Another Look at Private Property – Sharing Information Across the Country

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  - Laurie Chase, PE, Fuller Mossbarger Scott and May Engineers
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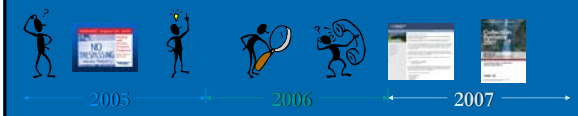
  - Jane McLamarrah, PE, MWH
- Renee Kayal and Susan Merther, WEF
- Participating Utilities
- Private Property Virtual Library (PPVL) Development Team
  - Laurie Chase, Chair
  - Jaime Davidson, Vice Chair
  - Bill Carter
  - Bruce Cohen
  - Carol Hufnagel
  - Jane McLamarrah
  - Mike Anderson
  - Mike Greene

Another Look at Private Property…

- The purpose of this webcast is:
  - to introduce the private property virtual library,
  - to present case studies of utilities, and
  - to promote the exchange of useful information
- Private Property Program Perspectives:
  - Initially evaluating program options
  - Implementing programs
  - Lessons learned from sustained program

WEF Private Property Virtual Library



Online now at

www.wef.org/PrivateProperty

Webcast Speakers

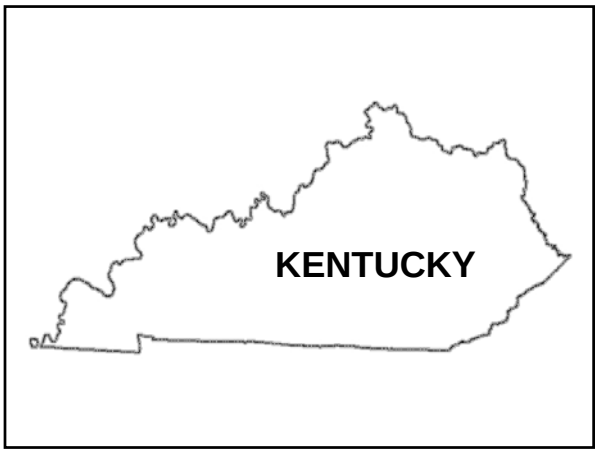
Charles Martin, PE – Director, Lexington-Fayette Urban County Government (LFUCG) Division of Water and Air Quality (KY)

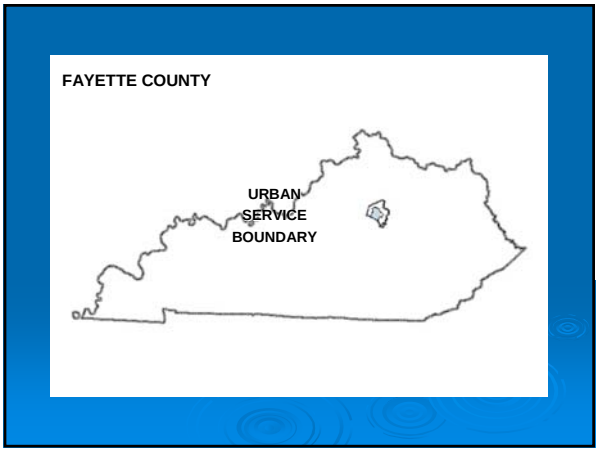
Thomas Whetham, PE – Deputy Commissioner, Erie County Department of Environment and Planning (NY)

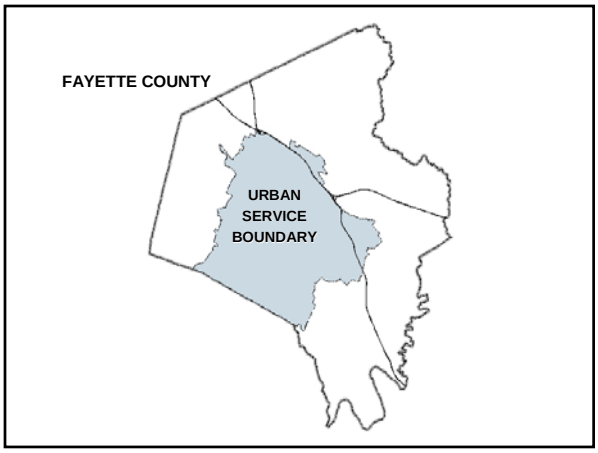
Doug Humphrey, PE – District Manager, Stege Sanitary District (CA)

Private Property Program Development

Lexington-Fayette Urban County Government (LFUCG)
Charles H. Martin, P.E.
Director – Division of Water & Air Quality


KENTUCKY


FAYETTE COUNTY
URBAN
SERVICE
BOUNDARY


FAYETTE COUNTY
URBAN
SERVICE
BOUNDARY

Background
LFUCG Sanitary Sewer System

- Combined City / County Government
- Urban Service Boundary Defines Service Area
- System Size - 1,100 miles of pipe
- System Size – 90,000 customers
- Average day flow approx. 36 MGD; peaks in excess of 110 MGD

The “Issue”

Background
LFUCG Sanitary Sewer System
Service Lateral Ownership

- Public – from main to edge of right of way or easement.
- Private – from edge of right of way or easement to structure.
- Historically – no clean-out installed at public / private interface.

Current Private Property Programs "Positives"

- Sump pump redirects from sanitary sewer.
- 983 completed between (1997 and 2007)
- Average cost - $1950 / redirect


Current Private Property Programs "Positives"

- Installation of clean-outs at public /private interfaces on service laterals.


Current Private Property Programs "Negatives"

- Sump pump redirects are voluntary and funded exclusively by user fee.
- No enforcement capability for other private property generated problems (laterals, grease, other I/I sources.
- Ordinances prohibit "clear water" discharges – lack of political will to enforce.

Past Efforts

- Mandatory sump pump inspection of residential structures concept presented to LFUCG Sanitary Sewer Oversight Committee (SSOC) in 2002.
- Proposed requiring disconnection of improper sump pump connections to occur at time of property transfer.
- Proposal opposed by realtors for fear that inspections / mandatory redirects would negatively impact sales.

Past Efforts
(cont.)

- Engineering evaluations of over 500 homes in Chevy Chase neighborhood.
- Evaluations looking for all improper connections (sump pumps, foundation drains, area drains, etc.)
- 72 improper connections to sanitary sewer confirmed, additional 83 suspected but inconclusive.
- No action plan adopted.

Sump Pump Connected to Sanitary Sewer

Area Drains Connected to the Sanitary Sewer

Past Efforts
(cont.)

Grease interceptor ordinance challenges.

Renewed Efforts

- LFUCG currently negotiating a federal Consent Decree (CD) for un-permitted discharges (SSOs).
- Outcomes of CD - Capacity evaluations / remedial action plan.
- Private property program is critical to success of any remedial action plan.

What Are LFUCG's Options?

Do nothing about private property I/I sources?

- Probable outcome – remedial measures plan that over-sizes conveyance system and treatment plants.
- Probable outcome – high costs for collecting, conveying and treating "clear water".

Provide financial assistance to private property owners for remediation of I/I sources?

- Current rates do not support.
- General opposition to higher rates.
- Localized opposition of some property owners – users fees benefiting private property.

Force Private Property Owners to Pay for Corrective Actions of Their Property?

- Political challenge.
- Legal challenges (access for inspection, method for enforcement of corrective action).
- Absentee property owners.
- Fixed income property owners.
- Equity issues.

Developing a Plan

- Quantify the issue for decision makers.
- Develop cost comparisons for alternatives.
- Gain support from citizen groups.
- Initiate pilot programs that generate “real numbers” and participant feedback.

PROGRESS IN “GAINING SUPPORT”

Sanitary Sewer Oversight Committee

- Sub-committee formed in 2007.
- LFUCG Councilperson leadership.
- Stakeholders – public & private sector.
- Developed “Conceptual Action Items” for implementation

CONCEPTUAL ACTION ITEMS

	Concept	Description	Action Taken
1	Point of Sale	Inspect properties during the sales process to identify and correct private property inflow and infiltration sources and defective sewer laterals. Also, install a cleanout at the right-of-way to provide access for internal inspection and cleaning.	Forward to Sanitary Sewer Oversight Committee (SSOC)
2	Cleanout Cap Replacement	Create a policy to allow sewer maintenance workers to replace missing or broken cleanout caps. Prevents inflow and provides access for cleanout and inline inspections.	Forward to SSOC.

CONCEPTUAL ACTION ITEMS

	Concept	Description	Action Taken
7	Lateral Inspection and Repair/Replacement Program	Establish a program to allow LFUCG to maintain and repair laterals. Allows access for repair, inspection and maintenance. Allows for cleanout installation and cap replacement.	Need to visit another community to see how it is being done elsewhere. There are several ways this type program can be run. Some charge everything to the homeowner, some do the work and place a lien on the property, some charge a separate fee and pay for the work out of that money. Also, there will be legislation needed on the State level. Ed Gardner continues to search for similar legislation. First you would need enabling legislation allowing governments to work on private property, then you would need separate legislation setting up how to pay for it. Further investigation – Wait until we know more about the system's needs.
7A	Property Owner Line Fee	Fee that provides funds for LFUCG to maintain and repair laterals, probably to within a few feet of the structure. Allows access for repair, inspection and maintenance. Allows for cleanout installation and cap replacement.	See above.

DESIRED OUTCOMES

- Concepts that can be implemented.
- Flow reductions / concept costs for cost / benefit analysis.
- ZERO SSOs!

QUESTIONS?

Infiltration and Inflow (I&I) Reduction Program

Erie County Department of Environment and Planning, New York

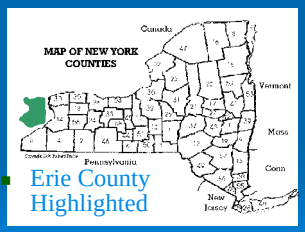
Thomas Whetham, P.E.

Deputy Commissioner

Agenda

- Background
  - Erie County, NY
  - Division of Water Quality Management (DSM)
- I&I Program Overview
- Cooperative Efforts with the NYSDEC and Local Developers
- Results for Future Development
- Continuing I&I Efforts
- Questions and Comments

Background

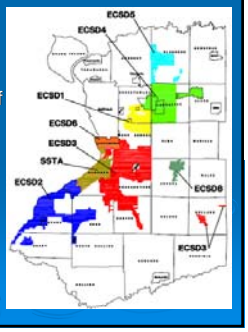


Erie County Highlighted

- Western New York State (WNY)
  - Erie and Niagara Counties
    - Buffalo and Niagara Falls

Division of Sewerage Management Erie County, New York

- Separate Sanitary Sewers
- 7 Sewer Districts
- Serve most communities outside of Buffalo, 1st & 2nd ring suburbs
- Suburbs approx. 30 – 50 year old sanitary sewer systems
- 300,000 population served
- Budget $40 million
- 250 full time equivalents
- …..and growing!

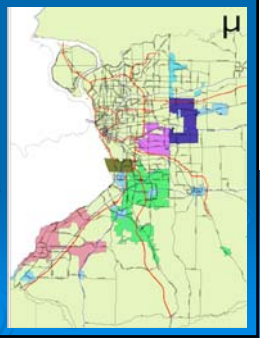


Mission Statement

- The mission of the Erie County Division of Water Quality Management is to provide cost effective, customer oriented, safe, reliable and sustainable wastewater service that protects public health and enhances our natural environment.

Infrastructure to Deliver Service and Achieve Mission

- Approx. 1,000 miles of sewer
- 20,500+ manholes
- 100 pumping stations
- 5 overflow retention facilities
- 462 low pressure grinder units



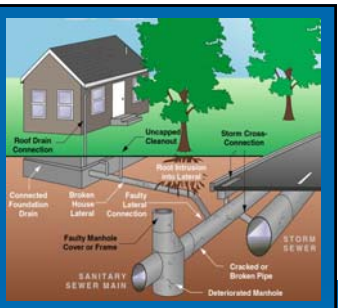
Challenges to Achieving the Mission

- Age of infrastructure
- Economic condition of service areas
- Aging workforce
- Tightening permit conditions
- Excessive wet weather flows

Today's Focus?

- Excessive wet weather flows
  - Inflow and infiltration
    - Aging systems (mains and private laterals) admit rain and groundwater into sewer
    - Illegal connections into private laterals admit inflow
- Private laterals!!
  - Defined as the connection from the private structure to the public main, up to and including, the actual connection to the main

What is I&I?



Infiltration and Inflow (I&I) are sources of ground water and surface water that enter the sanitary sewer system through holes, breaks, joint failures, connection failures, illegally connected sump pumps, downspouts, and footing drains, and from cross-connections with storm sewers. High groundwater levels (infiltration) and storm events (inflow) can contribute to excessive sewer flows.

Why do we care about I&I?

- I&I increases flow conveyed through the sewer system and the cost to provide service
- Increases sewer charges that businesses and residents pay for sewer service
- In NY State, the elements of the previously proposed CMOM Rule are being included in draft SPDES permits

Source of Excessive Flows

- Failing Infrastructure
  - Public Component (15- 50%)
  - Private Component (50 - 85%)

Public Component

Drainage Ditch Over Sewer – Smoke Indicates Leaks

Private Component

Lawn Area on Private Property – Smoke Indicates Leaky House Lateral

County Response

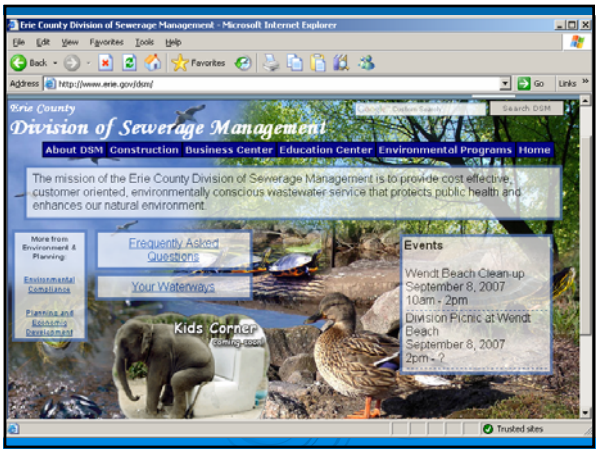
- Pursuing Elimination of Excessive Flows from Private Sources
- Increased System Evaluation Studies
  - Internal Effort – Dedicated Team
  - Some Use of Consultants
- Public System Improvements
  - Collection System Repair & Replacement
  - WWTP Capacity Improvements
  - Storage Facility Improvements (ORFs)

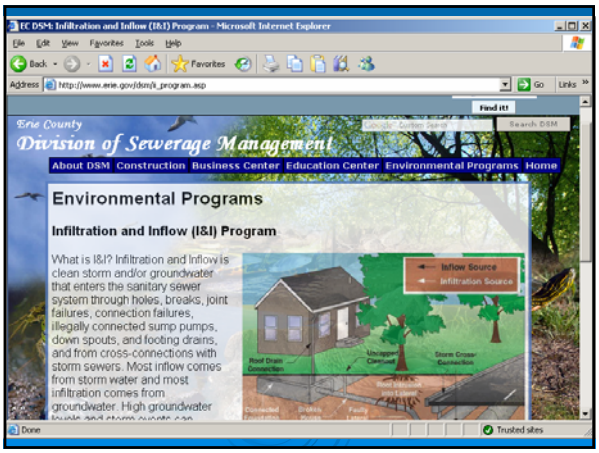
I & I Removal - Private

- Public Education
- Private house inspections (sewer ordinance)
- Proposed law to repair or replace laterals
- Private/Public partnership to replace/repair laterals

Public Education

- Created public education program
- Web site
- Door hangers
- Newsletters
  - Feature articles
  - Ongoing projects





Door Hangers

- Hanger
  - Example: Home Grinder Pump Maintenance

Sewer Ordinance

- Adopted by the Erie County Legislature
  - Local Law
- Article IV Sewage Discharge Regulations
  - Section 401 – Prohibited Discharges
  - …the following substances and wastewaters are specifically prohibited from discharge to the sewer system
    - Surface runoff, groundwater, roof runoff, subsurface drainage, or cooling water

Identification of Ordinance Violations

- House Inspection Program
  - Systematic program to inspect connections into the public sewer system (10% of system per year)
  - Notice to homeowner to setup an appointment
  - Inspection, followed by identification of violations
  - Notice to homeowner to correct violations

Enforcement of Ordinance Violations

- Enforcement provisions in ordinance
  - Fines for failing to comply with request for inspection and for failure to correct violations
  - Up to $500 per violation per day, $10,000 maximum
  - Lengthy and cumbersome hearing process
    - Hearing officer with formal hearing proceeding
  - Fines included on County tax bill
  - Fines, if unpaid, become a lien on the property title

Suggested State/Local Law

- Private Lateral and Plumbing Inspections at Time of Property Transfer
- Correction of Private Laterals and Footing Drains as a Requirement of Property Transfer

Advantages of Law

- Addresses Long Standing Environmental / Health Problem Now
  - Failing Private Component of Infrastructure
  - Inability/Unwillingness of Municipalities to Correct
- Reduces SSOs & Beach Closings
- Supports Env. Groups and Regulatory Goals
- Erie County Takes Leadership Role in Addressing Problem

Advantages of Law

- Reduces Cost Impact of SSO Elimination
  - Phased Remediation
  - Corrects Problem at Most Affordable Time for Owner
- Establishes Recurring Process
- Reduces WW Treatment and Conveyance Costs
- Positively Impacts Sewer Taxes & Charges
- Increases Capacity for Economic Development

Consequences of Law

- 50% of House Laterals Need Repair Now, but…
  - Cost to Repair / Replace ($2,000 - $5,000) at the Time of Property Transfer
  - Lateral Repair as % of Sale Price (2 - 5%)
  - Monthly Cost Impact of Lateral Replacement $10 to $30 Over the 30-Year Life of the Lateral Repair/Replacement

Note: Average Home Sale Price ($85,000) - See Next Slide

Impact of Local Law on Home Sales

Regional Housing Statistics / Impact of Local Law

	Occupied Housing Unit	Median Housing Unit Value	Sales for 2001	% of Homes Sold per Year	Average Sale Price	Lateral Repair As % of Sale Price
Amherst	46,803	$120,000	1,611	3.44%	$124,300	**2.41%**
Buffalo	145,574	$59,300	1,196	0.82%	$60,400	**4.97%**
Cheektowaga	41,901	$81,800	732	1.75%	$73,700	**4.07%**
Tonawanda	34,634	$85,100	751	2.17%	$78,900	**3.80%**
West Seneca	18,954	$95,200	394	2.08%	$95,900	**3.13%**

Source: Buffalo Niagara Association of Realtors, US Census

Where Else Has this Been Done?

- Erie County
  - Septic System Inspection/Replacement at Time of Property Transfer
- Tonawanda
  - Sump Pump Installation Req't at Time of Property Transfer
- Akron & Depew
  - Inspection (Illegal Connections) Prior to Transfer of Title
- Sarasota, Florida & Olmsted, Ohio
  - House Lateral Replacement Program

Private Laterals Paradigm

- In NY State, public entity cannot spend public monies for private benefit……
  - Sewer Laterals
- But, laterals are the most significant source of wet weather flows in sewer system
- NYSDEC policy on development in capacity constrained area
  - No development upstream of an SSO until SSO is eliminated, unless 4 times the amount of flow to be contributed by the development is removed
- Developers want to build in areas where sewer system is constrained during wet weather

Private Lateral Repair Program

- Developers can make repairs to private property with private property owner consent
- Public sewer service provider can provide a list of repairs
- NYSDEC has accepted table that includes the value of wet weather flows removed per type of repair made to the system

Erie County Sewer District's
General Infiltration and Inflow (I&I) Source Flow Contributior

Problem Type	Severity	I&I Contribution (gpm)
Manholes		
Surface Water/Low-lying Manholes		4
Frame[1], cone, barrel leaks	Slight	0.5
	Moderate	1
	Severe	2
Joint leaks	Slight	1
	Moderate	3
	Severe	5
Exposed frame and cone in ditch (Exterior)	Slight	5
	Moderate	10
	Severe	15
Cracks in the concrete or paved surface area surrounding a manhole with leaks in frame and cone		10

1. The term frame in this report includes the manhole frame adjustment rings or bricks beneath the frame.

Erie County Sewer District's
General Infiltration and Inflow (I&I) Source Flow Contributior

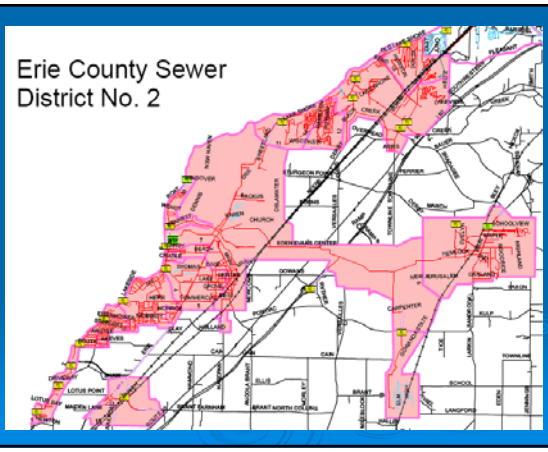
Problem Type	Severity	I&I Contribution (gpm)
Pipe Segments[2]		
Joint infiltration or Cracked pipe		1
Pipe broken		2
Leaking lateral at the connection to the main		1
Sliplining/100 feet[4]	8" pipe	1.1
	10" pipe	1.25
	12" pipe	1.5
	15" pipe	1.88
	18" pipe	2.25

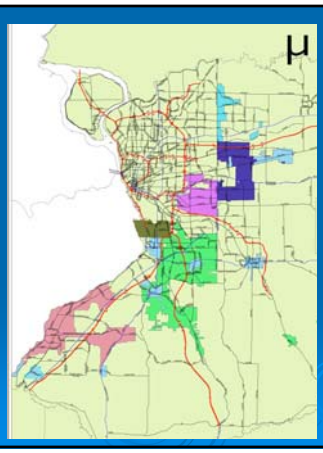
2. During the Parsons I&I study in ECSD 1 conducted in 2001, CCTV inspection was conducted in dry weather, under frozen ground conditions. Field observations were not always available, therefore, these general values were assigned to various defects.

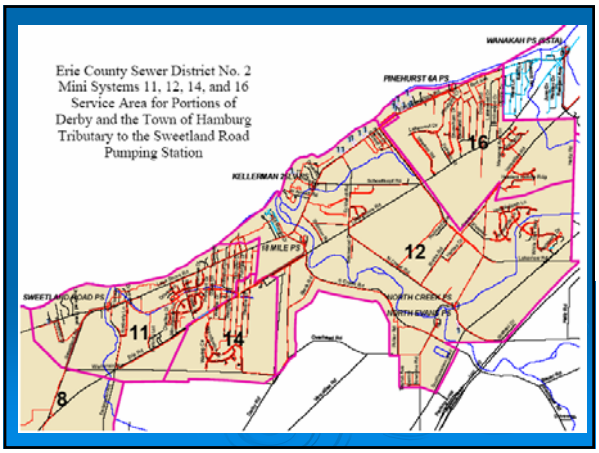
Erie County Sewer District's
General Infiltration and Inflow (I&I) Source Flow Contributior

Problem Type	Severity	I&I Contribution (gpm)
Private Sources		
Low-lying lawn vent		0.1 to 80 [3]
Downspout		5
Sump pump [4]		1
Defective residential lateral	Case-specific, no general classification	range 15 to 70 value used 42 [5]

3. Individual low-lying lawn vents vary in contribution according to surface characteristics.
4. NYSDEC approved values, per 2005 correspondence under the ECSD 2 SPDES I&I Plan.
5. Value used 42 gpm. However, lower or higher values may be used based on actual condition.





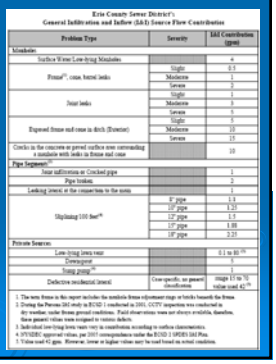


I&I Plan for the areas tributary to Sweetland PS – July 2001 to present

- Identify those known problem areas where sewage flow backs up in the system
- Field tasks completed
  - Manhole Inspections/Repairs
  - Internal Televising Inspections
  - Smoke Testing
  - Dye Testing for Cross Connections
  - House Inspections
  - Replacement/Rehab Sewerlines

Development in an Area Tributary to SSO

Based on the NYSDEC approved I&I source flow contribution (gallons per minute) for specific repair work

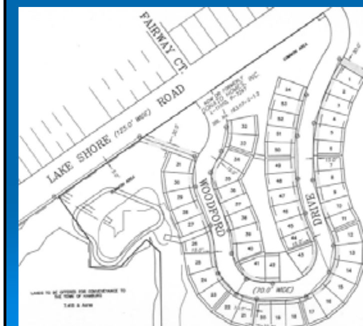


Erie County Sewer District's
General Infiltration and Inflow (I&I) Source Flow Contributions

Problem Type	Severity	I&I Contribution (gpm)
Manholes:		
Surface Water Low-lying Manholes		4
Frame[1], cone, barrel leaks	Slight	0.5
	Moderate	1
	Severe	2
Joint leaks	Slight	1
	Moderate	3
	Severe	5
Exposed frame-and-cone in ditch (Exterior)	Slight	5
	Moderate	10
	Severe	15
Cracks in the concrete or paved surface near surrounding a manhole with leaks in frame-and-cone		10
Pipe Segment:[2]		
Joint infiltration or Cracked pipe		1
Pipe broken		2
Leaking (joints) at the connection to the main		1
Sliplining 100 feet[3]	8" pipe	1.1
	10" pipe	1.23
	12" pipe	1.5
	15" pipe	1.88
	18" pipe	2.25
Private Sources:		
Low-lying town cesspool		0.1 to 80 [4]
Downspout		1
Sump pump[5]		1
Defective residential lateral	Case-specific, no general classification	single 15 to 70 value used 42.5[6]

1. The term frame in this report includes the manhole frame adjustment rings or bricks beneath the frame.
2. During the Parcona I&I study in ECSD 1 conducted in 2001, CCTV inspection was conducted in dry weather, under frame ground conditions. Field observations were not always available, therefore, these gpm/mi values were assigned to various defects.
3. Individual low-lying town vary in contribution according to surface characteristics.
4. NYSDEC approved values, per 2007 correspondence under the ECSD 1 SPDES I&I Plan.
5. Value used 42 gpm. However, lower or higher value may be used based on actual condition.

The Process…
Developers Submit Their Plans



Developers submit their plans for coordinated review and approval by Water Quality Mngmt and the Erie County Health Department on behalf of the NYSDEC

Developer's Rehab List

Erie County Sewer District No. 2
I&I Rehabilitation Work - Mini System (MS) 11, 12, 14, and 16
Eddy & Lewis Homes for Treehaven Estates, Hamburg (Lots 1-20 and 73-80)

#	MS	Address	Description of Rehab Work to be Completed	Details on Sewerline or MH	Attachments	Estimated I&I Removal (gpm)
1	11	[illegible] Townhouses on Independence Drive, Derby	Open Cut Spot Repair 8" Vitrified Clay Pipe	[illegible]	Map 1	10
2	11	[illegible] Townhouses on Independence Drive, Derby	Open Cut Spot Repair 8" Vitrified Clay Pipe and Replace existing tap (leaking)	[illegible]	Map 1	20
3	11	1330 Independence Drive, Derby	Open Cut Spot Repair 8" Vitrified Clay Pipe	[illegible]	Map 1	10
4	14	[illegible] Brandywine Drive, Evans	Open Cut Spot Repair 8" Asbestos Cement Pipe	[illegible]	Map 2	20
5	16	[illegible] Elmhurst Road, Hamburg	Open Cut Spot Repair 8" Asbestos Cement Pipe	[illegible]	Map 3	20
6	12	Bluffs - 1621 Old Manor, Derby	Install inflow protector.	Private MH [illegible], located in lawn	Map 4*	4
7	12	Bluffs - 1623 Old Manor, Derby	Raise to grade, apply a 1/2" cementitious lining to frame and install inflow protector	Private MH [illegible], located in lawn	Map 4*	6
8	12	Bluffs - 1627 Old Manor, Derby	Install inflow protector.	Private MH [illegible], located in driveway	Map 4*	4
9	12	Bluffs - [illegible] Old Manor, Derby	Install inflow protector.	Private MH [illegible], located in driveway	Map 4*	4
10	12	Bluffs - [illegible] Old Manor, Derby	Install inflow protector.	Private MH [illegible], located in driveway	Map 4*	4
11	12	Bluffs - 1408 Greenbriar, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in street	Map 4*	2
12	12	Bluffs - **Old Manor & Kingston**, Derby	Frame ring just set on top of frame - raise & Apply a 1/2" cementitious lining to frame & rings lacking between 3rd & 4th rings down	Private MH [illegible], located in lawn	Map 4*	2
13	12	Bluffs - End of **Old Manor**, Derby	Apply a 1/2" cementitious lining to frame and install inflow protector.	Private MH [illegible], located in pool yard	Map 4*	6
14	12	Bluffs - 1114 Kingston, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in street	Map 4*	2
15	12	Bluffs - 1108 Kingston, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in street	Map 4*	2
16	12	Bluffs - 1512 **Briarridge**, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in lawn	Map 4*	2
17	12	Bluffs - 1701 **Briarridge**, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in lawn	Map 4*	2
18	12	Bluffs - Past 1704 **Briarridge**, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in field	Map 4*	2
19	12	Bluffs - 1510 Stoneridge & Briarridge, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in lawn	Map 4*	2
20	12	Bluffs - Stoneridge, Derby	Apply a 1/2" cementitious lining to frame	Private MH [illegible], located in lawn	Map 4*	2
21	12	Tanglewoods Apartments, [illegible] Route 5, Derby	Pressure inject MH with epoxy grout until leaks have stopped at frame to cone joint and at base, followed by a 1/2" cementitious lining to interior; 1/4" chimney seal material applied to the exterior exposed in ditch	MH [illegible], located in ditch	Map 5	20
22	12	South of Tanglewoods Apartments at Niagara Mohawk Pole 83, Route 5, Derby	Apply a 1/2" cementitious lining to interior of frame; apply 1/4" chimney seal material to the exterior exposed in ditch	MH [illegible], located in ditch	Map 5	15
23	12	Route 5, Derby	Apply a 1/2" cementitious lining to interior frame; apply 1/4" chimney seal material to the exterior exposed in ditch; install inflow protector.	MH [illegible], located in ditch	Map 5	6

Notes: Route 5 is also known as Erie Road; Updated Streets are shown in bold; * Previous map listed streets incorrectly.

Total I&I Removal Estimated (gpm) [illegible]

Rehab Details

- Using the GIS, the contractor is provided with site maps and any pictures available
- Inspection must be done by County staff at the time of rehab
- Rehab details are logged by County

Compiling the Rehab Work for the Developers

- Finding additional rehab work for developers has taken a considerable amount of ECSD 2 investigative field work (televising additional sewer main lines and service laterals).
- The rehab lists are then given the appropriate I&I removal value, and submitted to the NYSDEC and the Health Department for their approval.
- Once approved, the rehab list is a condition for the sanitary sewer extension approval which must be completed prior to any permits being issued.

The DSM Project Overview

- Development is a very important economic factor for the County, the Towns (Hamburg and Evans) and for ECSD 2, which was realized by the NYSDEC.
- The coordinated and cooperative efforts between the DSM, the NYSDEC, and the developers should be acclaimed.
- The developers are provided with the most cost effective rehab in an effort to still be economically feasible for building in this area.

Repair and Rehab Work to Private Laterals in ECSD 2

- Advantages to developers replacing laterals :
  - ***Homeowners*** have their lateral replaced at no material or labor cost to them, only to have the responsibility of restoration to their property (lateral replacement cost is typically $1,500-$3,000).
  - ***Developers*** remove the most I&I for their rehab costs in replacing laterals (42 gpm).

Where Do We Go From Here…

- ECSD 2 and the other ECSDs will continue to be proactive with the I&I programs in place
  - Investigation & Rehabilitation work
  - Continuing to improve our level of service
  - Improve efficiency of our own records
- I&I work tracked through electronic forms, databases, and GIS/computerized maintenance management systems
- Online flow monitoring and SWMM hydraulic modeling of our system
- Capital Improvements Plan (CIP) is also in progress to determine future rehab and replacement projects

Questions or Comments??

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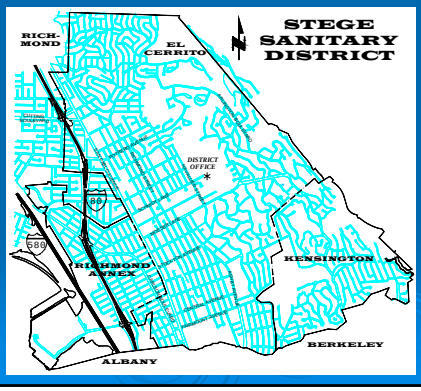
Stege Lateral Testing & Replacement Program

Stege Sanitary District
El Cerrito, California

Douglas Humphrey, District Manager

STEGE SANITARY DISTRICT



STEGE SANITARY DISTRICT

Satellite Collection System Agency

Serves El Cerrito, Kensington, Richmond Annex

- *5.5 Sq. miles, 150 miles main lines, 2 pump stations*
- Hayward Fault bisects the District
- 30% of Main Lines are in Easements, 50% in hilly terrain
- *Laterals – 13,000 connections, about 125 miles of laterals*

- System Replacement Value = $95 million
- Annual Operating Budget = $2.1 million
- Annual Capital Budget = $ 1 to 3 million

HISTORY OF THE DISTRICT

About the District

- *1913-1980* DISTRICT BUILD-OUT
- *1980-1985* EAST BAY I/I STUDY
- *1986-1997* I/I CORRECTION PROGRAM ($12M)
- *1992 ...* DIGITAL MAPS OF THE DISTRICT
- *1996 ...* SYSTEM REHAB PROGRAM (SRP)
- *1997 ...* DEVELOPED AND IMPLEMENTED PROACTIVE OR RELIABILITY CENTERED MAINTENANCE
- *2005 ...* LATERAL INSPECTION PROGRAM

Inflow / Infiltration (I / I)

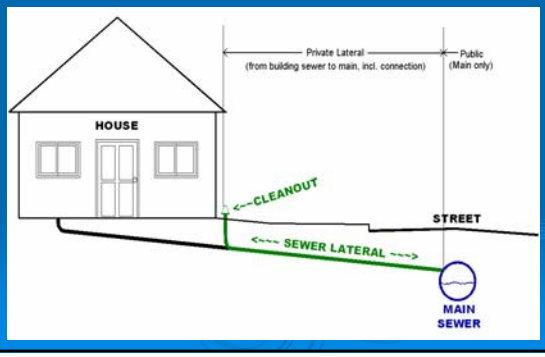
EAST BAY I/I STUDY

- Excessive I/I in EBMUD Service Area
- Stege - ADWF of 2.8 MGD, PWWF of 50 MGD
- Majority of Stege I/I from Groundwater
- Each Satellite Agency in EBMUD Issued a Cease & Desist Order (CDO)
- Each Agency Responsible for Own Plan to Reduce Sanitary Sewer Overflows (SSOs) & Bypasses of Untreated Wastewater
- I/I Correction Program – A Regional Cost-Effective Plan

LATERAL REHABILITATION - 1987

- Replaced all Laterals and Main Lines in one sub basin (small & separate – 110 residences)
- **Reduced I/I by 86%**
- Conclusion – **Laterals** responsible for majority of I/I
- Result – Changed cost-effectiveness assumptions, constructed more relief lines to provide capacity. Available downstream capacity at EBMUD Wet Weather Treatment Plant. This Plant treats (advanced Primary) "excess" flows during major storm events (about 6-8/year)

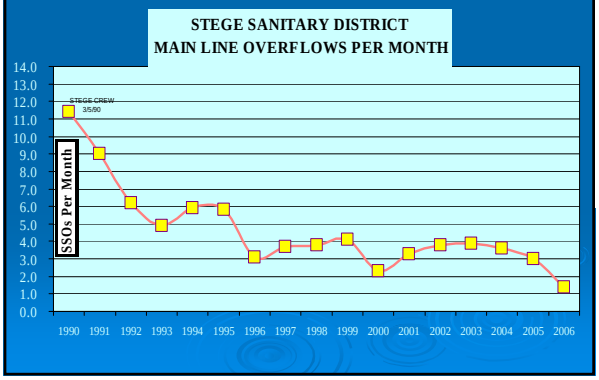
Lateral – Includes Connection to Main



LATERAL TESTING PROGRAM

- Discussions Regarding a Lateral Testing/Replacement Upon the Sale of Property Initiated in 1999
- Main Line Rehabilitation Program On-Going and Successful (Reduced Overflows, Bypasses Eliminated). Replacing 1.25 % of System/Year. SSOs Reduced from 150-160/year to 20
- Laterals – Still Significant Source of I/I
- Examples – Alameda, Albany, Burlingame, Tahoe-Truckee. Subsequently Berkeley, Richmond, & many others considering a similar program

SSO History



LATERAL TESTING PROGRAM

- Details of Program Completed in Early 2005
- Ordinance Revision Prepared – Adds the Sale of Property as Additional Requirement (to 5 existing) for the Testing of Laterals. Estimated at 400 to 450 sales per year
- Ordinance Passed in June 2005 – Implementation Date of September 6, 2005

LATERAL TESTING PROGRAM

- Realtor Associations Contacted Regarding Program
- Contacted Again and Notified Formally about Ordinance
- Written Information & Notices Sent to Realtor, Title Companies, Associations. Much More Interest in August 2005!
- Notified ALL Property Owners – Letters (7/05) & Newsletters in October 2005 & Spring 2006

LATERAL TESTING PROGRAM

- Video Testing - Property Owners Responsible
- Compliant for 10 Years After Lateral Replaced
- District Staff Reviews Video Tapes – No Charge. Permits for lateral work are $25. Some Contractors Charge $0 for Video Inspection
- HDPE is an Approved Material, & is the Predominant Type of Pipe Used
- Allowing Time Extensions – Modified Ordinance in 2007. Stege does NOT Prevent Closing of Sales or Escrow

HDPE Installation
Small Machine in Pulling Pit/Manhole

HDPE Fusing Machine

LATERAL TESTING PROGRAM

- Opposition Subsided Quickly
- Compliance Rate of about 90% by mid-2006. Was 75-80 % as of January 2006
- Additional 20 to 25 hours per week of Staff Time – Phone Assists, Video Assessment, Inspections, Records Management
- Following Up on Non-Compliance

LATERAL TESTING PROGRAM

- Tracking
  - Access Database
  - On-Line Property Sales Data
  - Initiated Use of Listing Databases in 2007
- Data
  - Test Results, Compliance, Extensions & Dates.
    - Over 1000 Compliant as of November 2007 (8%)
    - Over 700 Compliant as Direct Result of Sale
    - About 450 Sales Per Year in District
    - Will Take Decades(35-40 years) to Complete System
    - Lateral "Failure Rate" is about 90 % - Old VCP

LATERAL TESTING PROGRAM

- Enforcement
  - Letters for Non-Compliance
  - Letters to Agents upon Listing
  - Future : Inspection Warrant, Testing, Replacement (when needed) by Stege. Expenses, including Staff Time, to be Placed on Property Tax Bill

Suggestions

- Outreach to Real Estate Community is Vital – Explain This is Value Added to Their Clients & Community as a Whole
- Provide Notice to Everyone, and on Multiple Occasions
- Work with Realtors Prior to Implementation to Ensure Processes that Provide a Mutual Benefit are Included, and Processes that the Realtors Will Support

Questions ?

Q & A Session

- Laurie Chase, PE, FMSM Engineers
- Charles Martin, PE – Director, LFUCG Division of Water and Air Quality
- Thomas Whetham, PE – Deputy Commissioner, Erie County Department of Environment and Planning
- Doug Humphrey, PE – District Manager, Stege Sanitary District