SOUTHEAST METRO WATER RECLAMATION FACILITY

Draft Facility Plan

METROPOLITAN COUNCIL

May 2018

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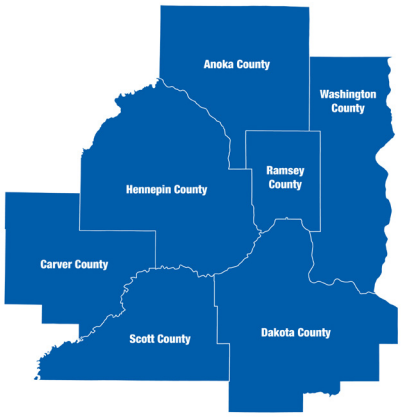

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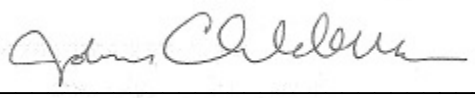

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Glossary of Terms

The following terms and abbreviations are used in this report, and are provided here for reference.

CT. Chlorine concentration multiplied by contact time.

DR11. A standard thickness grade of HDPE plastic pipe, rated for 150 psi of internal pipe pressure.

Effluent. The water leaving a wastewater treatment plant after treatment. In the context of this report, the effluent from the Empire Wastewater Treatment Plant is frequently referred to, which would serve as the source of water for the Southeast Metro Water Reclamation Facility.

EIW. Environmental Information Worksheet. A report that documents potential environmental impacts from a project, and is required as part of a facility plan to be used for an application for a Clean Water Revolving Fund loan.

ESA. Environmental Site Assessment. A report prepared for a land owner that identifies potential or existing contamination liabilities.

ft/s. Feet per second, a unit of measurement for water flow velocity.

gpm. Gallons per minute, a unit of measurement for rate of water flow by volume.

HDPE. High Density Polyethylene. A plastic that is commonly used to manufacture water pipes.

L74. MCES Lift Station 74.

LIDAR. Light Detection and Ranging. A remote sensing method that uses light in the form of a pulsed laser to measure distances. Used from aircraft to measure elevation over broad areas.

Lift Station. A pumping station for wastewater or storm water.

MCC. Motor Control Center. A common component of the electrical system of a process plant like the Southeast Metro Water Reclamation Facility. The MCC is a hub of control for motors in the plant such as pump motors.

MCES. Metropolitan Council Environmental Services

MGD. Millions of Gallons per Day, a unit of measurement for rate of water flow by volume.

mg/L. Milligrams per liter, a unit of measurement for concentration of a substance in water.

mJ/cm^2. Millijoules per square centimeter, a unit of measurement of UV radiation dose.

mL. Milliliter, a unit of measurement for volume of a fluid.

MnDOT. Minnesota Department of Transportation.

MnHPO. Minnesota Historic Preservation Office.

MPCA. Minnesota Pollution Control Agency.

MPN. Most Probable Number. This is a unit of measurement for bacteria and is used as a means of assessing the number of pathogens in water.

NPDES. National Pollutant Discharge Elimination System. The NPDES permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. The program is administered by the Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA). Wastewater treatment plants have NPDES permits that require monitoring of specific constituents discharged.

NTU. Nephelometric Turbidity Units, a unit of measurement for turbidity of water.

NWRI. National Water Research Institute.

Outfall. A pipe that conveys effluent water from a treatment plant to its discharge point in the environment. The Empire Wastewater Treatment Plant outfall pipe is frequently referred to in this report, and conveys effluent from the Empire plant to the Mississippi River.

psi. Pounds per square inch, a unit of measurement for water pressure in a pipe.

PVC. Polyvinyl Chloride. A plastic that is commonly used to manufacture water pipes.

Reclaimed Water. Effluent that has received additional treatment to make it suitable for specific applications or beneficial use. Recycled water is often used interchangeably with reclaimed water.

SWPPP. Storm Water Pollution Prevention Plan.

TKN. Total Kjeldahl Nitrogen. This is a measure of the amount of ammonia and organic / reduced nitrogen compounds in a water body or stream. These nitrogen compounds can react with chlorine in a disinfection process.

TOC. Total Organic Carbon. This is a measure of compounds containing carbon in a water body or stream.

UV. Ultraviolet radiation, which is used to disinfect water using ultraviolet light radiation to inactivate pathogens.

WWTP. Wastewater Treatment Plant

Executive Summary

MCES is planning to construct facilities to provide additional treatment for wastewater effluent from the Empire Wastewater Treatment Plant in order to provide the additionally treated wastewater (called reclaimed water) to industries or other users. From time to time, Metropolitan Council Environmental Services (MCES) has received inquiries about wastewater reuse from municipalities and industries in the Empire Wastewater Treatment Plant (WWTP) service area. Due to this interest, MCES considered the potential for wastewater reuse when it constructed the Empire WWTP effluent pipe (called the Empire outfall) in 2007. The proposed Southeast Metro Water Reclamation Facility builds upon this previous project planning and execution.

In March 2017, Enerkem, a Canadian company, stated its interest in receiving reclaimed water service from MCES. Enerkem is planning to construct a waste-to-fuel facility in Inver Grove Heights that will need 1.6 million gallons of water per day for its industrial processes and for cooling. MCES owns land at the former Rosemount Wastewater Treatment Plant site, with effluent from the Empire plant running through an outfall pipe adjacent to the site. This site is approximately 4 ½ miles from the proposed Enerkem facility, providing an opportunity for a cost-effective industrial wastewater reuse application. Enerkem is interested in reclaimed water service due to its concerns about obtaining an appropriations permit for the volume of groundwater they anticipate needing. Additionally, using reclaimed water would preserve high-quality groundwater resources for domestic use.

MCES would need to provide reclaimed water in accordance with the Minnesota Pollution Control Agency (MPCA) guidance for wastewater reuse. MPCA requires treatment to the Disinfected Tertiary Reuse Water level for Enerkem's process and cooling water use. This level of water quality is defined by the MPCA as municipal wastewater treated by a secondary treatment process, or equivalent, and tertiary filtration prior to disinfection to achieve a total coliform limit of 2.2 MPN/100 ml on an average daily basis. Additionally, the turbidity of the reclaimed water must not exceed 2 NTU on a daily average basis with a daily maximum of 10 NTU.

The planned reclaimed water system would include four primary components:

- Diversion: a connection to the Empire effluent outfall, piping, and a lift station to divert flow from the effluent outfall to the tertiary treatment process.
- Filtration and Disinfection: cloth media disk filters and sodium hypochlorite / UV systems to filter and disinfect the water to meet Disinfected Tertiary Reuse guidance.
- Storage and Pumping: a tank to provide storage capacity for reclaimed water, for operational flexibility and system reliability; and high lift pumping to provide pressure and flow for distribution.
- Distribution: a pipeline to transmit the reclaimed water to Enerkem.

This Facility Plan evaluates several alternatives for these system components, to arrive at a system concept and budgetary cost estimate. The budgetary cost estimate for the system is presented in Table ES1. This total project cost includes design, construction, inspection, and administrative costs, as well as a 20% contingency for undeveloped design details.

Table ES1. Budgetary Cost Estimate for System Concept

	Estimated Project Cost
Diversion System	$851,000
Filtration and Disinfection	$7,438,000
Storage and High Lift Pumping	$5,287,000
Distribution Piping (County Road 71 Route)	$14,121,000
Total	**$27,697,000**

Operations and maintenance costs are estimated at $300,000 annually, and include the items in Table ES2.

Table ES2. Annual Operational Cost Estimate

Operational Cost Item	Annual Quantity	Units	Unit Cost	Estimated Annual Cost
Sodium Hypochlorite	1,825	Gallons	$0.734	$1,300
General Maintenance, Labor	1	LS	$68,637	$68,600
General Maintenance, Materials	1	LS	$16,781	$16,800
Operations FTE	1	FTE	$100,000	$100,000
Filter Cloth Media Replacement	1	LS	$5,000	$5,000
Filter Main V-Ring Seal Replacement	1	LS	$1,000	$1,000
UV Lamp Replacement	1	LS	$24,480	$24,500
Power	1,100,000	kW-hr	$0.075	$82,500
Total				**$300,000**

This Facility Plan is to be made available for public review in May 2018, including a public hearing. Following the public hearing, and incorporation of any changes that result, the plan would be reviewed and adopted by the Metropolitan Council in June 2018. It would then be submitted to MPCA for review.

Design and construction phases of the project are dependent upon funding. It is anticipated that the construction of these facilities would be packaged into two separate bids: one for the treatment facilities and one for the distribution pipe. These two separate construction projects would occur at the same time, as would their design. Design is expected to start in 2018 or 2019, depending upon funding, and to take approximately one year to complete. Construction is expected to start in 2019 or 2020, and take two years to complete.

1. Background and Objectives

From time to time, Metropolitan Council Environmental Services (MCES) has received inquiries about wastewater reuse from municipalities and industries in its Empire Wastewater Treatment Plant (WWTP) service area. This interest is driven by a desire to protect high quality groundwater for domestic uses, and by concerns about groundwater appropriations permitting to accommodate growth and development. Because of the recurring interest in wastewater reuse in the area, MCES has considered reuse of wastewater for this portion of the Twin Cities in several planning studies over the last 20 years.

A master plan was developed in 2000-01 to evaluate alternative improvements to meet growing wastewater flows in the Rosemount and Empire service areas. At that time, two wastewater treatment plants were in operation to serve the southeastern portion of Dakota County. The Rosemount WWTP served the City of Rosemount, and the Empire WWTP served most of Apple Valley, and portions of Lakeville, Farmington, and Empire Township. Both plants were operating near capacity, and rapid growth was anticipated for the service areas. It was determined, based on studies conducted at that time, that the most effective way to continue to meet the needs of these communities into the future was to decommission the Rosemount WWTP and to expand the Empire WWTP.

The Empire WWTP discharge was to the Vermillion River at that time, which was to become designated as a trout stream by the Minnesota Department of Natural Resources. Because of the impact to the Vermillion River from increasing effluent flows from the Empire WWTP, it was determined that an outfall pipe was necessary to bring effluent directly to the Mississippi River. The route selected for that outfall pipe runs adjacent to the decommissioned Rosemount WWTP, which is located in an industrial area. MCES identified an opportunity at that time to potentially use the site of the former Rosemount WWTP to provide reclaimed water (wastewater reuse) for the neighboring Flint Hills refinery or other potential reclaimed water uses nearby. Therefore, the Rosemount WWTP site has been maintained by MCES should the need for reclaimed water present itself.

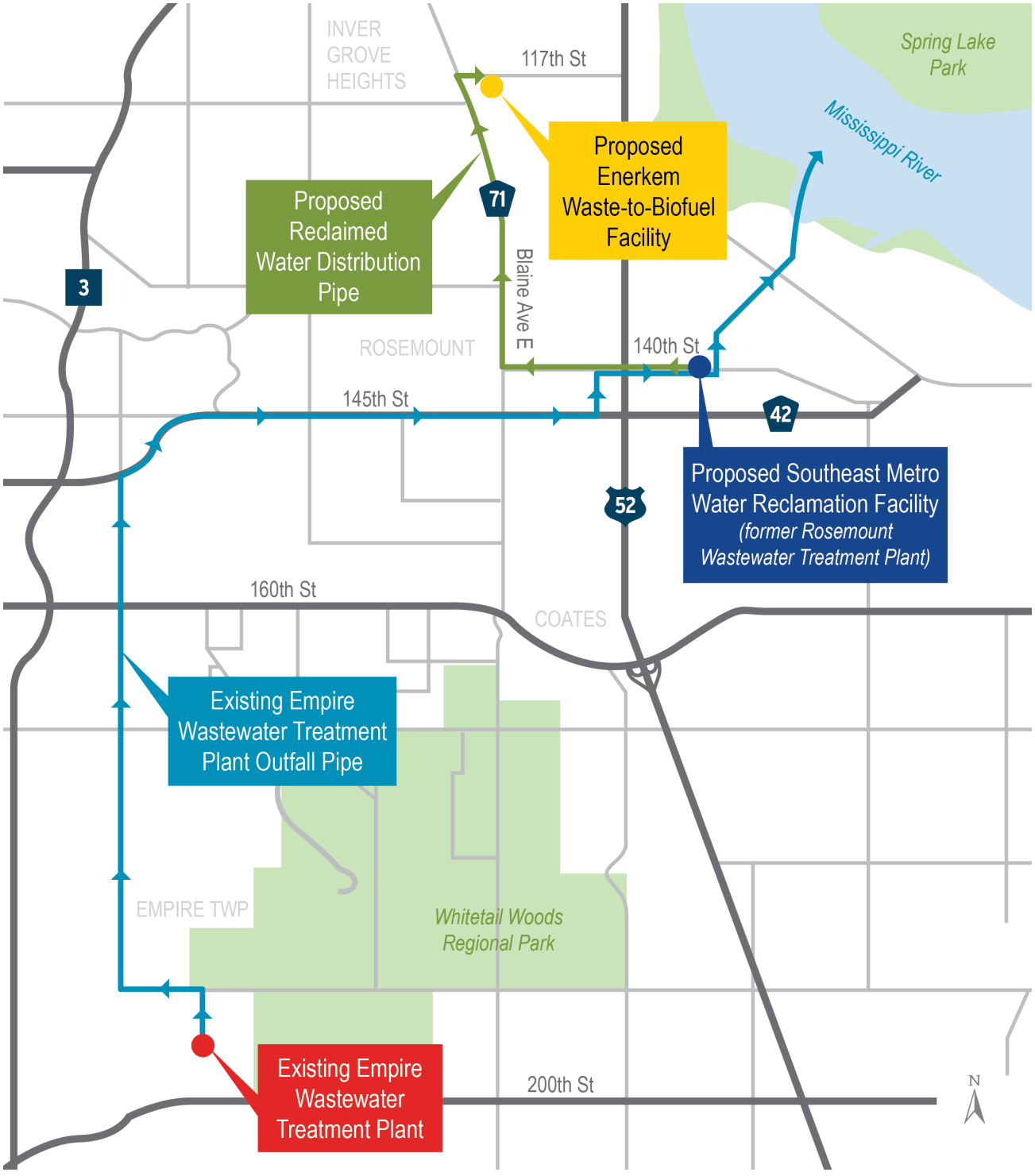
The proposed Southeast Metro Water Reclamation Facility builds upon this previous project planning and execution. SKB Environmental, a Twin Cities-based company, has partnered with Enerkem, a Canadian firm, on a potential waste-to-biofuel project in Inver Grove Heights. In March 2017, Enerkem contacted MCES indicating their desire to use reclaimed water from MCES for their proposed facility. They estimate that the facility would require 1.6 millon gallons per day (MGD) of reclaimed water.

Enerkem's proposed waste-to-biofuel facility would be located on 117th Street in Inver Grove Heights, approximately ¼-mile east of County Road 71. The proximity of the MCES Empire Wastewater Treatment Plant (WWTP) and its effluent outfall pipe to this location presents an opportunity for economically feasible wastewater reuse, and a means to promote sustainable use of water resources in the Twin Cities. The former Rosemount WWTP site is approximately 4 ½ miles from the proposed Enerkem facility, providing a potential site location for a satellite treatment plant to provide additional treatment of the effluent from the Empire WWTP to meet regulatory guidance for industrial reuse of wastewater.

Figure 1 shows the locations of the Empire WWTP, the effluent outfall pipe, the former Rosemount WWTP site, and the proposed waste-to-biofuel facility location.

In order to provide reclaimed water from the Empire effluent outfall to the Enerkem site, MCES would need additional infrastructure, including flow diversion, treatment, storage, pumping, and distribution piping. This Facility Plan evaluates the costs and feasibility of alternative approaches to providing the needed reclaimed water infrastructure. The infrastructure for this project is collectively referred to as the Southeast Metro Water Reclamation Facility in this report.

Figure 1. Project Location Map



2. Existing Conditions

2.1 Empire Effluent Flow Rates

Empire WWTP's last 5 years average flow rate has been approximately 10 MGD, with a minimum flow averaging a little under 9 MGD, and a maximum flow averaging around 15 MGD. With this flow Empire will be able to supply a sufficient amount of flow to the proposed water reclamation facility. Table 1 shows the minimum, average, and maximum flows from the last 5 years at Empire.

Table 1. Empire Flow Data. Flow rate in MGD.

	2013	2014	2015	2016	2017
Minimum	8.5	9.2	8.5	8.8	9.2
Average	10.2	10.4	10.0	10.5	10.7
Maximum	16.4	17.3	14.7	12.3	14.9

2.2 Reclaimed Water Demand

Enerkem estimates their facility will require approximately 1.6 MGD (1,100 gpm). MCES is planning to construct treatment and pumping facility capacity of 2.0 MGD (1,400 gpm) at the Southeast Metro Water Reclamation Facility. The difference between Enerkem's demand and the facility design capacity is due to operational needs such as for filter backwash water and flexibility. Redundancy would be incorporated into the design for filtration, disinfection, and pumping equipment. This would provide reliability to minimize loss of reclaimed water service.

2.3 Empire Effluent Water Quality

Empire WWTP is an advanced wastewater treatment facility that discharges to the Mississippi River and is regulated under a National Pollutant Discharge Elimination System (NPDES) permit. MCES performs extensive WWTP effluent monitoring to meet NPDES requirements and to monitor the performance of the treatment plant. In addition to what MCES is required to monitor in the NPDES permit, in recent years MCES monitored constituents of interest for several reclaimed water uses. The WWTP sampling program was initiated in June 2015. MCES plans to continue this monitoring at Empire WWTP for the foreseeable future. The list of constituents monitored at Empire along with the average and standard deviation of each constituents are in Table 2.

2.4 Reclaimed Water Quality Requirements

Based on Enerkem's intended use of reclaimed water, MCES would need to provide reclaimed water in accordance with the Minnesota Pollution Control Agency (MPCA) guidance for Disinfected Tertiary Reuse Water (Appendix A). This level of treatment is applicable for use in industrial process or cooling water, food crops where contact with the edible portion is anticipated, and irrigation of residential landscapes, parks, and golf courses. This level of water quality is defined by the MPCA as municipal wastewater treated by a secondary treatment process, or equivalent, and tertiary filtration prior to disinfection to achieve a total coliform limit of 2.2 MPN/100 ml on an average daily basis. Additionally, the turbidity of the reclaimed water must not exceed 2 NTU on a daily average basis with a daily maximum of 10 NTU. Other requirements such as signage to protect public health and reporting also apply.

Table 2. Empire Effluent Data

Constituent	Unit	Total Data Set Average	Standard Deviation for All Samples
Alkalinity (as CaCO3)	mg/L	225	27.73
Aluminum (Al)	mg/L	0.01	4.4E-03
Ammonia (NH3)	mg/L	0.13	0.40
Ammonium (NH4)	mg/L	0.06	0.06
Arsenic (As)	mg/L	0.001	1.1E-04
Bicarbonate ($HCO_{3)}$	mg/L	227	31.10
Boron (B)	mg/L	0.43	0.15
Calcium (Ca)	mg/L	93	13
Carbonaceous Biochemical Oxygen Demand (CBOD)	mg/L	2.79	1.21
Chemical Oxygen Demand (COD)	mg/L	39	9.12
Chloride (Cl)	mg/L	482	88
Dissolved Oxygen (DO)	mg/L	8	0.45
Electrical Conductivity	umho/cm	2,182	139
Fecal Coliform	MPN/100 ml	29	55
Hardness (as $CaCO_3$)	mg/L	337	46
Iron (Fe)	mg/L	0.11	0.05
Magnesium (Mg)	mg/L	27	1.86
Manganese (Mn)	mg/L	0.01	9.1E-03
Mercury (Hg), Total	ng/L	1.11	4.5E-01
Nitrate ($NO_{3)}$	mg/L	23	2.20
Nitrite (NO_2)	mg/L	0.09	0.12
Nitrogen, Total (TN)	mg/L	25	2.39
Nitrogen, Total Kjeldahl (Total: TKN)	mg/L	2	0.63
pH	unit	7.3	0.13
Phosphorus (total: TP)	mg/L	0.32	0.30
Potassium (K)	mg/L	28	7.44
Silica, molybdate reactive	mg/L	16	0.81
Sodium (Na)	mg/L	273	28
Sulfate (SO4)	mg/L	45	16.49
Sulfur (S)	mg/L	16	2.18
Total Coliform	MPN/100 ml	1,691	5,309
Total Coliform (During Non-Disinfection Season)	MPN/100 ml	90,033	43,644
Total Dissolved Solids (TDS)	mg/L	1,182	108
Total Organic Carbon (TOC)	mg/L	8.9	1.49
Turbidity	NTU	3.0	1.8

MPCA allows implementation of specific treatment technologies which have demonstrated compliance with the reclaimed water guidance. These specific technologies are listed in the latest version of the State of California Department of Public Health report “Treatment Technology Report for Recycled Water”. These vendor technologies require no further testing to prove applicability.

MCES anticipates the need for some residual chlorine in the distribution pipeline to prevent bacterial growth that could pose a concern for system maintenance. A residual chlorine concentration of 0.2 mg/L at the point of use is being considered, and will be further evaluated during the design phase of the project. Enerkem will be further treating the reclaimed water at the point of use. Issues that will be evaluated during design include chlorine dose requirements and Enerkem’s request to minimize chlorine residual in order to minimize its on-site treatment.

3. Site Selection for Treatment Facility

The former Rosemount WWTP site and the Empire WWTP site were both investigated as potential sites for the proposed reclaimed water facilities. Both sites are owned by MCES and are in proximity to the Empire effluent water that would serve as the source for the proposed reclaimed water system.

3.1 Rosemount WWTP Site

The Rosemount WWTP is a decommissioned wastewater treatment plant that houses an active MCES lift station (L74). The site has ample space for construction of the proposed facilities, it is closer to the industrial end user than the Empire WWTP, and the Empire outfall pipe runs adjacent to the site. The L74 lift station, which pumps untreated wastewater to the Empire WWTP, is adjacent to the site. Backwash and off-specification reclaimed water could be directed to L74 to be returned to the Empire WWTP.

3.2 Empire WWTP Site

The Empire WWTP site also has adequate space for installation of reclaimed water treatment facilities, and provides proximity of the Empire WWTP for discharge of backwash water. However, the distance from the Empire site to the potential Enerkem site is significantly greater (it would add approximately 6 miles to the distribution pipeline). This would also result in much greater pumping head requirements to overcome friction losses. Therefore, the capital and operating costs are significantly greater to utilize the Empire WWTP site than for the former Rosemount WWTP site.

3.3 Comparison of Site Alternatives

Consideration was given to the use of the Rosemount WWTP site and the Empire WWTP site to house the filtration, disinfection, storage, and pumping components of the system. The use of the Empire WWTP site would add approximately 6 miles to the distribution pipeline. The estimated project cost of this additional 6 miles of pipe is $18,400,000, making this alternative about 67% greater than the Rosemount WWTP site location. It would also significantly increase power consumption related to high lift pumping.

In addition to the added cost, the construction of 6 miles of pipeline would add significant construction risk, environmental and community impacts, and would also reduce the reliability of the system by adding to the risk of pipeline failure during operation. For these reasons, the Empire WWTP site was eliminated from further consideration. The alternatives considered in the remainder of this report assume that the new treatment facilities would be located at the former Rosemount WWTP site.

4. Reclaimed Water System Concept and Alternatives

The reclaimed water system for the Southeast Metro Water Reclamation Facility would include four primary components:

- Diversion: a connection to the effluent outfall, piping, and a lift station to divert flow from the effluent outfall to the tertiary treatment process.
- Filtration and Disinfection: cloth media disk filters and sodium hypochlorite / UV systems to filter and disinfect the water to meet Disinfected Tertiary Reuse guidance.
- Storage and Pumping: a tank to provide storage capacity for reclaimed water, for operational flexibility and system reliability; and high lift pumping to provide pressure and flow for distribution.
- Distribution: a pipeline to transmit the reclaimed water to the end user.

A conceptual hydraulic profile of the system is shown in Figure 2. A preliminary site layout is presented in Figure 3.

Based on discussions with Enerkem, it is assumed that there will be a below-grade storage tank at the point of use of the reclaimed water system. The system would deliver water to this storage tank on demand, with the high lift pumping system at the Southeast Metro Water Reclamation Facility controlled on tank level. Enerkem would pump water from this storage tank to serve their processes. The details of this system need to be further developed in partnership with Enerkem during the design phase of the project.

4.1 Alternatives Considered

Several alternatives were evaluated for the reclaimed water treatment and distribution system. These include disinfection process, building alternatives, storage type and capacity, and distribution pipe route. These alternatives were evaluated for capital and operational costs (where relevant). Non-monetary evaluation criteria were also considered, such as construction risk (e.g. encountering environmental contamination, poor soils, excessive dewatering), construction schedule, environmental impacts, community impacts, safety, and reliability. These non-monetary criteria were evaluated in a qualitative manner, based on factual information available, and the basis for these judgments are presented in each alternative evaluation.

The alternatives considered are summarized in Table 3.

Table 3. Summary of Alternatives

Disinfection Alternatives	Building Alternatives	Storage and High Lift Pumping Alternatives	Distribution Pipe Route Alternatives
Sodium Hypochlorite	New Construction	2 MG Below-Grade Concrete Storage Tank with Vertical Turbine Pumps	Hwy. 52 Route
UV	Repurposing Disk Filter Building and Process Control Building	6 MG Below-Grade Concrete Storage Tank with Vertical Turbine Pumps	Country Road 71 Route
		2 MG At-Grade Bolted Steel Storage Tank with Horizontal Centrifugal Pumps	

Figure 2. Conceptual Hydraulic Profile of Southeast Metro Water Reclamation Facility (Elevations in Feet)

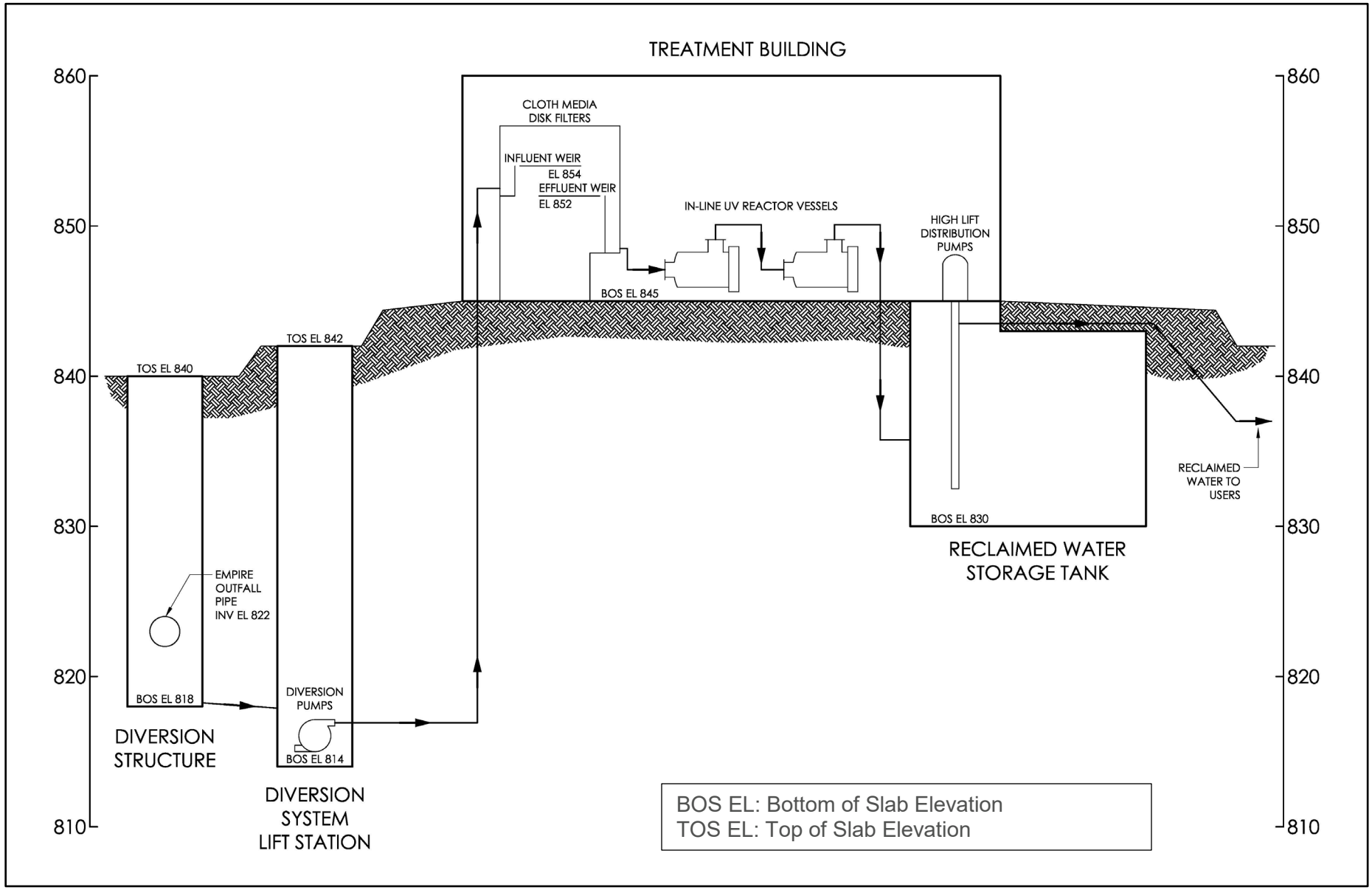
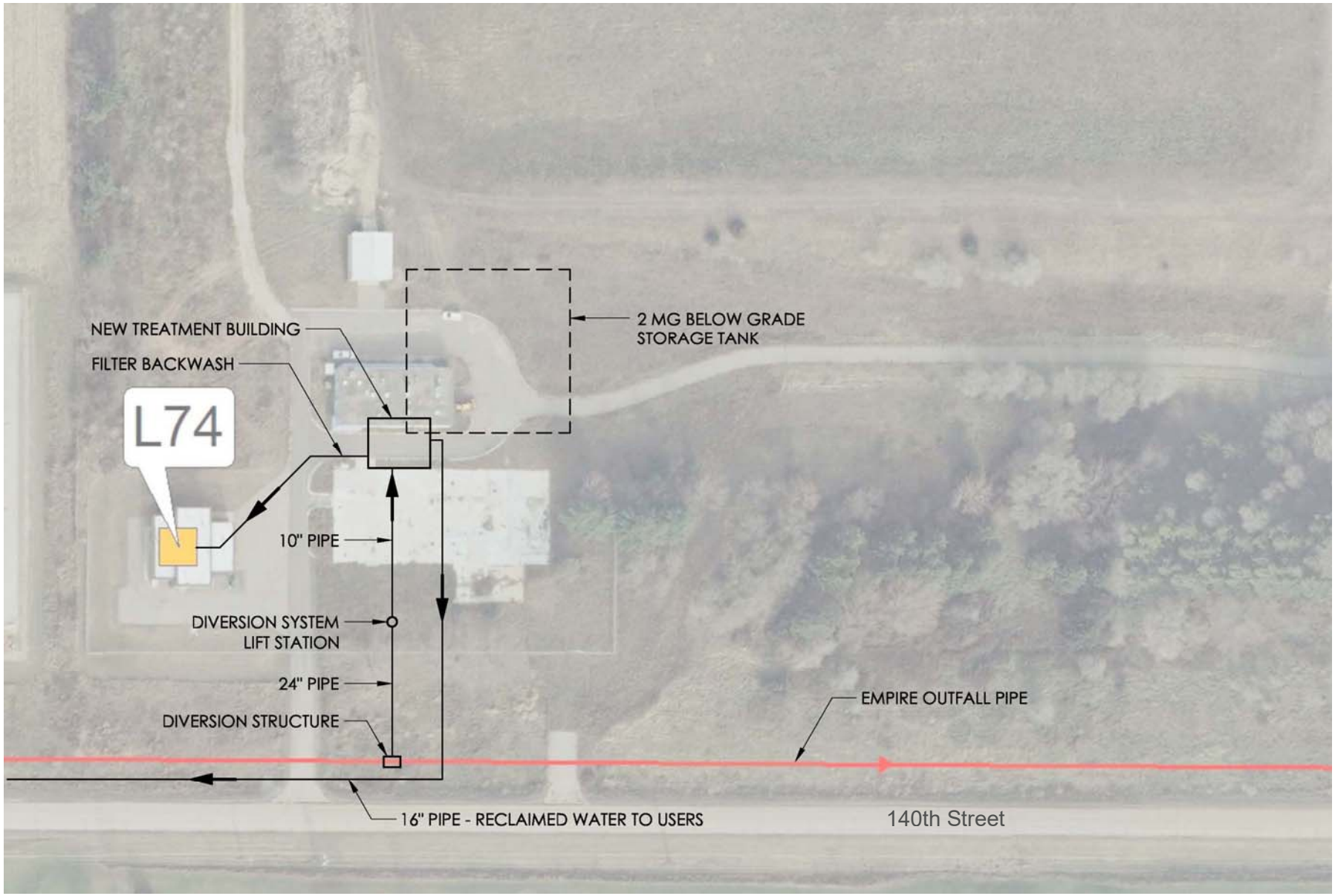


Figure 3. Preliminary Site Plan



4.2 Diversion System

4.2.1 Diversion System Description

A portion of the effluent from the Empire outfall line will be diverted to the proposed Southeast Metro Water Reclamation Facility in Rosemount. The diversion system concept includes a structure to connect to the Empire outfall pipe, a wet well, and submersible pumps to bring the effluent water up to the elevation of the filter inlet weirs. The flow from the effluent outfall to the wet well would be controlled passively by wet well elevation, but the design would incorporate a manually-controlled sluice gate to allow for lift station maintenance.

The diversion system would tie into the Empire effluent outfall pipe that parallels the southern edge of the property. The effluent outfall at this location is approximately 20 feet below grade, therefore a wet well would be required for pumping to the inlet weirs of the cloth media filters. This lift station is anticipated to be comprised of a precast manhole wet well structure with redundant submersible pumps.

4.2.2 Cost Estimate for Diversion System

The estimated project cost for the diversion system is presented in Table 4. This total project cost includes design, construction, inspection, and administrative costs, as well as a 20% contingency for undeveloped design details. A further breakdown of costs can be found in Appendix B

Table 4. Estimated Project Cost for Diversion System

	Estimated Project Cost
Diversion System	$851,000

4.3 Filtration and Disinfection

The diversion system would pump water from the wet well into the influent chambers of the filters. From there it would flow by gravity through the filters to storage. Disinfection could be accomplished through the use of chlorine or UV, and two alternative disinfection systems were considered in this Facility Plan.

Conceptual planning for the treatment process assumes a new building would be constructed to house filters and disinfection equipment. However, preliminary evaluation of the existing structures at the proposed Southeast Metro Water Reclamation Facility site indicates that there could be potential to realize cost savings by repurposing the existing Disk Filter Building and the existing Process Control Building. The potential cost savings associated with repurposing existing buildings is presented in alternative evaluations later in this report.

4.3.1 Filtration System Description

Tertiary filtration can be achieved using granular media filters, membrane technologies, or cloth media filters. MCES is exploring a cloth media filter approach for the Southeast Metro Water Reclamation Facility. This type of filter has demonstrated compliance with the reclaimed water guidance, and is listed in the State of California Department of Public Health report “Treatment Technology Report for Recycled Water”. Other considerations in the selection of cloth media filters include low capital cost, a long-term proven track record for reliability, operator familiarity, and low operations and maintenance costs.

The cloth media filters being considered have a relatively small footprint and low backwash water volume generation, which is typically less than 5% of the treated water volume. In addition, the units require very little day to day oversight and are well suited to remote automatic operation, reducing operational costs. A typical cloth media filter consists of a stainless steel tank with multiple cloth disks attached to a central shaft. Flow through the filter unit is by gravity, with flow passing through the filter cloth in an outside-to-inside manner. Filter effluent would move by gravity to an effluent chamber, and from there to below-grade storage. Backwash is initiated automatically based on water level differential across the cloth disks. When backwash is initiated, filtered water is pulled through the filter cloth in an inside-to-outside (reverse) manner. Backwash water would be returned to the Empire WWTP via the L74 lift station. Therefore, a backwash waste pipe would be needed between the filters and the L74 wet well.

The system being considered for the Southeast Metro Water Reclamation Facility would include two filter basins, each with capacity of 2 MGD, to provide complete redundancy. This would provide operational flexibility to take one unit out of service for maintenance or repair while maintaining service. Flow would be split between the two filters under normal operation, but could be diverted to one unit though the use of valves. Effluent from the two units would be combined before flowing through the disinfection system to storage.

4.3.2 Disinfection System Description

Often, disinfection of tertiary filtered wastewater is achieved through a gaseous chlorine or liquid sodium hypochlorite disinfection process. The “Treatment Technology Report for Recycled Water” from the California Department of Public Health also lists several Ultraviolet (UV) Disinfection system vendors that have demonstrated the ability to meet the disinfection guidance. MCES has evaluated the use of sodium hypochlorite and the use of UV as alternative disinfection methods. These systems are summarized in the following paragraphs.

Sodium Hypochlorite Disinfection

A chlorine disinfection system must be designed to provide a CT (defined as chlorine residual concentration times modal contact time) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of no less than 90 minutes at the peak flow rate. The treated effluent from Empire wastewater treatment plant is disinfected with UV to meet a permitted limit of 200 MPN/100 ml fecal coliform from April to October of each year. Fecal and total coliform in the Empire effluent are expected to be higher from November through March.

Based on a preliminary evaluation of the water chemistry of the Empire WWTP effluent, and discussions with staff from the City of Mankato, a dose of 8 mg/L was used for sizing the disinfection system, as a worst-case scenario based on the experience of the Mankato Reclaimed Water Facility. It is anticipated that during preliminary design for the Southeast Metro Water Reclamation Facility a chlorination study would be undertaken to better understand the chlorine demand to achieve disinfection to meet the disinfected tertiary guidance.

Based on preliminary dose calculations, assuming a 12.5% sodium hypochlorite solution, the system could demand up to 130 gallons of sodium hypochlorite solution per day at a worst-case dose of 8 mg/L. A 6000-gallon sodium hypochlorite storage tank would provide more than 30 days of chemical storage. The system would include three chemical metering pumps. Two redundant pumps would be used for initial disinfection, and one pump for chlorine residual adjustment in the reclaimed water distribution line.

Contact time for chlorine systems would be accomplished by the use of a chlorine contact chamber. This chamber was assumed to be a cast-in-place tank with a serpentine flow path to provide 90

minutes of hydraulic retention time. A chemical induction mixer would achieve rapid mixing of the sodium hypochlorite with the filtered effluent.

A process schematic for a system with cloth media filters and chlorine disinfection is shown in Figure 4.

UV Disinfection

A UV disinfection process was evaluated as an alternative to chlorine disinfection. The UV disinfection system must comply with NWRI "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse" which, in part, assume a lamp aging factor of 0.98 and bioassay validation of the UV dose. For this evaluation, a dose of 100 mJ/cm^2 is assumed for sizing the UV system. The UV units were assumed to be of the in-line, enclosed vessel type to be located indoors adjacent to the cloth media filters. The in-line vessels offer a smaller footprint than in-channel type UV systems and will better fit within the proposed hydraulic profile of the treatment train.

Four in-line UV disinfection vessels, in two parallel trains, each with two vessels in series, were assumed. This configuration allows for maintenance activities such as bulb replacement or sleeve cleaning while maintaining firm treatment capacity.

The UV analysis also assumed a small chlorine injection system to provide residual chlorine in the distribution system. Because the primary UV disinfection system does not impart a chlorine residual, the UV system would allow more flexibility in chlorine dosing, to limit residual to optimal levels for distribution system maintenance and the end user's operations.

A process schematic for a system with cloth media filters and UV disinfection is shown in Figure 5.

4.3.3 Evaluation of Disinfection Alternatives

Sodium hypochlorite and UV were considered as alternative primary disinfection methods. Table 5 presents capital cost, annual operational cost, and net present value of each for comparison. Additional capital cost details can be found in Appendix B. Operational costs are discussed in more detail in Section 5 of this report. The UV system has higher capital costs, driven by the cost of the UV equipment itself. Annual operations costs for the sodium hypochlorite disinfection system include chemical purchase as well as power to operate mixers, and general maintenance on equipment. Annual operations costs for the UV system include power to operate the lamps and lamp replacement, as well as a smaller chemical cost to provide sodium hypochlorite for residual disinfectant in the distribution system.

Table 5. Cost Comparison of Disinfection Alternatives

Disinfection Alternative	Estimated Project Cost	Annual Operational Cost	NPV
Sodium Hypochlorite	$1,072,000	$51,400	$1,802,000
UV	$2,192,000	$39,700	$2,756,000

Figure 4. Process Flow Schematic for Cloth Media Filters with Hypochlorite Disinfection

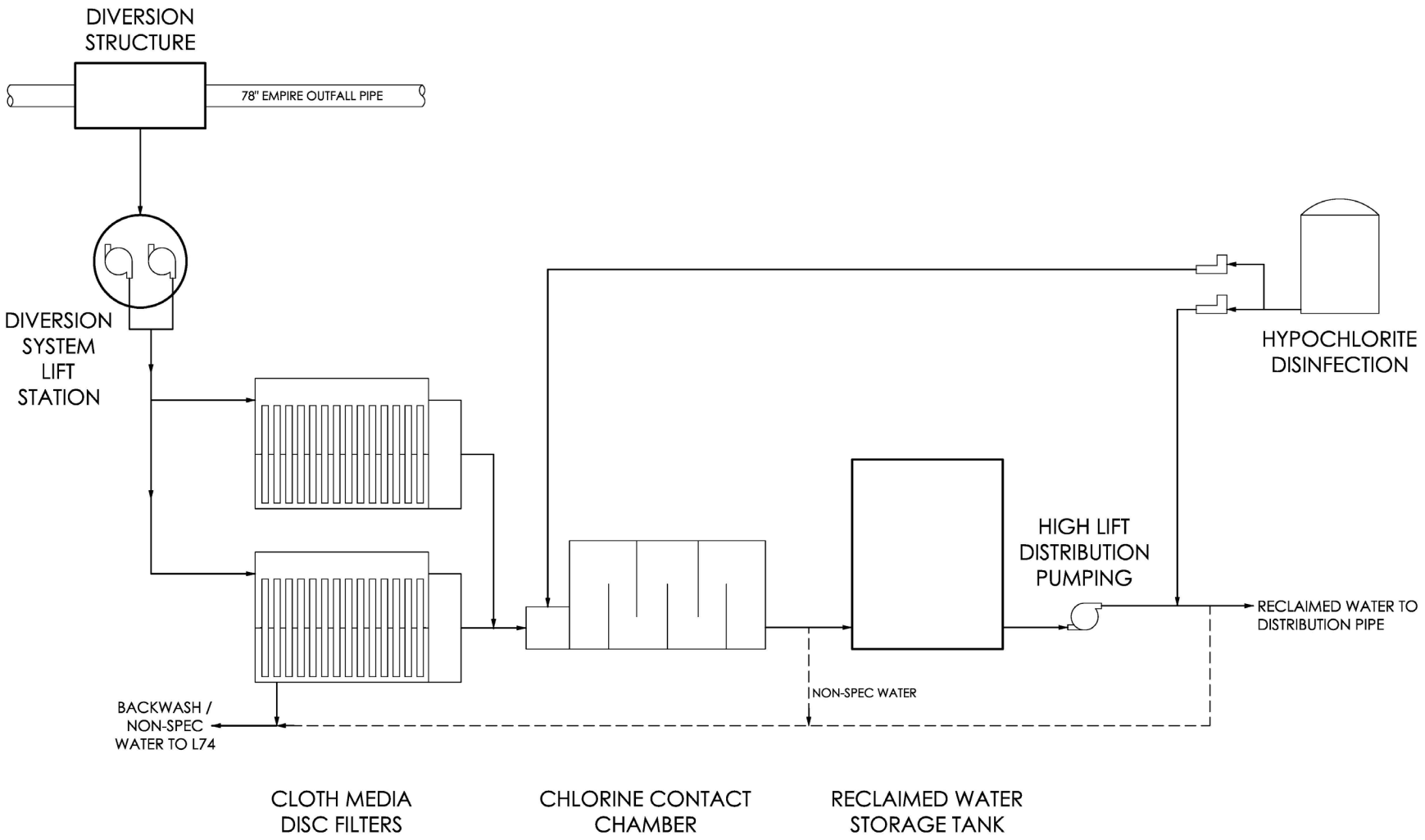
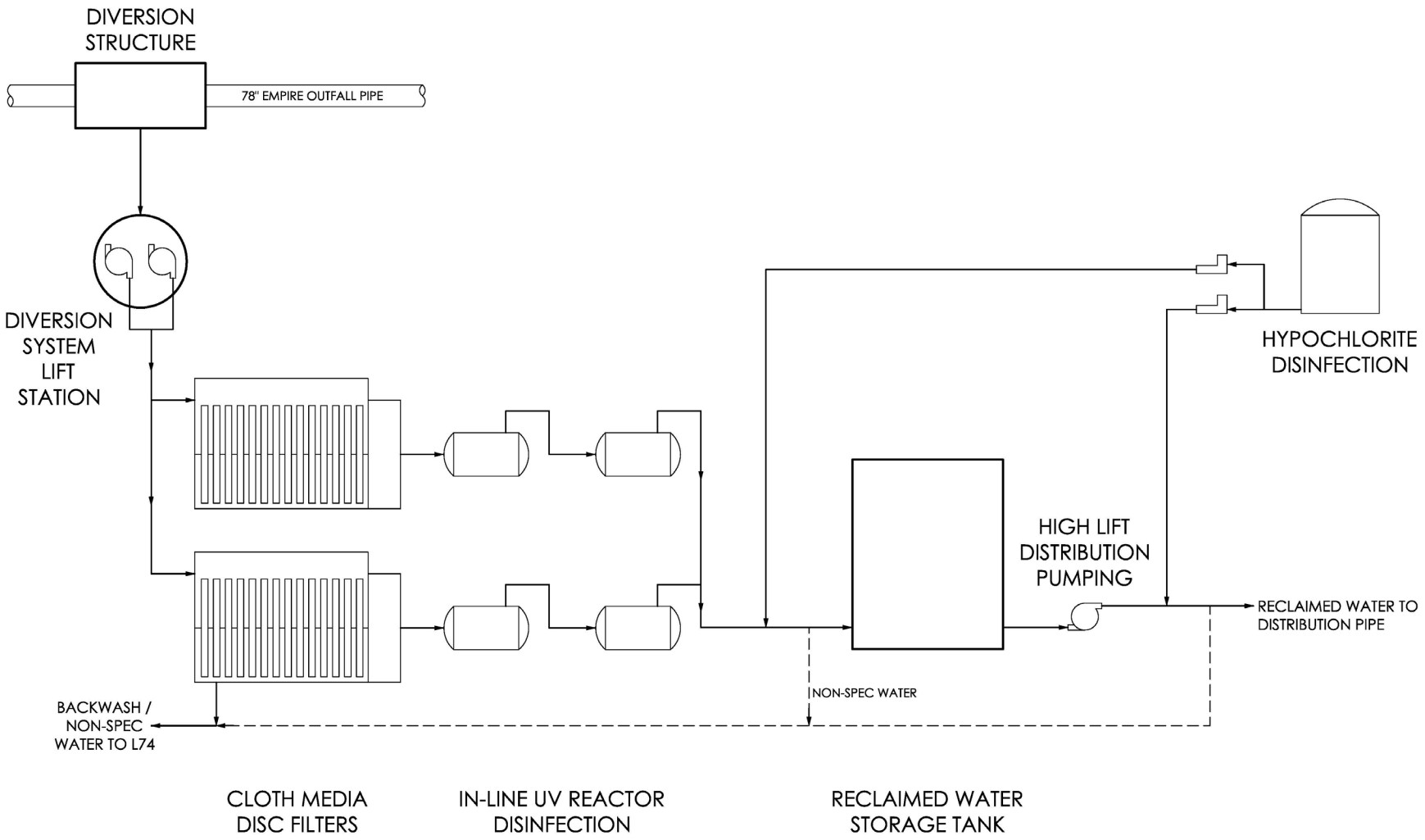


Figure 5. Process Flow Schematic for Cloth Media Filters with UV Disinfection



Non-monetary criteria for evaluating disinfection alternatives include acceptability of reclaimed water to the end user, operational complexity, and operator safety. Table 6 summarizes the evaluation of these criteria for the two alternatives considered.

As the end user, Enerkem has requested that MCES minimize the chlorine in the system to the extent possible. Therefore, controlling chlorine concentration in the reclaimed water is a priority. Using sodium hypochlorite as the primary disinfectant would limit the ability to eliminate chlorine residual in the reclaimed water distribution system if deemed necessary, and would make it more difficult to control the residual concentration in the distribution system.

The formation of disinfection byproducts in the reclaimed water also needs to be considered. Disinfection byproducts are often a concern with potable water systems that have high organic carbon in their source water. The reaction of chlorine with organic compounds generates chemical compounds that are carcinogenic, such as trihalomethanes and other halogenated organic molecules. Though the reclaimed water in this system is not for potable use, and disinfection byproducts will not be regulated, minimization of these compounds is still considered desirable. Reducing chlorine feed will reduce the formation of disinfection byproducts. UV disinfection does not produce disinfection byproducts.

Operational complexity may also be greater with the use of sodium hypochlorite as the primary disinfectant. This is due to the need to adjust chlorine dose with changing influent water chemistry. Given fluctuating TOC, TKN, and bacterial activity in the influent water (Empire effluent), it could be difficult to target the correct dose of sodium hypochlorite without frequent monitoring and adjustment that would require operator involvement. Overdosing chlorine to ensure permit compliance is a likely result.

Operator safety is thought to be somewhat reduced with a sodium hypochlorite primary disinfectant. The presence of larger volumes of hazardous chemicals on site may create more opportunity for spills and other exposures for operators during chemical deliveries and normal maintenance activities.

Table 6. Evaluation of Non-Monetary Criteria for Disinfection Alternatives

Disinfection Alternative	Acceptability of Reclaimed Water to End User	Operational Complexity	Operator Safety
Sodium Hypochlorite	Less Acceptable	Somewhat More Complex	Somewhat Less Safe
UV	More Acceptable	Somewhat Less Complex	Somewhat More Safe

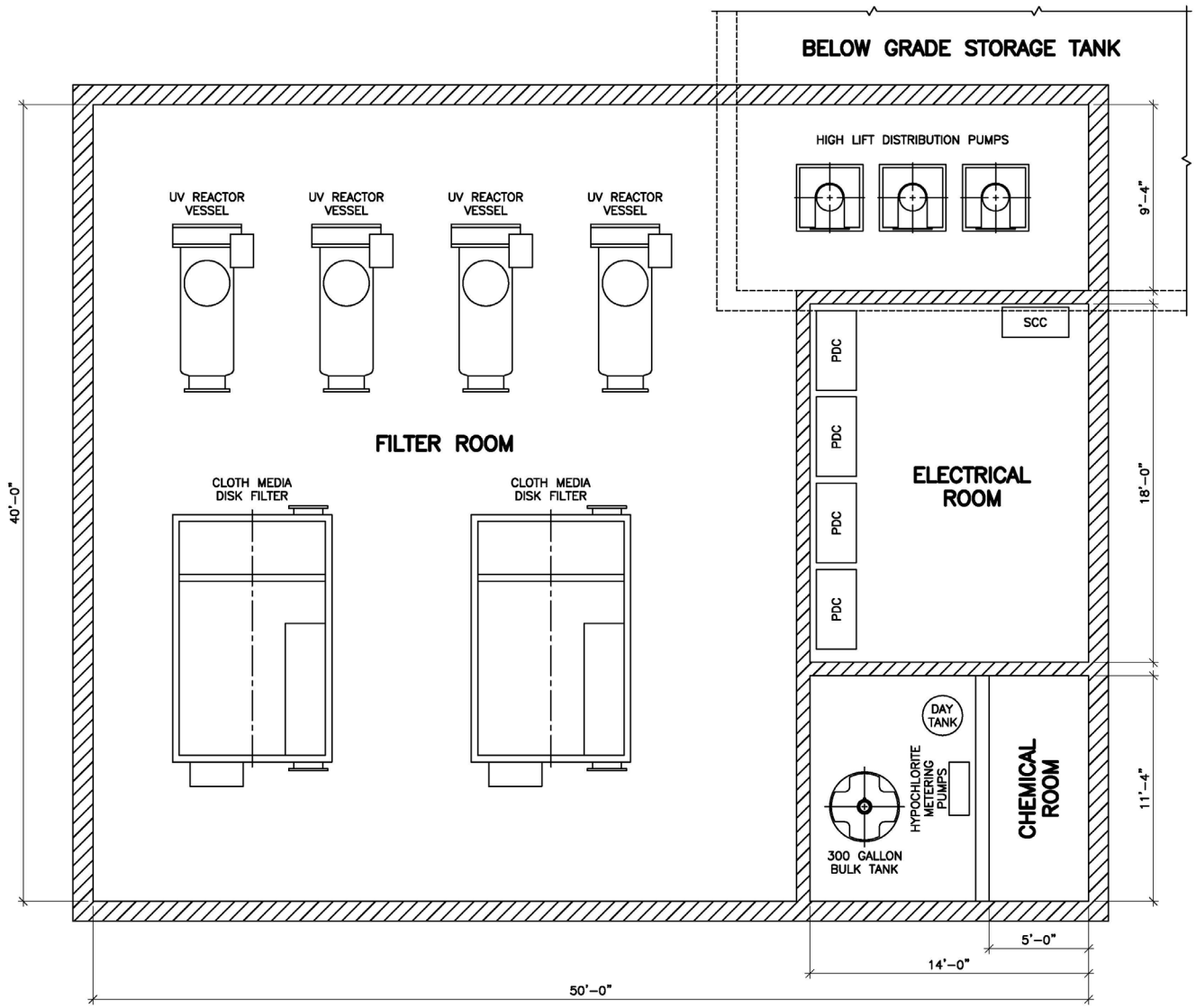
Weighing both costs and non-monetary considerations, UV disinfection is the preferred choice for the Southeast Metro Water Reclamation Facility. Though the capital costs for the system are estimated to be higher, the advantages for system operation and the ability to better control chlorine concentrations and halogenated organic compounds (disinfection byproducts) in the effluent outweigh the additional capital cost.

A preliminary floor plan for a new treatment building to house cloth media filters with UV for primary disinfection is shown in Figure 6.

4.3.4 Building Concepts for Filtration and Disinfection Equipment

The proposed site for the Southeast Metro Water Reclamation Facility has space for the construction of a new building to house filtration and disinfection equipment. Assuming a UV disinfection system, the

Figure 6. Preliminary Floor Plan for Treatment Building



footprint of the system would require a 40-foot by 50-foot building. Construction is expected to be precast tilt-up wall panels and hollow core plank roof decking, with cast-in-place concrete foundation and floor slab. Masonry partition walls are planned to create electrical and sodium hypochlorite rooms that are separate from the filtration and UV equipment.

An alternative building concept being considered for the filtration and disinfection equipment is to house the equipment within existing structures on the site. There are existing buildings on the site that were constructed for the former Rosemount WWTP that have the potential to be repurposed for filtration and disinfection equipment. The two existing buildings considered for repurposing are the Disk Filter Building and the Process Control Building. These buildings are identified on the site map in Figure 7, and described further in the following paragraphs. MCES evaluated the structures for potential repurposing in February and March of 2018, and the evaluation results are contained in a separate technical memorandum from TKDA, dated Mar. 20, 2018, entitled “SE Metro Wastewater Reclamation, Evaluation of Repurposing Existing Facilities at Former Rosemount WWTP”. The results of that evaluation are discussed in the following paragraphs.

Disk Filter Building

The Disk Filter Building was constructed in 2004 to house Krueger disk filters. It is a pre-engineered metal framed and metal clad building, with a ceiling height of 16 feet at the center, sloping to 14 feet at the wall, and outside dimensions of 32 feet x 38 feet.

The Disk Filter Building was determined to be in good structural condition overall. When the facility was decommissioned, the existing process, mechanical, and electrical equipment was left in the building, including the old filters, unit heaters, mechanical switch gear, etc. Upon review of the electrical switch gear and controls, it was determined removal and replacement would be necessary if the filter building was to be reused. The mechanical HVAC and plumbing equipment was also in need of replacement if the building was to be reused due to the age, prolonged period of not being operated, and unknown condition.

A floor plan for the Disk Filter Building is shown in Figure 8.

Process Control Building

The Process Control Building was constructed in 1989, and included aeration blowers, effluent pumping, an emergency back-up generator, and chemical feed rooms. It also housed the MCCs and electrical switch gear for the overall treatment plant, and included a small office and laboratory space. It is constructed of precast concrete walls and a concrete hollow core plank roof, with a ceiling height of 12 feet, and outside dimensions of 48 feet x 96 feet.

The Process Control Building was determined to be in good structural condition overall. When the facility was decommissioned, the existing process, mechanical, and electrical equipment was left in the building, including pump, blowers, boilers, mechanical switch gear, etc. Upon review of the electrical switch gear and controls, it was determined the equipment would need to be removed and replaced if the Process Control Building is reused. Due to the age and prolonged period of not being operated, replacement of the existing boiler and air handling unit should be considered during design. This equipment is nearing the end of its typical useful operational life expectancy. Improvements to the roof system would also be needed.

A floor plan for the Process Control Building is shown in Figure 9.

Figure 7. Existing Buildings at the Former Rosemount WWTP Site

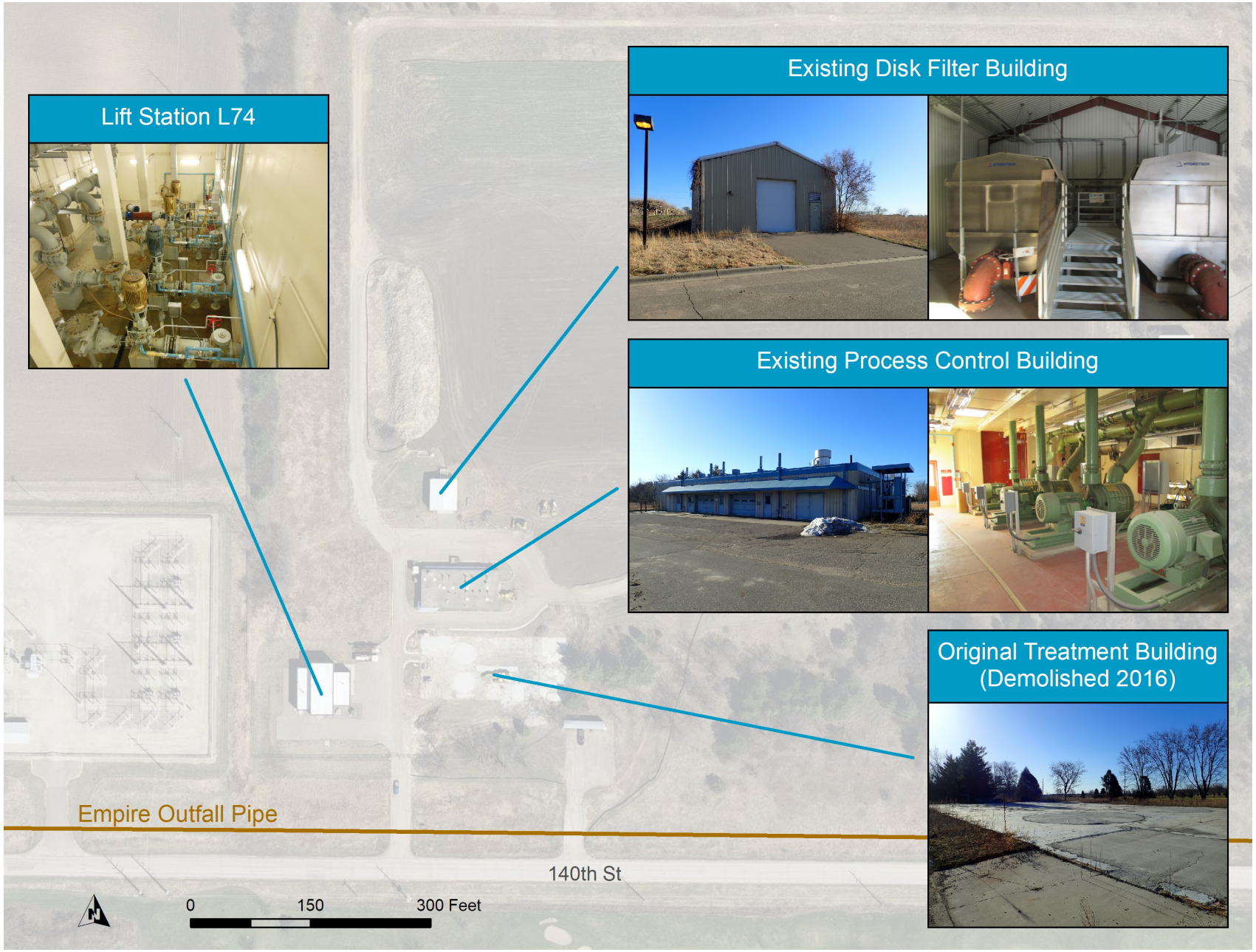


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Figure 8. Floor Plan for Existing Disk Filter Building

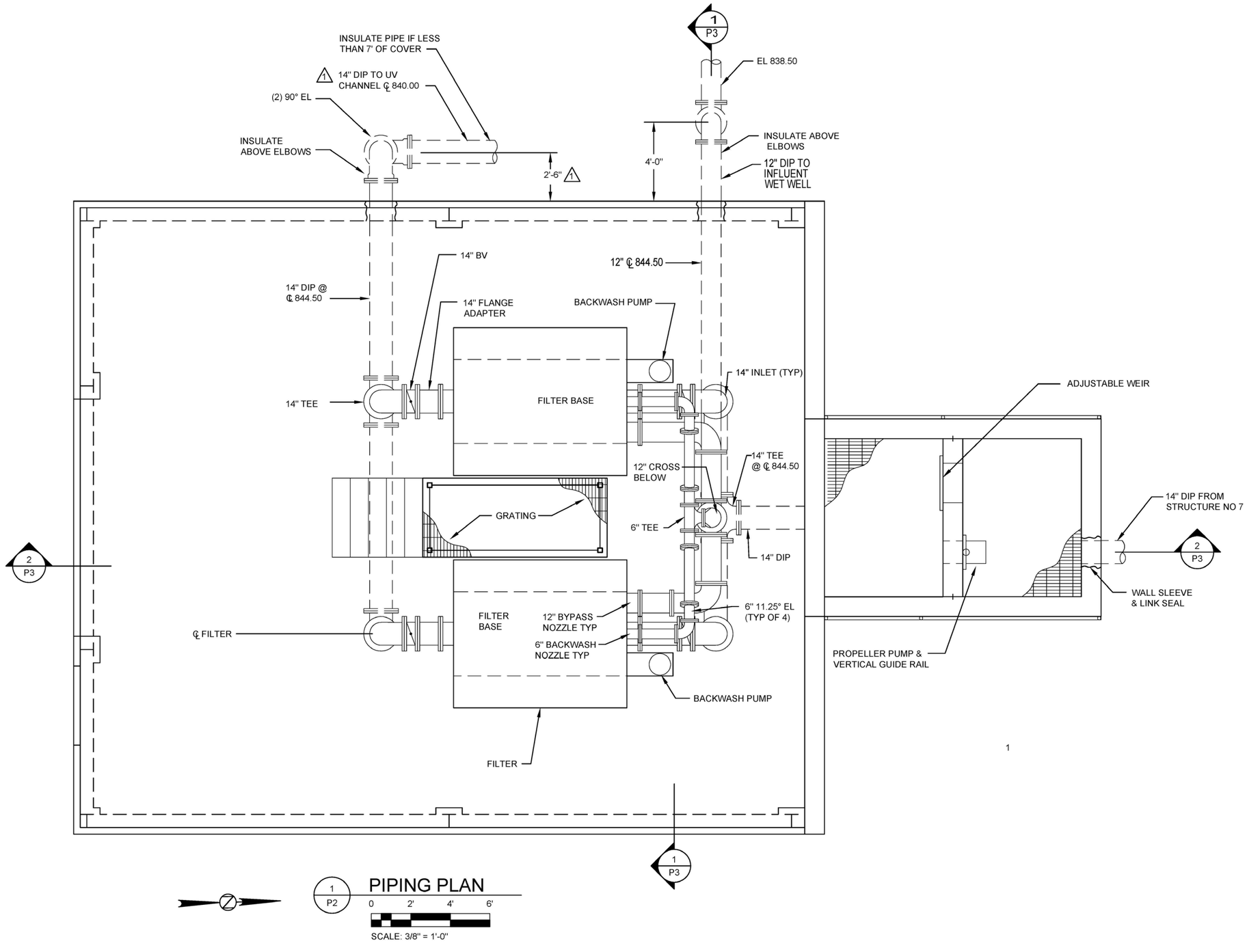

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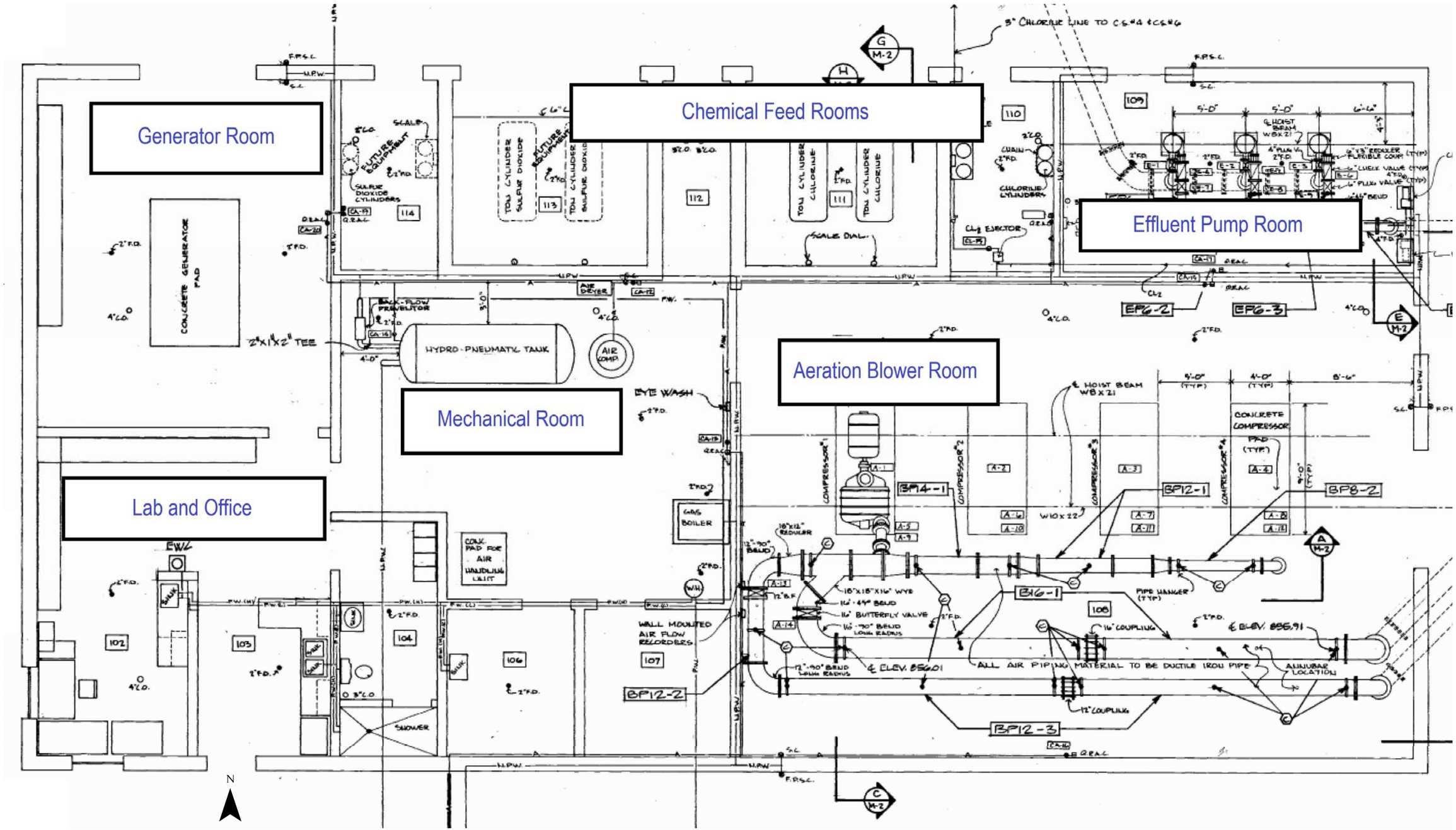
Figure 9. Floor Plan for Existing Process Control Building



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4.3.5 Evaluation of Building Alternatives

Based on the evaluation of the existing structures, it was determined that it is feasible to repurpose the existing Disk Filter Building and Process Control Building, and that there could be cost savings associated with that repurposing. In particular, it was found that the new cloth media filters could be housed in the Disk Filter Building. The ceiling height of the Disk Filter Building would accommodate the new filters, allowing the required overhead clearance for maintenance. There may also be potential to reuse existing below-slab process piping, minimizing remodeling costs. Preliminary equipment layouts indicate that the new filters could connect to existing pipe stubs at the floor. Additional evaluation of pipe condition would be needed during preliminary design. The UV equipment could be housed in either the Disk Filter Building or the Process Control Building. The sodium hypochlorite feed equipment could be housed in the Process Control Building or at the Disk Filter Building with a small addition.

Alternatives for new construction and repurposing existing buildings at the site were evaluated. The difference in capital cost are presented in Table 7. The costs presented here compare the costs of a new filter building to the cost of housing filtration and disinfection equipment in the existing Disk Filter Building and Process Control Building. The costs include structural, architectural, electrical, mechanical, and process costs related to these systems. It does not include the high lift pumping station cost, as those costs are evaluated with the Storage and High Lift Pumping Alternatives. The disinfection system in these alternatives is assumed to include UV as the primary disinfectant.

Table 7. Cost Comparison of Building Alternatives

Building Alternative	Estimated Project Cost
New Construction	$7,438,000
Repurposing of Existing Buildings	$6,645,000

Non-monetary evaluation criteria for the building alternatives included environmental impacts, construction schedule, and construction risk. Environmental impacts are thought to be somewhat lower with the repurposing of existing structures. This is due to the reduction in need for new materials for construction, and reduction in the amount of demolition and disposal of old construction materials that would be necessary to make way for new construction. Construction schedule may be compressed somewhat by reducing the scope of construction. Construction risk is also reduced somewhat as new foundations are not needed, and the amount of excavation is reduced. However, there is also inherent risk in repurposing existing buildings. Therefore, that criterion was rated as neutral for each alternative. Table 8 summarizes the evaluation of these non-monetary criteria.

Table 8. Evaluation of Non-Monetary Criteria for Building Alternatives

Building Alternative	Environmental Impacts	Construction Schedule	Construction Risk
New Construction	Somewhat Higher	Somewhat Longer	Neutral
Repurposing of Existing Buildings	Somewhat Lower	Somewhat Shorter	Neutral

Because the evaluation of the existing buildings was preliminary in nature, the recommendation is to further evaluate the potential to repurpose these buildings during preliminary design. Therefore, a selection will not be made at this stage of the project. Instead, overall budgetary project cost estimates will assume the higher cost of new construction, noting that costs could be further reduced through the repurposing of existing structures.

4.3.6 Cost Estimate for Filtration and Disinfection

The cost presented in Table 9 is for the new construction building option, including cloth disk filter equipment and UV disinfection equipment. This total project cost includes design, construction, inspection, and administrative costs, as well as a 20% contingency for undeveloped design details. A further breakdown of costs can be found in Appendix B.

Table 9. Estimated Project Cost for Filtration and Disinfection

	Estimated Project Cost
Filtration and Disinfection	$7,438,000

4.4 Storage and High Lift Pumping

Following filtration and disinfection, the reclaimed water would enter a storage tank prior to pumping into the distribution pipe.

4.4.1 Storage Capacity

Reclaimed water storage is needed to serve several functions:

- to allow for maintenance / emergency outages of treatment equipment
- to ensure a consistent reclaimed water supply during low flow from Empire WWTP
- to provide more consistent flow through the treatment process regardless of variation in reclaimed water demand
- to facilitate remote operation of the treatment facility
- to provide a reservoir for pumping to the distribution pipe to the end user

Because this facility will provide reclaimed water for industrial use, typical water supply storage guidelines are not directly applicable. For example, the system will not be providing fire protection. Also, system pressures and reliability are not required to maintain public health as is the case with a potable water system. Instead, storage size is driven by operational needs and reliability concerns of the industrial end user of the system. Several events were considered that could threaten the reliability of the reclaimed water supply. These are listed in Table 10.

Table 10. Service Reliability Risks

Event	Redundancy Available or Planned?	Estimated Time to Restore Service
Empire Eflluent Outfall Pump Failure	Yes	N/A Due to Redundancy
Empire Effluent Forcemain Leak or Break (48-inch Ductile Iron)	No	1 - 5 Days
Empire Effluent Gravity Sewer Leak or Break (66-inch to 78-inch Concrete)	No	1 - 5 Days
Low Flow to Empire	No	Not Expected
Reclaimed Water Distribution Pipe Leak or Break (16-inch HDPE or PVC)	No	1 Day
Reclaimed Water Treatment Facility Equipment Failure	Yes	N/A Due to Redundancy
Power Outage at Empire, Outfall Lift Station, or Southeast Metro Water Reclamation Facility	Yes (Backup Power Generation)	N/A Due to Redundancy

Given the risks of potential service loss, and the estimated length of time that service could be interrupted, this plan evaluated the cost of two alternative storage capacities:

- 2 MG (1 day of storage). This would allow the system to absorb operational fluctuations on the demand side, while maintaining continuous operation of the filtration system. It would also provide a reliable reserve of treated water to maintain reclaimed water service for one day during any outages or interruptions of flow.
- 6 MG (3 days of storage). This would allow the system to absorb operational fluctuations on the demand side, while maintaining continuous operation of the filtration system for an extended period of time. It would also provide a reliable reserve of treated water to maintain reclaimed water service for three days during any outages or interruptions of flow.

The storage would be located at the Southeast Metro Water Reclamation Facility site, due to land availability. However, storage at the treatment plant site does not provide added reliability for the distribution pipe. A break or repair of the distribution pipe would discontinue water service until the repair is complete. Enerkem or other reclaimed water users would need to provide additional storage or backup water supply at their site to further eliminate risks of supply interruptions.

4.4.2 Storage Tank Options

The storage was conceptualized as a below-grade cast-in-place concrete tank or two at-grade bolted steel glass-lined tanks. It was found that at-grade bolted steel tanks could result in cost savings, and minimize risks associated with dewatering and encountering contamination during construction, by limiting excavation. It is also expected that the construction schedule would be shorter for the bolted steel tank option. Therefore, a concept was developed that included two 1 MG bolted steel storage tanks as an alternative to a below-grade concrete tank.

The at-grade tanks would necessitate the use of an intermediate pumping station after filtration, to boost the filter effluent to the storage tank elevation. The cost estimate for this alternative includes two glass-lined bolted steel tanks on concrete ring foundations, and the intermediate pumping station to lift filter effluent to the at-grade tank high water level. The high lift pumping station that delivers reclaimed water to the distribution system would be reconfigured to include horizontal centrifugal pumps as opposed to the vertical turbine pumps conceptualized for the below-grade storage options.

4.4.3 High Lift Pumping

The high lift pumping station would provide 2 MGD of capacity with full redundancy, with pumps designed to deliver reclaimed water through the distribution pipe to the end user. With below-grade storage, the concept for the pumping station includes three vertical turbine pumps, each with a 1 MGD capacity, to be housed in the treatment building and drawing from a pump chamber that is integrated with the storage tank below the treatment building. With at-grade storage, the concept for the pumping station includes three horizontal centrifugal pumps, each with a 1 MGD capacity.

The distribution system is anticipated to include a below-grade storage tank at the point of use, with the high lift pumps controlled on water level in that tank. In that case, pumps would be selected to overcome the static head caused by ground elevation change and the friction losses in the distribution pipe. Detailed design is yet to be conducted, but the pumps were sized conceptually based on LIDAR ground elevation information and pipe friction losses assuming a 16-inch HDPE DR11 distribution pipe.

4.4.4 Evaluation of Storage and High Lift Pumping Alternatives

Capital cost estimates for the three alternatives for storage and high lift pumping are presented in Table 11. Operating costs are not expected to vary greatly between alternatives, so were not considered in the evaluation.

Table 11. Cost Comparison of Storage and High Lift Pumping Alternatives

Storage and High Lift Pumping Alternative	Estimated Project Cost
6 MG Below-Grade Storage Tank with Vertical Turbine Pumps	$11,689,000
2 MG Below-Grade Storage Tank with Vertical Turbine Pumps	$5,287,000
2 MG At-Grade Storage Tank with Horizontal Centrifugal Pumps	$3,181,000

Non-monetary evaluation criteria for storage and high lift pumping alternatives include construction risk, construction schedule, and operational complexity. Table 12 summarizes the evaluation of these non-monetary criteria. Construction risks due to excavation include a high water table at the site, which could add to costs for dewatering, and known contamination in the area. For these reasons, the below-grade tank options are deemed to have higher construction risk. The additional excavation and concrete construction is thought to add time to the construction schedule as well for the below-grade tank options. However, manufacturing time for bolted-steel tanks needs to be investigated during preliminary design. Operational complexity is increased for the at-grade storage option, due to the need for an intermediate pumping station.

Table 12. Evaluation of Non-Monetary Criteria for Storage and High Lift Pumping Alternatives

Storage and High Lift Pumping Alternative	Construction Risk	Construction Schedule	Operational Complexity
6 MG Below-Grade Storage Tank with Vertical Turbine Pumps	Higher	Longer	Lower
2 MG Below-Grade Storage Tank with Vertical Turbine Pumps	Higher	Somewhat Longer	Lower
2 MG At-Grade Storage Tank with Horizontal Centrifugal Pumps	Lower	Somewhat Shorter	Higher

The 6 MG below-grade storage tank added an estimated $6.4 million to the total project cost, over the cost of a 2 MG below-grade storage tank. The risk mitigation provided by the larger storage volume is not thought to justify the additional cost. The risk events that were considered in Table 10 should be infrequent, and the impact of the events limited to industrial process interruption, without risk to public health. For that reason, the 6 MG storage tank is considered cost-prohibitive.

The at-grade bolted steel storage tank option shows promise for cost reduction and for reducing construction risk. Operational complexity would be increased by introducing an additional pumping system. The pumps should be suitable for automatic operation, however. These intermediate pumps would also increase energy consumption, but by lifting the reclaimed water to a higher head in the

storage tanks it would allow for smaller high lift pumps after storage by increasing suction head for those pumps. Therefore, the additional energy consumption would be limited to the frictional losses in the pumps due to inefficiencies.

Additional investigation needs to be undertaken during preliminary design to better understand the site layout for the proposed Southeast Metro Water Reclamation Facility, including future site uses. Additional geotechnical investigations will also be conducted during preliminary design to better define the water table on the site as well as tank foundation requirements. Therefore, a selection of storage tank style will not be made at this stage of the project. Instead, overall budgetary project cost estimates will assume the higher cost of a 2 MG below-grade tank, noting that costs could be further reduced through the use of above-grade tanks.

4.4.5 Cost Estimate for Storage and High Lift Pumping

The cost presented in Table 13 is for the 2 MG below-grade cast-in-place concrete tank alternative with vertical turbine pumping station. This total project cost includes design, construction, inspection, and administrative costs, as well as a 20% contingency for undeveloped design details. A further breakdown of costs can be found in Appendix B.

Table 13. Estimated Project Cost for Storage and High Lift Pumping

	Estimated Project Cost
Storage and High Lift Pumping	$5,287,000

4.5 Distribution

The distribution of reclaimed water would include a single distribution line from the Southeast Metro Water Reclamation Facility to the Enerkem facility. A 16-inch diameter HDPE DR11 (160 psi rating) distribution pipe was considered for conceptual planning and cost estimating. With an inner diameter of 12.9 inches, the velocity in the pipe at 2 MGD would be 3.4 ft/s.

Two primary viable routes were identified. As Enerkem's facility is proposed to be constructed north of the Flint Hills Pine Bend Refinery, and the proposed Southeast Metro Water Reclamation Facility is south of the refinery, the two alternate routes go around the east and west side of the refinery. The eastern route follows Highway 52 between 140th Street in Rosemount and 117th Street in Inver Grove Heights. This route is referred to in this report at the Hwy. 52 Route. The western route follows County Road 71 between 140th Street and 117th Street. This route is referred to as the County Road 71 Route.

4.5.1 Hwy. 52 Route

This route would follow 140th Street west from the Southeast Metro Water Reclamation Facility site to Hwy. 52, and then north along Hwy. 52 to 117th Street, then west along 117th Street to Enerkem's proposed site. This route is approximately 21,100 feet and is shown in Figure 10.

Land Uses

Land use along the corridor is generally industrial and agricultural in nature. There is a golf course, Rich Valley Golf Course, on the south side 140th Street, along with two transportation company distribution centers between the Southeast Metro Water Reclamation Facility and Hwy. 52. The north side of 140th street is owned by Flint Hills and is mostly agricultural with an electrical substation adjacent to the Southeast Metro Water Reclamation Facility site. The Hwy. 52 corridor is bordered by

property owned by the Flint Hills refinery and the Chicago Northwestern railroad between 140th Street and 117th Street. The 117th Street route, from Hwy. 52 to Enerkem's proposed site, is flanked by the refinery, a transportation company distribution center, an Xcel Energy substation, a pipeline operator, and landfill property.

Right-of-Way Characteristics

140th Street is a 2-lane paved road, 25 feet wide, with no shoulder, centered on a 66-foot right-of-way. Right-of-way use is permitted by the City of Rosemount. There is overhead power in right-of-way on both sides of the road.

U.S. Hwy. 52 is a freeway in the project area, with two lanes and a 12-foot shoulder in each direction of traffic, separated by a grass median strip. The right-of-way width varies in the project area, with the narrowest portion 230 feet in width. There is overhead power in the right-of-way on both sides of the freeway. Hwy. 55 interchanges with Hwy. 52 approximately half-way along the proposed route between 140th Street and 117th Street. There is an exit ramp at the interchange with 117th Street.

117th Street is a 2-lane paved road. Near Hwy. 52 it is a divided highway with a 12-foot shoulder in each direction of travel and a 108-foot right-of way. This condition exists for about ½ mile west of Hwy. 52, where the shoulder begins to taper and right-of-way width drops to 73 feet and then 66 feet. Right-of-way use is permitted by the City of Inver Grove Heights. There is overhead power in right-of-way on both sides of the road.

4.5.2 County Road 71 Route

This route would follow 140th Street west from the Southeast Metro Water Reclamation Facility to County Road 71 (Blaine Avenue), and then north along County Road 71 (Blaine Avenue / Rich Valley Boulevard) to 117th Street, then east along 117th Street to Enerkem's proposed site. This route is approximately 24,500 feet and is shown in Figure 11.

Land Uses

Land use along the corridor is generally industrial and agricultural in nature. There is a golf course, Rich Valley Golf Course, on the south side 140th Street, along with two transportation company distribution centers between the Southeast Metro Water Reclamation Facility and Hwy. 52. The north side of 140th street is owned by Flint Hills and is mostly agricultural with an electrical substation adjacent to the Southeast Metro Water Reclamation Facility site.

Between Hwy. 52 and County Road 71, there is one transportation company distribution center, and a Union Pacific Railroad corridor. The remainder of the land is agricultural and owned by Flint Hills.

Figure 10. Highway 52 Route

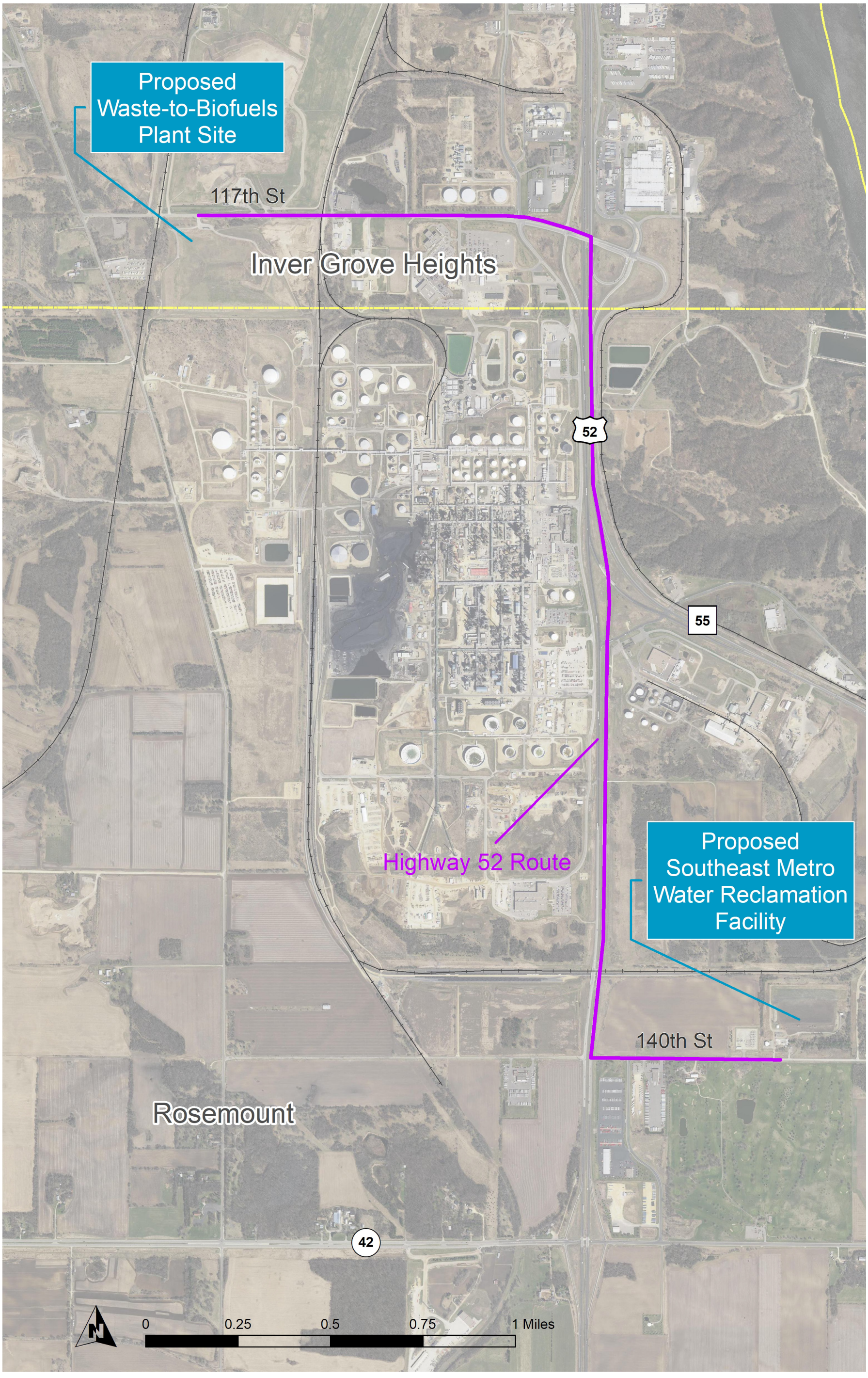

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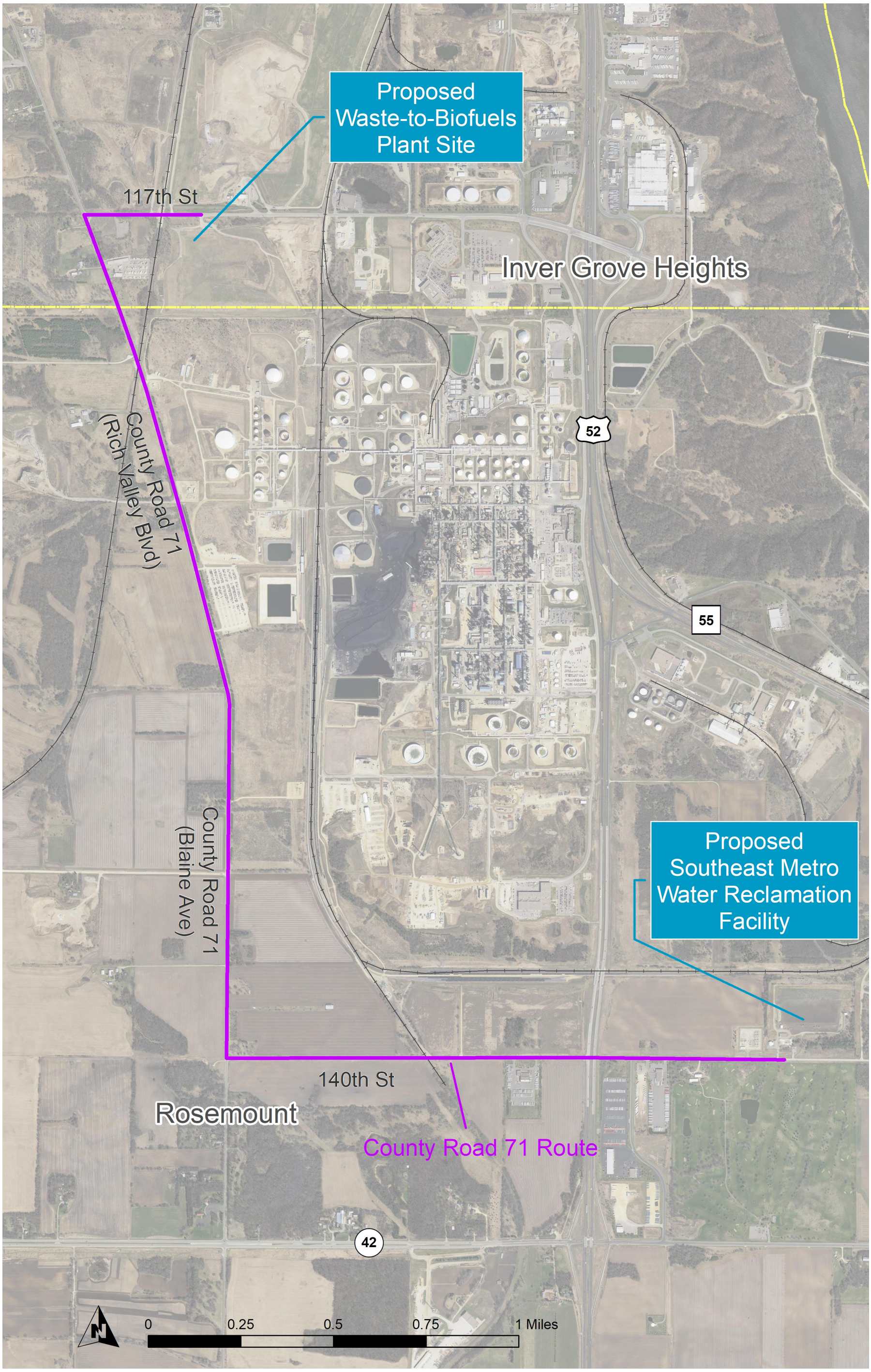
Figure 11. County Road 71 Route



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The land adjacent to County Road 71, from 140th Street to 117th Street, is mostly agricultural property owned by Flint Hills, with one agricultural homestead owned by another party near 117th Street. There is a Union Pacific Railroad corridor, a mini-storage and warehouse facility, and a lot that appears to be used for storage of construction equipment – all of these at the north end of the route, near 117th Street.

Right-of-Way Characteristics

140th Street is a 2-lane paved road, 25 feet wide, with no shoulder, centered on a 66-foot right-of-way. Right-of-way use is permitted by the City of Rosemount. There is overhead power in right-of-way on both sides of the road.

County Road 71 is a 2-lane paved road, 25 feet wide, with no shoulder, centered on a 66-foot right-of-way. Right-of-way use is permitted by Dakota County. There is overhead power in right-of-way on one side of the road.

117th Street from County Road 71 to the proposed Enerkem site is a 2-lane paved road, 25 feet wide, with no shoulder, centered on a 66-foot right-of-way. Right-of-way use is permitted by the City of Inver Grove Heights.

4.5.3 Petroleum Product Pipeline Conflicts

Flint Hills refinery is a hub of liquid and gas petroleum product pipelines that radiate from the site in all directions. Each of the distribution pipe routes considered would include crossing of several of these pipelines, based on preliminary review of information from the National Pipeline Management System. Additional discussions are needed with Flint Hills, and pipeline operators, to get more detailed information related to the location of pipelines and other utilities in the area, and to better understand the impacts of these pipeline crossings on the design and construction of the reclaimed water distribution pipe.

Preliminary information indicates that the Hwy. 52 Route contains several gas and liquid pipelines that follow the same route as proposed for the reclaimed water distribution pipe. This is likely to further constrain the placement of the reclaimed water distribution pipe in the Hwy. 52 right-of-way, and create additional risks for construction and operation. The County Road 71 Route appears to contain no parallel gas or liquid petroleum product pipelines, with the exception the portion of the route along 117th Street. 117th Street appears to have a gas transmission pipeline that traverses the proposed project route.

4.5.4 Traffic

MnDOT traffic counts have been conducted on each of the roadways considered for the distribution pipe route. These are presented in Tables 14 and 15. This information documents the higher traffic volumes on the Hwy. 52 route.

Table 14. Traffic Counts – Hwy. 52 Route

Road Segment	Annual Average Daily Traffic
140th St, east of Hwy. 52	125
Hwy. 52, between 140th St. and Hwy. 55	34,500
Hwy. 52, between Hwy. 55 and 117th St.	47,300
117th St., between County Road 71 and Hwy. 52	7,000

Table 15. Traffic Counts – County Road 71 Route

Road Segment	Annual Average Daily Traffic
140th St, east of Hwy. 52	125
140th St, west of Hwy. 52	235
County Road 71 (Blaine Ave. and Rich Valley Blvd.), between 140th St. and 117th St.	2,300
117th St., between County Road 71 and Hwy. 52	7,000

4.5.5 Environmental Considerations

A project Environmental Information Worksheet (EIW), required by MPCA for projects funded through the Clean Water Revolving Fund, can be found in Appendix C. In addition, a preliminary environmental review was conducted to identify potential environmental risks caused by soil and groundwater contamination along the project corridor. This environmental review is attached with the EIW.

Based on preliminary reviews of environmental databases, several sites have been identified along the project corridor that pose potential environmental risk due to contamination. These sites include Superfund sites and documented leak and spill sites. There are known contamination plumes in the area, though the extent and characteristics of the plumes have not been investigated. Additional environmental investigation will be necessary during preliminary design, to better understand the risks posed by contaminated soil and groundwater.

All of the high-risk environmental sites identified are located east of County Road 71. Due to the groundwater gradient in the area, the flow of groundwater is generally from southwest to northeast, toward the Mississippi River. Because of this, the likelihood of encountering soil and groundwater contamination during construction is deemed higher for the Highway 52 Route than it is for the County Road 71 Route.

4.5.6 Evaluation of Distribution Pipe Route Alternatives

The Hwy. 52 Route was estimated to be shorter than the County Road 71 Route by approximately 3,400 feet. However, several challenges on this route include:

- The route has heavy traffic, along Hwy. 52 and the 117th Street interchange, which sees a large volume of truck traffic to the Flint Hills refinery as well as the landfill. The larger traffic volume, as well as faster traffic speeds on Hwy. 52 create concern for construction impact on the community and users of Hwy. 52, and also for the safety of construction contractors and the public during construction activities.
- MnDOT permitting is expected to result in additional costs during construction due to added construction safety needs as well as added design requirements for pipe in highway right-of-way.
- Environmental contamination is likely to be more significant as Hwy. 52 is downgradient from many documented sites of environmental contamination, and in closer proximity to additional contamination sites to the east. The likely presence of contamination creates a risk for increased cost related to remediation during construction.
- Petroleum product pipelines that run parallel to Hwy. 52 create further restrictions on placement of the reclaimed water pipe in the right-of-way, and increased construction safety concerns.

Considering the unknown costs related to work in MnDOT right-of-way, as well as contamination risk, and potential risks of parallel petroleum product pipelines, the cost for both routes is estimated to be approximately equal despite the longer length of the County Road 71 route.

Non-monetary evaluation criteria for the distribution pipe route alternatives included traffic impact, construction risk, and construction safety. Table 16 summarizes the evaluation of these non-monetary criteria.

Table 16. Evaluation of Non-Monetary Criteria for Distribution Pipe Route Alternatives

Pipe Route Alternative	Traffic Impact	Construction Risk	Construction Safety Risk
Hwy. 52 Route	Higher	Higher	Higher
County Road 71 Route	Lower	Lower	Lower

The County Road 71 route is the preferred route, as the construction would have less impact on traffic, less construction risk due to contamination and petroleum product pipelines, and would be more safe for construction. Additional investigation of both routes will be completed during preliminary design. In particular, contamination plumes will be characterized by the Phase I ESA. Further discussions with pipeline operators and MnDOT, as well as Flint Hills refinery, will help to better understand constraints of each route. At this time, the County Road 71 route is assumed, and the environmental review reflects the choice of that route.

4.5.7 Cost Estimate for Distribution

The cost presented in Table 17 is for the preferred County Road 71 route for the distribution pipe. This total project cost includes design, construction, inspection, and administrative costs, as well as a 20% contingency for undeveloped design details. It also includes an assumption of temporary and permanent easement needs along the project corridor. A further breakdown of costs can be found in Appendix B.

Table 17. Estimated Project Cost for Distribution

	Estimated Project Cost
Distribution Piping (County Road 71 Route)	$14,121,000

4.6 Summary of Selected Alternatives and Cost Estimates

Based on the evaluation of alternatives, a system concept has been developed with a cost estimate for budgetary purposes. The alternatives considered for the system concept were:

- **Disinfection Alternatives:** Based on the operational water quality needs, a UV primary disinfection system is preferred over sodium hypochlorite as the primary disinfectant. The UV system would incorporate sodium hypochlorite as a secondary disinfectant, to provide a disinfectant residual in the distribution pipe.

- **Building Alternatives:** An analysis of the potential to reuse existing buildings on the Southeast Metro Water Reclamation Facility site to house the filtration and disinfection equipment indicated that there may be potential to save costs, and that it may be feasible to use the existing buildings without major structural rehabilitation or remodeling. However, additional investigation is recommended during the design phase to further assess the structures and condition of all equipment. Therefore, the budgetary cost used for the system concept is based on the estimated cost for new construction of a building for filtration and disinfection equipment.
- **Storage and High Lift Pumping Alternatives:** An evaluation of risk and cost led to the selection of a 2 MG storage tank over a 6 MG storage tank. Further investigation indicates that at-grade bolted steel tanks could provide additional cost savings over a below-grade concrete tank. Additional study is needed during preliminary design to better define site layout and to investigate soils and water table to understand tank foundation requirements. Therefore, a selection will not be made at this stage of the project. Instead, overall project cost estimates will assume the higher cost of a 2 MG below-grade concrete tank, noting that costs could be further reduced through the use of an above-grade tank.
- **Distribution Pipe Route Alternatives:** Routes along County Road 71 and Hwy. 52 were considered in system conceptual planning. While the Hwy. 52 route was somewhat shorter, additional perceived risks along that route result in construction costs to be estimated as approximately equal between the two routes. Given the additional community impacts due to traffic on Hwy. 52, potential environmental risk due to documented contamination in the vicinity of the Hwy. 52 route, and concerns for construction safety, the County Road 71 route is preferred. Additional investigation will be conducted during design to evaluate contamination and to discuss routes with petroleum product pipeline operators and MnDOT, as well as Flint Hills refinery, to better understand constraints.

The estimated budgetary project cost for the overall system concept is presented in Table 18. A further breakdown of costs can be found in Appendix B.

Table 18. Budgetary Cost Estimate for System Concept

	Estimated Project Cost
Diversion System	$851,000
Filtration and Disinfection	$7,438,000
Storage and High Lift Pumping	$5,287,000
Distribution Piping (County Road 71 Route)	$14,121,000
Total	**$27,697,000**

5. System Operations

The Southeast Metro Water Reclamation Facility is being designed to be automated to the extent possible. Given the selection of the Rosemount WWTP site, due to the much higher cost of the Empire WWTP site, automation and operational simplicity will be very important considerations to minimize the demand on operations staff time at the remote location. The equipment being considered for this facility is intentionally being selected to minimize operational and maintenance expense to the extent possible.

The reclaimed water system consists of a diversion system, filtration, disinfection, storage, and high lift pumping through a distribution pipe to the point of use of the reclaimed water. The diversion system will allow water to flow from the Empire effluent outfall pipe to a wet well, until the wet well reaches an elevation that equalizes with the hydraulic grade in the effluent outfall pipe. Water will be pumped from the wet well via submersible pumps to the filter influent chamber. These lift station submersible pumps will be called based on storage elevation in the onsite storage tank. The filter operation would be automated, to allow gravity flow through the cloth disk filtration media until filter clogging causes head to increase on the upstream side of the filter. A high head condition initiates a backwash sequence. From the filter effluent chamber, effluent water will flow by gravity through in-line UV vessels to below-grade storage, or though an intermediate pump station if at-grade storage is utilized. The high lift pumping station will draw from storage to pump the reclaimed water through the distribution pipe to a below-grade tank at the point of use. The high lift pumps would be controlled based on the water level in the tank at the point of use.

While operator involvement will be minimized, it will not be eliminated. Compliance sampling and laboratory analysis will be required. Pumps will need maintenance. Sodium hypochlorite dose rates may need to be adjusted. Chemical deliveries will need to be staffed. UV bulbs will need to be replaced. Electrical, mechanical, and HVAC equipment will need to be maintained. Filter cloth and seals will need periodic replacement. System status will need to be monitored remotely, and alarm conditions responded to. The distribution pipe will need periodic cleaning and maintenance. Therefore, the operational costs presented in the following section include 1 fulltime employee (FTE) to staff the system. It is thought this cost would be spread between interceptor operations and maintenance, plant operations and maintenance, laboratory staff, and metering and alarm staff.

5.1 Operational Cost Parameters

Operational cost estimates were developed to include the cost of operational staff time, power, sodium hypochlorite consumption, specific periodic maintenance requirements for the filters and UV equipment, and general maintenance labor and materials estimates. The parameters used for analysis are presented in Table 19.

Table 19. Operational Cost Parameters

Parameter	Value	Source
Sodium Hypochlorite	$0.734 / gal	MCES Financial Analysis Guidelines
Power	$0.075 / kWhr	MCES Financial Analysis Guidelines
General Maintenance, Labor	3% of Equipment Cost Annually	MCES Financial Analysis Guidelines
General Maintenance, Materials	1.5% of Equipment Cost Annually	MCES Financial Analysis Guidelines
FTE	$100,000 / yr	MCES Financial Analysis Guidelines
Discount Rate for Future Expenditures	3.5%	MCES Financial Analysis Guidelines
Filter Cloth Media Replacement	$29,000 / 7 yrs	Manufacturer Data
Filter Main V-Ring Seal Replacement	$2,000 / 10 yrs	Manufacturer Data
UV Lamp Replacement	$24,480 / yr	Manufacturer Data
Filter Backwash Pumps Power	4,680 kWhr / yr	Manufacturer Data
Filter Drive Power	750 kWhr / yr	Manufacturer Data
Filter Control Panel Power	2,800 kWhr / yr	Manufacturer Data
UV Power Consumption	21.054 kW = 184,430 kWhr / yr	Manufacturer Data

5.2 Operational Cost Estimate

Based on the parameters in Table 19, the annual cost of system operation is presented in Table 20. The general maintenance multipliers (3% for labor, 1.5% for materials) were applied to an estimated equipment cost for process and mechanical equipment, excluding the filters and UV equipment, as the maintenance for those was itemized separately.

Table 20. Annual Operational Cost Estimate

Operational Cost Item	Annual Quantity	Units	Unit Cost	Estimated Annual Cost
Sodium Hypochlorite	1,825	Gallons	$0.734	$1,300
General Maintenance, Labor	1	LS	$68,637	$68,600
General Maintenance, Materials	1	LS	$16,781	$16,800
FTE	1	FTE	$100,000	$100,000
Filter Cloth Media Replacement	1	LS	$5,000	$5,000
Filter Main V-Ring Seal Replacement	1	LS	$1,000	$1,000
UV Lamp Replacement	1	LS	$24,480	$24,500
Filter Backwash Pumps Power	5,000	kW-hr	$0.075	$400
Filter Drive Power	1,000	kW-hr	$0.075	$100
Filter Control Panel Power	3,000	kW-hr	$0.075	$200
UV Power Consumption	184,430	kW-hr	$0.075	$13,800
Chemical Induction Units	65,323	kW-hr	$0.075	$4,900
Diversion Pumps	261,293	kW-hr	$0.075	$19,600
Chemical Metering Pumps	3,266	kW-hr	$0.075	$200
High Lift Pumps	587,910	kW-hr	$0.075	$44,100
Total				**$300,000**

6. Proposed Project Schedule and Delivery

This Facility Plan is to be made available for public review in May 2018, including a public hearing. Following the public hearing, and incorporation of any changes that result, the plan would be reviewed and adopted by the Metropolitan Council in June 2018. It would then be submitted to MPCA for review.

Design and construction phases of the project are dependent upon funding. It is anticipated that the construction of these facilities would be packaged into two separate bids: one for the treatment facilities and one for the distribution pipe. These two separate construction projects would occur at the same time, as would their design. Design is expected to start in 2018 or 2019, depending upon funding, and to take approximately one year to complete. Construction is expected to start in 2019 or 2020, and take two years to complete.

Appendix A. MPCA Municipal Wastewater Reuse Guidance

Minnesota Pollution Control Agency

Municipal Wastewater Reuse

Definition of Municipal Wastewater Reuse, Recycling, or Reclamation

Wastewater Reuse, Recycling, or Reclamation are interchangeable terms commonly used when treated wastewater effluent is used as a substitute for another source of water. Typically, the recycled wastewater is used in place of water from a lake, stream, groundwater, or drinking water supply for use in various agricultural, industrial, commercial or municipal activities.

Historical municipal wastewater reuse in Minnesota

The reuse of treated municipal wastewater in Minnesota is not new and has been practiced for more than 40 years. The most common reuse is for irrigation of agricultural crops, grassland, or forests and is commonly referred to as "spray irrigation". In 2009, there were approximately 32 Minnesota cities that reused treated effluent for irrigation of this type. More recently, there has been the emergence of recycling wastewater for golf course irrigation, industrial cooling, and for toilet flushing.

Concern is

The primary concern with the reuse of municipal wastewater is the protection of public health. Municipal wastewater contains pathogens and other microorganisms that could cause illness. Therefore, the regulation of reuse is based on the potential for human exposure with the wastewater. Reuse activities are categorized based on public access and the risk for the potential for human exposure with the effluent.

Treatment limits and types of reuse

Since 1992, the Minnesota Pollution Control Agency (MPCA) has used the State of California Regulations as guidance for the permitting of wastewater reuse. California was one of the first states to develop detailed regulations to ensure that the reuse of wastewater would be protective of human health. Like Minnesota, many other states have used California regulations as a template for their own requirements.

The required level and type of treatment is based on the type of reuse and establishes the total coliform bacteria that are allowed to be detected in the final treated water. Total coliform is used for the regulation of wastewater reuse rather than fecal coliform. A total coliform limit is more restrictive than a fecal coliform limit and is used as an additional safety measure.

Treatment design requirements

At a minimum, all reused municipal wastewater must be treated by a secondary treatment process or its' equivalent. The highest level of treatment, "disinfection tertiary" also requires filtration. The State of California Department of Public Health has published a report titled, "Treatment Technology Report for Recycled Water," and lists specific brand name technologies which have been demonstrated to meet the above treatment requirements. These technologies will be allowed with no additional testing required for verification. Other technologies may be allowed but additional justification will be necessary to document the performance capability with respect to the above requirements. A copy of the latest report can be found at the link provided at the end of this factsheet.

Storage requirements

Municipal facilities that irrigate all of their wastewater or a large volume of it must have sufficient storage to account for the fact that irrigation during the winter is not allowed in Minnesota. Facilities that propose to irrigate and do not have the ability to discharge elsewhere must have a minimum of 210-days of storage for flow during the period when vegetation is dormant and the ground is frozen. Facilities must also have a reuse contingency plan to ensure that insufficiently treated wastewater is not reused.

Minnesota Pollution Control Agency • 520 Lafayette Rd. N., St. Paul, MN 55155-4194 • www.pca.state.mn.us
651-296-6300 • 800-657-3864 • TTY 651-282-5332 or 800-657-3864 • Available in alternative formats

Treatment Limits

Types of reuse	Reuse permit limits	Minimum level of treatment
• Food crops where the recycled water contacts the edible portion of the crop, including root crops • Irrigation of residential landscape, parks, playgrounds, school yards, golf courses • Toilet flushing • Decorative fountains • Artificial snow making, structural fire fighting • Backfill consolidation around potable water pipe • Industrial process water that may come in contact with workers • Industrial or commercial cooling or air conditioning involving cooling towers, evaporative condensers, or spray that creates mist	2.2 MPN/100 ml. Total Coliform 2 NTU daily average; 10 NTU daily maximum turbidity	**Disinfected** **Tertiary** secondary, filtration, disinfection
• Cemeteries • Roadway landscaping • Ornamental nursery stock and sod farms with restricted access • Pasture for animals producing milk for human consumption • Nonstructural fire fighting • Backfill consolidation around nonpotable water pipe • Soil compaction, mixing concrete, dust control on roads and streets • Cleaning roads, sidewalks, and outdoor work areas • Industrial process water that will not come into contact with workers • Industrial boiler feed • Industrial or commercial cooling or air conditioning not involving cooling towers, evaporative condenser, or spray that creates mist	23 MPN/100 ml. Total Coliform	**Disinfected Secondary 23** Secondary, disinfection
• Fodder,fiber, and seed crops • Food crops not for direct human consumption • Orchards and vineyards with no contact between edible portion • Non food bearing trees, such as Christmas trees, nursery stock and sod farms not irrigated less than 14 days before harvest • In Minnesota, this is commonly called “spray irrigation”	200 MPN/100 ml. Fecal Coliform	**Disinfected secondary 200** Secondary, disinfection (stabilization pond systems with 210 days of storage do not need a separate disinfection process)

Use area restrictions

In addition to the treatment requirements for the recycling of wastewater, the permit will include additional requirements to ensure protection of public health and the environment.

- All use areas must be posted with signs that state that the water used is recycled, nonpotable, and not fit for consumption.
- Setback distance from wells must be in accordance with Well Code, Minn. R. 4725.
- No spray irrigation can occur, other than disinfected tertiary water, within 100 feet of a residence, park, playground, school, or other area with similar public exposure.
- Irrigation must be done in such a manner as to prohibit runoff of recycled wastewater from the site.
- No physical connection shall be allowed between any recycled wastewater source and a potable water source.
- No hose bibs can be installed in areas subject to access by the general public. Only quick connect couplers that differ from those used on the potable water system can be used on the recycled wastewater.

Annual report

In addition to monthly reporting, an annual report is required. The report should include an itemized list of where the wastewater was reused, the volume used at each location, a summary of monitoring results.

Recycled wastewater returned from an industry

In some reuse situations, such as industrial reuse, the industry may not have a separate National Pollutant Discharge Elimination Systems (Permits Program)/State Disposal System (Permit) discharge permit and will return the recycled wastewater to the municipality. While this can be allowed, additional concerns need to be addressed to ensure the returned water does not overload or upset the permitted facility's treatment process.

Additional information

Additional details and information regarding the requirements can be found in the California regulation related to recycled water, January 2009 http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/RWregulations-01-2009.pdf.

Additional details and information regarding the design and operation of disinfection process can be found in the California "Treatment Technology Report for Recycled Water" http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/RecycledWaterTechnologylisting2-09.pdf.

Appendix B. Cost Estimates

2 MGD Disinfected Tertiary Reclaimed Water Facility

Project Totals	New Plant Construction, Buried Storage	Repurpose Buildings, Buried Storage	New Plant Construction, At-Grade Storage	Repurpose Buildings, At-Grade Storage
Subtotal 3 - Construction Cost Estimate w/o Contingency	**$ 18,997,000**	**$ 18,448,000**	**$ 17,537,000**	**$ 16,988,000**
Undeveloped Design Details Contingency (20%)	$ 3,799,000	$ 3,690,000	$ 3,507,000	$ 3,398,000
Subtotal 4 - Construction Cost Estimate w/ Contingency	**$ 22,797,000**	**$ 22,138,000**	**$ 21,045,000**	**$ 20,386,000**
Inflation to Midpoint of Construction (3%, 18 mos.)	$ 1,026,000	$ 996,000	$ 947,000	$ 917,000
Total Construction Cost Estimate	**$ 23,823,000**	**$ 23,134,000**	**$ 21,992,000**	**$ 21,303,000**
Construction Inspection (4%)	$ 953,000	$ 925,000	$ 880,000	$ 852,000
Construction Engineering (3%)	$ 715,000	$ 694,000	$ 660,000	$ 639,000
Total Construction Phase	**$ 25,490,000**	**$ 24,753,000**	**$ 23,531,000**	**$ 22,794,000**
Design (8%)	$ 1,906,000	$ 1,851,000	$ 1,759,000	$ 1,704,000
Land Acquisition	$ 300,000	$ 300,000	$ 300,000	$ 300,000
Total Project Cost Estimate	**$ 27,697,000**	**$ 26,904,000**	**$ 25,591,000**	**$ 24,798,000**

Diversion System

Component	Cost Estimate (Diversion System)	Source
Outfall Pipe Demolition	$ 1,153	Labor and equipment est. - Means
Diversion Structure Base Slab	$ 3,949	Labor, material, and equipment est. - Means
Diversion Structure Walls (22' h x 18" th)	$ 51,498	Labor, material, and equipment est. - Means
Diversion Structure Top	$ 6,878	Labor, material, and equipment est. - Means
Diversion Structure Excavate / Backfill	$ 26,275	Labor, material, and equipment est. - Means, includes 60 days dewatering
Diversion Structure Slide Gate	$ 8,647	Labor, material, and equipment est. - Means, includes base slab / top slab
Pipe from Diversion Structure to Lift Station	$ 47,702	Labor, material, and equipment est. - Means, includes 30 days dewatering;
Influent Lift Station Excavate / Backfill	$ 39,997	Labor, material, and equipment est. - Means, includes 60 days dewatering;
Influent Lift Station Structure (8' D, precast)	$ 55,780	Labor, material, and equipment est. - Means, includes base slab / top slab;
Influent Lift Station Pumps and Discharge Pipe	$ 115,060	Labor, material, and equipment est.
Subtotal 1 - Bare Construction Cost Estimate	**$ 356,939**	
Overhead and Profit (10%)	$ 35,694	
Shipping and Handling (4% on Materials and Equipment)	$ 8,611	
Sales Tax (8.875% on Materials and Equipment)	$ 18,836	
Subtotal 2	**$ 420,079**	
Builder's Risk, Liability, and Vehicle Insurance (2%)	$ 8,402	
Payment and Performance Bonds (1.5%)	$ 6,301	
Mobilization (5%)	$ 21,004	
Commissioning (2%)	$ 8,402	
Electrical, Instrumentation, and Controls Allowance (20%)	$ 84,016	
Mechanical, Process Piping Allowance (10%)	$ 42,008	
Subtotal 3 - Construction Cost Estimate w/o Contingency	**$ 590,212**	
Undeveloped Design Details Contingency (20%)	$ 118,042	
Subtotal 4 - Construction Cost Estimate w/ Contingency	**$ 708,254**	
Inflation to Midpoint of Construction (3%, 18 mos.)	$ 31,871	
Total Construction Cost Estimate	**$ 740,125**	
Construction Inspection (4%)	$ 29,605	
Construction Engineering (3%)	$ 22,204	
Total Construction Phase	**$ 791,934**	
Design (8%)	$ 59,210	
Total Project Cost Estimate	**$ 851,000**	

Filtration and Disinfection

Component	Cost Estimate (New Plant Construction)	Cost Estimate (Building Repurposing)	Source
New Filter Building Slab	$ 53,000	$ -	Labor, material, and equipment est. - Means
New Filter Building Equipment Pads	$ 19,946	$ 19,946	Labor, material, and equipment est. - Means
New Filter Building Walls (Precast Tip-up)	$ 282,767	$ -	Labor, material, and equipment est. - Means
New Filter Building Roof Deck (Hollow Core Plank)	$ 31,427	$ -	Labor, material, and equipment est. - Means
New Filter Building CMU Walls (Electrical and Chem Rm)	$ 10,000	$ -	Labor, material, and equipment est. - Means
New Filter Building Insulation and Membrane Roof	$ 31,533	$ -	Labor, material, and equipment est. - Means
New Filter Building Doors and Windows	$ 14,604	$ -	Labor, material, and equipment est. - Means
New Filter Building Structure Coatings	$ 7,944	$ -	Labor, material, and equipment est. - Means
Existing Building Selective Demolition	$ -	$ 80,250	Project experience
Existing Building Overhead Door Modification	$ -	$ 10,000	Project experience, lump sum estimate
Existing Building Low Lift Pumps	$ -	$ 20,000	Project experience, lump sum estimate
Existing Building Process Electrical Equipment	$ -	$ 136,888	Project experience, unit price estimates
Existing Building Plumbing	$ -	$ 8,000	Project experience, unit price estimates
Existing Building HVAC	$ -	$ 18,400	Project experience, unit price estimates
Existing Building Electrical	$ -	$ 291,250	Project experience, unit price estimates
Existing Building Communications	$ -	$ 57,700	Project experience, unit price estimates
Existing Building Electronic Safety and Security	$ -	$ 18,500	Project experience, unit price estimates
Existing Building Piping	$ -	$ 15,000	Project experience, lump sum estimate
Existing Building Concrete for Electrical / Chem Rm Additions	$ -	$ 13,060	Project experience, unit price estimates and price per square foot floor area
Existing Building Metal Wall and Framing Systems for Electrical / Chem Rm Additions	$ -	$ 4,500	Project experience, price per square foot floor area
Existing Building Roof Systems for Additions	$ -	$ 5,320	Project experience, unit price estimates
Existing Building Doors for Additions	$ -	$ 7,500	Project experience, unit price estimates
Existing Building Excavation and Backfill for Additions	$ -	$ 4,600	Project experience, unit price estimates
New Filter Building Monorail and Hoist	$ 45,887	$ 45,887	Labor, material, and equipment est. - Means
New Filter Building HVAC System	$ 72,000	$ -	Project experience, lump sum estimate
New Filter Building Strip Top Soil	$ 1,884	$ -	Labor, material, and equipment est. - Means
New Filter Building 18" HDPE to L74 (500 LF Assumed)	$ 74,393	$ 74,393	Labor, material, and equipment est. - Means
New Filter Building Trench for 18" HDPE to L74	$ 16,301	$ 16,301	Labor, material, and equipment est. - Means
New Filter Building Hypochlorite Tank and Pumps	$ 43,711	$ 43,711	Project experience, unit price estimates, reduced because smaller storage tank needed
New Filter Building Cloth Disk Filters	$ 1,671,414	$ 1,671,414	Vendor costs + estimate for installation and mechanical piping
New Filter Buidling UV Disinfection System	$ 921,595	$ 921,595	Vendor costs + estimate for installation
New Filter Building Site Restoration	$ 14,634	$ 14,634	Labor, material, and equipment est. - Means
Subtotal 1 - Bare Construction Cost Estimate	**$ 3,313,040**	**$ 3,498,849**	
Overhead and Profit (10%)	$ 331,304	$ 349,885	
Shipping and Handling (4% on Materials and Equipment)	$ 72,496	$ 72,496	
Sales Tax (8.875% on Materials and Equipment)	$ 158,585	$ 158,585	
Subtotal 2	**$ 3,875,425**	**$ 4,079,815**	
Builder's Risk, Liability, and Vehicle Insurance (2%)	$ 77,509	$ 81,596	
Payment and Performance Bonds (1.5%)	$ 58,131	$ 61,197	
Mobilization (5%)	$ 193,771	$ 203,991	
Commissioning (2%)	$ 77,509	$ 81,596	
Generator and Enclosure	$ 100,000	$ 100,000	Project experience
Electrical, Instrumentation, and Controls Allowance (15%)	$ 581,314	$ -	
Mechanical, Process Piping Allowance (5%)	$ 193,771	$ -	
Subtotal 3 - Construction Cost Estimate w/o Contingency	**$ 5,157,430**	**$ 4,608,196**	
Undeveloped Design Details Contingency (20%)	$ 1,031,486	$ 921,639	
Subtotal 4 - Construction Cost Estimate w/ Contingency	**$ 6,188,916**	**$ 5,529,835**	
Inflation to Midpoint of Construction (3%, 18 mos.)	$ 278,501	$ 248,843	
Total Construction Cost Estimate	**$ 6,467,417**	**$ 5,778,678**	
Construction Inspection (4%)	$ 258,697	$ 231,147	
Construction Engineering (3%)	$ 194,023	$ 173,360	
Total Construction Phase	**$ 6,920,137**	**$ 6,183,185**	
Design (8%)	$ 517,393	$ 462,294	
Total Project Cost Estimate	**$ 7,438,000**	**$ 6,645,000**	

Storage and High Lift Pumping

Component	Cost Estimate (Below-Grade Concrete Tank)	Cost Estimate (At-Grade Bolted Steel Tank)	Source
Storage Tank Base Slab	$ 826,756	$ -	Labor, material, and equipment est. - Means
Storage Tank Exterior Walls	$ 412,606	$ -	Labor, material, and equipment est. - Means
Storage Tank Concrete Walls at Slide Gate	$ 10,174	$ -	Labor, material, and equipment est. - Means
Storage Tank Roof	$ 695,480	$ -	Labor, material, and equipment est. - Means
Storage Tank Excavation and Backfill	$ 595,886	$ -	Labor, material, and equipment est. - Means
Storage Tank Slide Gate	$ 26,000	$ -	Labor, material, and equipment est. - Means, halved to reduce to one slide gate
Storage Tank Foundations	$ -	$ 180,000	Project experience, unit price estimate
Bolted Steel Storage Tanks	$ -	$ 1,100,000	- Vendor information for 2 @ 1 MG/ea.
Bolted Steel Storage Tank Excavation and Backfill	$ -	$ 50,000	Project experience, lump sum estimate
Bolted Steel Storage Tank Piping	$ -	$ 50,000	Project experience, lump sum estimate
Filter Building Vertical Turbine Pumps and Discharge Piping	$ 276,868	$ -	Project experience, unit price estimates, includes 40 feet of flanged piping
At-Grade High Lift Pump Station Foundations	$ -	$ 20,000	Project experience, unit price estimate
At-Grade High Lift Pump Station Floor Slab	$ -	$ 5,000	Project experience, price per square foot of floor area
At-Grade High Lift Pump Station Metal Building	$ -	$ 32,500	Project experience, price per square foot of floor area
High Lift Pumps	$ -	$ 75,000	Project experience, 3 x $25k
High Lift Pump Motors	$ -	$ 45,000	Project experience, 3 x $15k
High Lift Pump Station Valves	$ -	$ 60,000	Project experience, lump sum estimate
High Lift Pump Station Misc. Piping	$ -	$ 25,000	Project experience, lump sum estimate
Subtotal 1 - Bare Construction Cost Estimate	**$ 2,843,770**	**$ 1,642,500**	
Overhead and Profit (10%)	$ 284,377	$ 164,250	
Shipping and Handling (4% on Materials and Equipment)	$ 59,473	$ 59,473	
Sales Tax (8.875% on Materials and Equipment)	$ 130,097	$ 130,097	
Subtotal 2	**$ 3,317,718**	**$ 1,996,321**	
Builder's Risk, Liability, and Vehicle Insurance (2%)	$ 66,354	$ 39,926	
Payment and Performance Bonds (1.5%)	$ 49,766	$ 29,945	
Mobilization (5%)	$ 165,886	$ 99,816	
Commissioning (2%)	$ 66,354	$ 39,926	
Subtotal 3 - Construction Cost Estimate w/o Contingency	**$ 3,666,078**	**$ 2,205,934**	
Undeveloped Design Details Contingency (20%)	$ 733,216	$ 441,187	
Subtotal 4 - Construction Cost Estimate w/ Contingency	**$ 4,399,293**	**$ 2,647,121**	
Inflation to Midpoint of Construction (3%, 18 mos.)	$ 197,968	$ 119,120	
Total Construction Cost Estimate	**$ 4,597,262**	**$ 2,766,242**	
Construction Inspection (4%)	$ 183,890	$ 110,650	
Construction Engineering (3%)	$ 137,918	$ 82,987	
Total Construction Phase	**$ 4,919,070**	**$ 2,959,878**	
Design (8%)	$ 367,781	$ 221,299	
Total Project Cost Estimate	**$ 5,287,000**	**$ 3,181,000**	

Distribution Piping

Component	Cost Estimate (Distribution System)	Source
16" HDPE Pipe	$ 1,471,200	MnDOT bid prices, 24,520 LF, $60 / LF
Excavation-Common (8x10)	$ 588,480	MnDOT bid prices, 24,520 LF, $8 / CY, 3 CY / LF
Backfill / Borrow (8x10)	$ 1,103,400	MnDOT bid prices, 24,520 LF, $15 / CY, 3 CY / LF
Contaminated Material Haul and Dispose (8x10)	$ 150,000	MnDOT bid prices, 1000 LF, $50 / CY, 3 CY / LF
Remove Bituminous Pavement (25'x0.5')	$ 49,040	MnDOT bid prices, 24,520 LF, $2 / LF
Type SP 9.5 Wearing Course Mix (3.b) (25'x0.5')	$ 1,226,000	MnDOT bid prices, 24,520 LF, 1 ton per LF (25'x0.5'x1')x(150 lbs/CF - in place density); $50 / ton
Aggregate Base (25'x1')	$ 1,103,400	MnDOT bid prices, 24,520 LF, $30 / CY; 1.5 CY /LF
SWPPP/ Restoration	$ 212,500	MnDOT bid prices, 17 AC, $12,500 / AC
Clearing and Grubbing	$ 136,000	MnDOT bid prices, 17 AC, $8000 / AC
Subtotal 1 - Bare Construction Cost Estimate	$ 6,040,020	
Overhead and Profit (10%)	$ 604,002	
Subtotal 2a	$ 6,644,022	
Builder's Risk, Liability, and Vehicle Insurance (2%)	$ 132,880	
Payment and Performance Bonds (1.5%)	$ 99,660	
Mobilization (5%)	$ 332,201	
Subtotal 2b - Construction Cost Estimate - Unit Price Items	**$ 7,208,764**	
Hwy. 52 Crossing	$ 500,000	MCES project experience, lump sum estimate
Railroad Crossing	$ 375,000	MCES project experience, lump sum estimate
Interceptor Crossing	$ 100,000	MCES project experience, lump sum estimate
Petroleum Pipeline Crossing	$ 600,000	MCES project experience, lump sum estimate
Forcemain Structures	$ 500,000	MCES project experience, lump sum estimate
Tunneling Allowance	$ 100,000	MCES project experience, lump sum estimate
Utility Conflicts Allowance	$ 50,000	MCES project experience, lump sum estimate
Dewatering Allowance	$ 100,000	MCES project experience, lump sum estimate
Traffic Control Allowance	$ 50,000	MCES project experience, lump sum estimate
Subtotal 3 - Construction Cost Estimate w/o Contingency	**$ 9,583,764**	
Undeveloped Design Details Contingency (20%)	$ 1,916,753	
Subtotal 4 - Construction Cost Estimate w/ Contingency	**$ 11,500,517**	
Inflation to Midpoint of Construction (3%, 18 mos.)	$ 517,523	
Total Construction Cost Estimate	**$ 12,018,040**	
Construction Inspection (4%)	$ 480,722	
Construction Engineering (3%)	$ 360,541	
Total Construction Phase	**$ 12,859,303**	
Design (8%)	$ 961,443	
Easements	$ 300,000	Based on limited PE (2000 feet x 30 feet wide), and 10 feet of TE for entire corridor, TE rent value at 7.5% annually
Total Project Cost Estimate	**$ 14,121,000**	

Appendix C. Environmental Information Worksheet (EIW)

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

Environmental Information Worksheet (EIW) form

Clean Water State Revolving Fund Program

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

Doc Type: Wastewater Point Source

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

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

1. **Project title:** Southeast Metro Water Relaimation Facility

2. **Proposer:** Metropolitain Council Environmental Services

   Contact person: John Chlebeck, PE

   Title: Principal Engineer

   Address: 3565 Kennebec Drive

   Eagan, MN 55122

   Phone: 651-602-4527

   Fax: john.chlebeck@metc.state.mn.us

3. **Project location:** County: Dakota City/Twp: Rosemount and Inver Grove Heights

   1/4 See 1/4 Table Section: Attached Township: Range:

Tables, Figures, and Appendices attached to the EIW:

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

4. Description:

a. Provide a project summary of 50 words or less.

The Southeast Metro Water Reclamation Facility would include a satellite treatment plant and pipeline to treat secondary effluent from our Empire Wastewater Treatment Plant (WWTP) to disinfected tertiary standards, using filtration and disinfection processes, and convey the reclaimed water to an industrial customer for process and cooling water.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

See attached "Project Description"

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

MCES has a policy objective to pursue wastewater reuse where feasible, as a means of promoting sustainable management of water resources. This particular project is being driven by a demand for reclaimed water for industrial use. An industry has requested reclaimed water, and is planning to locate in proximity to our secondary treated effluent from the Empire WWTP. The project would provide water supply for industrial purposes, allowing industrial development while protecting other water resources. In particular, the aquifers in Dakota county would be reserved for higher quality uses, such as domestic use.

The industry using the water is the primary beneficiary of the infrastructure. Aquifer preservation is a secondary benefit.

d. Are future stages of this development including development on any outlots planned or likely to happen? ☐ Yes ☒ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

e. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No
If yes, briefly describe the past development, timeline and any past environmental review.

5. Project magnitude data

Total Project Area (acres) 4.0 ac + 16.7 ac or Length (miles) 4.5
Number of Residential Units: Unattached 0 Attached 0 maximum units per building
Commercial/Industrial/Institutional Building Area (gross floor space): total square feet 0
Indicate area of specific uses (in square feet): Work at the treatment plant site is approximately 4 ac, the distribution pipe is 4.5 miles in length (16.7 ac).

Office		Manufacturing	
Retail		Other Industrial	Reclaimed water treatment facility - 4.0 ac; reclaimed water distribution pipe - 4.5 miles in length (approx. 16.7 ac disturbed)
Warehouse		Institutional	
Light Industrial		Agricultural	
Other Commercial (specify)			

Building height _____ If over 2 stories, compare to heights of nearby buildings _____

6. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

Unit of government	Type of application	Status
	See attached "Required Permits" Table	

7. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

The treatment facility is proposed to be constructed on the site of a decommissioned wastewater treatment plant site, the Rosemount WWTP, which is owned by MCES. The distribution pipe will follow public right-of-way along 140th Street, County Road 71 (Blaine Ave. / Rich Valey Blvd.) and 117th Street. The land use throughout the corridor is generally agricultural and industrial / commercial. Most of the land adjacent to the project is owned by Flint Hills Resources, and the project goes around the Flint Hills Pine Bend refinery. There are four trucking distribution centers / warehouse facilities along the route, one golf course, and one private residence. At the northern end of the pipe route there is a municipal solid waste landfill.

The construction of a water treatment facility and distribution pipe in this location is compatible with existing and planned land uses in the area.

Information on documented environmental contamination in the vicinity of the project can be found in the attached memorandum prepared by SEH (Short Elliott Hendrickson) titled "Environmental Review". In addition, Figures EIW-11, EIW-12, and EIW-13 show locations of sites from the MPCA and MDA What's in My Neighborhood databases. The attached "What's in My Neighborhood Database Search" document lists additional information corresponding to the sites in those figures with additional information about the nearby sites identified.

There are several sites of concern along the proposed route of the distribution pipe, including active Superfund sites and documented spills. The selection of the route along County Road 71 in part attempts to mitigate some of the construction risk associated with environmental contamination. The groundwater flow in this area is generally to the northeast, toward the Mississippi River, and therefore the highest risk sites of environmental contamination are down-gradient from the proposed construction route.

Additional work will be conducted during the preliminary design phase of the project to conduct a Phase I Environmental Site Assessment and to perform some field investigation to better delineate expected contamination sites.

There are at least 13 trunk petroleum product pipelines that the proposed distribution pipe would need to cross between the treatment plant site and the Enerkem site, along the described route. These pipelines create a safety concern and an environmental risk during construction, and a high level of care will be needed in design and construction to avoid any damage to these pipeline facilities. MCES will work with all of the pipeline operators to come up with designs that meet their standards for utility crossing. It is expected that each pipeline operator will have a permit process that includes their review of our construction plans and construction oversight.

8. Cover types. Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Types 1-8 wetlands	No changes	No changes	Lawn/landscaping	No changes	No changes
Wooded/forest	No changes	No changes	Impervious Surfaces	No changes	No changes
Brush/grassland	No changes	No changes	Other (describe)	No changes	No changes
Cropland	No changes	No changes			
			Total	No changes	No changes

9. Fish, wildlife, and ecologically sensitive resources.

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

As the project will be located on a decommissioned wastewater treatment plant site, and along existing road right-of-way, there is not expected to be any fish and wildlife resources or habitats affected by construction activities.

b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site?
☒ Yes ☐ No
If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the Minnesota Department of Natural Resources (DNR) Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: ERDB 20180237
Describe measures to minimize or avoid adverse impacts.

The Loggerhead Shrike (Lanius ludovicianus), a state-listed endangered bird, Bell's Vireo, (Vireo bellii) and Lark Sparrow (Chondestes grammacus), both state listed bird species of special concern, have been documented in the vicinity of the project site. The Loggerhead Shrike and Bell's Vireo both nest in small trees or shrubs, while the Lark Sparrow typically nests on the ground. If the project boundary contains suitable habitat, then it is possible that these birds may breed in the area. Recommendations to minimize potential impacts include the following: Avoid tree and shrub removal within suitable habitat during the breeding season, typically April through July, and report any loggerhead shrike sightings to the DNR.

10. Physical impacts on water resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No
If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

11. Water use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☒ Yes ☐ No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

The water table at the Rosemount WWTP is known to be approximately 20 feet below ground surface, and it is expected that the construction of below-grade water storage tanks and a lift station on the site will necessitate dewatering for construction purposes. The quantity is currently unknown. Dewatering for construction would likely take the form of temporary construction dewatering wells, which would be permitted by MDH and DNR.

12. Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☐ Yes ☒ No
If yes, identify the district and discuss project compatibility with district land use restrictions.

13. Water surface use. Will the project change the number or type of watercraft on any water body? ☐ Yes ☒ No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

14. Erosion and sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: **21** **114,00** cubic yards. Describe any steep slopes or highly erodible soils and Acres: **0**
identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

Soil classifications from NRCS are presented in Figures EIW-22, EIW-23, and EIW-24, and in the attached "Soils Table and Map Unit Descriptions". Additional information on the NRCS soil classifications from NRCS database queries is also attached.

Soils through the project area are known, based on historical geotechnical borings, to be primarily poorly graded sand of glacial outwash origin, overlaid with 2 - 8 feet of clay, silty clay, or loam where undisturbed, and often overlaid with fill materials in the road right-of-way. Erosion of soils will be a concern during construction activities, particularly when stockpiled during excavation activities. MCES will work with the watershed districts to develop SWPPP plans for the treatment plant construction and pipeline construction. Erosion control measures will be maintained throughout construction, and overseen by MCES construction administrators and inspectors.

15. Water quality – surface-water runoff.

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.

There will be no change to the quantity or quality of site runoff before and after the project.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

The project area is not served by storm sewer. Runoff at the site and along the proposed distribution pipe route is along ditches and swales that drain to localized depressions. There are no immediate receiving waters.

16. Water quality – wastewater.

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

This faclity will take treated wastewater effluent and produce reclaimed water. This treatment will produce backwash water that will be discharged to the MCES lift station onsite. There will likely be a restroom and handwashing facilities on site that will produce small amounts of domestic wastewater, and water for facility cleaning and floor drains for handling cleaning water. This domestic water will also be sent to the onsite lift station.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

All wastewater is anticipated to be sent to the onsite MCES lift station (L74), from which it will be pumped to the MCES Empire WWTP.

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

Wastewater will be conveyed by the proposed facilities to the MCES Empire Wastewater Treatment Plant (WWTP). The Empire WWTP currently treats approximately 10.7 mgd and has an average wet weather design capacity of 28.6 mgd. The project will not significantly alter the amount of wastewater conveyed to the Empire WWTP.

d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

N/A

17. Geologic hazards and soil conditions.

a. Approximate depth (in feet) to	Groundwater	Varies - see Figures EIW-16, EIW-17, EIW-18	minimum;		average.
	Bedrock:	*Varies - See Figure EIW-19, EIW-20, EIW-21*	minimum;		average.

Describe any of the following geologic site hazards to groundwater and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

None known.

b. Describe the soils on the site, giving U.S. Soil Conservation Service (SCS) classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

Refer to Figure EIW-22, EIW-23, EIW-24, and also the attached "Soils Table and Map Unit Descriptions" which identifies soils in the project area based on NRCS classifications.

Soils through the project area are known, based on historical geotechnical borings, to be primarily poorly graded sand of glacial outwash origin, overlaid with 2 - 8 feet of clay, silty clay, or loam where undisturbed, and often overlaid with fill materials in the road right-of-way. The soils are expected to have high permeability when the clay layer is removed through excavation activities. Groundwater is therefore susceptible to contamination from surface spills during construction.

Fuel storage for construction equipment will require secondary containment. The treatment facility being constructed will have sodium hypochlorite storage and feed systems, which will also have secondary containment as part of the design of those systems. A standby emergency generator that may be needed at the treatment facility will include secondary containment if diesel is used as the fuel source.

18. Solid wastes, hazardous wastes, storage tanks.

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

There is no solid or hazardous waste to be generated as part of the construction or operation of this facility.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

Refer to discussion regarding secondary containment for fuels and for sodium hypochlorite in Item 17.b. above.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

There would be a sodium hypochlorite bulk storage tank (~ 30 days, 300 gallons) and day tank (~ 1 day, 10 gallons). Both of these tanks would be placed within a secondary containment system.

An emergency standby power generator may be installed at the water reclamation treatment facility. Additional work is required during preliminary design to determine if the existing generator at the neighboring L74 lift station can be used to power equipment at the proposed water reclamation facility. If a new generator is needed, the amount of fuel

storage needed will need to be determined during preliminary design. Secondary containment would be included in the design of fuel storage for the standby power generator.

MCES has an emergency response protocol to address chemical spills at treatment plants and construction sites. This emergency response protocol would be followed for the SE Water Reclamation Facility as well. Depending on the scenario, the employee responding to a spill would contain the spill if possible, then notify 911 if an emergency and our Regional Dispatch Center. Regional Dispatch would be reponsible for notifying the State Duty Officer, or National Response Center, and coordinate remediation response with the appropriate MCES management and staff and contractors.

19. **Traffic.** Parking spaces added: *0* Existing spaces (if project involves expansion): *0*
Estimated total average daily traffic generated: *N/A* Estimated maximum peak hour traffic generated (if known) and its timing: *N/A* Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

N/A

20. **Vehicle-related air emissions.** Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult *Environmental Assessment Worksheet (EAW) Guidelines* about whether a detailed air quality analysis is needed.

Vehicle emissions associated with the construction of the project will not have a significant effect on air quality.

21. **Stationary source air emissions.** Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

The only stationary air emission source that would be included in this facility is the emergency standby power generator, which may be needed at the water reclamation treatment facility. Additional work is required during preliminary design to determine if the existing generator at the neighboring L74 lift station can be used to power equipment at the proposed water reclamation facility. Since the generator would only be used in emergency situations where there is a power outage, its contribution to air pollution from combustion products is expected to be insignificant..

22. **Odors, noise, and dust.** Will the project generate odors, noise or dust during construction or during operation? ☒ Yes ☐ No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

An emergency standby power generator may be installed at the Southeast Metro Water Reclamation Facility. This generator would use either diesel fuel or natural gas. The generator will meet EPA emissions regulations and will be placed in an enclosure to limit ambient noise.

Heavy equipment used during temporary construction activities may result in odors, noise, and dust (from disturbed soils). Exhaust odors from construction equipment likely will not be significant enough to warrant mitigation. MCES will require contractors to provide dust control at the construction sites. Dust control would consist of wetting exposed dirt surfaces and cleaning access roads of dirt, dust, and other debris on a frequent basis (daily, if needed) to minimize dust. Construction will take place during daylight hours on weekdays or as permitted by local ordinances.

23a. **Nearby resources.** Are any of the following resources on or in proximity to the site? Projects should search the Minnesota State Historic Preservation Office's (SHPO) National Register of Historic Places database.

***Note:** Project proposers must contact the SHPO at datarequestshpo@mnhs.org to request a database review to obtain information on any known historical or archaeological sites in the project area. Include a copy of correspondence with SHPO with the submittal of this EIW form.

a. Archaeological, historical, or architectural resources? ☒ Yes ☐ No
b. Prime or unique farmlands or land within an agricultural preserve? ☒ Yes ☐ No
c. Designated parks, recreation areas, or trails? ☐ Yes ☒ No
d. Scenic views and vistas? ☐ Yes ☒ No
e. Other unique resources? ☐ Yes ☒ No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

One historic site was identified in the MnHPO database review within the expected project construction area. It is referred to as the Mendota-Wabasha Military Road: Inver Grove Heights Section, and is located in the vicinity of Rich Valley Blvd. Further correspondence with MnHPO provided additional details about the site. According to MnHPO, the Inver Grove Heights Section of the Mendota-Wabasha Military Road was determined to be ineligible for listing in the National Register due to lost integrity,

and therefore not a concern for construction impacts. No additional historical or archaeological resources were identified within the area of expected impact from construction. Correspondence with MnHPO is attached.

All of the soils in the project area are classified as Prime Farmland or Farmland of Statewide Importance. However, as the construction of this project would be on an existing wastewater treatment plant site and within existing road right-of-way, no impact is expected to farmland from the project.

23b. **Section 106 Review** (36 CFR 800) is required for all CWRF projects. The following forms can be found on the MPCA Wastewater and Stormwater Financial Assistance website at https://www.pca.state.mn.us/ppl. Select Clean Water Revolving Fund tab; then scroll to Facilities Plan and Facilities Plan Supplement for Wastewater Treatment Systems heading.

a. Project is exempt from review (attach completed *Exemption Checklist*) ☐ Yes ☒ No

b. Project is required to complete further Section 106 Review: ☒ Yes ☐ No
   a. SHPO
   b. Tribal consultation
   c. Other Consulting parties

24. **Visual impacts**. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☐ Yes ☒ No

If yes, explain.

25. **Compatibility with plans and land use regulations.** Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☒ Yes ☐ No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

The project is subject to local comprehensive plans and zoning regulations for the City of Rosemount and CIty of Inver Grove Heights. In particular, the zoning ordinances for the City of Rosemount will include restrictions for new above-grade structures at the Rosemount WWTP site. This site is zoned as Public / Institutional use, and has a conditional use permit as a wastewater treatment plant and lift station, so the planned use is in accord with the current zoning and conditional use permit. The City of Rosemount will be consulted during design to ensure compatibility with City ordinances.

26. **Impact on infrastructure and public services.** Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☒ Yes ☐ No

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

Building electrical service and water service will need to be upgraded or modified for the new facilities. However, there is existing electrical and water service at the site. Sanitary sewer will be handled by MCES facilities on the site.

27. **Cumulative impacts.** Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

The waste-to-biofuel plant that will be served by this reclaimed water system may have construction concurrent with the project that is the subject of this EIW. However, no cummulative impacts have been identified. The identified impacts of the Southeast Metro Water Reclamation Facility project are temporary in nature, related to construction activities. Erosion control and dust control will minimize environmental impacts from those construction activities. As construction will occur during the day, and the area is primarily industrial and agricultural, it is not expected that noise impacts will be significant.

28. **Other potential environmental impacts.** If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

N/A

29. **Summary of issues.** List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

The following items will require additional investigation during preliminary design:

- Complete a Phase I Environmental Site Assessment (ESA) for the project

- Identify zoning requirements related to above-grade structures at the proposed treatment plant site, and adjust design to accommodate any requirements identified.

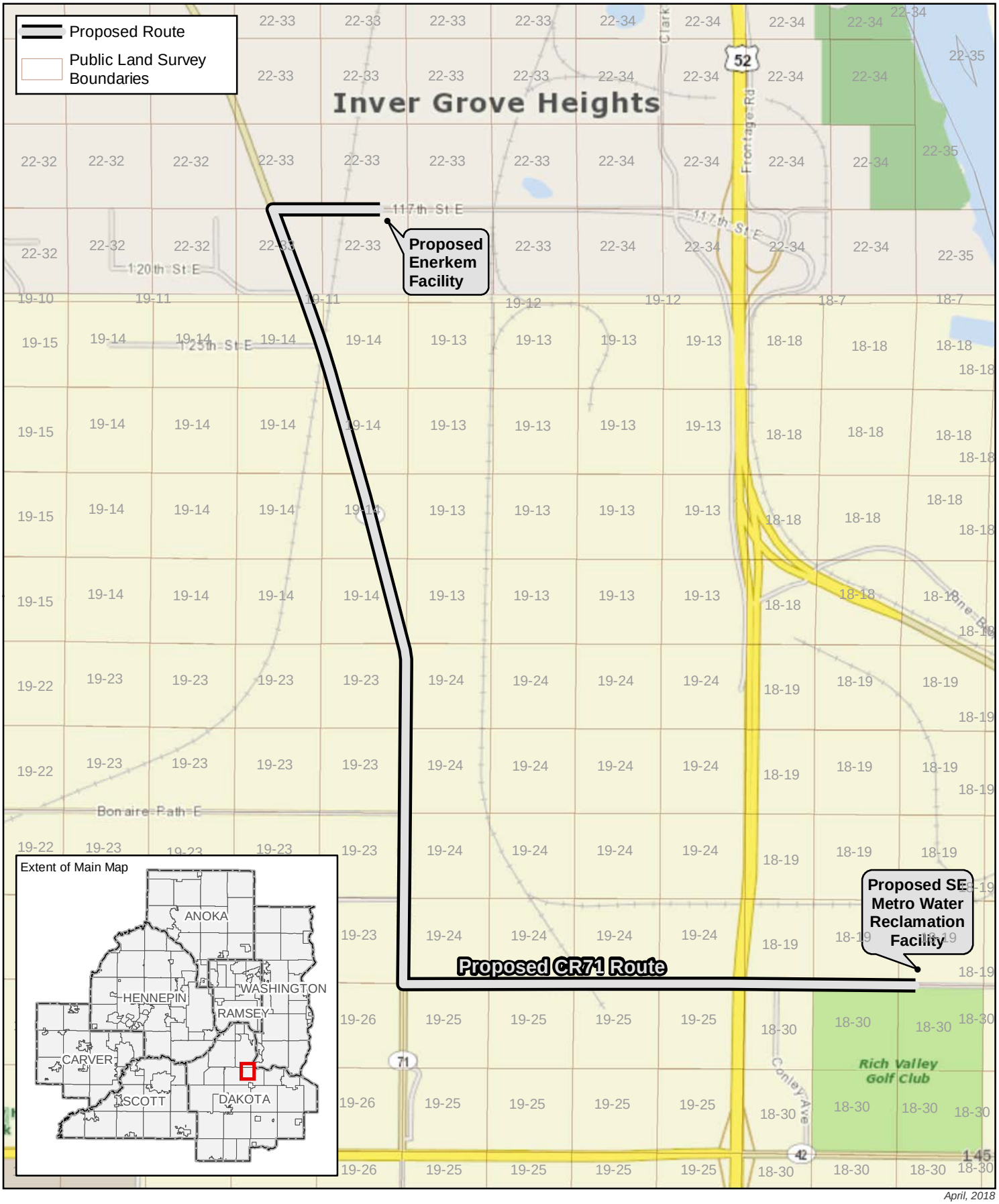
- Identify requirements for crossing of petroleum product pipelines, and begin permitting process

- Identify any habitat for threatened or endangered species that could be affected by the project, and mitigate effects through a permitting process if necessary, or preferably adjust design to eliminate effects.

- Complete wetland delineation and identify mitigation needs to prevent wetland impacts.

- Complete a stormwater pollution prevential plan (SWPPP).

EIW Figures



April, 2018

FIGURE EIW - 1

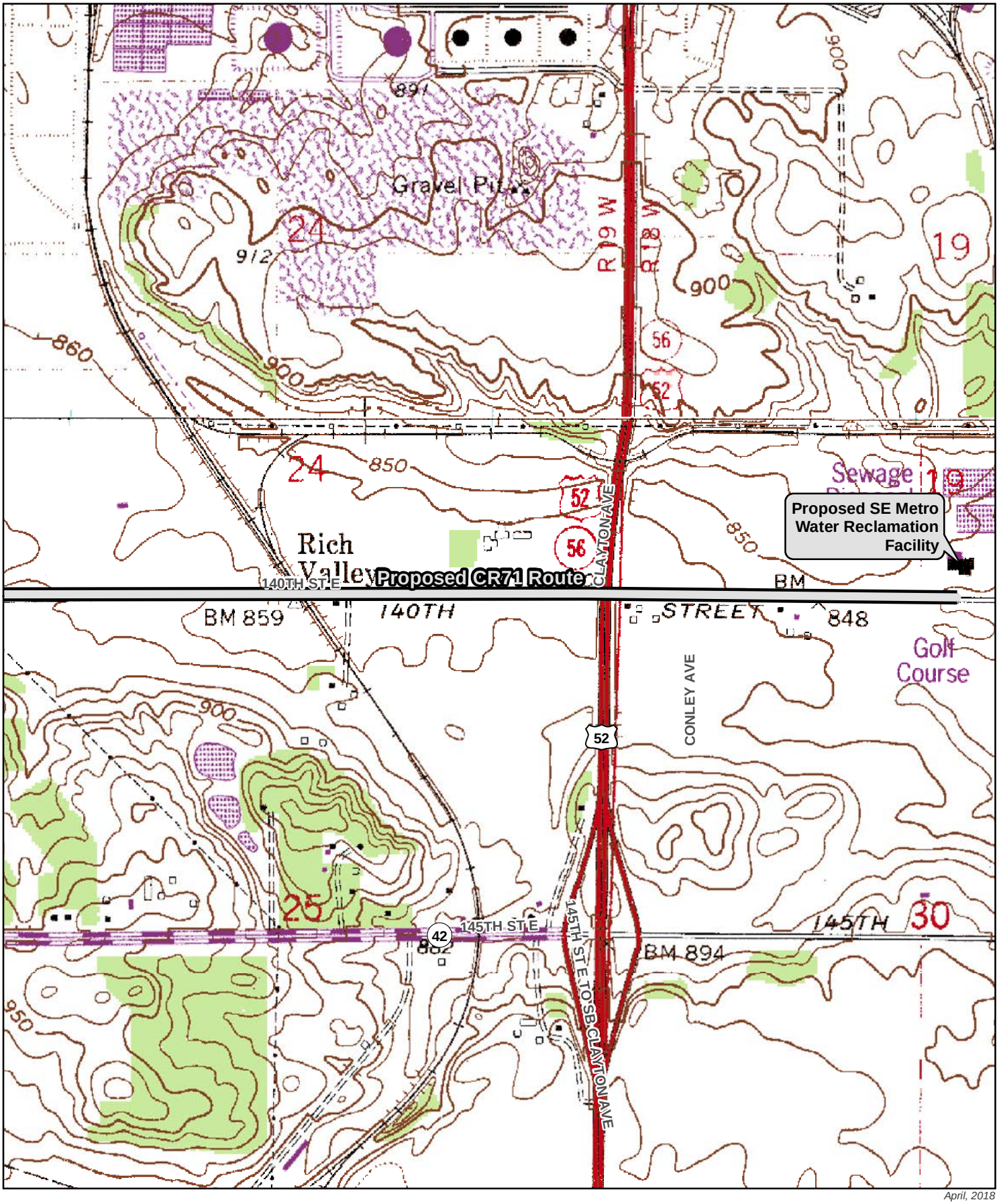
Project Location

County Road 71 Route

809100 Wastewater Reclamation Facilities

0 0.25 0.5 1 Miles

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 2

USGS 7.5 Minute Quadrangle

County Road 71 Route

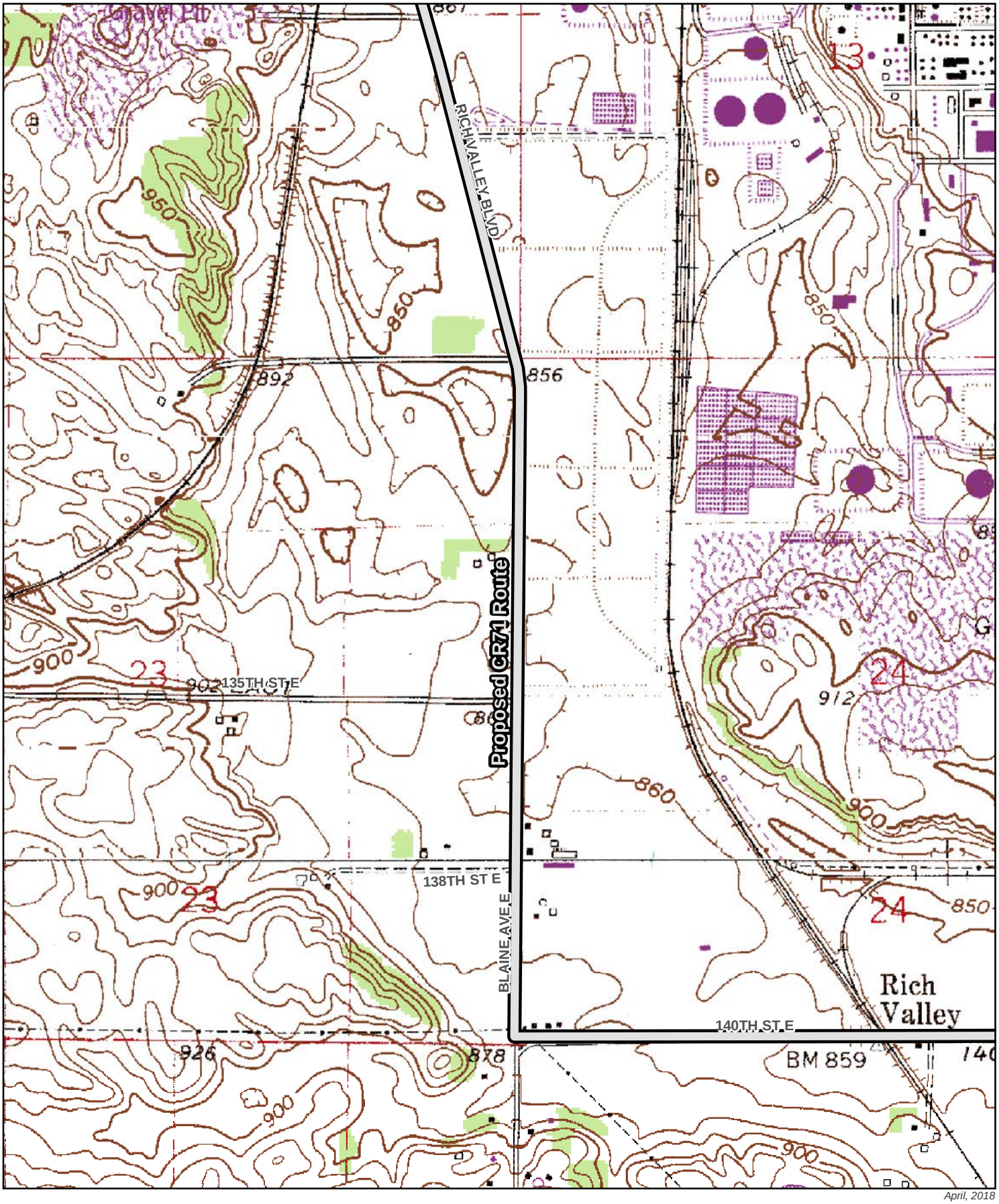
809100 Wastewater Reclamation Facilities

Proposed Route

N W E S

0 500 1,000 2,000 Feet

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 3

USGS 7.5 Minute Quadrangle

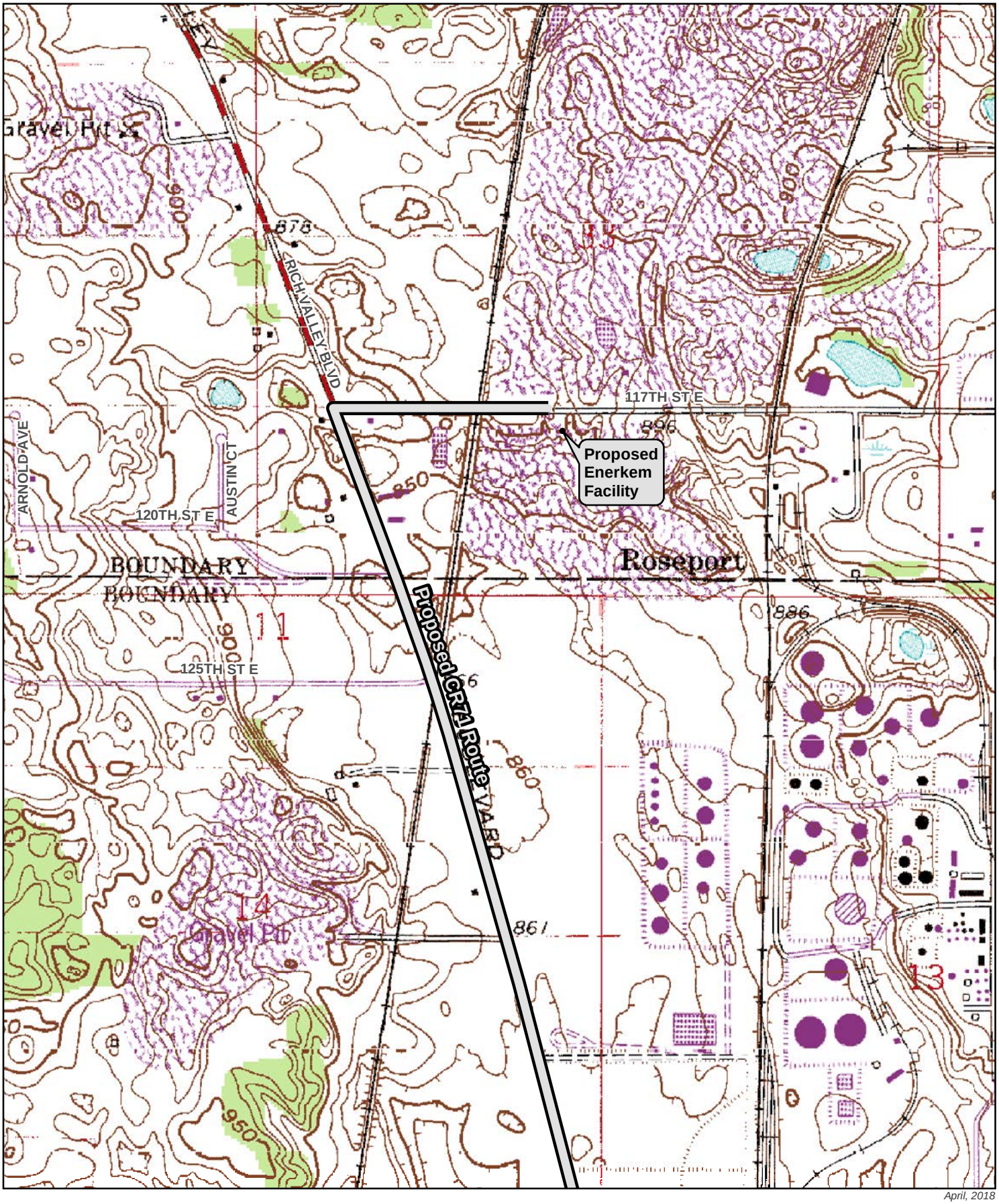
Proposed Route

N
W E
S

0 500 1,000 2,000 Feet

County Road 71 Route
809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 4

USGS 7.5 Minute Quadrangle

Proposed Route

N W E S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

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April, 2018

FIGURE EIW - 5

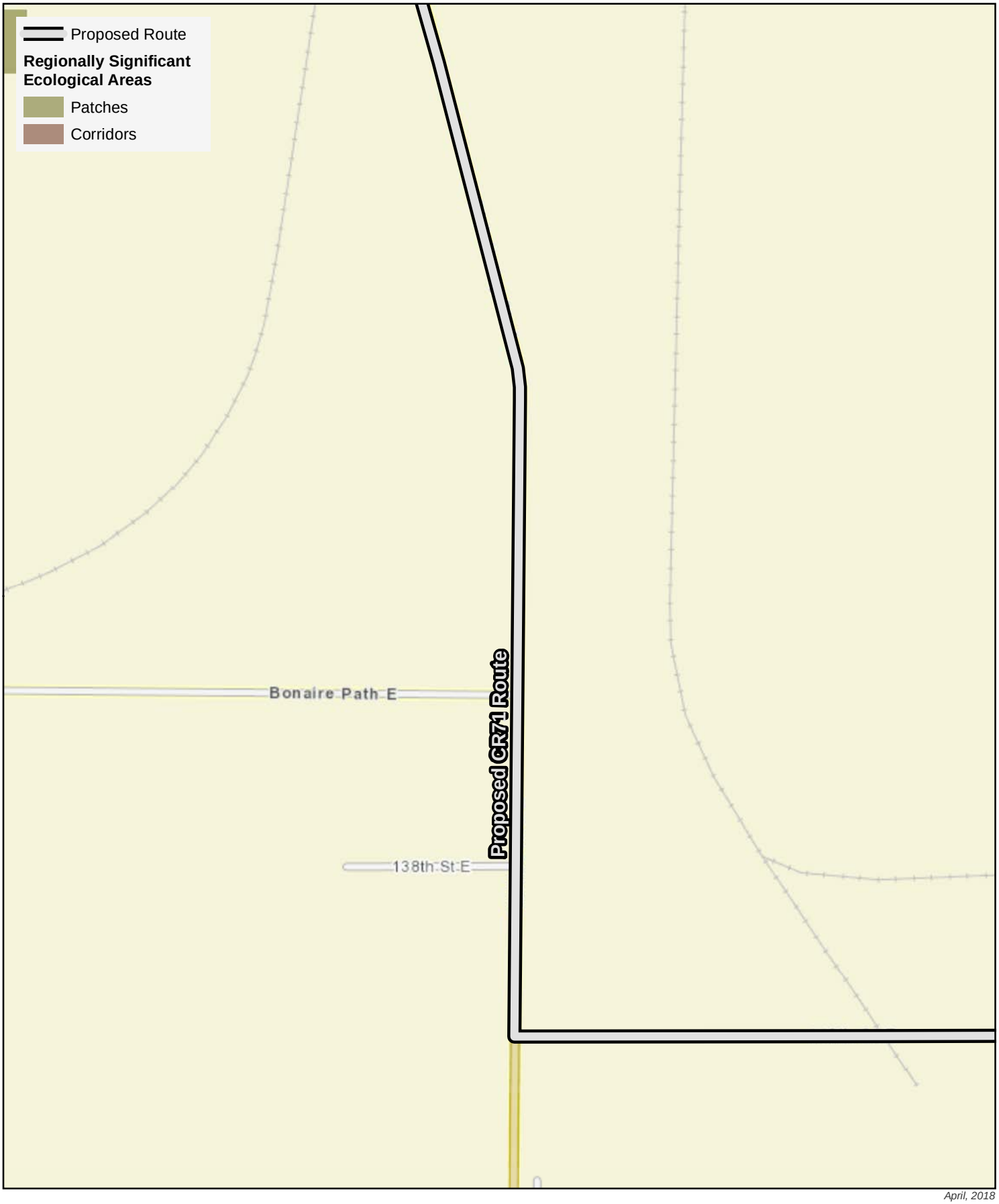
DNR Regionally Significant Ecological Areas

County Road 71 Route
809100 Wastewater Reclamation Facilities

N
W E
S

0 500 1,000 2,000
Feet

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 6

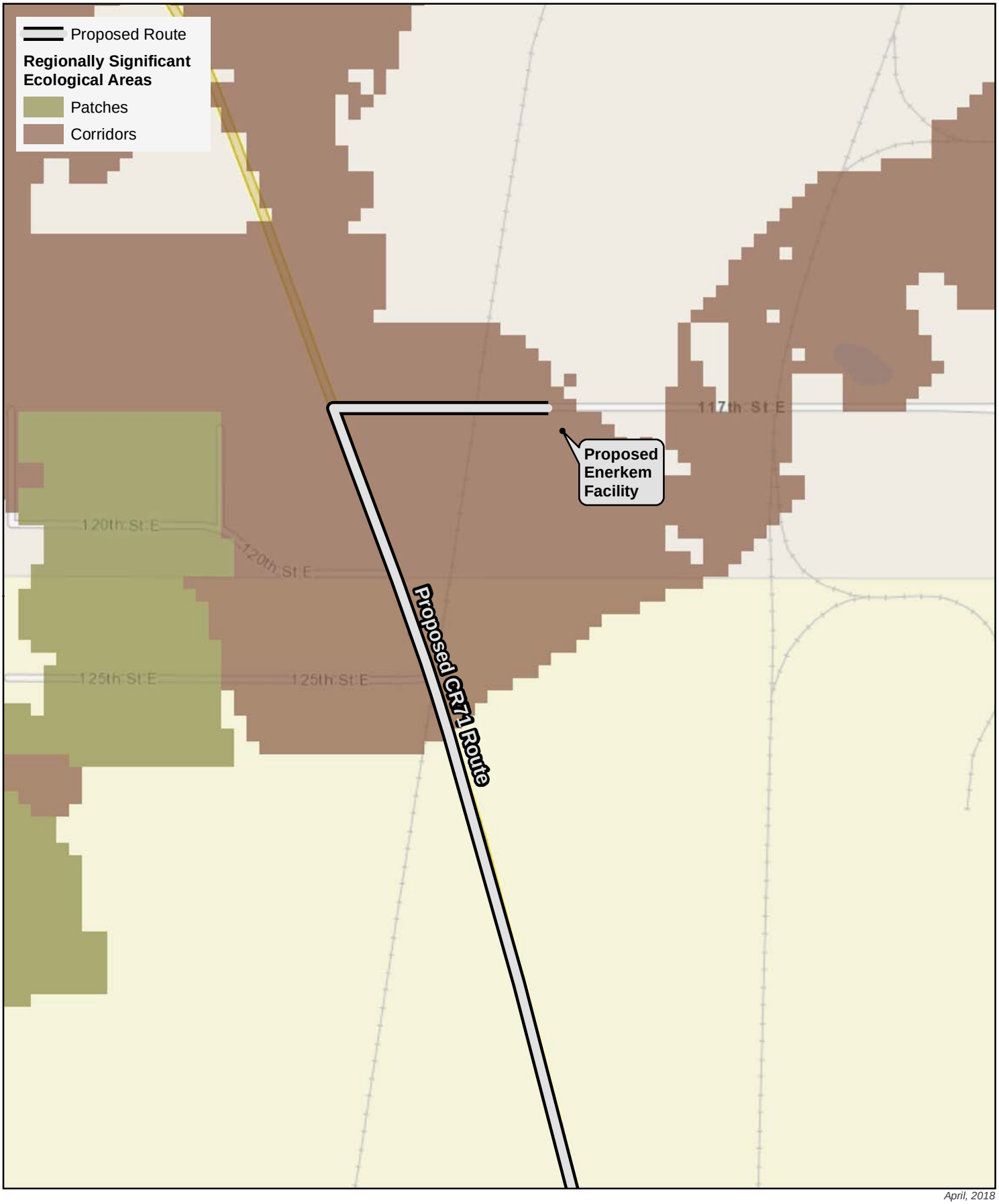
DNR Regionally Significant Ecological Areas

N
W E
S

0 500 1,000 2,000 Feet

County Road 71 Route
809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 7

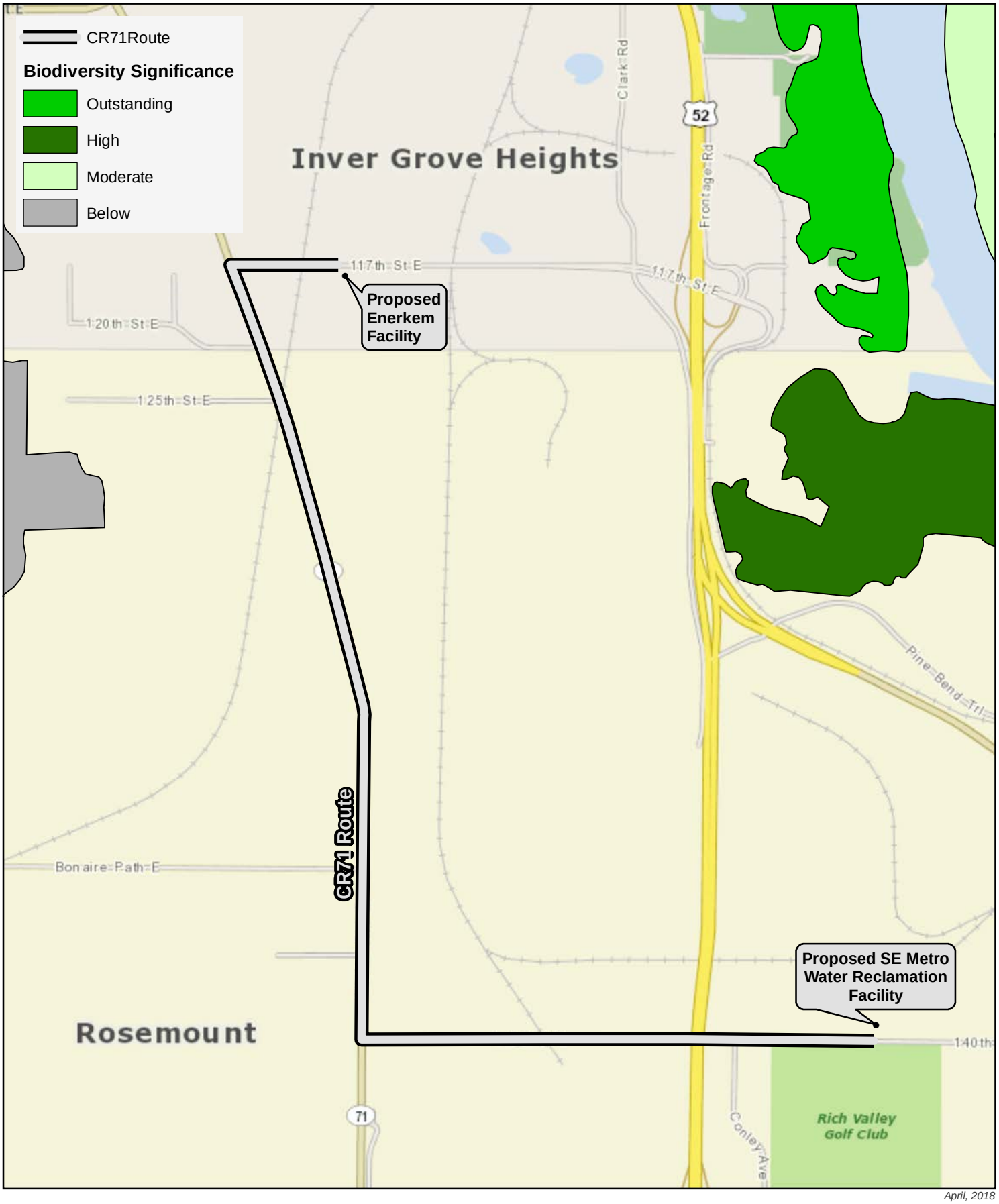
DNR Regionally Significant Ecological Areas

N
W E
S

0 500 1,000 2,000 Feet

County Road 71 Route
809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

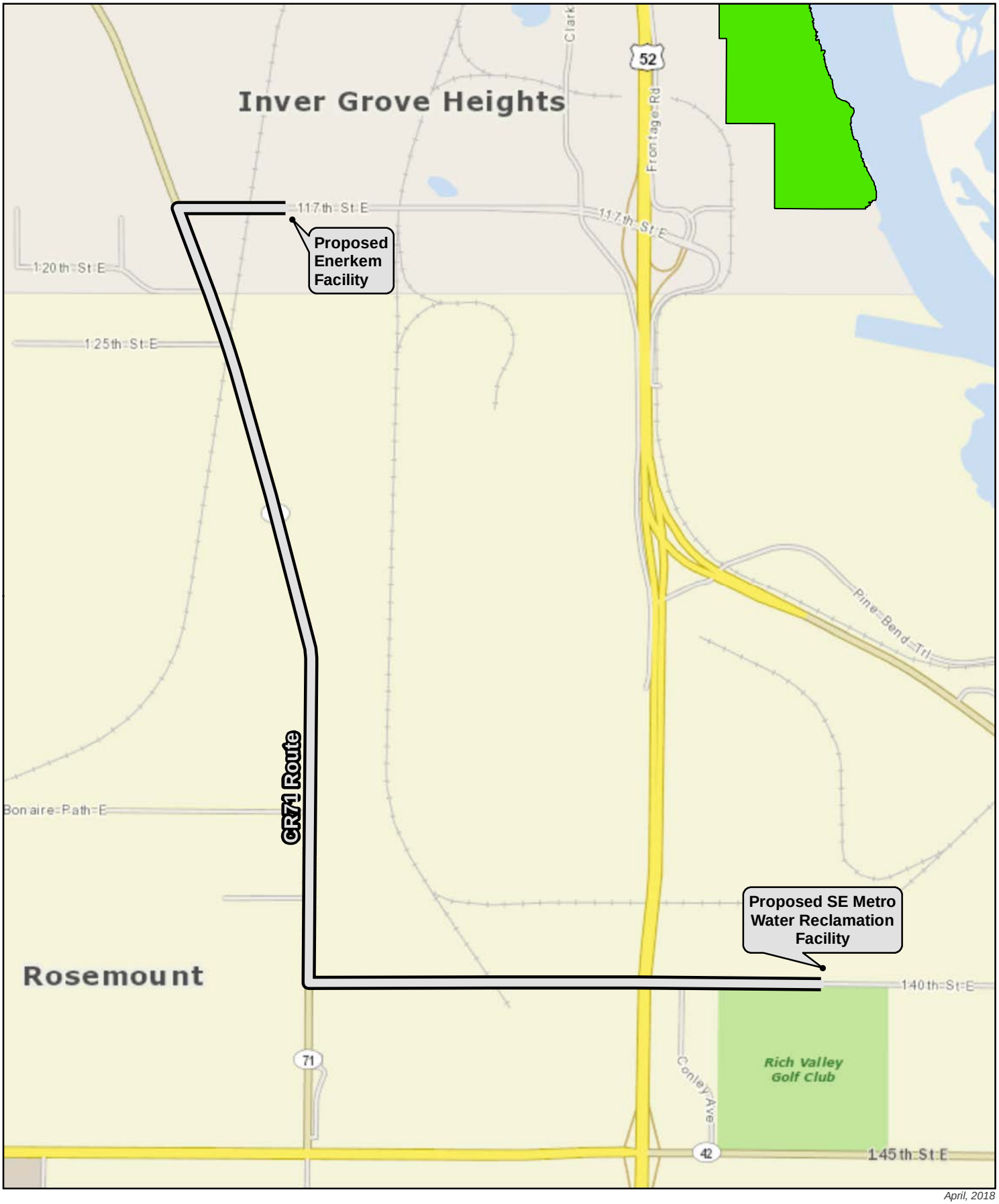
FIGURE EIW - 8

MBS Sites of Biodiversity Significance

County Road 71 Route
809100 Wastewater Reclamation Facilities

0 0.25 0.5 1 Miles

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 9

DNR Scientific and Natural Areas

CR71Route

Scientific and Natural Areas

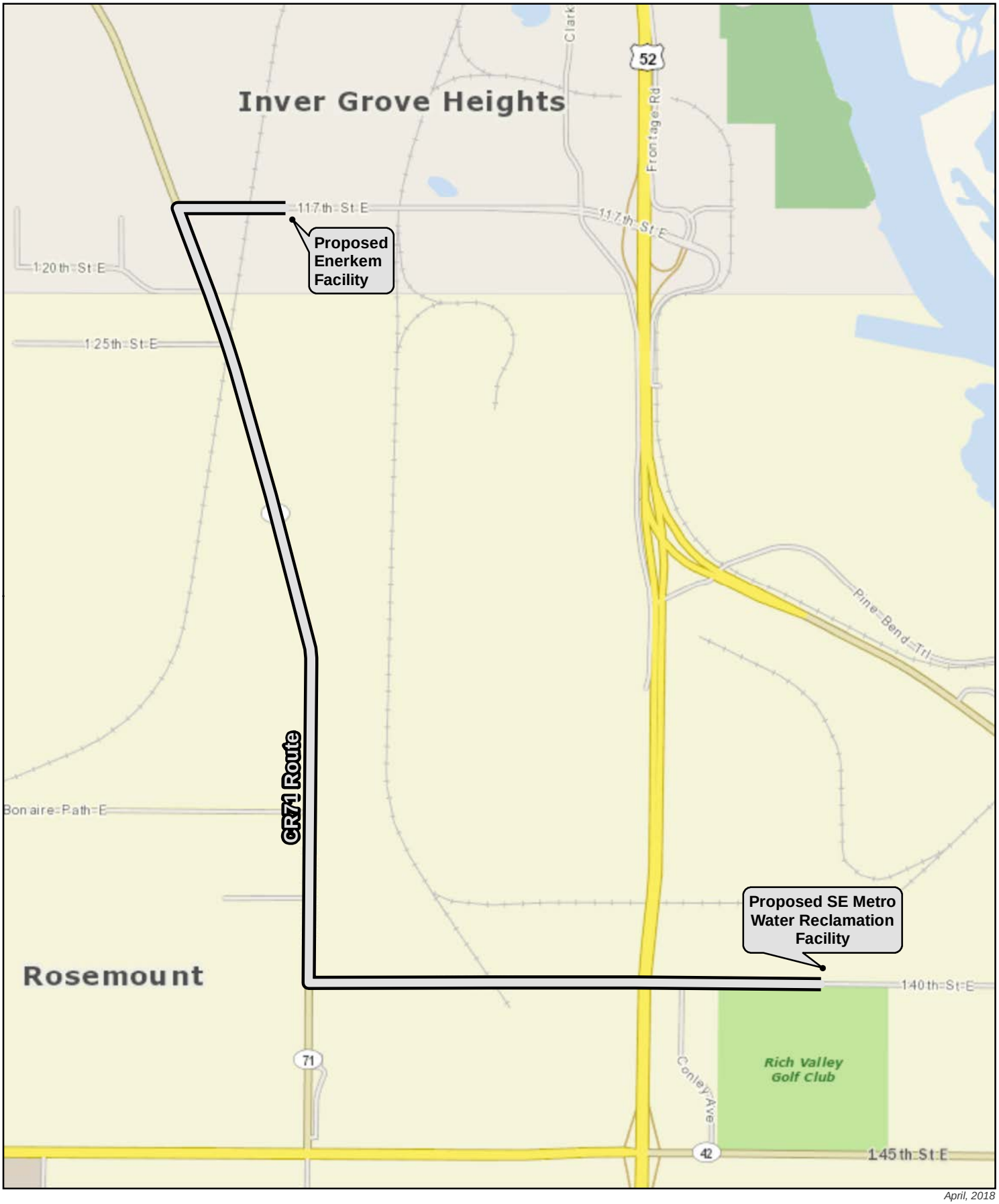
N W E S

0 0.25 0.5 1 Miles

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 10

DNR Wildlife Management Areas

CR71Route

Wildlife Management Areas

N W E S

0 0.25 0.5 1 Miles

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL

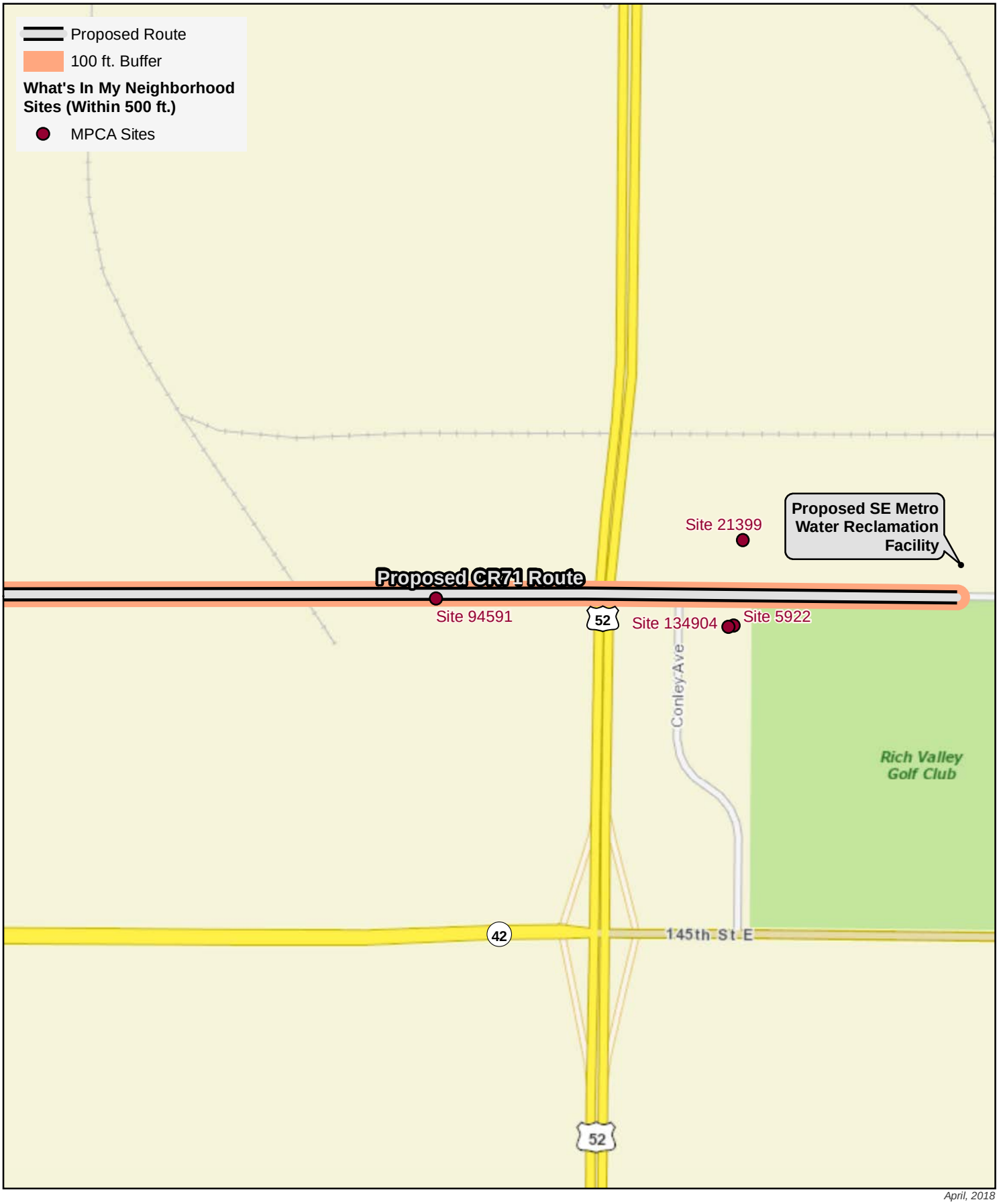


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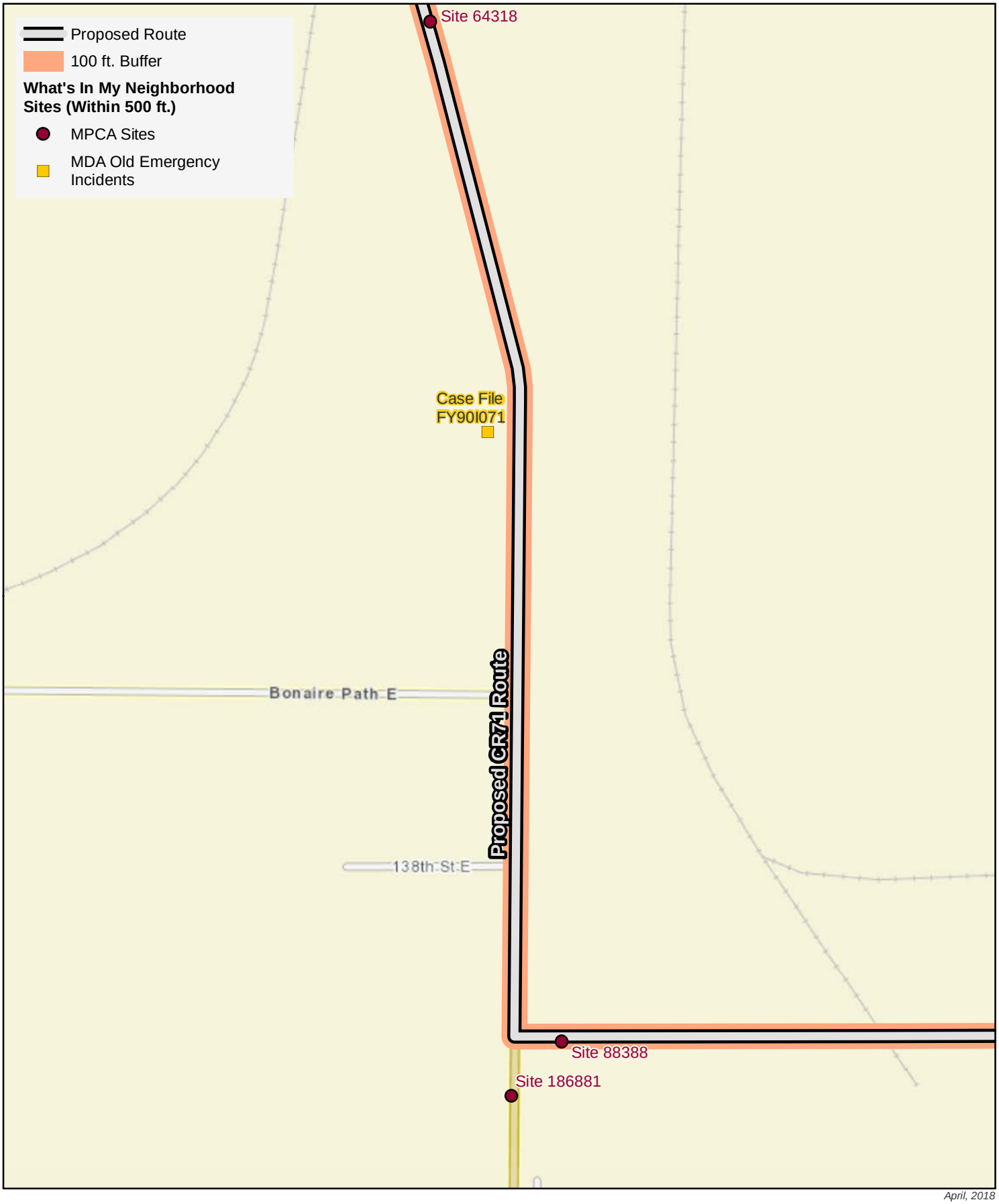
FIGURE EIW - 11

MPCA & MDA What's In My Neighborhood Sites

County Road 71 Route
809100 Wastewater Reclamation Facilities

0 500 1,000 2,000 Feet

METROPOLITAN COUNCIL



April, 2018

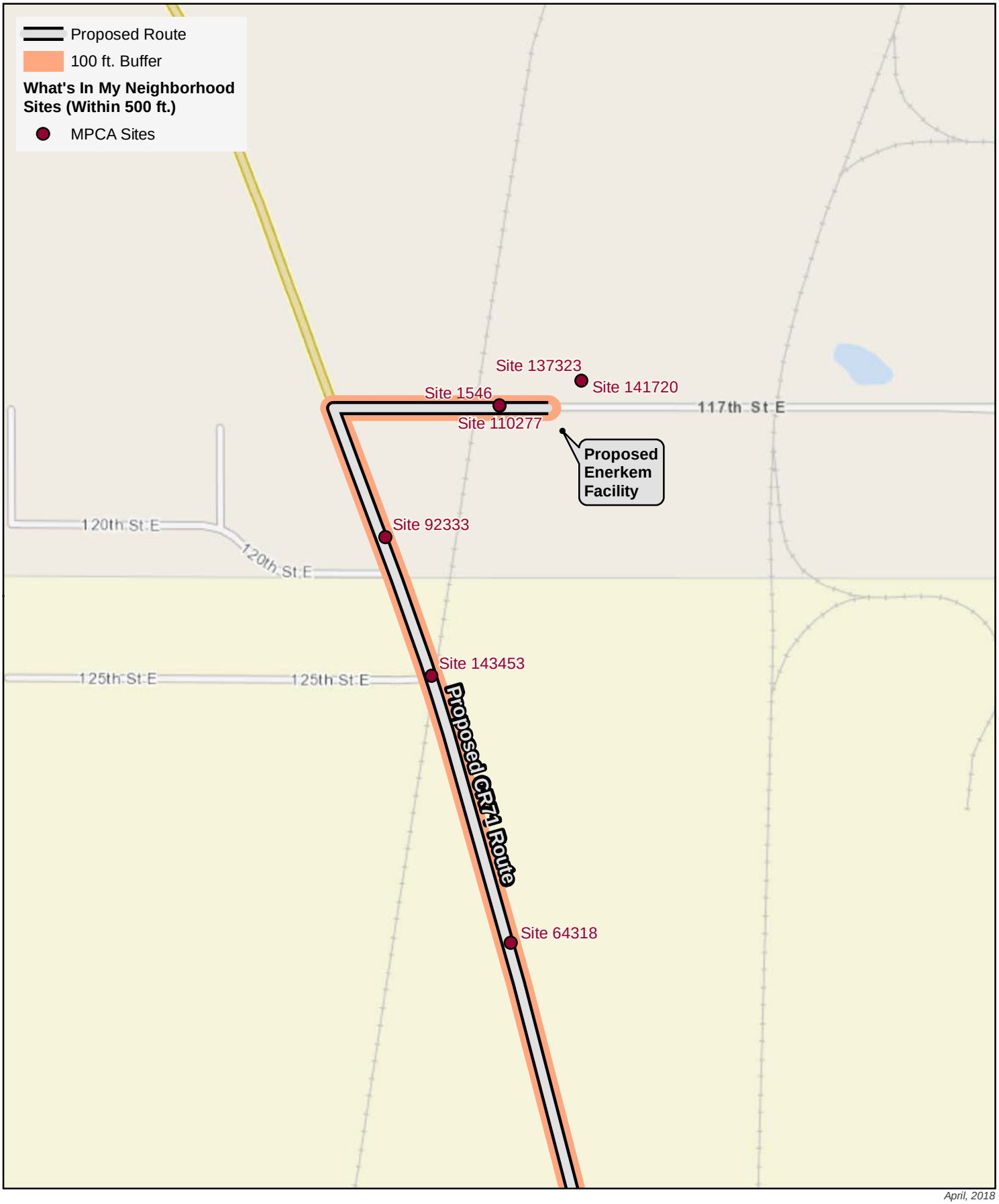
FIGURE EIW - 12

MPCA & MDA What's In My Neighborhood Sites

County Road 71 Route
809100 Wastewater Reclamation Facilities

0 500 1,000 2,000 Feet

METROPOLITAN COUNCIL



April, 2018

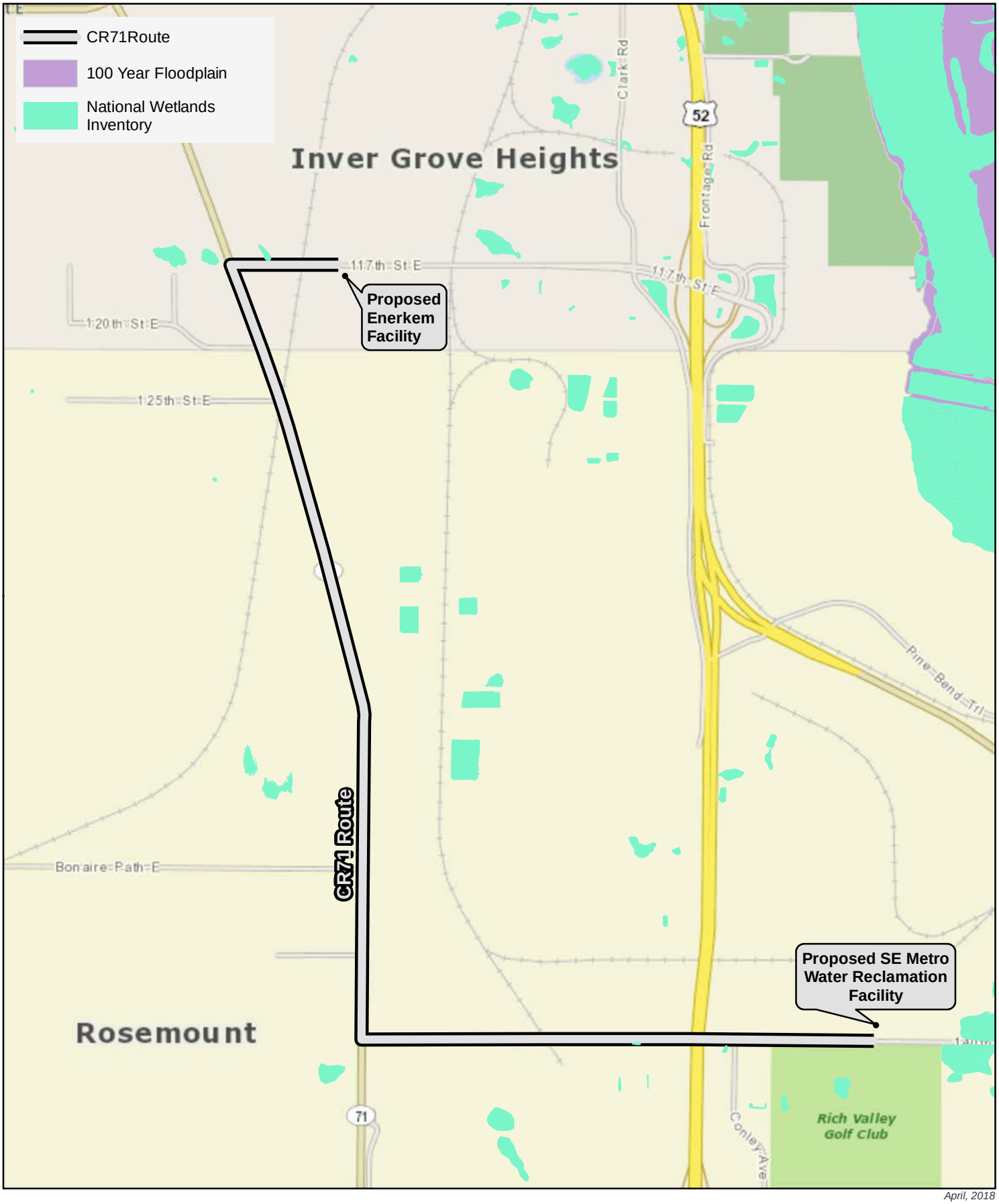
FIGURE EIW - 13

MPCA & MDA What's In My Neighborhood Sites

County Road 71 Route
809100 Wastewater Reclamation Facilities

0 500 1,000 2,000 Feet

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 14

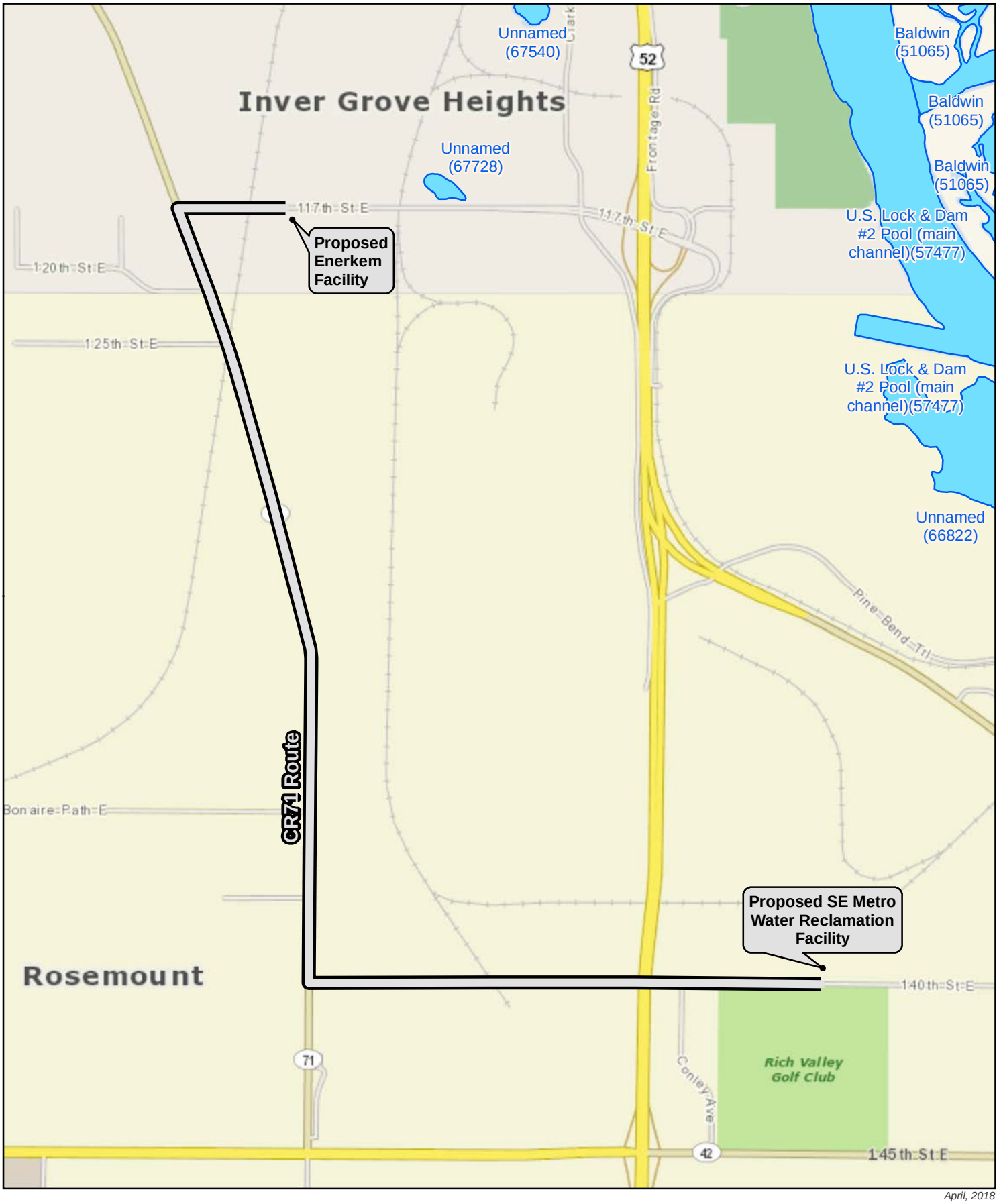
National Wetlands Inventory & FEMA
100-yr Floodplain

County Road 71 Route
809100 Wastewater Reclamation Facilities

N W E S

0 0.25 0.5 1 Miles

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 15

DNR Public Waters Inventory

CR71Route

DNR Public Waters

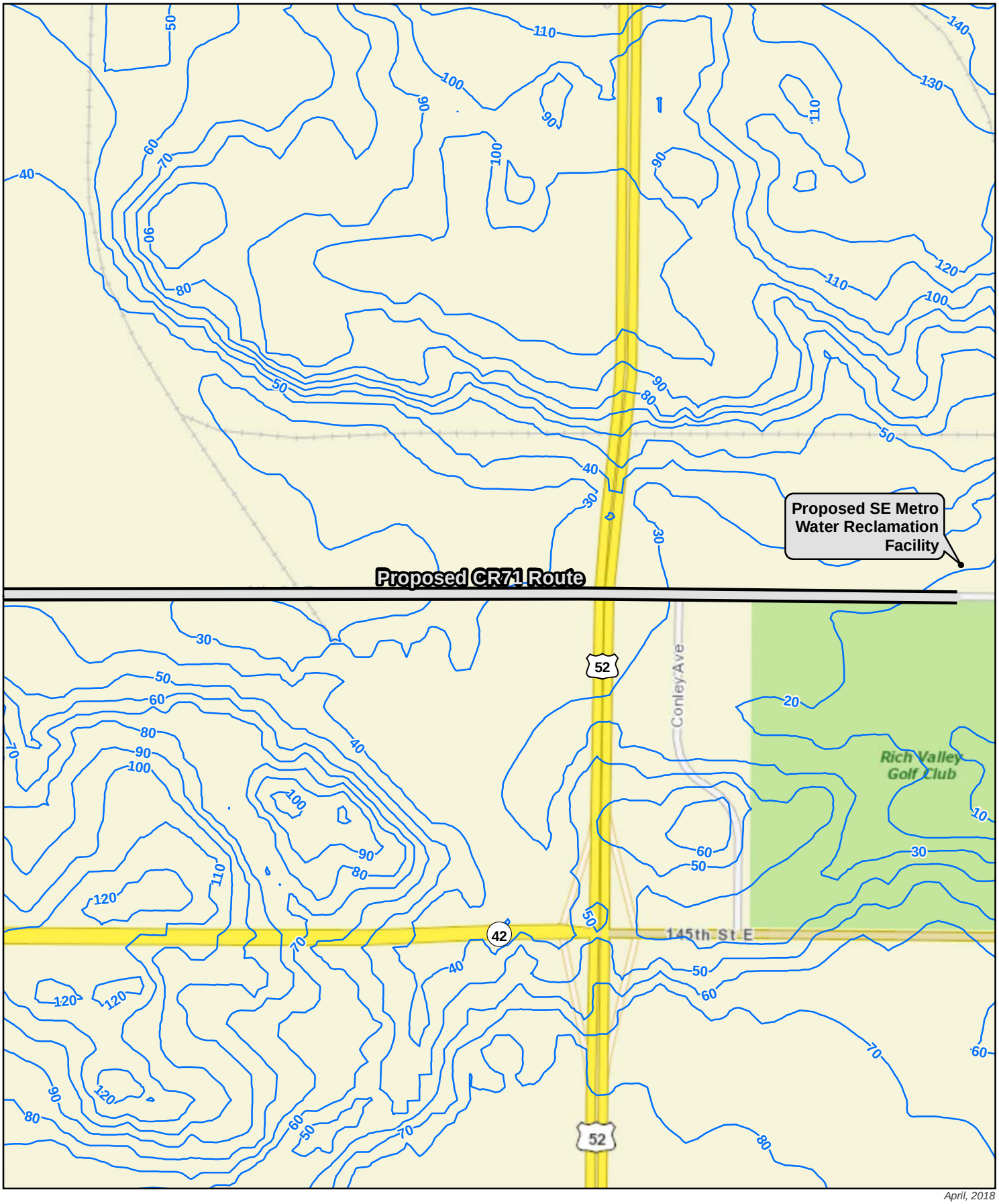
N W E S

0 0.25 0.5 1 Miles

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 16

Depth to Regional Water Table (10ft Contours)

Proposed Route

Depth To Water Table

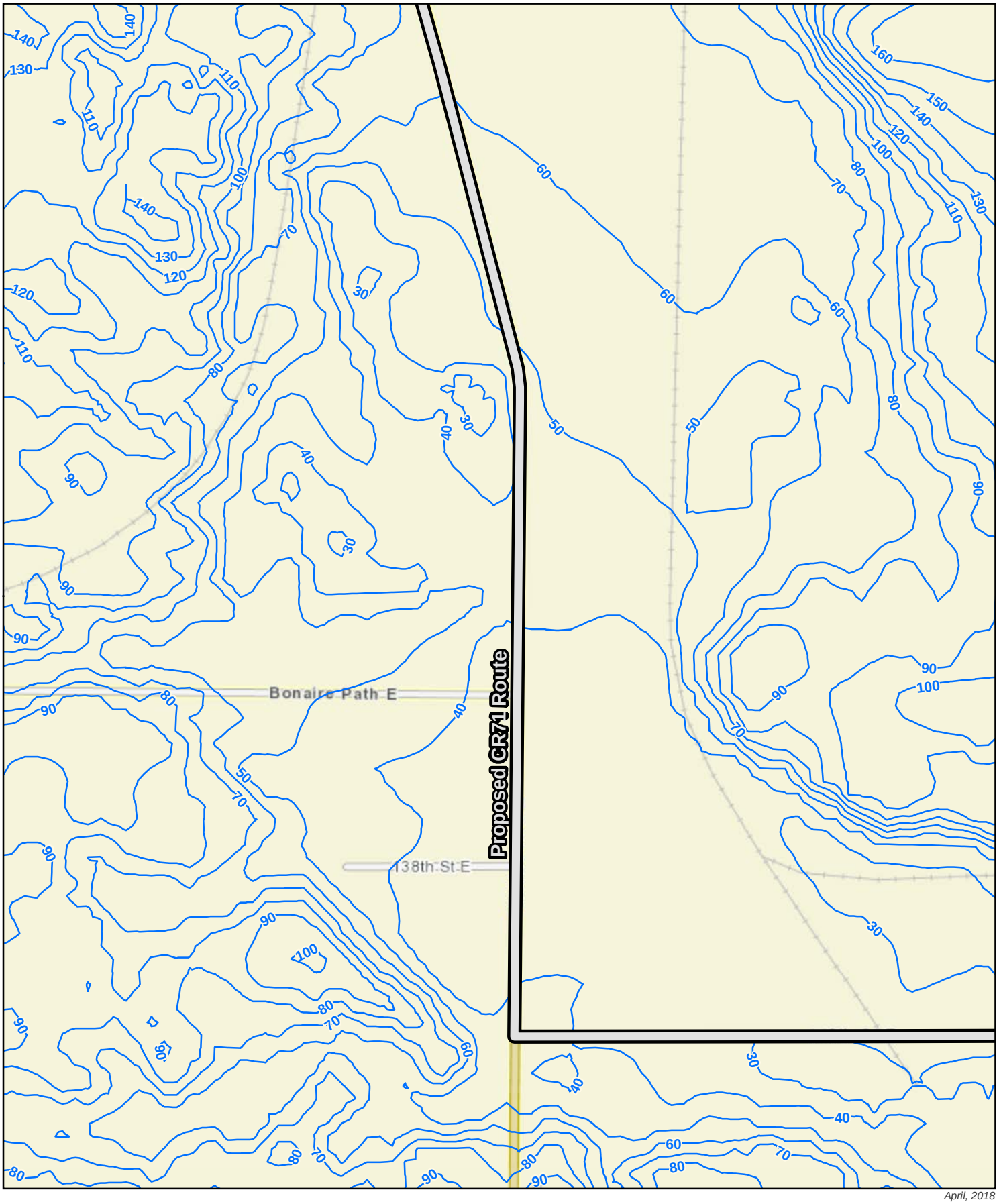
N W E S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 17

Depth to Regional Water Table (10ft Contours)

Proposed Route

Depth To Water Table

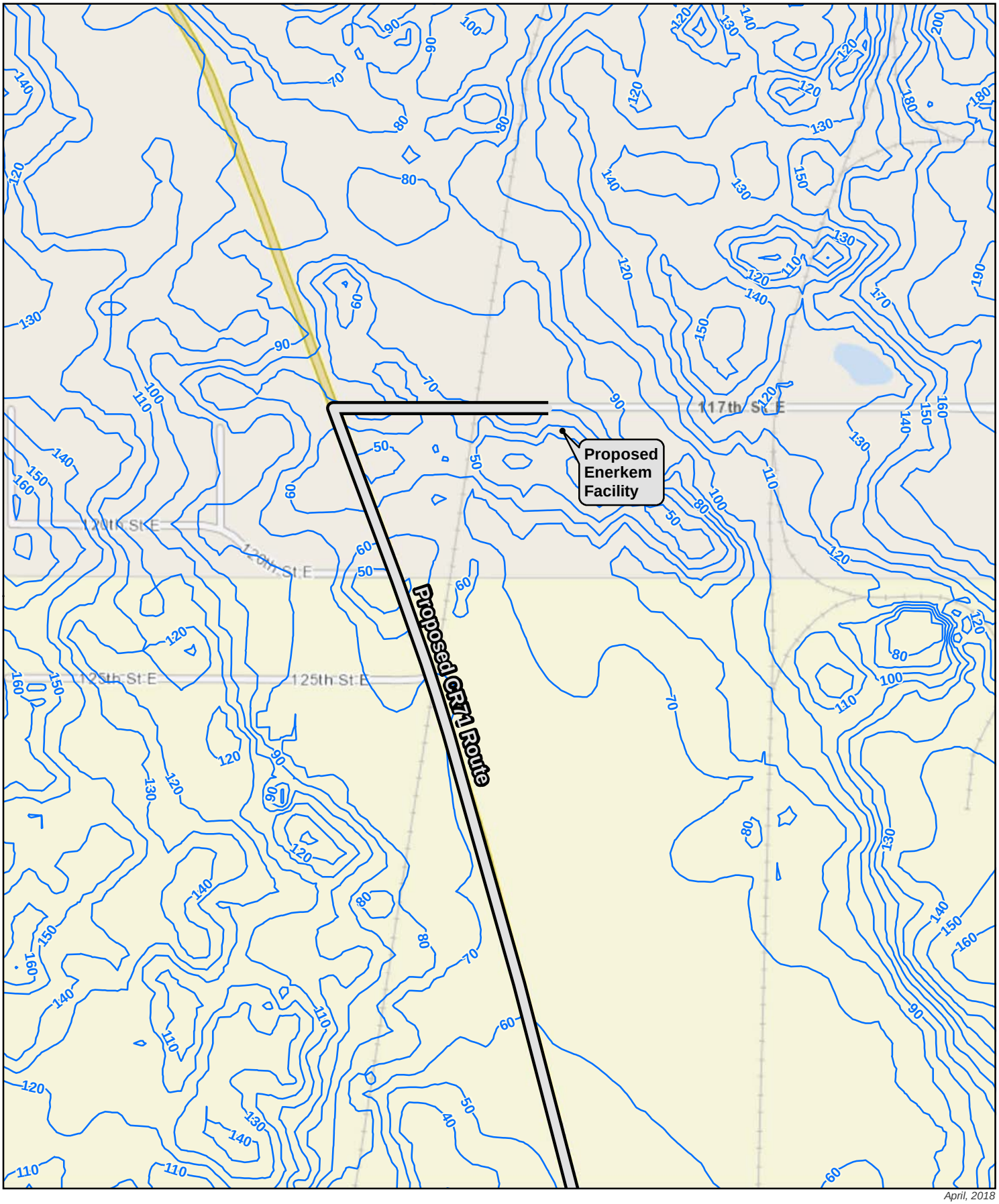
N
W E
S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 18

Depth to Regional Water Table (10ft Contours)

Proposed Route

Depth To Water Table

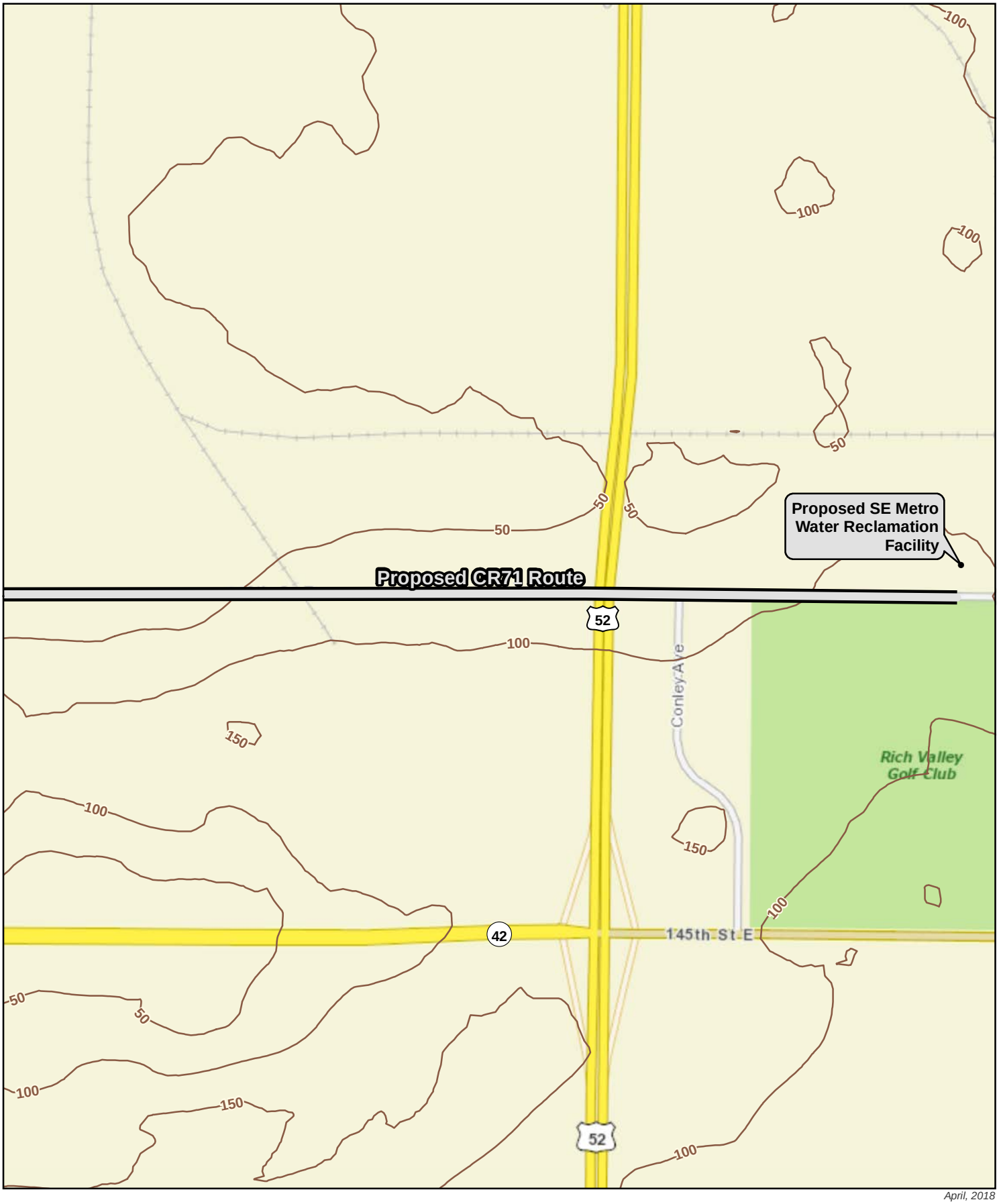
N W E S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 19

USGS Depth to Bedrock (50ft Contours)

Proposed Route

Depth To Bedrock

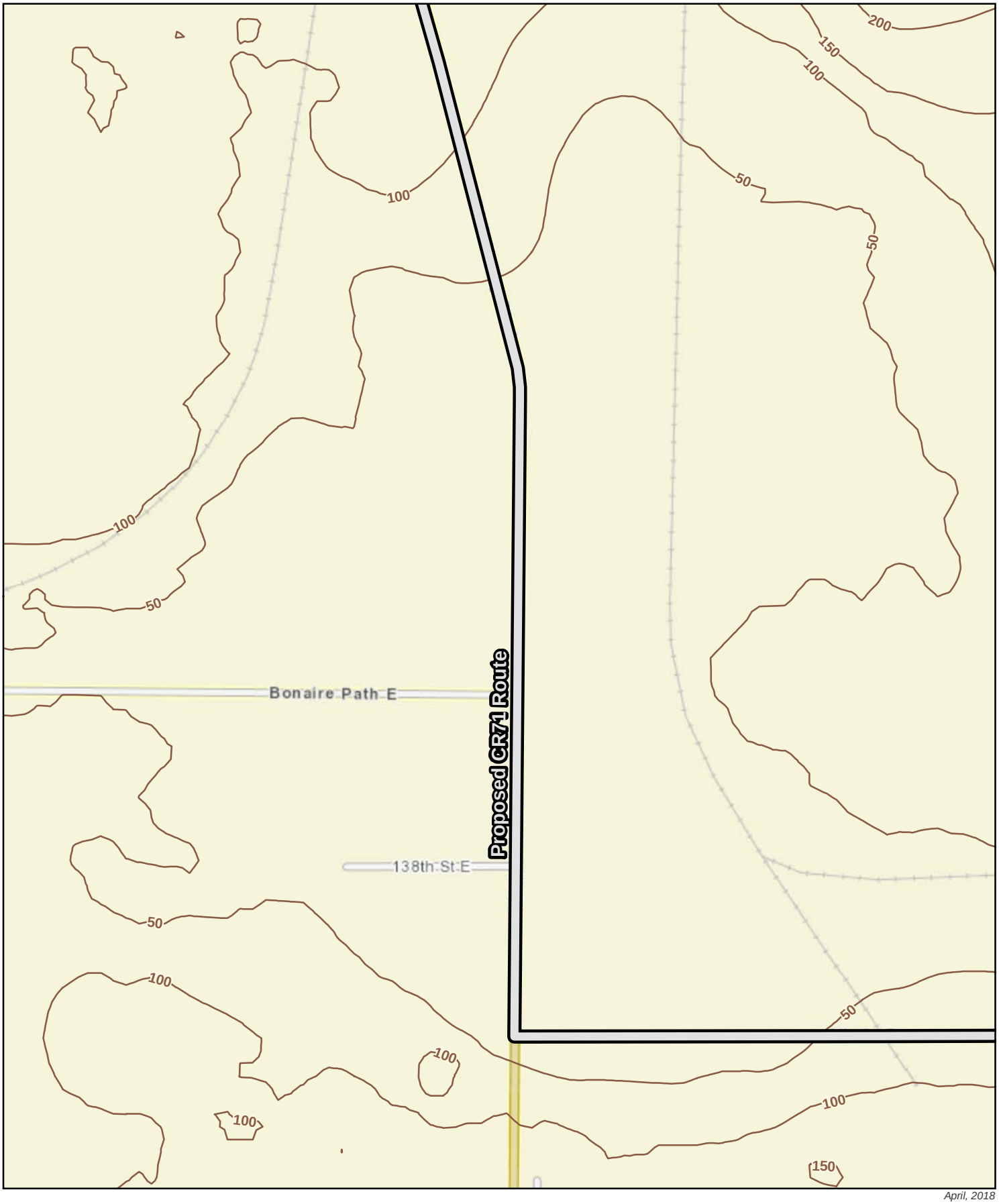
N W E S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 20

USGS Depth to Bedrock (50ft Contours)

Proposed Route

Depth To Bedrock

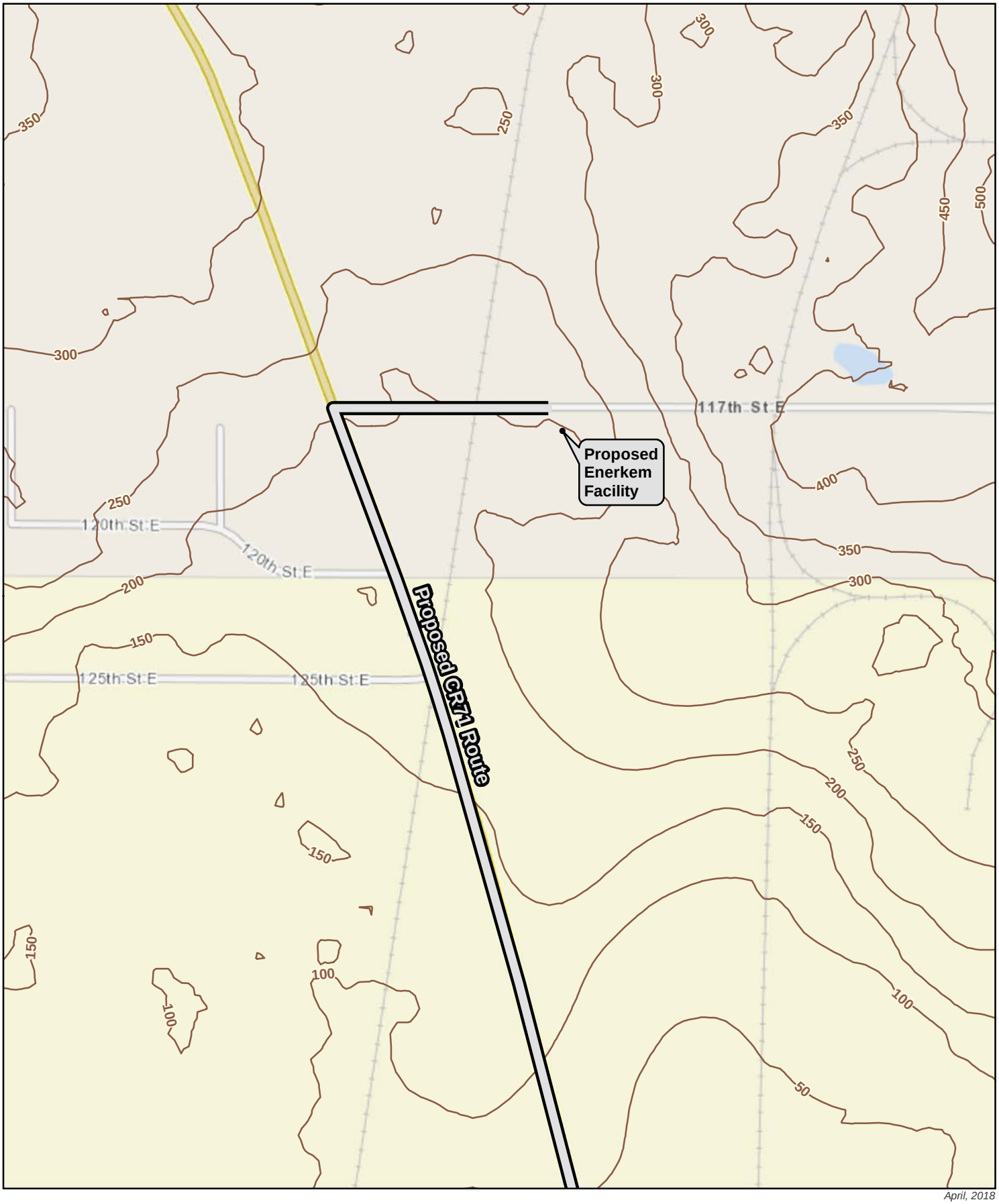
N
W E
S

0 500 1,000 2,000 Feet

METROPOLITAN COUNCIL

County Road 71 Route

809100 Wastewater Reclamation Facilities



April, 2018

FIGURE EIW - 21

USGS Depth to Bedrock (50ft Contours)

Proposed Route

Depth To Bedrock

N W E S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL

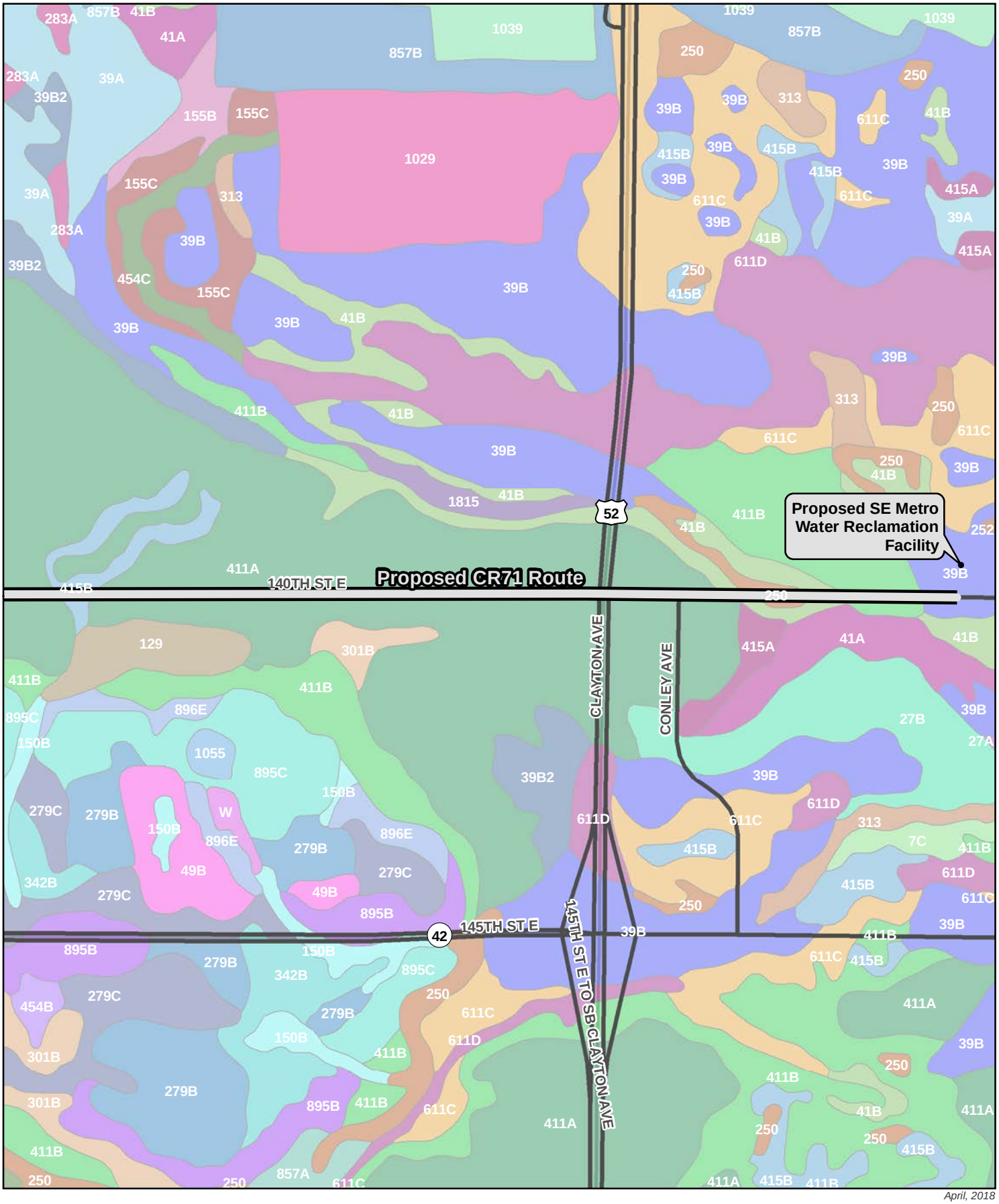


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FIGURE EIW - 22

NRCS Dakota County Soils Survey

Proposed Route

0 500 1,000 2,000 Feet

County Road 71 Route
809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL

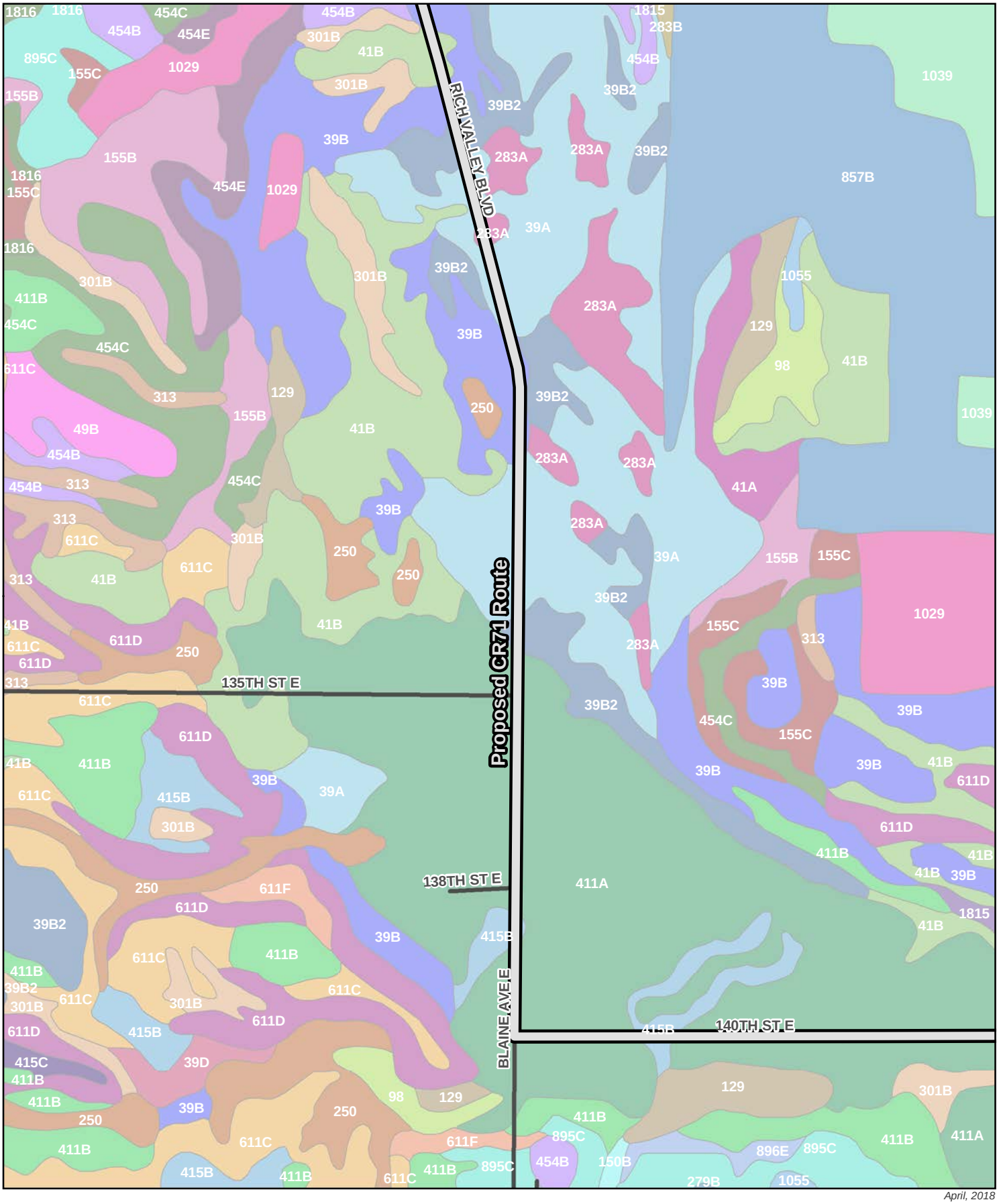


FIGURE EIW - 23

NRCS Dakota County Soils Survey

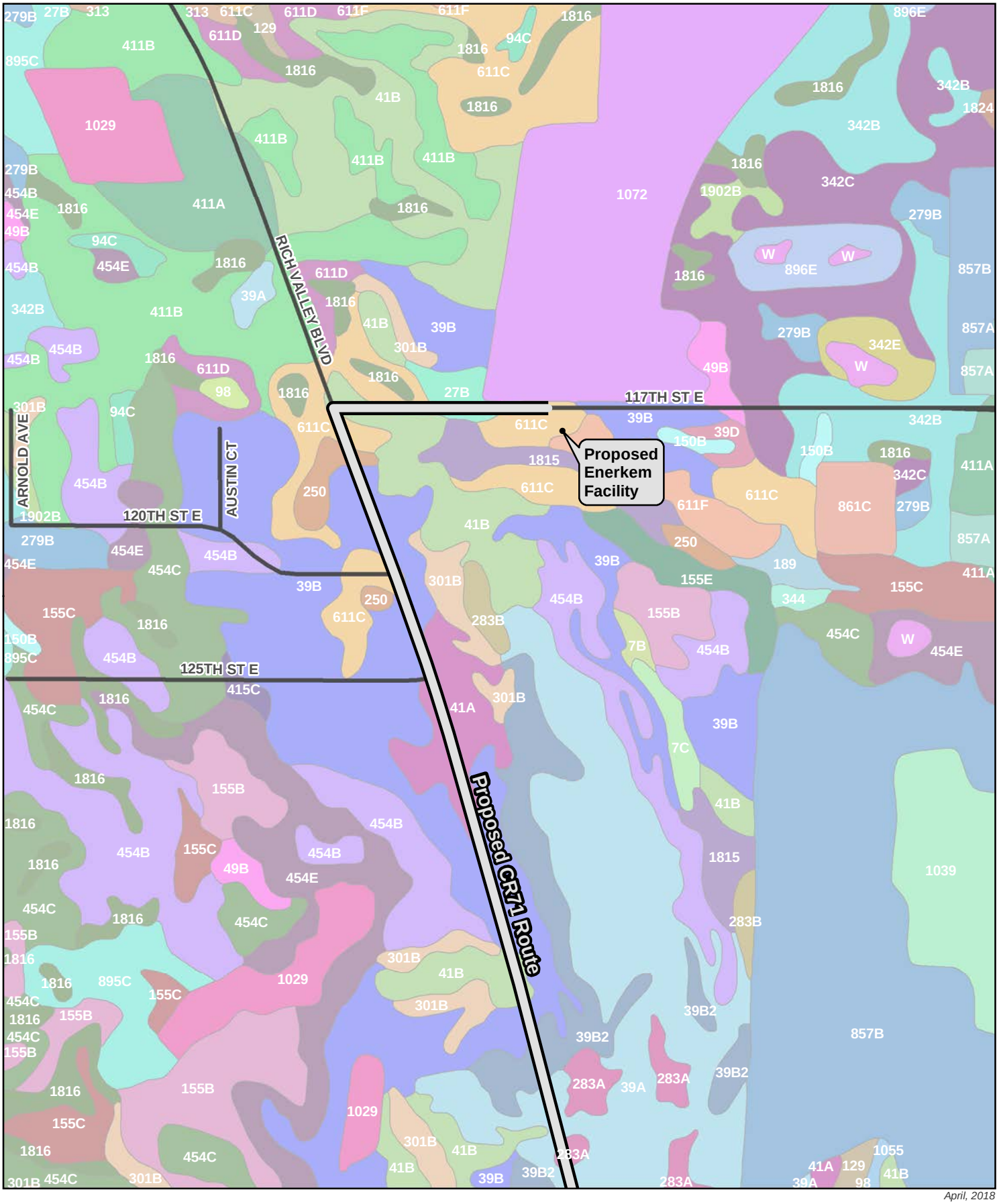
Proposed Route

N
W E
S

0 500 1,000 2,000 Feet

County Road 71 Route
809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL



April, 2018

FIGURE EIW - 24

NRCS Dakota County Soils Survey

Proposed Route

N
W E
S

0 500 1,000 2,000 Feet

County Road 71 Route

809100 Wastewater Reclamation Facilities

METROPOLITAN COUNCIL

EIW Attachment 1. Project Location

Project Location

Township	Range	Section	1/4-1/4
115	18W	19	SWSE
115	18W	19	SESW
115	18W	19	SWSW
115	18W	30	NWNE
115	18W	30	NENW
115	18W	30	NWNW
115	19W	11	NENE
115	19W	13	SWSW
115	19W	14	SESE
115	19W	14	NESE
115	19W	14	SENE
115	19W	14	NENE
115	19W	14	NWNE
115	19W	23	SESE
115	19W	23	NESE
115	19W	23	SENE
115	19W	23	NENE
115	19W	24	SESE
115	19W	24	SWSE
115	19W	24	SESW
115	19W	24	SWSW
115	19W	24	NWSW
115	19W	24	SWNW
115	19W	24	NWNW
115	19W	25	NENE
115	19W	25	NWNE
115	19W	25	NENW
115	19W	25	NWNW
115	19W	26	NENE
27	22W	33	SWSW
27	22W	33	NWSW
27	22W	33	NENW
27	22W	33	SESW
27	22W	33	NWSE
27	22W	33	SWSE

EIW Attachment 2. Project Description

Project Description

The Southeast Metro Water Reclamation Facility would include a satellite treatment plant and pipeline to treat secondary effluent from our Empire WWTP to disinfected tertiary standards, using filtration and disinfection processes, and convey the reclaimed water to an industrial customer for process and cooling water.

The reclaimed water system would include four primary components:

- Diversion: a connection to the effluent outfall, piping, and lift station to divert flow from the effluent outfall to the tertiary treatment process.
- Filtration and Disinfection: cloth media disk filters and UV / sodium hypochlorite to filter and disinfect the water to meet Disinfected Tertiary Reuse standards.
- Storage and Pumping: a tank to provide storage capacity for reclaimed water, for operational flexibility and system reliability; and high lift pumping to provide pressure and flow for distribution.
- Distribution: a pipeline to transmit the reclaimed water to the end user.

The diversion, filtration, disinfection, storage, and pumping facilities would be located at the MCES Rosemount WWTP site, which has been decommissioned as a wastewater treatment plant but currently houses the MCES L74 lift station.

Diversion

A portion of the effluent from the Empire outfall line will be diverted to the proposed reclaimed water treatment facility in Rosemount. The diversion system concept includes a structure to connect to the Empire outfall pipe, a wet well, and submersible pumps to bring the effluent water up to the elevation of the filter inlet weirs. The flow from the effluent outfall to the wet well would be controlled passively by wet well elevation, but the design would incorporate a manually-controlled sluice gate to allow for lift station maintenance.

At the Rosemount WWTP site, the diversion system would tie into the Empire effluent outfall pipe near the L74 lift station on that site. The effluent outfall at this location is approximately 20 feet below grade, therefore a wet well would be required for pumping to the inlet weirs of the cloth media filters. This lift station is anticipated to be comprised of a precast manhole wet well structure with redundant submersible pumps.

Filtration and Disinfection

Tertiary filtration can be achieved using granular media filters, membrane technologies, or cloth media filters. MCES is exploring a cloth media filter approach for the Southeast Metro Water Reclamation Facility. This type of filter has demonstrated compliance with reclaimed water standards, and is listed in the State of California Department of Public Health report "Treatment Technology Report for Recycled Water". Other considerations in the selection of cloth media filters include low capital cost, a long-term proven track record for reliability, operator familiarity, and low operations and maintenance costs.

The cloth media filters being considered have a relatively small footprint and low backwash water volume generation, which is typically less than 5% of the treated water volume. In addition, the units require very little day to day oversight and are well suited to remote automatic operation, reducing operational costs. A typical cloth media filter consists of a stainless steel

tank with multiple cloth disks attached to a central shaft. Flow through the filter unit is by gravity, with flow passing through the filter cloth in an outside-to-inside manner. Filter effluent would move by gravity to an effluent chamber, and from there to below-grade storage. Backwash is initiated automatically based on water level differential across the cloth disks. When backwash is initiated, filtered water is pulled through the filter cloth in an inside-to-outside (reverse) manner until the water level differential is reduced to a predetermined set point. Backwash water would be returned to the Empire WWTP via the L74 lift station. Therefore, a backwash waste pipe would be needed between the filters and the L74 wet well.

The system being considered for the SE Metro Water Reclamation Facility would include two filter basins, each with capacity of 2 MGD, to provide complete redundancy. This would provide operational flexibility to take one unit out of service for maintenance or repair while maintaining service. Flow would be split between the two filters under normal operation, but could be diverted to one unit though the use of valves. Effluent from the two units would be combined before flowing through the disinfection system to storage.

Often, disinfection of tertiary filtered wastewater is achieved through a gaseous chlorine or liquid sodium hypochlorite chlorine disinfection process. The "Treatment Technology Report for Recycled Water" from the California Department of Public Health also lists several Ultraviolet (UV) Disinfection system vendors that have demonstrated the ability to meet the disinfection standards. UV is the preferred approach for primary disinfection at this facility, based on an evaluation of costs and non-monetary considerations, as presented in the Facility Plan for this project. Sodium hypochlorite would be used to maintain a disinfectant residual in the distribution pipe.

The UV disinfection system must comply with NWRI/AWWARF "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse" which, in part, assume a lamp aging factor of 0.98 and bioassay validation of the UV dose. For this evaluation, a dose of 100 mJ/cm2 is assumed for sizing the UV system. The UV units were assumed to be of the in-line, enclosed vessel type that are located indoors adjacent to the cloth media filters. The in-line vessels offer a smaller footprint than in-channel type UV systems and will better fit within the proposed hydraulic profile of the treatment train.

Four in-line UV disinfection vessels, in two parallel trains, each with two vessels in series, were assumed. This configuration allows for maintenance activities such as bulb replacement or sleeve cleaning while maintaining capacity.

The UV analysis also assumed a small chlorine injection system to provide residual in the distribution system if deemed necessary. Because the primary UV disinfection system does not impart a chlorine residual, the UV system would allow more flexibility in chlorine dosing, to limit residual to optimal levels for distribution system maintenance and the end user's operations, without the need for dechlorination.

Storage and High Lift Pumping

Reclaimed water storage is needed to serve several functions:

- to allow for maintenance / emergency outages of treatment equipment
- to ensure a consistent reclaimed water supply during low flow from Empire WWTP
- to facilitate remote operation of the treatment facility
- to provide a reservoir for pumping to the distribution pipe to the end user

Because this facility will create a non-potable water source, typical water supply storage guidelines are not directly applicable. For example, the system will not be providing fire protection. Also, system pressures and reliability are not required to maintain public health as is the case with a potable water system. Instead, storage size is driven by operational needs and reliability concerns of the industrial end user of the system.

The storage was conceptualized as a below-grade cast-in-place concrete tank. A 2 MG tank would provide for one full day of storage. This volume of storage was found to provide the right balance between system reliability and cost.

An alternative configuration being considered includes two at-grade bolted steel storage tanks in lieu of the below-grade concrete tank. The at-grade tanks would necessitate the use of an intermediate pumping station after filtration to boost the filter effluent to the storage tank elevation. This will be further evaluated during preliminary design.

The at-grade tanks would necessitate the use of an intermediate pumping station after filtration, to boost the filter effluent to the storage tank elevation. The cost estimate for this alternative includes two glass-lined bolted steel tanks on concrete ring foundations, and the intermediate pumping station to lift filter effluent to the at-grade tank high water level. The high lift pumping station that delivers reclaimed water to the distribution system would be reconfigured to include horizontal centrifugal pumps as opposed to the vertical turbine pumps conceptualized for the below-grade storage options.

The high lift pumping station would provide 2 MGD of capacity with full redundancy, with pumps designed to deliver reclaimed water through the distribution pipe to the end user. With below-grade storage, the concept for the pumping station includes three vertical turbine pumps, each with a 1 MGD capacity, to be housed in the treatment building and drawing from a pump chamber that is integrated with the storage tank below the treatment building. With at-grade storage, the concept for the pumping station includes three horizontal centrifugal pumps, each with a 1 MGD capacity.

The distribution system is anticipated to include a below-grade storage tank at the point of use, with the high lift pumps controlled on water level in that tank. In that case, pumps would be selected to overcome the static head caused by ground elevation change and the friction losses in the distribution pipe. Detailed design is yet to be conducted, but the pumps were sized conceptually based on LIDAR ground elevation information and pipe friction losses assuming a 16-inch HDPE DR11 distribution pipe.

Distribution

The distribution of reclaimed water would include a single distribution line from the treatment facility to the Enerkem facility. A 16-inch diameter HDPE DR11 (160 psi rating) distribution pipe was considered for conceptual planning and cost estimating. With an ID of 12.9 inches, the velocity in the pipe at 2 MGD would be 3.4 ft/s.

The preferred route for the distribution pipe would follow 140th Street west from the Rosemount WWTP site to Blaine Avenue (County Road 71), and then north along Blaine Avenue / Rich Valley Boulevard to 117th Street, then east along 117th Street to Enerkem's proposed site. This route is approximately 24,500 feet.

System Operation

The Southeast Metro Water Reclamation Facility is being designed to be automated to the extent possible. The equipment being considered for this facility is intentionally being selected to minimize operational and maintenance expense to the extent possible.

The diversion system will allow water to flow from the Empire effluent outfall pipe to a wet well, until the wet well reaches an elevation that equalizes with the hydraulic grade in the effluent outfall pipe. Water will be pumped from the wet well via submersible pumps to the filter influent chamber. These lift station submersible pumps will be called based on storage elevation in the on site storage tank. The filter operation is automated, to allow gravity flow through the cloth disk filtration media until filter clogging causes head to increase on the upstream side of the filter. A high head condition initiates a backwash sequence. From the filter effluent chamber, effluent water will flow by gravity through in-line UV vessels to below-grade storage, or though a low lift pump station where at-grade storage is utilized. The high lift pumping station will draw from storage to pump the reclaimed water through the distribution pipe to a below-grade tank at the point of use. The high lift pumps would be called for based on the water level in the tank at the point of use.

While operator involvement will be minimized, it will not be eliminated. Compliance sampling and laboratory analysis will be required. Pumps will need maintenance. Sodium hypochlorite dose rates may need to be adjusted with water chemistry fluctuations. Chemical deliveries will need to be staffed. UV bulbs will need to be replaced. Electrical, mechanical, and HVAC equipment will need to be maintained. Filter cloth and seals will need periodic replacement. System status will need to be monitored remotely, and alarm conditions responded to. The distribution pipe will need periodic cleaning and maintenance.

MCES treatment plant operations personnel (certified wastewater treatment plant operators) would be responsible for operating the treatment facility, with the assistance of remote monitoring and control. It is not anticipated that the site will need dedicated operations staff on a full-time basis. Our collections system operations staff will assist with operation and maintenance of pumping facilities and the distribution pipe.

EIW Attachment 3. Required Permits

Required Permits

Unit of Government	Type of Application	Status
MPCA	Review of Construction Plans and Specifications (CWRF Loan Requirement)	To be Submitted
MPCA	Modification to NPDES Permit	To be Submitted
MPCA	NPDES Construction Stormwater Permit	To be Submitted
MPCA	Capital Grant for Pre-Design	Under Review
MnDOT	Utility Accommodation on Trunk Hwy. Right-of-Way	To be Submitted
City of Rosemount	Right-of-Way Excavation Permit	To be Submitted
City of Rosemount	Building Permit	To be Submitted
City of Inver Grove Heights	Right-of-Way Excavation Permit	To be Submitted
City of Inver Grove Heights	Building Permit	To be Submitted
Dakota County	Utility Permit	To be Submitted
Vermillion River JPO	Erosion Control Permit and Wetland Determination	To be Submitted
Lower Mississippi WMO	Erosion Control Permit and Wetland Determination	To be Submitted
MN DNR	Water Appropriations Permit for Temporary Construction Dewatering	To be Submitted
MDH	Well Construction Permit for Temporary Construction Dewatering	To be Submitted

EIW Attachment 4. Environmental Review

Building a Better World for All of Us®

December 4, 2017

RE: Environmental Review
SE Metro Area Water Reclamation Facility
Inver Grove Heights and Rosemount, Minnesota
SEH No. MCES 128015

Deborah Manning
Metropolitan Council Environmental Services
390 Robert Street North
Saint Paul, MN 55101-1805

Dear Ms. Manning:

Short Elliott Hendrickson Inc. (SEH) was retained by Metropolitan Council Environmental Services (MCES) to complete an Environmental Review for the SE Metro Area Water Reclamation Facility located in Inver Grove Heights and Rosemount , Minnesota. The project area and select features are depicted on **Figures 1 and 2** in **Attachment A**.

Project Overview and Scope

The project relates to a MCES concept plan for the Southeast Metro area that considers producing and providing potential reclaimed water to a potential industrial user in the Empire WWTP Service area. The concept plan considers diversion and advanced treatment of some of the secondary treated effluent wastewater from the MCES Empire WWTP outfall line to produce the reclaim water and then pumping the reclaim water through a forcemain to the potential industrial user site.

The purpose of this environmental review was to identify potential soil, groundwater and soil vapor contaminated sites that pose an environmental risk to the project. The area of interest will herein be referred to as “project corridor” and includes the proposed construction area and a buffer area. The buffer area is defined as a 500’ radius from the centerline of proposed forcemain location. The project corridor and buffer are depicted on **Figure 2**. It was not within the scope of this Environmental Review to evaluate the level, extent, or confirm contamination. Summary information and conclusions from this report may be used to develop contingency planning for environmental issues associated with proposed construction within the project corridor.

SEH used Minnesota Department of Transportation (MnDOT) Office of Environmental Stewardship (OES) standard categories of “low”, “medium”, and “high” risk to rank sites within the project corridor.

- ***High Environmental Risk*** –All active and inactive Voluntary Investigation and Cleanup (VIC) and Minnesota Environmental Response & Liability Act (MERLA) sites, all active and inactive dump sites, all active Leak sites, dry cleaners (with on-site or unknown chemical processing), bulk oil facilities, all active agricultural release sites, and all historical industrial sites with likely chemical use on the premises.
- ***Medium Environmental Risk*** – All closed Leak sites, all sites with USTs or ASTs, machine shops, all sites with historical vehicle repair activities, clandestine chemical/drug laboratory, and all closed agricultural release sites.

- ***Low Environmental Risk*** – All sites that are hazardous waste generators, railroad lines, and possibly some farmsteads, residences, or commercial properties with poor housekeeping practices.
- ***De Minimis Environmental Risk*** – Properties that do not qualify by definition as low, medium, or high ranked sites and are considered unlikely for contamination (ranked "de minimis").

This Environmental Review was limited to the following research tasks listed below.

- Environmental Database Review of Minnesota Pollution Control Agency (MPCA) What's in my Neighborhood (WIMN), and Minnesota Department of Agriculture (MDA) WIMN.
- Historic aerial photograph review of available online photographs.
- Historic topographic map review of available online maps.
- Review of located monitoring and abandoned wells available on the Minnesota Department of Health (MDH) County Well Index (CWI) website.

Project Area Physical Summary

This section includes current general characteristics of the project corridor based on various maps, aerial photographs and the site reconnaissance.

Properties currently located along the project corridor are agricultural, commercial, and industrial. The ground surface elevation ranges from approximately 845 to 880 feet above mean sea level (amsl) along the project corridor.

The surficial geology of the project corridor is characterized by outwash. Outwash along the south side of the corridor along 140th Street East is from Superior Lobe deposits and is comprised of gravel and sand (MGS, 1990). Surficial geology throughout the remainder of the corridor is mixed outwash from Des Moines Lobe deposits and is comprised of "sand, loamy sand, and gravel" (MGS, 1990). The bedrock geology in the project corridor contains Paleozoic era, lower Ordovician series bedrock from the Prairie du Chien group. "Dolostone of the Shakopee Formation forms the upper two thirds to half. It is commonly thin bedded and sandy or oolitic, and contains thin beds of sandstone and chert. Dolostone in the lower part – the Oneota Dolomite – is commonly massive to thick bedded, and generally is not oolitic or sandy" (MGS, 1990). Bedrock is approximately 0 to 200 feet below ground surface (bgs) in the project corridor, with shallower bedrock on the south side of the project corridor (MGS, 1990).

Regional groundwater flow direction is east towards the Mississippi River and is expected to be encountered within the upper 75 feet (MDH, 2017).

Historical Summary

SEH reviewed 1947, 1957, 1966, 1972, 1979, 1991, 2003, 2008, 2009, 2010, and 2013 historic aerial photography and the 1896, 1901, 1906, 1908, 1909, 1913, 1917, 1926, 1928, 1938, 1947, 1953, 1958, 1959, 1965, 1966, 1973, 1976, 1989, and 1993 historic topographic map available on the Nationwide Environmental Title Research (NETR) website.

The project corridor was developed with 117th Street E., Blaine Avenue E., and 140th Street E. prior to the late 1890s. Areas along the corridor consisting of agricultural properties were developed prior to the late 1950s. Commercial and industrial properties were developed in the early 2000s. Properties currently located along the corridor include mostly agricultural land, commercial, and industrial sites.

Environmental Database Review

SEH reviewed reasonably ascertainable records from standard sources such as publicly-available federal, tribal, state, county and/or city records as appropriate to assist in identifying environmental conditions in connection with the project corridor. SEH used the MPCA "What's in My Neighborhood" (WIMN) website and associated databases as the primary source of environmental site information. SEH also reviewed WIMN sites with poor location information. MPCA site locations were field verified when possible and locations were reassigned to the correct property parcel if necessary. Additional sources reviewed include the following:

- MPCA Spills database
- MPCA Petroleum Remediation Program website
- Minnesota Department of Agriculture (MDA) WIMN website
- MDA Dakota County Spill Report
- Minnesota Department of Health County Well Index (MDH CWI) located monitoring and abandoned wells

Findings and Opinions

Based on the findings of the Environmental Review, this section summarizes general environmental concerns for the project corridor and also includes discussion regarding listings that are potentially located within the project corridor (but could not be adequately located) and data gaps. High, medium, and low risk sites identified as environmental conditions for the project corridor are listed in the Conclusions.

MPCA and Dakota County environmental spill listings were identified as potentially located within the project corridor, but were not associated with a particular site or deleted from the list of potential concerns for the project corridor because adequate location information and/or site description was not available. Several of these listings have a name that is similar to sites identified in the project corridor, but reported location information could not confirm that they are associated with the site. Possible environmental spill listings located from the MPCA are detailed on **Table 1** attached. **Table 2** below details environmental listings from Dakota County's environmental review database.

Dakota County Environmental Listings

Dakota County Site ID	Name	Waste Site Classification	File Status
1091	Plan Salvage & Disposal	Industrial Waste Disposal	Open
1139	Bituminous Roadways	Industrial Waste Disposal	Open
1401	Pine Bend Landfill	Regulated Waste Facility	Closed
1405	SKB Demolition Landfill	Regulated Waste Facility	Open
1406	SKB Demolition Transfer	Regulated Waste Facility	Open
1407	SKB Processing	Regulated Waste Facility	Open
1526	Phoenix Landfill	Regulated Waste Facility	Closed
1529	Inver Grove Heights Audit #29	Large, Unlimited Variety	Open
5041	Wenzel Engineering Disposal	Hazardous Waste Disposal	Open
5076	Wenzel Engineering Dump North	Industrial Waste Disposal	Open
5077	CY-CON Dump	Industrial Waste Disposal	Open

Dakota County Site ID	Name	Waste Site Classification	File Status
5176	Koch Property LUST	Spill, Leak, Leach or Inject Release	Closed
5313	Rahn Dump	Large, Unlimited Variety	Open
5317	Burger, Richard Dump West	Large, Unlimited Variety	Open
5318	Burger, Richard Dump East	Large, Unlimited Variety	Open
5319	Lance Johnson Tire Dump	Large, Unlimited Variety	Open
5323	Chicago &Northwestern Railroad Disposal	Industrial Waste Disposal	Open
5343	Koch Hazardous Waste Landfarm	Industrial Waste Disposal	Open
5383	Koch Treatment Lagoon	Industrial Waste Disposal	Open
5385	Koch Coke Disposals	Industrial Waste Disposal	Open

Conclusions and Recommendations

The following high, medium and low risk sites were identified during this Environmental Review and are depicted on **Figure 2**.

Site ID	Site Name	Rank	Rationale for Ranking
01	Pine Bend Sanitary Landfill / Pine Bend Energy	High	Superfund site, Permitted Solid Waste Facility, ASTs, USTs, Hazardous Waste SQG,
02	SKB Rich Valley Demolition Waste Mgmt Facility	Low	Permitted Solid Waste Facility
03	Koch Pipeline Company LP - PB Gate 19	Low	Hazardous Waste Small Quantity Generator (SQG)
04	Flint Hills Resources LP	High	Superfund site, Closed Leak Sites (multiple), Historic Spills (multiple), ASTs, USTs, Hazardous Waste SQG, Permitted Solid Waste Facility
05	Koch Property	Medium	Closed Leak Site
06	Flint Hills Resources LP - 3110	Medium	USTs
07	CHS Transportation / Cenex Harvest States Transportation	Medium	Aboveground Storage Tanks (ASTs), USTs, Hazardous Waste SQG
08	Wayne Transport	Medium	USTs, Hazardous Waste SQG
09	Bay & Bay Transfer / Fleet Development Facility	Medium	Closed Leak Site, Underground Storage Tanks (USTs), Hazardous Waste SQG
10	Rich Valley Golf Course/Club	High	Closed Voluntary Investigation & Cleanup (VIC) site, Hazardous Waste SQG
11	Met Council Rosemount WWTP	Medium	ASTs, USTs, Hazardous Waste SQG
12	SKB Environmental Rosemount / SKB Rosemount Industrial Waste Facility	High	Permitted Solid Waste Facility, ASTs, Hazardous Waste SQG

SEH recommends a Phase I Environmental Site Assessment (ESA) be completed and potentially a Phase II Investigation, prior to construction and/or property acquisition, based on the results of the Phase I ESA.

References Not Attached

Minnesota Department of Agriculture (MDA), 2011, *Dakota County Sill Report*

Minnesota Department of Health (MDH), County Well Index, www.health.state.mn.us/divs/eh/cwi/

Minnesota Department of Natural Resources (MNDNR), MnTOPO, http://arcgis.dnr.state.mn.us/maps/mntopo/

Minnesota Geological Survey (MGS), 1990, *Geologic Atlas of Dakota County, Minnesota,* County Atlas Series, Atlas C-6

Nationwide Environmental Title Research (NETR), Historic Aerials and Topographic Maps, http://www.historicaerials.com/

We have included a copy of the full report on CD. Please feel free to contact me directly at 651.490.2198 or Katrina Hapka at 651.256.0438 if you have any questions or comments.

Sincerely,

John Kinny
Senior Environmental Scientist

Katrina Hapka
Environmental Scientist

kmh

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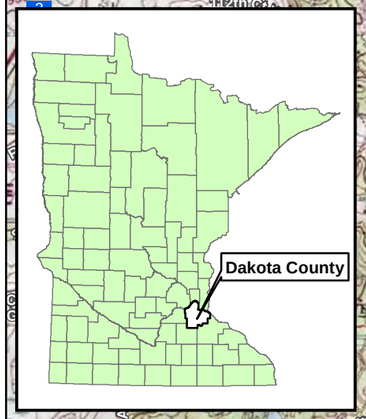
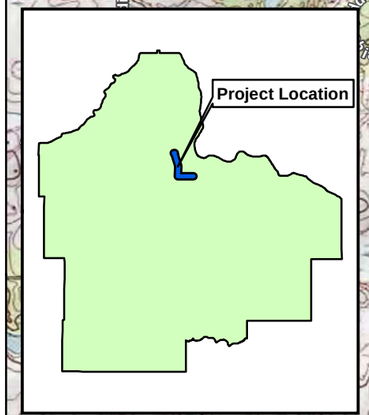
Figures





Legend

Project Alignment

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Feet

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SEH

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Project: MCES 128015
Print Date: 12/1/2017

Map by: msherrill
Projection: NAD83 UTM 15N
Source: SEH, ESRI, Dakota County

SE Metro Area Water Reclamation Facility

Inver Grove Heights and Rosemount, Minnesota

Project Location

Figure 1

Site ID	Site Name	Rank	Rationale for Ranking
1	Pine Bend Sanitary Landfill / Pine Bend Energy	High	Superfund site, Permitted Solid Waste Facility, ASTs, USTs, Hazardous Waste SQG,
2	SKB Rich Valley Demolition Waste Mgmt Facility	Low	Permitted Solid Waste Facility
3	Koch Pipeline Company LP - PB Gate 19	Low	Hazardous Waste Small Quantity Generator (SQG)
4	Flint Hills Resources LP	High	Superfund site, Closed Leak Sites (multiple), Historic Spills (multiple), ASTs, USTs, Hazardous Waste SQG, Permitted Solid Waste Facility
5	Koch Property	Medium	Closed Leak Site
6	Flint Hills Resources LP - 3110	Medium	USTs
7	CHS Transportation / Cenex Harvest States Transportation	Medium	Aboveground Storage Tanks (ASTs), USTs, Hazardous Waste SQG
8	Wayne Transport	Medium	USTs, Hazardous Waste SQG
9	Bay & Bay Transfer / Fleet Development Facility	Medium	Closed Leak Site, Underground Storage Tanks (USTs), Hazardous Waste SQG
10	Rich Valley Golf Course/Club	High	Closed Voluntary Investigation & Cleanup (VIC) site, Hazardous Waste SQG
11	Met Council Rosemount WWTP	Medium	ASTs, USTs, Hazardous Waste SQG
12	SKB Environmental Rosemount / SKB Rosemount Industrial Waste Facility	High	Permitted Solid Waste Facility, ASTs, Hazardous Waste SQG

Legend

- Project Alignment

Site ID and Risk Ranking

- High Rank Site
- Medium Rank Site
- Low Rank Site
- Dakota County Parcels

Notes:

AST - Aboveground Storage Tank
UST - Underground Storage Tank
VIC - Voluntary Investigation and Cleanup Program
MDH - Minnesota Department of Health
RCRA SQG - Resource Conservation and Recovery Act Small Quantity Hazardous Waste Generator

All parcels partially or wholly within the buffer area were assessed during the modified Phase I ESA.

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Print Date: 12/1/2017

Map by: msherrill
Projection: NAD83 UTM 15N
Source: SEH, MnGeo, Dakota County

SE Metro Area Water Reclamation Facility

Inver Grove Heights and Rosemount, Minnesota

Project Features

Figure 2

Attachment A

Table 1 – MPCA Spill Listings

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
Anonymous	unknown address MN	86080	12/31/2012
Augies's Trucking	SB 52 south of 55th MN	94485	11/19/2015
BEL AIR RUBBISH	Inver Grove Heights MN 55077	2512	3/11/1987
BFI	Inver Grove Heights MN 55077	30276	4/19/1999
BLESSY TOWING CO.	Rosemount MN 55068	26750	10/14/1997
CANNAL BARGE CO.	Hwy 52 MN 55068	30731	6/25/1999
CENEX	Inver Grove Heights MN 55077	27826	4/24/1998
CENEX	Inver Grove Heights MN 55077	3511	5/18/1988
Cenex IGH Lubricants Plant	Court House Blvd	104346	5/30/2017
CENEX LAND O LAKES	Address Unknown MN	22575	11/1/1995
CF INDUSTRIES	Address Unknown MN	22830	1/2/1996
CF INDUSTRIES	Address Unknown MN	21272	4/26/1994
CF INDUSTRIES	Address Unknown MN	21267	4/26/1994
Chris Fernholz	SB Hwy 52 SB MN	91058	8/15/2014
CONTINENTAL NITROGEN	Highway 52 MN	15724	1/16/1992
CORNWELL-TAYLOR	Inver Grove Heights MN 55077	2836	7/23/1987
Dakota County Mosquito Control District	Albadar PassMN	52744	8/4/2000
DAVE SHECK	Hwy 52 MN 55068	31234	9/8/1999
DPC INDUSTRIES	Address Unknown MN	13819	1/1/1996
EMERSON ELECTRIC	Rosemount Inc. MN	26007	6/25/1997
Endres Services Inc	NB Hwy 52, 1000 yds South of Refinery MN	79310	6/18/2010
FISHER AUTO BODY	Inver Grove Heights MN 55077	2744	1/1/1996
FISHER AUTO BODY	Inver Grove Heights MN 55077	2741	1/1/1996
Flint Hills	Address Unknown MN	65034	8/12/2005
Flint Hills Resources	Highways 52 & 55 MN	83008	1/6/2012
Flint Hills Resources - marshall	Hwy 52 Rosemount Plant MN	67093	5/31/2006
Flint Hills Resources (Formerly Koch Petroleum)	Address Unknown MN	23743	6/8/1996
Flint Hills Resources (Formerly Koch Petroleum)	Highways 52 & 55 MN	26127	7/10/1997
Flint Hills Resources (Formerly Koch Petroleum)	Hwy 52 MN 55068	27088	12/22/1997
Flint Hills Resources (Formerly Koch Petroleum)	Hwy 52 MN 55068	26962	11/19/1997
Flint Hills Resources LP	Alky unit at 12555 Clark Road	101234	5/18/2016
Flint Hills Resources LP	API Phase Separator (12555 Clark Road)	102977	12/7/2016
Flint Hills Resources LP	Asphalt surface at north administration building.	100745	5/4/2016
Flint Hills Resources LP	Cooling tower 3 at 12555 Clark Road	100711	4/30/2016
Flint Hills Resources LP	Tank 371, 12555 US Hwy 52	101619	6/14/2016
Flint Hills Resources Pine Bend Refinery	alky unit, address: same	104236	5/16/2017
Flint Hills Resources Pine Bend Refinery	An o-ring broke on a crane. Contained, clean up when	105621	
Flint Hills Resources Pine Bend Refinery	by fuel pumps; address: none	105875	11/1/2017
Flint Hills Resources Pine Bend Refinery	Coke loading	102034	8/13/2016
Flint Hills Resources Pine Bend Refinery	Coker process unit #23	102020	8/11/2016
Flint Hills Resources Pine Bend Refinery	construction area; address: same	104154	5/9/2017
Flint Hills Resources Pine Bend Refinery	Scaffold yard	102012	8/10/2016
Flint Hills Resources Pine Bend Refinery	Tank 29; address: none	105380	9/1/2017
Flint Hills Resources, LP	Junction of Hwy 52 & 55 MN 55077	57341	5/17/2002
Flint Hills Resources, LP	Junction of Hwy 52 & 55 MN 55077	56741	5/15/2002
Flint Hills Resources, LP	Junction of Hwy 52 & 55 MN 55077	56733	5/13/2002
Flint Hills Resources, LP - Inver Grove Heights	Address Unknown MN	58202	1/3/2003
Flint Hills Resources, LP - Inver Grove Heights	Address Unknown MN	57557	8/24/2002
Flint Hills Resources, LP - Inver Grove Heights	Address Unknown MN	57513	8/20/2002
Flint Hills Resources, LP - Inver Grove Heights	crane storage area MN	59638	8/21/2003
Flint Hills Resources, LP - Inver Grove Heights	Highways 52 & 55 MN 55077	64808	1/30/2004

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
Flint Hills Resources, LP - Inver Grove Heights	Hwy 52 and 55 MN	67001	5/4/2006
Flint Hills Resources, LP - Inver Grove Heights	Hwy 52 and 55 MN	67000	5/4/2006
Flint Hills Resources, LP - Inver Grove Heights	Hwy 52 MN 55068	80231	12/30/2010
Flint Hills Resources, LP - Inver Grove Heights	Hwy 55 and Hwy 52 MN	64906	2/5/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	81346	7/1/2011
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	78609	9/18/2008
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	75950	6/17/2009
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	75902	7/15/2009
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	75640	6/25/2009
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	75609	6/22/2009
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	75026	3/29/2009
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	74639	1/25/2009
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	67678	8/3/2006
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	65229	7/4/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	64936	6/21/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	64913	3/27/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	63573	7/11/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	63542	6/29/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	63399	3/15/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	63281	5/30/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	63117	5/3/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	63021	4/16/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62886	3/29/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62877	3/28/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62693	5/28/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62579	2/7/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62547	1/30/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62546	1/28/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62505	1/22/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62504	1/21/2005
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62193	11/10/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62192	11/10/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	62047	10/18/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	61945	10/6/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	61916	9/29/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	61410	7/7/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN	61255	6/16/2004
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN 55077	58296	8/4/2002
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN 55077	57723	9/6/2002
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN 55077	57594	9/6/2002
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN 55077	57558	8/28/2002
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN 55077	57133	7/8/2002
Flint Hills Resources, LP - Inver Grove Heights	Junction of Hwy 52 & 55 MN 55077	56935	6/20/2002
Flint Hills Resources, LP - Rosemount	Address Unknown MN	64558	11/2/2005
Flint Hills Resources, LP - Rosemount	between 6th and 12th Streets MN	89856	4/8/2014
Flint Hills Resources, LP - Rosemount	C St and 10th St MN 55068	67414	7/4/2006
Flint Hills Resources, LP - Rosemount	Clark rd MN	84903	8/31/2012
Flint Hills Resources, LP - Rosemount	clark road refinery MN	81937	8/18/2011
Flint Hills Resources, LP - Rosemount	cooling tower 4 area MN	88234	9/25/2013
Flint Hills Resources, LP - Rosemount	Hwy 52 MN 55068	89617	3/14/2014
Flint Hills Resources, LP - Rosemount	inside refinersy MN	86602	3/30/2013

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
Flint Hills Resources, LP - Rosemount	south tank farm MN	83593	3/8/2012
Flint Hills Resources, LP - Rosemount	Tank 86 MN	86667	3/16/2013
Flint Hills Resources, LP - Rosemount	truck loading rack MN	80312	8/13/2009
Flint Hills Resources, LP - Rosemount	unknownMN55068	67415	7/4/2006
Flint Hills Resources, LP-Rosemount (Admin)	same MN	93831	8/14/2015
Flint Hils	Highway 52 &55MN	66339	3/1/2006
FRATTALONE EXCAVATORS	Inver Grove Heights MN 55077	3936	8/17/1988
I.G.H. DIST. PROPERTIES	Hwy 52 & PINE BEND MN	5113	5/24/1989
INVER HILLS CC	Inver Grove Heights MN 55077	2722	6/16/1987
Kath Oil	1325 50th St SE MN 55077	66696	4/20/2006
KOCH	Address Unknown MN	22551	10/26/1995
KOCH	Address Unknown MN	22454	10/5/1995
KOCH	Address Unknown MN	21882	7/12/1995
KOCH	Address Unknown MN	21881	7/12/1995
KOCH	Address Unknown MN	21867	7/9/1995
KOCH	Address Unknown MN	21637	6/5/1995
KOCH	Highway 52 MN	22742	12/10/1995
KOCH	Highways 52 & 55 MN	20695	12/31/1994
KOCH MATERIALS CO	Hwy 52 MN 55068	29698	1/13/1999
KOCH MATERIALS CO	Hwy 52 MN 55068	29423	11/12/1998
KOCH MATERIALS CO	Hwy 52 MN 55068	28324	6/25/1998
KOCH MATERIALS CO	Hwy 52 MN 55068	28156	6/3/1998
KOCH MATERIALS CO	Hwy 52 MN 55068	28126	5/31/1998
KOCH PETROLEUM	2nd St MN 55164	30788	7/5/1999
KOCH PETROLEUM	Hwy 52 MN 55068	52306	6/15/2000
KOCH PETROLEUM	Hwy 52 MN 55068	52186	5/31/2000
KOCH PETROLEUM	Hwy 52 MN 55068	52173	5/28/2000
KOCH PETROLEUM	Hwy 52 MN 55068	52144	5/23/2000
KOCH PETROLEUM	Hwy 52 MN 55068	52119	5/19/2000
KOCH PETROLEUM	Hwy 52 MN 55068	52118	5/21/2000
KOCH PETROLEUM	Hwy 52 MN 55068	52052	5/13/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51808	4/12/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51785	4/18/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51782	4/18/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51723	3/31/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51713	4/4/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51630	3/25/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51592	3/17/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51569	3/15/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51561	3/13/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51499	3/2/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51449	2/28/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51384	2/9/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51345	2/7/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51344	2/9/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51294	1/31/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51273	1/20/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51246	1/15/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51156	1/4/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51142	1/1/2000
KOCH PETROLEUM	Hwy 52 MN 55068	51003	12/18/1999

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
KOCH PETROLEUM	Hwy 52 MN 55068	50968	9/20/1999
KOCH PETROLEUM	Hwy 52 MN 55068	50397	10/30/1999
KOCH PETROLEUM	Hwy 52 MN 55068	50359	10/25/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31190	8/30/1999
KOCH PETROLEUM	Hwy 52 MN 55068	50212	10/21/1999
KOCH PETROLEUM	Hwy 52 MN 55068	50068	10/8/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31409	10/6/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31391	9/25/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31351	9/23/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31279	9/14/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31278	9/13/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31264	9/12/1999
KOCH PETROLEUM	Hwy 52 MN 55068	31183	8/27/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30930	7/26/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30789	7/3/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30729	6/25/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30710	6/22/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30709	6/23/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30690	6/23/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30576	6/8/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30553	6/10/1999
KOCH PETROLEUM	Hwy 52 MN 55068	30530	6/4/1999
Koch Petroleum Group	Address Unknown MN	55090	7/21/2001
Koch Petroleum Group	Address Unknown MN	54454	5/11/2001
Koch Petroleum Group	Hwy 52 MN 55068	56039	12/26/2001
Koch Petroleum Group	Hwy 52 MN 55068	55876	11/30/2001
Koch Petroleum Group	Hwy 52 MN 55068	55612	7/6/2001
Koch Petroleum Group	Hwy 52 MN 55068	55592	8/21/2001
Koch Petroleum Group	Hwy 52 MN 55068	55389	9/12/2001
Koch Petroleum Group	Hwy 52 MN 55068	55387	9/12/2001
Koch Petroleum Group	Hwy 52 MN 55068	55331	9/4/2001
Koch Petroleum Group	Hwy 52 MN 55068	55319	8/30/2001
Koch Petroleum Group	Hwy 52 MN 55068	55313	8/30/2001
Koch Petroleum Group	Hwy 52 MN 55068	54950	6/11/2001
Koch Petroleum Group	Hwy 52 MN 55068	54944	6/11/2001
Koch Petroleum Group	Hwy 52 MN 55068	54808	6/27/2001
Koch Petroleum Group	Hwy 52 MN 55068	54782	6/21/2001
Koch Petroleum Group	Hwy 52 MN 55068	54540	5/26/2001
Koch Petroleum Group	Hwy 52 MN 55068	54248	4/24/2001
Koch Petroleum Group	Hwy 52 MN 55068	54154	3/28/2001
Koch Petroleum Group	Hwy 52 MN 55068	54151	3/23/2001
Koch Petroleum Group	Hwy 52 MN 55068	54067	3/26/2001
Koch Petroleum Group	Hwy 52 MN 55068	54050	3/24/2001
Koch Petroleum Group	Hwy 52 MN 55068	53993	3/12/2001
Koch Petroleum Group	Hwy 52 MN 55068	53887	2/24/2001
Koch Petroleum Group	Hwy 52 MN 55068	53829	2/5/2001
Koch Petroleum Group	Hwy 52 MN 55068	53805	1/31/2001
Koch Petroleum Group	Hwy 52 MN 55068	53804	2/2/2001
Koch Petroleum Group	Hwy 52 MN 55068	53788	1/27/2001
Koch Petroleum Group	Hwy 52 MN 55068	53668	1/1/2001
Koch Petroleum Group	Hwy 52 MN 55068	53624	12/20/2000

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
Koch Petroleum Group	Hwy 52 MN 55068	53619	11/25/2000
Koch Petroleum Group	Hwy 52 MN 55068	53040	9/21/2000
Koch Petroleum Group	Hwy 52 MN 55068	53353	11/3/2000
Koch Petroleum Group	Hwy 52 MN 55068	53227	10/20/2000
Koch Petroleum Group	Hwy 52 MN 55068	53202	10/16/2000
Koch Petroleum Group	Hwy 52 MN 55068	53137	10/9/2000
Koch Petroleum Group	Hwy 52 MN 55068	52922	9/6/2000
Koch Petroleum Group	Hwy 52 MN 55068	52870	8/23/2000
Koch Petroleum Group	Hwy 52 MN 55068	52802	8/11/2000
Koch Petroleum Group	Hwy 52 MN 55068	52604	7/18/2000
Koch Petroleum Group	Hwy 52 MN 55068	52507	7/8/2000
Koch Petroleum Group	Hwy 52 MN 55068	52501	7/9/2000
Koch Petroleum Group	Hwy 52 MN 55068	52466	7/3/2000
Koch Petroleum Group	Hwy 52 MN 55068	52461	7/4/2000
Koch Petroleum Group	Hwy 52 MN 55068	52432	6/28/2000
Koch Petroleum Group	Hwy 52 MN 55068	52426	6/29/2000
KOCH PETROLEUM GROUP	Hwy 52 MN 55068	52056	5/16/2000
KOCH PETROLEUM GROUP	Hwy 52 MN 55068	51788	4/17/2000
KOCH PETROLEUM GROUP	Hwy 52 MN 55068	51766	4/6/2000
KOCH PETROLEUM GROUP	Hwy 52 MN 55068	51668	3/31/2000
KOCH PETROLEUM GROUP	Hwy 52 MN 55068	51310	2/3/2000
KOCH PETROLEUM GROUP	Hwy 52 MN 55068	30544	6/5/1999
Koch Pipeline Company	Clark StMN	53190	10/27/2000
KOCH REFINERY	2nd St & B STRUT MN	19307	4/14/1994
KOCH REFINERY	7th St SUMPMN55068	29163	9/11/1998
KOCH REFINERY	7th St SUMPMN55068	26736	10/13/1997
KOCH REFINERY	Address Unknown MN	23344	4/16/1996
KOCH REFINERY	Address Unknown MN	22993	2/11/1996
KOCH REFINERY	Address Unknown MN	22990	4/22/1996
KOCH REFINERY	Address Unknown MN	23335	4/11/1996
KOCH REFINERY	Address Unknown MN	23083	2/14/1996
KOCH REFINERY	Address Unknown MN	22963	2/2/1996
KOCH REFINERY	Address Unknown MN	21806	6/23/1995
KOCH REFINERY	Address Unknown MN	21506	5/17/1995
KOCH REFINERY	Address Unknown MN	21505	5/17/1995
KOCH REFINERY	Address Unknown MN	21213	4/30/1995
KOCH REFINERY	Address Unknown MN	20230	9/24/1994
KOCH REFINERY	Address Unknown MN	19835	7/15/1994
KOCH REFINERY	Address Unknown MN	19551	5/27/1994
KOCH REFINERY	Address Unknown MN	19543	5/17/1994
KOCH REFINERY	Address Unknown MN	19524	5/17/1994
KOCH REFINERY	Address Unknown MN	19371	4/21/1994
KOCH REFINERY	Address Unknown MN	18636	10/15/1993
KOCH REFINERY	Address Unknown MN	18630	10/18/1993
KOCH REFINERY	Address Unknown MN	13417	3/19/1990
KOCH REFINERY	Highway 52 South MN	26153	7/11/1997
KOCH REFINERY	Highway 52 MN	24871	12/27/1996
KOCH REFINERY	Highway 52 MN	23464	4/29/1996
KOCH REFINERY	Highways 52 & 55 MN	26982	11/23/1997
KOCH REFINERY	Highways 52 & 55 MN	26920	11/7/1997
KOCH REFINERY	Highways 52 & 55 MN	26306	7/26/1997

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
KOCH REFINERY	Highways 52 & 55 MN	26181	7/17/1997
KOCH REFINERY	Highways 52 & 55 MN	26070	7/2/1997
KOCH REFINERY	Highways 52 & 55 MN	26068	7/1/1997
KOCH REFINERY	Highways 52 & 55 MN	26067	7/1/1997
KOCH REFINERY	Highways 52 & 55 MN	26017	6/26/1997
KOCH REFINERY	Highways 52 & 55 MN	26013	6/26/1997
KOCH REFINERY	Highways 52 & 55 MN	25873	6/4/1997
KOCH REFINERY	Highways 52 & 55 MN	24321	9/4/1996
KOCH REFINERY	Highways 52 & 55 MN	23721	6/15/1996
KOCH REFINERY	Highways 52 & 55 MN	23626	5/23/1996
KOCH REFINERY	Highways 52 & 55 MN	23609	5/21/1996
KOCH REFINERY	Highways 52 & 55 MN	23472	5/6/1996
KOCH REFINERY	Highways 52 & 55 MN	23409	4/26/1996
KOCH REFINERY	Highways 52 & 55 MN	23020	2/8/1996
KOCH REFINERY	Highways 52 & 55 MN	22936	1/25/1996
KOCH REFINERY	Highways 52 & 55 MN	22593	11/3/1995
KOCH REFINERY	Hwy 35 MN	24514	10/7/1996
KOCH REFINERY	Hwy 52 PINE BEND MN	4620	2/25/1989
KOCH REFINERY	Hwy 52 MN 55068	31054	12/17/1998
KOCH REFINERY	Hwy 52 MN 55068	30573	5/25/1999
KOCH REFINERY	Hwy 52 MN 55068	30477	5/21/1999
KOCH REFINERY	Hwy 52 MN 55068	30411	5/20/1999
KOCH REFINERY	Hwy 52 MN 55068	30338	5/3/1999
KOCH REFINERY	Hwy 52 MN 55068	30327	5/5/1999
KOCH REFINERY	Hwy 52 MN 55068	30299	4/30/1999
KOCH REFINERY	Hwy 52 MN 55068	30250	4/16/1999
KOCH REFINERY	Hwy 52 MN 55068	30227	4/26/1999
KOCH REFINERY	Hwy 52 MN 55068	30221	4/24/1999
KOCH REFINERY	Hwy 52 MN 55068	30143	4/8/1999
KOCH REFINERY	Hwy 52 MN 55068	30142	4/9/1999
KOCH REFINERY	Hwy 52 MN 55068	30117	4/6/1999
KOCH REFINERY	Hwy 52 MN 55068	30087	4/1/1999
KOCH REFINERY	Hwy 52 MN 55068	30002	3/18/1999
KOCH REFINERY	Hwy 52 MN 55068	29970	2/18/1999
KOCH REFINERY	Hwy 52 MN 55068	29942	3/3/1999
KOCH REFINERY	Hwy 52 MN 55068	29786	2/3/1999
KOCH REFINERY	Hwy 52 MN 55068	29730	1/14/1999
KOCH REFINERY	Hwy 52 MN 55068	29667	1/5/1999
KOCH REFINERY	Hwy 52 MN 55068	29359	11/2/1998
KOCH REFINERY	Hwy 52 MN 55068	29607	12/21/1998
KOCH REFINERY	Hwy 52 MN 55068	29572	12/15/1998
KOCH REFINERY	Hwy 52 MN 55068	29504	11/26/1998
KOCH REFINERY	Hwy 52 MN 55068	29500	11/25/1998
KOCH REFINERY	Hwy 52 MN 55068	29476	11/18/1998
KOCH REFINERY	Hwy 52 MN 55068	29440	11/10/1998
KOCH REFINERY	Hwy 52 MN 55068	29391	11/4/1998
KOCH REFINERY	Hwy 52 MN 55068	29367	11/2/1998
KOCH REFINERY	Hwy 52 MN 55068	29282	10/25/1998
KOCH REFINERY	Hwy 52 MN 55068	29281	10/26/1998
KOCH REFINERY	Hwy 52 MN 55068	29244	10/19/1998
KOCH REFINERY	Hwy 52 MN 55068	29218	10/12/1998

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
KOCH REFINERY	Hwy 52 MN 55068	29217	9/30/1998
KOCH REFINERY	Hwy 52 MN 55068	29061	9/21/1998
KOCH REFINERY	Hwy 52 MN 55068	29025	9/13/1998
KOCH REFINERY	Hwy 52 MN 55068	28942	9/3/1998
KOCH REFINERY	Hwy 52 MN 55068	28919	8/31/1998
KOCH REFINERY	Hwy 52 MN 55068	28833	8/22/1998
KOCH REFINERY	Hwy 52 MN 55068	28810	8/12/1998
KOCH REFINERY	Hwy 52 MN 55068	28295	6/23/1998
KOCH REFINERY	Hwy 52 MN 55068	28615	7/25/1998
KOCH REFINERY	Hwy 52 MN 55068	28544	7/17/1998
KOCH REFINERY	Hwy 52 MN 55068	28534	7/18/1998
KOCH REFINERY	Hwy 52 MN 55068	28519	7/15/1998
KOCH REFINERY	Hwy 52 MN 55068	28417	7/8/1998
KOCH REFINERY	Hwy 52 MN 55068	28416	7/6/1998
KOCH REFINERY	Hwy 52 MN 55068	28184	6/8/1998
KOCH REFINERY	Hwy 52 MN 55068	28122	5/30/1998
KOCH REFINERY	Hwy 52 MN 55068	27732	4/14/1998
KOCH REFINERY	Hwy 52 MN 55068	27670	4/3/1998
KOCH REFINERY	Hwy 52 MN 55068	27604	3/28/1998
KOCH REFINERY	Hwy 52 MN 55068	27596	3/27/1998
KOCH REFINERY	Hwy 52 MN 55068	27588	3/26/1998
KOCH REFINERY	Hwy 52 MN 55068	27565	3/23/1998
KOCH REFINERY	Hwy 52 MN 55068	27554	3/22/1998
KOCH REFINERY	Hwy 52 MN 55068	27548	3/20/1998
KOCH REFINERY	Hwy 52 MN 55068	27545	3/19/1998
KOCH REFINERY	Hwy 52 MN 55068	27536	3/18/1998
KOCH REFINERY	Hwy 52 MN 55068	27522	3/17/1998
KOCH REFINERY	Hwy 52 MN 55068	27509	3/14/1998
KOCH REFINERY	Hwy 52 MN 55068	27497	3/11/1998
KOCH REFINERY	Hwy 52 MN 55068	27483	3/10/1998
KOCH REFINERY	Hwy 52 MN 55068	27444	2/28/1998
KOCH REFINERY	Hwy 52 MN 55068	27409	2/26/1998
KOCH REFINERY	Hwy 52 MN 55068	27398	2/23/1998
KOCH REFINERY	Hwy 52 MN 55068	27388	1/22/1998
KOCH REFINERY	Hwy 52 MN 55068	27335	2/12/1998
KOCH REFINERY	Hwy 52 MN 55068	27289	2/6/1998
KOCH REFINERY	Hwy 52 MN 55068	27249	1/27/1998
KOCH REFINERY	Hwy 52 MN 55068	27091	12/22/1997
KOCH REFINERY	Hwy 52 MN 55068	26939	11/14/1997
KOCH REFINERY	Hwy 52 MN 55068	23291	4/4/1996
KOCH REFINERY	Hwy 52 MN 55068	20154	9/13/1994
KOCH REFINERY	Hwy 52 MN 55068	19716	11/17/1994
KOCH REFINERY	Hwy 52 MN 55068	19286	4/6/1994
KOCH REFINERY	Hwy 52 MN 55068	19137	3/4/1994
KOCH REFINERY	Hwy 52 MN 55068	18575	10/8/1993
KOCH REFINERY	Hwy 52 MN 55068	13383	3/23/1990
KOCH REFINERY	Hwy 52 MN 55068	13309	3/6/1990
KOCH REFINERY	Hwy 52 MN 55068	4409	12/16/1988
KOCH REFINERY	Hwy 52 MN 55068	4309	11/22/1988
KOCH REFINERY	Hwy 52 MN 55068	4281	11/15/1988
KOCH REFINERY	Hwy 55 MN 55068	25177	3/10/1997

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
KOCH REFINERY	HY 52 & 53 MN	13198	2/9/1990
KOCH REFINERY	MINNESOTA RIVER at the PLANT MN	5939	8/14/1989
KOCH REFINERY	Rosemount MN 55068	26868	10/31/1997
KOCH REFINERY	TANK #39 MN	24291	8/30/1996
KOCH REFINERY	TANK 26 MN	22566	10/28/1995
KOCH REFINING	3rd St & A MN 55068	28093	5/27/1998
KOCH REFINING	Address Unknown MN	22250	8/30/1995
KOCH REFINING	Address Unknown MN	19936	8/7/1994
KOCH REFINING	Address Unknown MN	15515	11/7/1991
KOCH REFINING	Address Unknown MN	14942	6/15/1991
KOCH REFINING	Address Unknown MN	14652	4/6/1991
KOCH REFINING	Address Unknown MN	14312	11/24/1990
KOCH REFINING	Address Unknown MN	14269	11/11/1990
KOCH REFINING	Address Unknown MN	13908	7/24/1990
KOCH REFINING	Address Unknown MN	13351	3/15/1990
KOCH REFINING	Address Unknown MN	13338	1/1/1996
KOCH REFINING	Address Unknown MN	13337	1/1/1996
KOCH REFINING	Address Unknown MN	13336	1/1/1996
KOCH REFINING	Address Unknown MN	13335	1/1/1996
KOCH REFINING	Address Unknown MN	13334	1/1/1996
KOCH REFINING	Highways 52 & 55 MN	17690	4/16/1993
KOCH REFINING	Hwy 52 MN 55068	28369	6/30/1998
KOCH REFINING	Hwy 52 MN 55068	28106	5/28/1998
KOCH REFINING	Hwy 52 MN 55068	27846	4/28/1998
KOCH REFINING	Hwy 52 MN 55068	27817	4/23/1998
KOCH REFINING	Rosemount MN 55068	27801	4/23/1998
KOCH REFINING	TANK FARMMN	16793	9/21/1992
KOCK REFINERY	Hwy 52 MN 55068	29392	11/6/1998
KOCK REFINERY	Hwy 52 MN 55068	18343	8/20/1993
LENCO-ROBERT LENCENTZ	Hwy 52 S MN 55068	28948	9/1/1998
LOU & BUD TAMBORINONO	Inver Grove Heights MN 55077	3629	1/1/1996
Magellan Pipeline Co. (Williams Pipeline)	approx intersection 117th St E & Clark R MN	92112	1/16/2015
Metropolitan Council Env Services	Address Unknown MN	62120	10/27/2004
Milligan Brothers Transport	Hwy 52 MN 55068	54133	4/3/2001
MINNESOTA PIPELINE	GREY CLOUDMN55068	26660	9/30/1997
NATIONAL MARINE	Address Unknown MN	18909	1/1/1996
OLD SPILLS DATA	Inver Grove Heights MN 55077	3431	1/1/1996
Pine Bend Paving and Como Lube and Supply	Address Unknown MN	64106	8/17/2005
Pioneer Power (Contractor)	Junction of Hwy 52 & 55 MN	62642	1/26/2005
PRAIRIE LINE INC	117th St MN	21792	6/26/1995
River Country Coop - Inver Grove Heights	3240-57th St East MN	89829	4/28/2014
River Country Coop - Inver Grove Heights	3240-57th St East MN	85655	10/24/2012
River Country Coop- Marathon	3240 57th Street East MN	90249	6/7/2014
ROADWAY BITUMINOUS	Inver Grove Heights MN 55077	3490	5/12/1988
ROSEMOUNT SCHOOL DISTRICT	Address Unknown MN	14399	1/2/1991
Scott Marshall	Address Unknown MN	63606	7/10/2005
SKB INC.	Inver Grove Heights MN 55077	2998	32059
SKYLINE TRAILER COURT	Inver Grove Heights MN 55077	3513	5/17/1988
Swift Transport	Inver Grove Heights MN 55077	69455	2/3/2007
Tiller Corp.	Pit number 782 MN	85763	11/8/2012
Total Construction	north contractor parking lot MN	80296	9/15/2009

Table 1
MPCA Spill Listings - Potentially Located Within Corridor
Inver Grove Heights/Rosemount, Minnesota

Name	Location	MPCA Spill ID	Incident Date
Union Pacific Railroad - Omaha	117 th St MN	64751	11/15/2005
Union Pacific Railroad - Omaha	334.0 Albert Lea Subdivison MN	65555	1/17/2006
Union Pacific Railroad - Omaha	Off 117th St & Hwy 52 MN	89907	4/30/2014
Unknown	Address Unknown MN	17311	1/1/1996
WAYNE TRANS	Inver Grove Heights MN 55077	3102	11/30/1987
Wayne Transport	S of Koch Refinery MN	52816	8/18/2000
WILLIAMS PIPELINE	3rd & F St at PLANT FACILITY MN 55068	26558	9/15/1997
Williams Pipeline	Address Unknown MN	52477	7/5/2000
Williams Pipeline	Hwy 52 near Koch Refinery MN	53521	12/11/2000
WILLIAMS PIPELINE	Rosemount MN 55068	30747	6/24/1999
WILLIAMS PIPELINE COMPANY	Address Unknown MN	14110	9/18/1990
WILLIAMS PIPELINE COMPANY	Address Unknown MN	5547	7/10/1989
WILLIAMS PIPELINE COMPANY	Rosemount MN 55068	4106	9/28/1988
WILLIAMS PIPELINE COMPANY	Rosemount MN 55068	3100	2/2/1988
WILLIAMS PIPELINE COMPANY	Rosemount MN 55068	2764	1/1/1996
Xcel Energy	Hwy 52 MN 55077	83046	1/31/2012
Yocum Oil	Address Unknown MN	65057	9/14/2005
	Address Unknown MN	64988	12/20/2005
	Address Unknown MN	51947	4/25/2000
	address: none	104653	6/29/2017
	Hwy 52 MN 55068	85512	9/22/2012
	Hwy 52 MN 55068	66184	1/1/2010
	Hwy 52 MN 55068	66182	1/1/2010
	Hwy 52 MN 55068	54075	12/22/1997
	Hwy 52 MN 55077	65996	1/17/2006
	Hwy 52 MN 55077	26617	9/24/1997
	Junction of Hwy 52 & 55 MN 55077	62025	9/3/2004
	next to Koch Refinery Koch Pipeline pump station MN 55016	53300	10/18/2000
	Rosemount MN 55068	2378	35065
	S VALLEY PARK MN	24144	8/5/1996
	See narrative MN	53662	1/6/2001

EIW Attachment 5. What's in My Neighborhood Database Search

What's in My Neighborhood Database Search

MPCA Sites within 500 Feet of Project

ID	Name	Active	Street Address	Activity
1546	Pine Bend Energy LLC	Y	2345 117th St E	Aboveground Tanks; Air Quality; Hazardous Waste, Minimal quantity generator; Underground Tanks
5922	Fleet Development Facility	N	3686 E 140th St	Construction Stormwater; Petroleum Remediation, Leak Site; Underground Tanks
21399	Rich Valley Golf Club	Y	3760 140th St E	Hazardous Waste, Minimal quantity generator
64318	Shafer Contracting Co Inc Johnson Pit	N	12500 Rich Valley Blvd	Industrial Stormwater
88388	Flint Hills Resources LP - 3110	Y	3110 140th St	Underground Tanks
92333	Hilton Mini Storage	N	11900 Rich Valley Blvd	Construction Stormwater
94591	CHS Transportation	Y	3290 140th St E	Aboveground Tanks; Construction Stormwater; Industrial Stormwater; Underground Tanks; Wastewater
110277	Gas Recovery Systems Llc	Y	2345 117th St E	Aboveground Tanks; Underground Tanks
134904	Bay and Bay Transportation Services	Y	3686 140th St E	Industrial Stormwater
137323	Phase 5 Cell D Landfill Cell Construction	Y	2495 117th St E	Construction Stormwater
141720	Phase 5 Cell E Landfill Cell Construct	Y	2495 E 117th St	Construction Stormwater
143453	Koch Pipeline Company LP - PB Gate 19	Y	Rich Valley Blvd & 125th St E	Hazardous Waste
186881	Koch Property	Y	14105 Blaine Ave	Petroleum Remediation, Leak Site

MDA Old Emergency Response Sites within 500 Feet of Project

ID	Name	Active	Street Address	Contaminant
FY90I071	N/A	Closed	13780 Blaine Ave	Pesticides

EIW Attachment 6. NHIS Data Request

NO STAPLES PLEASE

Minnesota DEPARTMENT OF NATURAL RESOURCES

2012

For Agency Use Only:
Received _____ Due _____ Inv _____
Search Radius _____mi. L / I / D EM Map'd _____
NoR / NoF / NoE / Std / Sub Let _____ Log out _____

#Sec _____ Contact Rqsted? _____
#EOs _____ Survey Rqsted? _____
#Com _____
Related ERDB# _____

NATURAL HERITAGE INFORMATION SYSTEM (NHIS) DATA REQUEST FORM

Please read the instructions on page 3 before filling out the form. Thank you!

WHO IS REQUESTING THE INFORMATION?

Mr.
■ Ms.

Name and Title Patti Craddock, PE - Project Manger

Agency/Company Short Elliott Hendrickson Inc.

Mailing Address 3535 Vadnais Center Drive (Street) St. Paul (City) MN (State) 55110 (Zip Code)

Phone 651.490.2067 e-mail pcraddock@sehinc.com

Responses will be sent via email. If you prefer US Mail check here: ☐

THIS INFORMATION IS BEING REQUESTED FOR A:

☐ Federal EA ☑ State EAW ☐ PUC Site or Route Application ☐ Watershed Plan ☐ BER
☐ Federal EIS ☐ State EIS ☐ Local Government Permit ☐ Research Project
☐ NEPA Checklist ☑ Other (describe) **The response letter, only, will be included as an attachment to the facility plan.**

☐ Check here if this project is funded through any of the following grant programs: Lessard-Sams Outdoor Heritage Council (L-SOHC), Conservation Partners Legacy (CPL), or Legislative-Citizen Commission on Minnesota Resources (LCCMR).

INFORMATION WE NEED FROM YOU:

1) **Enclose a map** of the project boundary/area of interest (topographic maps or aerial photos are preferred).
2) Please **provide a GIS shapefile*** (NAD 83, UTM Zone 15N) of the project boundary/area of interest.
3) List the following locational information* (attach additional sheets if necessary):

For Agency Use: Region / MCBS Status

For Agency Use: TRS Confirmed ☐

County	Township #	Range #	Section(s) (please list **all** sections)
Dakota	115	18	19
Dakota	115	19	13, 14, 24
Dakota	27	22	33

4) Please provide the following information (attach additional sheets if necessary):

Project Name: Southwest Metro Wastewater Reuse Facility Plan

Project Proposer: Metropolitan Council Environmental Services

Description of Project (including types of disturbance anticipated from the project):

Project consists of a wastewater reuse treatment facility and force main. Reuse facility is located at old Rosemount wastewater treatment facility and includes: new diversion structure at existing lift station 74, new filtration and disinfection building (approx size: 45' x 55'), new effluent reuse lift station. Disturbances are typical of building construction, excavation, deliveries, noise. Construction limited to wastewater site. Forcemain is routed through existing utility easements and right-of-way along existing roadways. Disturbances are typical of utility work, trench and boring, deliveries, traffic control, noise.

Describe the existing land use of the project site. What types of land cover / habitat will be impacted by the proposed project? The reuse facility is located on a prior wastewater treatment facility which was demolished. An existing wastewater lift station is located at the site. The force main is routed along existing roadways and utility right-of-ways.

List any waterbodies (e.g., rivers, intermittent streams, lakes, wetlands) that may be affected by the proposed project, and discuss how they may be impacted (e.g., dewatering, discharge, riverbed disturbance).

The proposed route and wastewater facility are not near natural waster bodies. The route does pass one storm water pond near the intersection of Blaine Ave E and 117th St E.

Does the project have the potential to affect any groundwater resources (e.g., groundwater appropriation, change in recharge, or contamination)?

No. There is no groundwater pumping anticipated with this project.

To your knowledge, has the project undergone a previous Natural Heritage review? If so, please list the correspondence #: ERDB # N/A. How does this request differ from the previous request (e.g., change in scope, change in boundary, project being revived, project expansion, different phase)?

No.

To your knowledge, have any native plant community or rare species surveys been conducted within the site? If so, please list: No.

List any DNR Permits or Licenses that you will be applying for or have already applied for as part of this project:

None.

INFORMATION WE PROVIDE TO YOU:

1) The response will include a Natural Heritage letter. If applicable, the letter will discuss potential effects to rare features.

☐ Check here if you are interested in a list of rare features in the vicinity of the area of interest but you do **not** need a review of potential effects to rare features. Please list the reason a review is not needed:

_____

2) Depending on the results of the query or review, the response may include an Index Report of known aggregation sites and known occurrences of federally and state-listed plants and animals* within an approximate one-mile radius of the project boundary/area of interest. The Index Report and Natural Heritage letter can be included in any public environmental review document.

3) A Detailed Report that contains more information on each occurrence may also be requested. Please note that the Detailed Report may contain specific location information that is protected under *Minnesota Statutes*, section 84.0872, subd. 2, and, as such, the Detailed Report may not be included in any public document (e.g., an EAW).

☑ Check here if you would like to request a Detailed Report. Please note that if the results of the review are 'No Effects' or a standard comment, a Detailed Report may not be available.

FEES / TURNAROUND TIME

There is a fee* for this service. Requests generally take **3-4 weeks** from date of receipt to process, and are processed in the order received.

I have read the entire form and instructions, and the information supplied above is complete and accurate. I understand that material supplied to me from the Natural Heritage Information System is copyrighted and that I am not permitted to reproduce or publish any of this copyrighted material without prior written permission from the DNR. Further, if permission to publish is given, I understand that I must credit the Minnesota Division of Ecological and Water Resources, Minnesota Department of Natural Resources, as the source of the material.

Signature (**required**) Patti P. Crass	Note: Digital signatures representing the name of a person shall be sufficient to show that such person has signed this document.

Mail or email completed form to:

Lisa Joyal, Endangered Species Review Coordinator
Division of Ecological and Water Resources
Minnesota Department of Natural Resources
500 Lafayette Road, Box 25
St. Paul, Minnesota 55155
Review.NHIS@state.mn.us

Form is available at
http://files.dnr.state.mn.us/eco/nhnrp/nhis_data_request.pdf

Revised March 2, 2012

* Please see the instructions on page 3.

Instructions for the
Natural Heritage Information System (NHIS) Data Request Form

The Division of Ecological and Water Resources maintains the Natural Heritage Information System (NHIS), a collection of databases that provides information on Minnesota's rare plants and animals, native plant communities, and other rare features. The NHIS is continually updated as new information becomes available, and the Minnesota County Biological Survey (MCBS) is a major source of this information.

- Use this form to request information on rare features within an approximate one-mile radius of an area of interest. You may reproduce this form for your own use or to distribute. An **electronic copy** of the form is available at the DNR's web site at http://files.dnr.state.mn.us/eco/nhnrp/nhis_data_request.pdf

- If you are interested in obtaining the Rare Features Database electronically as a GIS shapefile, do not fill out this form. Please see http://files.dnr.state.mn.us/eco/nhnrp/natural_heritage_data.pdf for more information on this option.

WHO IS REQUESTING THE INFORMATION?

- The person whose name is entered on the form under the "Who is Requesting the Information" section must sign the form as an acknowledgment of the State of Minnesota's copyright on all generated reports. All correspondence and invoices will be sent to this person. Please do not ask us to send this information to a different party.
- Please include a complete mailing address. Responses will be sent via email unless you specify differently.

INFORMATION WE NEED FROM YOU:

- Include a legible map (topographic maps or aerial photographs are preferred) clearly showing:

  1) location and boundaries of the project,
  2) associated infrastructure, and
  3) any waterbodies that may be affected by the proposed project.

- If the project boundary is large **or** complex, please provide a **GIS shapefile** (NAD 83, UTM Zone 15) of the project boundary/area of interest. Do not include any buffers. An additional "digitizing fee" may be charged for projects that require a substantial amount of time to digitize.
- Provide a complete list of sections that the proposed project or area of interest falls within. Do not include any buffer area. Please double-check this information. Incorrect sections can delay the processing of your request, and may result in an invalid review.
- Please provide a detailed **project description**, attaching separate pages to the form if necessary. Identify the type of development (e.g., housing, commercial, utility, ethanol facility, wind farm) being proposed, the size and # of units (if applicable), construction methods, and **any associated infrastructure** such as access roads, utility connections, and water supply and/or discharge pipelines.
- We cannot begin processing data requests until we receive all parts of the request, including a map and a completed, signed form.

INFORMATION WE PROVIDE TO YOU:

- The Natural Heritage review and database reports are valid for environmental review purposes for one year, and they are only valid for the project location and description provided on the form. Please contact Lisa Joyal at lisa.joyal@state.mn.us if project details change or if a data update is needed.
- Please note that the Natural Heritage review and database reports do not address/contain locations of the gray wolf (*Canis lupus*), state-listed as special concern, or Canada lynx (*Lynx canadensis*), federally-listed as threatened, as these species are not currently tracked in the Natural Heritage Information System. See page 4.

FEES / TURNAROUND TIME:

- There is a fee for this service. All fees are subject to change. The current fee schedule is available at http://files.dnr.state.mn.us/eco/nhnrp/natural_heritage_data.pdf. The minimum charge is $90.00, and increases based on the time it takes us to process the request (dependent upon project size and the results of the query). Please do not include payment with your request; an invoice will be sent to you.
- There is generally a **3-4 week turn-around time** to process requests.

PLEASE SEE NEXT PAGE FOR ADDITIONAL SOURCES OF INFORMATION

ADDITIONAL SOURCES OF INFORMATION:

- The DNR Rare Species Guide (http://www.dnr.state.mn.us/rsg/index.html) is the state's authoritative reference for Minnesota's endangered, threatened, and special concern species. It is a dynamic, interactive source that can be queried by county, ECS subsection, watershed, or habitat.

- Information on the gray wolf (*Canis lupus*):
  DNR website: http://www.dnr.state.mn.us/mammals/graywolf.html
  USFWS website: http://www.fws.gov/midwest/wolf/

- Information on the Canada lynx (*Lynx Canadensis*):
  DNR website: http://www.dnr.state.mn.us/mammals/canadalynx.html
  USFWS website: http://www.fws.gov/midwest/endangered/mammals/lynx/index.html

- Minnesota's Comprehensive Wildlife Conservation Strategy (http://www.dnr.state.mn.us/cwcs/index.html) is an action plan focused on managing Minnesota's native animals whose populations are rare, declining, or vulnerable to decline. It identifies Species in Greatest Conservation Need and the Key Habitats that support them.

- The DNR Data Deli (http://deli.dnr.state.mn.us/) allows users to download GIS shapefiles of MCBS Sites of Biodiversity Significance, MCBS Native Plant Communities, MCBS Railroad Rights-of-Way Prairies, and Scientific and Natural Area Boundaries.

- Information on MCBS Sites of Biodiversity Significance can be found at http://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html.

- Information on MCBS Native Plant Communities can be found at http://www.dnr.state.mn.us/npc/index.html.

- Questions? Please contact Lisa Joyal at 651-259-5109 or lisa.joyal@state.mn.us.

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

December 28, 2017
Correspondence # ERDB 20180237

Ms. Patti Craddock
Short Elliott Hendrickson, Inc.
3535 Vadnais Center Drive
St. Paul, MN 55110

RE: Natural Heritage Review of the proposed Southwest Metro Wastewater Reuse Facility,

County	Township (N)	Range (W)	Section(s)
Dakota	115	18	19
Dakota	115	19	13,14,24
Dakota	27	22	33

Dear Ms. Craddock

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. Based on this query, rare features have been documented within the search area (for details, please visit the Rare Species Guide at http://www.dnr.state.mn.us/rsg/index.html for more information on the biology, habitat use, and conservation measures of these rare species). Please note that the following rare features may be adversely affected by the proposed project:

- The Loggerhead Shrike (*Lanius ludovicianus*), a state-listed endangered bird, Bell's Vireo, (*Vireo bellii*) and Lark Sparrow (*Chondestes grammacus*), both state listed bird species of special concern, have been documented in the vicinity of the project site. The Loggerhead Shrike and Bell's Vireo both nest in small trees or shrubs, while the Lark Sparrow typically nests on the ground. If the project boundary contains suitable habitat, then it is possible that these birds may breed in the area. Recommendations to minimize potential impacts include the following:
    - Avoid tree and shrub removal within suitable habitat during the breeding season, typically April through July,
    - Report any loggerhead shrike sightings to the DNR,
    - Please reference the attached fact sheet and the DNR Rare Species Guide for additional recommendations.

Please contact me if any tree or shrub removal will occur during the breeding season, April through July, as the DNR may request that a survey for active nests be conducted prior to construction.

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance.

- Please include a copy of this letter in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. If you have not done so already, please contact your DNR Regional Environmental Assessment Ecologist to determine whether there are other natural resource concerns associated with the proposed project (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Samantha Bump
Natural Heritage Review Specialist
Samantha.Bump@state.mn.us

Enc. Loggerhead Shrike Fact Sheet

Cc: Becky Horton
Leslie Parris

Landowners Guide for Maintaining and Encouraging

Loggerhead Shrikes

Loggerhead shrikes are in trouble – but you may be able to help. Throughout the United States, and particularly in the Midwest, loggerhead shrikes are disappearing at an alarming rate. So serious is the decline that the loggerhead shrike is one of six bird species considered threatened in Minnesota.

What is a loggerhead shrike?

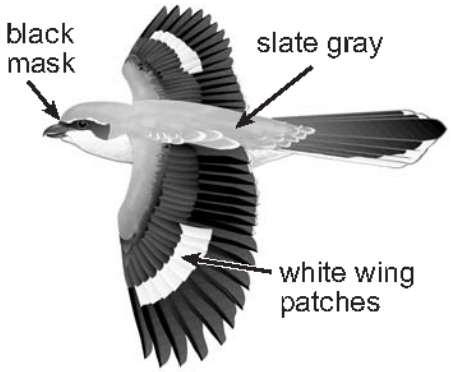
Loggerhead shrikes are special birds – an interesting cross between songbird and hawk. They feed on large insects such as grasshoppers and beetles, mice, small birds, frogs and toads. Shrikes spend much of their time perched on powerlines, fences or the top-most branches of trees and shrubs, scouting for prey and then swooping down to catch it. Then the bird either eats its prey, impales it on a nearby thorn or barbed wire fence or wedges it into the fork of a branch. Because shrikes lack the strong, sharp claws and feet of hawks, impaling food holds it in place as the bird tears at it with its bill. Your first clue that loggerhead shrikes are on your property may be finding an animal impaled on a fence barb or a thorn. This habit has earned the loggerhead shrike the nickname "butcher bird."

What do loggerhead shrikes look like?

The robin-sized loggerhead shrike has a slate-gray back with a light breast. The most distinguishing markings of this bird are the black mask, which extends across the eye, and the black and white wing and tail patches which flash when the bird flies. Males and females are similar in size and color.

In Minnesota, loggerhead shrikes are most easily confused with eastern kingbirds and northern shrikes. However, eastern kingbirds have no mask, their heads are entirely dark, and they do not have white patches on their wings. The northern shrike looks very similar to the loggerhead shrike, but occurs in Minnesota from October through April, whereas the loggerhead shrike is here from March to October. During the early spring and fall, when both shrikes are in the state, they can be told apart by the loggerhead shrike's completely black bill and its mask which extends across the top of the bill.

Loggerhead Shrike

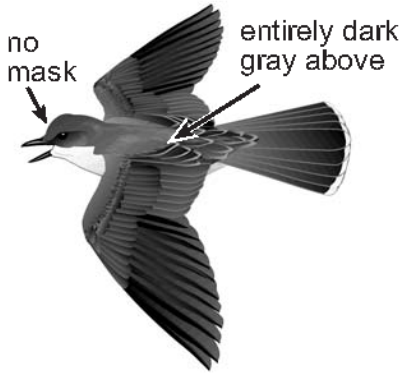


Where do they live?

Loggerhead shrikes were once found throughout much of the unforested region of the state. Today, their numbers are very low. Recent surveys have located fewer than 30 nests in the state (Fig. 1). It is very important that we try to maintain habitat for the few shrikes that still breed in Minnesota.

Shrikes use grassy, open areas with scattered trees and shrubs such as pastures, prairie patches and grassy roadsides. A few trees and shrubs, along with fences and powerlines provide nesting sites and perches from

Eastern Kingbird



continued on back

which to hunt. Red cedar, hawthorn and plum trees are often used for nesting. A pair may range over 2.5 - 30 acres.

Loggerhead shrikes are early nesters, arriving in Minnesota from their wintering areas in the southern U.S. and Mexico in early spring. Shrikes lay 4-6 eggs that hatch after about 16 days. The young birds remain with their parents for about 4 weeks after leaving the nest. It is at this time that the birds are most conspicuous. Shrikes tend to nest in the same general areas from year to year, although they may be absent for a year or two and then return again, as long as the habitat remains.

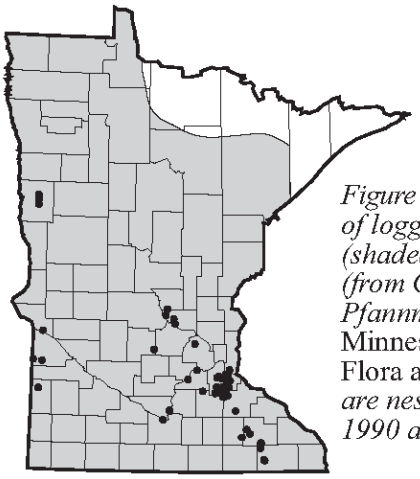


Figure 1. Historical range of loggerhead shrikes (shaded) in Minnesota. (from Coffin and Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna). *Dots are nests found between 1990 and 1996.*

Why is the loggerhead shrike population declining?

The decline of the loggerhead shrike is likely the result a combination of factors, including loss of habitat resulting from the conversion of pasture and grasslands to houses or cropland and the encroachment of forest and brush on pastures and grasslands. In addition, changes in farming practices have resulted in larger fields and fewer trees, shrubs and fences scattered about. The increasing use of pesticides may also play a role in the decline of shrikes because these chemicals affect many animals that shrikes eat.

WHAT CAN YOU DO TO HELP LOGGERHEAD SHRIKES?

If there are shrikes nesting on your property, congratulations! You are one of a very few Minnesotans fortunate to share your property with such a unique bird. We hope you will want to help this bird continue its presence in your neighborhood. Obviously your land management practices and land use are already compatible if the birds have selected your land for nesting. While biologists continue to investigate the decline of the shrike there are things you can do on your property to encourage shrikes.

1. Leave fences standing for shrikes to use for perching and impaling food. If a fence must be removed, or if there are no fences near your grassland or pasture, you can create perch and impaling posts. To do this, wrap barbed wire near the top of a post. Place these posts along the edges of pastures and fields for shrikes to use. Your local nongame wildlife biologist can help you select the best locations for the posts.

2. Keep brush from encroaching upon grasslands by removal or burning, but only to the extent that the shrubs and trees don't dominate the grassland. A few scattered shrubs and trees are necessary to maintain the best shrike habitat.

3. Pastures and grassland are more attractive to shrikes than are row crops. Therefore, it is important to maintain existing pasture and grasslands. Investigate the Conservation Reserve Program (CRP) which pays farmers to retire highly erodible farmlands from production and to establish permanent grassland. Contact your local Natural Resources Conservation Service office (formerly the Soil Conservation Service) for more information about this program.

4. Take advantage of financial incentives for maintaining compatible land uses. In many counties, the Agricultural Preserve Program and/or the Green Acres Program provide tax adjustments and/or deferments to farmers to help them maintain their land for agricultural use. Contact your county assessor's office for more information about these programs.

5. Minimize use of pesticides. Pesticides can reduce the supply of large insects and other non-target animals that shrikes need. Also, because shrikes feed on animals at which pesticides are directed, these chemicals can build up in the birds and impair their ability to reproduce and reduce the survival of their young.

For more information about shrikes or to report loggerheads shrikes on your property please contact:

Nongame Wildlife Program
500 Lafayette Rd.,
St. Paul, MN 55155
(651) 297-3764
1-800 766-6000

or locally contact:

10/96

EIW Attachment 7. Soils Table and Map Unit Descriptions

Soils Table

Map ID	Soil Classification
1072	Udorthents, moderately shallow
250	Kennebec silt loam
27B	Dickinson sandy loam, 2 to 6 percent slopes
283A	Plainfield loamy sand, 0 to 2 percent slopes
39A	Wadena loam, 0 to 2 percent slopes
39B	Wadena loam, 2 to 6 percent slopes
39B2	Wadena loam, 2 to 6 percent slopes, eroded
411A	Waukegan silt loam, 0 to 1 percent slopes
411B	Waukegan silt loam, 1 to 6 percent slopes
415B	Kanaranzi loam, 2 to 6 percent slopes
41A	Estherville sandy loam, 0 to 2 percent slopes
41B	Estherville sandy loam, 2 to 6 percent slopes
611C	Hawick gravelly sandy loam, 6 to 12 percent slopes

Prime and Other Important Farmlands

Dakota County, Minnesota

Map symbol	Map unit name	Farmland classification
27B	Dickinson sandy loam, 2 to 6 percent slopes	All areas are prime farmland
39A	Wadena loam, 0 to 2 percent slopes	All areas are prime farmland
39B	Wadena loam, 2 to 6 percent slopes	All areas are prime farmland
39B2	Wadena loam, 2 to 6 percent slopes, eroded	All areas are prime farmland
250	Kennebec silt loam	All areas are prime farmland
411A	Waukegan silt loam, 0 to 1 percent slopes	All areas are prime farmland
411B	Waukegan silt loam, 1 to 6 percent slopes	All areas are prime farmland
41A	Estherville sandy loam, 0 to 2 percent slopes	Farmland of statewide importance
41B	Estherville sandy loam, 2 to 6 percent slopes	Farmland of statewide importance
415B	Kanaranzi loam, 2 to 6 percent slopes	Farmland of statewide importance

Map Unit Description (MN)

Dakota County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

27B--Dickinson sandy loam, 2 to 6 percent slopes

Dickinson

Extent: 90 percent of the unit
Landform(s): outwash plains
Slope gradient: 2 to 6 percent
Parent material: outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer): .20
Land capability, nonirrigated: 3e
Hydric soil: no
Hydrologic group: A
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A,AB -- 0 to 15 in	Sandy loam	moderately rapid	1.80 to 2.24 in	5.6 to 7.3
Bw -- 15 to 24 in	Sandy loam	moderately rapid	1.09 to 1.36 in	5.1 to 6.5
BC,C -- 24 to 60 in	Sand	rapid	1.43 to 2.51 in	5.1 to 7.8

39A--Wadena loam, 0 to 2 percent slopes

Wadena

Extent: 75 to 95 percent of the unit

Landform(s): outwash plains on till plains, terraces on till plains

Slope gradient: 0 to 2 percent

Parent material: loamy glaciofluvial deposits over sandy and gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer): .28

Land capability, nonirrigated: 2s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 7 in	Loam	moderate	1.06 to 1.56 in	5.6 to 7.3
A -- 7 to 17 in	Loam	moderate	1.48 to 1.87 in	5.6 to 7.3
Bw -- 17 to 30 in	Loam	moderate	1.43 to 2.47 in	6.1 to 7.3
2C -- 30 to 79 in	Gravelly loamy coarse sand	rapid	0.98 to 4.88 in	7.4 to 8.4

39B--Wadena loam, 2 to 6 percent slopes

Wadena

Extent: 75 to 95 percent of the unit
Landform(s): outwash plains on till plains, terraces on till plains
Slope gradient: 2 to 6 percent
Parent material: loamy glaciofluvial deposits over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer): .28
Land capability, nonirrigated: 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 7 in	Loam	moderate	1.06 to 1.56 in	5.6 to 7.3
A -- 7 to 17 in	Loam	moderate	1.48 to 1.87 in	5.6 to 7.3
Bw -- 17 to 30 in	Loam	moderate	1.43 to 2.47 in	6.1 to 7.3
2C -- 30 to 79 in	Gravelly loamy coarse sand	rapid	0.98 to 4.88 in	7.4 to 8.4

39B2--Wadena loam, 2 to 6 percent slopes, eroded

Wadena, eroded

Extent: 90 percent of the unit
Landform(s): outwash plains
Slope gradient: 2 to 6 percent
Parent material: outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer): .24
Land capability, nonirrigated: 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 9 in	Loam	moderate	1.81 to 1.99 in	6.1 to 7.3
Bw -- 9 to 31 in	Loam	moderate	3.09 to 4.19 in	5.6 to 7.3
2C -- 31 to 60 in	Sand	very rapid	0.57 to 1.15 in	6.6 to 8.4

41A--Estherville sandy loam, 0 to 2 percent slopes

Estherville

Extent: 90 percent of the unit
Landform(s): outwash plains
Slope gradient: 0 to 2 percent
Parent material: outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer): .15
Land capability, nonirrigated: 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,AB -- 0 to 13 in	Sandy loam	moderately rapid	1.69 to 2.34 in	5.6 to 7.3
Bw -- 13 to 21 in	Sandy loam	moderately rapid	1.02 to 1.42 in	5.6 to 7.3
2BC,2C -- 21 to 60 in	Sand	rapid	0.78 to 1.56 in	6.6 to 8.4

41B--Estherville sandy loam, 2 to 6 percent slopes

Estherville

Extent: 75 to 95 percent of the unit
Landform(s): outwash plains on till plains, terraces on till plains
Slope gradient: 2 to 6 percent
Parent material: loamy glaciofluvial deposits over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer): .20
Land capability, nonirrigated: 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	Sandy loam	moderately rapid	0.94 to 1.73 in	5.6 to 7.3
A -- 8 to 13 in	Sandy loam	moderately rapid	0.61 to 0.97 in	5.6 to 7.3
Bw -- 13 to 19 in	Sandy loam	moderately rapid	0.65 to 0.77 in	6.1 to 7.3
2C -- 19 to 79 in	Gravelly loamy coarse sand	rapid	1.20 to 5.98 in	7.4 to 8.4

250--Kennebec silt loam

Kennebec

Extent: 100 percent of the unit
Landform(s): outwash plains
Slope gradient: 0 to 2 percent
Parent material: alluvium
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer): .37
Land capability, nonirrigated: 1
Hydric soil: no
Hydrologic group: C
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2 -- 0 to 41 in	Silt loam	moderate	9.01 to 9.83 in	5.6 to 7.3
C -- 41 to 60 in	Silt loam	moderate	3.78 to 4.16 in	6.1 to 7.3

283A--Plainfield loamy sand, 0 to 2 percent slopes

Plainfield

Extent: 95 percent of the unit
Landform(s): outwash plains, stream terraces
Slope gradient: 0 to 2 percent
Parent material: outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer): .20
Land capability, nonirrigated: 4s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 4 in	Loamy sand	rapid	0.35 to 0.47 in	5.1 to 7.3
Bw,BC,C -- 4 to 60 in	Sand	very rapid	1.68 to 3.91 in	4.5 to 6.5

411A--Waukegan silt loam, 0 to 1 percent slopes

Waukegan

Extent: 90 percent of the unit
Landform(s): outwash plains, stream terraces
Slope gradient: 0 to 1 percent
Parent material: glaciofluvial sediments over outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer): .32
Land capability, nonirrigated: 2s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,AB -- 0 to 13 in	Silt loam	moderate	2.86 to 3.12 in	5.6 to 7.3
Bt -- 13 to 28 in	Silt loam	moderate	2.99 to 3.29 in	5.1 to 7.3
2BC -- 28 to 42 in	Gravelly sand	rapid	0.28 to 0.57 in	5.6 to 7.8
2C -- 42 to 60 in	Gravelly sand	rapid	0.35 to 0.71 in	5.6 to 7.8

411B--Waukegan silt loam, 1 to 6 percent slopes

Waukegan

Extent: 90 percent of the unit
Landform(s): outwash plains, stream terraces
Slope gradient: 1 to 6 percent
Parent material: glaciofluvial sediments over outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer): .32
Land capability, nonirrigated: 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,AB -- 0 to 13 in	Silt loam	moderate	2.86 to 3.12 in	5.6 to 7.3
Bt -- 13 to 28 in	Silt loam	moderate	2.99 to 3.29 in	5.1 to 7.3
2BC -- 28 to 42 in	Gravelly sand	rapid	0.28 to 0.57 in	5.6 to 7.8
2C -- 42 to 60 in	Gravelly sand	rapid	0.35 to 0.71 in	5.6 to 7.8

415B--Kanaranzi loam, 2 to 6 percent slopes

Kanaranzi

Extent: 100 percent of the unit
Landform(s): outwash plains
Slope gradient: 2 to 6 percent
Parent material: outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer): .20
Land capability, nonirrigated: 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 9 in	Loam	moderate	1.54 to 1.90 in	5.6 to 7.3
Bw -- 9 to 19 in	Silt loam	moderate	1.48 to 1.87 in	5.6 to 7.8
2BC -- 19 to 23 in	Loamy sand	very rapid	0.08 to 0.16 in	6.6 to 8.4
2C -- 23 to 60 in	Coarse sand	very rapid	0.74 to 1.48 in	7.4 to 8.4

611C--Hawick gravelly sandy loam, 6 to 12 percent slopes

Hawick

Extent: 85 to 95 percent of the unit
Landform(s): outwash plains on till plains, terraces on till plains
Slope gradient: 6 to 12 percent
Parent material: sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer): .05
Land capability, nonirrigated: 4s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 7 in	Gravelly sandy loam	moderately rapid	0.64 to 1.06 in	6.1 to 7.8
Bw -- 7 to 11 in	Gravelly loamy coarse sand	rapid	0.08 to 0.39 in	6.1 to 7.8
C -- 11 to 79 in	Gravelly coarse sand	very rapid	1.35 to 6.77 in	7.4 to 8.4

Map Unit Description (MN)

Dakota County, Minnesota

This report provides a semitabular listing of some soil and site properties and interpretations that are valuable in communicating the concept of a map unit. The report also provides easy access to the commonly used conservation planning information in one place. The major soil components in each map unit are displayed. Minor components may be displayed if they are included in the database and are selected at the time the report is generated.

EIW Attachment 8. MnHPO Correspondence

Chlebeck, John

From: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Sent: Wednesday, April 11, 2018 2:51 PM
To: Chlebeck, John
Subject: RE: Database Review Request - Southeast Metro Water Reclamation Facility and Pipeline
Attachments: DakotaHistoric.xls; DakotaHistoric.xls; DakotaArchaeology.xls

THIS EMAIL IS NOT A PROJECT CLEARANCE

This information has recently been updated, please read the note below carefully.

This message simply reports the results of the cultural resources database search you requested. The database search produced results for only previously known archaeological sites and historic properties.

Archaeological sites and historic/architectural properties were identified in a search of the Minnesota Archaeological Inventory and Historic and Architectural Inventory for the search area requested. **A report containing the results of the searches is attached.**

The result of this database search provides a listing of recorded archaeological sites and historic/architectural properties that are included in the current MN SHPO databases. Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development or construction projects within that area. Additional research, including field survey, may be necessary to adequately assess the area's potential to contain historic properties.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received. The following codes on the reports you received are:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Review and Compliance Process. There properties need to be further assessed before they are officially listed in the National Register.

SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National Register, in circumstances other than the Review and Compliance process.

DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.

CNEF – Considered Not Eligible Findings are made during the course of a Review and Compliance process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.

Properties without **NR, CEF, SEF, DOE, or CNEF** designations in the reports you received may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years for the date of the current survey are considered out of date and the property will need to be reassessed.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson in Review and Compliance @ 651-201-3285 or by email at kelly.graggjohnson@state.mn.us.

The Minnesota SHPO Survey Manuals and Database Metadata can be found at https://mn.gov/admin/shpo/identification-evaluation/

MN SHPO research hours are 8:30 AM – 4:00 PM Tuesday-Friday. Please call ahead at 651-201-3295 to ensure staff is available to assist you, if necessary.

The Office is closed on Mondays.

DEPARTMENT OF ADMINISTRATION

SHPO Data Requests
Minnesota State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
(651) 201-3295
datarequestshpo@state.mn.us

From: Chlebeck, John [mailto:John.Chlebeck@metc.state.mn.us]
Sent: Wednesday, April 11, 2018 2:46 PM
To: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Subject: Database Review Request - Southeast Metro Water Reclamation Facility and Pipeline

Hello. I am working on a Facility Plan for funding through the Clean Water Revolving Fund, and need to request a search of MnHPO databases to assess impacts to historic or archaeological resources. My understanding is that you need project location information to the quarter-quarter section in order to complete the search. Please let me know if additional information is needed. Thank you.

The project is a wastewater reuse treatment facility and water distribution pipe in Dakota County. The location information is as follows:

Township	Range	Section	1/4-1/4
115	18W	19	SWSE
115	18W	19	SESW

115	18W	19	SWSW
115	18W	30	NWNE
115	18W	30	NENW
115	18W	30	NWNW
115	19W	11	NENE
115	19W	13	SWSW
115	19W	14	SESE
115	19W	14	NESE
115	19W	14	SENE
115	19W	14	NENE
115	19W	14	NWNE
115	19W	23	SESE
115	19W	23	NESE
115	19W	23	SENE
115	19W	23	NENE
115	19W	24	SESE
115	19W	24	SWSE
115	19W	24	SESW
115	19W	24	SWSW
115	19W	24	NWSW
115	19W	24	SWNW
115	19W	24	NWNW
115	19W	25	NENE
115	19W	25	NWNE
115	19W	25	NENW
115	19W	25	NWNW
115	19W	26	NENE
27	22W	33	SWSW
27	22W	33	NWSW
27	22W	33	NENW
27	22W	33	SESW
27	22W	33	NWSE
27	22W	33	SWSE

METROPOLITAN COUNCIL

John Chlebeck, PE
Principal Engineer | Interceptor Project Delivery | Environmental Services
John.Chlebeck@metc.state.mn.us
P. 651.602.4527
3565 Kennebec Drive | Eagan, MN | 55122 | metrocouncil.org

COUNTY	SITENUM	SITENAME	TOWNSHIP	RANGE	SECTION	XQUARTERS	ACRES	WORKTYPE	DESCRIPT	TRADITION	CONTEXT	ReportNum	Natreg	CEF	DOE
Dakota															
	21DKam	John Danner House	115	19	24	SW-NW-NW		1	AS,FEAT		RA-1				
	21DKan	John Drake House	115	19	24	SW-NW-SW		1	AS,FEAT		RA-1				
	21DKao	Rich Valley Village	115	19	24	SW-SW-SE		1	AS,FEAT		RA-1				
		Rich Valley Village	115	19	24	SE-SW		1	AS,FEAT		RA-1				

COUNTY	CITYTWP	PROPNAME	ADDRESS	TOWNSHIP	RANGE	SECTION	QUARTERS	USGS	REPORTNUM	NRHP	CEF	DOE	INVENTNUM
Dakota													
	Inver Grove Heights												
		Mendota-Wabasha Military Rd.: Inver Grove Heights Section	Rich Valley Blvd.	27	22	33		Inver Grove Heights	xx-89-4H				DK-IVG-015
	Ravenna Twp.												
		Ravenna Cemetery		115	19	26	SE-NE						DK-RAV-006
	Rosemount												
		school	140th St. & Blaine Ave.	115	19	24	SW-SW-SW	Coates					DK-RSC-008
		Koch Refinery	13155 Courthouse Blvd.	115	18	19	N-N	Inver Grove Heights	DK-93-1H				DK-RSC-018
		barn	ca. 4250 140th St.	115	18	19	SE-SE	Coates					DK-RSC-019
		St. John's Evangelical Lutheran Cemetery	14385 Blair Ave.	115	19	26	SE-NE	Coates	DK-2011-2H				DK-RSC-049
		house and garage	14380 Blaine Ave.	115	19	25	SW-NW	Coates	DK-2011-2H				DK-RSC-050
		house and garage	14600 Blaine Ave.	115	19	26	NE-SE	Coates	DK-2011-2H				DK-RSC-051
		house and outbuildings	2583 145th St. E	115	19	25	SW-NW	Coates	DK-2011-2H				DK-RSC-052
		house and outbuildings	2765 145th St. E	115	19	25	SW-NW	Coates	DK-2011-2H				DK-RSC-053
		St. John's Evangelical Lutheran Church and School	west of 2829 145th St. E	115	19	25	SE-NW	Coates	DK-2011-2H				DK-RSC-054
		house and outbuilding	2829 145th St. E	115	19	25	SE-NW	Coates	GD-2011-2H				DK-RSC-055
		agricultural outbuildings	3720 145th St. E	115	19	25	NE-SE	Coates	GD-2011-2H				DK-RSC-056
		house and outbuildings	3275 145th St. E	115	19	25	SE-NE	Coates	GD-2011-2H				DK-RSC-057
		farmstead	3330 145th St. E	115	19	25	NE-SE	Coates	GD-2011-2H				DK-RSC-058
		industrial complex	3000 145th St. E	115	19	25	NW-SE	Coates	GD-2011-2H				DK-RSC-060

Chlebeck, John

Subject: FW: SHPO Request for Southwest Metro Wastewater Reuse Facility located in Rosemount, MN (Dakota County)

From: "GraggJohnson, Kelly (ADM)" <kelly.graggjohnson@state.mn.us>
To: Rebecca Beduhn <rbeduhn@sehinc.com>
Date: 04/24/2018 09:41 AM
Subject: RE: SHPO Request for Southwest Metro Wastewater Reuse Facility located in Rosemount, MN (Dakota County)

Hi Rebecca – I was unable to track down the inventory form for this property – but the Inver Grove Heights Section has been determined "not eligible" for listing in the National Register, so you do not need to worry about it for your project… The segment is located in T27 R22 S19 – along Rich Valley Blvd – according to our dbase. There are other segments in Goodhue County that have been listed in the National Register and have been determined eligible… but this one in Inver Grove Heights has lost integrity and was determined to be not eligible.

Let me know if you have further questions.

Kelly

DEPARTMENT OF ADMINISTRATION

Kelly Gragg-Johnson | Environmental Review Program Specialist
State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
(651) 201-3285
kelly.graggjohnson@state.mn.us

From: Rebecca Beduhn <rbeduhn@sehinc.com>
Sent: Monday, April 23, 2018 4:58 PM
To: GraggJohnson, Kelly (ADM) <kelly.graggjohnson@state.mn.us>; Kling, Jesse (ADM) <jesse.kling@state.mn.us>
Subject: Fw: SHPO Request for Southwest Metro Wastewater Reuse Facility located in Rosemount, MN (Dakota County)

Hello! I have received a report containing properties included in the MN Archaeological Inventory and Historic and Architectural Inventory for a potential property in Inver Grove Heights.

It lists the "Mendota-Wabasha Military Rd.: Inver Grove Heights Section" located within one of the sections included in our search.

The client (Met Council) is in the process of choosing the best location for their site, and thus was looking for additional info on this site so it can be avoided. The address says "Rich Valley Blvd." and so I would believe it is along this route, can you confirm or deny that for me? Are we allowed to know the extents of the listing?

Please contact me if I can help in anyway. Thank you for your consideration on the proposed project.

Rebecca Beduhn MS, CWD, SS-IT, PWS | Wetland Scientist

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