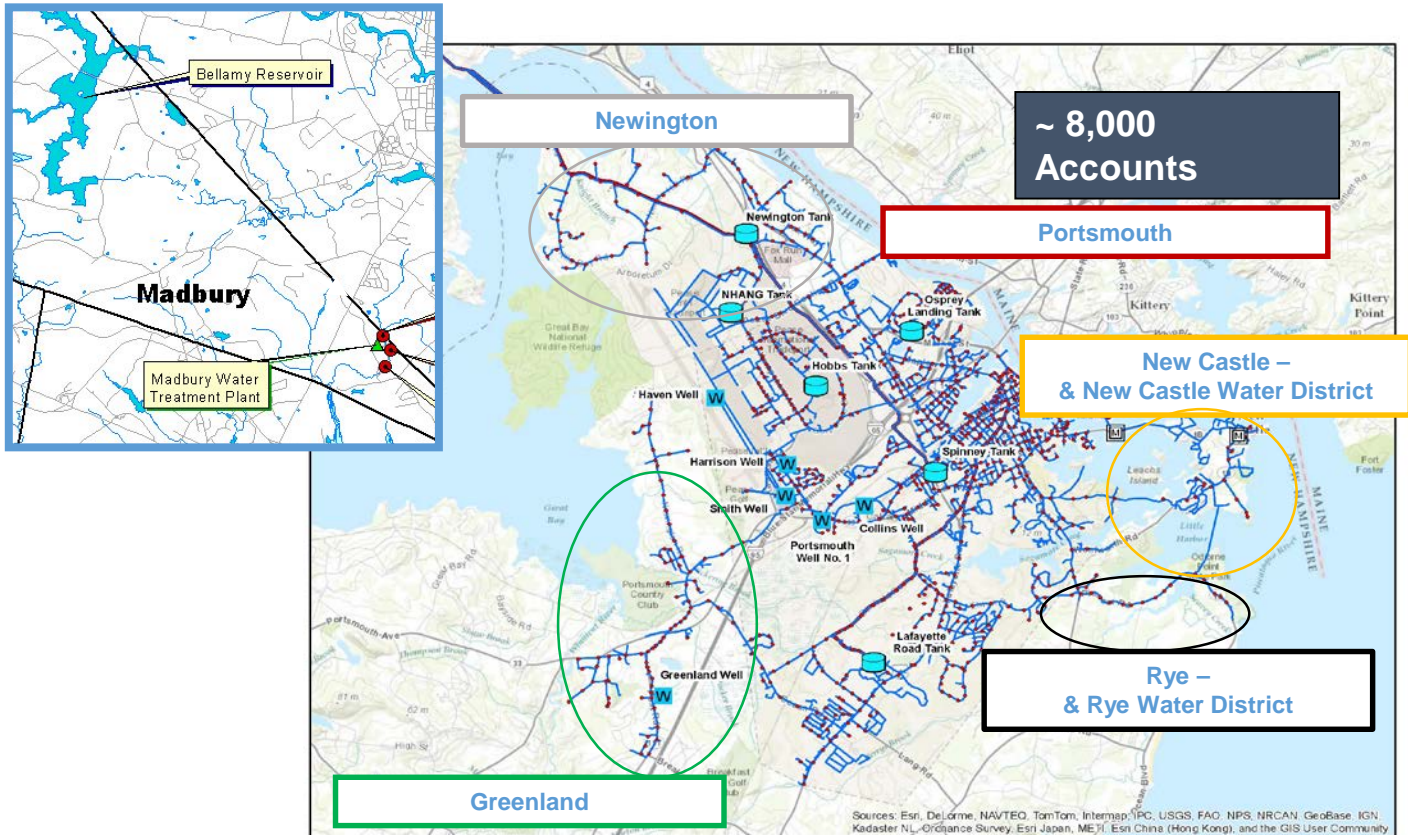


City of Portsmouth
Water Efficiency Effort
Timeline and Summary
May 2016

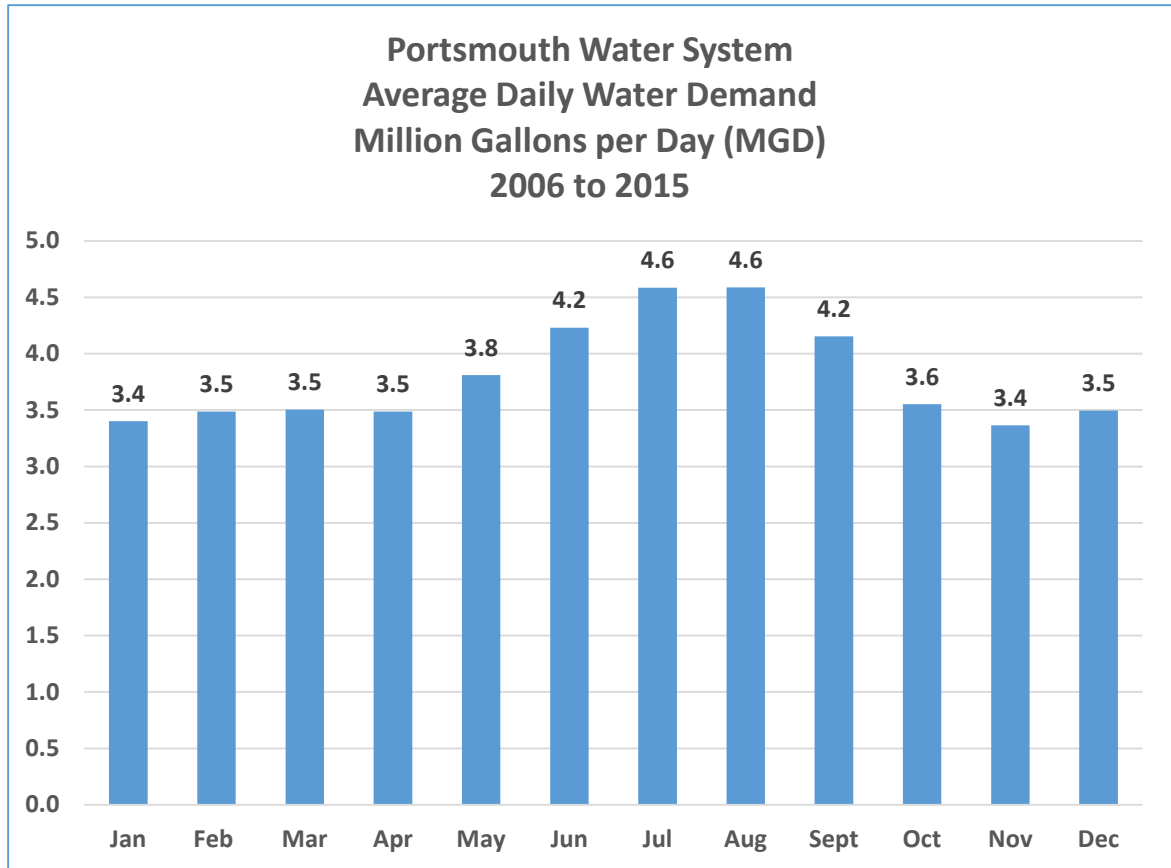


Portsmouth Regional Water System Service Area



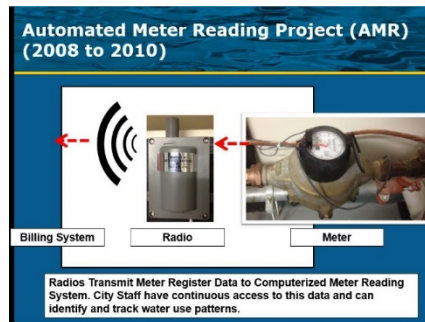
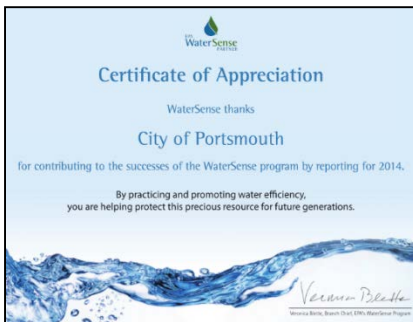
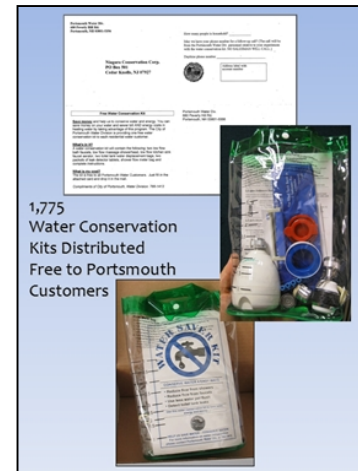
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, MEI, Esri China (Hong Kong), and the GIS User Community

Seasonal Water Demand



Ten Years 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 (complete)
5. EPA's WaterSense Program (ongoing)
6. Leak Detection Program (ongoing)
7. Water Efficiency Rebate Program (ongoing)
8. WaterSense Irrigation Requirements (2016)



2006 to 2009 Water Conservation Kit Program

Nearly 1,800 kits distributed to Residential Water Customers

Kits included:

Low Flow Faucet Aerators

Low Flow Showerheads

Leak Detection Tablets

Toilet bladder to reduce flushing volume

**1,775
Water Conservation
Kits Distributed
Free to Portsmouth
Customers**

Portsmouth Water Div.
600 Pineroy Hill Rd.
Portsmouth, NH 03801-0008

Niagara Conservation Corp.
PO Box 281
Cedar Knolls, NJ 07927

How many people in household? _____

Has anyone your phone number for a follow-up call? (This call will be from the Portsmouth Water Div. - personnel relative to your application for the Water Conservation Kit. NO SALES/MAKE WELL CALLS.) _____

Customer phone number: _____

Address (omit unit or apartment number) _____

Free Water Conservation Kit

Portsmouth Water Div.
600 Pineroy Hill Rd.
Portsmouth, NH 03801-0008

Save Money and Help us to Conserve Water and Energy: You can save money on your water and energy bill (WEC) savings come in many ways. By saving on energy in the program, The City of Portsmouth Water Division is providing one free water conservation kit to each residential water customer.

What's in it?
A water conservation kit will contain the following: two low flow bath faucets, low flow coverage showerhead, two flow restrictor airtight shower heads, two toilet tank water displacement bags, one pack of leak detection tablets, shower flow meter bag and complete instructions.

How to Use Kit:
The kit is free to all Portsmouth Water Customers. Just fill in the attached card and drop it in the mail.

Commitment of City of Portsmouth, Water Division, 786-1413

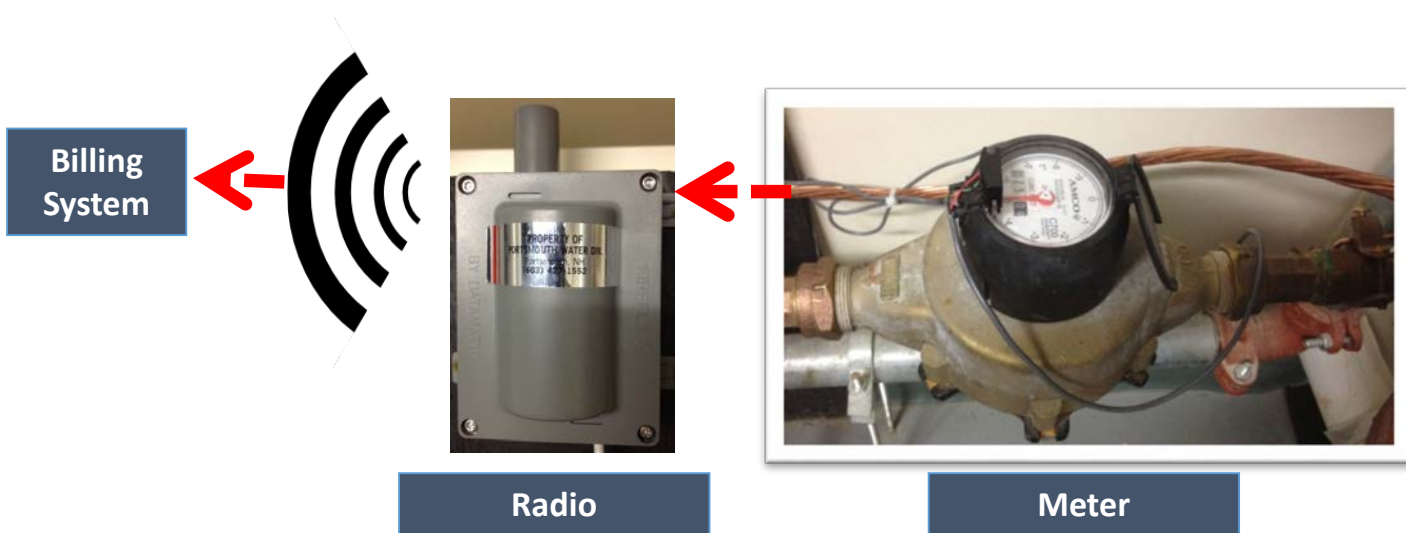


FY07 – Introduction of Tiered Water and Sewer Rates

	Water Rates	Sewer Rates
First Tier Rate (10 units or less per month)	\$4.15	\$11.77
Second Tier Rate (units over 10 per month)	\$5.00	\$12.95
Irrigation Meter Rate (All units billed)	\$5.00	

When a customer uses more that 10 units of water a month (approximately 7,500 gallons or 248 gallons per day) their rate for the next unit of water/sewer bill increases

Automated Meter Reading Project (AMR) (2008 to 2010)

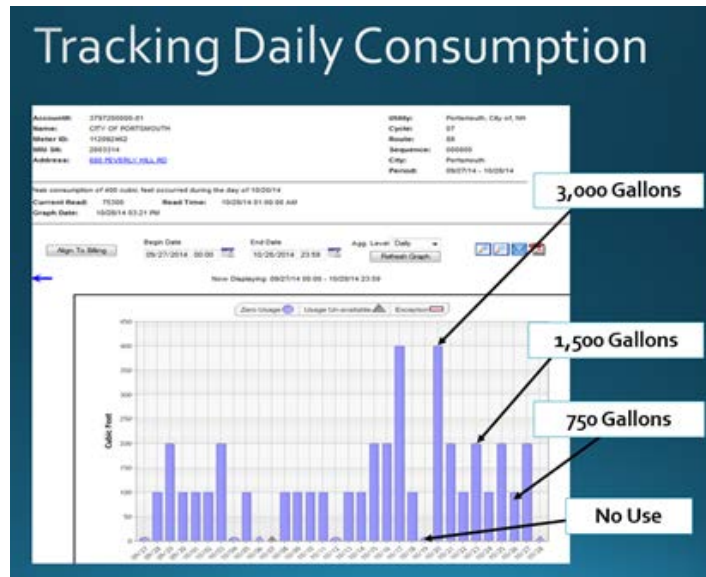


Additional Benefit of AMR Program: More frequent water billing

- System transition has enabled City to go to monthly billing (bills used to go out three times a year)
- Consumers can now see the immediate impact of high water use on their bill
- Leaks identified quickly as water consumption can be compared to prior month or yearly use.
- Leak codes can track these users, allowing our customer service representatives to contact users about high water use.

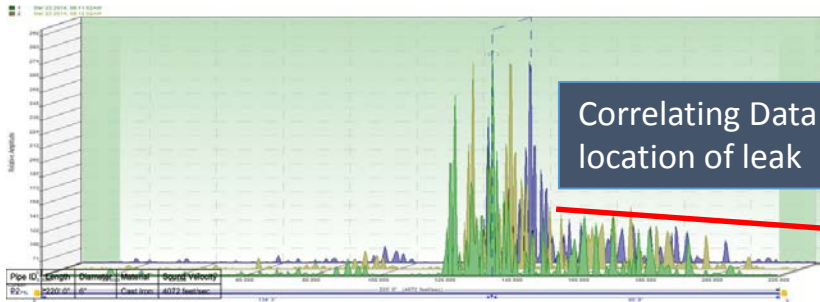
Meter Reading – Daily Water Use

- The following graphic shows daily water usage for the City's Department of Public Works and shows how it effectively identifies daily water usage patterns:



Leak Detection Analysis – Ongoing

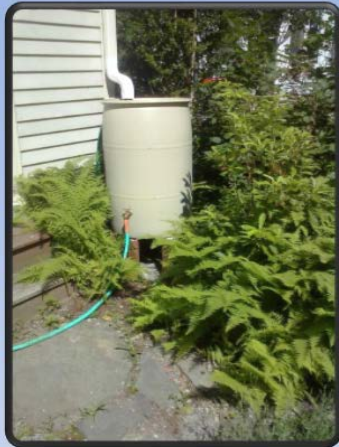
- Routinely survey the system to identify hard-to-find leaks



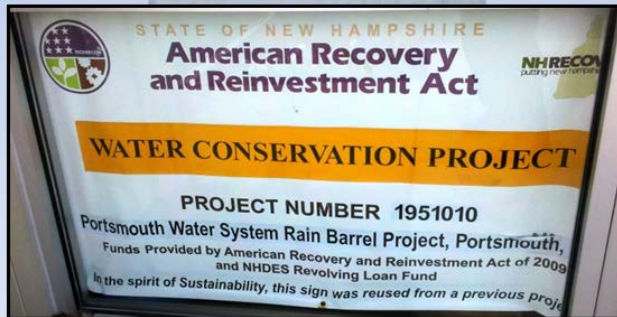
Leak ID	Leak Position	Correlation Between	Confidence	Recording Time
L4	304 2" from 1	1->3	85.6%	Mar 23 2014, 08:11:52AM
L5	304 2" from 1	1->3	89.6%	Mar 23 2014, 08:12:52AM
L6	304 2" from 1	1->3	85.5%	Mar 23 2014, 08:13:52AM
L7	134 3" from 2	2->3	83.7%	Mar 23 2014, 08:11:52AM
L8	122 9" from 2	2->3	83.0%	Mar 23 2014, 08:12:52AM
L9	133 9" from 2	2->3	84.5%	Mar 23 2014, 08:13:52AM
L25	182 8" from 2	2->4	80.9%	Mar 23 2014, 08:11:52AM
L26	182 10" from 2	2->4	81.1%	Mar 23 2014, 08:12:52AM
L27	182 10" from 2	2->4	77.2%	Mar 23 2014, 08:13:52AM
L28	134 3" from 2	2->3	83.7%	Mar 23 2014, 08:11:52AM
L29	122 9" from 2	2->3	83.0%	Mar 23 2014, 08:12:52AM
L30	133 9" from 2	2->3	84.5%	Mar 23 2014, 08:13:52AM
L31	660 2" from 4	4->2	60.7%	Mar 23 2014, 08:11:52AM
L32	659 9" from 4	4->2	81.0%	Mar 23 2014, 08:12:52AM
L33	660 9" from 4	4->2	77.2%	Mar 23 2014, 08:13:52AM
L34	80 4" from 3	3->2	83.7%	Mar 23 2014, 08:11:52AM
L35	96 10" from 3	3->2	83.0%	Mar 23 2014, 08:12:52AM
L36	86 9" from 3	3->2	84.5%	Mar 23 2014, 08:13:52AM
L37	134 3" from 2	2->3	83.7%	Mar 23 2014, 08:11:52AM



2009 to 2011 Rain Barrel Program



**1,000 barrels
sold to
Portsmouth
water customers
at a reduced
price**



2013 – EPA's WaterSense Partnership



The City of Portsmouth's staff will be presenting more information about our WaterSense Program at the Portsmouth Farmers' Market on Saturday, July 27, 2013. For more info, please visit our wastewater website: <http://www.portsmouthwastewater.com>



Partners are provided with outreach information and assistance to improve water efficiency

Water Efficiency Rebate Program – Introduced in 2014



Low-Flow Toilets (281 total):

200 rebates issued in 2015

81 rebates through April 2016

High Efficiency Washing Machines (77 total):

71 rebates issued in 2015

6 rebates through April 2016

Potential Water Savings Through Rebate Program



Most full-sized **High Efficiency washers** use 13 gallons of water per load, compared to the 27 gallons used by standard top loading machines.

- **Washing machines have an expected useful life of 14 years**
- **7% of the public will replace their washing machines per year**



HIGH EFFICIENCY TOILETS:

- **1.28 to 1.6 Gallons per Flush versus older models that used 3.5 to 5.0 Gallons per flush**

Source: "Water Conservation: Customer Behavior and Effective Communications"
Water Research Foundation project #4012, 2012

Rebate Program – Average Monthly Consumption

Analysis of 20 Locations with Rebates (Non Irrigation Months)



Low Flow Toilets:

- Pre Rebate – 5,102 gallons/month
- Post Rebate – 3,567 gallons/month
- Savings – 1,535 gallons/month
- 50 gallons/day savings
- **30% Reduction**



High Efficiency Washing Machines:

- Pre Rebate – 3,861 gallons/month
- Post Rebate – 3,122 gallons/month
- Savings – 739 gallons/month
- 24 gallons/day savings
- **19% Reduction**

2015 - Irrigation Efficiency

- Odd-Even Watering Schedule as a Condition for new 73-Lot Condominium project in Greenland, NH

XXI. CONDOMINIUM IRRIGATION SYSTEM

The Condominium Association shall be responsible for the operation and maintenance of the Irrigation System, to be installed by the Developer, and the costs for same shall be included in the Annual Operating Budget for the Association and each unit owner shall be assessed a proportionate share of the costs thereof.

The City of Portsmouth NH is the provider of water for the Condominium and has agreed to provide service to the Condominium pursuant to the following terms and conditions:

1. Irrigation use shall be restricted to the time period 5/15 to 9/15 of each year: total of four (4) months per year;
2. Irrigation use shall be restricted to every other day per home, **other than during the initial grass seeding period required to establish lawn areas, which will be watered daily until the grass becomes established;**
3. The Association shall seek to gain water efficiency through more efficient landscaping, rain gardens, drip irrigation and watering schedules.

2015 New Hampshire Water Sustainability Award

- NHDES Commissioner Tom Burack presented the City of Portsmouth with NHDES' "Source Water Sustainability" award for a variety of water conservation measures being implemented, including New Hampshire's first customer rebate program that provides incentives for customers to install more water-efficient appliances.



Commissioner Tom Burack, Al Pratt – Portsmouth Water Resources Engineer, Peter Armstrong – Portsmouth Chemist

Save Water For Earth Day 2016 Flyer



Save Water for Earth Day 2016



This April 22nd marks the 46th anniversary of Earth Day, and what better way to celebrate than saving water in the great outdoors? You can get started with some of the outdoor water-saving tips below while you reconnect with nature and give back to the earth by saving water in your lawn or garden this spring.

Here are six simple tips to preserve this precious resource:

1. **Check the time:** Water your yard in the morning or evening to avoid losing water to evaporation in the heat of the day.
2. **Get in the “hydro” zone:** Group the plants in your garden according to their water needs, also known as using “hydrozones,” which reduce the risk of over watering your plants.
3. **Use mulch:** Adding mulch in your garden helps reduce evaporation, inhibit weed growth, moderate soil temperature, and prevent erosion.
4. **Keep control:** Upgrade to a WaterSense labeled controller, which acts like a thermostat for your sprinkler system using actual local weather conditions to tailor your watering schedule.
5. **Compost:** Instead of sending organic waste from your kitchen down the garbage disposal with water, add them to a compost pile. You can then use the compost as nutrient-rich soil to add to your garden.



Commit to save water! **WaterSense**

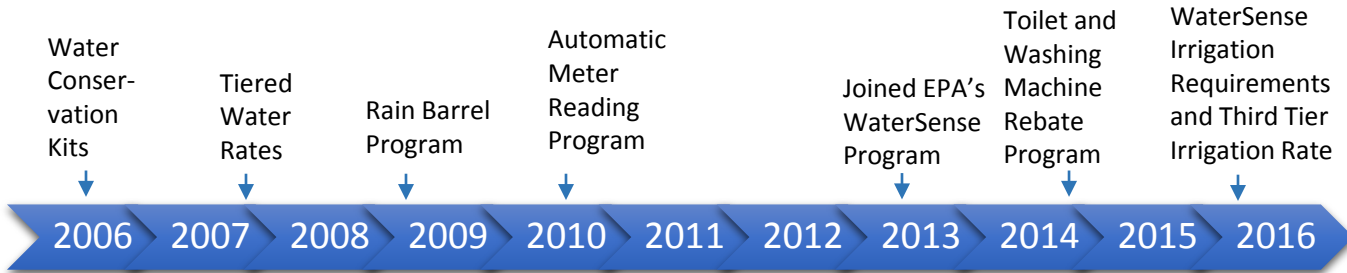
Take the US EPA Watersense “*I'm for Water*” pledge and use their “*2016 monthly resolutions checklist*” to extend your Earth Day water conservation to a year-round effort at:

epa.gov/watersense/pledge

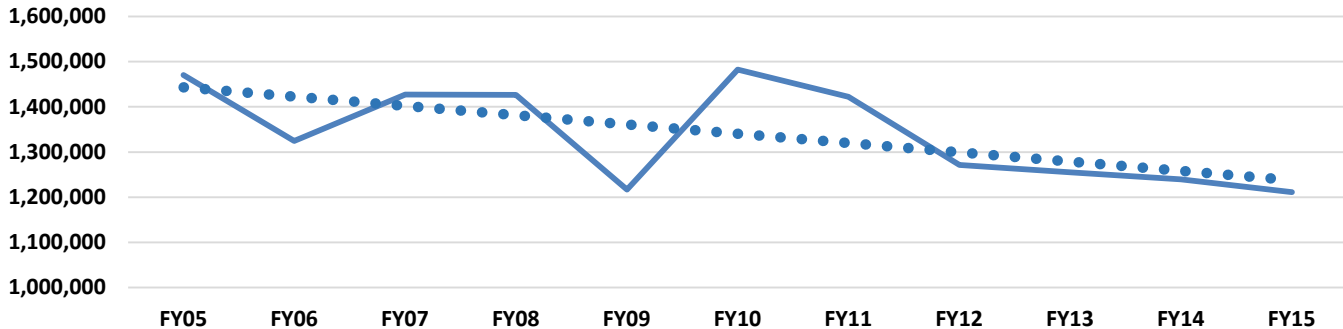
May 2016 – City Council vote to amend sewer ordinance to include WaterSense Certification and adoption of Third Tier for Irrigation Meters

- **Encourage water efficiency through specific policies that govern how irrigation water can be used within the community such items as:**
 - City approves only landscape irrigation systems designed and installed an EPA WaterSense Certified professional
 - Require in-ground irrigation systems include moisture sensors
 - Restrict irrigation usage to specific days or periods of time
 - April 1 to September 30, landscape irrigation utilizing water, in whole or in part, obtained from the City water system, is prohibited except during the times between 6:00 p.m. and 10:00 a.m.
 - Enable the City to restrict the use of irrigation meters during periods of drought
 - Apply a third tier to appropriately charge customers that use more water for that additional capacity

Water Efficiency Timeline



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



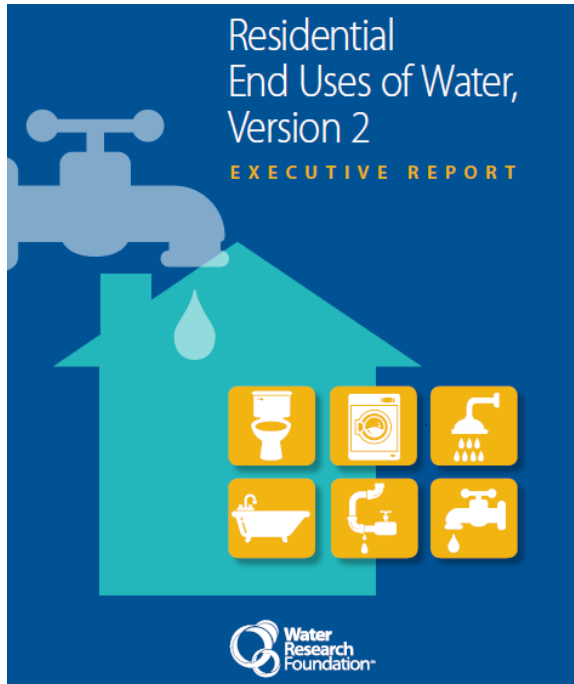
Portsmouth Water Demand Trends

- Factors Contributing to Declining Demand
 - ▶ Water fixture change-outs
 - ▶ Conservation ethic
 - ▶ Response to rate increases and monthly billing
 - ▶ Water bills are primarily based on units of water used
 - ▶ Sewer bills are based entirely on units of water used
 - ▶ Tiered rates charge customers that use more water a higher rate after they reach 10 units/month
 - ▶ City's outreach and water efficiency programs

2012 Water System Master Plan Analysis

Customer Classification	Accounts	Current Average Per Account Gallons Per Day	Average Billable Units Per Month
Industrial	81	6,904	282
Municipal	66	1,659	68
Commercial	976	1,444	59
Multi- Family Residential	738	540	22
Irrigation	238	275	11
Single Family Residential	5,932	133	5
Rye and New Castle Water Districts	2	61,932	2,525

Portsmouth's Single-Family Residential Customers use 14% Less Water than the National Average



National Average Indoor
Water Use:

138 Gallons per Day

Portsmouth Average Indoor
Water Use:

119 Gallons per Day

Public Outreach – City Website




WATER EFFICIENCY

- [Water Efficiency Rebate Program](#)
- [Portsmouth Water Efficiency Measures](#)
- [Press Release for the City's Partnership with EPA's WaterSense program](#)
- [WaterSense Handout](#)
- [Fact Sheet on Outdoor Water Use](#)
- [Facts and Tips to Reduce Outdoor Water Use](#)
- [EPA's WaterSense website provides helpful tips for outdoor water use efficiency](#)

Water Supply Status Report

- Introduced in 2015
- Routine Evaluation of Supply Status
- Notification of Water Use Restrictions if needed
- Posted on City Website

**City of
Portsmouth**
Department of Public Works



February 5, 2016

Portsmouth Water Supply Status Report

Overview

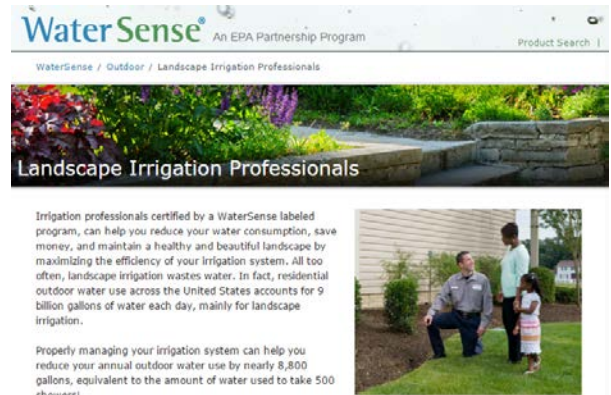
The following Portsmouth Water Supply Status Report provides the Portsmouth Water Division's customers an assessment of our current water supply conditions. This report will be distributed routinely via the City of Portsmouth's website at: www.Cityofportsmouth.com/publicworks - water

Water Conservation Status

Customer Water Restrictions	Based on current water supply conditions, there are no water use restrictions at this time.
N/A	The demand for water is typical for this time of year. Groundwater and surface water conditions are within ranges historically observed during January and February. Water supply resources are adequate and demand can be met without use restrictions.
None	
Water's Measure	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:
Outdoor Watering	http://www.portsmouthwastewater.com/watersense.html
Indoor/Well Watering	http://www.epa.gov/watersense/
No Outdoor Use	

Future Water Efficiency Efforts

- Continue to offer Water Efficiency Rebates
- Customer Outreach regarding water use and efficiency
- Promote more efficient irrigation practices through EPA's WaterSense Irrigation Certification



The image is a screenshot of the WaterSense website. At the top, the "WaterSense" logo is displayed in blue and green, with the tagline "An EPA Partnership Program" to its right. A search bar is visible in the top right corner. Below the logo, a navigation breadcrumb reads "WaterSense / Outdoor / Landscape Irrigation Professionals". The main content area features a large photograph of a well-maintained garden with a stone retaining wall. Below the photo, the heading "Landscape Irrigation Professionals" is written in white. To the left of the main text, there is a paragraph explaining the benefits of the certification program. To the right, there is a smaller photograph of a man, a woman, and a child standing in a yard. At the bottom, another paragraph provides specific water-saving statistics.

WaterSense® An EPA Partnership Program

WaterSense / Outdoor / Landscape Irrigation Professionals

Landscape Irrigation Professionals

Irrigation professionals certified by a WaterSense labeled program, can help you reduce your water consumption, save money, and maintain a healthy and beautiful landscape by maximizing the efficiency of your irrigation system. All too often, landscape irrigation wastes water. In fact, residential outdoor water use across the United States accounts for 9 billion gallons of water each day, mainly for landscape irrigation.

Properly managing your irrigation system can help you reduce your annual outdoor water use by nearly 8,800 gallons, equivalent to the amount of water used to take 500 showers!