

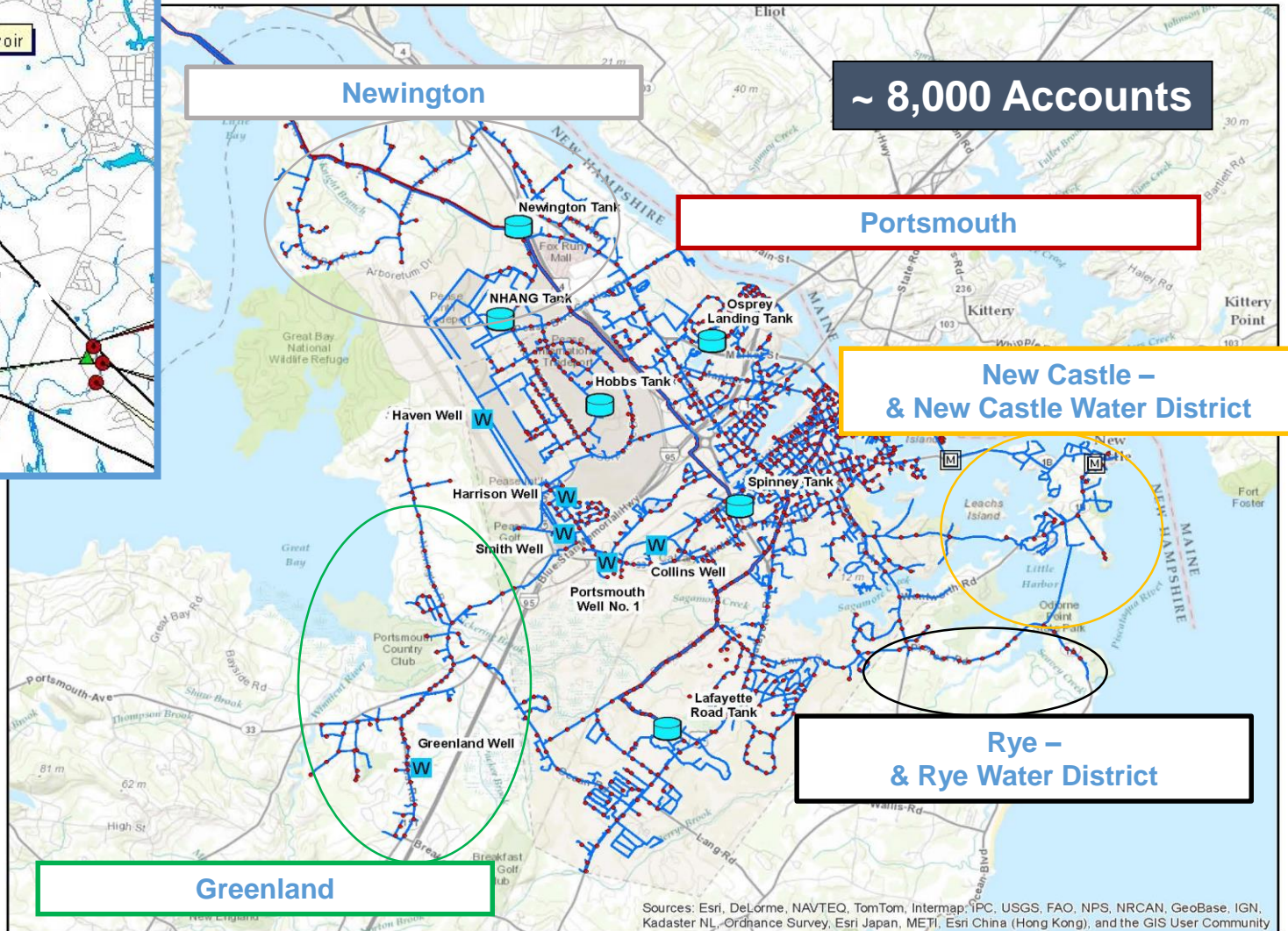
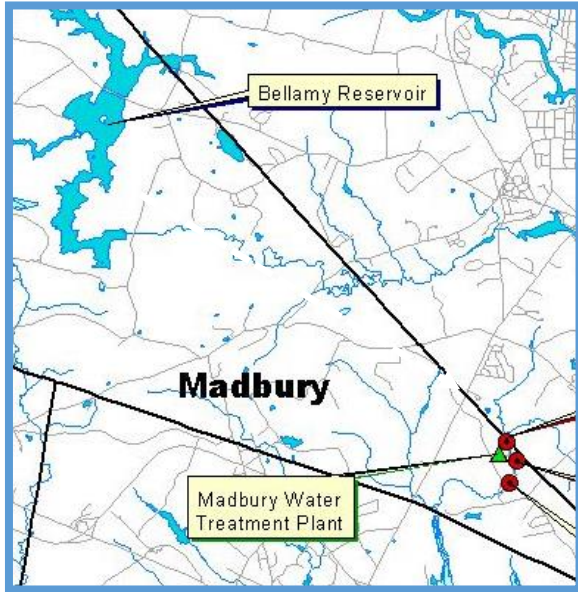
# City of Portsmouth



## Water System History and Overview

Updated:  
October 2017

# Portsmouth Regional Water System Service Area



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, IPC, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

# History of Portsmouth Water System

- 1797 - Portsmouth Aqueduct Company formed by act of NH Legislature
- Fountain Head Spring Developed (near current Haven Well) and piped to City
- 1867 – Sherburne and Concord Springs added
- 1891 – City takes over system
- 1950's – Pease Air Base takes over Haven Well and builds new tanks and pipes in Pease area for it's own, separate water system. Madbury Wells, Bellamy Reservoir and Madbury Water Treatment Facility are built by Air Force to replace water sources for City
- 1990's – Pease system turned over to Pease Development Authority. City takes over operations.



# Water Sources in 1891

Sherburne Springs  
(now Collins Well)

Fountain Head Springs  
(now Smith Well area)

Haven Springs  
(now Haven Well)

WATER WORKS  
PORTSMOUTH N. H.  
SCALE 200 FT TO THE INCH  
1891  
L. ESCRIBAN DEL.

# Wooden Pipes – 1800's



Portsmouth, NH - Water System Overview

# 100 Years of Metering Water





# Portsmouth Regional Water System

- Bellamy Reservoir
- Madbury Water Treatment Facility
- 8 Wells
- 5 Storage Tanks
- Two Pressure Zones
- 3.5 to 6.5 Million Gallons a Day



Portsmouth, NH - Water System Overview

# Portsmouth Regional Water System

- 190 miles of pipe
- 972 Fire Hydrants
- 2,840 Valves
- 8,203 Meters/Customers



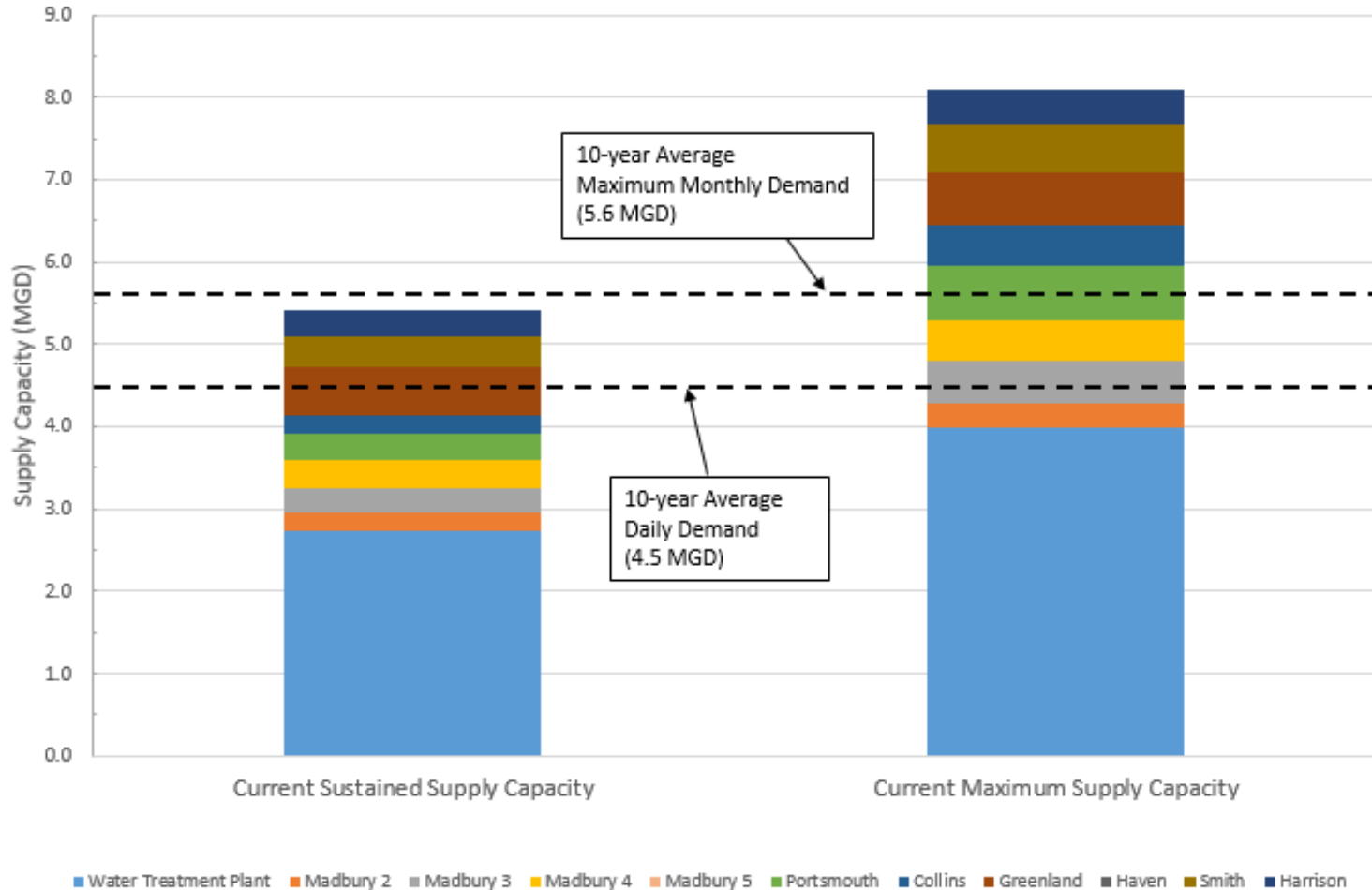


# Water Supply Capacity

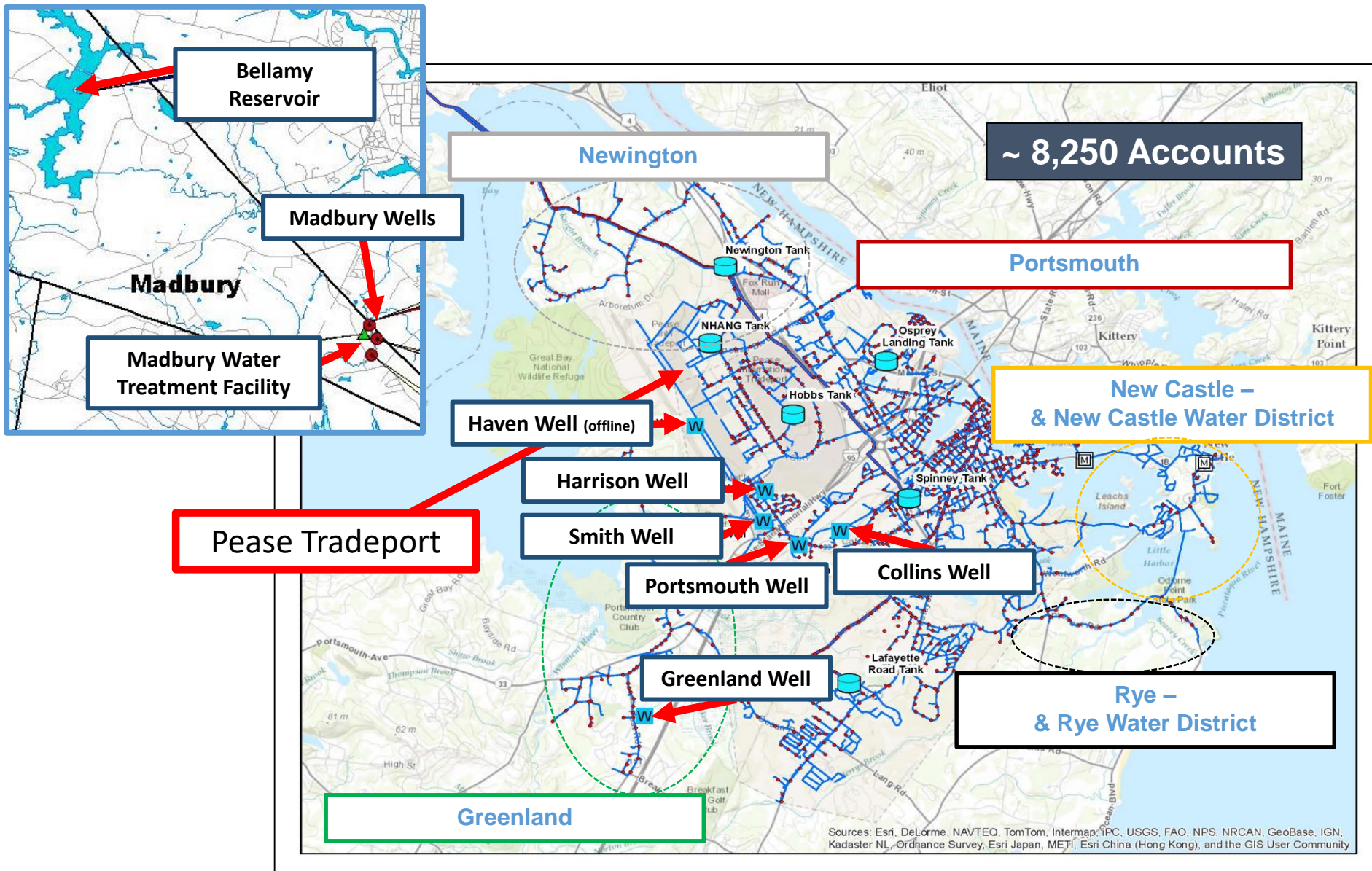


Source	Current Sustained Capacity (MGD)	Current Maximum Capacity (MGD)
Bellamy Reservoir	2.7	4.0
Portsmouth & Madbury Wells	2.0	3.1
Pease Wells	0.7	1.0
<b>TOTAL:</b>	<b>5.4</b>	<b>8.1</b>

# Water Supply Capacity



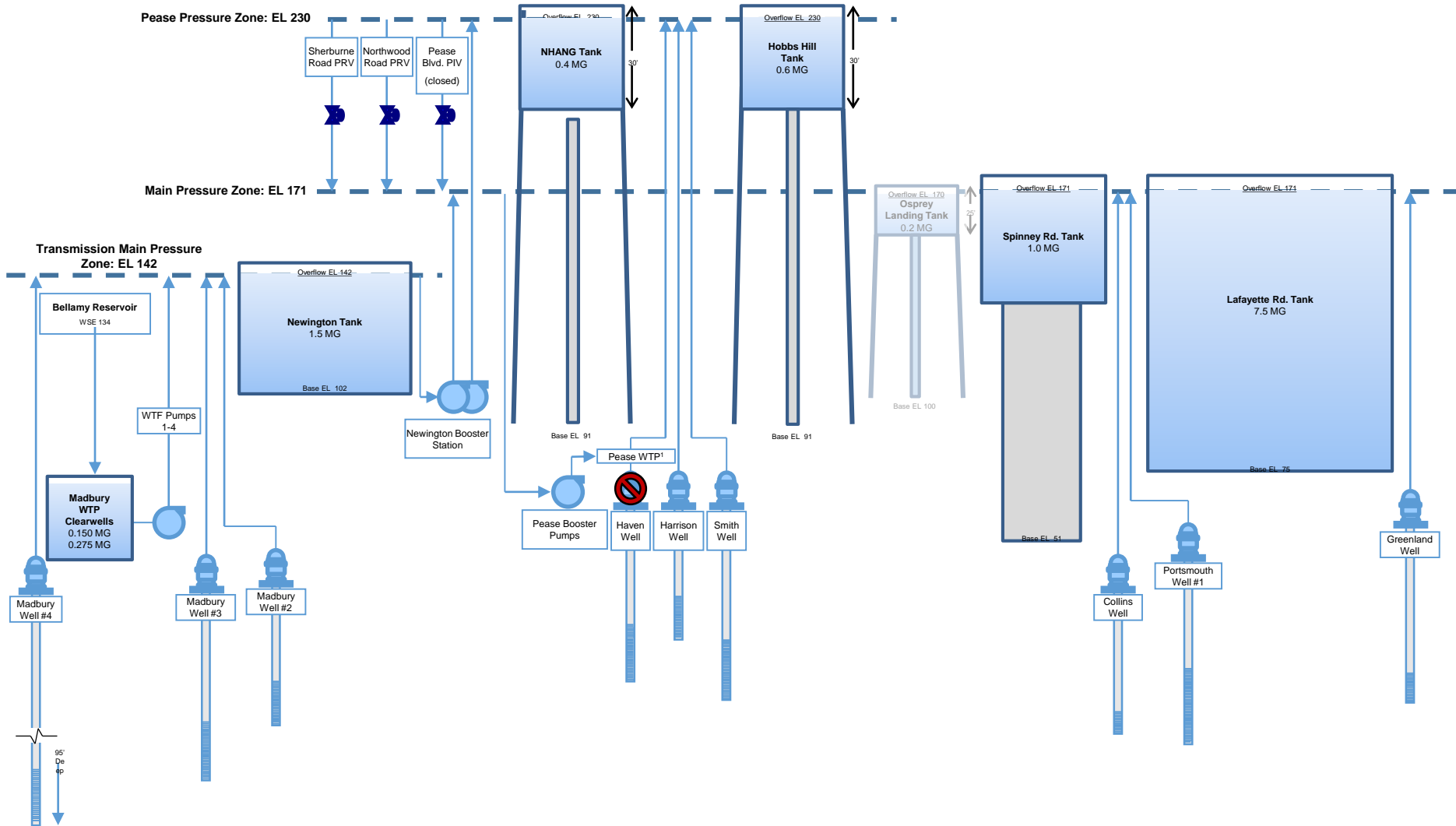
# Portsmouth Regional Water System





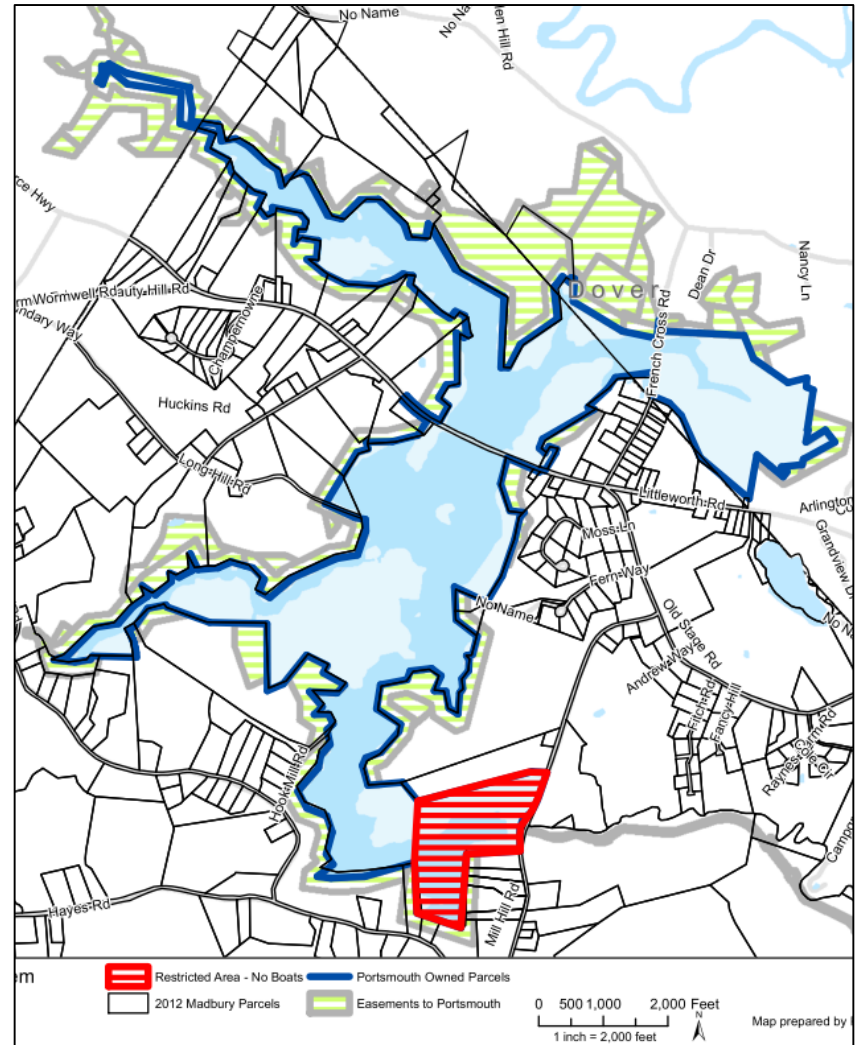
**Notes**

1. The Pease WTP is only used if triggered by VOC levels in monitoring wells.



**Figure 3-1**

# Bellamy Reservoir



# Madbury Water Treatment Facility LEED Silver Certification (2011)



Portsmouth, NH - Water System Overview





# Three Madbury Wells - 1957



# Newington Booster

**Installed in 1957**  
**1.5 Million Gallon Tank**



**Booster Station**  
**Currently in Design for Replacement**





# Portsmouth Well #1

**Installed in 1859  
(Concord Springs)**

**350 GPM Pump**





# Collins Well

**Installed in 1889  
(Sherburne Springs)**

**250 GPM Pump**



# Greenland Well

**Installed in 1949**

**450 GPM Pump**





# Water Storage Tanks

**Spinney – 1 Million Gallons**



**Lafayette – 7.5 Million Gallons**

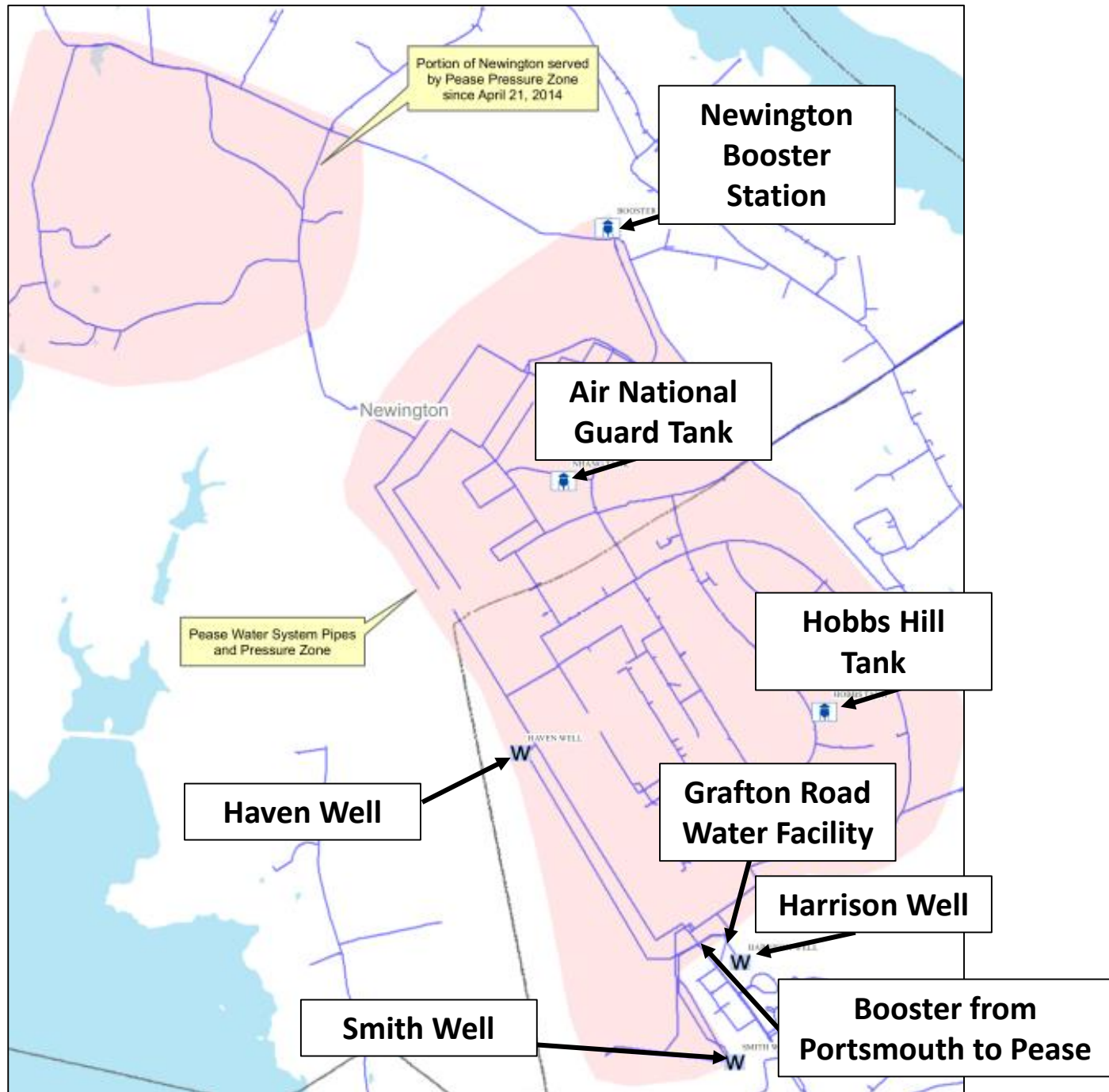




# Pease International Trade Port Water System

- Built in the 1950's for the Pease Air Force Base
- Turned over to Pease Development Authority (PDA) in the 1990's
- Operated by the City of Portsmouth under agreements with PDA since 1992
- Three groundwater sources:
  - Haven Well (originally developed in 1870 by the City of Portsmouth's water system – currently off-line due to PFC contamination)
  - Smith Well (installed in 1958 as part of Air Base water system)
  - Harrison Well (reactivated in 2007)
- Two Elevated Storage Tanks
  - Hobbs Hill Landing – 600,000 gallons
  - Air National Guard – 400,000 gallons

# Pease Tradeport Water System



# Smith Well

**Installed in 1957**

**300 GPM Pump**





# Harrison Well

**Installed in 1957**

**Replaced in 2006**

**225 GPM Pump**



# Pease Booster

**Installed in 1990's**



**Two 450 GPM Pumps  
Boosts water from Portsmouth to Pease**





# Haven Well – Out of Service Since May 12, 2014

**Installed in 1875 (Haven Springs)**

**Part of Pease Air Base: 1956 to 1992**

**PDA/Portsmouth: 1992 to 2014**

**Currently off-line: Shut down in May  
2014 due to PFOS contamination**

**500 GPM Pump**





# System Operations

- Regulated by the Federal Safe Drinking Water Act
- Administered by EPA and NHDES Drinking Water and Groundwater Bureau
- Testing and reporting requirements for all sources of supply
- Six State Certified Water Treatment Operators
- Chemist
- Water Resources Manager
- 24/7 Coverage

# Customer Water Use:

**TABLE 1-12**

Portsmouth Water System – Total Annual Water Use by Account Category (July 2012 data)

	<b>Accounts</b>	<b>Total Gallons</b>	<b>MGD</b>	<b>% of Use</b>
Commercial	976	<b>514,420,544</b>	1.41	32.7%
Residential	6,843	<b>497,254,692</b>	1.36	31.6%
Industrial	81	<b>204,114,484</b>	0.56	13.0%
Other Districts	2	<b>45,374,428</b>	0.12	2.9%
Municipal	66	<b>39,956,641</b>	0.11	2.5%
Irrigation	238	<b>12,041,028</b>	0.03	0.8%
<b>TOTAL</b>	<b>8,206</b>	<b>1,313,161,817</b>	<b>3.60</b>	<b>N/A</b>
Pease Golf Use (unbilled)		10,600,656	5.79	0.7%
Hydrant Flushing		1,500,000	10.21	0.1%
Other known leaks		122,256	19.86	0.0%
Meter Adjustments		18,555,000	39.60	1.2%
<b>Total Billed and other use</b>		<b>1,343,939,729</b>	<b>3.68</b>	<b>85.4%</b>
<b>Total System Water Produced</b>		<b>1,572,904,437</b>	<b>4.31</b>	<b>N/A</b>
<b>Unaccounted For Water</b>		<b>228,964,708</b>	<b>0.63</b>	<b>14.6%</b>

# Water Usage by Town (2012 Rate Study Analysis)

TOTAL USAGE BREAKDOWN BY TOWN				
Community	Accounts	Annual Gallons	Average Gallons per Day	% of overall CONS
Portsmouth	6,787	938,423,596	2,563,999	76.8%
Newington	341	157,237,080	429,610	12.9%
Greenland	490	44,203,060	120,773	3.6%
New Castle	248	42,900,044	117,213	3.5%
Rye	70	33,177,540	90,649	2.7%
Madbury	2	5,063,960	13,836	0.4%
Durham	2	112,200	307	0.0%
<b>TOTAL</b>	<b>7,940</b>	<b>1,221,117,480</b>	<b>3,336,387</b>	



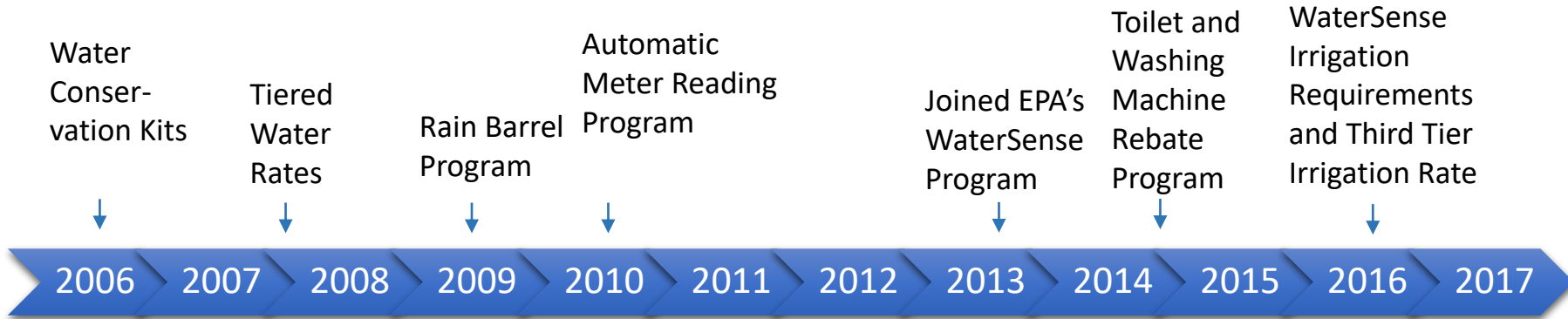
# Promoting Water Efficiency In Portsmouth's Water and Wastewater Systems



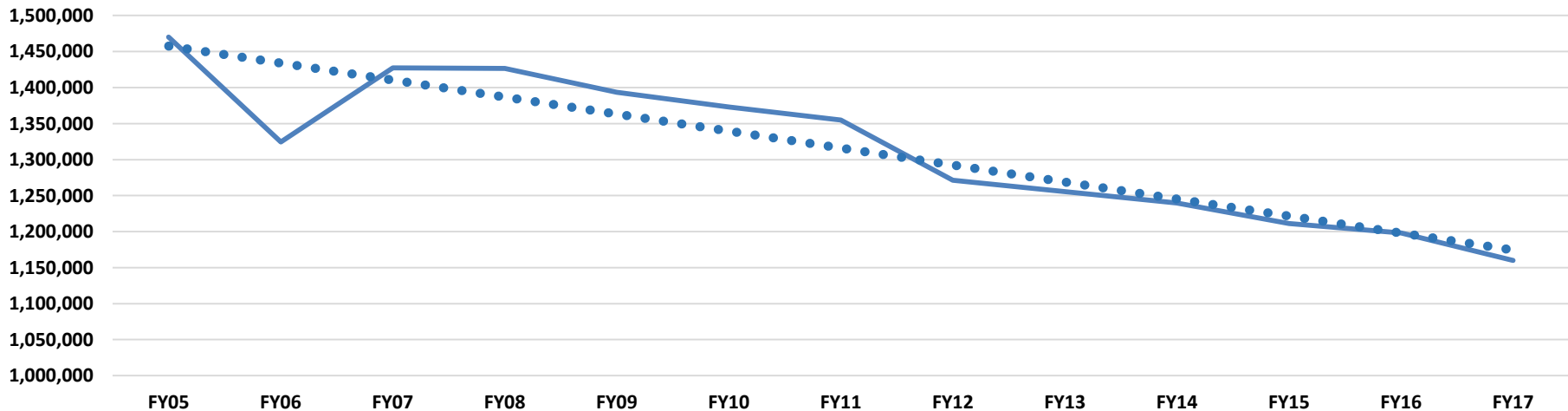
1. Water Conservation Kits (2006 to 2008)
2. Tiered Water Rates (starting FY07)
3. Rain Barrel Program (2009 to 2011)
4. Automatic Meter Reading Project (2008 to 2010)
5. EPA's WaterSense Program (joined in 2013)
6. Leak Detection Program (ongoing)
7. Water Efficiency Rebate Program (Introduced in 2014)
8. Water Supply Status Report (introduced in 2015)
9. Water Sustainability Award (2015)
10. WaterSense Irrigation Requirements and third tier irrigation rate (adopted in 2016)



# Water Efficiency Timeline



Trend - Total Residential Water Use Average (gallons per day)



# Water Sustainability Efforts

## Water Conservation Retrofit Kits (2006)



1,775  
Water Conservation  
Kits Distributed  
Free to Portsmouth  
Customers

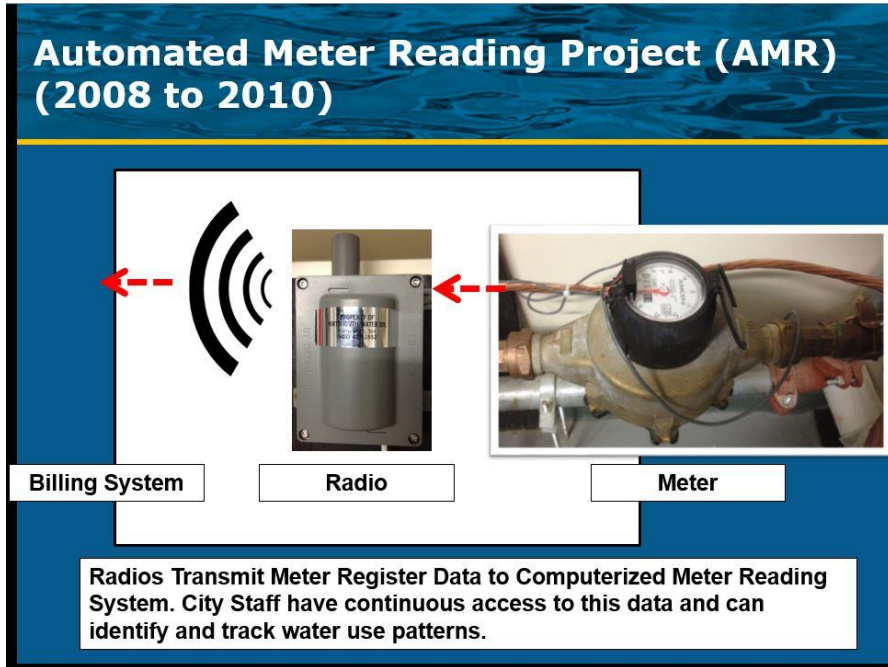
## Rain Barrel Project (2009 to 2011)





# Water Sustainability Efforts

## Automatic Meter Reading System (2008 to 2010)



## Leak Detection Program (Ongoing)



# Water Sustainability Efforts

## EPA WaterSense Program (Joined in 2013)



## Water Efficiency Rebate Program for Toilets and Washing Machines

(Introduced in 2014)

*Effective December 9, 2014*

### Water Efficiency Rebate Program

The City of Portsmouth's Water and Sewer Division is pleased to announce our latest effort to promote water efficiency in our water and sewer systems — A Toilet and Washing Machine replacement rebate for eligible residential water customers.

Qualifying customers who replace older, inefficient toilets and clothes washing machines with high efficiency, low flow models will be eligible to receive a \$100 rebate per toilet and \$150 per washing machine.

Information and forms can be accessed at the links below.


Customers can also stop by the Water/Sewer Billing Office at City Hall on Junkins Avenue in Portsmouth or the Department of Public Works office on 680 Peverly Hill Road in Portsmouth or call during business hours at: 603-427-1530



# Water Sustainability Efforts

## Water Supply Update (Introduced in 2015)

City of  
Portsmouth  
*Department of Public Works*



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August 31, 2015

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**Portsmouth Water Supply Status Report**

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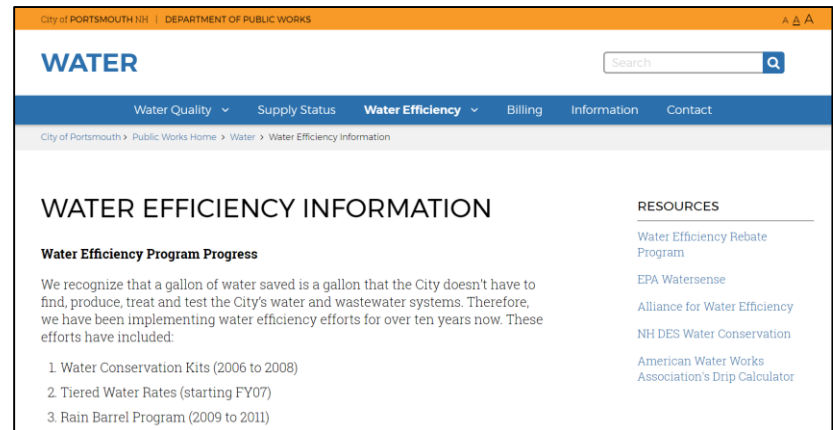
**Overview**

The following Portsmouth Water Supply Status Report provides the Portsmouth Water Division's customers an assessment of our current water supply conditions. This report will be distributed at least monthly via the City of Portsmouth's website at: [www.cityofportsmouth.com/publicworks](http://www.cityofportsmouth.com/publicworks) - water

**Water Conservation Status**

Customer Water Restrictions	Based on current water supply conditions, there are <b>no water use restrictions</b> at this time.
N/A	Water use is currently at a rate that is typical for this time of year. Groundwater and surface water conditions are within ranges historically observed in July. At this time, water supply resources are adequate and demand can be met without use restrictions.
None	
Voluntary Measures	The City of Portsmouth continues to encourage awareness of water use and the implementation of water efficiency measures. Information and tips regarding water efficiency can be accessed at the following website links:
Odd/Even Watering	<a href="http://www.portsmouthwastewater.com/watersense.html">http://www.portsmouthwastewater.com/watersense.html</a>
Two-days/Week Watering	<a href="http://www.epa.gov/watersense/">http://www.epa.gov/watersense/</a>
No Outdoor Use	

## City Website Updates (Ongoing)



City of PORTSMOUTH | DEPARTMENT OF PUBLIC WORKS

**WATER** Search

Water Quality | Supply Status | **Water Efficiency** | Billing | Information | Contact

City of Portsmouth > Public Works Home > Water > Water Efficiency Information

### WATER EFFICIENCY INFORMATION

**Water Efficiency Program Progress**

We recognize that a gallon of water saved is a gallon that the City doesn't have to find, produce, treat and test the City's water and wastewater systems. Therefore, we have been implementing water efficiency efforts for over ten years now. These efforts have included:

1. Water Conservation Kits (2006 to 2008)
2. Tiered Water Rates (starting FY07)
3. Rain Barrel Program (2009 to 2011)

**RESOURCES**

- Water Efficiency Rebate Program
- EPA Watersense
- Alliance for Water Efficiency
- NH DES Water Conservation
- American Water Works Association's Drip Calculator



# Water Sustainability Efforts

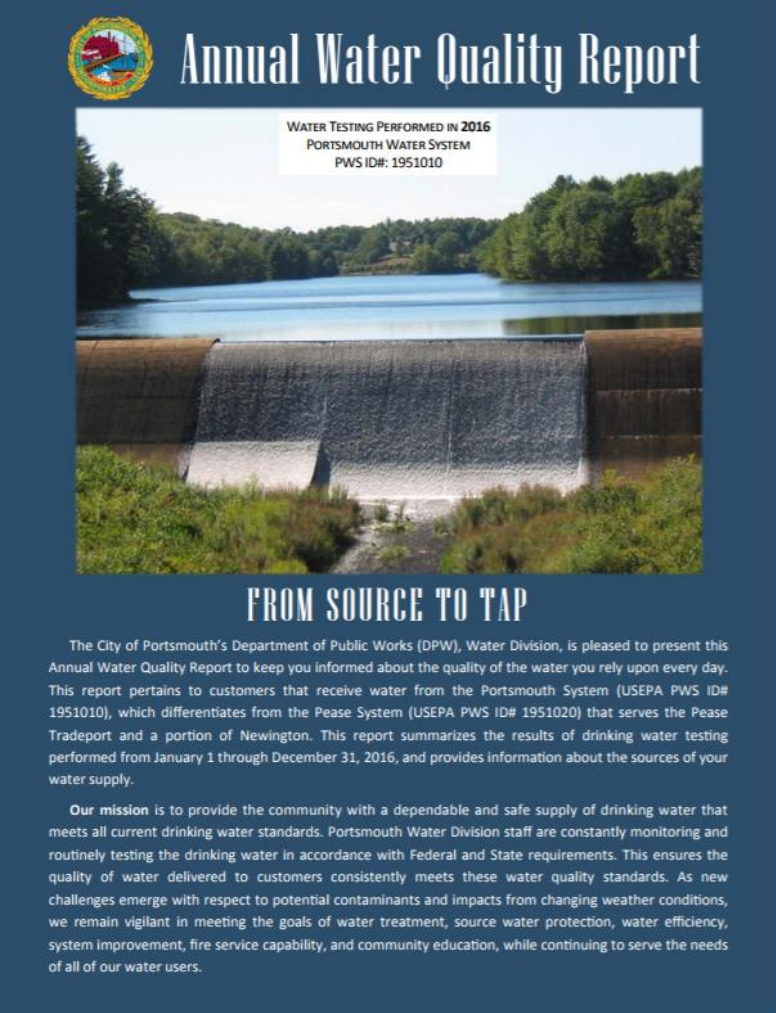
## **New Hampshire Water Sustainability Award - 2015**



Portsmouth, NH - Water System Overview

# Water Quality Reporting

- Information with respect to drinking water quality is provided annually to all customers of the Portsmouth and Pease water systems through the Portsmouth Water Division's Annual Water Quality Report



**Annual Water Quality Report**

WATER TESTING PERFORMED IN 2016  
PORTSMOUTH WATER SYSTEM  
PWS ID#: 1951010

**FROM SOURCE TO TAP**

The City of Portsmouth's Department of Public Works (DPW), Water Division, is pleased to present this Annual Water Quality Report to keep you informed about the quality of the water you rely upon every day. This report pertains to customers that receive water from the Portsmouth System (USEPA PWS ID# 1951010), which differentiates from the Pease System (USEPA PWS ID# 1951020) that serves the Pease Tradeport and a portion of Newington. This report summarizes the results of drinking water testing performed from January 1 through December 31, 2016, and provides information about the sources of your water supply.

**Our mission** is to provide the community with a dependable and safe supply of drinking water that meets all current drinking water standards. Portsmouth Water Division staff are constantly monitoring and routinely testing the drinking water in accordance with Federal and State requirements. This ensures the quality of water delivered to customers consistently meets these water quality standards. As new challenges emerge with respect to potential contaminants and impacts from changing weather conditions, we remain vigilant in meeting the goals of water treatment, source water protection, water efficiency, system improvement, fire service capability, and community education, while continuing to serve the needs of all of our water users.

# City of Portsmouth



Water Division

680 Peverly Hill Road

Portsmouth, NH 03801

603-427-1530

[www.cityofportsmouth.com/publicworks/water](http://www.cityofportsmouth.com/publicworks/water)