



# Metropolitan Water Reclamation District of Greater Chicago

## **Infiltration / Inflow Control Program Training Workshop**

February 26, 2019

Private Sector Program  
&  
Long Term Operation and Maintenance Program

*Presented by*

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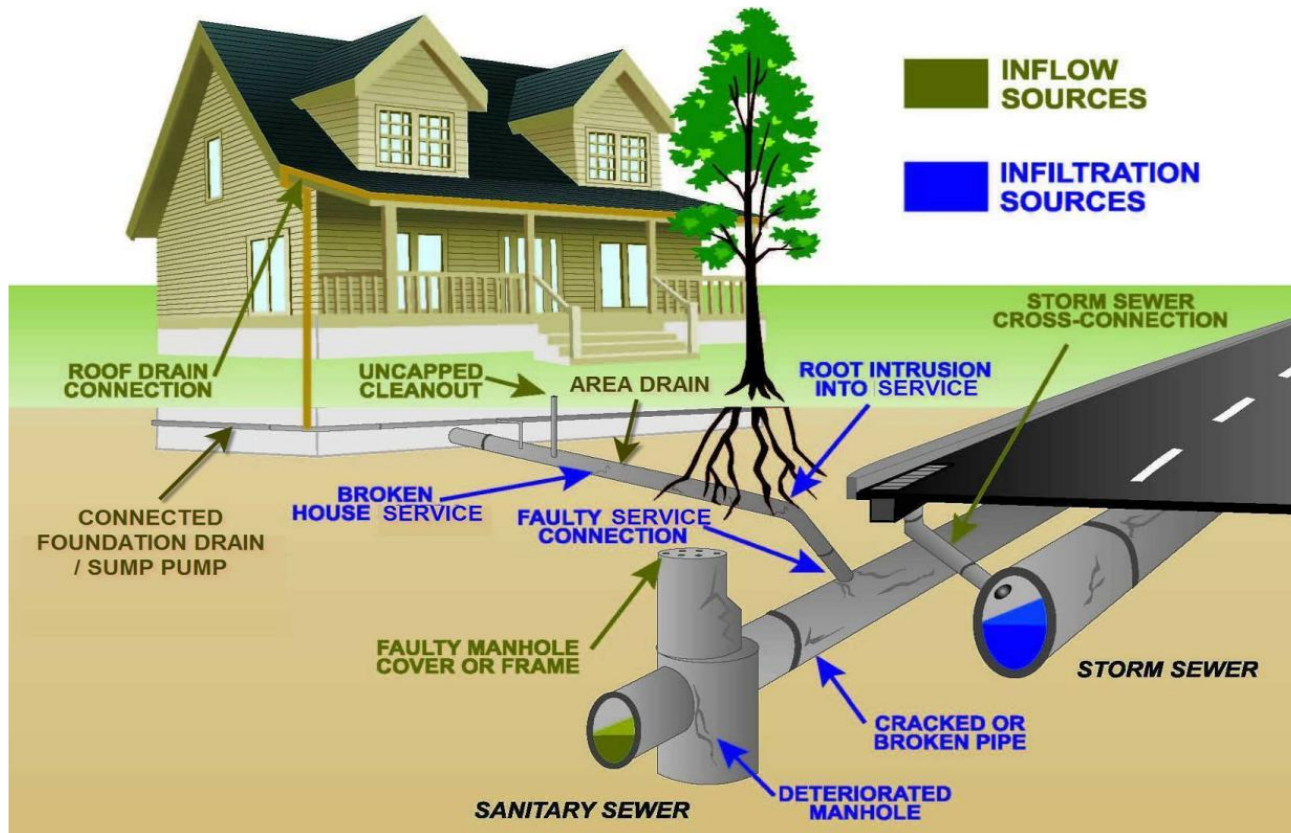
Michael Zigulich, P.E.



# Infiltration and Inflow Basics

**Infiltration**: Groundwater entering the system through defects

**Inflow**: Stormwater entering the system by direct connections



# Consequences of Ineffective I/I Control





# History

- 1889 MWRD established by Illinois General Assembly
- 1920 MWRD begins issuing permits to local sewer systems to connect to interceptors
- 1972 Under Federal Water Pollution Act, the District establishes a 150 gpcpd limit
- 1985 MWRD establishes ICAP Cost-effective I/I source removal



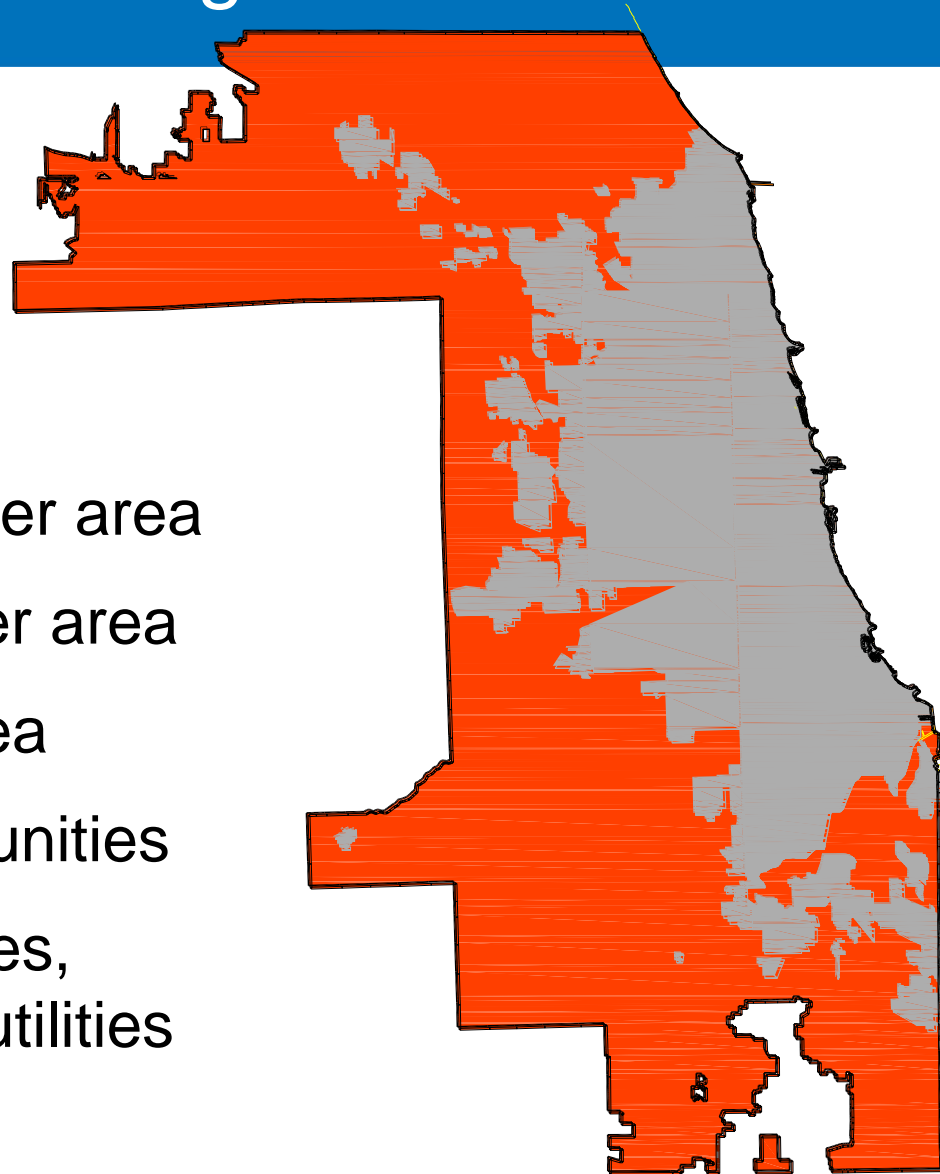
# History

- |              |  |
|--------------|--|
| 2009         | IEPA NPDES permits require additional I/I source removal/correction          |
| 2012-2014    | Advisory Technical Panel develops new I/I Control Program (IICP)             |
| July 2014    | MWRD adopts IICP in WMO Article 8  |
| 2015         | Program Compliance Training  |
| 2015 - Today | Satellite Entities Working on Short Term Requirements to Comply with Program |



# MWRD Background

- 7 wastewater plants
- 554 Miles of Interceptors
- 508.5 sq. mi. separate sewer area
- 375 sq. mi. combined sewer area
- TARP serves combined area
- 114 separate sewer communities
- Sewer systems include cities, villages, sanitary districts, utilities





# Infiltration / Inflow Control Program

## Applicability

- Local sewer system owners in the separate sewer area

## Goals

- Reduce SSOs and Basement Backups
- Maintain system capacity
- Prevent system failures
- Minimize clearwater entering the system for treatment

Two phases of the Infiltration / Inflow Control Program (IICP):

1. Short Term Requirements (STR) - Complete by 2019
2. Long Term Operation and Maintenance (LTOMP)



# IICP Short Term Requirements

## Short Term Requirements (STR)

- Define High Priority Area / High Risk Sewers
  - SSOs / Basement Backups, surcharging sub-basins, etc.
  - 10% minimum
- Condition Assessment of High Risk Sewers (NASSCO)
  - CCTV, smoke testing, dye water testing
  - Manhole inspections
  - Property inspections
- High Priority Deficiencies
  - Address low-cost, high-flow I/I sources and defects likely to cause system failure
  - 1-year deficiencies: cleanouts, downspouts, x-connections
  - 3-year deficiencies: NASSCO 4 and 5 sewer/manholes





# IICP Short Term Requirements

## Short Term Requirements (STR) (continued)

- Sewer System Map / System Description and Inventory
  - Submit system map (sewers, structures, pump stations, District connections)
  - Submit system attributes (service area, sewer length, etc.)
- Private Sector Program (PSP)
  - Develop program for the identification/correction of private-sector I/I sources
- Long Term Operation & Maintenance Program (LTOMP)
  - Develop program for the continuous inspection, maintenance, rehabilitation, and correction of I/I sources of the public-sector system



# Long Term Operation & Maintenance Program

## Long Term Operation & Maintenance Program Components

- System Management
- System Map
- Inspection
- Maintenance
- Rehabilitation
- Capacity Evaluation
- Material and Equipment
- Capital Improvement Plan
- Private Sector Program
- Funding



# Long Term Operation & Maintenance Program

## System Management

- Staff safety and training
- Customer service
  - Procedures to respond to reports of SSOs and basement backups, and other customer inquiries
  - Brochures, newsletters, mailings
- Management information system
  - Maintain records of all inspections, maintenance, and rehabilitation (CMMS, hardcopy, etc.)
  - Available to the District upon request
- SSO/ basement backup procedures
  - Investigation, notification, and corrective work
  - SSO / Basement Backup Internal Summary (Appendix D)



# Long Term Operation & Maintenance Program

## System Management (continued)

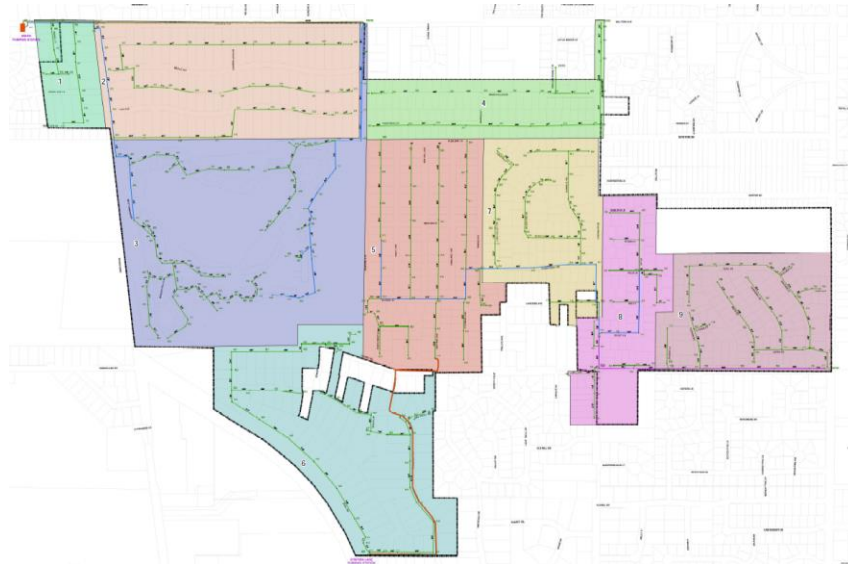
- Emergency Response
  - Respond to sewer and/or pump station failure, SSOs, and basement backups
  - Procedure for 24-hour a day response
- Sewer Use Ordinance
  - Design and construction standards for all sewer work, quantity/quality of wastewater, I/I source correction, and inspection of the system
- FOG program
  - Requirements for FOG contributors (restaurants, auto service, etc.)



# Long Term Operation & Maintenance Program

## Sewer System Map

- Map records maintained by GIS, CAD, hardcopy, other
- Map should contain sewer and structure attributes (elevation, size, material, age, pump stations, force main, etc.) and District connections
- Annual updates to the map

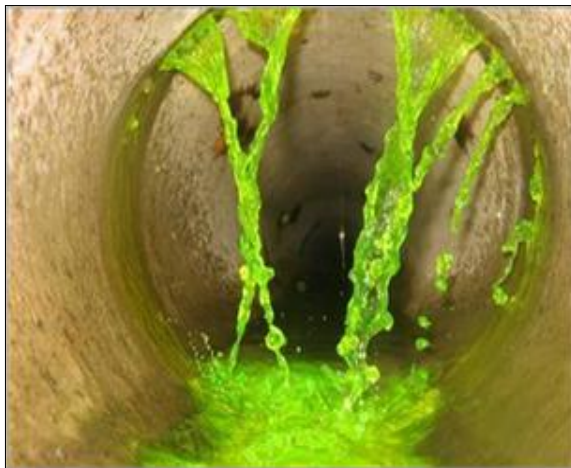




# Long Term Operation & Maintenance Program

## Sewer System Inspection

- Inspection procedures
  - New construction
  - Continuous existing system inspection
- Frequency (10% goal, 2% per year minimum)
- Indicate methodology (CCTV, smoke testing, other)
- Inspection standards (NASSCO where applicable, etc.)





# Long Term Operation & Maintenance Program

## Sewer System Maintenance

- Prevent SSOs and basement backups
- Remove blockages
- Prioritize regular maintenance to reduce emergency maintenance
- Emergency maintenance
  - 24-hour a day availability
- Sewer cleaning
  - Routine cleaning
  - Prior to inspections

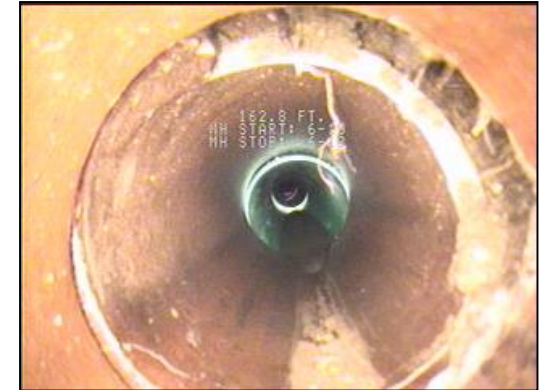




# Long Term Operation & Maintenance Program

## Sewer System Rehabilitation

- Address deficiencies identified during inspection
- Prioritize deficiencies that may result in:
  - System failure
  - Reduced capacity
  - Excessive I/I
- High priority deficiencies not corrected
  - Tracked on Status of High Priority Deficiencies Form
  - Included in Capital Improvement Plan



## Capital Improvement Plan

- Include deficiencies identified for long-term correction
- Detail schedule and funding for corrective action
- Updated annually, as applicable





# Long Term Operation & Maintenance Program

## Sewer System Capacity Evaluation

- Dry weather SSOs and basement backups
  - Not attributable to flooding, maintenance issues, or system deficiencies
- Service area is expanding or rezoned and require additional sewer capacity
- Evaluate existing system capacity
- Determine required capacity



# Long Term Operation & Maintenance Program

## Material and Equipment

- Adequate and proper material and equipment provided to conduct work under the LTOMP
- Maintain inventory of material and equipment
- Document maintenance of equipment

## Funding

- Fund all aspects of the LTOMP and PSP
- Indicate funding source
  - Water and/or sewer fees
  - Grants
  - SRF loans



# Private Sector Program

## Private Sector Program (PSP) Components

- Authority
- Inspection
- Non-compliance correction
- Long term I/I source correction
- Enforcement
- Public Information





# Private Sector Program

## Authority

- Indicate ordinance allowing internal and external private property inspections and enforcement

## Inspection

- Indicate when private inspections occur
  - SSO / basement backup occurrences
  - System conditions
  - Substantial improvements
- Inspection results
  - Document location of all sewer connections
  - Use to provide owners with notice for corrective action





# Private Sector Program

## Non-Compliance Correction

- Procedure to inform and educate property owners
  - Non-compliance issue/condition
  - Corrective action
  - Follow-up inspection
  - Enforcement actions

## Enforcement

- Summarize hierarchy of enforcement actions
  - Included in ordinance



# Private Sector Program

## Long Term I/I Source Correction

- Correction plan for high-flow, high-cost deficiencies (foundation drains, driveway drains, area drains, laterals)
- Required at improvement, cost-share, transfer, etc.

## Public Information

- Public education details
- Availability of funding





# Infiltration / Inflow Control Program

## IICP Non-Compliance

- Article 8 of the WMO outlines non-compliance:
  - Complete the Short Term Requirements by July 2019
  - Implement the approved PSP or LTOMP
  - Failure to submit a complete Annual Summary Report
- Penalties:
  - Loss of potential District funding
  - Report the agency to the IEPA and/or USEPA
  - Loss of Authorized Municipality Status
  - Denial of a Watershed Management Permit for qualified sewer construction



# Infiltration / Inflow Control Program

## Questions?

### Contact

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