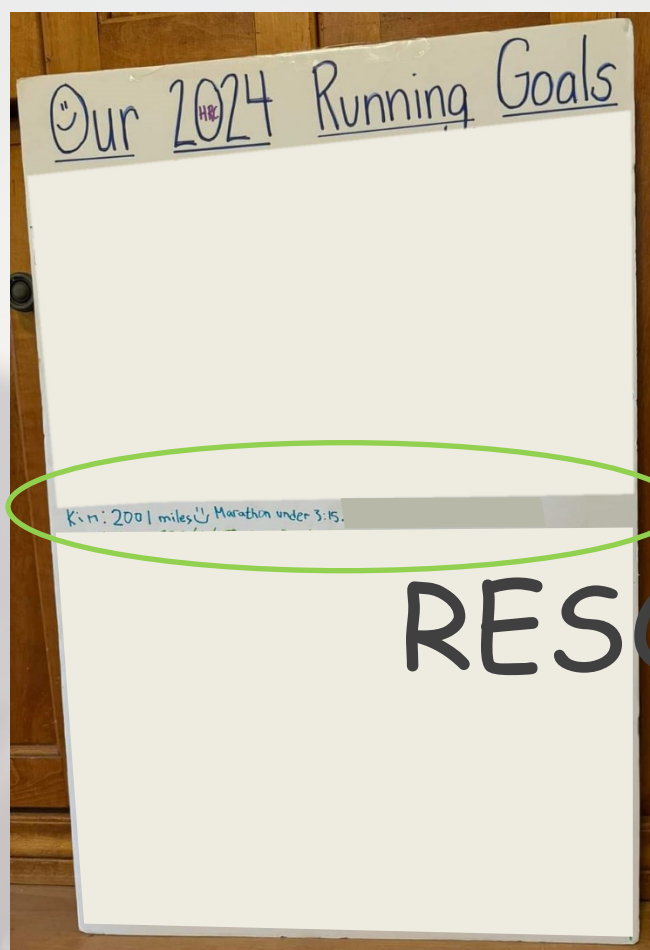




Your Key to Tackling I/I

A Well Engineered
Annual Inspection
Program (Plan)

Kin Wong
Project Manager, Weston & Sampson



2024 Goals

NEW
• 2000+ Miles
YEAR

RESOLUTIONS
• Marathons
Under 3:15



Wednesday 4

day 5



friday 10

saturday

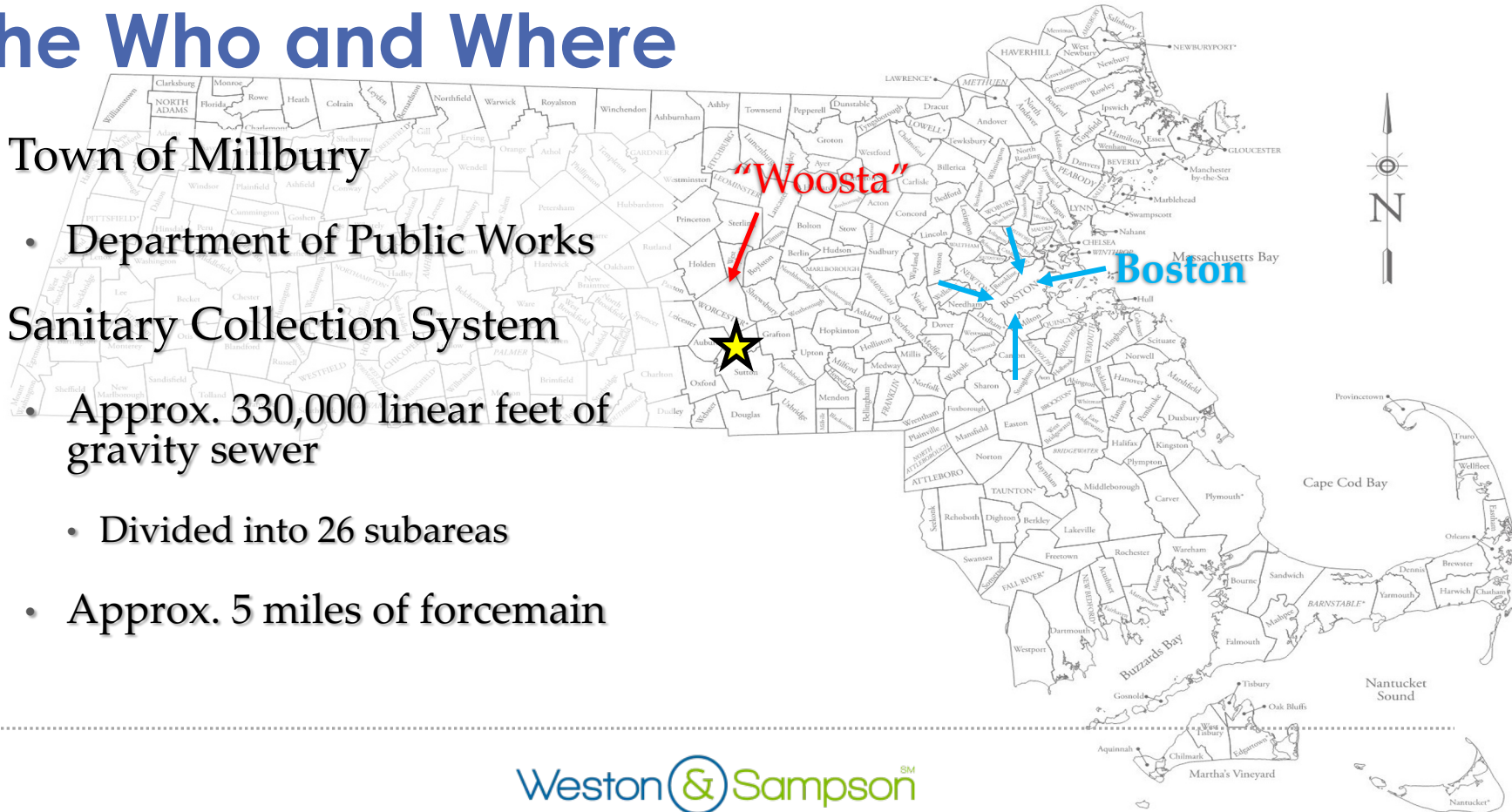
sunday

Goal and Objective (of this presentation)

- Five Ws and H
 - Who, What, Where, When, Why, and How
- Present an example
- Funding/Financial Recommendation
- Share some results

The Who and Where

- Town of Millbury
- Department of Public Works
- Sanitary Collection System
 - Approx. 330,000 linear feet of gravity sewer
 - Divided into 26 subareas
 - Approx. 5 miles of forcemain



The When

**Townwide
Metering
Project
2010**

**I/I Control
Plan -
Creation of
the Annual
Program
2017**

**First I/I Rehabilitation
Project – SRF Funded
2021/2022**



**Town of
Millbury
and
Weston &
Sampson
Partnership/
Collaboration
2016/2017**

**First I/I
Project
2017**

**Year 6 of the
Program
2024**

The What

- Annual I/I Program
- 4 to 6 Years Phase
 - Infiltration
 - Inflow
 - Construction Rehab

Fiscal Year	Planned Season	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Houses	Status
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FY2020	Spring	Year 4 Infiltration	Manhole inspections, flow isolation and television inspection	14 and 14B	24,904	137	-	✓
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Fiscal Year	Planned Season	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Houses	Status
FY2017	Spring	Year 1 Infiltration	Manhole inspections, flow isolation and television inspection	13	7,041	89	-	✓
FY2018	Spring	Year 2 Infiltration	Manhole inspections, flow isolation and television inspection	6 and 10A	14,141	96	-	✓
FY2018	Fall	Year 1 and Year 2 Inflow	Smoke Testing	6, 10A and 13	21,182	-	-	✓
FY2019	Spring	Year 3 Infiltration	Manhole inspections, flow isolation and television inspection	1, 5B and 7	23,545	140	-	✓
FY2019	Fall	Add'l Downtown Work	Additional Downtown Area Sewer Project	Downtown Area			-	✓
FY2020	Spring	Year 4 Infiltration	Manhole inspections, flow isolation and television inspection	14 and 14B	24,904	137	-	✓
FY2021	Fall	Year 3 and Year 4 Inflow	Smoke Testing, Dye Testing/Flooding with TV	1,5B, 7, 14, and 14B	48,449	-	-	✓
2021/2022		Year 1 to 4 Rehabilitation	Sewer Rehabilitation - Trenchless/Traditional Methods	1, 5B, 6, 7, 10A, 13, 14, and 14B	-	-	-	✓

FY2035	Spring	Year 13 Infiltration	Manhole inspections, flow isolation and television inspection	4 and 9	31,211	169	-	✓
FY2036	Spring	Year 14 Infiltration	Manhole inspections, flow isolation and television inspection	15	21,039	72	-	✓
FY2037	Fall	Year 13 and 14 Inflow	Smoke Testing, Dye Testing/Flooding with TV, and Building Inspection	4, 9, and 15	52,250	-	620	✓
2037/2038		Year 13 and Year 14 Rehabilitation	Sewer Rehabilitation - Trenchless/Traditional Methods	4, 9, and 15	TBD	TBD	-	✓

¹³ Subarea divided into Year 7 and Year 8 Investigation.

	Infiltration
	Inflow
	Rehabilitation/Construction

The Why



314 CMR: DIVISION OF WATER POLLUTION CONTROL

12.04: continued

(2) All sewer system authorities shall develop and implement an ongoing plan to control infiltration and inflow (I/I) to the sewer system, which shall be submitted upon request of the Department for review and approval. The plan shall describe the preventative maintenance program that identifies and mitigates infiltration/inflow entering the sewer system in order to prevent all unauthorized discharges of wastewater, including, but not limited to, sanitary sewer overflows and by-passes due to excessive infiltration/inflow. The plan shall include:

(a) An ongoing program to identify and eliminate sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding to implement the program.

(b) An inflow identification and control program that focuses on the disconnection and redirection of public and private sources of illegal inflow. Priority shall be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows.

(c) A phased evaluation of the sewer system, consistent with the Department's *Guidelines for Performing Infiltration/Inflow Analysis and Sewer Systems Evaluation Survey*, to determine its existing condition, the presence and quantity of infiltration and inflow into the system, and locations and risks of wet weather sanitary sewer overflows or by-passes in the sewer system. The Infiltration/Inflow Analysis may assess a range of design storms, but shall specifically assess the risk of sewer system overflows for a five year, 24 hour storm event. The sewer system authority shall proceed with the evaluation in accordance with the following scope and schedule, unless otherwise required by the Department pursuant to an enforcement order.

The How

Town-wide Flow Metering

- ✓ To locate areas with highest amount of I/I
- ✓ Collect data



Flow Data Analysis

- Quantify I/I
- Rank/Prioritize system subareas
- Recommend further study
- Present the result to the client



Listen

- 🔑 = \$\$\$
- Funding Allocation
- Manageable goals ✓
- Overreaching ✗



Execute !

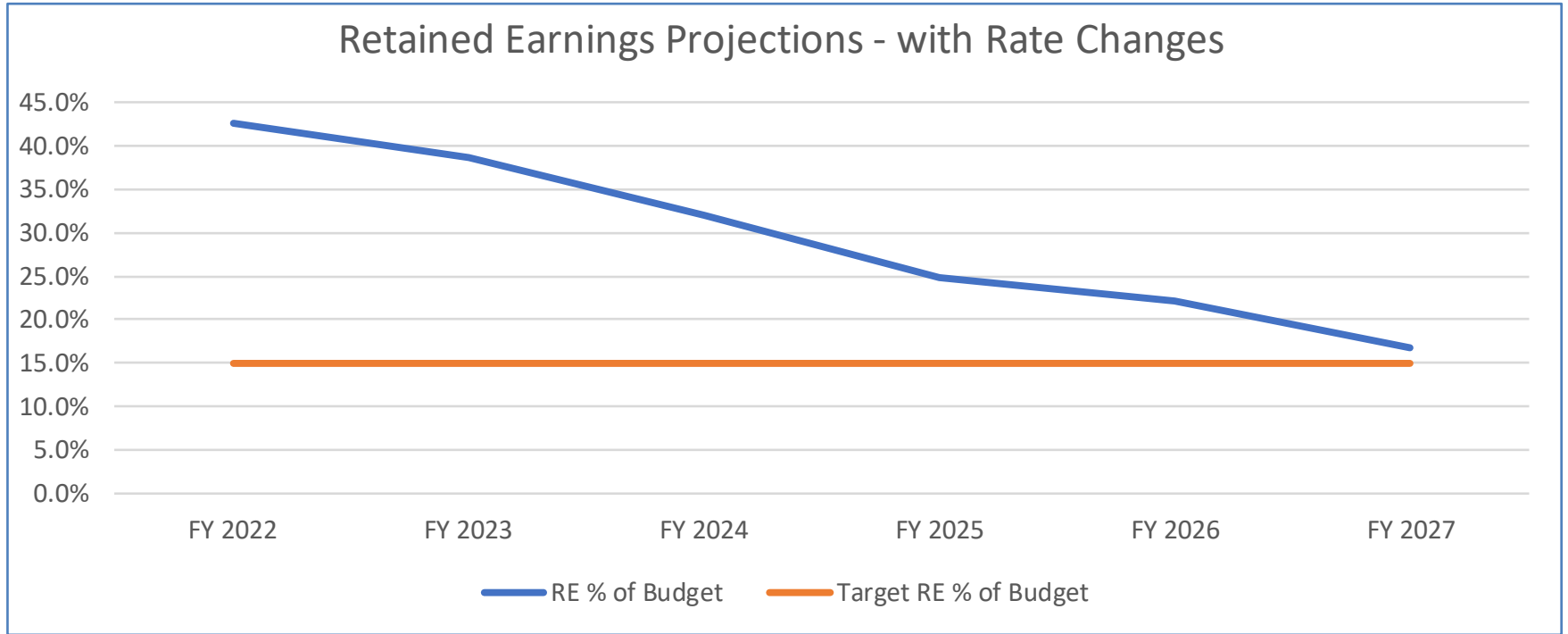
- ❖ Stick to plan
- ❖ But... be flexible
- ❖ Maintain Communication

Funding/Finance

- SRF
- Sewer Enterprise
 - Revenue
 - User Fees
 - I/I Fees for new development
- Rate Study

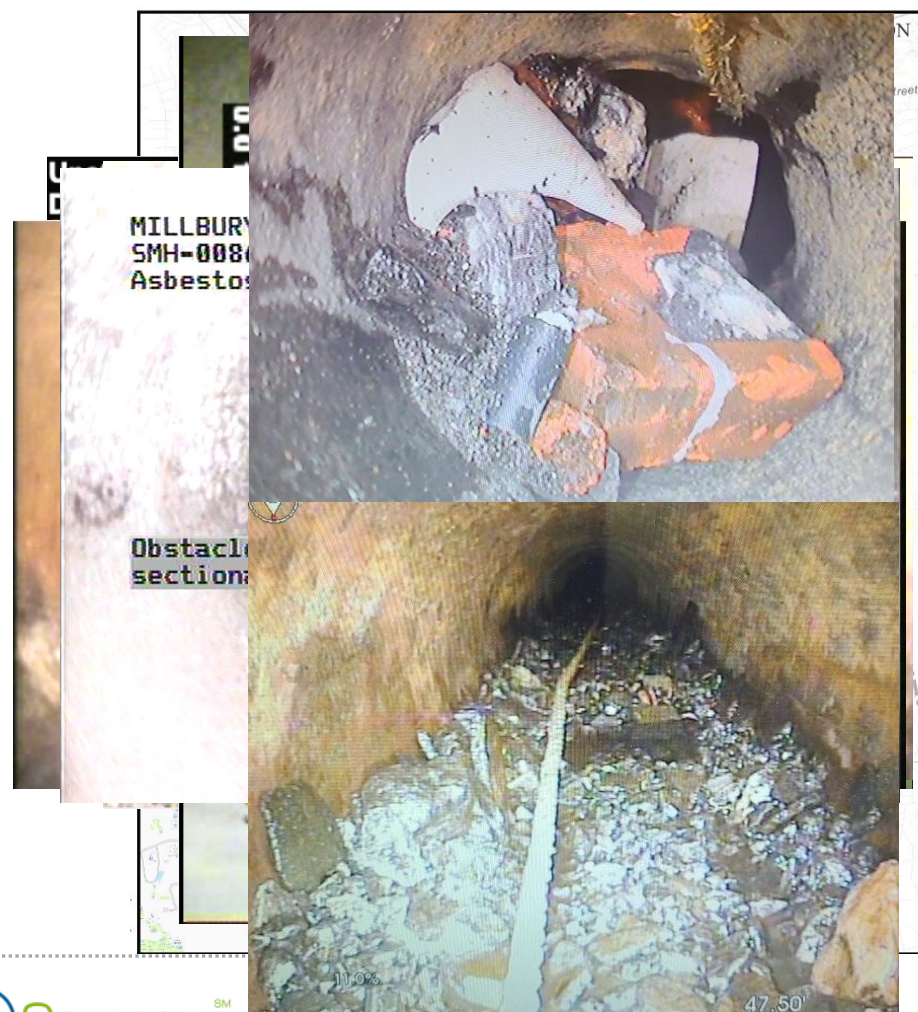


Rate Study (why?)



Result

- 21% of the system inspected
 - Approximately 100,000 gpd of infiltration in inspected area (50% removal rate)
 - Structural defect
 - Inflow = Main source of I/I
 - Building Inspection Program
 - O&M – Remove debris/increase capacity for future development



Lesson Learned

- Stick to the plan... but be flexible
- Communicate
- Don't give up!



SCAN ME

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thank you

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