



**ORLAND
PARK**

Emergency repairs to Wedgewood Forcemain Discharge manhole and piping

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Executive Summary of Emergency Repairs to Sewer main

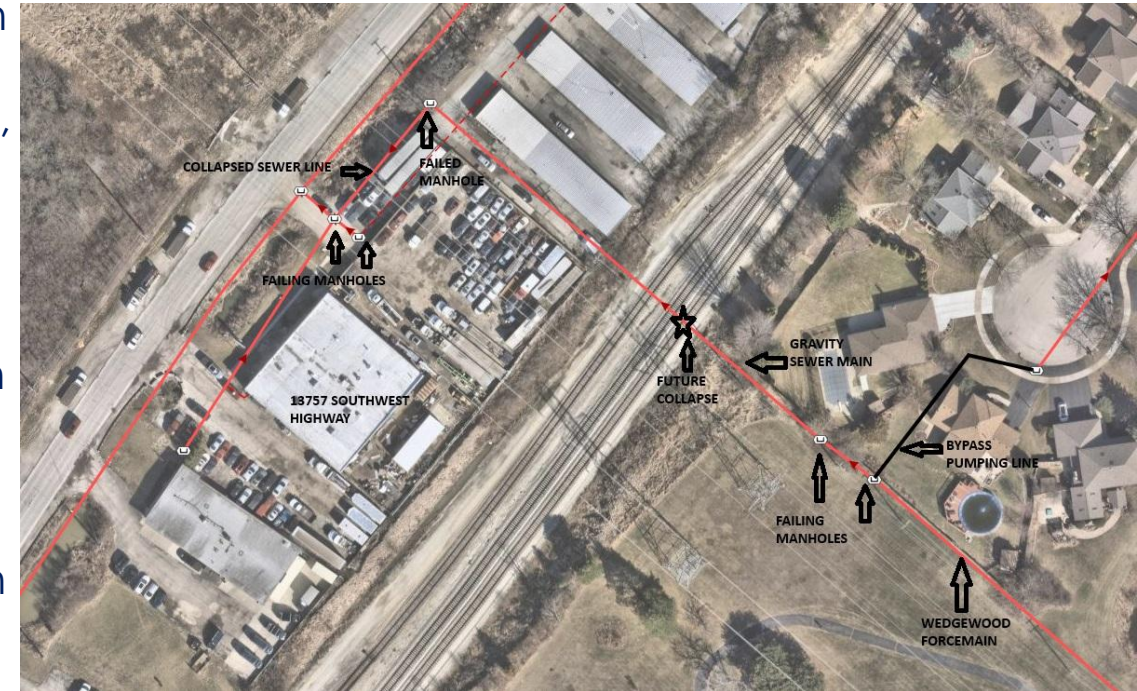
Cause/Recovery efforts to bring back to normal

Cause of Failure of manholes and piping

- Hydrogen Sulfide gases, byproduct of raw sewage, mixes with oxygen and creates a very acidic condensation on concrete and ductile iron piping which eats away the concrete, piping, and existing liner installed in 2004.

Recovery Efforts

- Setup bypass pump.
- Shutdown 20" pipe and activated 10" emergency force main pipe from Wedgewood. (1/2 capacity though)
- With help of Airy's, dug up 20" pipe location to install new section and vactored all old debris out of remaining pipe.
- Inspected five (5) manholes and videoed 620 feet of piping in the area to assess condition to include pipe under railroad track.
- Reestablished flow to 20" pipe temporarily until materials could arrive to do permeant repairs to (5) manholes and the remaining pipe.
- Materials ordered and work has begun on manholes and lining of piping to follow once manholes are complete.



Wedgewood Force Main Emergency Repairs
Near Southwest Hwy

Executive Summary of Contract with Airy's

Expertise Assistance

Approval for Airy's not to exceed costs:

| | |
|---|---------------------|
| • Initial emergency response: | \$ 67,855.20 |
| • Estimated manhole fiberglass lining cost: | \$148,495.86 |
| • Estimated sewer main lining cost: | \$138,416.25 |
| • Contingency for unknowns/Bond: | <u>\$ 20,000.00</u> |
| • Total cost not to exceed: | \$374,767.31 |

Pricing Verification

- These cost includes the initial emergency response, labor, materials, and equipment along with the new lining material, fiberglass manhole liners, stone, full restoration of the area, along with specialized equipment like a Vactor truck, excavator, trench boxes, and support vehicles.
 - Pricing was compared to similar past work with other contractors and deemed fair and reasonable.
 - Airy's searched for the best price for manhole fiberglass lining for us and also got three quotes for the lining work since it would be a sub to them to ensure we get the best price.
 - Public Works Utilities have also been engaged with Airy's to reduce the costs of the repairs.

QUESTIONS?

Where the work is occurring at and future planning

Wedgewood Force main transitions to gravity at the end portion of line

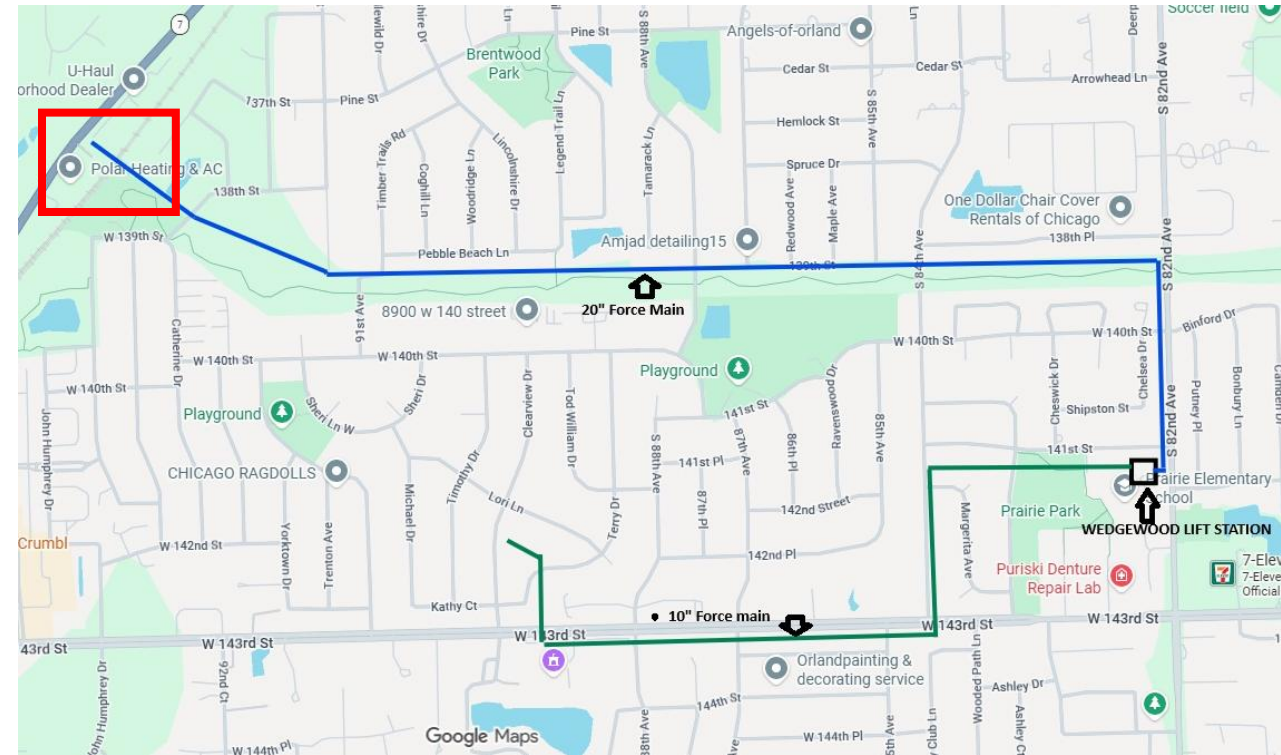
Due to drop of elevation from ComEd easement to MWRD interceptor and to go under Railroad tracks, the force main transitions to a gravity main. This portion of the line (red box) is the area we are addressing in the repairs.

What is the difference between a gravity main and forcemain?

- Gravity mains use gravity to move the waste so pipes are pitched downward. Sewer lines are the deepest infrastructure due to this gravity constraint.
- Forcemains means that our pumps in lift stations are pushing the waste in the pipe due to not having elevation needed for gravity.
- Gravity is preferred due to cost of electricity to pump and maintenance of lift station/pumps.

Some future planning already in works:

- In planning our new water rates next year for FY28-FY33, we were planning a project already to install a liner in the remaining portions of 20" pipe.
- There are other sewer projects planned as well.



Detail Information on found condition

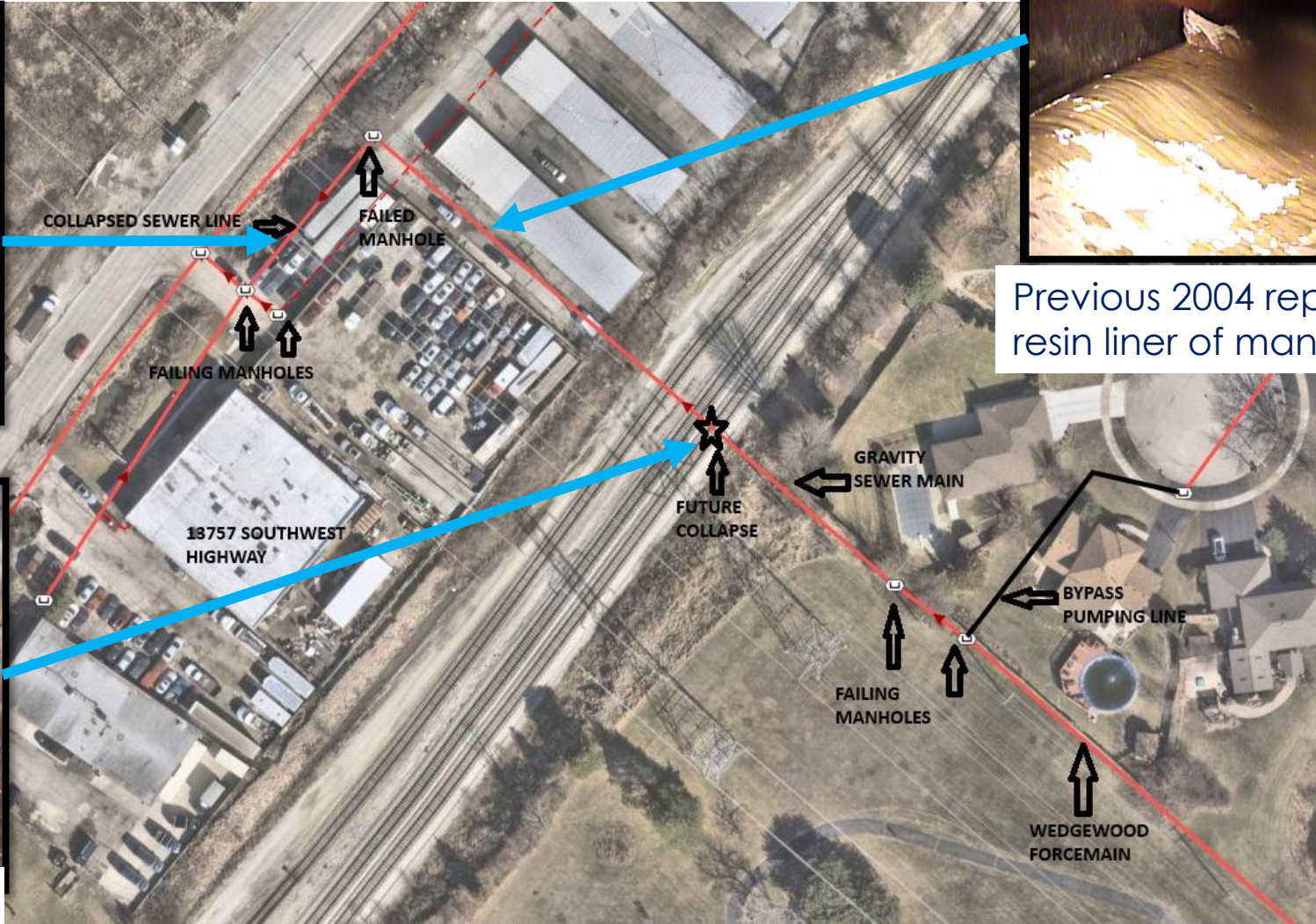
Collapsed pipe, failed liner, and cracks in pipe



Stone Debris found in pipe



Crack in pipe



Previous 2004 repairs of epoxy resin liner of manholes in pipe

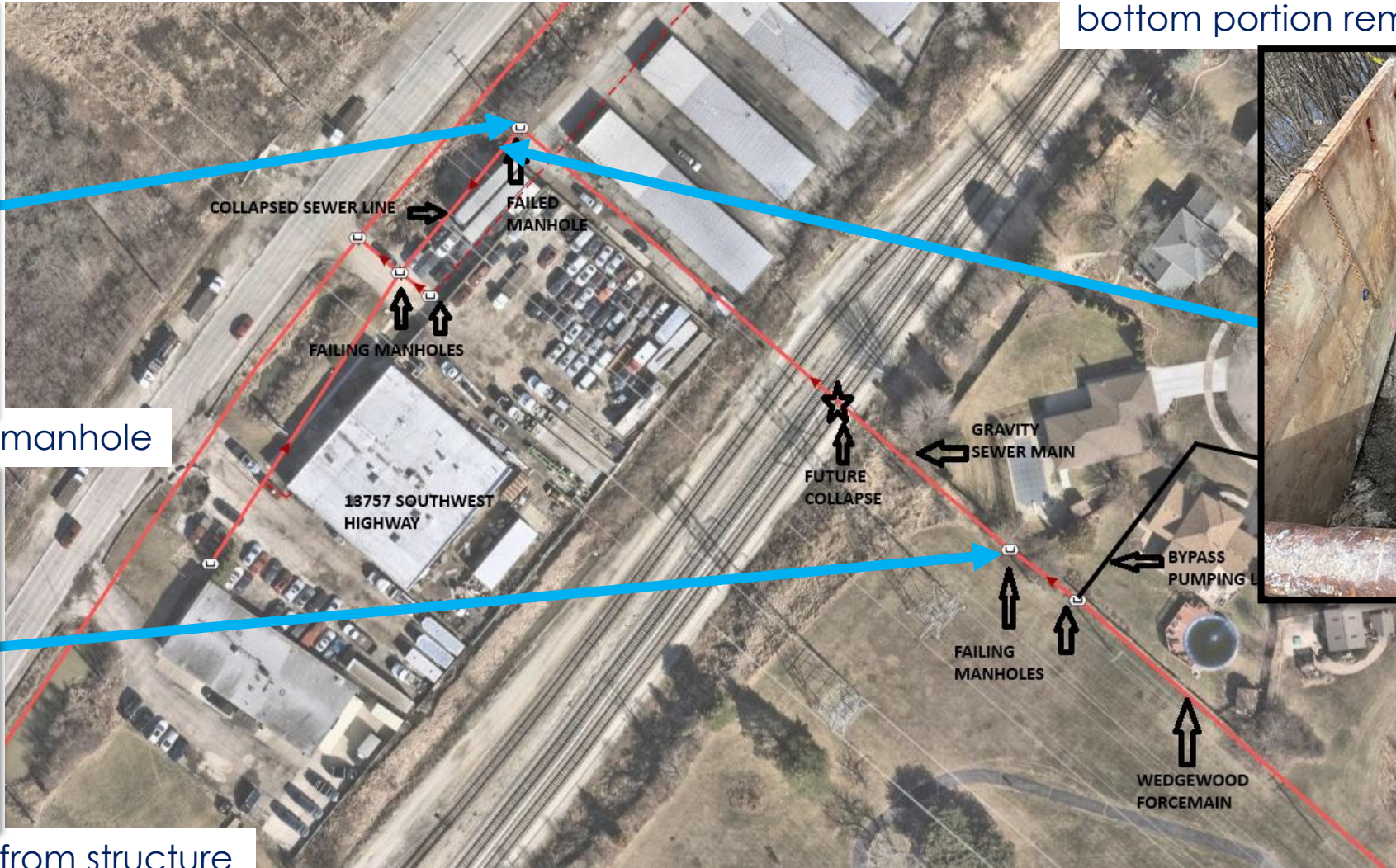
Detail Information on found condition

Manhole conditions, liner condition, pipe repair

Pipe repaired, section was missing. Gases ate away top portion but since water on bottom of pipe, the bottom portion remained.



Concrete missing in manhole



Liner peeling away from structure

Additional Detail Information

Wedgewood Forcemain

Cause?

- The damage is a result from a chemical reaction that occurs between high levels of hydrogen sulfide (H₂S) gas and high moisture content caused manholes to deteriorate rapidly.
- Due to sewer smell, these manholes also have a closed lid so the business don't smell the fumes which also increases the problem the chemical reaction.

How did Utilities keep the sewer still flowing?

- We dropped the Wedgewood station to only 2 pumps, verses 4 pumps and were able to use the emergency 10" feed with the reduced volume due to time of year. Once the pipe was reinstalled, we returned to 20" line until the next step of repairs. We will go back to the 10" feed during repairs.

Why difference between summer and winter on sanitary system and what is back up plan during repair work?

- While we continuously do infiltration and inflow (I&I) projects each year, additional ground water gets into our sanitary pipes that creates more sewer volume in pipes. As a backup plan, we have pumps and piping above ground that would be used to bypass the work area while the repair work is ongoing.