

**Kutzky Park and Slatterly Park Neighborhoods
Follow Up Presentation for
Private Sector Infiltration/Inflow (I/I)
City Council Presentation**

City of Rochester, MN
October 10, 2011



Meeting Objectives

- Private Sector I/I Program
 - Present background for implementing program
 - Discuss options for funding and implementation
 - Outline recommended plan
- FOG Program
 - Present background for implementing program
 - Outline recommended plan
- Get City Council Input and Direction

Private Sector I/I Can Cause Problems

- Sewer backups onto private property, including sewage backups into basements, can cause potential health problems and damage to private property and buildings.
- Increased annual costs for maintenance and treatment (with increased volumes flowing through the system).
- Increased capital costs for conveyance and treatment infrastructure upgrades (i.e. when a system approaches capacity new facilities or expanded wastewater treatment capacity may be required to accommodate the additional flow).
- Greater potential for Sanitary Sewer Overflows (SSOs), or spills into private or public land and waterways

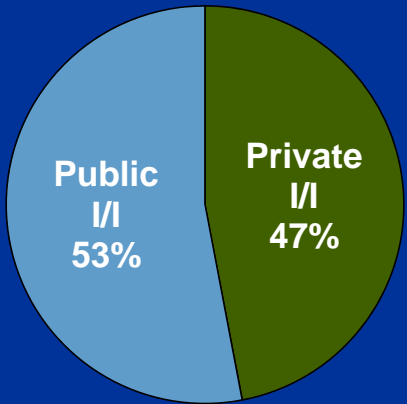
Overall Pilot I/I Recommendations (1/2)

- Implement the rehabilitation plan for manholes and public mains.
- Implement relief sewer improvements.
- Implement private sector improvements including addressing policy considerations for artificial seepage collection systems (beaver drains), laterals, and funding.

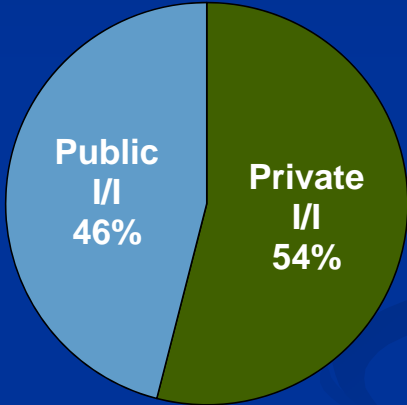
Overall Pilot I/I Recommendations (2/2)

- Implementation of a broader City-wide program to address system maintenance and asset management is recommended
 - Continue long term flow and rainfall monitoring program in balance of the system
 - Implement Capacity Maintenance Operations & Management (CMOM) protocols and Utility Assessment program to evaluate maintenance procedure, staffing, processes and tools
 - Upgrade maintenance tools to effectively handle condition assessment and maintenance data
 - Strategic program to manage I/I and system capacity
 - Private Sector Plan
- Optimize process used in the pilot study for future similar work.

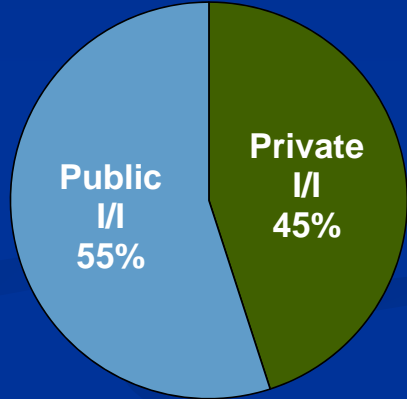
Private vs. Public I/I Contributions



Kutzky

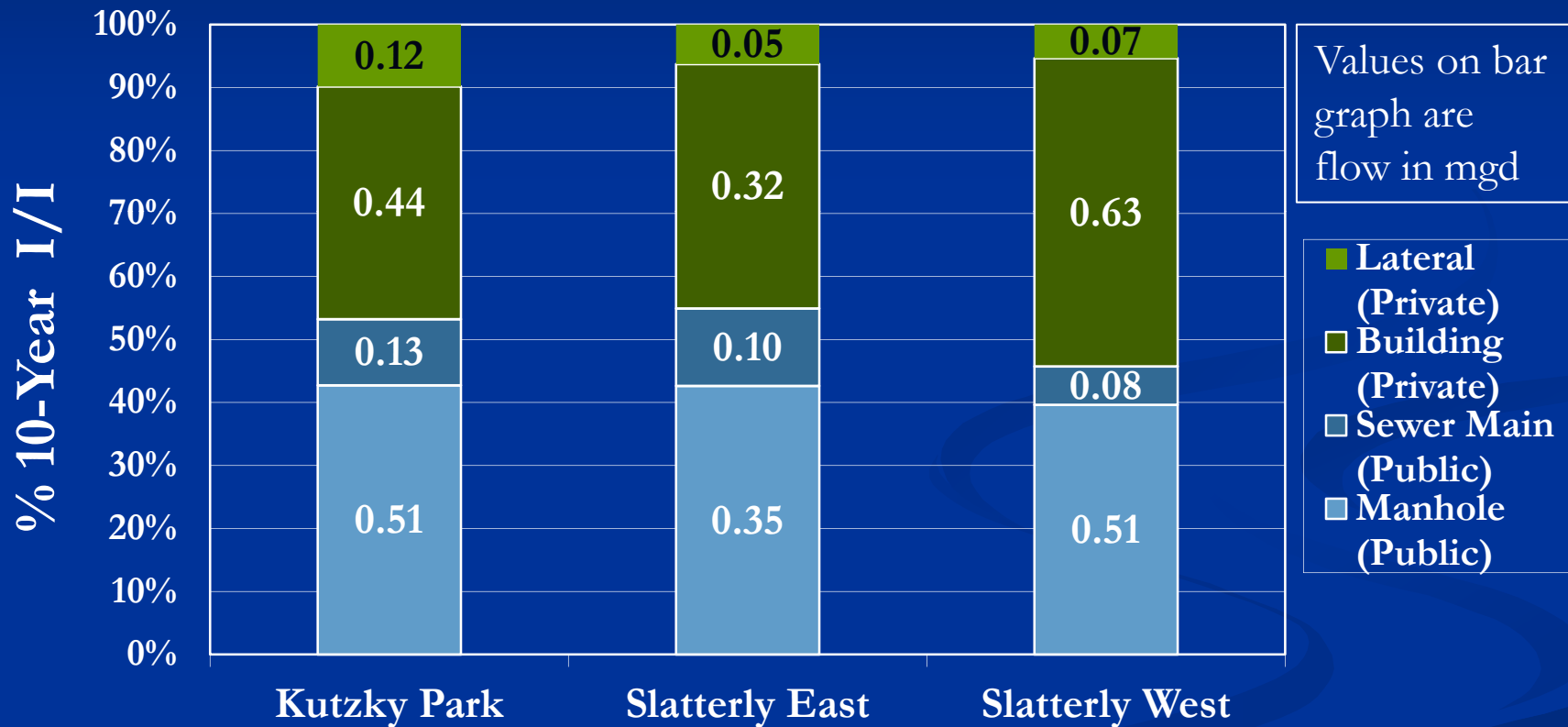


Slatterly West



Slatterly East

Source Quantification of I/I by Asset Type



Note: Source quantification includes identified and projected sources in the private sector

The Recommended Plan Includes Addressing Private Sector I/I

- Private Sector I/I
 - Removal of I/I sources currently in violation of the sewer use ordinance
 - Recommendations to modify sewer use ordinance
 - Other considerations for implementation

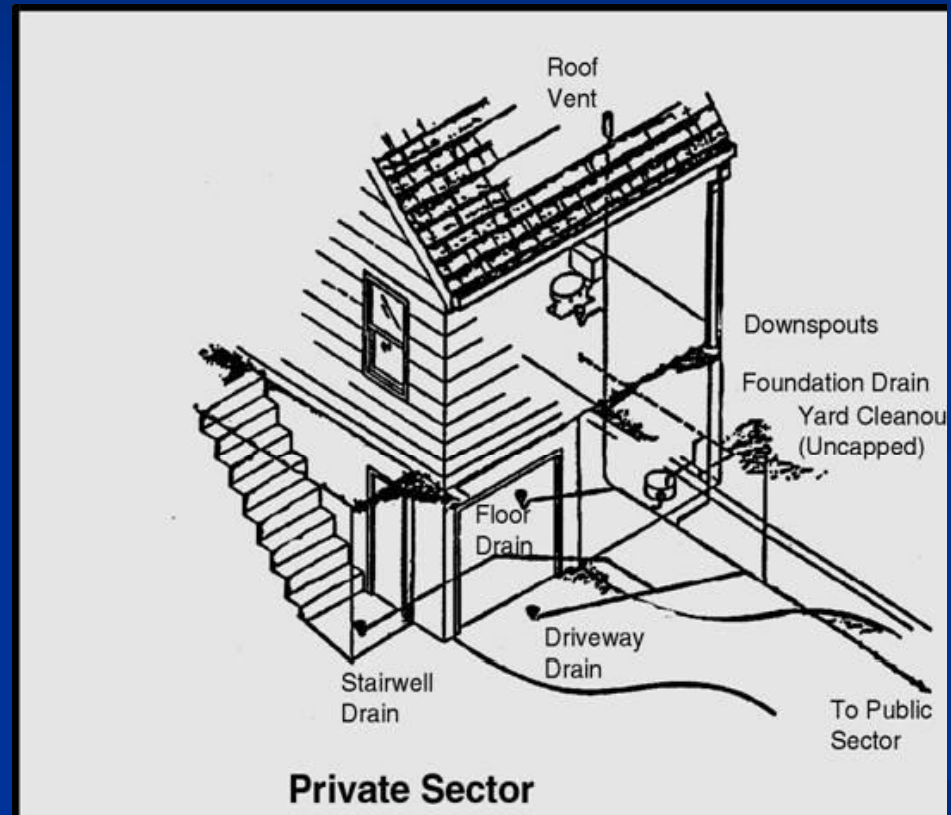
Private Building Connections & Lateral Defects Were Identified in the Pilot I/I Study Area and Likely Exist in Other Areas of the Sanitary Sewer System

■ Building I/I Sources:

- Area Drain
- Artificial Seepage Collection Systems (Beaver Drain)
- Downspout
- Driveway Drain
- Stairwell Drain
- Sump Connections
- Uncapped Cleanout

■ Lateral I/I Sources

- Defective joints
- Roots
- Cracked/broken pipe
- Poor connection to main



Building Inspection Findings



Illicit Sump Connection



Illicit Sump/Hose Connection



Artificial Seepage Collection System (Beaver Drain)

Building Inspection Findings



Foundation Drain – Floor Drain



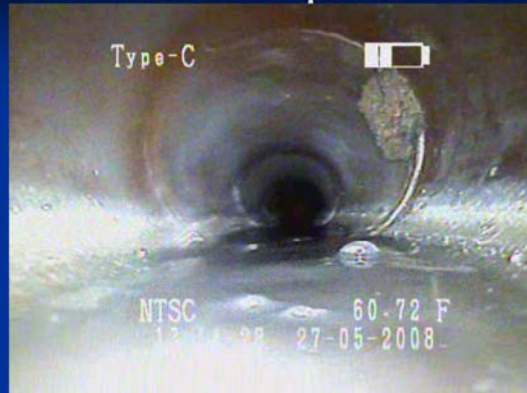
Illicit Sump Connection



Inaccessible – Clean Out In
Concrete

Building Lateral CCTV Findings

Lateral - deposits



Lateral - good



Lateral - submerged



Inspector with Push Camera

Lateral - roots



Typical Elements of a Private Sector I/I Program

- Public outreach
- Legal considerations to update sewer use ordinances and to handle issues as required
- Resources to implement program including people and technology
- Inspection and removal program methods to find and fix private sector I/I sources that are not in compliance with the sewer use code.
- Funding

What Are Other Cities Doing ?

- A review of the approach used by other communities in Minnesota was performed. Some programs have been voluntary and some mandatory. Some communities have instituted a monthly surcharge for non-compliance. In most cases cited, the property owner was responsible for the necessary repair however the City of Duluth does provide for partial cost of repairs. (See Next Slide for Details)

MN Cities Programs to Reduce and Remove Private Sector I/I

<u>City</u>	<u>Program Type</u>	<u>Surcharge</u>	<u>Assistance</u>
Byron	Mandatory/Bldg	penalty	no
Duluth	Mandatory/Bldg	yes	partial
Eyota	Mandatory/Bldg	yes	no
Mantorville	Mandatory/Bldg	penalty	no
Plainview	Mandatory/Bldg&Lat	yes	no
St. Charles	Mandatory/Bldg&Lat	yes	no
Stewartville	Mandatory/Bldg&Lat	penalty	no
Rochester*	Mandatory/Bldg&Lat?	TBD	TBD

* Existing ordinance has had a private sector compliance provision since 1992.

General Compliances Approaches to Private Sector I/I

- Voluntary, incentive-based approach,
- Regulatory, enforcement-based approach,
- Informational approach, or
- Hybrid approach (some combination of the first 3).

What About Other Cities Nationally?

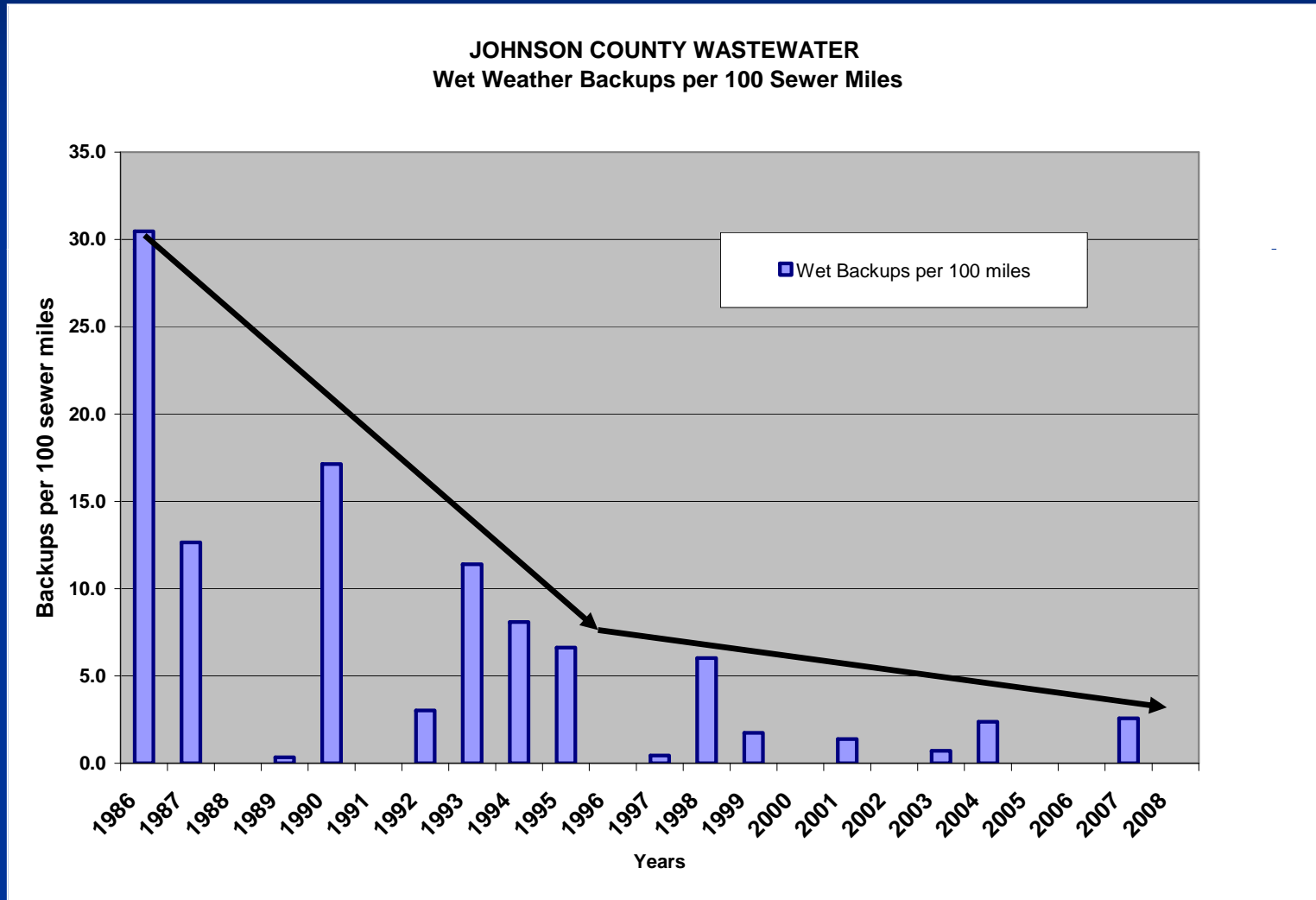
- In a Water Environment Research Foundation Study (WERF) entitled, “Methods of Cost-Effective Rehabilitation of Private Lateral Sewers,” a national survey was conducted of 58 agencies and the legal, technical and financing approaches were presented and analyzed.
 - The information shows that some agencies require written permits from property owners prior to entering private property while others only require a verbal agreement.
 - A total of 35 % of the agencies reported that they do nothing in terms of enforcement to make property owners carry out disconnections. Other agencies reported that non-compliance could result in water being shut-off, adding a monthly surcharge to the utility bill, add an amount to the property tax bill, or summoning the property owner to court.
 - A total of 62% of the agencies reported they don't offer any type of financial assistance. The 38% of agencies that did report they provide financial assistance offered such things as low-interest loans, partial payments, predefined financial limits by type of repair, or hardship case assistance.

Table 6-2. Reported Private Lateral Payment Options.

No.	Option	Description
1	No Funding	Homeowner responsible for maintenance and repair of entire lateral
2	Lower Lateral Funding Only	Financial assistance provided for lower lateral repairs and Wye connections. Homeowner responsible for upper lateral and part of lower lateral repair up to a maximum cost.
3	Funding for Testing Only	Agency provides funding for testing of lateral and homeowner is responsible for lateral repair
4	Voluntary Test and Repair	Homeowners of a single family home can volunteer to have their lateral tested and receive a specified funding level for any repair costs and inspection costs.
5	Mandatory Test and Repair Upon Sale of Home	Prior to sale of home, mandatory testing and any needed repairs are all paid for by the homeowner. A Certificate of Compliance can be issued after repairs that is effective for a specific length of time.
6	First Time Funding Only	City funds the first time that a lateral is repaired with the homeowner responsible thereafter.
7	Deductible Funding	Agency provides funding for repairs beyond a set maximum cost and, in some cases, all street, curb and sidewalk repairs.
8	Insurance Funding	Agency makes available insurance to homeowners that covers all or part of the cost for lateral repair.
9	Zero Interest Loan With Deferred Payback Funding	Agency funds lateral repairs through a zero interest loan which is paid back at the time of house sale.
10	Funding Limit by Defect	Agency provides full or partial funding for removal or repair of private section, I/I sources and defects based on type of defect.
11	Full Funding	All O&M responsibility is held by the Agency.
12	Warranty	Homeowner purchases an annual warranty and thereby transfers responsibility for all O&M to the Agency.
13	Split Funding	Dual responsibility where Agency conducts all O&M activities and shares the costs equally between the Agency and the homeowner.
14	No Funding/Agency Acts As Agent	Homeowner pays but the Agency acts as the agent for the homeowner in coordination of services and hiring of contractors. Responsibility for O&M and all costs are held by the homeowner.
15	Hardship Cases	Hardship cases where the Agency provides support on a case-by-case basis only. O&M responsibility is held by the homeowner.
16	Agency Inspection/Mandated Repair	Agency assesses lateral condition through inspection or I/I study and identifies lateral defects. Agency instructs the homeowner to make appropriate changes with consideration for penalties. O&M responsibility held by the homeowner.
17	Agency Inspection/Incentive Rebate	Agency inspects laterals as part of sewer reconstruction contracts. Homeowner is advised of defects and fined a set fine per month if the repairs are not completed within a specified time. Homeowners that comply within specified time can participate in an incentive rebate program. O&M responsibility is held by the homeowner.
18	Homeowner Required to Inspect and Provide Annual Report	Homeowner is advised of O&M responsibility and mandated to provide periodic inspection report. Agency has the right to conduct inspections on the homeowner's behalf and charge costs back to the homeowner. O&M responsibility is held by the homeowner.
19	Joint Inspection/Homeowner Mandated to Repair	Homeowner and the Agency inspect assets and the Agency provides the landowner with a report identifying any necessary repairs. The Agency provides a list of authorized contractors and grants the homeowner a set period (e.g. 30 days) to complete the repairs. Non-compliance results in the Agency completing the work and charging the homeowner. O&M responsibility is held by the homeowner.

Reported Private Lateral Payment Options

Effectiveness of Private Sector I/I and Maintenance Programs



Importance of Addressing the Private Sector: Knoxville Utility Board PACE10 Post Construction Flow Monitoring Results (CH2M HILL Program Management Project)

Sewer Mini-basin	Total Length (ft)	Amount Rehabbed (%)	Peak/RDI/I reduction (%)
A	26,000	65	71
B	35,000	43	31
C	33,000	60	61

Sewer Mini-basin B no lateral rehabilitation

Recommended Approach to Rochester's Private I/I Program

- Modify sewer use ordinance (see details on following slide)
- Implement a public outreach program. This will be to educate customers and also to encourage program participation both in terms of removal of illicit I/I sources and reporting performance problems such as sewer backups.
- Develop a private sector I/I policy manual that includes current sewer use ordinances, typical letters and notifications to property owners, criteria for compliance, and typical types of repairs as well as a flow chart detailing how inspections and repairs are to be implemented.
- Establish a comprehensive private building and lateral inspection and repair program for property owners.
- Establish financial incentives for compliance both in terms of City funding for voluntary compliance and surcharges for those not complying.
- Develop/obtain the resources to run the private sector I/I program.

Recommended Amendment to Sewer Use Ordinance (1/2)

- Artificial seepage collection systems that collect groundwater from around the foundation and direct the groundwater to drains that eventually discharge to the sanitary sewer system should not be allowed.
- If sump pump discharges cause a nuisance problem such as sidewalk icing during the winter, the ordinance should allow the City Engineer to allow seasonal exceptions. A seasonal exception would allow sump pump discharges to the sanitary sewer during the winter months (November 1 through April 1).
- Modify sewer use ordinance to require hard sump pump piping to the outside whenever a sump is installed. Remove wording in current ordinance that states, “at the time the sump is constructed”.

Recommended Amendment to Sewer Use Ordinance (2/2)

- Defective laterals should not be allowed and repair should be required. Defective laterals will be as determined by standards established by the City Engineer.
- Institute a point-of-sale compliance requirement.
- Clarify compliance requirements for both building and lateral sources in a guidance or Private Sector I/I Procedurals manual and have the ordinance indicate that compliance to be per ordinance as determined by the City Engineer.
- A monthly non-compliance surcharge should be implemented.
- Grant authority to the City Engineer to identify focused study areas where private sector inspection and removal of private I/I sources in buildings and laterals can be implemented.

Recommended Approach (1/3)

- Implement a hybrid approach. The hybrid approach will include some aspects of a voluntary, incentive based approach; a regulatory, enforcement based approach; and an informational approach. Key elements of the hybrid approach would be as follows:
 - All customers to be in compliance with building I/I sources within 8 years (by Year 2020) from program initiation. This compliance period would include financial incentives for property owners to pay for repairs. A maximum of \$1,000 financial incentive is suggested for those participating in the first four years (years 1 through 4) followed by a \$500 financial incentive for those participating in the next four years (years 5 through 8).
 - Building compliance would be required at point-of-sale.

Recommended Approach (2/3)

- Implement a hybrid approach. The hybrid approach will include some aspects of a voluntary, incentive based approach; a regulatory, enforcement based approach; and an informational approach. Key elements of the hybrid approach would be as follows:
 - Lateral compliance would be required at point of sale. Financial incentive for securing compliance would be provided by the City. A maximum of \$2,500 will be provided as financial incentives for those laterals identified at point of sale.
 - Financial incentive for securing compliance would be provided by the City for focused study areas identified by the City Engineer. A maximum of \$2,500 will be provided as financial incentives for those laterals identified in the focused study areas.
 - All customers to be in compliance with laterals I/I sources within 18 years (by Year 2030) from program initiation. This compliance period would include financial incentives for property owners to pay for repairs. A maximum of \$2,500 financial incentive is suggested for those participating in the program.

Recommended Approach (3/3)

- Implement a hybrid approach. The hybrid approach will include some aspects of a voluntary, incentive based approach; a regulatory, enforcement based approach; and an informational approach. Key elements of the hybrid approach would be as follows:
 - Customers whose buildings are not in compliance would be charged a monthly surcharge on their sewer bill beginning Jan 1st, 2020 until compliance is achieved. A monthly surcharge of \$100 is suggested and will be adjusted for inflation.
 - Customers whose laterals are not in compliance would be charged a monthly surcharge on their sewer bill beginning Jan 1st, 2030 until compliance is achieved. A monthly surcharge of \$100 is suggested and will be adjusted for inflation.
 - Incentives would be provided for Pilot Study areas retroactive to January 1, 2009 for those homeowners that may have performed inspections or repairs.

Potential Timeframe for Implementation

Table 1 – Private Sector I/I Program Schedule

Activity	Date	Comment
Policy Ordinance Update	2011	Update all ordinances relative to Private Sector and create Private Sector I/I Removal Procedures Manual
Public Education	2012	Public education campaign to gain program momentum, link customers with resources and information, gain voluntary compliance.
Plumber Education	2012	Program to ensure that intent of private sector program is understood by plumbers, that procedures are understood, and compliance requirements are clear to those doing the work.
Realtor Education	2012	Program to educate realtors on point of sale requirements.
Preparation for Implementation	2011 - 2012	Evaluate and secure people and technology to carry out the program.
Implementation	2012 - 2030	Implement program

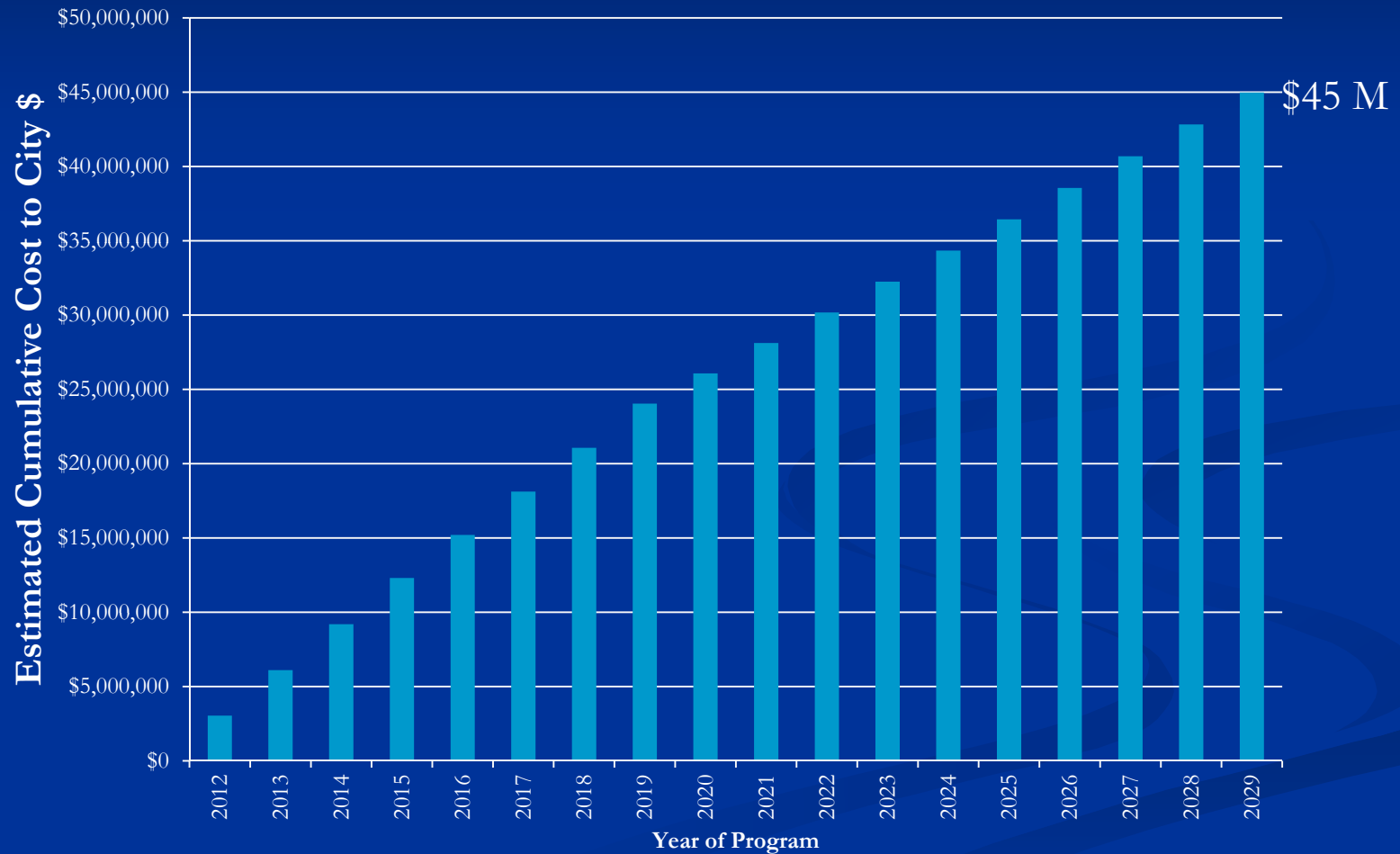
Variables and Values Used for Analysis – Building I/I Sources

Variable	Scenario Value Used
Total number of buildings	33,000 (100 % of System)
Building rehabilitation City unit cost	\$1,000 first 4 years, \$500 year 5 -8. (not escalated)
Unit cost of inspection	\$100 escalated at 3% per year
City pay for inspection – yes or no	Yes
Administrative cost per inspection	\$50
Percent buildings with I/I source to disconnect	12% (estimated)
Annual % of buildings inspected	12.5 % (100% compliance by 2020)

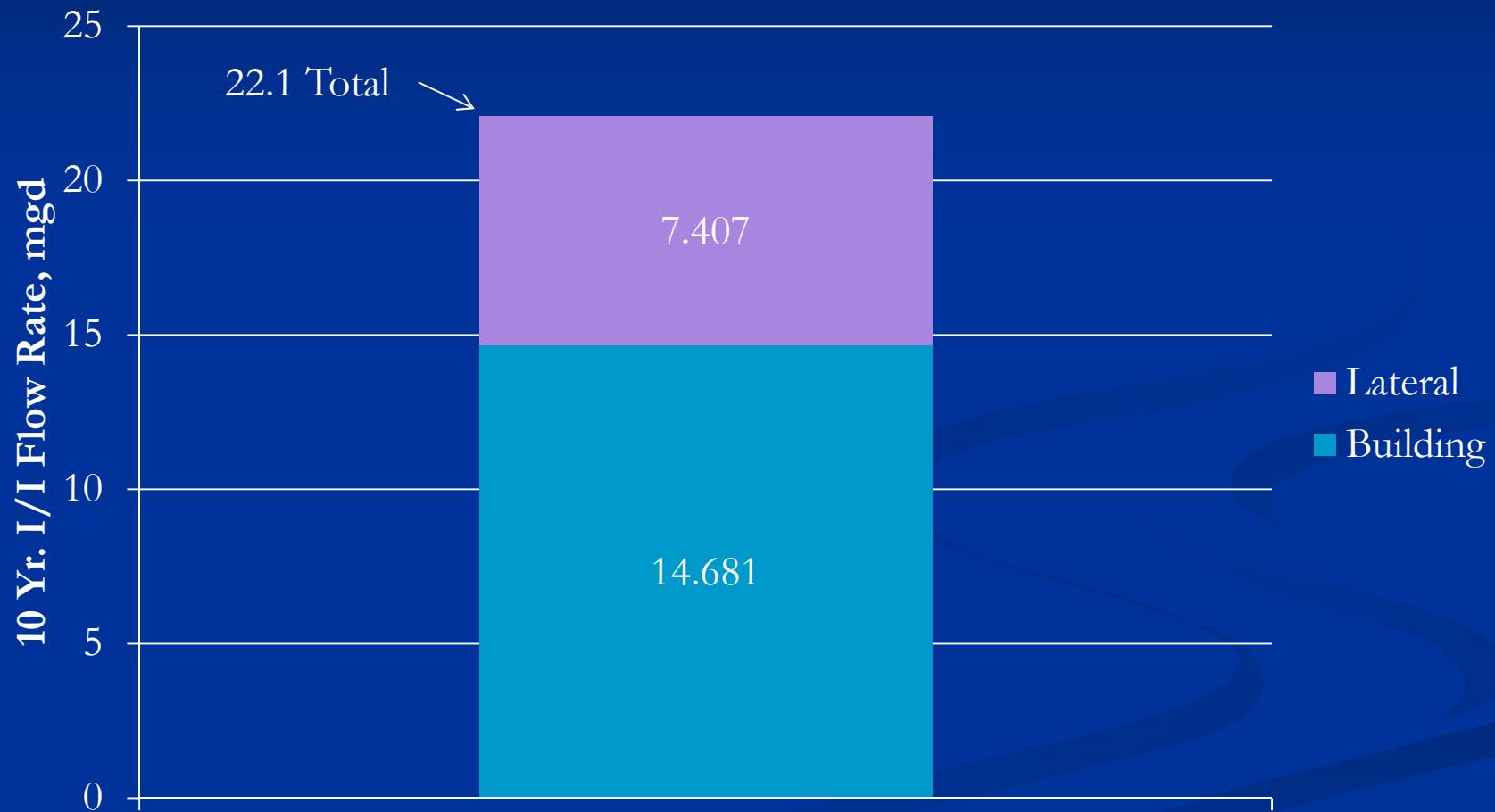
Variables and Values Used for Analysis – Lateral I/I Sources

Variable	Scenario Value Used
Total number of buildings	33,000 (100 % of System)
% of defective laterals	30 %
Annual lateral inspection through sales	4 %
Annual lateral inspection through focus studies	1.55 %
City pay for inspection in focus study areas and for building sales – yes or no	Yes
City pay for rehabilitation in focus study areas and for building sales – yes or no	Yes
City administration cost	\$50 lateral inspected
Unit lateral inspection cost	\$250 escalated at 3% per year
Unit lateral rehabilitation cost to City	\$2500 (not escalated)

Cumulative Estimated Cost to City by Year

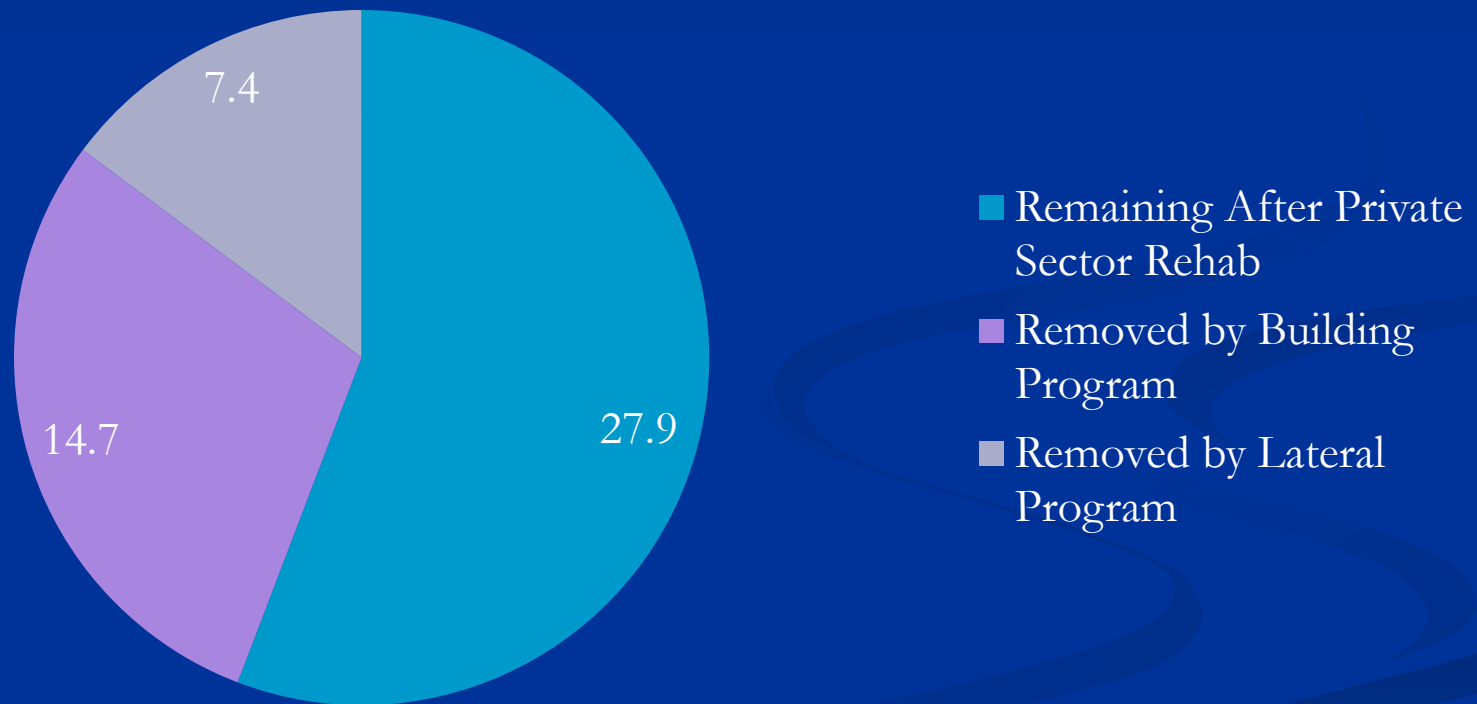


10 Yr. I/I Removed by Private Sector Program



Impact of Private Sector I/I Removal – System Wide

10 Yr. I/I, mgd



50 mgd total system I/I, 44% (22.1 mgd) removed by Private Sector Program

Cost Effectiveness Analysis

Cost Component	Estimated Cost, \$ M
Private Sector I/I Removal Program – 18 Years	\$45.0
Cost Reductions Due to Implementation of Private Sector Program (Present Worth)	
Relief Trunk Sewers	\$ 16.5
I/I Treatment	\$ 38.6
Total Cost Reduction	\$ 55.1
Cost savings over 18 years through implementation of private sector program	\$ 10.1
Benefit / Cost Ratio	\$1.22 benefit for every dollar spent

Issues caused by Fats, Oils, and Grease (FOG)

- FOG results in
 - loss of conveyance capacity by reducing the effective pipe diameter thereby reducing capacity available for growth and may contribute to Sanitary Sewer Overflows (SSOs).
 - increased maintenance and treatment costs.
- Hundreds of food service businesses are not subject to actual cost of treating and conveying high strength wastewater discharges containing FOG.
- The current plumbing code does not address garbage disposal waste and this aspect of FOG control should be reviewed.

Currently Reactive and Not Proactive FOG Program

- The current plumbing code requires grease traps but many of these traps are ineffective in removing FOG.
- The current grease program is reactive to problems and not proactive to prevention.
- The current “reactive” grease program is ineffective and does not address the issues caused by FOG.
- The current City resources are insufficient to address compliance and maintenance issues.
- Disposal of captured grease is also a challenge.
- There is a need for a comprehensive FOG program.

Recommended Actions to Develop a FOG Program

- FOG Program that will address:
 - Sewer use rates with special emphasis on food service businesses and garbage disposal waste.
 - Public outreach and education regarding FOG reduction.
 - Evaluate options for disposal of FOG.
 - Update current City FOG ordinance/standards as necessary.
 - Evaluate current FOG maintenance practices and update as necessary.

Council Input and Direction

- Implement the rehabilitation plan for manholes and public mains (yes or no)
- Implement relief sewer improvements (yes or no)
- Implement private sector improvements including addressing policy considerations for artificial seepage collection systems (beaver drains), laterals, and funding (yes or no)
- Implementation of a broader City-wide program to address system maintenance and asset management is recommended (yes or no)
- Develop a FOG program (yes or no)