special-use area means secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and areas with other activities that may contribute pollutants to the storm water for which the Department determines monitoring is needed.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Federal Act for waterbodies that do not meet Water Quality Standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet Water Quality Standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14 day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

PART II

Section A. Definitions

7-day concentration
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period. A time-proportioned composite sample may be used upon approval of the Department if the permittee demonstrates it is representative of the discharge.

PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Federal Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Chief of the Permits Section, Water Resources Division, Michigan Department of Environmental Quality, P.O. Box 30273, Lansing, Michigan, 48909-7773. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Control/Quality Assurance program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

PART II

Section C. Reporting Requirements

1. Start-up Notification

If the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA, specifically Section 324.3110(3) and R 323.2155(2) of Part 21, allows the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring" the permittee shall submit self-monitoring data via the Department's Electronic Environmental Discharge Monitoring Reporting (e2-DMR) system.

The permittee shall utilize the information provided on the e2-Reporting website at https://secure1.state.mi.us/e2rs/ to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act (Act 96 of the Public Acts of 1987) for assurance of proper facility operation shall be submitted as required by the Department.

PART II

Section C. Reporting Requirements

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a *written* notification to the Department indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Federal Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the noncompliance. A written submission shall also be provided within five (5) days.

b. Other Reporting
The permittee shall report, in writing, all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Written reporting shall include: 1) a description of the discharge and cause of noncompliance; and 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706 (calls from **out-of-state** dial 1-517-373-7660).

Within ten (10) days of the release, the permittee shall submit to the Department a full written explanation as to the cause of the release, the discovery of the release, response (clean-up and/or recovery) measures taken, and preventative measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

PART II

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset, shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and

c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittee submitted notices as required under 9.b. or 9.c. below.

b. Notice of Anticipated Bypass
If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least ten (10) days before the date of the bypass, and provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions listed in 9.a. above.

c. Notice of Unanticipated Bypass
The permittee shall submit notice to the Department of an unanticipated bypass by calling the Department at the number indicated on the second page of this permit (if the notice is provided after regular working hours, use the following number: 1-800-292-4706) as soon as possible, but no later than 24 hours from the time the permittee becomes aware of the circumstances.

PART II

Section C. Reporting Requirements

d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of 9.a., 9.b., 9.c., and 9.d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittee shall notify the Department, in writing, as soon as possible but no later than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

PART II

Section C. Reporting Requirements

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such notice, the permit or, if applicable, the facility's COC may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall submit to the Department 30 days prior to the actual transfer of ownership or control a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

PART II

Section C. Reporting Requirements

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Federal Act and the NREPA.

The Federal Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than $2,500.00 or more than $25,000.00 for each violation. The court may impose an additional fine of not more than $25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than $25,000.00 per day and not more than $50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically all such reports or notifications as required by this permit.

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Federal Act and constitutes grounds for enforcement action; for permit or Certificate of Coverage (COC) termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a 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.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or

b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

PART II

Section D. Management Responsibilities

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a Publicly Owned Treatment Work (POTW), these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and

b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit, shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Federal Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

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

PART II

Section E. Activities Not Authorized by This Permit

1. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

2. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

3. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Federal Act except as are exempted by federal regulations.

4. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Federal Act.

5. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environmental Quality permits, or approvals from other units of government as may be required by law.

PART III

Section A. Groundwater Discharge

1. Effluent Limitations

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 737,000 gallons per day and 75,350,000 gallons per year of sanitary sewage from the monitoring points listed below to the groundwater in the SE ¼, Section 16, T10N, R5W, Crystal Township, Montcalm County, Michigan. The discharge shall be limited and monitored by the permittee as specified below.

Parameter	Minimum Daily Limit	Maximum Daily Limit	Units	Monitoring Frequency	Sample Type
Monitoring Point **EQ-1NFIELD** (water sample from irrigation pump house)					
Flow		640,000.0	GPD	Daily*	Direct Measurement
Flow		35,200,000.0	GPY	Annually†	Calculation
Total Inorganic Nitrogen		15.0	mg/l	Twice monthly*	Calculation
Ammonia Nitrogen		(report)	mg/l	Twice monthly*	Grab
Nitrate Nitrogen		(report)	mg/l	Twice monthly*	Grab
Nitrite Nitrogen		0.5	mg/l	Twice monthly*	Grab
pH		(report)	S.U.	Twice monthly*	Grab
Biochemical Oxygen Demand (BOD_5)		(report)	mg/l	Twice monthly*	Grab
Dissolved Oxygen	(report)		mg/l	Twice monthly*	Grab
Chloride		500.0	mg/l	Twice monthly*	Grab
Sodium		400.0	mg/l	Twice monthly*	Grab
Total Phosphorus		5.0	mg/l	Twice monthly*	Grab
Monitoring Point **EQ-2SFIELD**					
Flow		737,000.0	GPD	Daily*	Direct Measurement
Flow		40,150,000.0	GPY	Annually†	Calculation
LAND APPLICATION					
Monitoring Points **NORTHFIELD, SOUTHFIELD**					
Application Rate (daily)	0.72	inches	Daily*	Calculation	
Application Rate (weekly) (May 1 – September 30)	3.6	inches	Weekly*	Calculation	
Soil					
Monitoring Points **NORTHFIELD, SOUTHFIELD** Stage Code **G1**					
Bray P1 (available soil phosphorus)		(report)	mg/kg	Annually‡	Composite
Sodium		(report)	mg/kg	Annually‡	Composite
pH		(report)	S.U.	Annually‡	Composite
Cation Exchange Capacity		(report)	meq/100 grams	Annually‡	Composite
Nitrate		(report)	mg/kg	Annually‡	Composite

* During discharge † In the month of December ‡ In the month of October

PART III

Section A. Groundwater Discharge

a) Total Inorganic Nitrogen
The daily maximum value for total inorganic nitrogen shall be reported as the sum of the daily maximum values for ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.

b) Sampling Locations
Influent and effluent flow shall be measured in accordance with the approved Sampling and Analysis Plan. The location and method of collecting and analyzing effluent samples shall be in accordance with the approved Sampling and Analysis Plan. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative. Effluent quality monitoring will be reported under EQ-1 North Field regardless of the field to which the discharge is applied on the day of sampling.

c) Total Phosphorus – Bray P1 Soils Testing
Soils at land application sites shall be sampled a minimum of once every year to determine phosphorus levels and the results shall be used to determine land application rates. Sample soil using an 8 inch vertical core, and take 20 or more cores in a random pattern spread evenly over each uniform field area. A uniform field area shall be no greater than 20 acres or it can be up to 40 acres if that field has one soil map unit and has been managed as a single field for the last ten years. The 20 cores shall be composited into one sample and analyzed using the Bray P1 method. Alternate methods may be used upon approval of the Department. Additional information on soil sampling can be found in Michigan State University Extension Bulletins E2904 and E498.

PART III

Section A. Groundwater Discharge

2. Groundwater Monitoring and Limitations (Upgradient)

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee shall sample the groundwater from the hydraulically upgradient groundwater monitor well **MW-1, and** centrally located **MW-10** as described below:

Parameter	Limit	Units	Monitoring Frequency	Sample Type
Static Water Elevation	(report)	USGS-Ft	Quarterly	Measured
pH	(report)	S.U.	Quarterly	Grab
Specific Conductance	(report)	umhos/cm	Quarterly	Grab
Total Inorganic Nitrogen	(report)	mg/l	Quarterly	Calculation
Ammonia Nitrogen	(report)	mg/l	Quarterly	Grab
Nitrate Nitrogen	(report)	mg/l	Quarterly	Grab
Nitrite Nitrogen	(report)	mg/l	Quarterly	Grab
Chloride	(report)	mg/l	Quarterly	Grab
Sodium	(report)	mg/l	Quarterly	Grab
Total Phosphorus	(report)	mg/l	Quarterly	Grab
Calcium	(report)	mg/l	Annually	Grab
Iron	(report)	mg/l	Annually	Grab
Magnesium	(report)	mg/l	Annually	Grab
Manganese	(report)	mg/l	Annually	Grab
Potassium	(report)	mg/l	Annually	Grab
Bicarbonate	(report)	mg/l	Annually	Grab
Sulfate	(report)	mg/l	Annually	Grab

a) Sampling Locations
Unless an alternative monitoring schedule is approved in the Sampling and Analysis Plan, quarterly sampling shall be in the months of February, May, August and November. Annual sampling shall be in August. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative.

b) Total Inorganic Nitrogen at Groundwater Monitoring Points
The value for total inorganic nitrogen shall be reported as the sum of the values for ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.

PART III

Section A. Groundwater Discharge

3. Groundwater Monitoring and Limitations (Downgradient)

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee shall sample the groundwater from hydraulically downgradient groundwater monitor wells. The discharge of treated wastewater shall not cause the groundwater in monitor wells **MW-4, MW-5, MW-6, MW-7, and MW-8** to exceed the limitations below.

Parameter	Minimum Daily Limit	Maximum Daily Limit	Units	Monitoring Frequency	Sample Type
pH	6.5	9.0	S.U.	Quarterly	Grab

Parameter	Maximum Daily Limit	Units	Monitoring Frequency	Sample Type
Static Water Elevation	(report)	USGS-Ft	Quarterly	Measured
Specific Conductance	(report)	umhos/cm	Quarterly	Grab
Total Inorganic Nitrogen	5.0	mg/l	Quarterly	Calculation
Ammonia Nitrogen	(report)	mg/l	Quarterly	Grab
Nitrate Nitrogen	(report)	mg/l	Quarterly	Grab
Nitrite Nitrogen	0.50	mg/l	Quarterly	Grab
Chloride	250.0	mg/l	Quarterly	Grab
Sodium	230.0	mg/l	Quarterly	Grab
Total Phosphorus	1.0	mg/l	Quarterly	Grab
Calcium	(report)	mg/l	Annually	Grab
Iron	0.30	mg/l	Annually	Grab
Magnesium	(report)	mg/l	Annually	Grab
Manganese	(report)	mg/l	Annually	Grab
Potassium	(report)	mg/l	Annually	Grab
Bicarbonate	(report)	mg/l	Annually	Grab
Sulfate	250.0	mg/l	Annually	Grab

a) Sampling Locations
Unless an alternative monitoring schedule is approved in the Sampling and Analysis Plan, quarterly sampling shall be in the months of February, May, August, and November. Annual sampling shall be in August. The Department may approve alternate sampling locations which are demonstrated by the permittee to be representative.

b) Total Inorganic Nitrogen at Groundwater Monitoring Points
The daily maximum value for total inorganic nitrogen shall be reported as the sum of the daily maximum values for ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.

PART III

Section A. Groundwater Discharge

4. Schedule of Compliance

The permittee shall comply with the following schedule. Submittals shall comply with Rule 323.2218 which may be obtained via the internet at http://www.deq.state.mi.us/documents/deq-wmd-gwp-part22.pdf. All submittals shall be to the Department.*

a) On or before April 1, 2015 the permittee shall submit for review and approval the Sampling and Analysis Plan that includes both effluent and groundwater sampling requirements pursuant to Rule 323.2223. This plan must also contain discussion regarding the location, collection method, and sampling parameters for effluent samples.

*If any document required to be submitted under this section is disapproved by the Department, the permittee shall, within 30 days of receiving written disapproval, submit a revised document addressing the deficiencies.

5. Operation and Maintenance Manual

The permittee is required to develop an Operation and Maintenance Manual. A guidance document is available via the internet at: http://www.deq.state.mi.us/documents/deq-wmd-gwp-Part22GuidshtVI.pdf.

6. Facility Operation and Maintenance

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee shall comply with the inspection, operation and maintenance program requirements specified below.

Location	Condition	Measurement Frequency	Sample Type
Lagoon	Freeboard -2 foot minimum	Weekly	Visual Observation
	Control Structures	Weekly	Visual Observation
	Dike Integrity	Weekly	Visual Observation
	Vegetation Control	Weekly	Visual Observation
	Nuisance Animals	Weekly	Visual Observation
	Odors	Weekly	Olfactory Observation
Irrigation Fields	Ponding	Daily During Discharge	Visual Observation
	Pooling	Daily During Discharge	Visual Observation
	Erosion	Daily During Discharge	Visual Observation
	Odors	Daily During Discharge	Olfactory Observation
	Piping	Daily During Discharge	Visual Observation
	Sprinkler Heads	Daily During Discharge	Visual Observation

a) Lagoon Inspection
These inspections shall include:
(1) the lagoon dikes for vegetative growth, erosion, slumping, animal burrowing or breakthrough;
(2) the lagoon for growth of aquatic plants, offensive odors, insect infestations, scum, floating sludge, and septic conditions;
(3) the depth of the water in each cell and the freeboard with a minimum two (2) feet of freeboard being maintained at all times;
(4) the control structures and pump stations to assure that valves, gates and alarms are set correctly and properly functioning;
(5) the lagoon security fence and warning signs.

b) Facility Maintenance
The permittee shall implement a Facility Maintenance Program that incorporates the following management practices unless otherwise authorized by the Department.

PART III

Section A. Groundwater Discharge

(1) Vegetation shall be maintained at a height not more than six (6) inches above the ground on lagoon dikes.
(2) Not more than 10 percent of the water surface shall be covered by floating vegetation and not more than 10 percent of the water perimeter may have emergent rooted aquatic plants.
(3) Dike damage caused by erosion, slumping or animal burrowing shall be corrected immediately and steps taken to prevent occurrences in the future.
(4) The integrity of the lagoon liner shall be protected. Liner damages shall be corrected immediately and steps taken to prevent future occurrences.
(5) The occurrence of scum, floating sludge, offensive odors, insect infestations, and septic conditions shall be minimized.
(6) A schedule for the inspection and maintenance of the collection system, lift stations, mechanical and electrical systems, transfer stations, and control structures shall be developed and implemented.

c) Lagoon Drawdown Conditions
The permittee shall observe the following conditions when drawing down a cell for transfer or discharge unless otherwise authorized by the Department.
(1) Water discharged shall be removed from the surface two feet of the cell at a rate of less than one foot per day.
(2) The permittee shall maintain a minimum of two feet of freeboard in all cells at all times. Upon written notification, the Department may require a minimum of three feet of freeboard for larger systems.
(3) The permittee shall maintain a minimum of two feet of water in all cells at all times.

7. General Conditions

a) The discharge shall not be, or not be likely to become, injurious to the protected uses of the waters of the state.

b) The discharge shall not cause runoff to, ponding on, or flooding of adjacent property, shall not cause erosion, and shall not cause nuisance conditions.

c) The point of discharge shall be located not less than 100 feet inside the boundary of the property where the discharge occurs, unless a lesser distance is specifically authorized in writing by the Department.

d) The discharge shall not create a facility as defined in Part 201, Environmental Remediation, of the NREPA.

8. Other Conditions

a) **Basis of Design** - The discharge shall be treated in accordance with the approved basis of design pursuant to Rule 323.2218(2).

b) **Wastewater Characterization** - The wastewater being treated shall be of the same chemical, biological, and physical characteristics as described in the characterization required pursuant to Rule 323.2220.

c) **Land Application:**
Slow Rate Land Application
(2) A portion of the flow is expected to percolate to the groundwater while the remainder is utilized by plants or lost through evaporation.
(3) The wastewater loading volume shall be designed so that the wastewater will be absorbed and held within the effective rooting zone of the vegetative cover established on the site receiving the wastewater.
(4) The header ditch drainage and the grading of the furrows, where utilized, shall be tested for equal liquid distribution before seeding.
(5) The system shall be seeded with a mixture of perennial vegetative cover, which are grasses such as reed canary grass, tall fescue, and orchard grass, alone or in combination with legumes, such as

PART III

Section A. Groundwater Discharge

clover, alfalfa, and birdsfoot trefoil, suited to the climate and the soil moisture conditions created as a result of the application of wastewater in accordance with the designed loading cycle. The Department may approve alternative vegetative cover on a case-by-case basis, but may impose restrictions based upon the characteristics of the proposed alternative.

(6) All furrow side slopes, where present, shall be designed and constructed to allow for periodic maintenance and or mechanical harvesting of vegetative cover.

(7) The depth of the furrows of a ridge and furrow system, when utilized, shall be adequate to contain the highest proposed furrow stream.

(8) The treatment system must have sufficient hydraulic capacity to treat organic or inorganic loading so that the discharge receives physical, chemical biological treatment or a combination of treatments to meet the standards of Rule 323.2222.

(9) Crops for human consumption grown on effluent irrigated fields shall be limited to crops requiring processing prior to consumption.

(10) Animals that produce milk for human consumption shall not be allowed to graze on any effluent irrigated fields until 30 days following the application of effluent.

(10) In no case shall nutrients provided by wastewater and supplemental fertilization exceed the nutrient requirements of the crop based on the yield goal for that crop.

9. Discharge Management Plan (DMP)

a) A land treatment system shall be designed, constructed, and operated as follows:

(1) The system shall be designed and constructed to prevent surface runoff from either entering or exiting the system.

(2) The system shall be designed and constructed to provide even distribution of wastewater during application. A header ditch, where used, shall be designed and constructed to allow for complete drainage after each wastewater loading or shall be lined to prevent seepage.

(3) If vegetative cover is utilized and is considered part of the overall treatment system, then the design and construction of the system shall allow for the mechanical harvesting of vegetative cover.

(4) The system shall be designed, constructed, and operated to allow an appropriate loading cycle. An appropriate loading cycle allows time between loadings for all of the following:

(a) Soil organisms to biologically decompose organic constituents in the wastewater.

(b) Organic solids on the soil surface to decompose.

(c) The soil to become aerated.

(d) Vegetative cover to utilize available nutrients provided through the application of the wastewater.

(e) Soil conditions to become unsaturated and aerobic.

(f) Harvesting operations to occur at appropriate times.

b) The design hydraulic loading or application rate, whether daily, monthly, or annual, shall not be more than one of the following:

(1) Three percent of the permeability of the most restrictive soil layer within the solum over the area of the discharge when determined by either the cylinder infiltration method or air entry permeameter test method.

(2) Seven percent of the permeability of the most restrictive soil layer within the solum over the area of the discharge as determined by the saturated hydraulic conductivity method.

(3) Twelve percent of the permeability of the most restrictive soil layer within the solum over the area of the discharge as determined by the basin infiltration method.

(4) If published information is utilized, the permittee shall determine the methodology used to measure the reported hydraulic conductivity. If the hydraulic conductivity is given as a range of expected values, then a permittee shall use the minimum value given the most restrictive soil layer within the solum when calculating the hydraulic loading or application rate.

c) The system shall be designed, constructed, and operated so as to prevent the development of sodic conditions within the solum of the discharge area. Sodic conditions are considered to exist in the solum when the exchangeable sodium percentage, which is the percentage of the cation exchange capacity of a soil occupied by sodium, is more than 15 percent.

PART III

Section A. Groundwater Discharge

d) If phosphorus adsorption within the solum or unsaturated soil column is part of the overall treatment process, then the system shall be designed as follows:

a. The available phosphorus adsorptive capacity of the solum or unsaturated soil column from within the discharge area shall be sufficient to provide the necessary treatment to ensure that the applicable limit established in the permit is not exceeded for the duration of the permit.

b. The loading cycle shall be designed so as to provide the necessary contact time within the solum or unsaturated soil column required for phosphorus to be removed from the applied wastewater through adsorption processes.

c. The available phosphorus adsorptive capacity of the discharge area shall be determined through either of the following methods:

1) By subtracting phosphorus levels of the unsaturated soil column, determined through on-site Bray-P1 analysis, from published phosphorus adsorption capacity data for the solum found within the discharge area.

2) By subtracting phosphorus levels of the unsaturated soil column, as determined through on-site Bray-P1 analysis, from the phosphorus adsorption maximum as determined through Langmuir isotherm analysis of on site soils, after adjustments for the concentration of phosphorus in the effluent and fraction of utilization within the solum are made.

e) All of the following operation and maintenance requirements shall be met:
(1) Portions of the wastewater distribution system shall be capable of being taken out of service for maintenance and other operational activities and to provide rest to portions of the irrigation area without disrupting applications to other areas of the system.
(2) All areas within a system shall be accessible for maintenance equipment.
(3) For slow rate and overland flow treatment systems, the pH of the plow layer within the discharge area shall be maintained between 6.0 and 7.5 standard units.

b) The discharge to a land treatment system shall be limited so that the discharge volume combined with the precipitation from a 10-year frequency, 24-hour duration rainfall event does not overflow the designed discharge area.

c) If any modifications are made to the management practices or specifications for the land application of wastewater, including but not limited to changes in crops grown, yield goal for those crops, or supplemental fertilization provided by the permittee or a third party, the permittee shall submit a revised DMP on or before November 30 of the year prior to making the proposed change. Based on this submittal, the Department may modify this permit in accordance with applicable rules and laws.

10. Compliance Requirements

Compliance with all applicable requirements set forth in Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance with concentration limitations of effluent or groundwater shall be reported as follows.

a) If the facility is in a wellhead protection area, within 48 hours from the time the permittee becomes aware of the noncompliance, the permittee shall report noncompliance to the public water supply manager.

b) Within seven (7) days from the time the permittee becomes aware of the noncompliance, the permittee shall report, in writing, all instances of noncompliance. Written reporting shall include all of the following: 1) the name of the substance(s) for which a limit was exceeded; 2) the concentration at which the substance was found; and 3) the location(s) at which the limit was exceeded.

c) Within 14 days from the time the permittee becomes aware of the noncompliance, the permittee shall resample the monitoring point at which the limit was exceeded for the substance for which a limit was exceeded.

PART III

Section A. Groundwater Discharge

d) Within 60 days from the time the permittee becomes aware of the noncompliance, the permittee shall submit a written report that shall include all of the following: 1) the results of the confirmation sampling; 2) an evaluation of the cause for the limit being exceeded and the impact of that event to the groundwater; and 3) a proposal detailing steps taken or to be taken to prevent recurrence.

e) In accordance with applicable rules, the Department may require additional activities including, but not limited, to the following:
   (1) Change the monitoring program, including increasing the frequency of effluent monitoring or groundwater sampling, or both.
   (2) Develop and implement a groundwater monitoring program if one is not in place.
   (3) If the discharge is in a designated wellhead protection area, assess the effects of the discharge on the public water supply system.
   (4) Review the operational or treatment procedures, or both, at the facility.
   (5) Define the extent to which groundwater quality exceeds the applicable criteria that would designate the site as a facility under Part 201.
   (6) Revise the operational procedures at the facility.
   (7) Change the design or construction of the wastewater operations at the facility.
   (8) Initiate an alternative method of waste treatment or disposal.
   (9) Remediate contamination to comply with the terms of Part 201, if applicable.

f) The conditions set forth in subsection g, below shall apply if the discharge from the facility is otherwise in compliance with the sodium and chloride limitations specified in Section 324.3109e(1) of the NREPA and Part 1, Section 1, Effluent Limitations of this permit. In accordance with Section 324.3109e(4) of the NREPA, if the permittee complies with these conditions, the permittee shall not be subject to response activities under Part 201 with respect to the discharge of sodium and chloride.

g) If the permittee discharges sodium or chloride, or both, into groundwater that migrates off of the property on which the discharge was made and that discharge directly causes the groundwater concentration of sodium or chloride, or both, to exceed the levels of 230 mg/l and 250 mg/l, respectively, provided under Section 324.3109(e)(2) of the NREPA, the permittee shall do all of the following:
   (1) Initiate a sampling program approved by the department to monitor downgradient water supply wells for the levels of sodium or chloride, or both, in the water supply.
   (2) If the concentration of sodium in a downgradient water supply exceeds the level provided under Section 324.3109(e)(2), the permittee shall provide and maintain, for each affected downgradient water supply, free of charge, a point-of-use treatment system approved by the department that will remove sodium from the water supply so as to be in compliance with the level provided under Section 324.3109(e)(2).
   (3) If the concentration of chloride in a downgradient water supply exceeds the level provided under Section 324.3109(e)(2), provide to each affected water supply owner a notice of aesthetic impact with respect to chloride levels.

h) If the Department determines there is a change in groundwater quality from a normal operating baseline that indicates the concentration of a substance in groundwater may exceed an applicable limit, then the discharger shall take the following actions if required by the Department:
   (1) Change the monitoring program, including increasing the frequency of effluent sampling or groundwater sampling, or both.
   (2) Review the operational or treatment procedures, or both, at the facility.

11. Request for Discharge of Water Treatment Additives

In the event a permittee proposes to discharge water treatment additives (WTAs) to groundwater, the permittee shall submit a request to discharge WTAs to the Department for approval. Such requests shall be sent to the Permits Section, Water Resources Division, Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan 48909, with a copy to the Department contact listed on the cover page of this permit. Instructions to submit a request electronically may be obtained via the internet

PART III

Section A. Groundwater Discharge

(http://www.michigan.gov/deqnpdes; then click on Applicable Rules and Regulations, which is under the Information banner and then click on Water Treatment Additive Discharge Application Instructions). Written approval from the Department to discharge such WTAs at specified levels shall be obtained prior to discharge by the permittee. Failure to obtain approval prior to discharging any WTA is a violation of this permit. Additional monitoring and reporting may be required as a condition for the approval to discharge the WTA. WTAs include such chemicals as herbicides used to kill weeds and grasses as part of lagoon maintenance.

A request to discharge WTAs to groundwater shall include all of the following:

a) product Information:
   (1) name of the product;
   (2) Material Safety Data Sheet;
   (3) product function (i.e. microbiocide, flocculants, etc.);
   (4) specific gravity if the product is a liquid ; and
   (5) annual product use rate (liquids in gallons per year and solids in pounds per year);

b) ingredient information:
   (1) name of each ingredient;
   (2) CAS number for each ingredient; and
   (3) fractional content by weight for each product;

c) the monitoring point from which the WTA is to be discharged;

d) the proposed WTA discharge concentration;

e) the discharge frequency (i.e., number of hours per day and number of days per year);

f) the type of removal treatment, if any, that the WTA receives prior to discharge;

g) relevant mammalian toxicity studies for the product or all of its constituents (if product toxicity data are submitted, the applicant shall provide information showing that the product tested has the same composition as the product listed under Item “a” above. Preferred studies are subchronic or chronic in duration, use the oral route of exposure, examine a wide array of endpoints and identify a no-observable-adverse-effect-level. Applicants are strongly encouraged to provide the preferred data. If preferred data are not available, then the minimum information needed is an oral rat LD50 study. In addition, an environmental fate analysis that predicts the mobility of the product/ingredients and their potential to migrate to groundwater may be provided.

h) If the discharge of the WTA to groundwater is within 1,000 feet of a surface water body, the following information shall also be provided:
   (1) a 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either Ceriodaphnia sp., Daphnia sp., or Simocephalus sp.); and
   (2) the results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of Rule 323.1057(2) of the Water Quality Standards.

Prior to submitting the request, the permittee may contact the Permits Section by telephone at 517-284-5568 or via the internet at the address given above to determine if the Department has the product toxicity data required by Item “g” above. If the Department has the data, the permittee will not need to submit product toxicity data.

12. Groundwater Discharge Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to either SW-846, 3rd edition, September 1986, “Test Methods for the Evaluation of Solid Waste, Physical-Chemical Methods”, or Section 304(h) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et

PART III

Section A. Groundwater Discharge

seq), 40 CFR Part 136 - Guidelines Establishing Test Procedures for the Analysis of Pollutants, unless specified otherwise in this permit. Requests to use test procedures not defined here shall be submitted to the Department for review and approval. The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Control/Quality Assurance program.

13. Permit Monitoring Requirements

Pursuant to Rule 323.2223(1), the Department may modify the effluent or groundwater monitoring parameters or frequency requirements of this permit. The permittee may request a modification of the parameters of frequency of monitoring of this permit with adequate supporting documentation.

14. Treatment System Closure

a) In the event that discharges from a treatment system are planned to be eliminated, the permittee shall do the following:

(1) Eliminate all physical threats associated with discharge related facilities not later than five (5) days after use of the facility has ceased.
(2) Not less than 75 days before cessation of discharge related activities, characterize any wastewater, sediments and sludges related to the discharge, pursuant to Rule 323.2226(4)(a)(i-iii).

b) Within 30 days of completing the characterization, the discharger shall submit a closure plan to the Department for review and approval that describes how the wastewater, sediments and sludges associated with the discharge will be handled in accordance with Part 31, Part 115, Part 111, or Part 201, as appropriate.

c) Closure activities must be initiated within 30 days of Department approval of the Closure Plan, and must be completed within one (1) year of approval of the Closure Plan.

d) If the groundwater exceeds a standard established by the Department that would result in the site qualifying as a facility under Part 201, then the discharger shall comply with the requirements of Part 201, as applicable.

e) The Department may require post closure monitoring activities to evaluate the effectiveness of the closure activities. Any wastewater or residual disposal inconsistent with the approved plan shall be considered a violation of this permit. After proper closure of the treatment system, this permit may be terminated.

f) The discharger must certify completion of the approved closure plan. Certification shall be by a qualified person described as follows:

(1) An engineer licensed under Act No. 299 of the Public Acts of 1980, as amended, being §339.101 et seq. Of the Michigan Compiled Laws, and known as the occupational code.
(2) A professional geologist certified by the American Institute of Professional Geologists, 7828 Vance Drive, Suite 103, Arvada, Colorado 80003.
(3) A professional hydrologist certified by the American Institute of Hydrology, 2499 Rice Street, Suite 135, St. Paul, Minnesota 55113.
(4) A groundwater professional certified by the National Ground Water Association, Association of Groundwater Scientists and Engineers Division, 601 Dempsey Road, Westerville, Ohio 43081.

PART III

Section A. Groundwater Discharge

(5) Another groundwater professional certified by an organization approved by the Department.

PART III

Section A. Groundwater Discharge

15. Definitions

In addition to the definitions in Part II, Section A, the definitions below apply to Part III.

By-Pass means any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit.

Furrow Stream is the volume, in gallons per unit time, usually per minute, of wastewater discharged into the furrow.

GPD means gallons per day.

GPY means gallons per year.

Mg/l is a unit of measurement and means milligrams per liter.

Report when written as (report) means there is no limit associated with the individual substance for the medium that is being sampled. The permittee must only report the result of the laboratory analysis.

APPENDIX C – CORRESPONDENCE

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

April 9, 2024

State Historic Preservation Office
Environmental Review Office
Michigan Historical Center
702 W. Kalamazoo Street
P.O. Box 30740
Lansing, MI 48909

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Dear Sir or Madam:

Crystal Township is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund program for the referenced project. One of the requirements of the application is the evaluation of specific cultural and environmental issues by the appropriate agencies.

Because the project is required to comply with both the Archeological and Historical Preservation Act of 1974 (16 U.S.C. §469 through §469c-1) and the National Historic Preservation Act (16 U.S.C. §470, et. seq.), we request that your office review the referenced project to identify if the project might cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data. An application for Section 106 Review is attached for the project.

If you have any questions, please feel free to contact me at (517) 325-3290.

Thank you in advance for your cooperation. We would like to have your response before May 1st, 2024, if possible, to incorporate into the Project Plan.

Sincerely,

FLEIS & VANDENBRINK

Kyle Paulson, PE
Project Engineer

Enclosures

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
www.fveng.com

STATE HISTORIC PRESERVATION OFFICE
Application for Section 106 Review

SHPO Use Only					
☐ IN	Received Date ____ / ____ / ____	Log In Date	____ / ____ / ____		
☐ OUT	Response Date ____ / ____ / ____	Log Out Date	____ / ____ / ____		
	Sent Date ____ / ____ / ____				

Submit one copy for each project for which review is requested. This application is required. Please type. Applications must be complete for review to begin. Incomplete applications will be sent back to the applicant without comment. Send only the information and attachments requested on this application. Materials submitted for review cannot be returned. Due to limited resources we are unable to accept this application electronically.

I. GENERAL INFORMATION

☒ THIS IS A NEW SUBMITTAL ☐ THIS IS MORE INFORMATION RELATING TO ER#

a. Project Name: Crystal Township Collection System, Lift Station, and Treatment Facility Improvements
b. Project Address (if available): 3042 Miner Road, Crystal, MI 48818 + other sites
c. Municipal Unit: Crystal Township County: Montcalm
d. Federal Agency, Contact Name and Mailing Address (*If you do not know the federal agency involved in your project please contact the party requiring you to apply for Section 106 review, not the SHPO, for this information*.): Michigan Department of Environment, Great Lakes, and Energy (EGLE), Jonathan M. Berman, State Revolving Fund Compliance Specialist, P.O. Box 30457, Lansing, MI 48909-7957 -- FEDERALLY AUTHORIZED SIGNATORY
e. State Agency (if applicable), Contact Name and Mailing Address: Michigan Department of Environment, Great Lakes, and Energy (EGLE), Sara Brown, Grand Rapids District Office, 5th Floor, 350 Ottawa Ave NW, Grand Rapids, MI 49503
f. Consultant or Applicant Contact Information (if applicable) *including mailing address*: Fleis & VandenBrink Engineering, 2960 Lucerne Dr. SE, Grand Rapids, MI 49546

II. GROUND DISTURBING ACTIVITY (INCLUDING EXCAVATION, GRADING, TREE REMOVALS, UTILITY INSTALLATION, ETC.)

DOES THIS PROJECT INVOLVE GROUND-DISTURBING ACTIVITY? ☒ YES ☐ NO (If no, proceed to section III.)

Exact project location must be submitted on a USGS Quad map (portions, photocopies of portions, and electronic USGS maps are acceptable as long as the location is clearly marked).

a. USGS Quad Map Name: Butternut [+ Crystal & Sumner]
b. Township: 10N Range: 05W Section: 16 +
c. Description of width, length and depth of proposed ground disturbing activity: Rehabiliation of all manhole interiors and ground-level castings, reconstruction of two (2) existing pump/lift stations, and rehabiliation of existing assets at the wastewater treatment facility.
d. Previous land use and disturbances: Wastewater collection assets in the vicinity of Crystal Lake and treatment assets have existed since 1977. Wastewater collection assets in the vicinity of Duck Lake have existed since 2005.
e. Current land use and conditions: Wastewater Collection and Treatment Facilities
f. Does the landowner know of any archaeological resources found on the property? ☐ YES ☒ NO
Please describe:

III. PROJECT WORK DESCRIPTION AND AREA OF POTENTIAL EFFECTS (APE)
Note: Every project has an APE.

a. Provide a detailed written description of the project (plans, specifications, Environmental Impact Statements (EIS), Environmental Assessments (EA), etc. **cannot** be substituted for the written description): The project

involves the reconstruction and/or rehabiliation of structures and piping at the wastewater treatment plant (WWTP), the reconstruction and/or rehabiliation of lift stations throughout the service area, and the rehabiliation of manholes throughout the service area.

b. Provide a localized map indicating the location of the project; road names must be included and legible.
c. On the above-mentioned map, identify the APE.
d. Provide a written description of the APE (physical, visual, auditory, and sociocultural), the steps taken to identify the APE, and the justification for the boundaries chosen. The APE is considered to be the existing wastewater treatment plan (WWTP) site and parcels in the surrounding area that are served by and/or adjacent to existing collection system lift stations and manholes. The APE does not include the buildings or other privately-owned assets on these parcels as the work will be limited to the collection system assets themselves with some allowance for ground distrubance in a small area surrounding the asset.

IV. IDENTIFICATION OF HISTORIC PROPERTIES

a. List and date **all** properties 50 years of age or older located in the APE. If the property is located within a National Register eligible, listed or local district it is only necessary to identify the district: There are no third-party structures or landmarks in the APE. Modifications to WWTP and collection system structures will occur but these will only have existed for 48 years of FY2025.
b. Describe the steps taken to identify whether or not any **historic** properties exist in the APE and include the level of effort made to carry out such steps: A search of the MSHDA historic sites online webpage was performed and local maps were consulted to determine if any historic or potentially historic properties were in the service area (and by extension the APE).
c. Based on the information contained in "b", please choose one:
   - ☐ Historic Properties Present in the APE
   - ☒ No Historic Properties Present in the APE
d. Describe the condition, previous disturbance to, and history of any historic properties located in the APE: N/A

V. PHOTOGRAPHS

Note: All photographs must be keyed to a localized map.

a. Provide photographs of the site itself.
b. Provide photographs of all properties 50 years of age or older located in the APE (faxed or photocopied photographs are not acceptable).

VI. DETERMINATION OF EFFECT

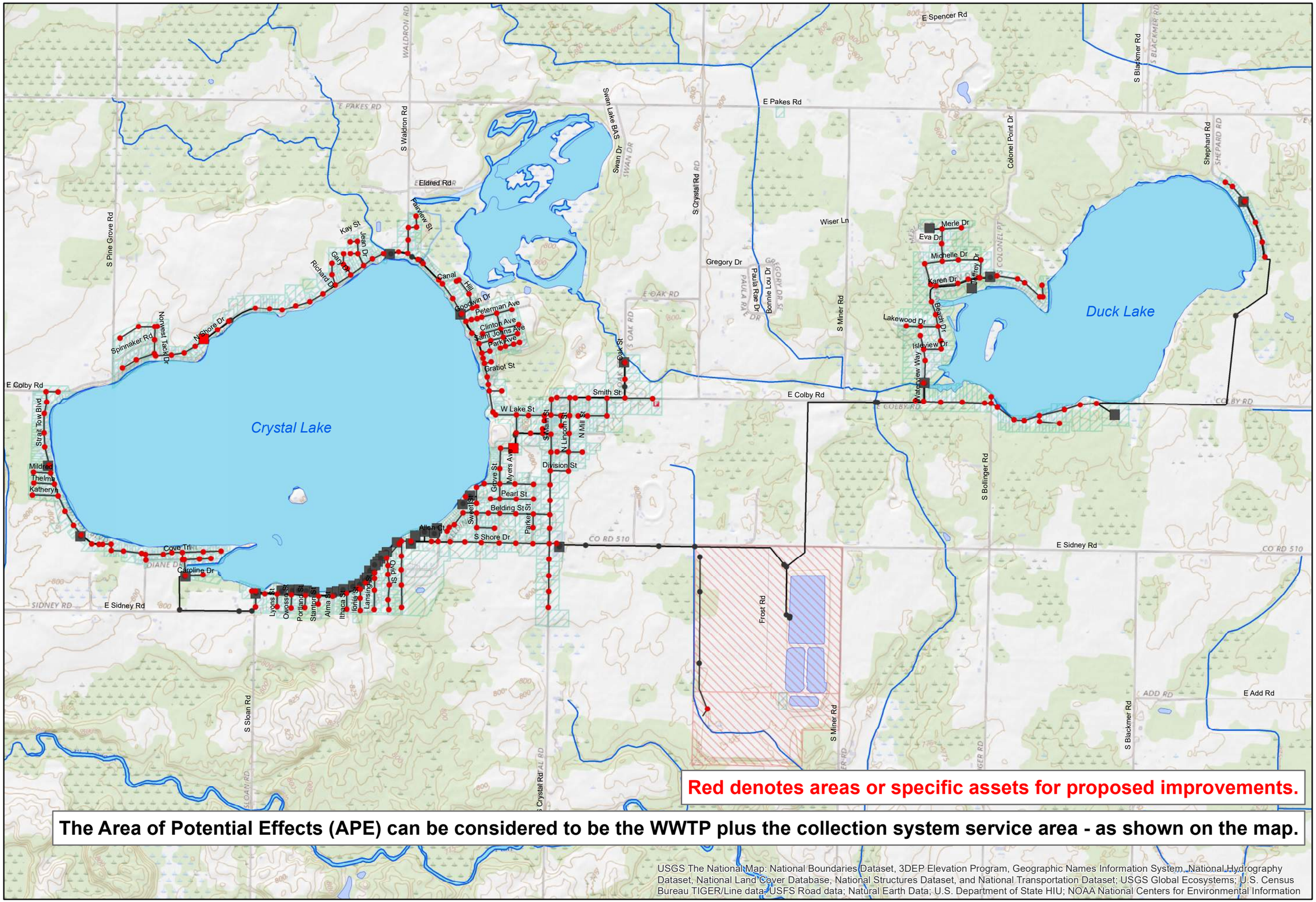
☒ No historic properties affected based on [36 CFR § 800.4(d)(1)], please provide the basis for this determination.

☐ No Adverse Effect [36 CFR § 800.5(b)] on historic properties, explain why the criteria of adverse effect, 36 CFR Part 800.5(a)(1), were found not applicable.

☐ Adverse Effect [36 CFR § 800.5(d)(2)] on historic properties, explain why the criteria of adverse effect, [36 CFR Part 800.5(a)(1)], were found applicable.

Please print and mail completed form and required information to:

State Historic Preservation Office, Environmental Review Office, Michigan Historical Center, 702 W. Kalamazoo Street, P.O. Box 30740, Lansing, MI 48909-8240



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Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes
- Force Main
- Gravity Sewer
- Service Area
- WWTP

Proposed Improvements to Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	4/9/2024
PROJECT NO.	SCALE
861970	1:19,000
FILE LOCATION	
--	
SOURCES	
--	

N

0 500 1,000
SCALE IN FEET

Irrigation Building at WWTP – To be Reconstructed

Lagoon and Maintenance Building at WWTP

Examples of Structures to be Rehabilitated at WWTP

One of the Lift Stations to be Reconstructed

One of the Lift Station Valve Chambers to be Rehabilitated

One of the Manholes to be Rehabilitated

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

April 9, 2024

Carolan Sonderegger
Natural Resources Department Mgr.
Carolan.Sonderegger@gtb-nsn.gov

Courtney Hessell
Environmental Services Coordinator
Courtney.Hessell@gtb-nsn.gov

Sammie McClellan-Dyal
Water Quality Specialist
Sammie.Dyal@gtb-nsn.gov

Grand Traverse Band of Ottawa and Chippewa Indians
2605 N. West Bay Shore Drive
Peshawbestown, MI 49862

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Dear Sir or Madam:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund (SRF) to subsidize necessary improvements to its wastewater collection and treatment facilities starting in fiscal year 2025.

The proposed project is located within Crystal Township and is located at the treatment facility (3042 S Miner Road, Crystal, MI, 48818) as well as the manholes and lift stations throughout the service area (in the vicinity of Crystal Lake and Duck Lake). This location corresponds to Township 10N, Range 05W, Section 16 and the surrounding sections. Please refer to the attached map for the project locations / work areas.

The project includes improvements and reconstruction of existing treatment facility assets, improvements and reconstruction of existing lift station assets, and internal and surface improvements to existing collection system manholes.

This notice and opportunity to comment is being sent to you to fulfill Section 106 of the National Historic Preservation Act review process, which requires a federal agency or applicant to consult with THPOs and federally recognized Indian Tribes. The purpose of this notice is to give you an opportunity to have your interests and concerns considered. Should you have any comments on potential impacts to known religious and/or culturally significant properties in the area of the proposed project, please provide them to us within 30 days of this notice.

Thank you in advance for your cooperation. We would like to have your response before May 1st, 2024, if possible, to incorporate into the Project Plan. If you have any questions, please feel free to contact me at (517) 325-3290.

Sincerely,

Kyle Paulson, PE
Project Engineer
FLEIS & VANDENBRINK

Enclosures

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
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FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

April 9, 2024

Jay Sam
Director, Historic Preservation Department
jonniesam@lrboi-nsn.gov

Frank Beaver
Director, Natural Resources Department
williambeaver@lrboi-nsn.gov

Little River Band of Ottawa Indians
2608 Government Center Drive
Manistee, MI 49660

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Dear Sir or Madam:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund (SRF) to subsidize necessary improvements to its wastewater collection and treatment facilities starting in fiscal year 2025.

The proposed project is located within Crystal Township and is located at the treatment facility (3042 S Miner Road, Crystal, MI, 48818) as well as the manholes and lift stations throughout the service area (in the vicinity of Crystal Lake and Duck Lake). This location corresponds to Township 10N, Range 05W, Section 16 and the surrounding sections. Please refer to the attached map for the project locations / work areas.

The project includes improvements and reconstruction of existing treatment facility assets, improvements and reconstruction of existing lift station assets, and internal and surface improvements to existing collection system manholes.

This notice and opportunity to comment is being sent to you to fulfill Section 106 of the National Historic Preservation Act review process, which requires a federal agency or applicant to consult with THPOs and federally recognized Indian Tribes. The purpose of this notice is to give you an opportunity to have your interests and concerns considered. Should you have any comments on potential impacts to known religious and/or culturally significant properties in the area of the proposed project, please provide them to us within 30 days of this notice.

Thank you in advance for your cooperation. We would like to have your response before May 1st, 2024, if possible, to incorporate into the Project Plan. If you have any questions, please feel free to contact me at (517) 325-3290.

Sincerely,

Kyle Paulson, PE
Project Engineer
FLEIS & VANDENBRINK

Enclosures

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
www.fveng.com

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

April 9, 2024

Melissa Wiatrolik
Tribal Historic Preservation Officer
mwiatrolik@ltbbodawa-nsn.gov

Caroline Moellering
Environmental Services Coordinator
cmoellering@ltbbodawa-nsn.gov

Little Traverse Bay Bands of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Dear Sir or Madam:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund (SRF) to subsidize necessary improvements to its wastewater collection and treatment facilities starting in fiscal year 2025.

The proposed project is located within Crystal Township and is located at the treatment facility (3042 S Miner Road, Crystal, MI, 48818) as well as the manholes and lift stations throughout the service area (in the vicinity of Crystal Lake and Duck Lake). This location corresponds to Township 10N, Range 05W, Section 16 and the surrounding sections. Please refer to the attached map for the project locations / work areas.

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April 9, 2024

Abigail Bultsma
Water Resources Division (WRD)
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Grand Rapids District Office
5th Floor, 350 Ottawa Ave NW
Grand Rapids, MI 49503

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Abigail:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund program to subsidize necessary improvements to the wastewater collection system, lift stations, and treatment facility, starting in fiscal year 2025.

The proposed project is located within Crystal Township and is located at the treatment facility (3042 S Miner Road, Crystal, MI, 48818) as well as the manholes and lift stations throughout the service area (in the vicinity of Crystal Lake and Duck Lake). This location corresponds to Township 10N, Range 05W, Section 16 and the surrounding sections. Please refer to the attached map for the project locations / work areas.

The project includes improvements and reconstruction of existing treatment facility assets, improvements and reconstruction of existing lift station assets, and internal and surface improvements to existing collection system manholes.

A requirement of the application is the evaluation of specific cultural and environmental issues by the appropriate agencies. Because the project is required to comply with the Fish and Wildlife Coordination Act, Federal Executive Order 11990, the Coastal Barrier Resources Act, as amended, the Rivers and Harbors Act of 1899, and the Clean Water Act of 1977, we request that your office review the proposed project with respect to any land-water interfaces, including inland lakes and streams, wetlands, and Great Lakes Shorelands, noting if any are present, their location, and whether the proposed project presents the possibility of any impact to them. Please provide comments to us within 30 days of this notice. If time permits, we would like to have your response before May 1st, 2024, to incorporate into the current draft of the Project Plan.

If you have any questions, please feel free to contact me at (517) 325-3290.

Sincerely,

Kyle Paulson, PE
Project Engineer
FLEIS & VANDENBRINK

Enclosures

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April 9, 2024

Min-Huy Radics
Water Resources Division (WRD)
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Grand Rapids District Office
5th Floor, 350 Ottawa Ave NW
Grand Rapids, MI 49503

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Min-Huy:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund program to subsidize necessary improvements to the wastewater collection system, lift stations, and treatment facility, starting in fiscal year 2025.

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The project includes improvements and reconstruction of existing treatment facility assets, improvements and reconstruction of existing lift station assets, and internal and surface improvements to existing collection system manholes.

A requirement of the application is the evaluation of specific cultural and environmental issues by the appropriate agencies. Because the project is required to comply with Federal Executive Order 11988, we request that your office review the proposed project with respect to floodplains, noting if any are present, their location, and whether the proposed project presents the possibility of any impact to them. Please provide comments to us within 30 days of this notice. If time permits, we would like to have your response before May 1st, 2024, to incorporate into the current draft of the Project Plan.

If you have any questions, please feel free to contact me at (517) 325-3290.

Sincerely,

Kyle Paulson, PE
Project Engineer
FLEIS & VANDENBRINK

Enclosures

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
www.fveng.com

FLEIS&VANDENBRINK
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April 9, 2024

Thomas Horak
Water Resources Division (WRD)
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Grand Rapids District Office
5th Floor, 350 Ottawa Ave NW
Grand Rapids, MI 49503

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Thomas:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund program to subsidize necessary improvements to the wastewater collection system, lift stations, and treatment facility, starting in fiscal year 2025.

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The project includes improvements and reconstruction of existing treatment facility assets, improvements and reconstruction of existing lift station assets, and internal and surface improvements to existing collection system manholes. The treatment facility improvements include lagoon berm maintenance.

A requirement of the application is the evaluation of specific cultural and environmental issues by the appropriate agencies. To be in compliance with Michigan's Natural Resources Environmental Protection Act (NREPA) we request that your office review the proposed project to address any dam safety / lagoon berm permit issues. Please provide comments to us within 30 days of this notice. If time permits, we would like to have your response before May 1st, 2024, to incorporate into the current draft of the Project Plan.

If you have any questions, please feel free to contact me at (517) 325-3290.

Sincerely,

Kyle Paulson, PE
Project Engineer
FLEIS & VANDENBRINK

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FLEIS&VANDENBRINK
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April 9, 2024

Michigan Natural Features Inventory
P.O. Box 13036
Lansing, MI 48901-3036

RE: Crystal Township Collection System, Lift Stations, and Treatment Plant Improvements

Dear Sir or Madam:

Crystal Township is located on the east side of Michigan's Montcalm County. Fleis & VandenBrink Engineering, working on behalf of the Township, is currently preparing a Project Plan to apply for funding from the Clean Water State Revolving Fund program to subsidize necessary improvements to the wastewater collection system, lift stations, and treatment facility, starting in fiscal year 2025.

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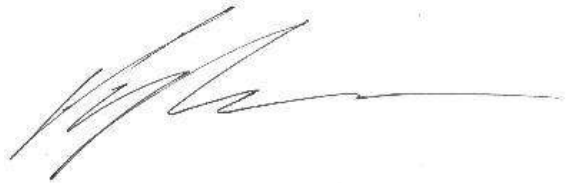
The project includes improvements and reconstruction of existing treatment facility assets, improvements and reconstruction of existing lift station assets, and internal and surface improvements to existing collection system manholes.

The wastewater treatment facility is comprised of 125 acres of cover crop farmland and 30 acres of wastewater lagoons (4 lagoons in all) with attendant avian, aquatic, and other expected wildlife. Manholes and lift stations are located in different settings, ranging from roads, roadside ditches, paved/gravel lots, yards, and wooded areas. Some of these locations are adjacent to farm fields, wooded areas, lake shoreline, and wetland areas.

A requirement of the application is the evaluation of specific cultural and environmental issues by the appropriate agencies. To be in compliance with the Fish and Wildlife Coordination Act, this notice and opportunity to comment is being provided, and we request that your office review the proposed project with respect to any State or Federally listed endangered or threatened species, including if any are present, their location, and whether the project presents the possibility of any impact to them. Please provide comments to us within 30 days of this notice. If time permits, we would like to have your response before May 1st, 2024, to incorporate into the current draft of the Project Plan.

If you have any questions, please feel free to contact me at (517) 325-3290.

Sincerely,



Kyle Paulson, PE
Project Engineer
FLEIS & VANDENBRINK

Enclosures

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
www.fveng.com

The following species are potentially affected by activities in this location:

THUMBNAILS | LIST

SPECIES GUIDELINES

General project design guidelines
Available for 2 species

Mammals

NAME	STATUS
Indiana Bat CH Myotis sodalis Wherever found	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found	Endangered
Tricolored Bat Perimyotis subflavus Wherever found	Proposed Endangered

Birds

NAME	STATUS
Whooping Crane Grus americana	EXPN

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) Sistrurus catenatus Wherever found	Threatened

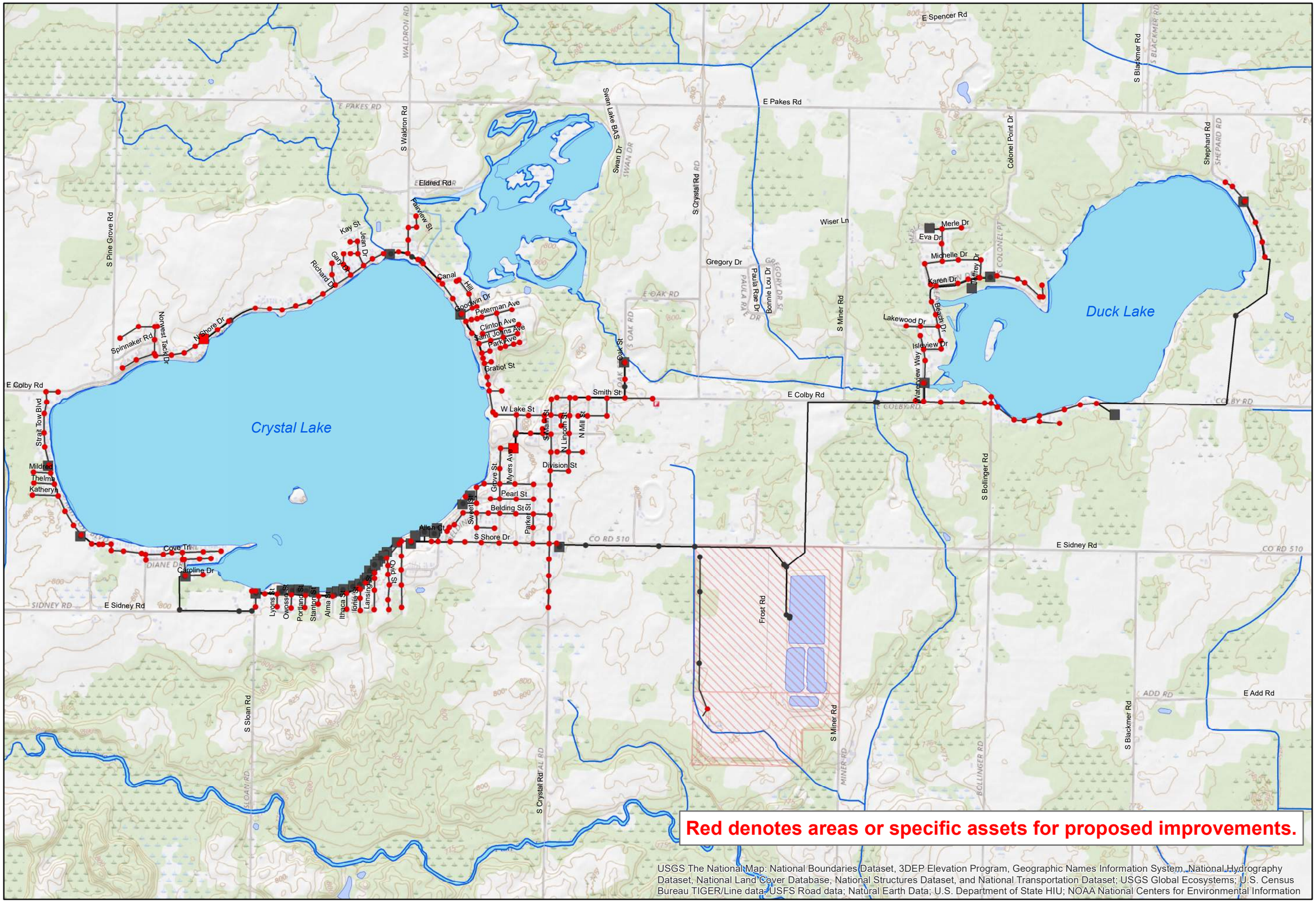
Insects

NAME	STATUS
Karner Blue Butterfly CH Lycaeides melissa samuelis Wherever found	Endangered
Monarch Butterfly Danaus plexippus Wherever found	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.



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Legend

- County Boundary
- Waterbodies
- Roads
- Lift Station
- Manholes
- Force Main
- Gravity Sewer
- WWTP

Proposed Improvements to Wastewater Assets

Crystal Township, Montcalm County, Michigan

DRAWN BY	DATE
KJP	4/9/2024
PROJECT NO.	SCALE
861970	1:19,000
FILE LOCATION	
--	
SOURCES	
--	

N

0 500 1,000
SCALE IN FEET

APPENDIX D – OPINION OF PROBABLE COSTS

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Crystal Township

Summary Table: Engineer's Opinion of Probable Project Cost[1]

Project No. 861970	Project Description	Project Budget (in 2024 Dollars)
Improvements		
	Manhole Rehabilitation	$1,403,000
	Control Structure & Piping Rehabilitation	$443,000
	Lift Station Rehabilitation	$3,333,000
	Irrigation System Improvements	$889,000
	TOTAL:	**$6,068,000**
	Expense Type	
	Engineering	**$792,000**
	Contingency	**$879,000**
	OH&P	**$574,000**
	Direct	**$3,823,000**
	TOTAL:	**$6,068,000**

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Engineer's Opinion of Probable Project Cost [1]

Project:	Crystal Sewer District - Collection System, LS, and WWTP Improvements	*Project No.*	861970
Basis for Estimate:	[X] Conceptual [ ] Basis of Design [ ] Final	*Estimator:*	ARH/SFH/KJP
Work:	**Control Structure & Piping Rehabilitation**		

Item	Description	Unit	Qty.	Unit Price	Amount
1	**WWTF Control Structure and Piping Rehabilitation**				**$279,000**
	Influent Structure				
	New Structure	LS	1	$50,000	$50,000
	12" Proposed Piping	LF	40	$400	$16,000
	Valves	EA	2	$20,000	$40,000
	Control Structure Grating	LS	1	$5,000	$5,000
	Intermediate Structure A				
	Slide Gates	EA	2	$65,000	$130,000
	Control Structure Grating	LS	2	$7,500	$15,000
	Intermediate Structure B				
	Control Structure Grating	LS	2	$7,500	$15,000
	Effluent Structure				
	Control Structure Grating	LS	1	$7,500	$8,000
2	**General Conditions and OH&P**		15%		$42,000
				Construction Total	**$321,000**
3	**Contingency & Undeveloped Details**		20%		$64,000
4	**Engineering & Adminstration**		18%		$58,000
				Total Project Cost:	**$443,000**

Notes:

(1) This estimate represents a budgetary cost estimate to be used for planning purposes. Further definition of the scope of the project through preliminary and final design will provide details necessary to improve the accuracy of conceptual estimates.

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Engineer's Opinion of Probable Project Cost [1]

Project:	Crystal Sewer District - Collection System, LS, and WWTP Improvements	*Project No.*	861970
Basis for Estimate:	[X] Conceptual [ ] Basis of Design [ ] Final	*Estimator:*	ARH/SFH/KJP
Work:	**Irrigation System Improvements**		

Item	Description	Unit	Qty.	Unit Price	Amount
1	**Irrigation Building**				**$65,000**
	Site Grading	LS	1	$20,000	$20,000
	Building Doors	LS	1	$5,000	$5,000
	Building Windows	LS	1	$10,000	$10,000
	Building Paint	LS	1	$15,000.00	$15,000
	HVAC	LS	1	$15,000.00	$15,000
2	**Irrigation Building System Piping and Mechanical**				**$185,000**
	Pumps	EA	2	$25,000	$50,000
	Valves	LS	1	$15,000	$15,000
	Piping	LS	1	$20,000	$20,000
	Electrical & Controls	LS	1	$100,000	$100,000
3	**Irrigation Field System Piping and Mechanical**				**$310,000**
	Center Pivot	LS	1	$250,000	$250,000
	Irrigation Piping	LS	1	$60,000	$60,000
4	**General Conditions and OH&P**		15%		$84,000
				Construction Total	**$644,000**
5	**Contingency & Undeveloped Details**		20%		$129,000
6	**Engineering & Adminstration**		18%		$116,000
				Total Project Cost:	**$889,000**

Notes:

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Engineer's Opinion of Probable Project Cost [1]

Project:	Crystal Sewer District - Collection System, LS, and WWTP Improvements	*Project No.*	861970
Basis for Estimate:	[X] Conceptual [ ] Basis of Design [ ] Final	*Estimator:*	ARH/SFH/KJP
Work:	**Lift Station Rehabilitation**		

Item	Description	Unit	Qty.	Unit Price	Amount
	Dewatering	LS	1	$50,000.00	$50,000
	Traffic Control	LS	1	$50,000.00	$50,000
	Bypass Pumping	LS	1	$100,000.00	$100,000
1	**Lift Station**				
	Complete Replacement of 11 and 7	EA	2	$700,000	$1,400,000
2	**Valve Vault**				
	High Pressure Grouting	LS	1	$100,000	$100,000
	Access Structure	EA	10	$15,000	$150,000
	Access Hatch	EA	10	$5,000	$50,000
	Valve	EA	10	$15,000	$150,000
	Blast and Coat piping	EA	10	$5,000	$50,000
3	**General Conditions and OH&P**		15%		$315,000
				Construction Total	**$2,415,000**
4	**Contingency & Undeveloped Details**		20%		$483,000
5	**Engineering & Adminstration**		18%		$435,000

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Engineer's Opinion of Probable Project Cost [1]

Project:	Crystal Sewer District - Collection System, LS, and WWTP Improvements	*Project No.*	861970
Basis for Estimate:	[X] Conceptual [ ] Basis of Design [ ] Final	*Estimator:*	ARH/SFH/KJP
Work:	**Manhole Rehabilitation**		

Item	Description	Unit	Qty.	Unit Price	Amount
1	**Manhole Rehabilitation**				**$884,000**
	Sanitary Manhole Lining (10 foot average depth)	EA	2,830	$252	$714,000
	Dr Structure Cover, Adj	EA	283	$600	$170,000
2	**General Conditions and OH&P**		15%		$133,000
				Construction Total	**$1,017,000**
3	**Contingency & Undeveloped Details**		20%		$203,000
4	**Engineering & Adminstration**		18%		$183,000
				Total Project Cost:	**$1,403,000**

Notes:

(1) This estimate represents a budgetary cost estimate to be used for planning purposes. Further definition of the scope of the project through preliminary and final design will provide details necessary to improve the accuracy of conceptual estimates.

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Summary Table: Engineer's Opinion of Probable Project Costs

Collection System, Lift Station, and WWTP Improvements Selected Alternatives Analysis

Summary of Selected Alternative - Net Present Worth Analysis (0.5% Discount, 20 Years)						
Alternative	**Project Cost**	**Annual OM&R Cost**	**Net Present Worth of OM&R Cost (1)**	**Total Present Worth**	**Salvage Value**	**Net Present Worth**
Collection System, Lift Station, and WWTP Improvements Selected Alternatives Analysis						
Alternative 3	$ 6,068,000	$ 51,000	$ 968,000	$ 7,036,000	$ 1,280,600	$ 5,755,400
Overall Project Total	**$ 6,068,000**	**$ 51,000**	**$ 968,000**	**$ 7,036,000**	**$ 1,280,600**	**$ 5,755,400**

Note: This table represents budgetary estimates for planning purposes. Further definition of the scope of the projects through preliminary and final design will provide details necessary to improve the accuracy of the costs.

APPENDIX E – DISADVANTAGED COMMUNITY STATUS WORKSHEET

Overburdened and Significantly Overburdened Calculation Worksheet

2. Median Annual Household Income (blended if necessary)	$59,375		
3. Taxable Value Per Capita (blended if necessary)	$42,206		
4. Amount of anicipated debt - FY25 SRF loan only	$6,100,000		
Terms	20		
Rate	3.00%		
New Annual debt from SRF loan	$410,016		
5. Annual Payments on existing debt	$30,690		
6. Total OM&R	$333,600		
7. Number of REUs	1066		
Total Annual Cost	$774,306		
Annual User Cost	$726		
MAHI Threshold $ Amount	**$594**		
Loan Threshold $ Amount	$3,996,796		**Result**
125% of Federal Poverty MAHI	$39,000	**Significantly Overburdened**	**NO**
Lowest 10% TVPC	$16,634	**Significantly Overburdened**	**NO**
Lowest 20% TVPC	$23,778	**Overburdened without calculation needed**	**NO**
Michigan MAHI	**$66,986**	**Overburdened with calculation**	**YES**

Instructions

This calculation template is designed to be used for informational purposes only for SRF FY25 applicants. Completion of this form is not necessary, unlike the determination survey. The results of this preliminary calculation do not guarantee any final determinations. Final determinations will be made by EGLE after a full review of the data and prior years submittals if applicable.

Only fill in the cells that are highlighted in grey: cells B2, B4, B6, B11, B13, and B15.
There are three ways an applicant can automatically qualify as overburdened or significantly overburdened:
-If they have a MAHI or blended MAHI below 125% of the federal poverty MAHI (Row 23)
-If they have a TVPC in the lowest 10% of the state (Row 25)
-If they have a TVPC in the lowest 20% of the state (Row 27)

These calculations are completed once cells B2 and B4 are entered, and the results are shown as a red "no" or a green "yes" in cells E23, E25, and E27. If any of these results in a green "YES" the applicant is automatically qualified* as overburdened or significantly overburdened and does not need to enter any cost data (*provided the numbers entered into B2 and B4 are accurate and followed the rules outlined in the Status Determination Survey).

The final way an applicant can be determined overburdened is if their MAHI falls below the state average of $66,986 AND their annual user costs are greater than 1% of their MAHI or blended MAHI. If the MAHI or blended MAHI is greater than $66,986, an applicant cannot be eligible for overburdened status, should not complete or send in an application, and a red "Do Not Qualify" will show up in cell B20. For applicants under $66,986 fill in cells B6, B11, B13, and B15 using the corresponding data from the completed Status Determination Survey. If the calculations turn out to be greater than 1% cell E29 will turn green and read "YES." If any of the results in E23, E25, E27, or E29 result in a "YES", the applicant preliminarily qualifies as overburdened or significantly overburdened.

Cell B21 is new this year. This cell calculates the loan amount needed for an applicant to either become overburdened by calculation or lose overburdened status by calculation. If the number shows up as 0, and cell E21 is green and says "YES", it means that the applicant will be overburdened by calculation regardless of the loan amount. If a number is shown then that is the amount the FY25 loan needs to be for an applicant to become/maintain overburdened status for FY25.

***Regional Systems**

First complete the tab on the bottom left of this sheet titled, "Blended MAHI and TVPC calcs". Once completed, cells B2 and B4 will automatically populate with the completed calculations. If they do not, enter the blended

APPENDIX F – PUBLIC PARTICIPATION

NOTICE OF PUBLIC HEARING

Crystal Township will hold a public hearing on a proposed Wastewater Collection, Lift Station, and Treatment System Improvements Project. The purpose of the Public Hearing is to receive comments from interested persons.

Crystal Township is pursuing subsidized financing through the Clean Water State Revolving Fund (CWSRF) in order to make necessary improvements to the collection and treatment system to address documented issues with manholes, lift stations, and the treatment facility. The Township is developing a Project Plan that provides a 20- to 30-year design basis for needed wastewater system improvements. The Township is pursuing low-interest financing through the CWSRF program over a 20-year or 30-year period.

The hearing will be held at 7:00 p.m. on April 29, 2024, at the following location:
Crystal Township Community Center, 217 West Park Street, Crystal, Michigan 48818

Please visit the Crystal Township website at http://crystal-township.com prior to the meeting for meeting details.

Impacts of the proposed project include minor traffic operation, increased local noise and dusts levels typically of a construction project. There are no anticipated long-term impacts from this project.

The estimated cost to users for the proposed project will be dependent on the terms of the financing proposed by EGLE for this project. The total project costs are estimated at approximately $6.1 million. The final user cost impacts will depend on final project financing and funding.

The SRF Project Plan will be available for public review on April 14, 2024, at the following locations:

- Crystal Township Community Center, 217 West Park Street, Crystal, Michigan 48818
- Online at the Crystal Township Website at http://crystal-township.com

Written comments received before the public hearing record is closed on April 29, will receive responses in the Final Project Plan. Written comments should be sent to:

Crystal Township
Attn: Patty Baker-Marek, Township Clerk
217 West Park Street
Crystal, MI 48818