



SEWER ASSESSMENT PROJECT

DIVISION OF WATER POLLUTION CONTROL



PURPOSE

- ▶ Have a better understanding of the condition of the existing sewer system
- ▶ Address critical issues
- ▶ Prioritize CIP projects



INTRODUCTION

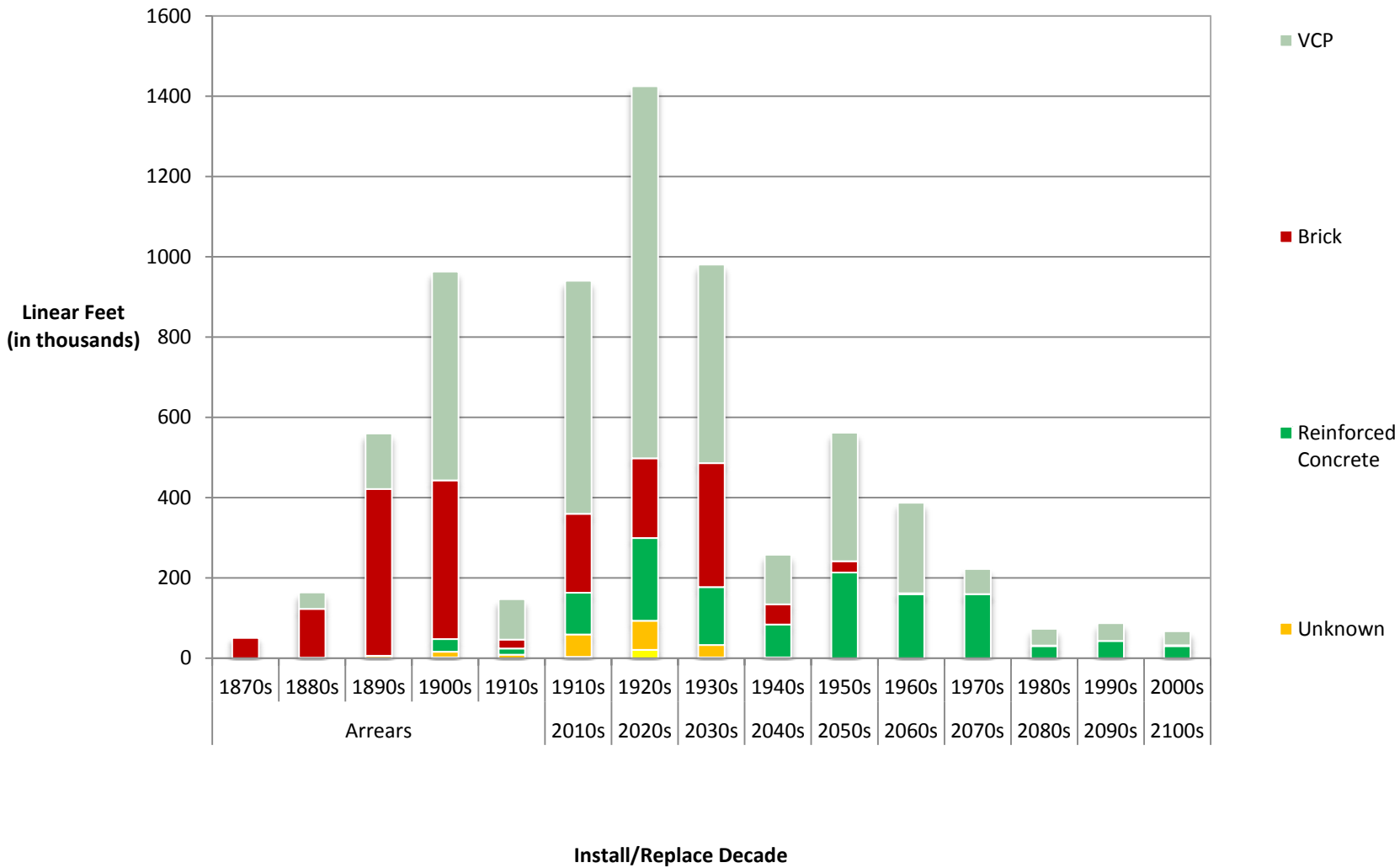
- ▶ WPC's responsibilities include the management of the sanitary & stormwater collection system in the City of Cleveland
 - 1,436 miles of sewers
 - 36,857 manholes
 - 43,500 catch basins
 - 12 pump stations

SEWER ASSESSMENT PROJECT



- ▶ Project consists of providing services necessary to conduct a condition assessment and Sewer System Evaluation survey of the sewers 100 years and older
- ▶ Extends over a 5-year period
- ▶ 27% of the system exceeded its useful life of 100 years
- ▶ It includes 388 miles of sewers and 13,047 manholes

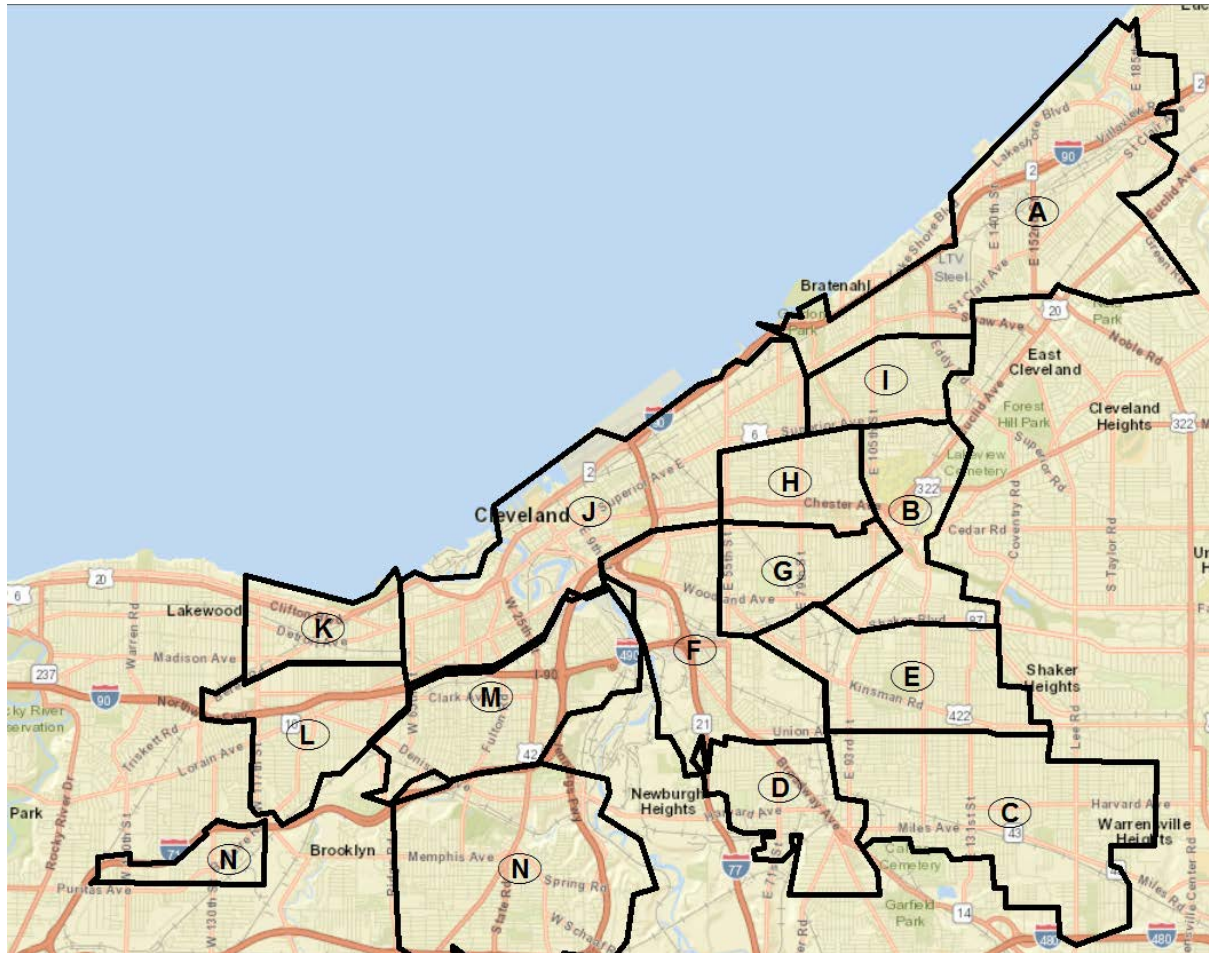
Installed Sewer Pipes (by Decade, Length and Material)



Process

- ▶ Identify 100 years sewers and older
- ▶ Develop sewersheds of the area to be inspected
- ▶ Prioritize areas and establish schedule
- ▶ Collect and store data
- ▶ Provide an engineering recommendation as necessary

YEAR 1





PROJECT ELEMENTS

- ▶ **Infrastructure Inspection**
 - Manhole inspection and pipe screening
 - Condition Assessment

- ▶ **SSES Evaluation**
 - Flow Monitoring
 - Smoke and Dye Testing
 - Public Information Program
 - Hydraulic Model Analysis
 - Rehabilitation Recommendations

- ▶ **Report Submittals & Deliverables**

Manhole and pipe screening

- ▶ Manhole inspection
 - Manhole materials
 - Condition assessment of all components (cover, frame, chimney, wall, bench...)
 - Rating of the structure

- ▶ Pipe screening
 - Pipe materials
 - Condition assessment (structural issues, maintenance issues, seal, I/I...)
 - Rating of the pipe

<u>Manhole Facility ID</u>	<u>Type of O&M Issue</u>	<u>Location of O&M Issue</u>
wpcMANH-1129	<u>Cracked Frame</u>	<u>Hamilton Ave.</u>
wpcMANH-15607	<u>Collapsed Frame with Missing Mortar</u>	<u>Clark St.</u>
wpcMANH-17268	<u>Missing Mortar around Frame</u>	<u>W. 3rd St.</u>
wpcMANH-25502	<u>Cracked Cover</u>	<u>Trowbridge Ave.</u>
wpcMANH-26240	<u>Cracked Cover</u>	<u>Marcella St.</u>
wpcMANH-26726	<u>Corroded Cover</u>	<u>Castle Ave.</u>
wpcMANH-28407	<u>Collapsed Frame with Missing Mortar</u>	<u>Riverbend St.</u>
wpcMANH-30730	<u>Missing Mortar around Frame</u>	<u>W. 3rd St.</u>
wpcMANH-33677	<u>Corroded Cover and Missing Mortar</u>	<u>W. 3rd St.</u>

<u>Pipe Stub ID</u>	<u>Type of O&M Issue</u>	<u>Location of O&M Issue</u>
wpcGRAM-11434	<u>Collapsed Pipe</u>	<u>W. 38th St.</u>
wpcGRAM-11435	<u>Damaged Pipe</u>	<u>W. 5th St.</u>
wpcGRAM-20508	<u>Collapsed Pipe</u>	<u>Auburn Ave.</u>
wpcGRAM-30395	<u>Damaged Pipe with Hole in Road</u>	<u>Detroit Ave.</u>
wpcGRAM-31031	<u>Damaged Pipe</u>	<u>Huron Rd.</u>
wpcGRAM-31766	<u>Collapsed Pipe</u>	<u>Scranton Ave.</u>
wpcGRAM-33704	<u>Collapsed Pipe</u>	<u>E. 57th St.</u>
wpcGRAM-3723	<u>Damaged Pipe</u>	<u>Eglindale Ave.</u>
wpcGRAM-409	<u>Collapsed Pipe</u>	<u>Fulton Ct.</u>
wpcGRAM-6369	<u>Collapsed Pipe</u>	<u>W. 32nd St.</u>
wpcGRAM-7690	<u>Damaged Pipe</u>	<u>E. 38th St.</u>

Pipe and Manhole Inspections Summary

▶ TOTALS

- **Manhole Inspections: 2901**
(23% of the manholes associated with the 100 year old sewers)
- **Pipe Screening: 110 miles**
(29% of the 100 year old sewers)

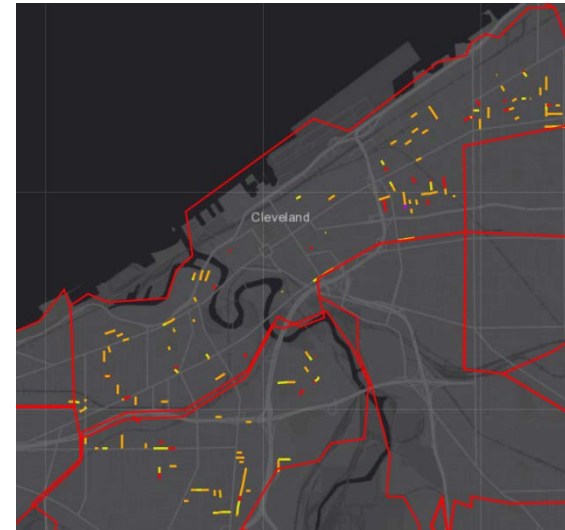
- **Sewershed J**
 - Manhole Inspections: 2027
 - Pipe Screening: 75 miles
- **Sewershed M**
 - 70% Complete in year 1
 - Manhole Inspections: 874
 - Pipe Screening: 35 miles

CCTV & Cleaning Summary

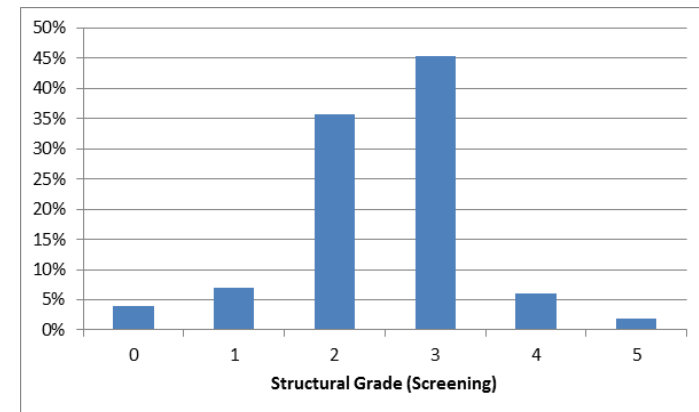
- ▶ **Sewer Cleaning Summary:**
 - A total of 10,112 Linear Feet of sewer were cleaned during Year 1 field work.
- ▶ **CCTV Inspections Summary:**
 - A total of 18,890 Linear Feet of sewers were inspected

Findings

- 80% of the pipes were scored as structural grades 2 or 3 (good or fair condition)
- 8% were scored as structural grade 4 or 5 (poor condition/failure likely or within 5 years),



Distribution of CCTV work



WPC SEWER ASSESSMENT
25/10/2017 01:24 PM



QUICKVIEW
BY ENVIROSIGHT
17/08/2017 12:43 PM



Flow Monitoring Summary



- 6 flow meters installed
- 1 rain gauge
- Surcharging observed at flow meter 2 and flow meter 3 in the vicinity of south of Clark and Scranton Road
- Monitoring and analysis is ongoing to capture additional storms

Year 1 – Recommendations

- **Manholes monitor, clean, and general spot repairs:**

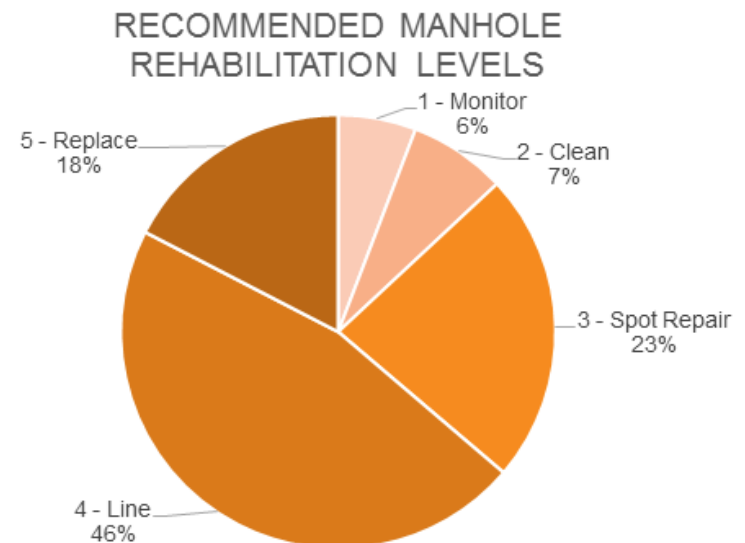
A total of 25 manholes were identified to need future monitoring to evaluate for further deterioration, cleaning, or localized.

- **Manhole lining and sealing:**

A total of 32 Manholes were identified for lining and sealing the structure's inner components to address noted structural/material deficiencies and to help limit inflow and infiltration.

- **Manhole replacement:**

Includes 12 manholes that need excavation, demolition, installation, back fill, and site restoration to provide a complete replacement.



Year 1 – Recommendations (Cont.)

- **Sewers monitor, clean, and general spot repairs:**

A total of 48 sewer segments were identified to need future monitoring to evaluate for further deterioration, cleaning or localized repairs.

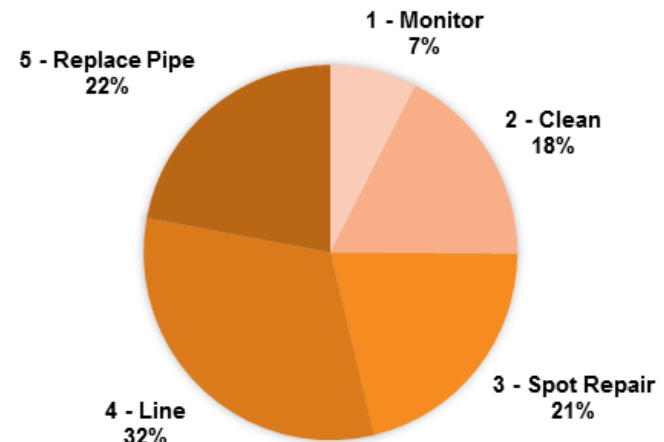
- **Sewer lining:**

Install lining membrane on the inside of the sewer and reconnecting the laterals to restore the sewers reliability for 17 sewer sections.

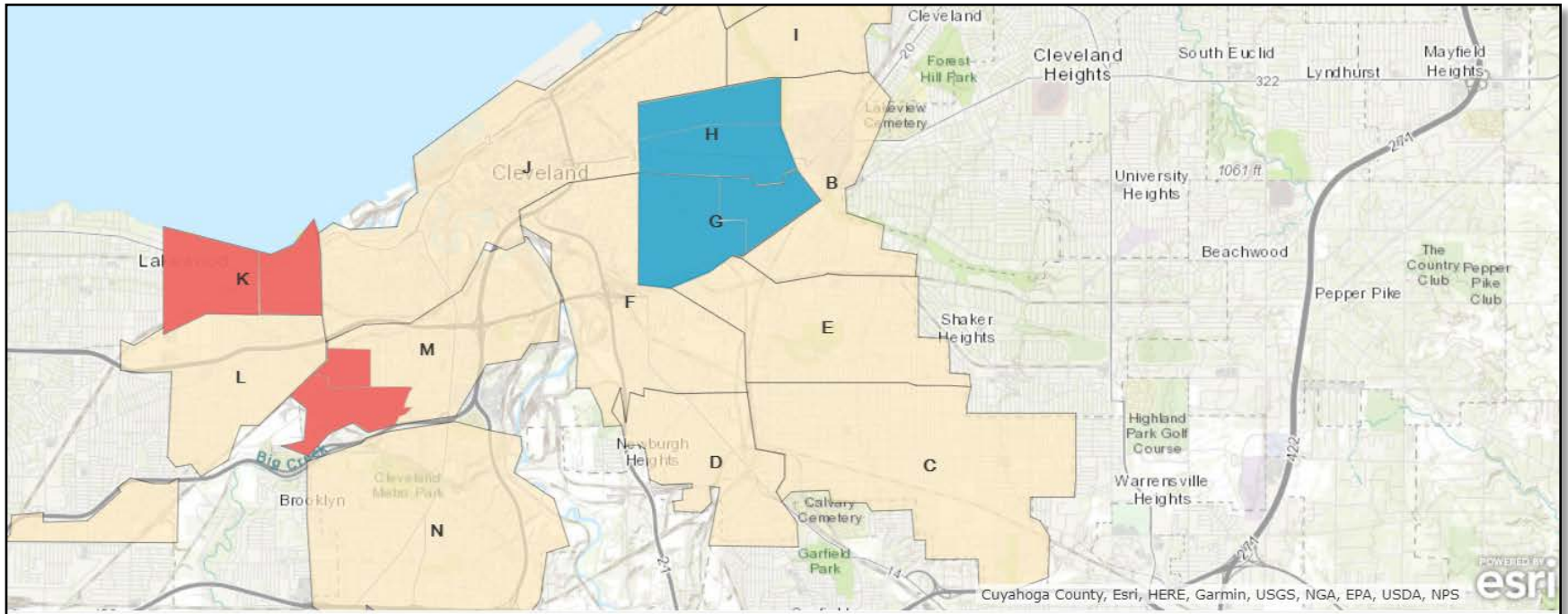
- **Sewers replacement:**

Replace 10 sewers that need excavation, demolition, installation, back fill, and site restoration to provide a complete replacement.

RECOMMENDED SEWER REHABILITATION LEVELS



YEAR 2 – TARGET MANHOLE & PIPE SCREENING



- Field Activities
 - Inspections – M, G, H, K
 - CCTV Inspection and cleaning
 - Flow Monitoring
 - Install flow monitors in:
areas North of Chester Ave
 - West of Scranton Road

YEAR 2 – TARGET MANHOLE & PIPE SCREENING

Sewershed	Manholes for inspection	Sewers to be screened	CCTV Inspection
M	372	633	15,000
H	629	588	15,000
G	680	675	15,000
K	605	630	15,000

QUESTIONS

