

# EMPIRE Wastewater Treatment Plant



## ENVIRONMENTAL SERVICES

We serve 2.7 million people living in 110 communities in the 7 county Metro Area

We treat 250 million gallons of wastewater every day

## OUR PURPOSE

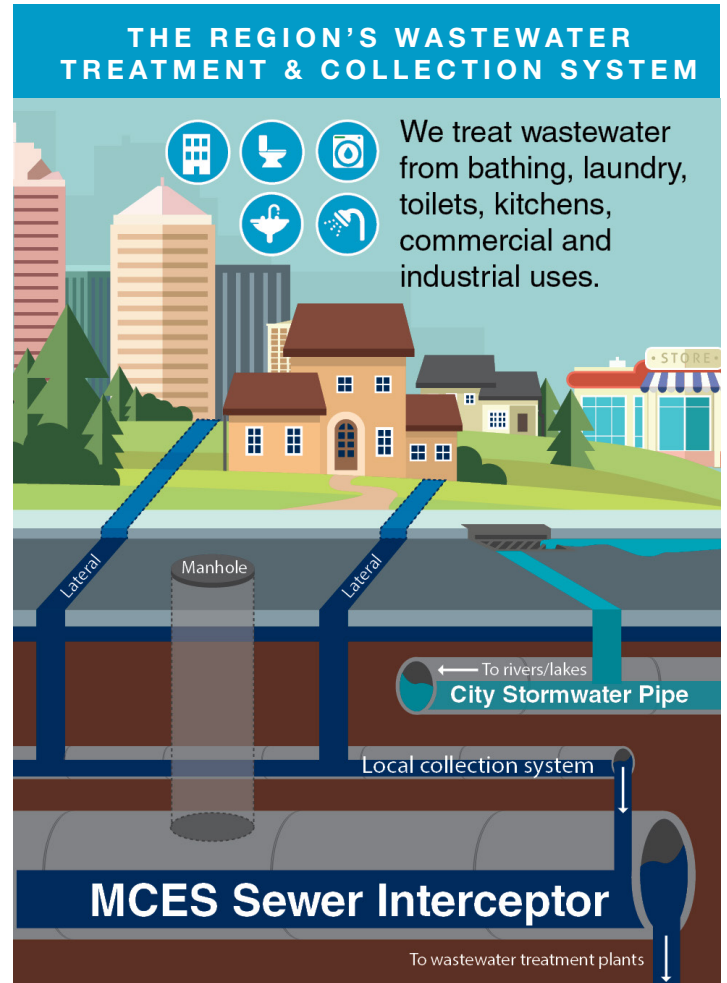
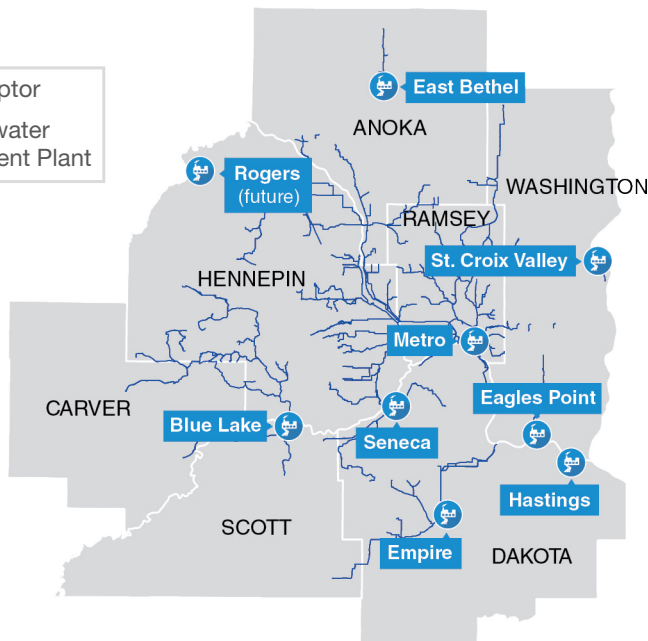
- Protect public health and the environment** through reliable and effective wastewater conveyance and treatment.
- Foster economic growth in the region** by maintaining low service rates through efficient operations and smart planning.
- Collaboratively engage with our customers, stakeholders and partners** to provide excellent and economical wastewater conveyance and treatment services.

## MCES WASTEWATER ASSETS

- 610 miles of sewer pipe
- 62 lift stations
- 213 meters
- 9 wastewater treatment plants
- \$7 billion in assets

### Key

- Interceptor
- Wastewater Treatment Plant



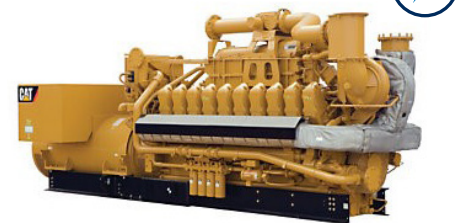
Our treatment process removes pollutants by converting them to a small volume of organic solids, and returns clean water to the environment.



# ENERGY RECOVERY SYSTEMS



For the next ten years, a new high-strength waste receiving facility will receive waste from one local dairy manufacturer. This project defers the need for plant expansion, improves plant efficiency, and helps foster economic growth.



The current project will install a combined heat and power engine generator (CHP). The CHP converts digester gas to electricity (equal to 1/3 of the plant's power demand) and recovers heat for on-site use. The CHP project will reduce wastewater treatment costs for our customer communities.



New high efficiency boilers will operate on natural gas, or digester gas if the CHP is offline.

# EMPIRE WASTEWATER TREATMENT PLANT

2540 197th Street West; Empire Township



Treats 11 million gallons/day



Discharges to Mississippi River



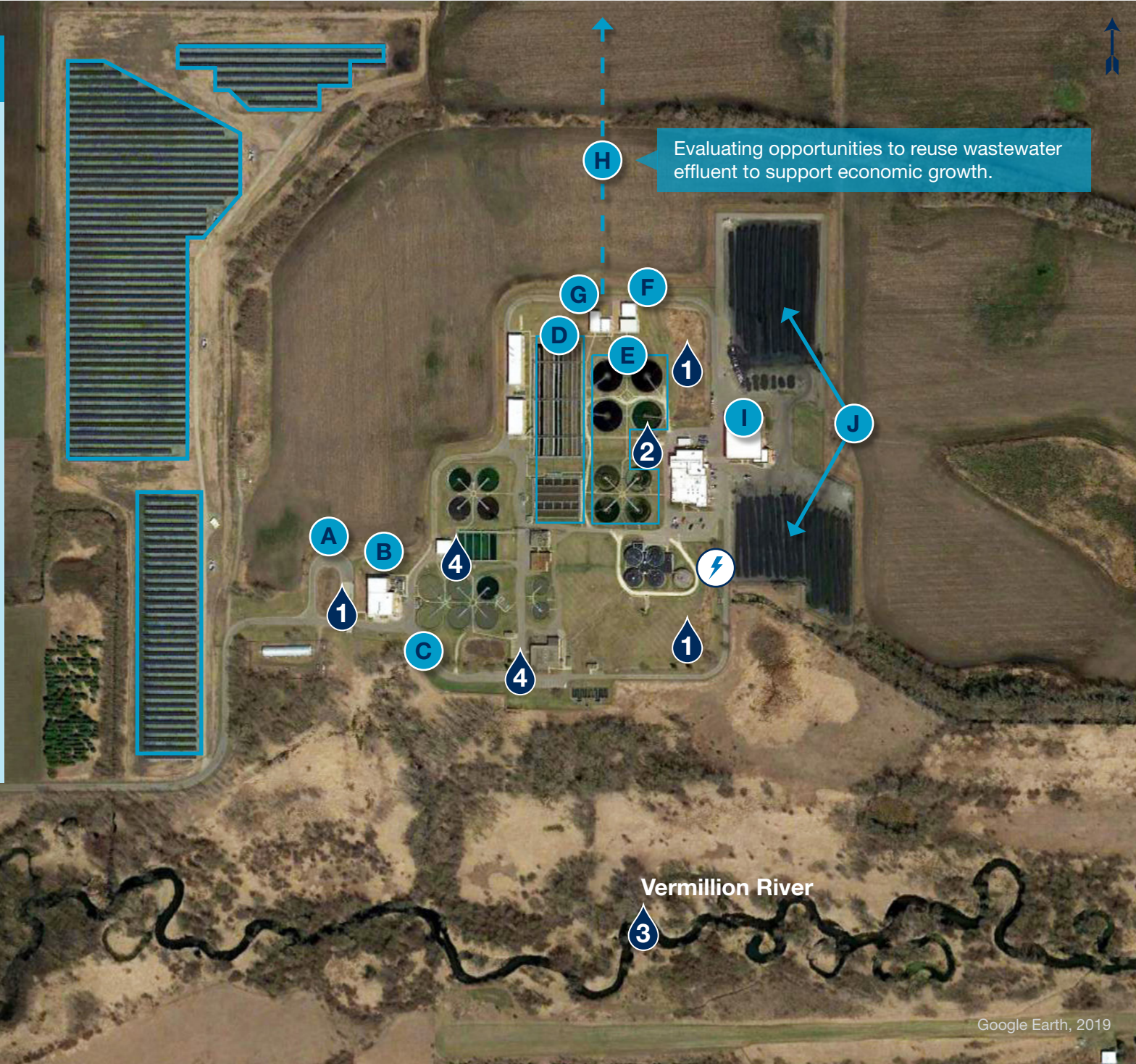
Serves 150,000 people



Serves communities of Empire Township, Farmington, Rosemount, Elko New Market, and portions of Apple Valley and Lakeville

## KEY

- A** Liquid Waste Receiving
- B** Headworks (screening and grit removal)
- C** Primary Clarifiers
- D** Secondary Treatment
- E** Secondary Clarifiers
- F** Ultraviolet (UV) Disinfection
- G** Effluent Pumping Station
- H** Outfall Pipe
- I** Solids Handling Building
- J** Biosolids Storage Pads



# STORMWATER BEST MANAGEMENT PRACTICES



Infiltration Basins



Green Roof



Restored Streambank  
Vermillion River



Permeable Pavers

# SOLIDS IMPROVEMENTS

at Environmental Services



## PHASE 1

Phase 1 construction, valued at \$27 million, will occur between 2019 and 2022. Improvements include:

- Biosolids Pad Improvements** – The Biosolids storage pad is being expanded, resurfaced, and covered in order to increase storage capacity. Stormwater from the cover will be collected and treated in our infiltration basins before returning to the groundwater.
- Road Improvements** – MCES will repair and reconstruct the deteriorated asphalt road at Empire Wastewater Treatment Plant (WWTP).
- Boiler System Improvements** – The current boiler system is near the end of its service life and will be replaced. Along with a new boiler system, a sludge pumping station, waste gas flare, and new biogas treatment building will be installed. Biogas treatment improves fuel quality and prepares for a future combined heat and power system that will generate electricity and heat for plant use.
- High Strength Waste Receiving** – MCES is installing a new fill station, waste storage tanks, piping valves, and controls to increase our biogas production. Biogas will be used to fuel our future combined heat and power system.
- Electrical improvements** – MCES will add a new transformer and breaker, replace the switch gear and motor control centers (MCCs), and re-cable existing transformers. These updates will address plant-wide arc flash issues and improve reliability of electrical systems.



## PHASE 2

Phase 2 construction, valued at \$20 million, will occur between 2021 and 2024. Improvements include:

- Digester Improvements** – New covers, mixing systems, and heating systems for Empire WWTP's secondary digesters will more efficiently use the existing tank volume. This will increase solids processing and storage capacity of the current digestion system.
- Biogas Treatment and Storage** – Digester gas will be treated with Hydrogen Sulfide (H<sub>2</sub>S) and Siloxane removal systems before it is used as fuel in the new combined heat and power system. Biogas storage will help manage the available fuel volume and keep the combined heat and power system running consistently.
- Combined Heat and Power System (CHP)** – A new 1,000 kW biogas-fueled engine generator will produce electricity and heat (in the form of hot water) for on-site use. Biogas generated from the digestion process and treated by the new moisture, Hydrogen Sulfide (H<sub>2</sub>S), and Siloxane removal systems will provide fuel for the new CHP system.