

Information Item: MCES Interceptor Pipe Condition Assessment Program

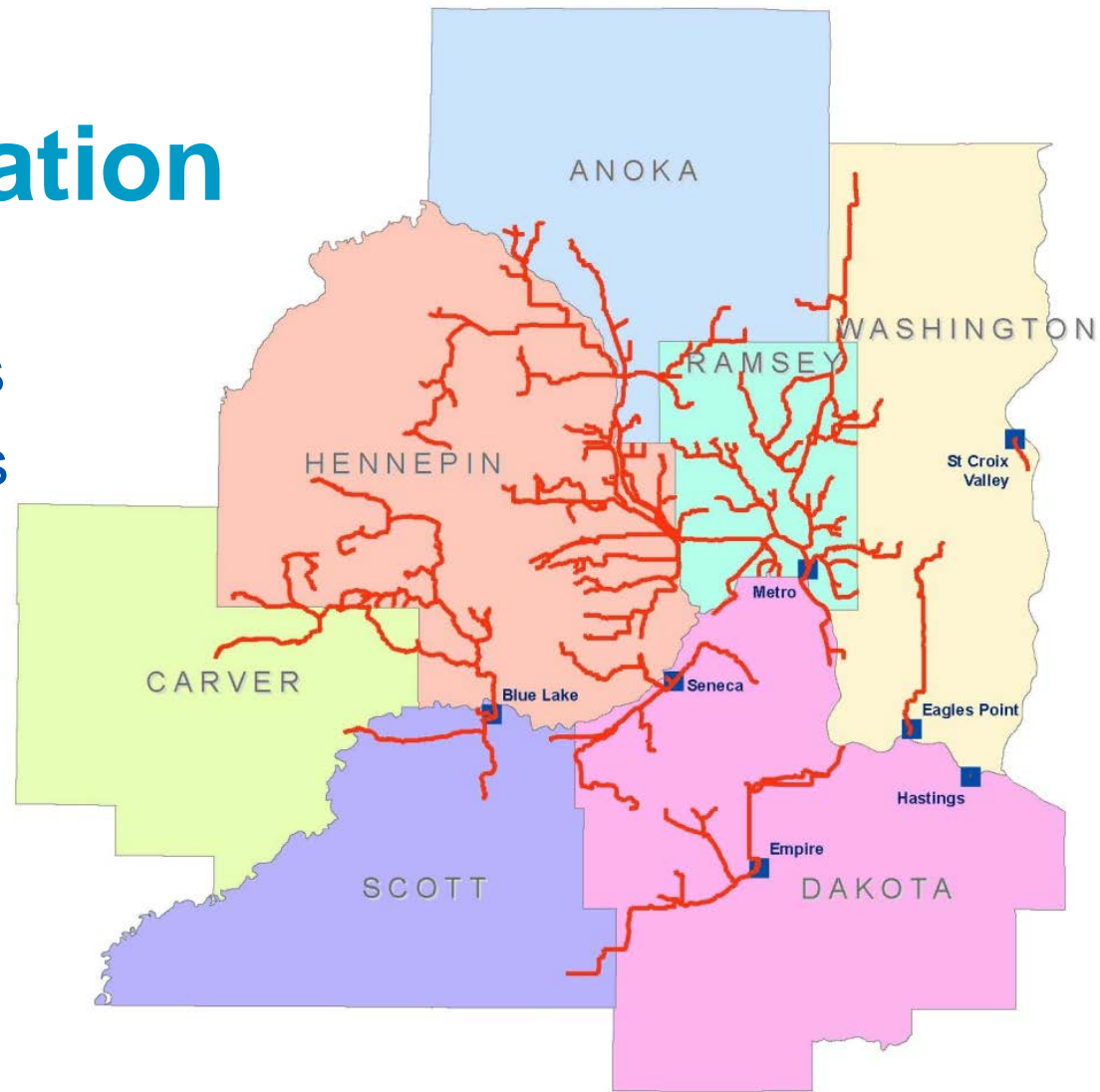
Karen Keenan, Project Delivery Manager

Environment Committee July 14, 2015



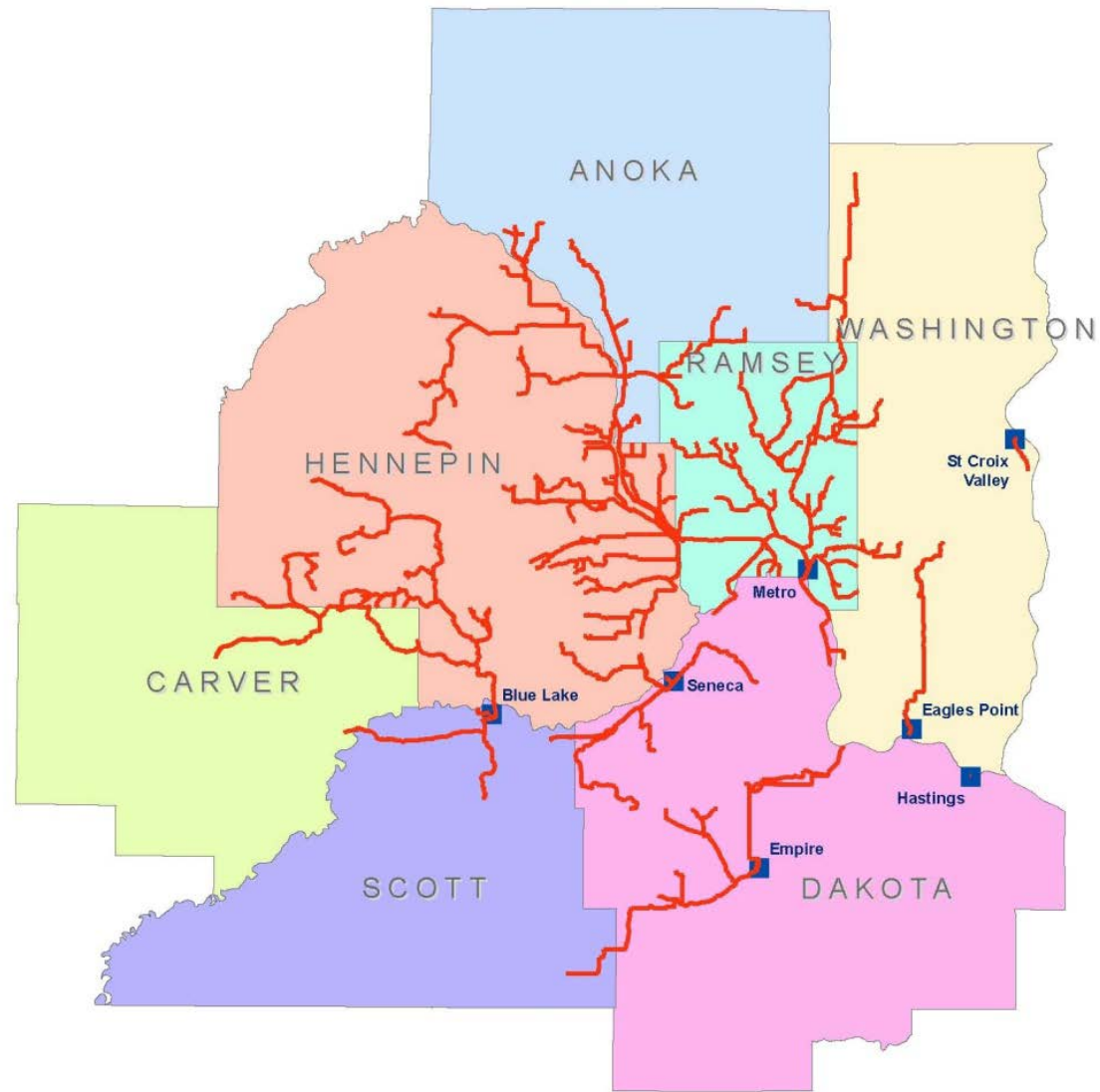
System Information

- Serves 108 communities
- 610 miles of sewer pipes
- 8 wastewater treatment plants
- 60 lift stations



Pipe System

- Gravity Pipe
 - 481 miles in system
 - 73% concrete and metal
- Forcemain Pipe
 - 116 miles in system
 - 78% concrete and metal



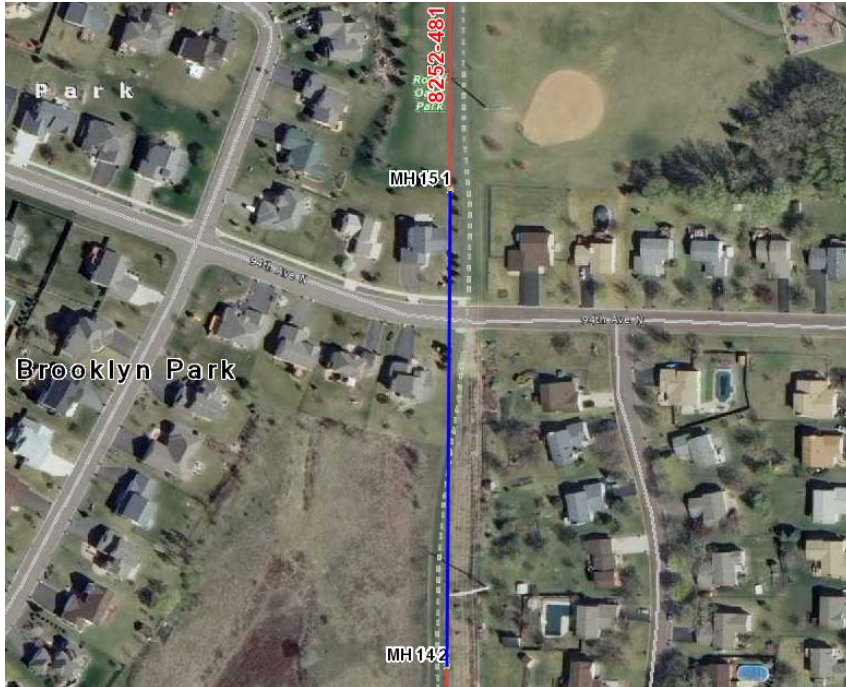
Gravity Condition Assessment

- On-going Program
 - Closed Circuit Television Inspection (CCTV)
 - Manhole Inspection
- Special Programs
 - Deep Tunnel Inspection (Future Presentation)

Forcemain Condition Assessment

- Internal Inspection
 - Costly diversion pumping & excavation for pipe access
 - Leak and gas pocket assessment (uncertain technology)
- External Inspection
 - Pipe wall assessment (specific locations)
- Risk Analysis
 - Corrosion: pipe material & turbulent areas
 - Severity of failure: located near bodies of water & public hazard

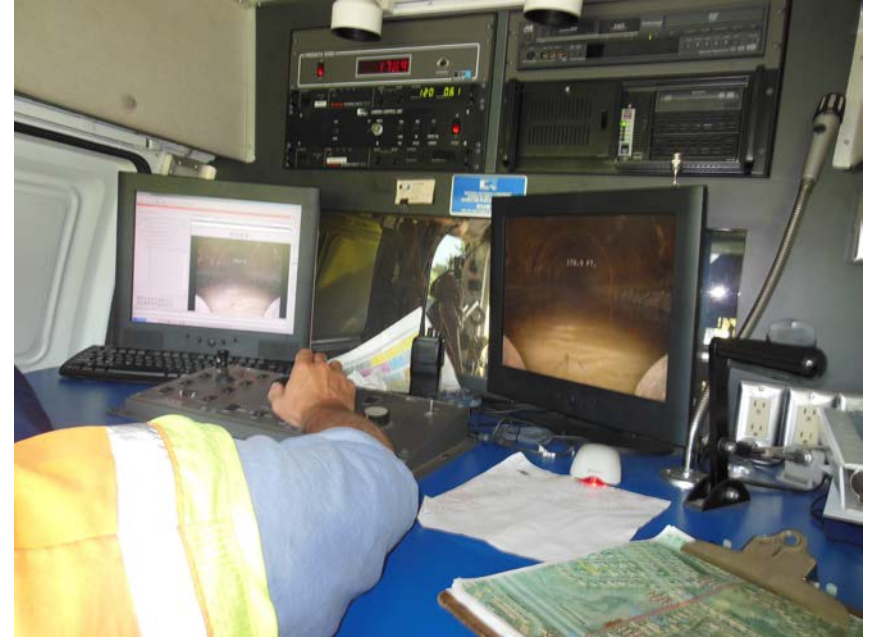
Closed Circuit Television Video (CCTV)



Closed Circuit Television Video (CCTV)



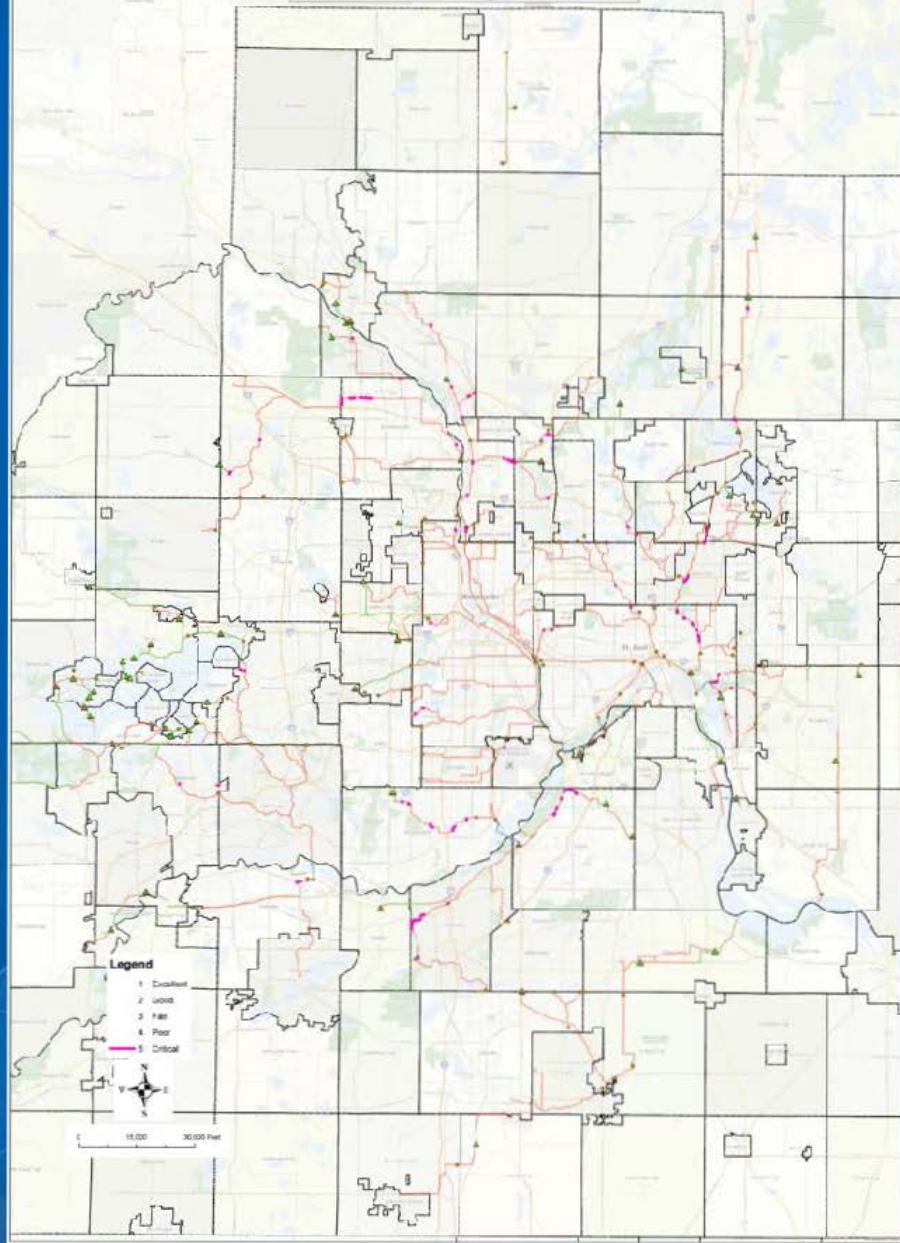
Closed Circuit Television Video (CCTV)



Category 5



CCTV INSPECTION Rating 5

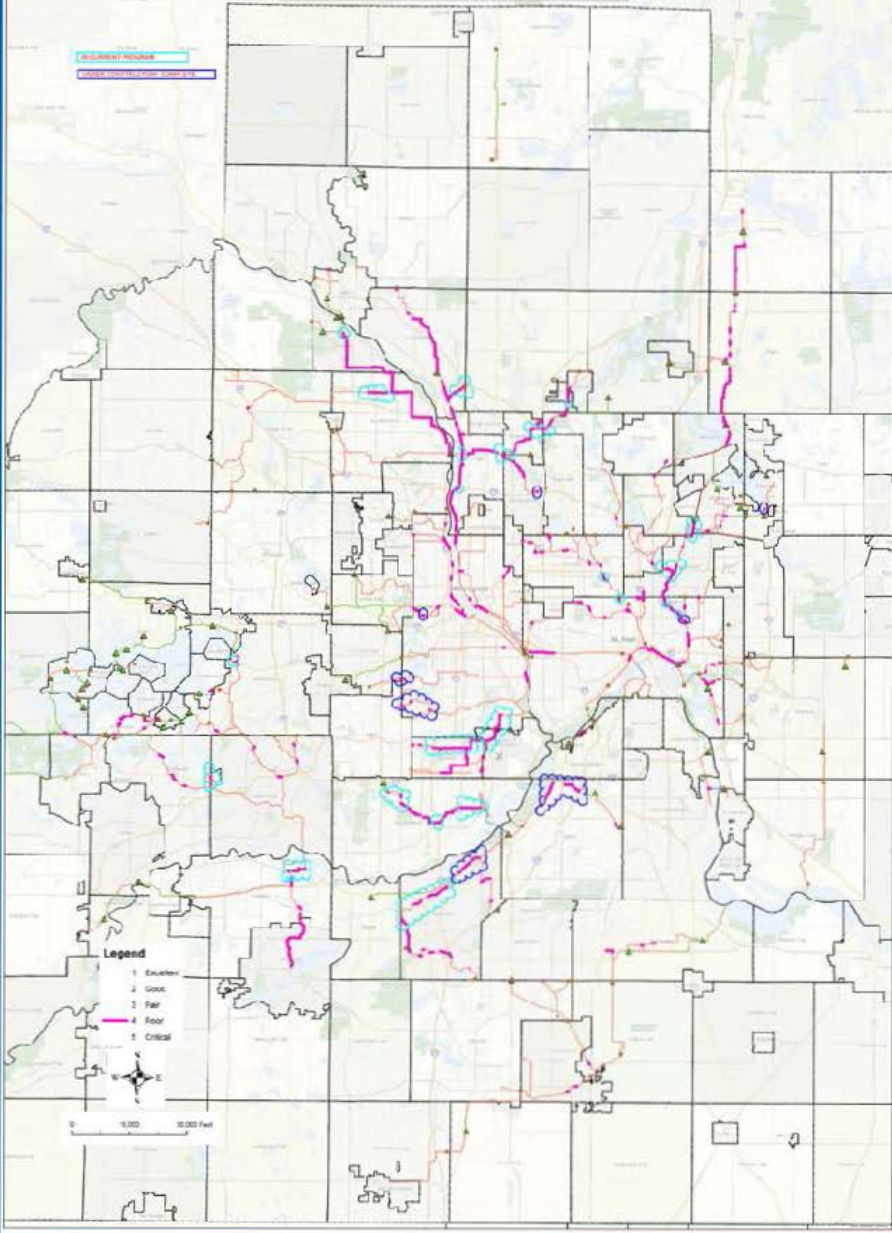


Category 4



CCTV INSPECTION

Rating 4



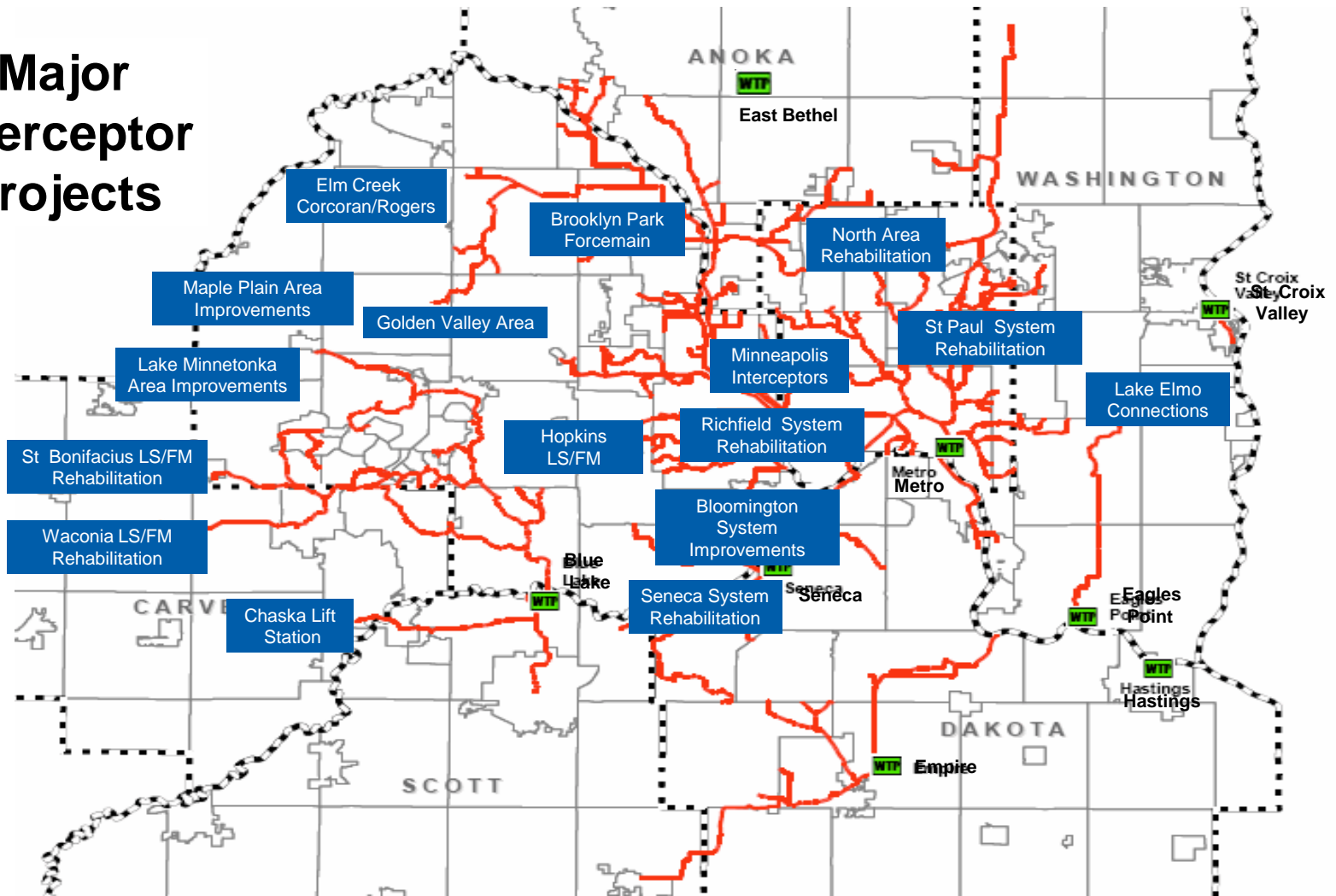
Gravity Sewer Renewal Projects

- Rehabilitate or replace 10 miles of condition 5 pipe as soon as possible
 - 2015-2017 Capital Program
- Rehabilitate or replace 90 miles of condition 4 pipe as soon as possible
 - 2018-2025 Capital Program

Forcemain Renewal Program

	Facility	Length
Completed	South St Paul, Plymouth, Long Lake, Mahtomedi, Brooklyn Park	18 miles
Construction	Excelsior, Wayzata, Hopkins, Waconia	16 miles
Design	Mound, Orono, St. Bonifacius, Christmas Lake, Galpin Lake	8 miles
Planning	Brooklyn Park, Moundsview, New Hope, Mound, Crystal, Chaska, Anoka, Orono, Lake Virginia, Maple Plain	26 miles

Major Interceptor Projects



Rehabilitation Technologies

- Pipe
 - Cured-In-Place-Pipe (CIPP)
 - Sliplining
 - Remove and Replace
- Manhole Structures
 - Lining (cured-in-place)
 - Fiberglass lining inserts
 - Polymer concrete inserts
 - Coating systems

CIPP Installation & Temporary Conveyance



Sliplining



Lessons Learned

- Corrosion damage occurs in concrete and metal pipe (73 percent of system)
- Corrosion damage occurs in areas of high hydrogen sulfide
 - Turbulent Areas: Force main discharges; in pipe with high slopes; meter stations, and at drop locations
 - Low flow and low velocity
 - Forcemain: High points and downhill sections
- Pipe age is not a factor

Current Approach for New Interceptors

- Use corrosion resistant materials
- Use chemicals, oxygen injection to reduce the sulfides in the wastewater
- Minimize force main length
- Minimize turbulence – minimize use of drops and highly sloped pipe

Future Condition Presentations

- Deep Tunnel Inspections
- River Crossings
- Lift Stations
- Meter Stations

Questions