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CSO Program Stakeholder Workgroup: Meeting #2

Newport City Hall – Council Chambers

April 20, 2011

CH2MHILL

Welcome & Introductions

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- City Representatives
  - Julia Forgue – Director of Utilities
- CH2M HILL
  - Peter von Zweck – Project Manager
  - Becky Weig – Public Involvement
  - Bill McMillin – Metering Program
  - Katie Chamberlain – Field Investigations
- Stakeholder Workgroup Participants

Agenda

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- Approval of Previous Minutes
- Overview of the CSO Program Schedule
- Parking Lot Follow-up Items
- Key Meeting Topics
  - Metering
  - Infiltration/Inflow Investigations
- Future Meetings, Wrap-up & Questions

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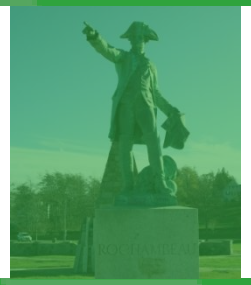


OVERVIEW OF THE STAKEHOLDER WORKGROUP

Schedule of CSO Stakeholder Workgroup Meetings

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	2011												2012											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Meeting #1 - Overview		●																						
CSO System Tours			●																					
Meeting #2 - Metering & Extraneous Flow Investigations				●																				
Meeting #3 - GIS, CMOM & WPCP							●																	
Meeting #4 - Harbor Water Quality									●															
Meeting #5 - Financing & Rates											●													
Meeting #6 - Decision Science Process														●										
Meeting #7 - Draft Collection System Capacity Assessment & SMP																	●							
Meeting #8 - Updated SMP																				●				
SMP - Final to EPA																							▲	

- Schedule developed to meet 2 key objectives:
  - Develop a collective understanding of the CSO Program (Meeting #s 1 – 4 & CSO System Tours)
  - Allow sufficient time for discussion and inclusion of Workgroup comments into the SMP (Meeting #s 5-8)

CSO Program Stakeholder Workgroup Mission Statement

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- To review proposed plans and projects for the CSO Program and provide recommendations to the City about the potential benefits and impacts of proposed plans and projects to all users of the system.
- To share CSO Program plans and project information with each stakeholder's organization to aid the City in its efforts to communicate CSO Program information.
- To support the CSO Program's public education efforts through participation in CSO Program public education activities.

Purpose of the Stakeholder Workgroup

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Boundary Conditions – limits of the Workgroup's activities

- The Workgroup may:
  - Ask questions about Program approach
  - Provide their perspective on Program approach & decision making
  - Review Program plans and projects & make recommendations
  - Disseminate Program information to their organizations
  - Propose Workgroup agenda topics
- The Workgroup may not:
  - Set City policies
  - Commit City funds

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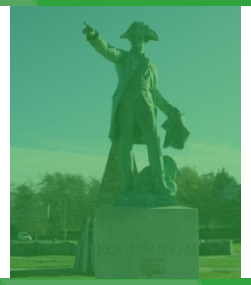


PARKING LOT FOLLOW-UP ITEMS

Parking Lot Questions #1&2

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- How long does flow stay in the system before reaching WPCP?

Example Location from Upstream in Catchment 2		
Range of System Velocities (ft/s)	**Total length (ft)**	**Time (Hr)**
2.5	24000	2.67
5	24000	1.33
8	24000	0.83

Results were confirmed by using hydraulic model for June 12-13, 2010 event. Lag time between input to Catchment 2 & WPCP was 1.5 Hr.

- Can conservation of water during rain events affect overflows?
  - Not in a significant way
  - Inflows during wet weather are 5 to 20 times larger than dry weather flows

Parking Lot Question #3

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- Q: What are the elements of the affordability analysis?
  - Wastewater costs per household (all Clean Water Act requirements – capital and O&M)
  - Capital cost amortization period
  - Borrowing interest rate & inflation rate
  - City bond rating
  - Net debt as a percent of full market property value
  - Unemployment rate
  - Median household income
  - Property tax revenue collection rate
  - Outside state & federal financial support (historic)


United States Environmental Protection Agency
Office of Water
Office of Wastewater Management (4204)
February 1997
EPA 832-B-97-004

EPA

Combined Sewer Overflows—Guidance for Financial Capability Assessment and Schedule Development

Final

Parking Lot Question #4

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Q: Can the City provide incentives for residents to disconnect private I/I?

- There is an ordinance in place that prohibits connections
- Funding for an incentive program through sewer rates can be evaluated as part of SMP development
- Public education and outreach efforts to promote disconnection of private I/I sources to be discussed later in meeting

Parking Lot Question #5

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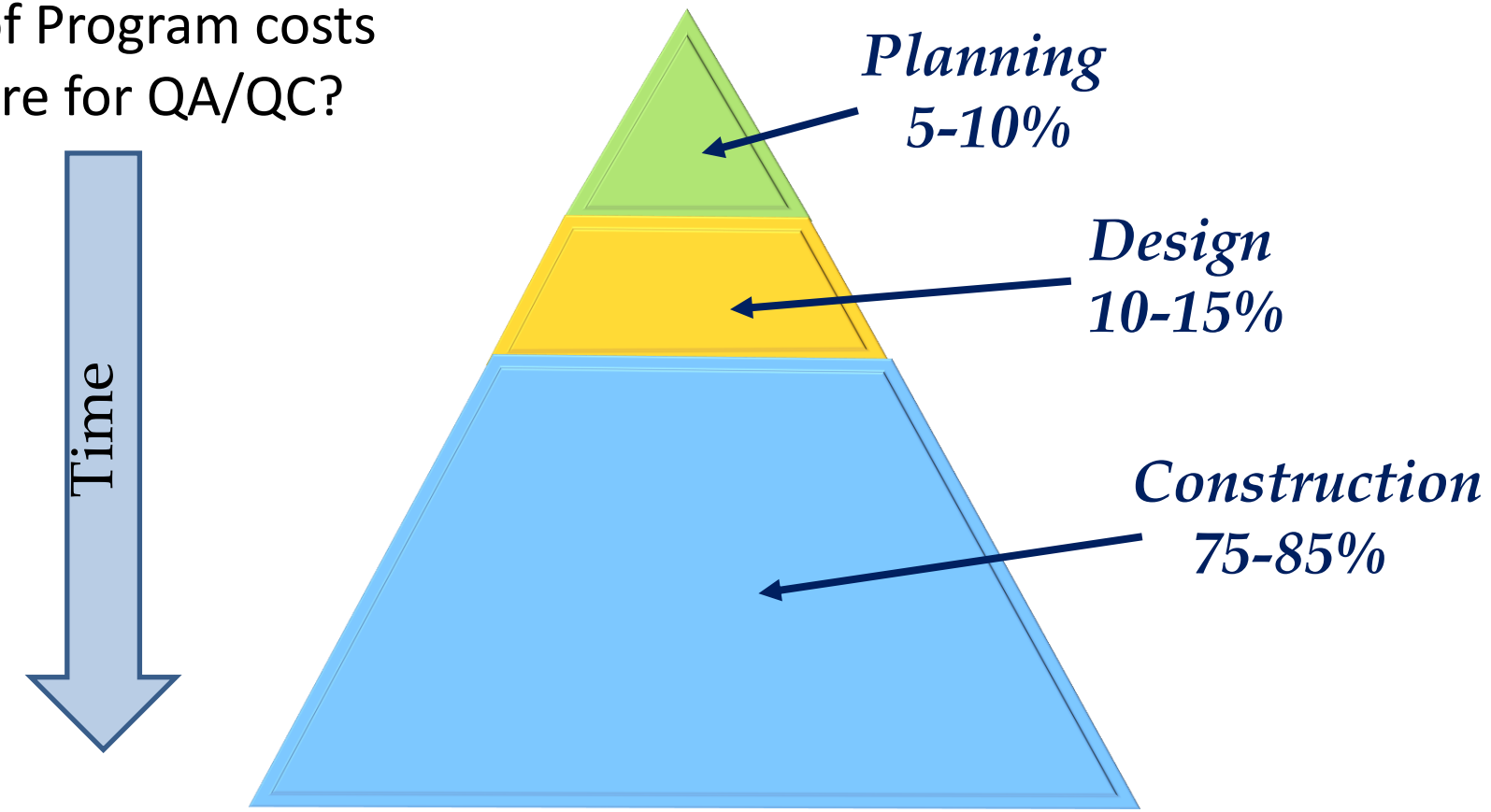
Q: What percentage of Program costs are for QA/QC?



QA/QC ~ 10-15 % of total Program Costs

Parking Lot Question #6

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Q: Can the Workgroup learn more about the contracts for wholesale customers?

- WPCP DWF capacity is 10.7 MGD
- All customers pay equitable share of costs based on allocations of flows…

User	Allocation	Dry Weather Flow Allocation (MGD)
City of Newport	53.3%	5.7
Navy	27.1%	2.9
Middletown	19.6%	2.1

Parking Lot Question #7

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Q: How is CSO program performance measured? Are there benchmarks?

- CSO Program benchmarks are set by:
  - Clean Water Act – receiving water bodies must meet water quality standards for their designated uses
    - Example: Fishable & swimmable
  - National CSO Control Policy
    - Presumptive Approach – allows annual average of 4 or more CSO events/yr – or – 85% capture by volume – to eliminate impairments
    - Demonstrative Approach – prove that water quality standards and designated uses will be met

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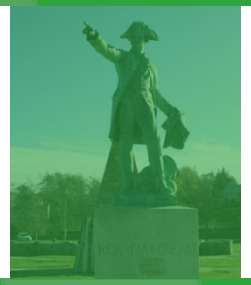


KEY MEETING TOPICS

METERING
I/I INVESTIGATIONS

Workgroup Meeting #2 – Key Topics

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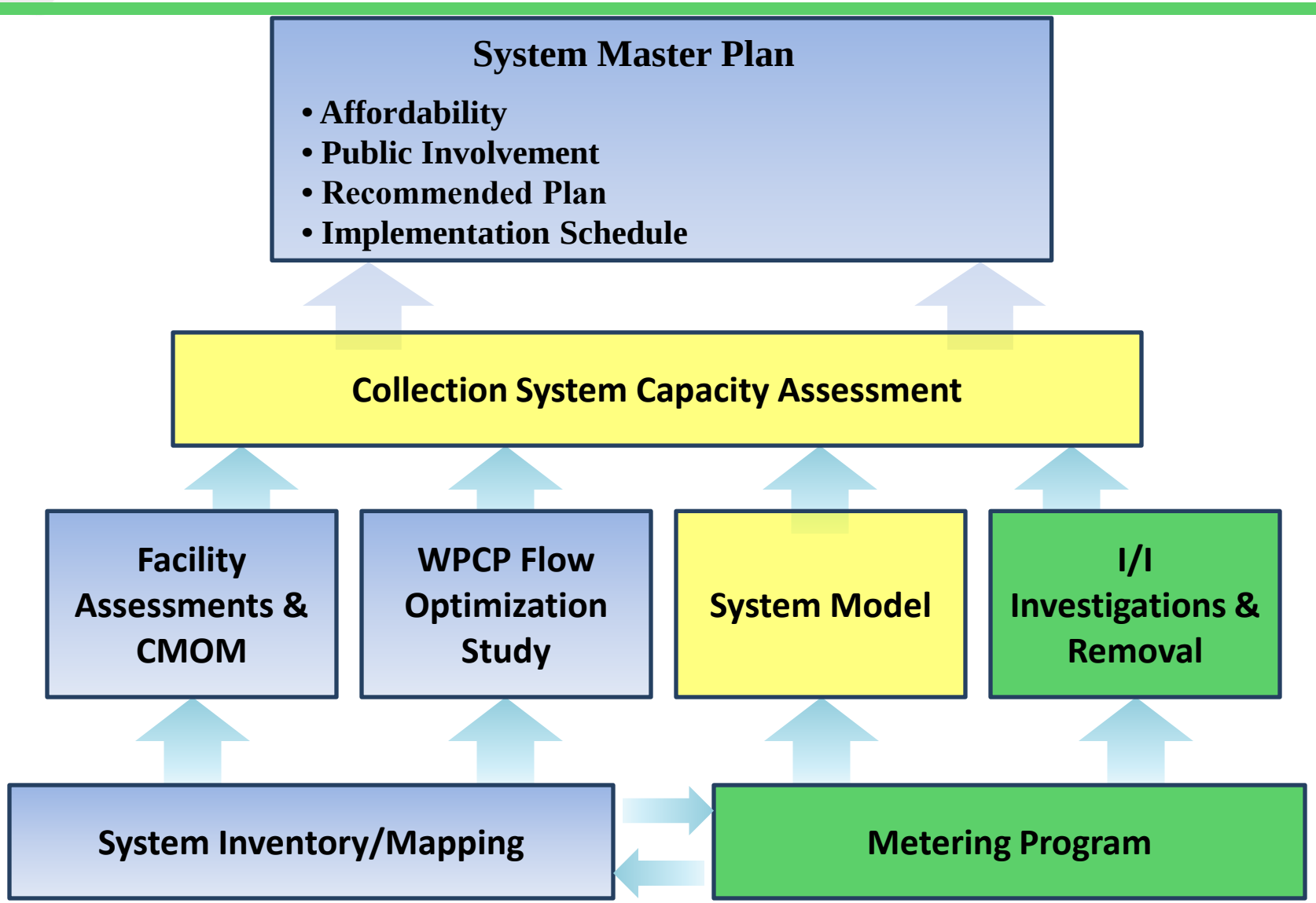

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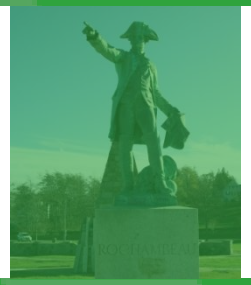


METERING

Metering Program

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- Elements of the metering program described today:
  - Purpose
  - Scope
  - Details
  - Using the data
  - Next steps

Purpose of the Metering Program

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- Provide flow data in sanitary and combined sewers for:
  - Characterization
  - Hydraulic Modeling
  - Evaluation
  - Future Planning

Purpose of the Metering Program

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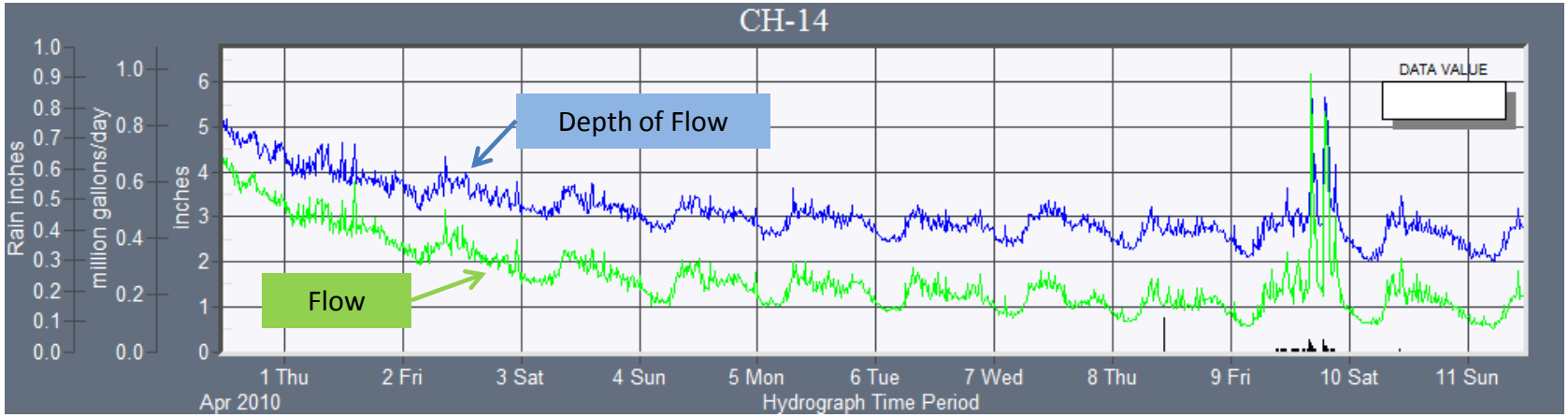
- Characterize conditions in the system during dry and wet weather
  - Monitor areas not previously monitored
  - Monitor private areas
  - Identify significant users
  - Understand how the entire system works
- Support hydraulic modeling
  - Hydraulics and flow for:
    - Dry weather - sanitary
    - Wet Weather – rain
  - Used to:
    - Build out the model
    - Verify that the model reasonably calculates observations



Purpose of the Metering Program

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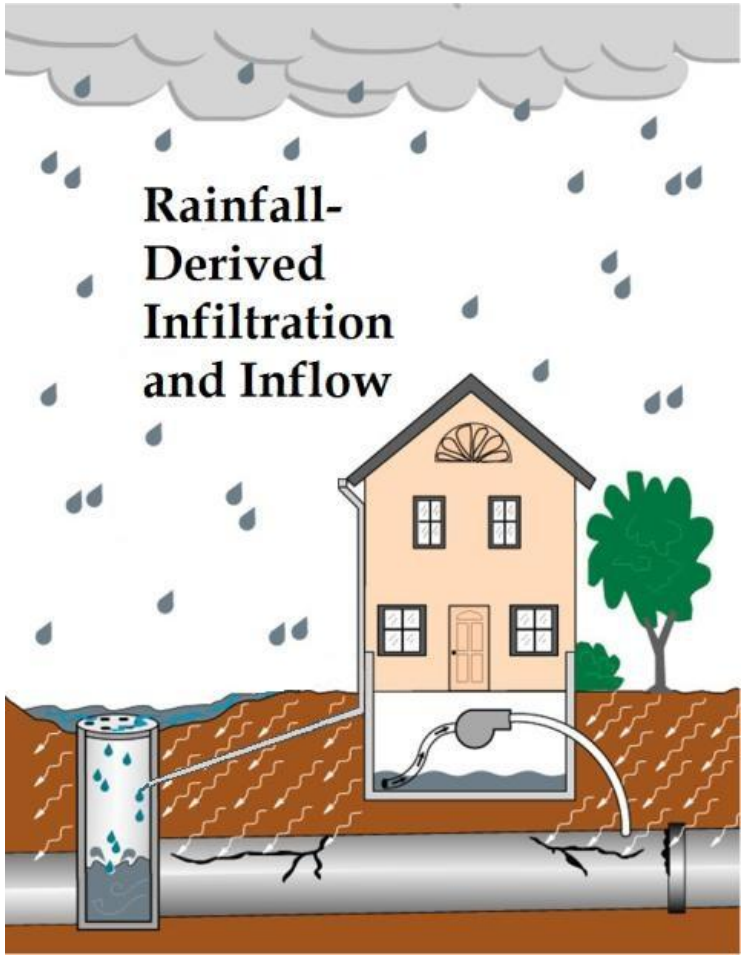
- Evaluations:
  - Periodic data review
    - Identify and correct metering problems
    - Direct meter relocations
    - Identify special studies
  - Rainfall-Derived Infiltration and Inflow (RDII) analyses
    - Identify extraneous flow
    - Direct extraneous flow investigations
- Future Planning
  - System master planning



Scope of the Metering Program

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- Install Meters (April 2010)
- Monitor for 12 months
  - Through April 15, 2011
- Perform Quality Control
- Manage Data
  - Real time
  - Monthly
- Data Analyses
  - RDII* analyses
  - Relocate meters
  - Guide field investigations
- Reporting

Meter CH-02 on Wellington Avenue
Post-Wellington Interceptor Replacement

*RDII – Rainfall-Derived Infiltration and Inflow

Details of the Metering Program

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- 35 Metering Locations
  - Velocity & depth of flow
  - Groundwater levels
  - 3 Rain gages
- Special - Salinity:
  - Monitoring in sewers at select locations
  - For infiltration into water table from harbor waters
- Other data compilation
  - Regional rainfall
  - System data for WPCP, pump stations, and Navy

Rain gage at Long Wharf Pump Station

Details of the Metering Program - Locations

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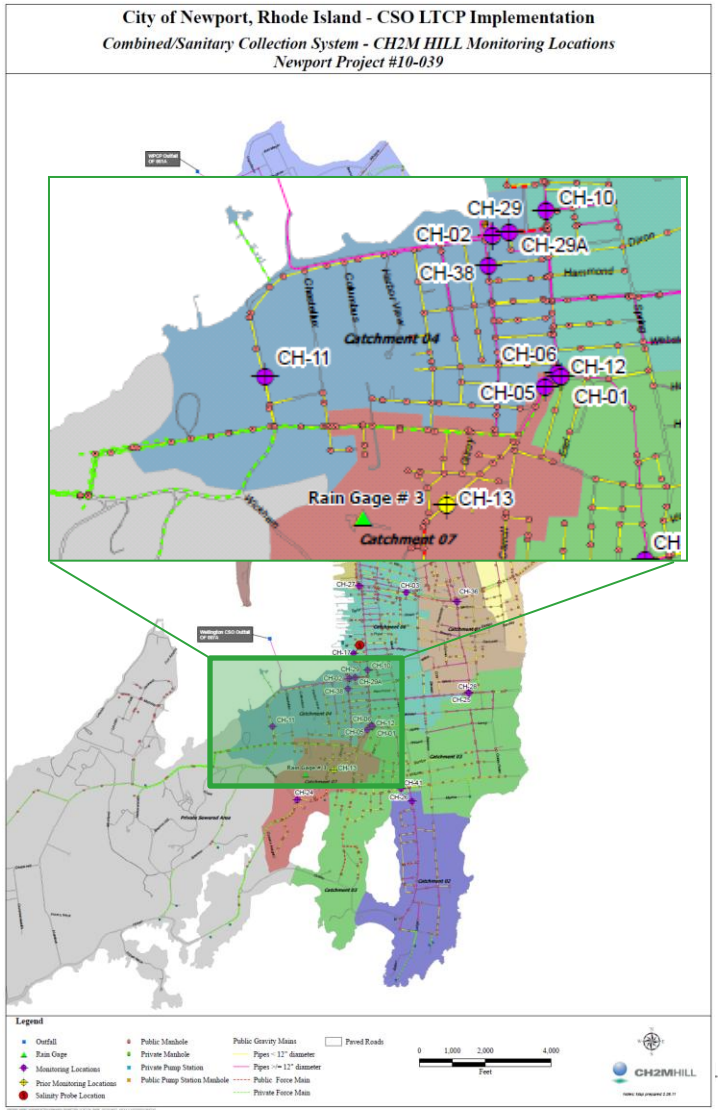
- Location selection criteria:
  - Previous locations for data continuity
  - Private Areas
  - Completed sewer projects
  - New areas not previously monitored
    - Washington
    - Direct to WPCP
  - Controls:
    - CSO Treatment Facilities
    - Narragansett storage conduit
    - Diversions
- Rainfall coverage



Details of the Metering Program
Tidal Effects on I/I Flows

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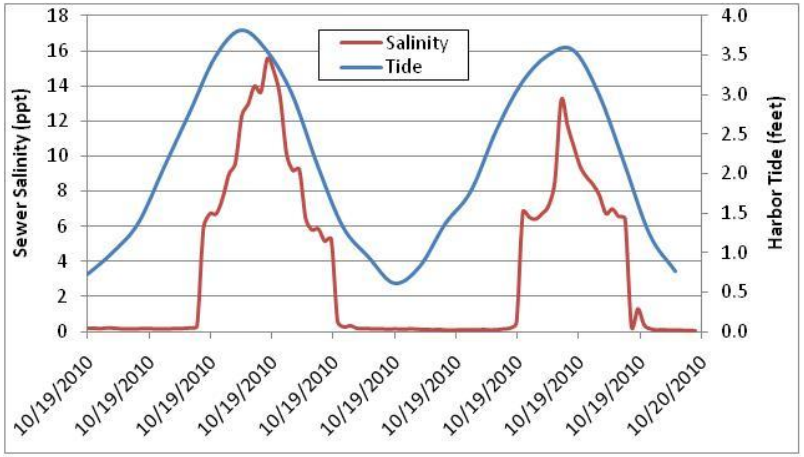
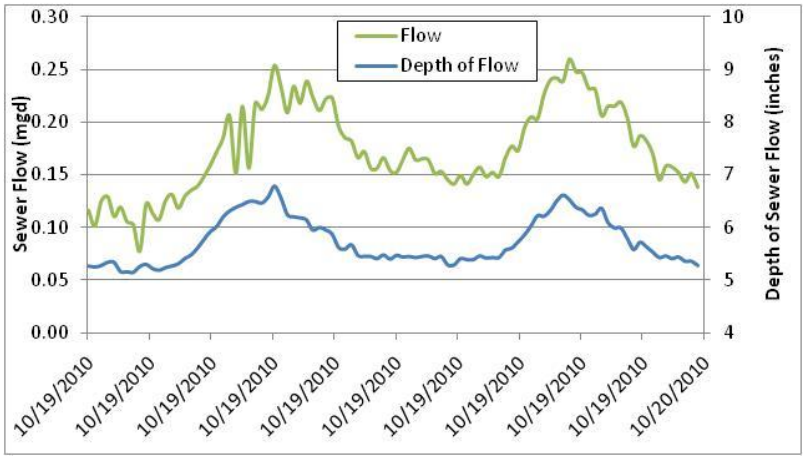
- Previous studies indicated tidal impacts may be significant
- Pathways:
  - Not through CSO outfalls or open pipes
  - Infiltration from water table in low-lying areas
- Data indicates:
  - Presence confirmed
  - Flow is insignificant and not a cause of CSOs

CH-18
Washington Street at Gladys Carr Bolhouse Rd.





Using the Data
System Response to Wet Weather

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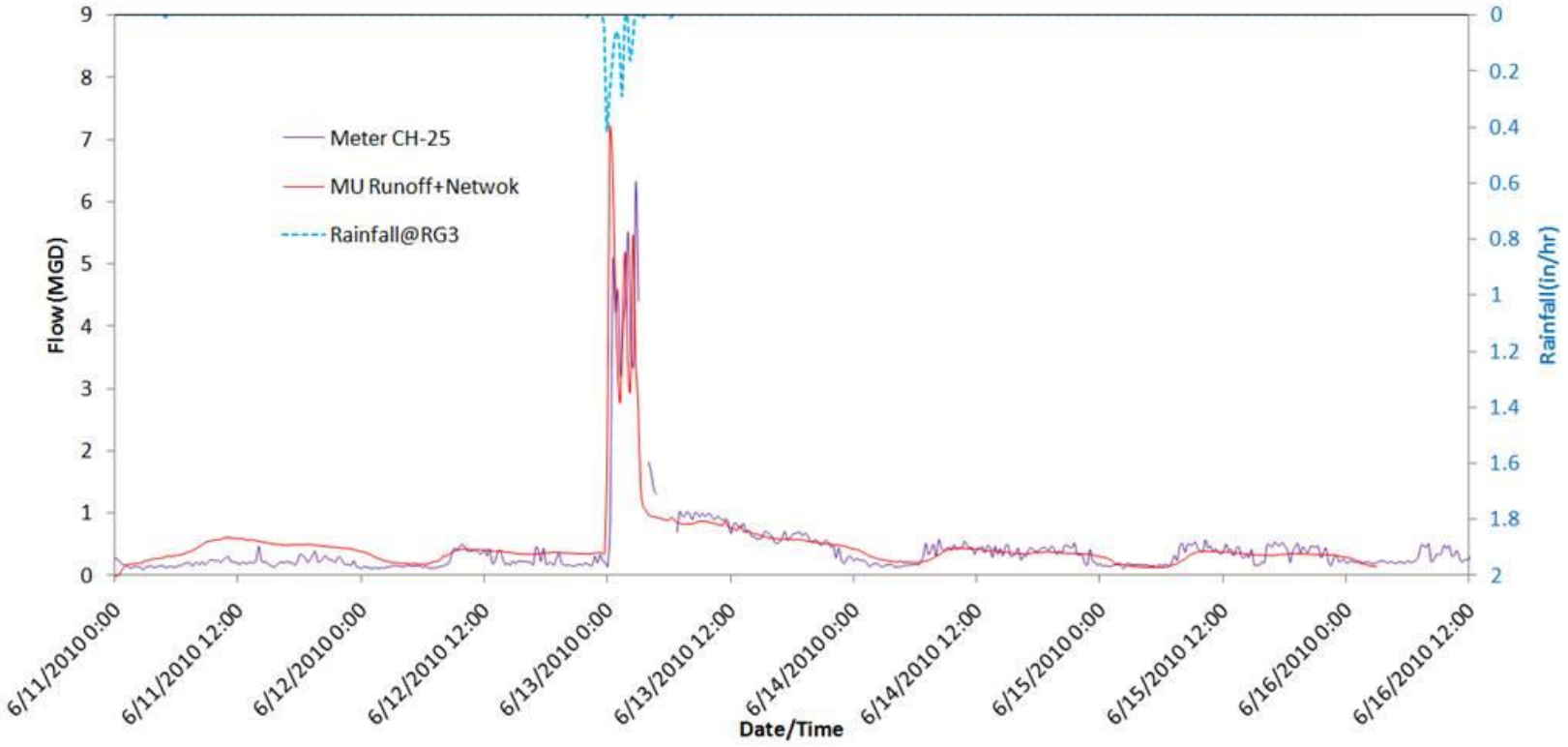
- Meter CH-25 at Narragansett Avenue
  - Area east of Bellevue, from Narragansett to north of Memorial
- Sewer flow responds quickly to wet weather



Using the Data To Prioritize Field Investigations

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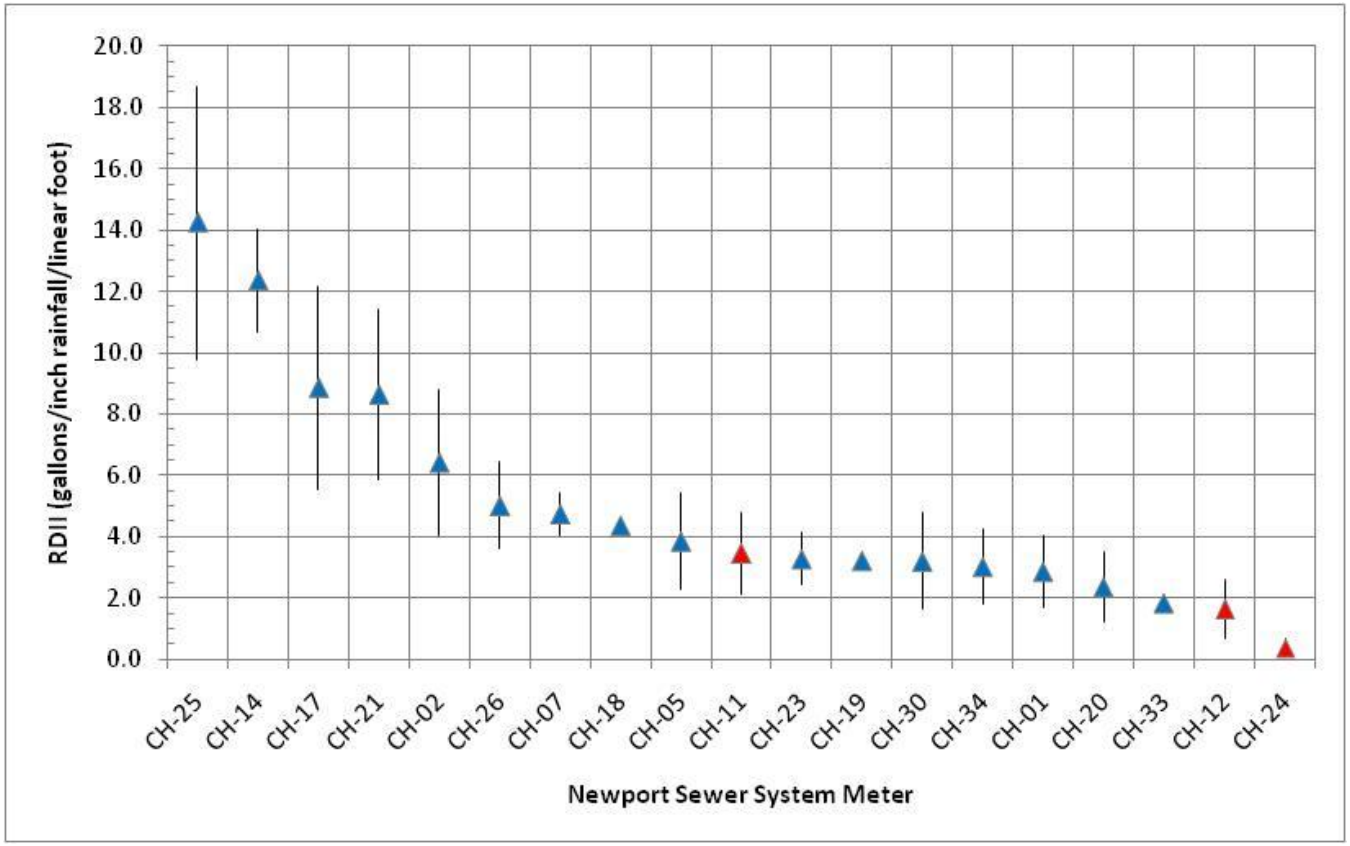
- June meter data was used to preliminarily calculate I/I, rank and prioritize areas, and direct initial I/I field investigations



RDII analyses were performed on three rain events in June 2010

Using the Data
Prioritized Areas for I/I Investigations

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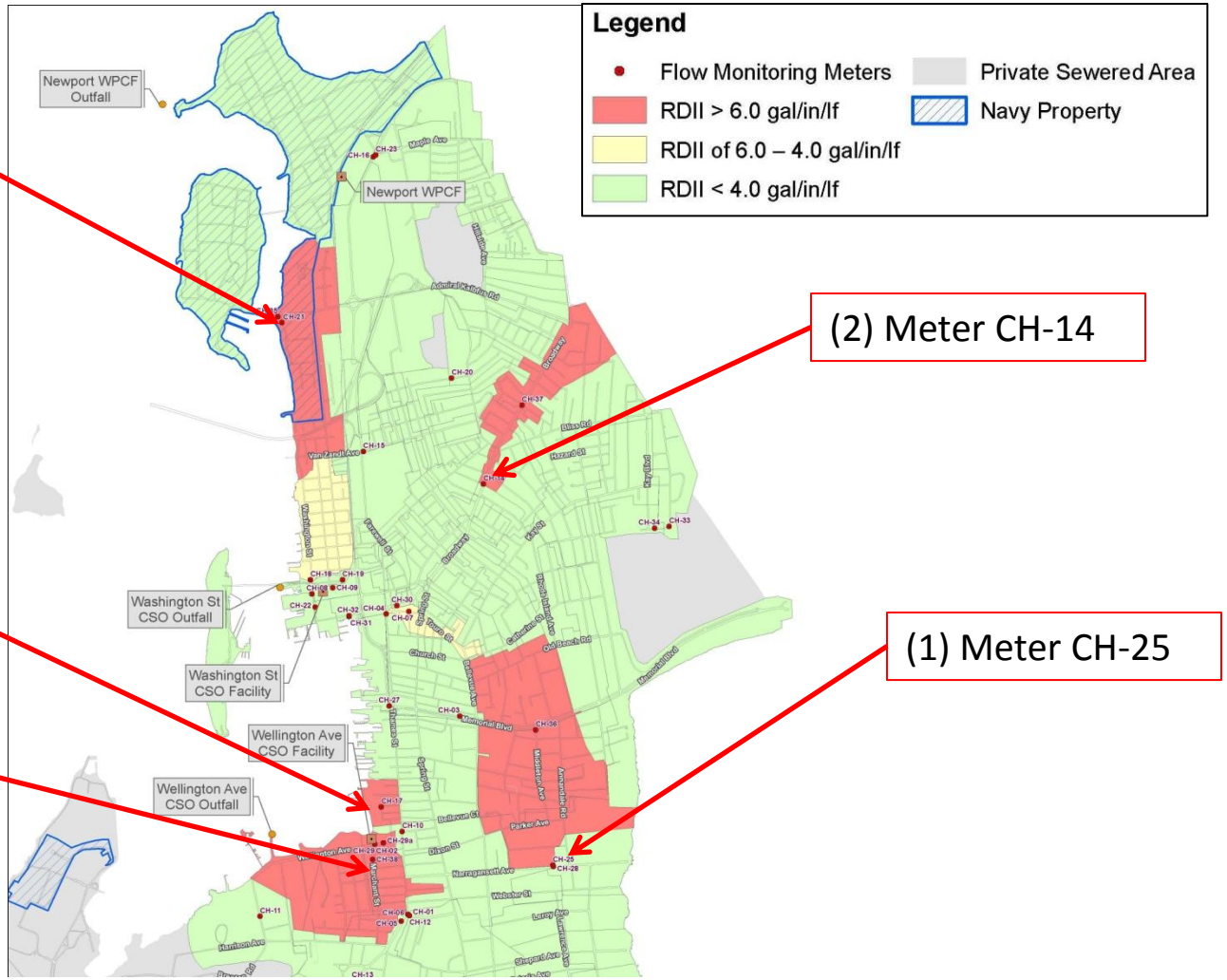
(4) Meter CH-21

(2) Meter CH-14

(3) Meter CH-17

(1) Meter CH-25

(5) Meter CH-02



Meter ranks in parentheses are based on preliminary June 2010 data analysis

Using the Data Input
Meter data is used for Modeling

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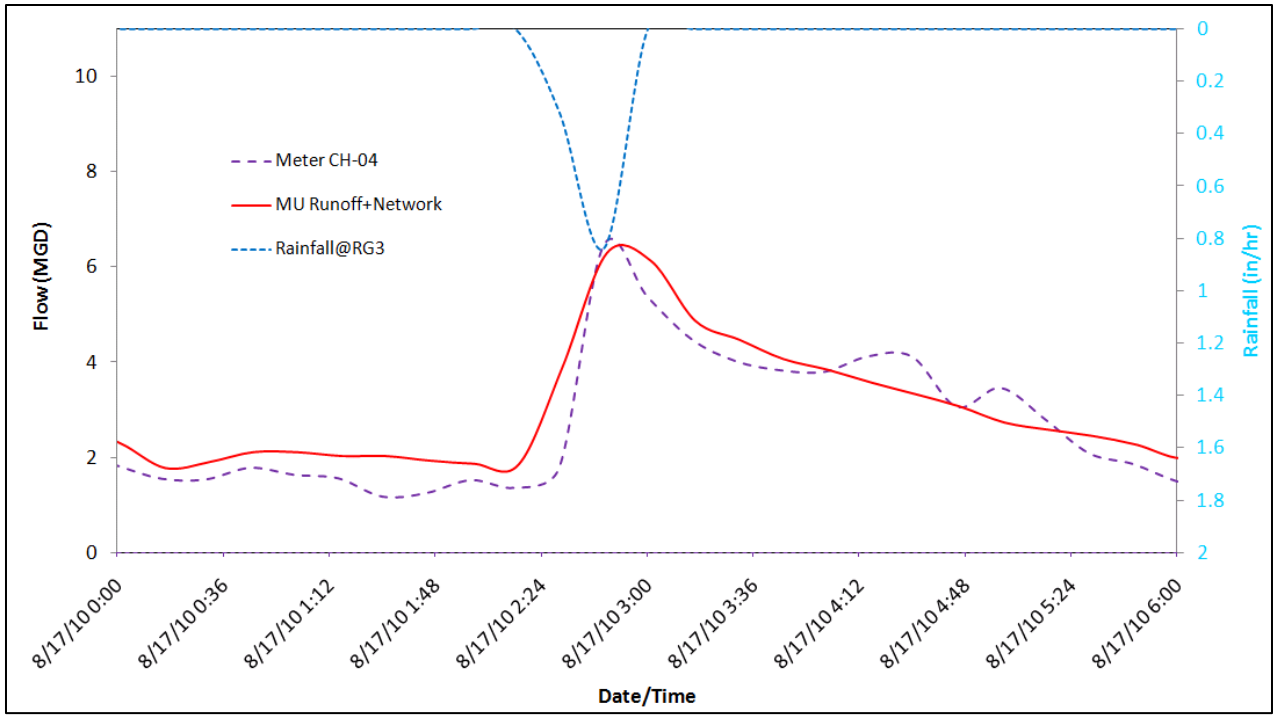
- Flow data from meter CH-04 on Thames Street near Touro Street is being used to verify that model calculations are accurate in the system



Data Input for Hydraulic Model Calibration - WPCP

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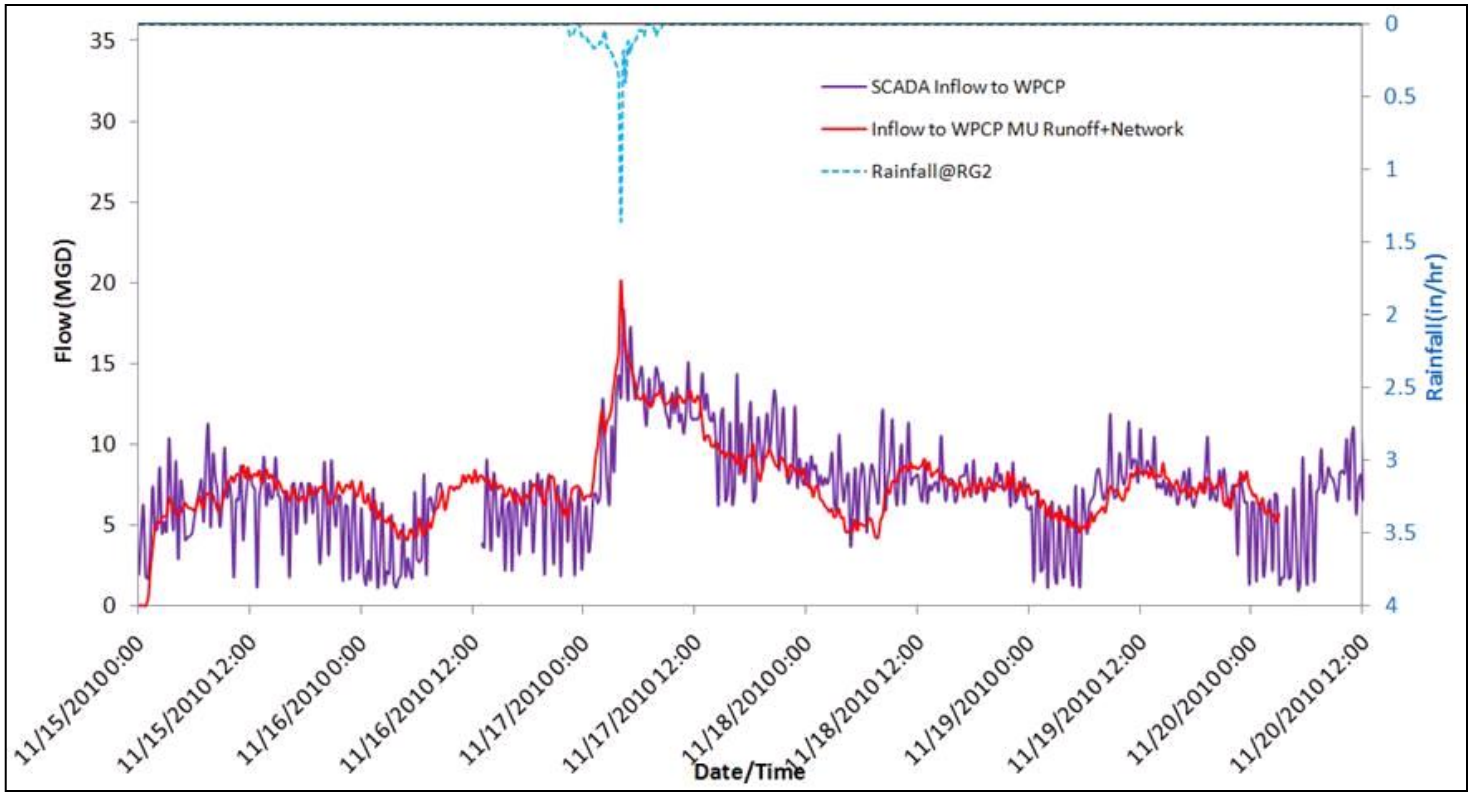
- Flow data recorded at the WPCP is being used to verify that model calculations are accurate for the WPCP



Metering Next Steps

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- Meter removal & demobilization
  - Starting April 15th
- Continue to meter selected locations
  - Measure benefits of recently completed projects
  - Collect additional data for model refinement
- Complete QA/QC
- Additional data analysis

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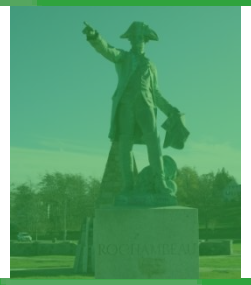


I/I INVESTIGATIONS

Infiltration & Inflow Investigations

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- Purpose of I/I Investigations
- Types of Defects
- Types of Investigations
- Previous Investigations & Follow-up
- Development of Current Investigation Program
- I/I Investigation Progress
- Next Steps
- Public Education and Outreach Options

Purpose of I/I Investigations

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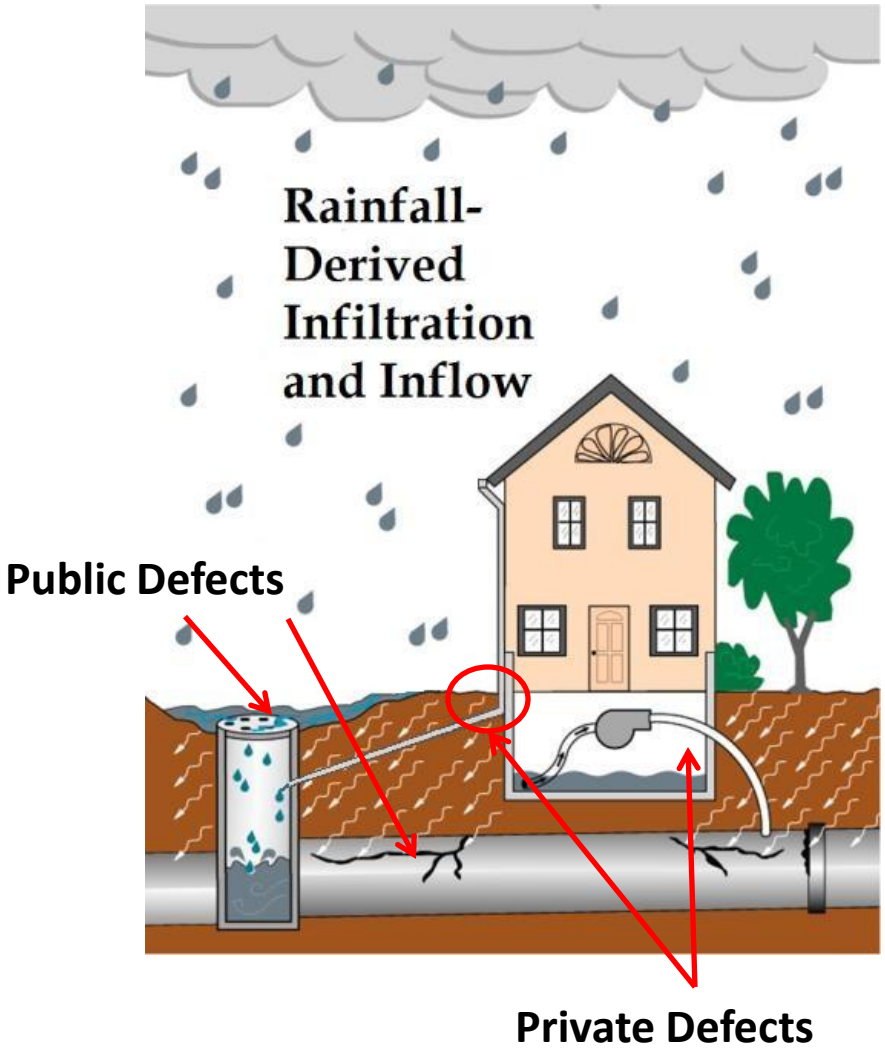
- Sources of I/I are identified through field investigations
  - Public
  - Private
- Corrective actions are then recommended for eliminating the defects

Types of Defects: Public & Private



- Examples of private defects:
  - Roof leader
  - Sump pump
  - Cracked service lateral
  - Uncapped cleanout
  - Area/driveway drain

- Examples of public defects:
  - Catch basins
  - Manhole defects (seals, cracks, cover holes)
  - Sewer line defects (cracks)
  - Area drain

Types of I/I Investigations

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- Smoke testing
- Manhole inspections
- Catch basin inspections
- CCTV
- Building inspections
  - Dye testing

Typical I/I Investigation Findings

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Roof leader

Vented manhole cover

Driveway drain

Service lateral defects

Stairwell drain

Curb inlet

Sump pump

Previous I/I Investigations

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- Focused on Wellington catchments
  - Smoke testing
  - Manhole inspections
  - Flow isolation investigations
  - Dye flood tests
  - CCTV
  - Building inspections
- Data has been integrated into a database

Previous Investigations Follow-up

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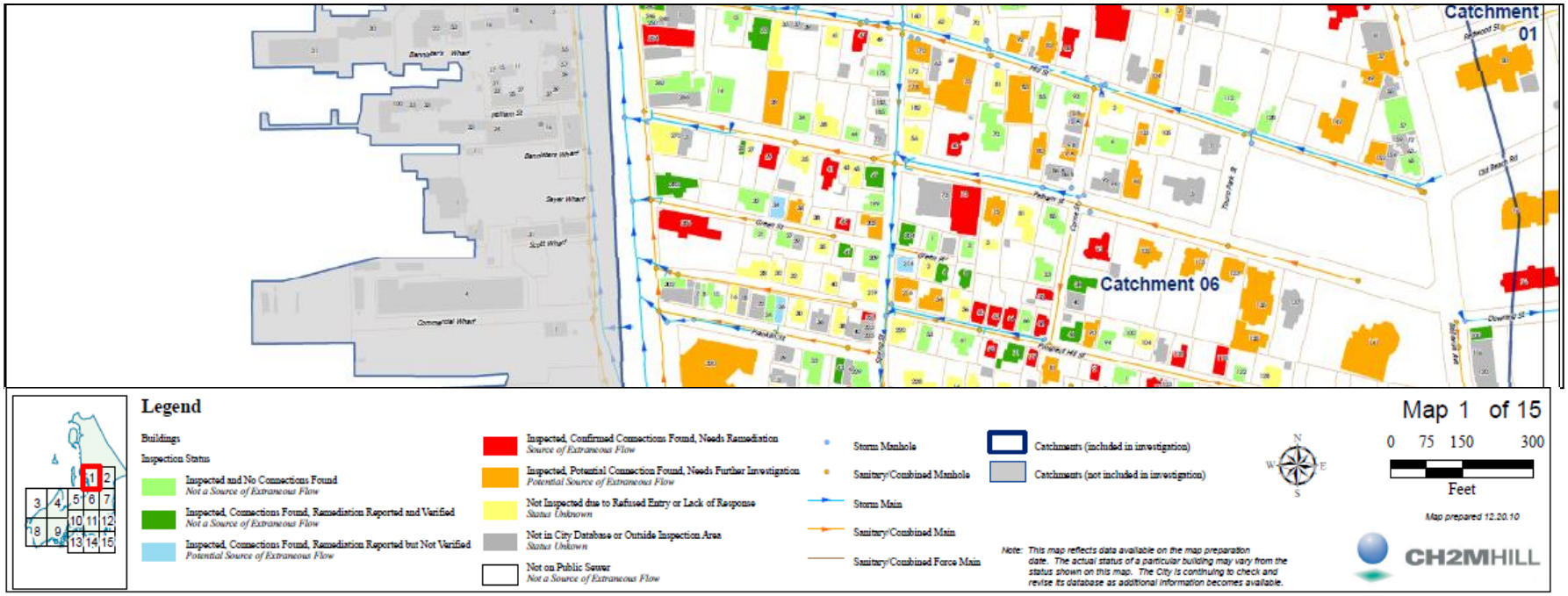
- Building inspection follow-up activities
  - Letters sent to properties with previously identified sources of I/I
  - Follow-up visits were conducted to verify disconnections
  - Attempted to inspect properties that were previously not inspected



Current I/I Investigations Differ Between Areas

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- Wellington Area
  - Focused on catchments with highest estimated I/I
  - Completed manhole inspections & building inspections not previously done
  - Verified disconnections from previous work
  - Re-smoke tested limited areas still showing high rates of I/I
  - Catch basin inspections
- Washington Area
  - Focused on catchments with highest estimated I/I
  - Started with faster & "bigger bang" inspections
    - Smoke testing
  - Followed up with manhole and catch basin inspections
  - Began building inspection program
  - Looking for both public and private defects

Current I/I Investigations Progress to Date

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Catchment	Building Inspections	Disconnection Verifications	Smoke Testing	Manhole Inspections	Catch Basin Inspections
1	O	O	C	C	C
3	Starting in May				
4					
6	O	O	C	C	
10				C	
11	O		C	C	O
13	O		C	C	

O = Ongoing
C = Completed

Preliminary Results of Current I/I Investigations

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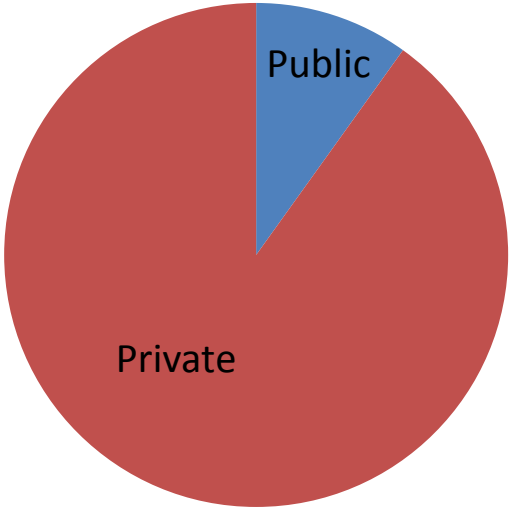
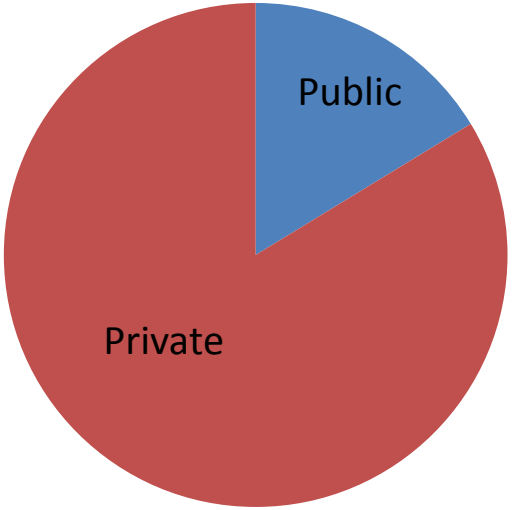
Catchment 1 (Wellington Area)

Public & Private I/I Flow Contributions



Catchment 11 (Washington Area)

Public & Private I/I Flow Contributions



Preliminary findings show that the majority of I/I flow is from private defects

I/I flows are estimated based on the types and numbers of defects found.
These are preliminary findings that will change as the program progresses.

Preliminary Results of Private I/I Flow Contributions

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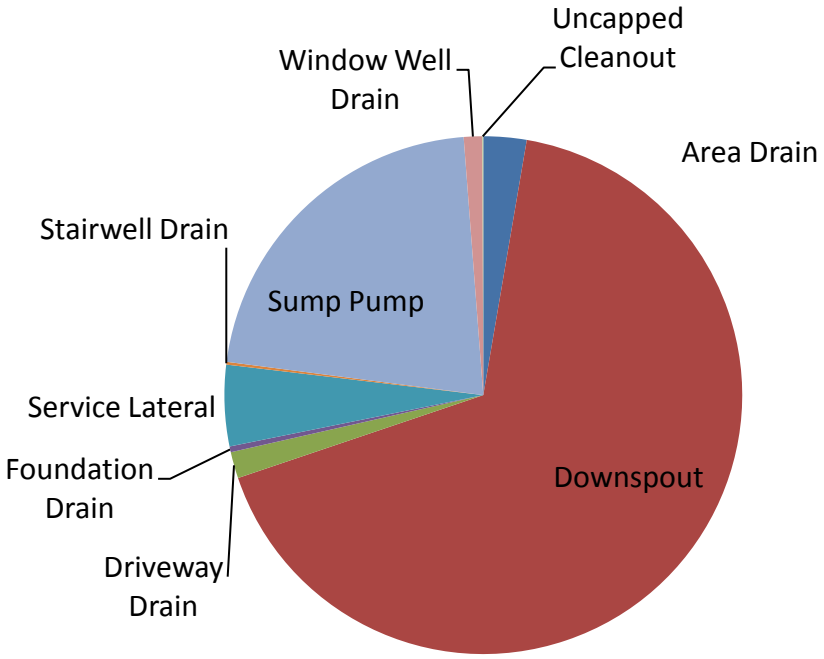
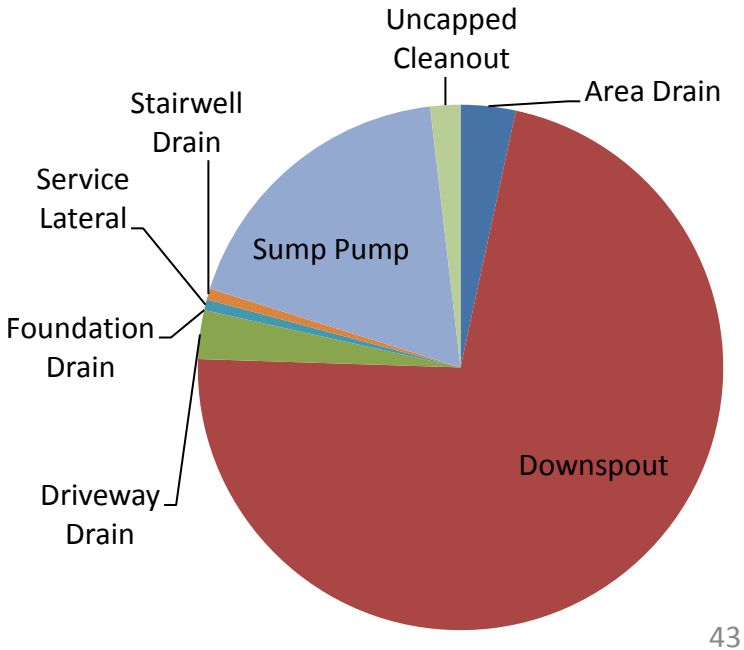
Catchment 1 (Wellington Area)



Catchment 11 (Washington Area)



Preliminary findings show that the majority of private I/I flow is from roof leaders

I/I flows are estimated based on the types and numbers of defects found.
These are preliminary findings that will change as the program progresses.

Preliminary Results of Public I/I Flow Contributions

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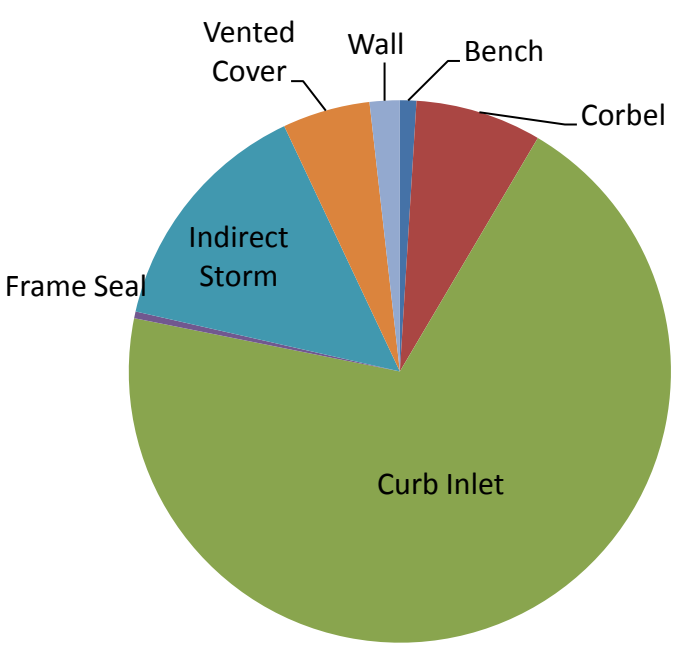
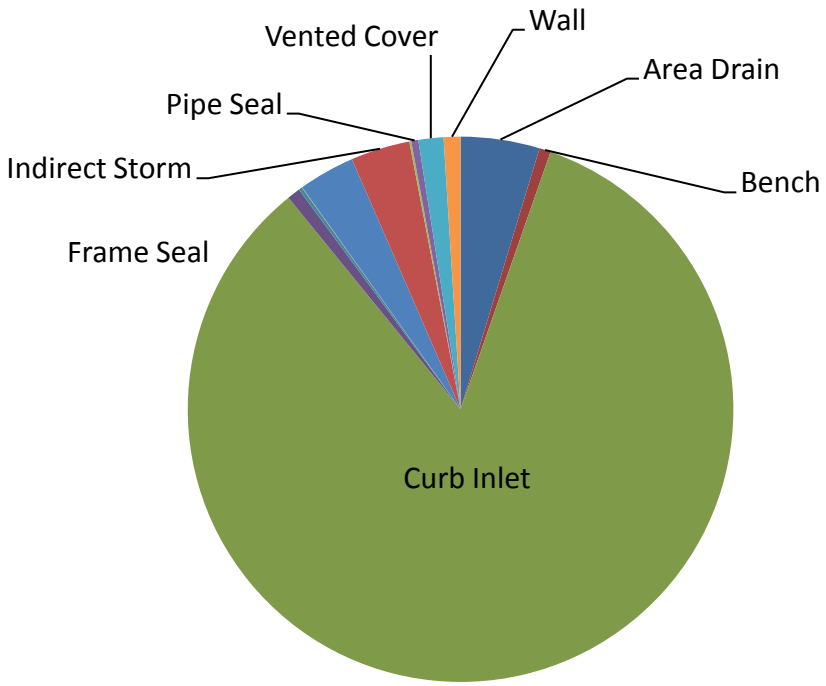
Catchment 1 (Wellington Area)



Catchment 11 (Washington Area)



Preliminary findings show that the majority of public I/I flow is from curb inlets

I/I flows are estimated based on the types and numbers of defects found.
These are preliminary findings that will change as the program progresses.

I/I Investigations Next Steps

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- I/I Investigations are an iterative process
  - Investigate
  - Analyze & evaluate data
  - Remediate & reprioritize additional investigations
  - Reinvestigate
- Continue to collect data
  - Building inspection program will be an ongoing process
  - Continue through this summer with smoke testing, manhole and catch basin inspections
- Will report field investigation results to EPA:
  - Wellington – July 2011
  - Washington – September 2011

I/I Public Education & Outreach Options

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- Purpose:
  - Increase success rates on building inspections and disconnections
  - Promote disconnections in catchments not yet inspected
- Options:
  - Newspaper insert
  - Bill stuffers
  - Website - City E-mail
  - Neighborhood associations presentations
  - Others?

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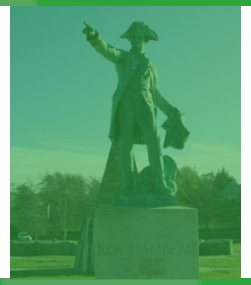


FUTURE MEETINGS, WRAP-UP & QUESTIONS

Future Meetings

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- Next Meeting
  - July 7, 2011
  - 3:00 PM
  - Council Chambers
  - Agenda Topics:
    - GIS
    - CMOM
    - WPCP

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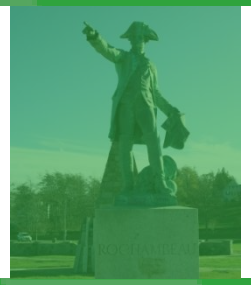


QUESTIONS?