WISCONSIN WASTEWATER OPERATORS' ASSOCIATION

Sewer Lateral Rehab Solves (SSO) Problems
A lesson in Public Relations

October 10, 2019

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Robinson ENGINEERING

Presentation Overview

Part 1 – Steve Godfrey

- ❑ **A Brief History of the Clean Water Act**
  - **As it relates to Private Property Sources**
- ❑ **Migration of I/I to private property sources**
- ❑ **Changing attitudes towards private property I/I**

Part 2 – Tom Nagle

- ❑ **Example of a Successful Lateral Rehab Project**
  - **Need for project**
  - **Public attitudes and involvement**
  - **Getting public support – Community buy-in**
- ❑ **Implementation and results**

Public Vs. Private I/I Sources

Public Sources

- Manholes and sewers
- Sewer lines
- Storm sewer connections
- Drain tiles/area drainage

50% - 75% of total I/I

Private Property Sources

- Connected roof drains
- Illegal sump connections
- Connected foundation drains
- Service laterals

25% - 50% of total I/I

The Clean Water Act

The driving force for the I/I removal industry

A lesson in history

Post WWII – Polluting America's Waters

Fast forward 20 years – 1960's
Pollution is still a major problem!

- **Continued environmental degradation**
  - **Polluted lakes and streams – fish kills**
  - **Endangered plants and animals**
  - **Beach closings**

- **Growing health concerns**
  - **Gastro-intestinal illnesses**
  - **Reproductive problems**
  - **Neurological disorders**

Pollution Found To Cause Mutations

The Turbulent 60's – Wake-up Call

The Social Change Movements

- Civil Rights marches and riots
- Anti-war protests
- Women's rights movements
- **The environmental movement**

What was the "smoking gun" that lead to action?

Cleveland Ohio – 1968
Fire Breaks Out

On The Cuyahoga River!

Cuyahoga River Fire Receives National Attention

- **Headline News**
- **Time Magazine Articles**
- **Environmental protests**
- **Pressure on government to take action**

Anarchy In The Streets!

The Federal Government Takes Action

- **December 2, 1970 – US EPA formed by executive order of Richard Nixon**
- **October 18, 1972 – Congress passes "The Water Pollution Control Act Amendments of 1972" – by vote of 247 to 43**
- **Goal of the WPCA Amendments:**
  - **<u>Restore</u> America's rivers, lakes and streams as fishable, swimmable waters.**

How Does Congress Achieve the Goal?

- **Establish water quality standards**
- **Require all dischargers to have permits**
- **Require WWTPs to meet effluent limits**
- **Set strict deadlines**
- **EPA will enforce permit requirements:**
  - **Fines – up to $20,000 per day**
  - **Imprisonment – up to 6 years**
- **Taxpayer Cost of WPCA > $1 trillion!**

Who Pays for I/I Removal programs?

- **The good news:**
  Public sector cost for I/I is 75% grant eligible

- **The bad news:**
  Private sector cost is <u>not grant eligible!</u>

How did that play out?

How Did Communities Address Private property sources?

- **Sewer rehab projects focused on public sources**
  - Manhole repairs and grouting; cover replacements
  - Sewer repairs, grouting, slip lining, replacements, etc.
  - Paid by the utility through rates
- **Sump pumps and roof drains were often addressed**
  - Easy to prove
  - Illegal by ordinance or state law
  - Relatively low cost to homeowner
- **Private lateral and foundation defects ignored**
  - Inspections require homeowner consent
  - Costly repairs ($2,500 to $10,000+)
  - Unhappy and uncooperative citizens (voters)

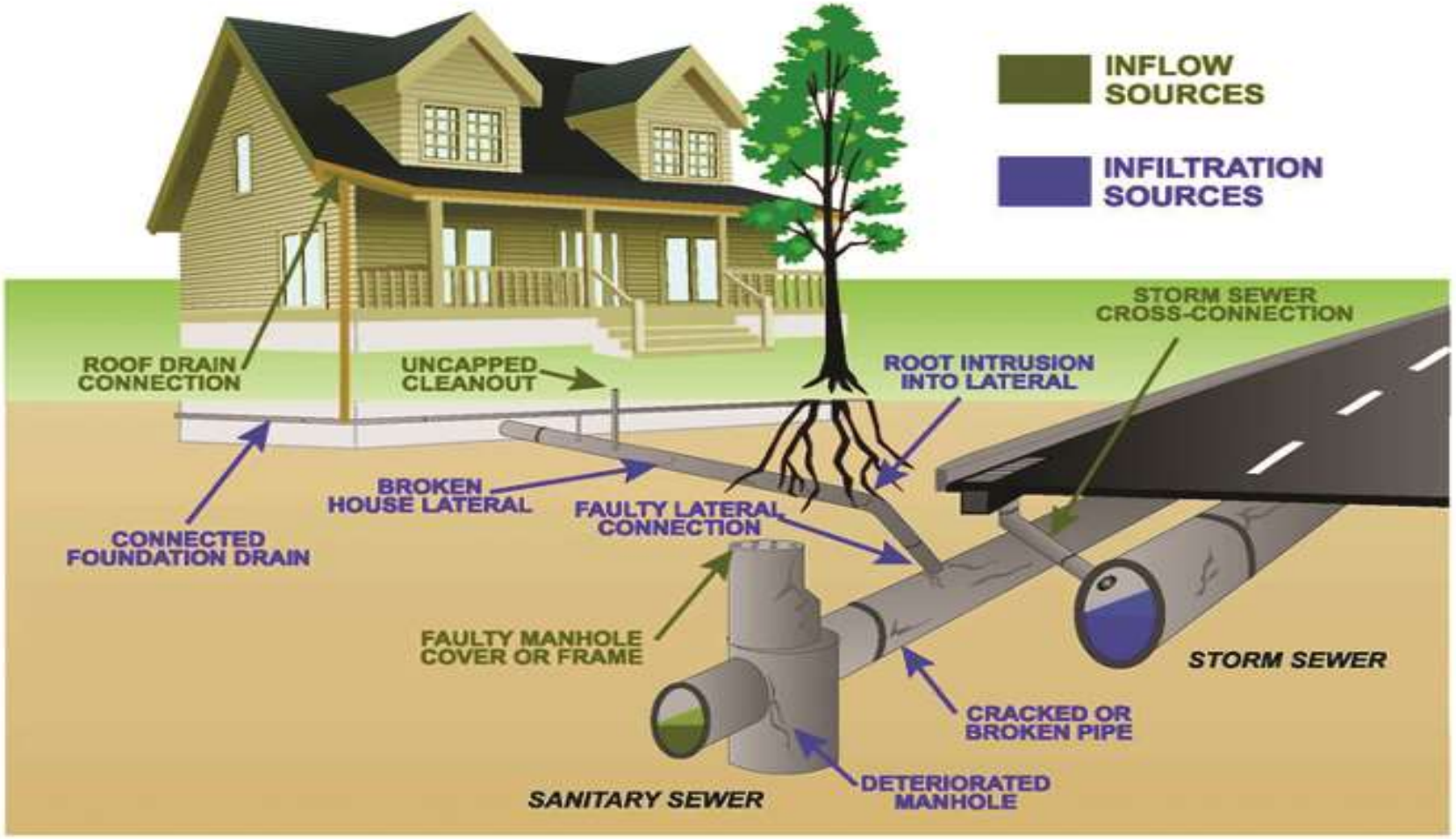
How Effective Were Sewer Rehab Projects?

- **SSES/Rehab found many problems and repaired many I/I sources**
- **Peak flow were “shaved” but I/I problems often persisted**
- **Continue with more SSES/Rehab of sewers and manholes**

We were just chasing I/I around!

I/I Sources and Migration

Stop lower leaks > Groundwater rises > Water migrates to other defects



We know we have an I/I problem from private laterals …. but let's not talk about it!

What Changed?

- **Technology?**
  - **Advances in televising – launch camera from mainline**
  - **Cured in place lining from mainline – trenchless**
  - **More efficient and cost-effective repairs**

Definitely!

Beginning in the 2000's More Emphasis on Fixing Laterals

What Changed?

- **Utility and City official attitudes?**

  - **High I/I after sewer and manhole rehabs**
  - **Private source reduction needed to prevent SSOs**
  - **Increasing pressure from regulatory agencies**

Reluctantly decide to proceed with projects

Beginning in the 2000's More Emphasis on Fixing Laterals

What Changed?

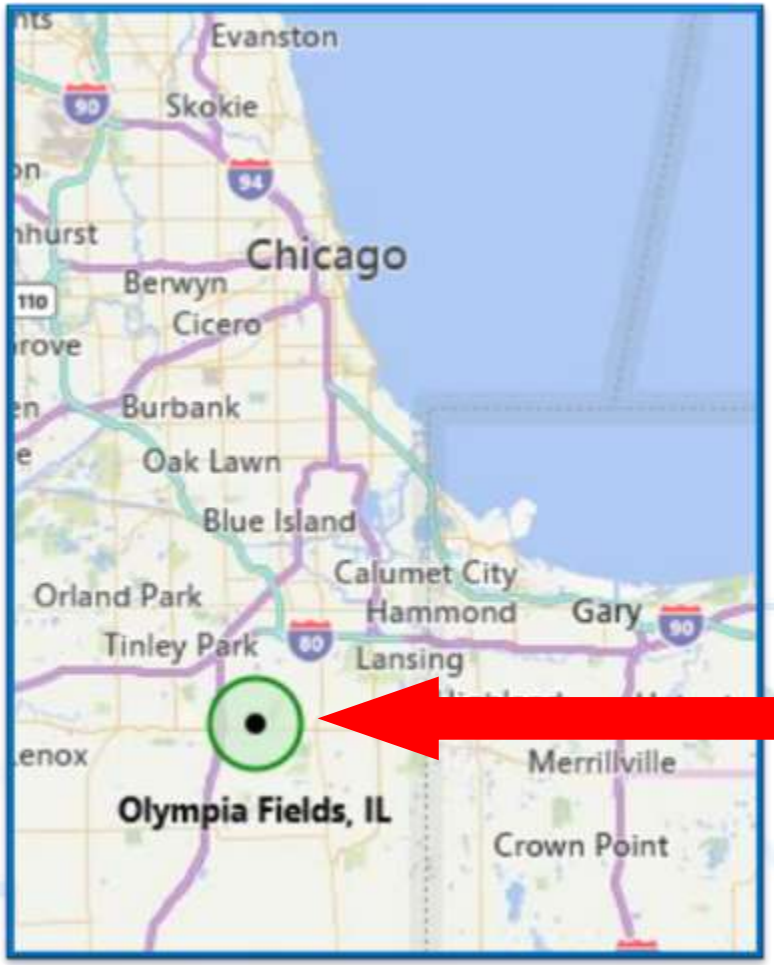
- **Homeowners attitudes?**
  - **My civic duty?**
  - **Anything to help the City?**
  - **Willing to pay to "help the cause"?**

Not so much!

Presentation Overview – Part 2

- **Big Picture Discussion on the Problem**
  - **Define the Basin**
  - **Scale and Scope of the Problem**
- **Sanitary Sewer Lift Station Improvements**
- **Public Sewer Improvements**
- **Getting Public Buy-in to Perform Private Sewer Improvements**
- **Construction of Public and Private Lateral Lining**
- **End Results**

Olympia Fields, Illinois



Olympia Fields, IL

- Suburb of Chicago
- Population of +/- 5,000
- Located within the MWRD Territory

Project Area – Graymoor Subdivision

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- **141 - Homes**
- **Built in the 60's**
- **Considered Mansions**
  - **Very Large Lots**
  - **Very Large Setbacks**
- **15,200' – Public Owned Sewers**
- **16,800' – Private Owned Service Lines**

Butterfield Creek

History

- System was having chronic Sanitary Sewer Overflows (SSO's)

- Occasional Basement Backup (BB)

Graymoor Sewer Basin

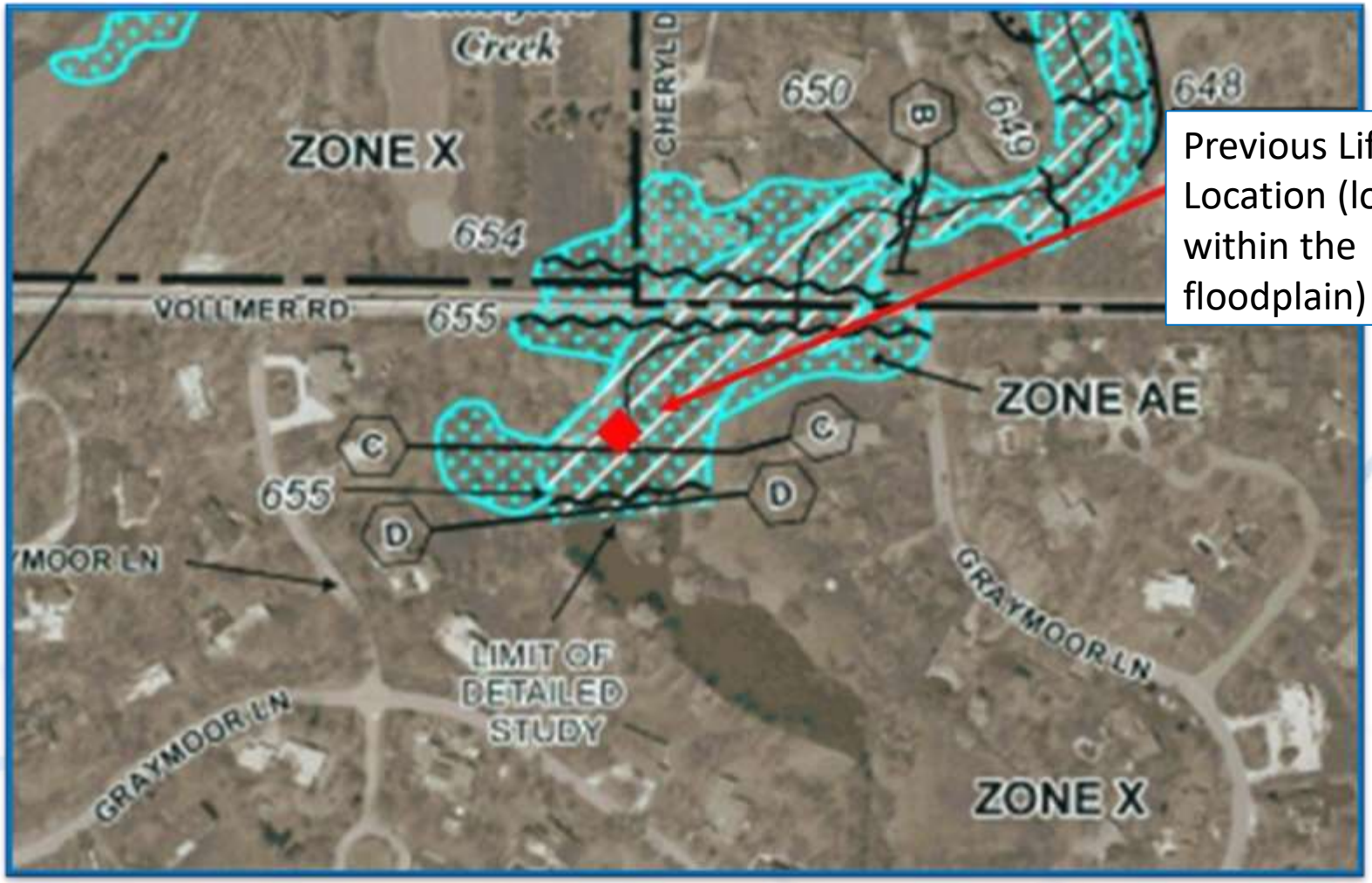
Graymoor Lift Station

Deficient Pumps & Controls

Aging Equipment and Structural Issues

Graymoor Lift Station

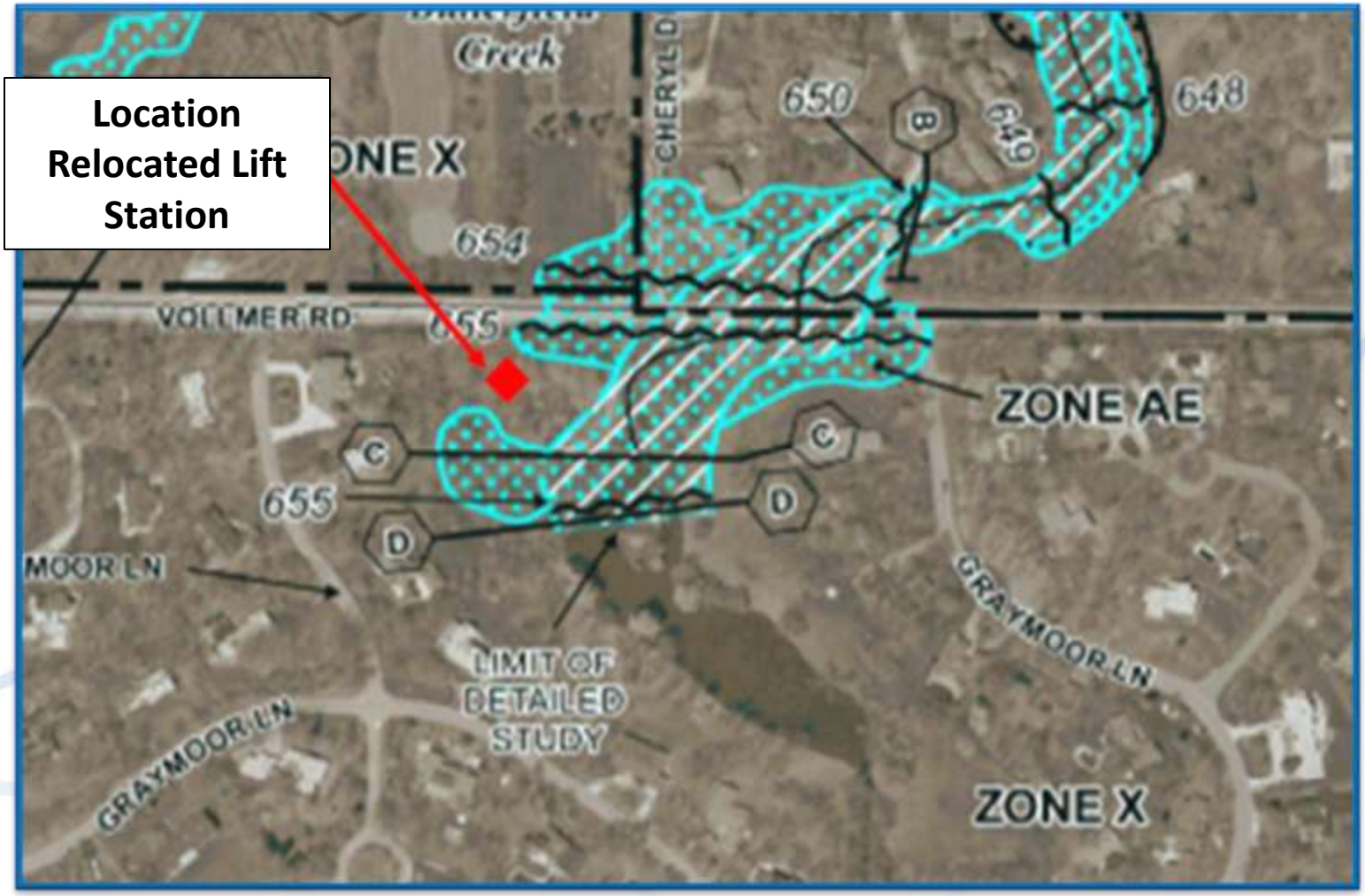
FEMA Floodplain Map



Previous Lift Station Location (located within the floodplain)

History

Graymoor Lift Station



Graymoor Lift Station

Graymoor Lift Station

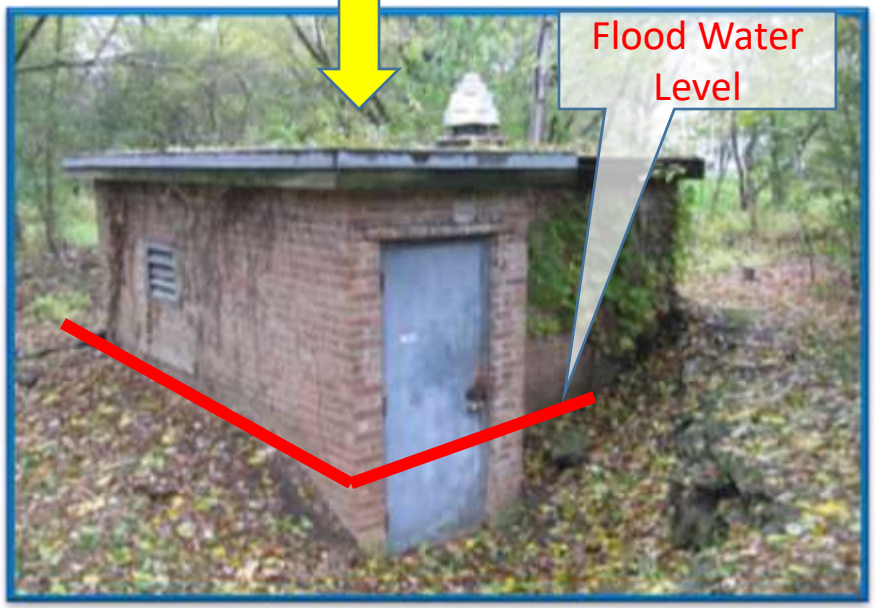
Prefabricate Control Building

Graymoor Lift Station

Graymoor Lift Station

Graymoor Lift Station

Went From This To This



What could possibly go wrong?

MWRD mandated the lift station be downsized by 50% due to the population being served

- 1960's Pre-upgrade Capacity = **800,000 gallons a day**
- 2012 Post-upgrade Capacity Based Upon Population Equivalency = **380,000 gallons a day**

Sewer Investigations and Sewer Rehabilitation Projects

- **Investigations**
  - **Smoke testing**



  - **Manhole Inspections**


  - **House to House (sump pump disconnects)**

Sewer Investigations and Sewer Rehabilitation Projects

Manhole Repairs

Point Repairs

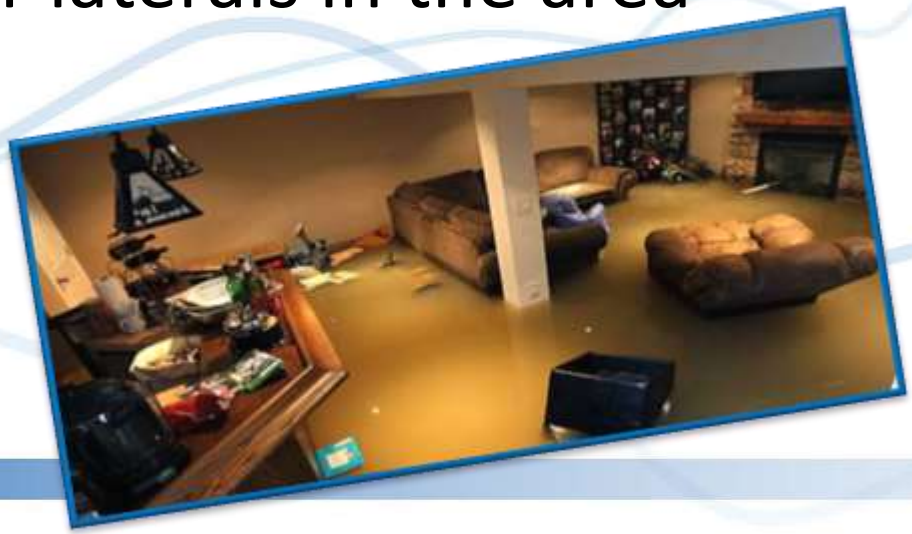
Sewer Lining

Problem still Occurring

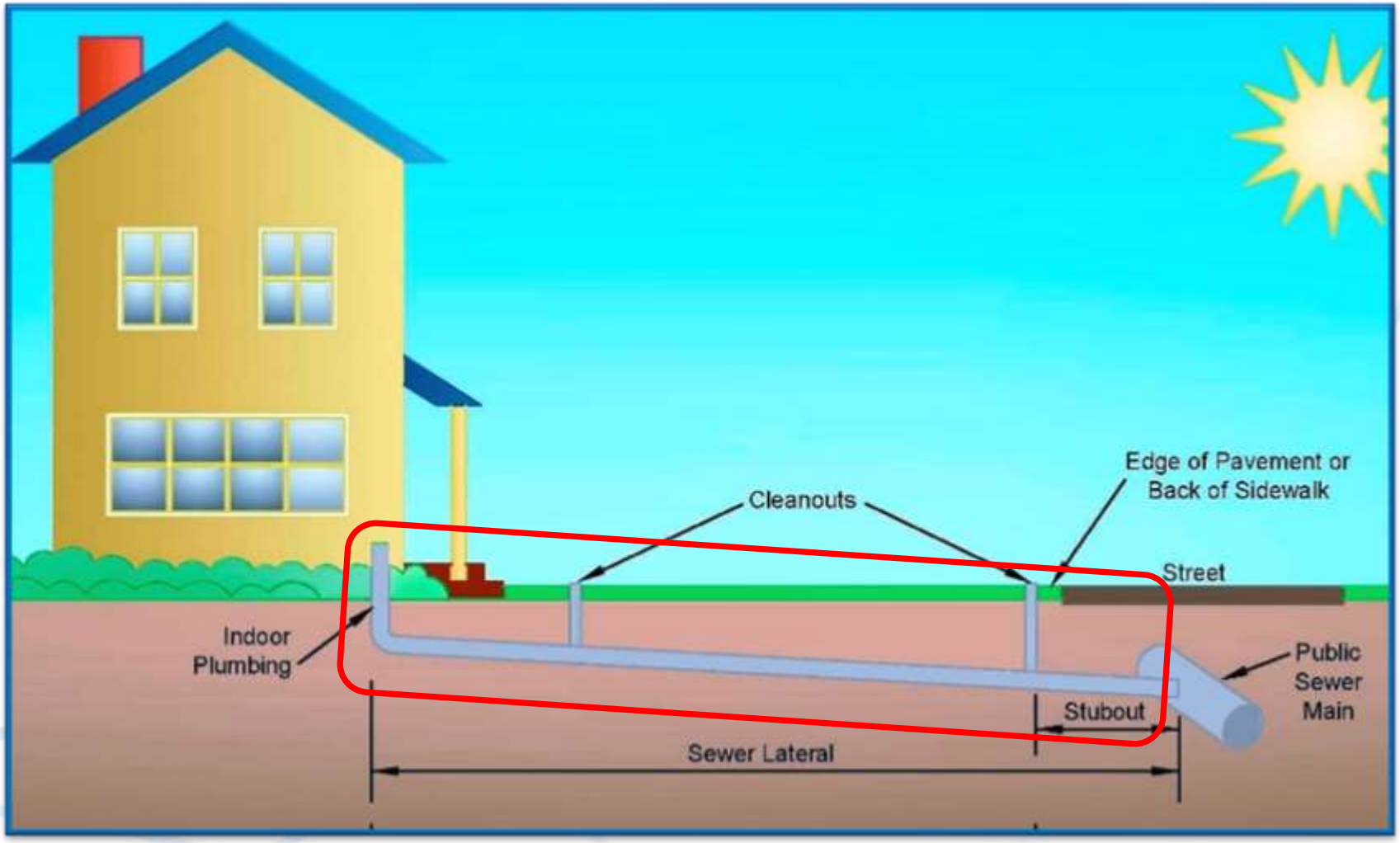
Despite all the work done to rehabilitate the publicly owned sanitary sewer the SSO's and BB's were still occurring

Next logical step...

- Investigate the privately owned sewer laterals in the area



Private Service Line



Lateral Service Lines

- Lateral Line Sewer Lengths (from main line to home)
  16,888’
- Average Lateral length
  115’
- Minimum Lateral Length
  39’
- Maximum Lateral Length
  224’

We needed residential buy-in for the project to be a success

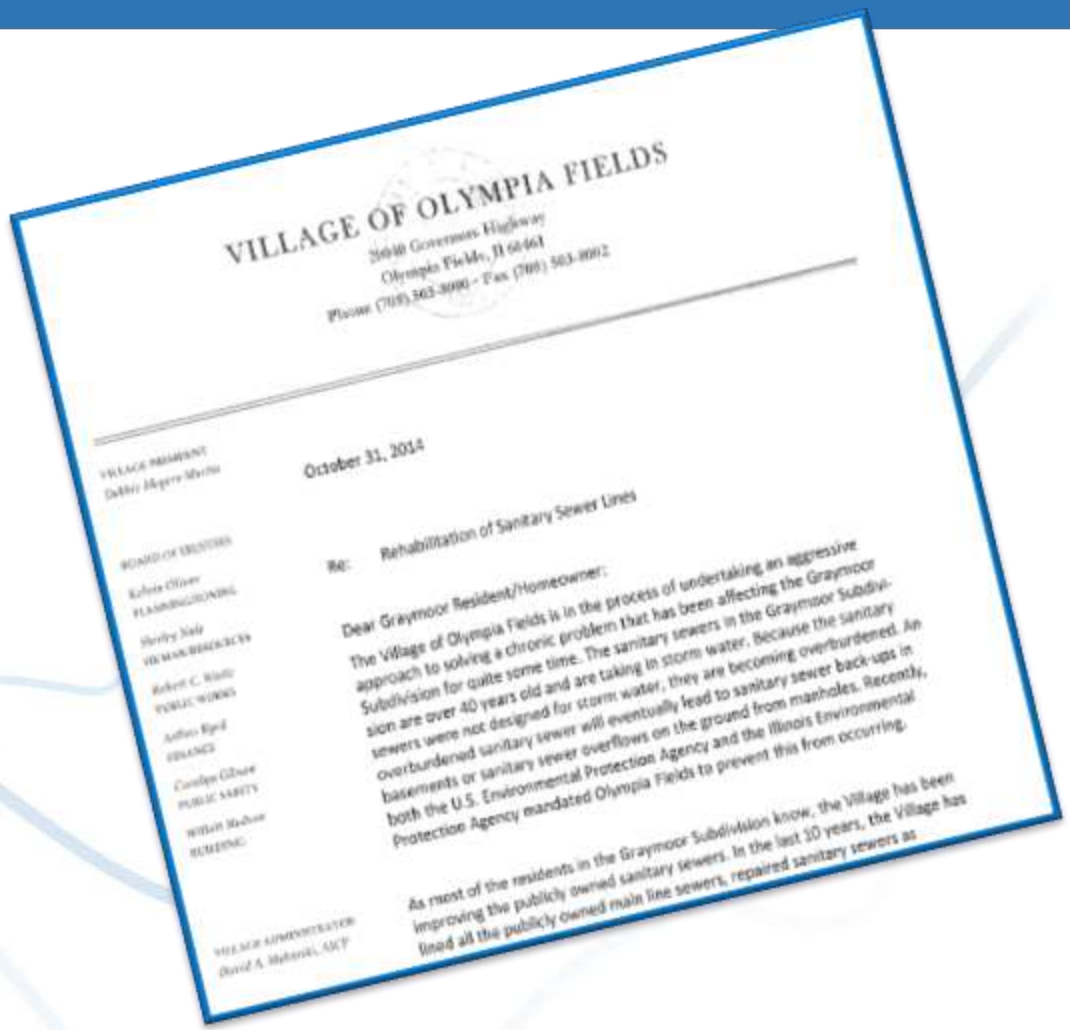
Stakeholder Buy-in
Public Meetings

We Needed Cooperation From the Majority of the 141 Individual Homeowners

Public Education Campaign

Public Information

- Public Notification Letter
- Public Meetings
- Web Page
- Flyers / Door Hangers
- Press Releases
- Face-to-Face Communications with the Residence
- Home Owners Association Involvement



VILLAGE OF OLYMPIA FIELDS

October 31, 2014

Re: Rehabilitation of Sanitary Sewer Lines

Dear Graymoor Resident/Homeowner:

The Village of Olympia Fields is in the process of undertaking an aggressive approach to solving a chronic problem that has been affecting the Graymoor Subdivision for quite some time. The sanitary sewers in the Graymoor Subdivision are over 40 years old and are taking in storm water. Because the sanitary sewers were not designed for storm water, they are becoming overburdened. An overburdened sanitary sewer will eventually lead to sanitary sewer back-ups in basements or sanitary sewer overflows on the ground from manholes. Recently, both the U.S. Environmental Protection Agency and the Illinois Environmental Protection Agency mandated Olympia Fields to prevent this from occurring.

As most of the residents in the Graymoor Subdivision know, the Village has been improving the publicly owned sanitary sewers. In the last 10 years, the Village has lined all the publicly owned main line sewers, repaired sanitary sewers as

Mayor and Board Held Several Public Town Hall Meetings

Presentations at Village Board Meetings

Offer to the Residents

Offer to the resident

- The Village will rehabilitate their service line
- A value of $10K - $15 per home (dependent on length)
- We would add an additional 50 years of useful life to their service line
- Reduce the chances of basement backups due to root intrusion
- Make their home more valuable!

We were going to deliver this project to them on silver platter

What could possibly go wrong?

What could possibly go wrong?

Anarchy in the Streets!!!!

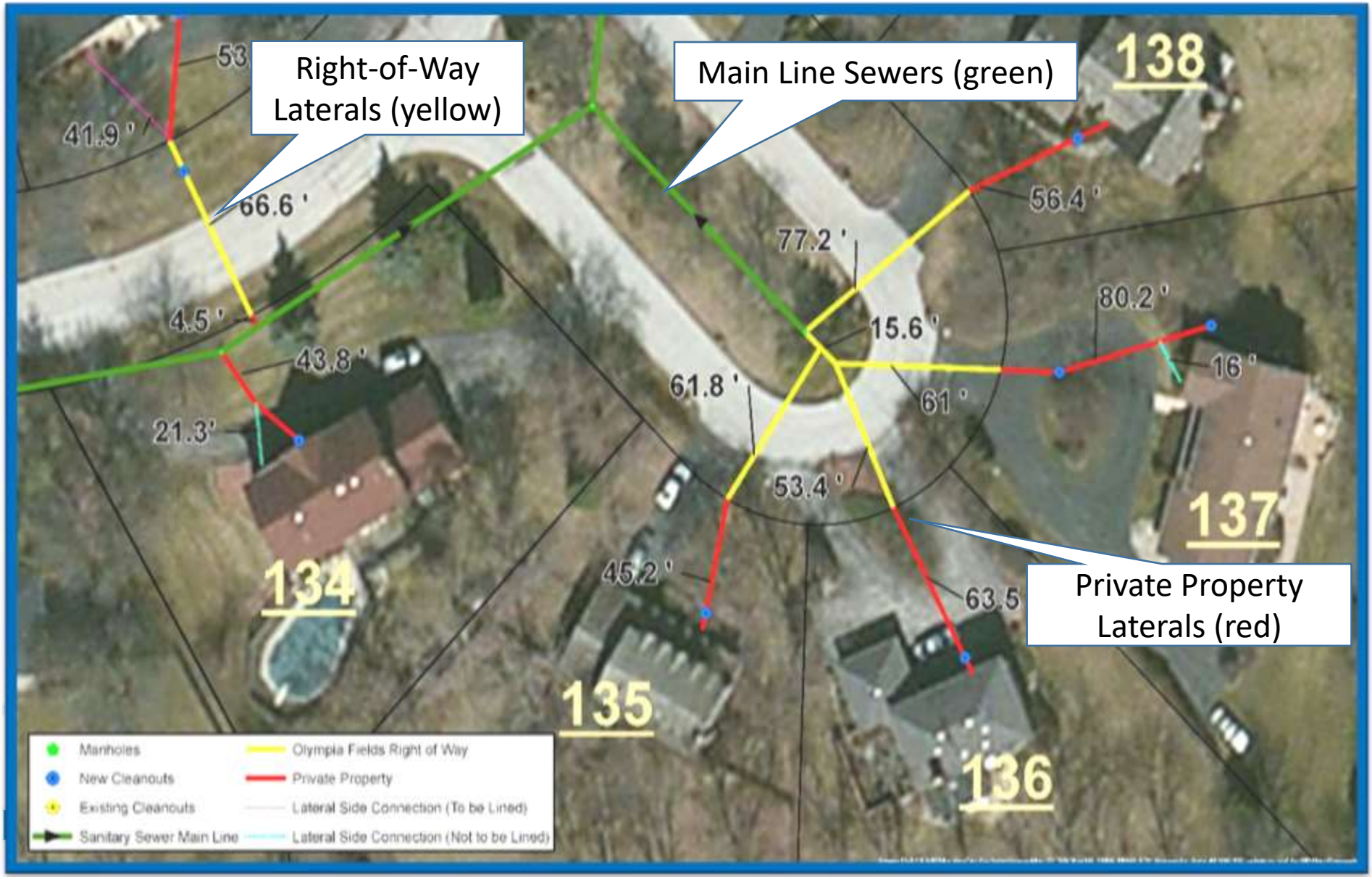
These are the reasons the residents gave us for not signing up

- "It's a ***government plot*** to find other violations on my property"
- "It's not needed, my service line is working fine now"
- "You can't enter my property for any reason"
- "I'm against it just because the Mayor is for it"

Ultimately - 95% Community Involvement

Total Properties	**141**
Allowed Access	**134 (95%)**
Denied Access	**7 (5%)**

Public and Private Partnership

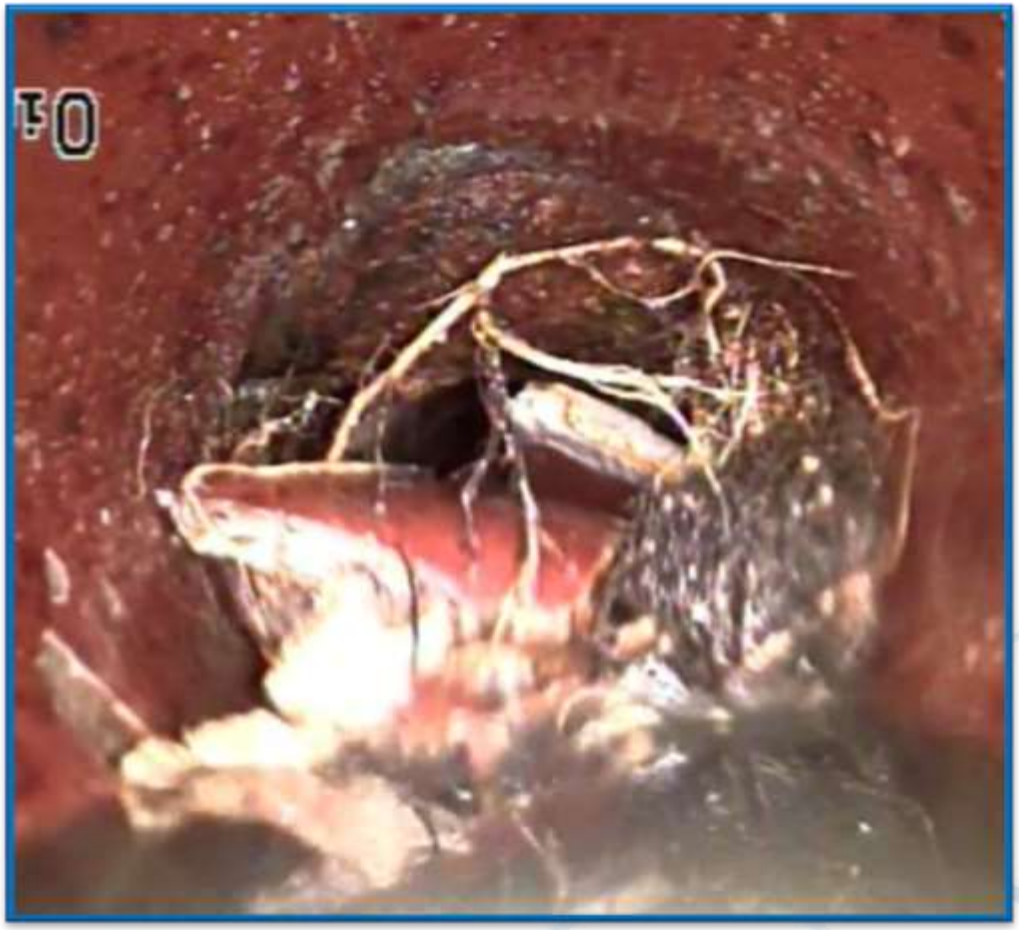


Pre-Televise, Cleaning and GPS Locates for GIS Mapping

Lateral Locations

Lateral Locations

Lateral Line Defects



Pipe Collapse

Longitudinal Cracking

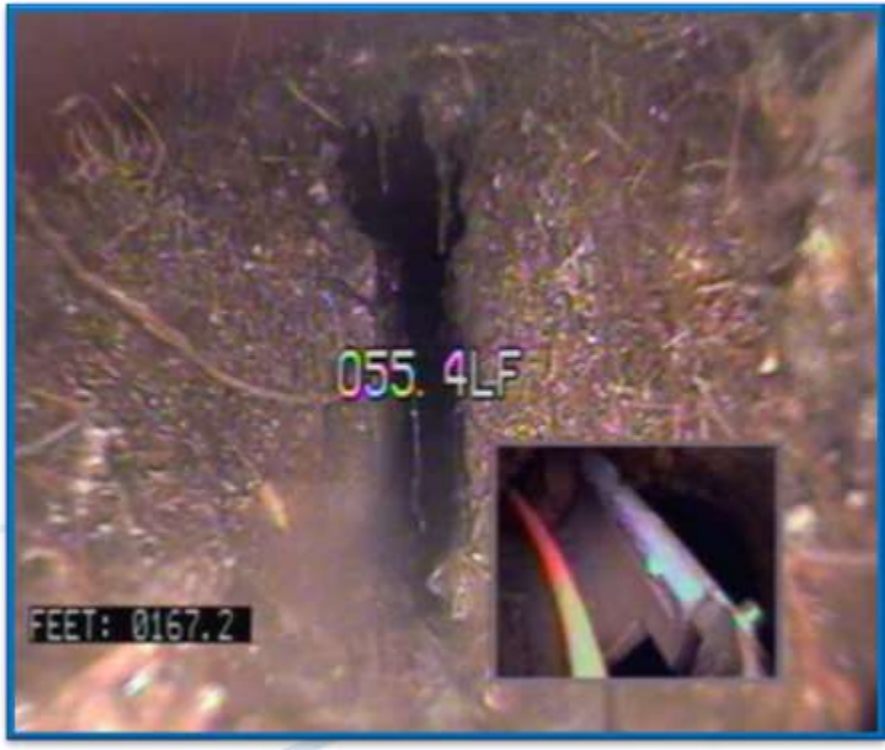
Lateral Line Defects

Hole in pipe near manhole connection

Void visible on a hinged section of a lateral

Lateral Line Defects

Tap Root in the Lateral Lines

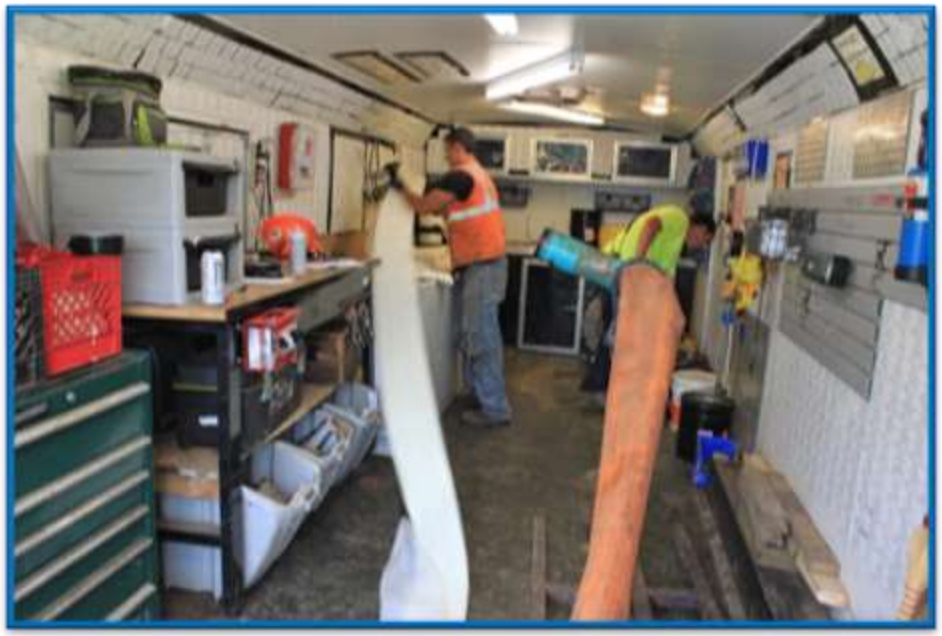


Root ball Intrusion (½" opening)

Cleanout Installation

Service Line Point Repairs

Preparing the Liner



Preparing the Lateral Liner for Installation

Lateral Lining

Lateral Launcher

Village of Olympia Fields
Pre and Post Late
RDII Flow An

Thank You

" This successful project is further evidence of the Village's strong commitment to the reduction of inflow and infiltration of the Village's sanitary sewer."
- *President Debbie Meyers-Martin*
Village of Olympia Fields

" Olympia Fields should be commended for being so proactive."
- *President Mariyana Spyropoulos*
Metropolitan Water Reclamation District

" With our partner, the Village of Olympia Fields, we have been able to complete this project that will help protect the health and safety of area residents."
- *Colonel Christopher Drew*
Commander, U.S. Army Corps of Engineers, Chicago District

Village of Olympia Fields
Sanitary Sewer Lateral Lining Project

OLYMPIA FIELDS 1927

ROBIN KELLY

US Army Corps of Engineers

Robinson ENGINEERING

PPI PERFORMANCE PIPELINING, INC.

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