





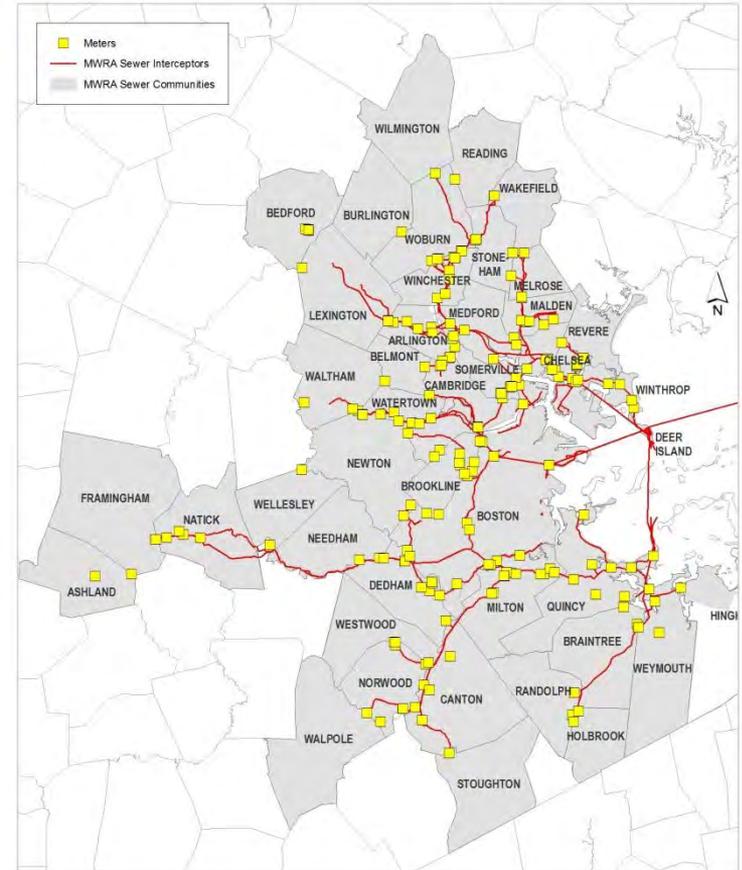
***Wastewater Metering
System Replacement
Contract 6739***

June 28, 2017



Overview

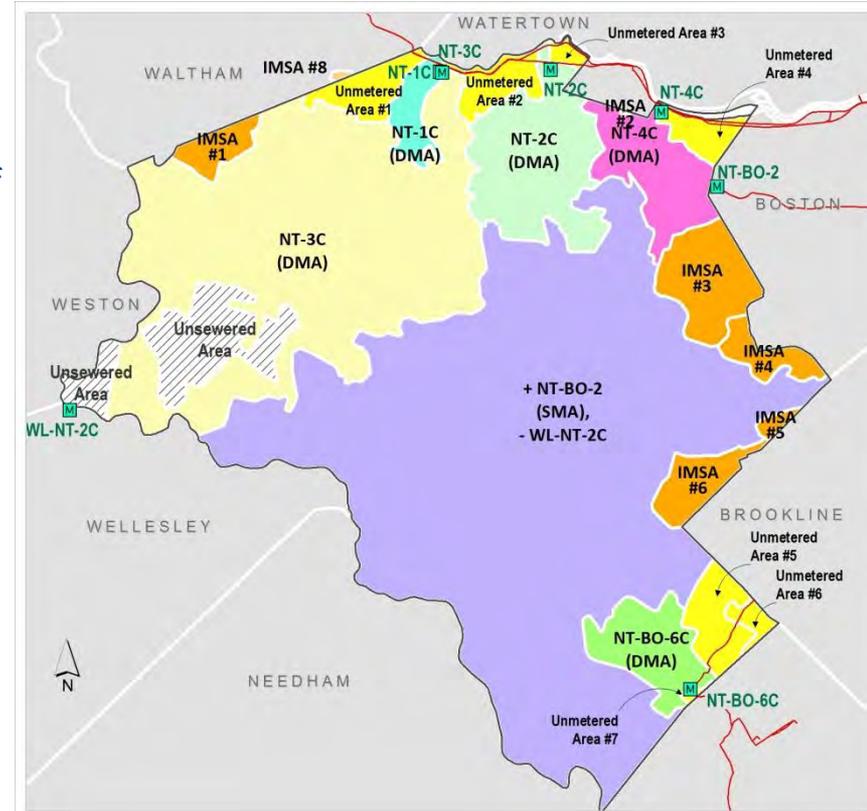
- Wastewater Meters are a Key Element of MWRA's Cost Allocation Methodology for the costs of the regional sewer system
- About 38% of operating and debt service costs for capital projects are allocated based on community average and maximum month flows
- Last full metering system upgrade was in 2004
- 189 Revenue Meters are In Service; 212 Total Meters





Wastewater Metering System Design

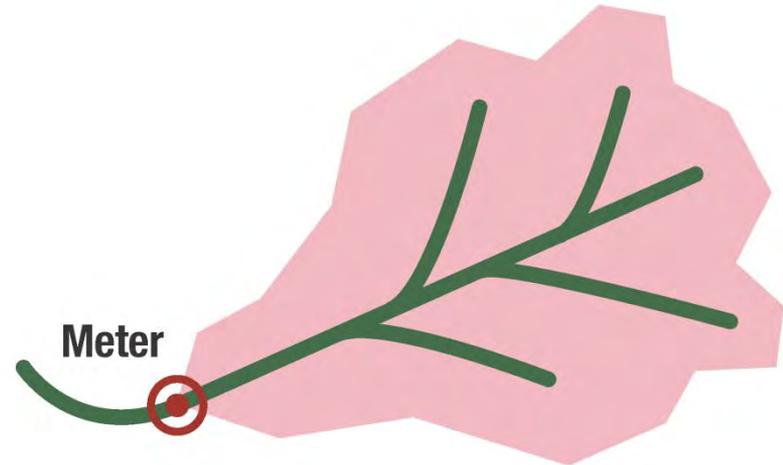
- The Regional WW collection system was not originally designed to be metered
- Goal was to cost-effectively meter at least 85 percent of every community's flow
- And to confidently estimate any unmetered flow
- Directly meter where possible
- Use subtraction where needed
- Estimate flow in unmetered areas based on ratio with a metered area
- Combine all the tributary areas within a community to calculate total flow





Direct Metering

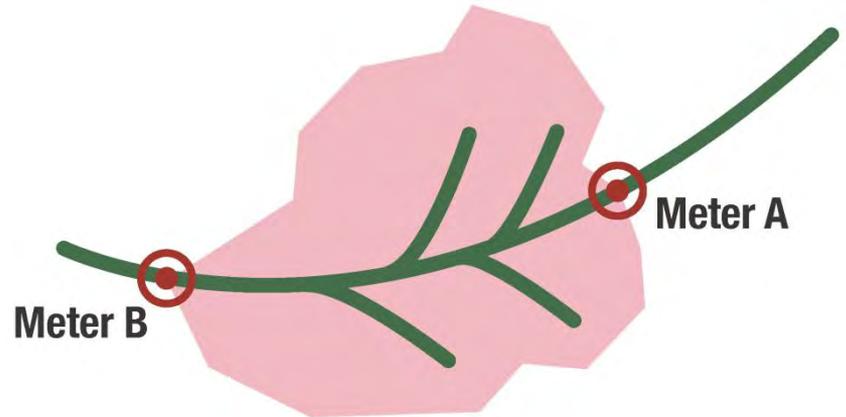
- Flow within a tributary area to a single suitable point for metering
- No adjustments needed





Subtraction Metering

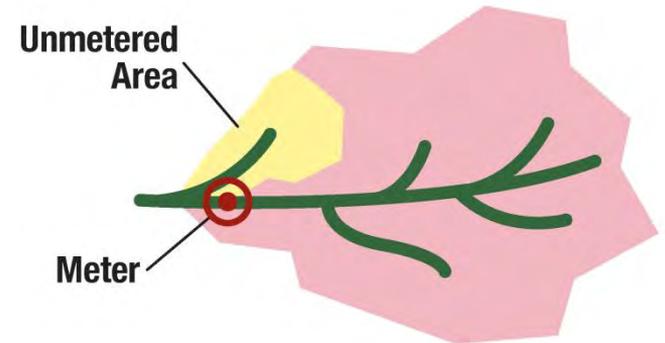
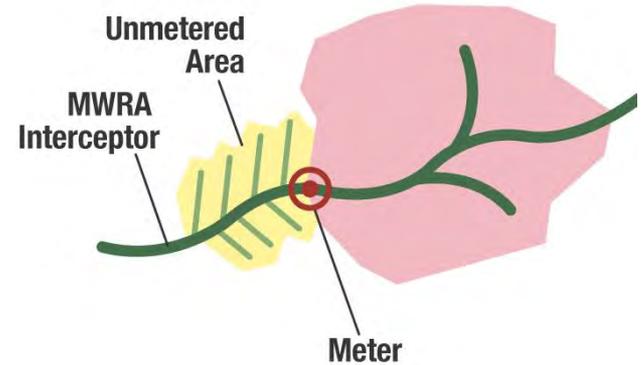
- Flow from one community flows through another community
- Can be tributary to community or MWRA pipe
- Flow = Meter B – Meter A





Unmetered Areas

- Some areas cannot easily or cost effectively be metered
 - a large number of small community connections to MWRA
 - downstream of suitable meter location
 - inter-municipal service areas
- Flow estimated based on flow measurements and a calculated flow ratio with a nearby metered subarea
- Flow = (flow from meter subarea) \times flow ratio





Major Tasks of the Upgrade Project

- Update flows from unmetered areas
- Assess current meter sites
- Review mix of metered and unmetered areas – increase metered if cost effective
- Assess state of the art in meter technology
- Assess communication and data management technology
- Work with MWRA staff to recommend metering system
- Specify and assist in procurement
- Oversee purchase and installation
- Document/develop SOPs



Contract Summary

PROPOSER	PROPOSED CONTRACT COST	LEVEL of EFFORT
RJN Group	\$3,870,189.15*	19,062 hours
Arcadis US	\$4,494,654.03	19,084 hours
<i>Engineer's Estimate</i>	\$5,125,361.00	23,748 hours

PROPOSER	TOTAL POINTS	ORDER OF PREFERENCE/ TOTAL SCORE	FINAL RANKING
RJN Group	410	5	1
Arcadis US	332.5	10	2



Overall Project Schedule - Preliminary

- Preliminary Field Investigations: Fall 2017
- Temporary Metering in unmetered areas: 12 months beginning Winter 2017/18
- Technology Assessment: Fall 2017 – Winter 2018/19
- Recommendations: Spring 2019
- Procurement of new meters: Summer 2019
- Installation: 12 months beginning Fall 2019
- Warrantee period- 12 months





***NIH Redundancy Pipeline
Section 110 - Stoneham
Contract 7067***

June 28, 2017



NIH Section 110 Project Location



Contract 7066: (\$1,921,952)

- 2,400 linear feet of 36-inch pipeline
- Completed May 2015.

Contract 7471: (\$11,071,797)

- 8,800 linear feet of 36-inch pipeline
- NTP January 2016
- Substantial Completion December 2017

Contract 7478: (\$17,817,999)

- 7,800 linear feet of 48-inch pipeline
- 2,600 linear feet of 16 and 12-inch pipeline
- Substantial Completion September 2018

Contract 7067: This Award

- 14,000 linear feet of 48-inch pipeline
- Substantial Completion November 2020



Contract 7066 - Reading

Completed May 2015





Contract 7066 - Reading





Contract 7471 - Reading

Completion date: December 2017





Contract 7471 - Reading





Contract 7471 - Reading





Governor's High Five Award





Contract 7478 Stoneham/Wakefield

Completion date: September 2018





Contract 7478 Stoneham/Wakefield





Contract 7067 - Stoneham

- Bids Opened June 8, 2017
- Five Bids Received

Bidder	Bid Price
Albanese D&S Inc.	\$22,737,000
P. Gioioso & Sons, Inc.	\$23,471,000
Engineer's Estimate	\$24,500,000
Baltazar Contractors Inc.	\$24,899,999
RJV Construction Corp.	\$25,385,000
Revoli Construction, Inc.	\$29,956,917





MWRA In-House Work

June 28, 2017



Closed Circuit Television Inspection



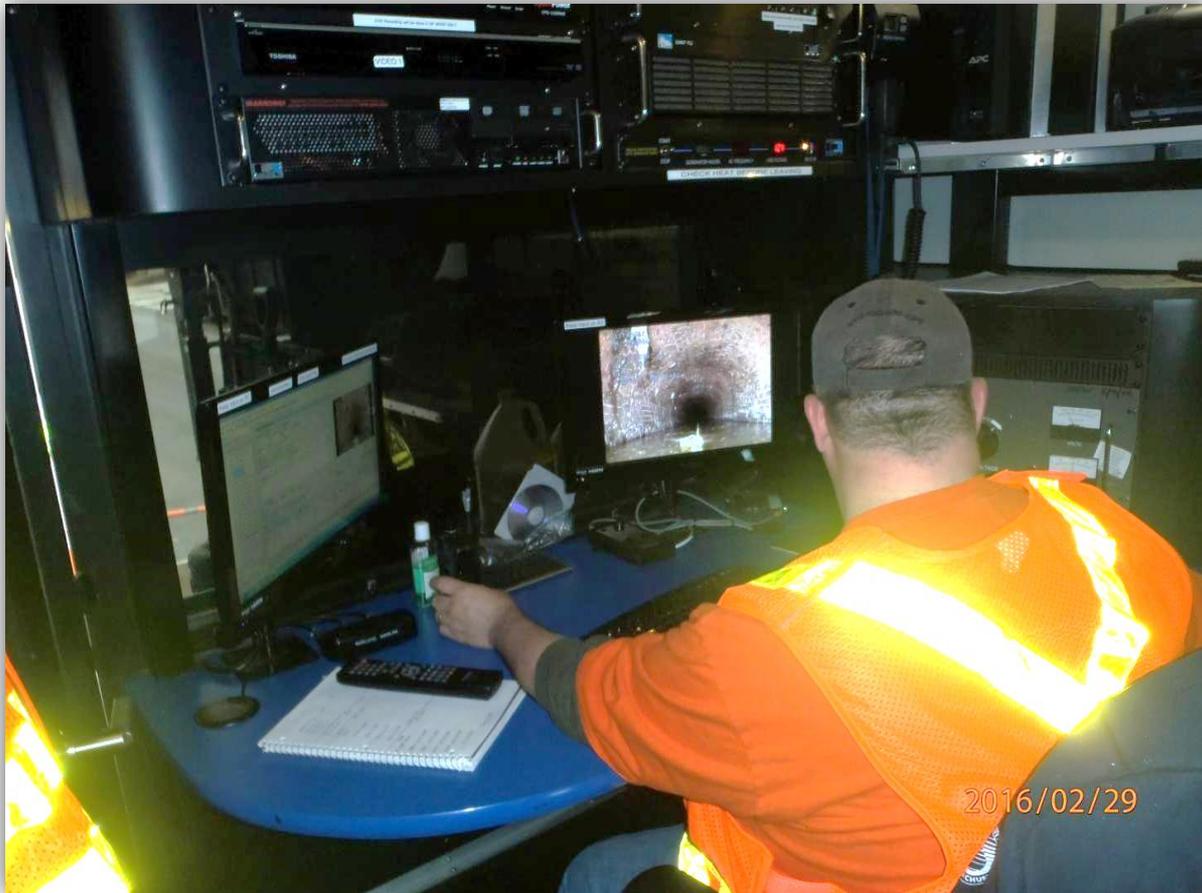


Closed Circuit Television Inspection





Closed Circuit Television Inspection





Closed Circuit Television Inspection Pipe Transporters – Small/Large Pipe





Sonar System – Siphon Inspections





Vactor Jet Maintenance



2016/02/29



Maintenance Equipment - Bucket Machine





Siphon Cleaning





Sewer Siphon Chamber/Manhole Rehabilitation





Manhole Frame and Cover Replacement





Manhole Structure Rehabilitation





Bypass Pumping





Section 20 Leak Repair, Cast Iron Pipe





Section 20 Leak Repair



Re-Caulked Joint



Bell Joint Clamp in Place



Welding New Caps Over Plugs, Steel Pipe





Tight Quarters



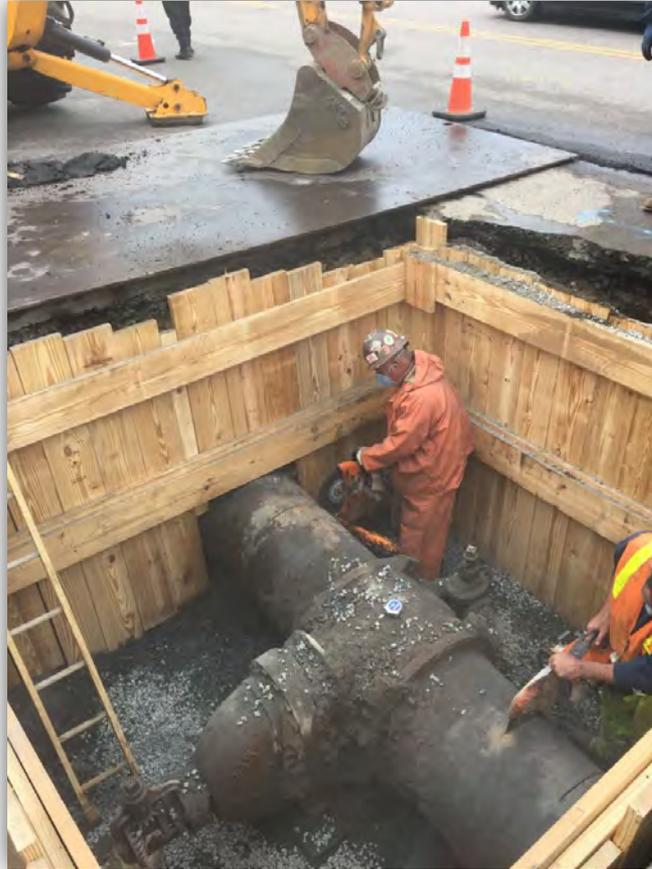


Crew Setting Valve and Pipe



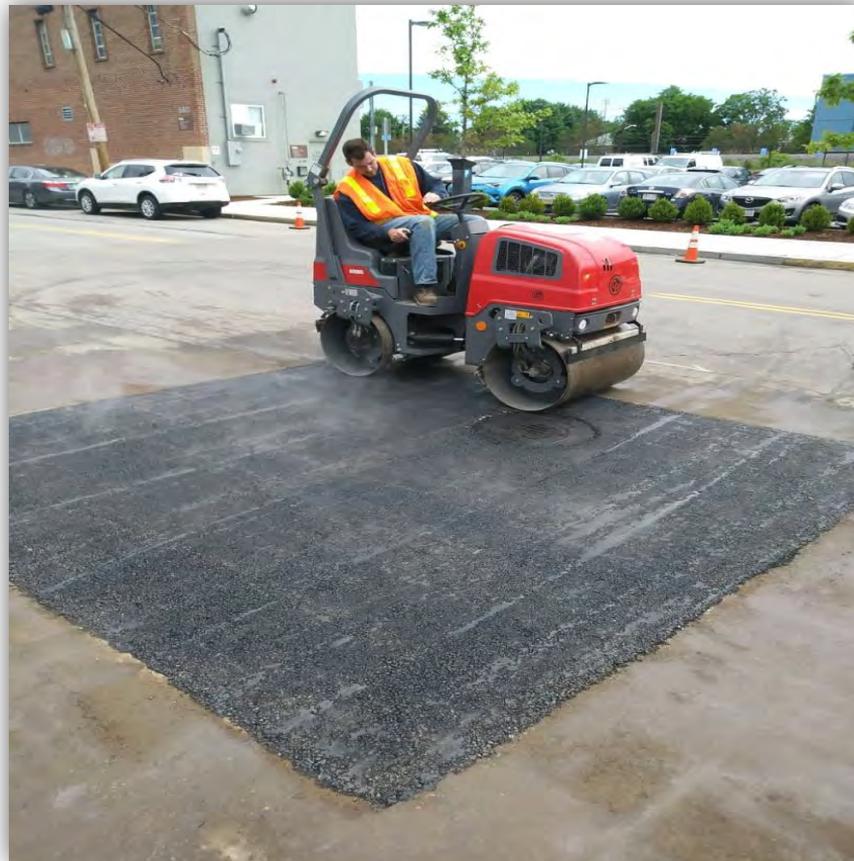


Replacing 24" Valve Remove Existing; Installing New





Final Bolt Tightening; Rolling Out Hot Asphalt





Blow Off Retrofits (Cross Connection Elimination) Section 80, Needham





Old and New Valves to Lynn Blow Off Connection/Reservoir





Cathodic Protection Work, Section 57, Revere Beach Parkway



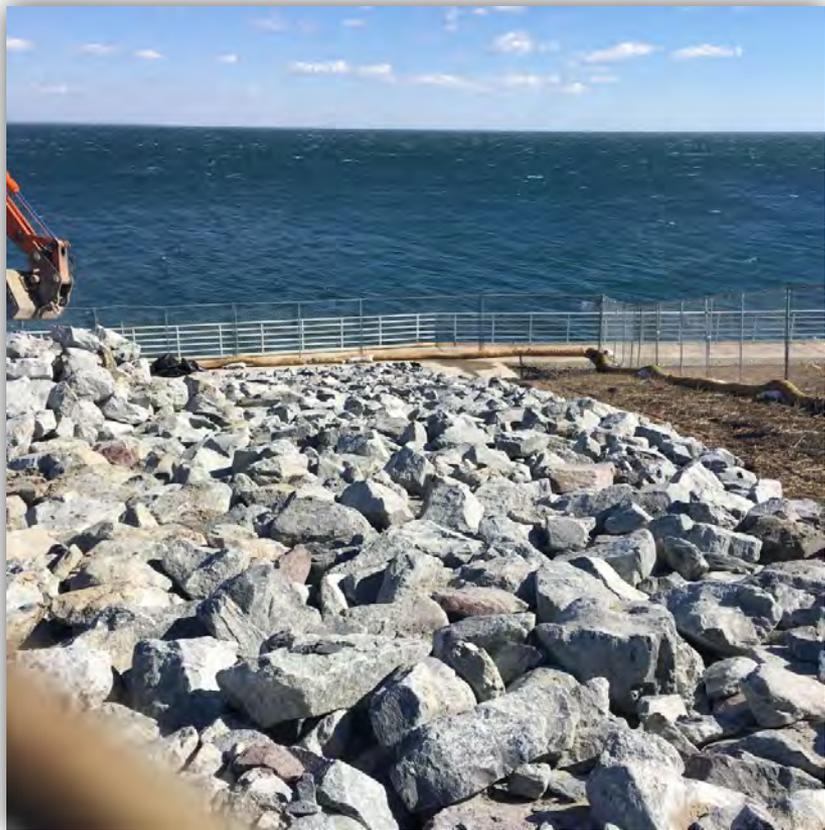


Welding Anode Wires to Pipe





Deer Island Rip Rap Project, Placing Stone





Looking South





Commercial Point CSO Demo





Mobile Pump Unit Deployment for Valve Replacement





Bedford Water Quality Assistance





Water Main Leak and Break Repairs, Assisting Marlborough

