

Webster Water System

Board of Selectmen Water Quality Update

August 31, 2015

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Overview

- **Introduction**
- **Water Quality issues**
 - Causes
 - Symptoms
 - Solution
- **The Plan for improving water quality**
 - Near Term / Long Term
 - Steps Taken
 - Next Steps
- **Follow up / Communications**

Introduction

Since last summer, the Town has

- Flushed the entire system ... twice
- Taken Station No. 1 is partially off line and is entering construction phase of improvements to allow limited use
- Solicited bids for a water SCADA system
- Budgeted several phases of water system improvements

Introduction

■ What happens when you call the water department?

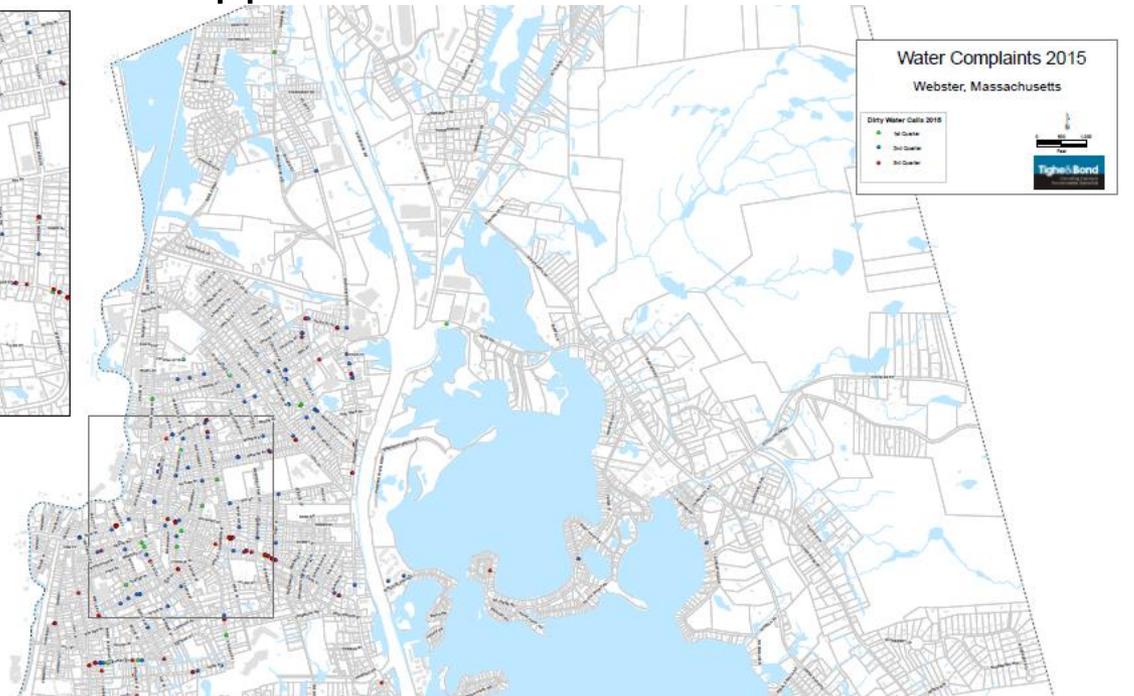
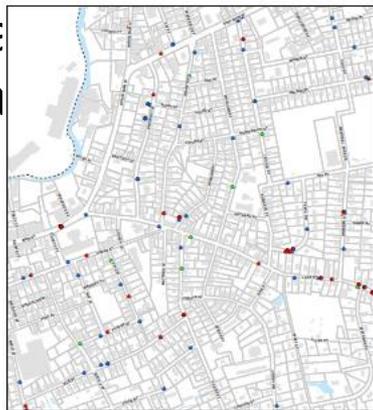
- Every call is logged and mapped
- Operating conditions are evaluated
- Hydrants are flushed

WEBSTER WATER DEPARTMENT						
DIRTY WATER LOG 2015						
Date		Location	Time of Day	Day of Week		
8/11/2015	August	11 Goddard St.	2:15 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	46 Prospect St	2:40 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	11 East Main St.	2:55 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	6 Crosby St.	3:05 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	14 Foster St	2:50 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	683 School St.	3:05 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	25 Maple St.	3:10 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	15 Pepka Dr.	5:30 PM	Tuesday		Caused by flushing Beacon Park
8/11/2015	August	28 Third St.	5:30 PM	Tuesday		Caused by flushing Beacon Park
8/14/2015	August	108 Lake St	9:00 AM	Friday		
8/14/2015	August	89 Lake St	2:10 PM	Friday		
8/18/2015	August	46 Park Ave.	7:45 AM	Tuesday		
8/18/2015	August	18 Klebart Ave	10:15 AM	Tuesday		
8/19/2015	August	Day St. (end)	2:00 PM	Wednesday		
8/19/2015	August	23 Grenier Ave	4:49 PM	Wednesday		
8/19/2015	August	58 Grenier Ave	7:47 PM	Wednesday		
8/20/2015	August	7 Eastern Ave		Thursday		
8/20/2015	August	27 Bates Grove Rd		Thursday		
8/20/2015	August	21 Fifth Ave.		Thursday		
8/20/2015	August	Nelson St. (2 calls)		Thursday		
8/21/2015	August	14 Pepka Dr	9:15 AM	Friday		
8/21/2015	August	108 Lake St.	9:30 AM	Friday		
8/21/2015	August	46 Hartley St	10:00 AM	Friday		
8/21/2015	August	17 Didonato Ave	11:00 AM	Friday		
8/21/2015	August	9 Hartley St	11:15 AM	Friday		
8/21/2015	August	121 East Main St	11:35 AM	Friday		

Introduction

■ What happens when you call the water department?

- Every call is logged and mapped
- Operat
- Hydra



Water Quality Issues

■ What is the problem?

- Iron (Fe) and Manganese (Mn)
- First and second most common elements in the earth's crust
- These are 'secondary' water quality parameters

■ Where does it come from?

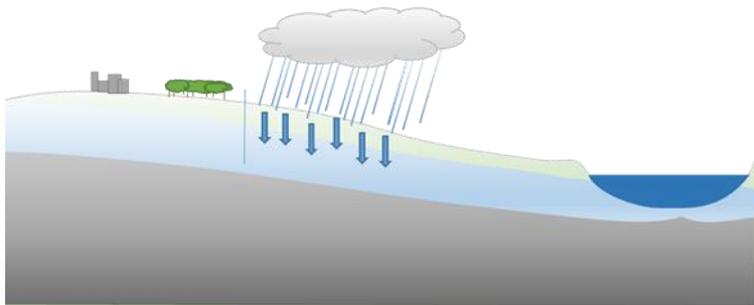
- The Town's wells (source water) AND the pipes



Water Quality Issues

■ Source water

- The Town has three water supplies
 - » Station 1 – Partially off line due to Fe & Mn
 - » Station 2 – Permanently off line due to Fe & Mn
 - » Station 3 – Currently just under the Manganese limit



All of Webster's
water comes from
wells (ground water)

Water Quality Issues

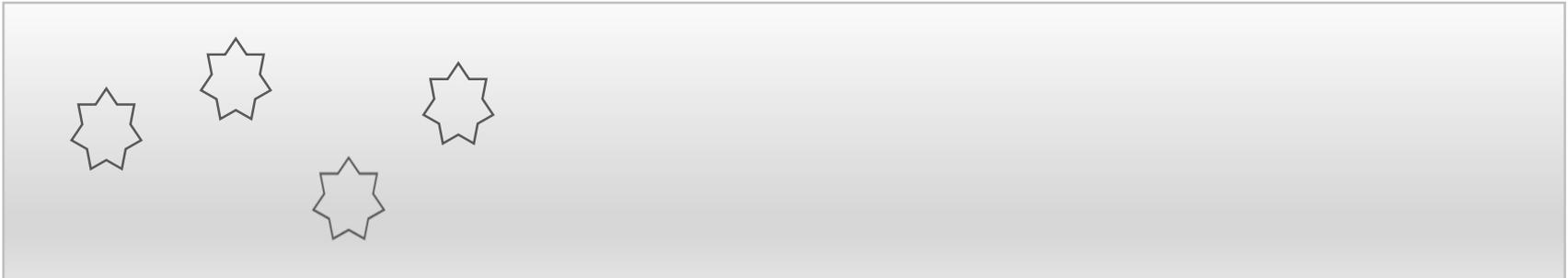
■ Pipes

- Iron and Manganese have built up in the water pipes over the last several years/ decades.
- There are 70 miles of water pipe in Webster
- Half of these pipes are unlined cast iron
- Unlined cast iron pipes are subject to tuberculation which reduces hydraulic capacity and makes it harder to clean them



Water Quality Issues

- **Why Manganese is a such a problem**
 - Normally Manganese is in soluble form and you wouldn't know it was there

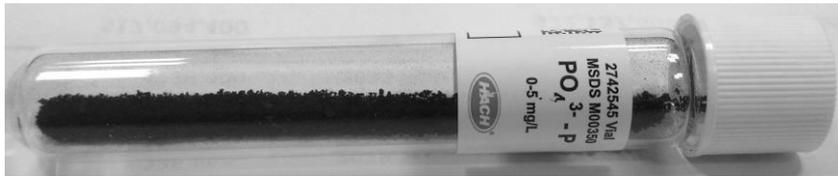


Water Quality Issues

- However, under certain conditions it turns into insoluble form and comes out of solution.



- Then you see it.



Water Quality Issues

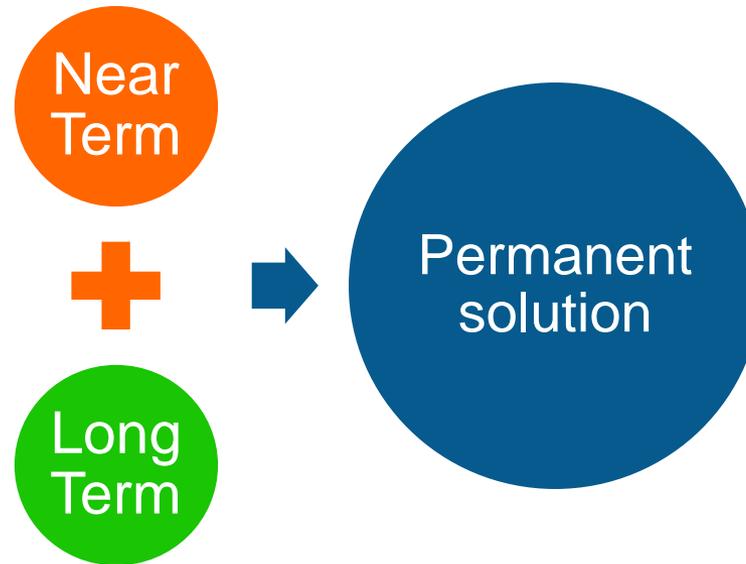
- **The Water Department is required to add chemicals to the water before it is sent out**
 - Disinfectant: Chlorine is used to safeguard against bacteria. Chlorine is an Oxidant.
 - pH adjustment. Old homes have lead and copper in their piping and plumbing fixtures, New England groundwater is acidic and will leach lead and copper out of plumbing. The pH is adjusted (raised) to prevent this.

These chemicals are necessary
but contribute to the problem

Water Quality Issues

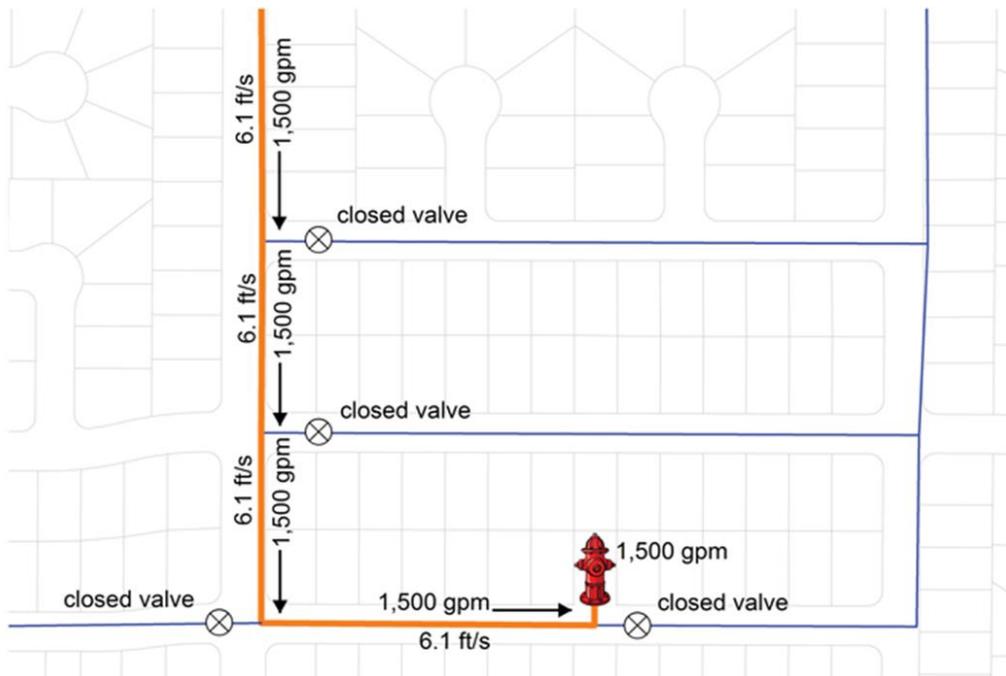
■ How do we fix this?

- First we get it out of the pipes
- Then we remove it from the source water



The Plan for Improving Water Quality

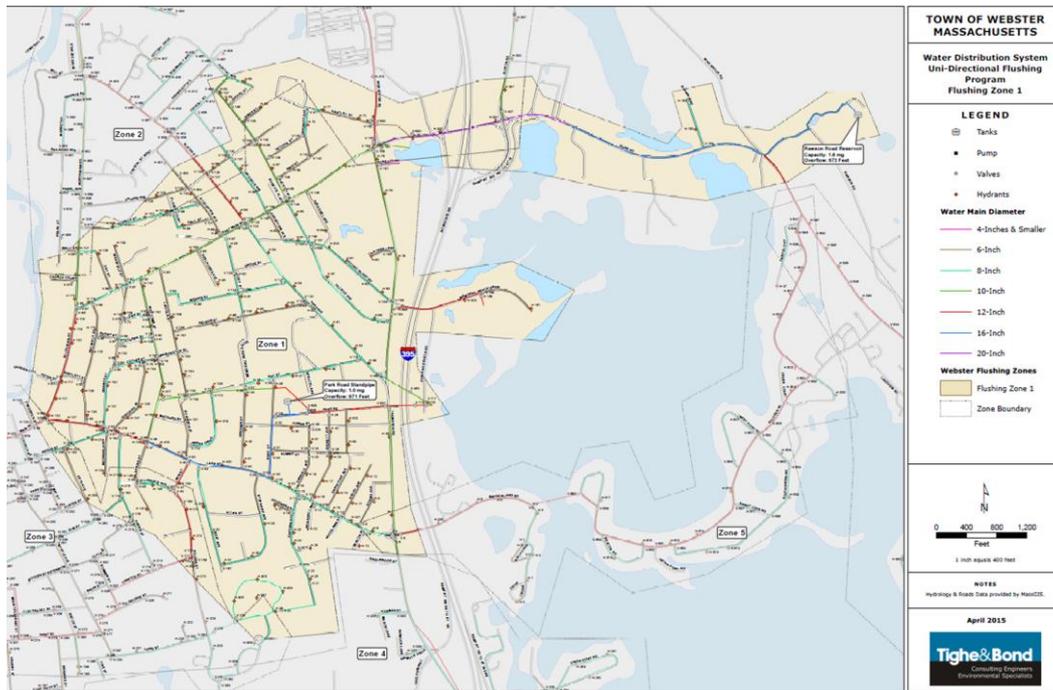
- **Near Term – Cleaning the pipes**
 - Currently using Unidirectional Flushing (UDF)



UDF is a method of watermain flushing that systematically isolates sections of the water system and maximizes flushing velocity by closing valves.

The Plan for Improving Water Quality

- **Near Term – Cleaning the pipes**
 - Currently using Unidirectional Flushing (UDF)

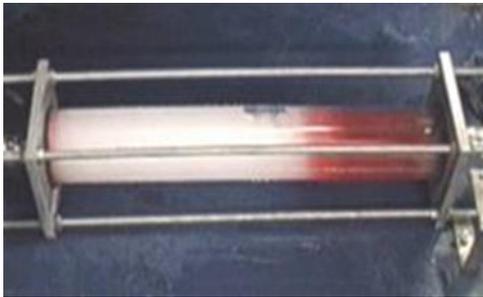


The entire town is broken into sections

The Plan for Improving Water Quality

■ Near Term – Cleaning the pipes

- Next step is to use a more aggressive method called Pigging
- Pigging is a physical means of cleaning pipes



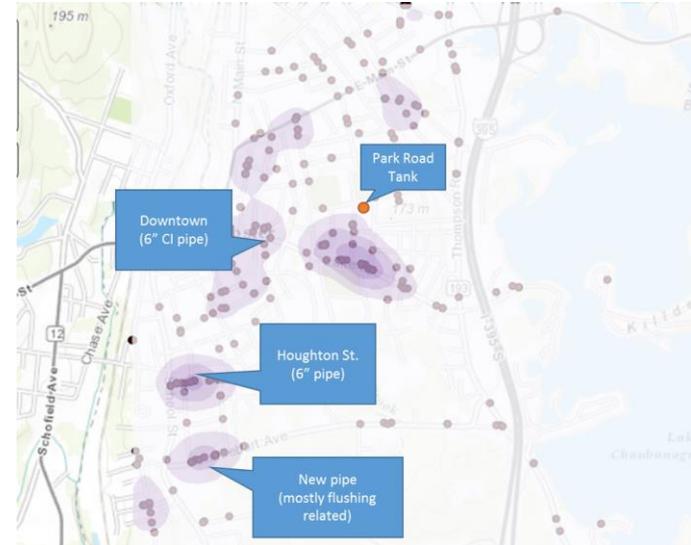
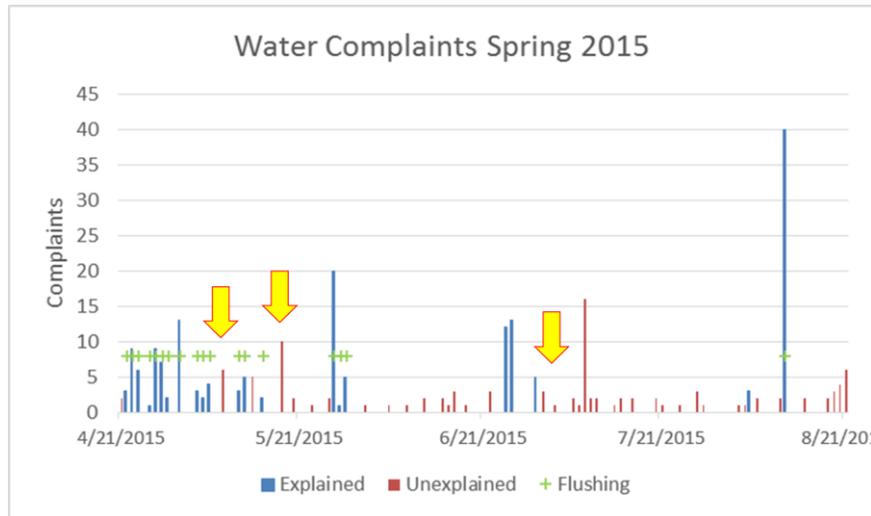
Recently a new method of pipe cleaning called ice pigging has been introduced.



The Plan for Improving Water Quality

■ Ice Pigging Program

- Town has authorized \$100K for Ice Pigging in this fiscal year
- This will likely be an annual program
- We are currently analyzing the system to select the first round



The Plan for Improving Water Quality

■ **Cleaning and Lining Program**

- Town has budgeted \$200K for phase 1 next year
- This will be a multi-phase program
- Trenchless rehabilitation method, restores pipe to like new condition
- Pipes are mechanically cleaned, all valves and hydrants are replaced and a new lining is installed
 - » Cement mortar
 - » Cured in place
- Design Phase this fall, bidding over winter for spring construction

The Plan for Improving Water Quality

- **Removing Iron and Manganese from the source water**
 - Necessary to prevent recurrence
- **Does Webster need a water treatment plant?**
 - Factors
 - » Most source water has elevated Fe and Mn
 - » Redundancy is significantly reduced because of this

The Plan for Improving Water Quality



Water Treatment Plant Concept



Water Treatment Plant Concept

