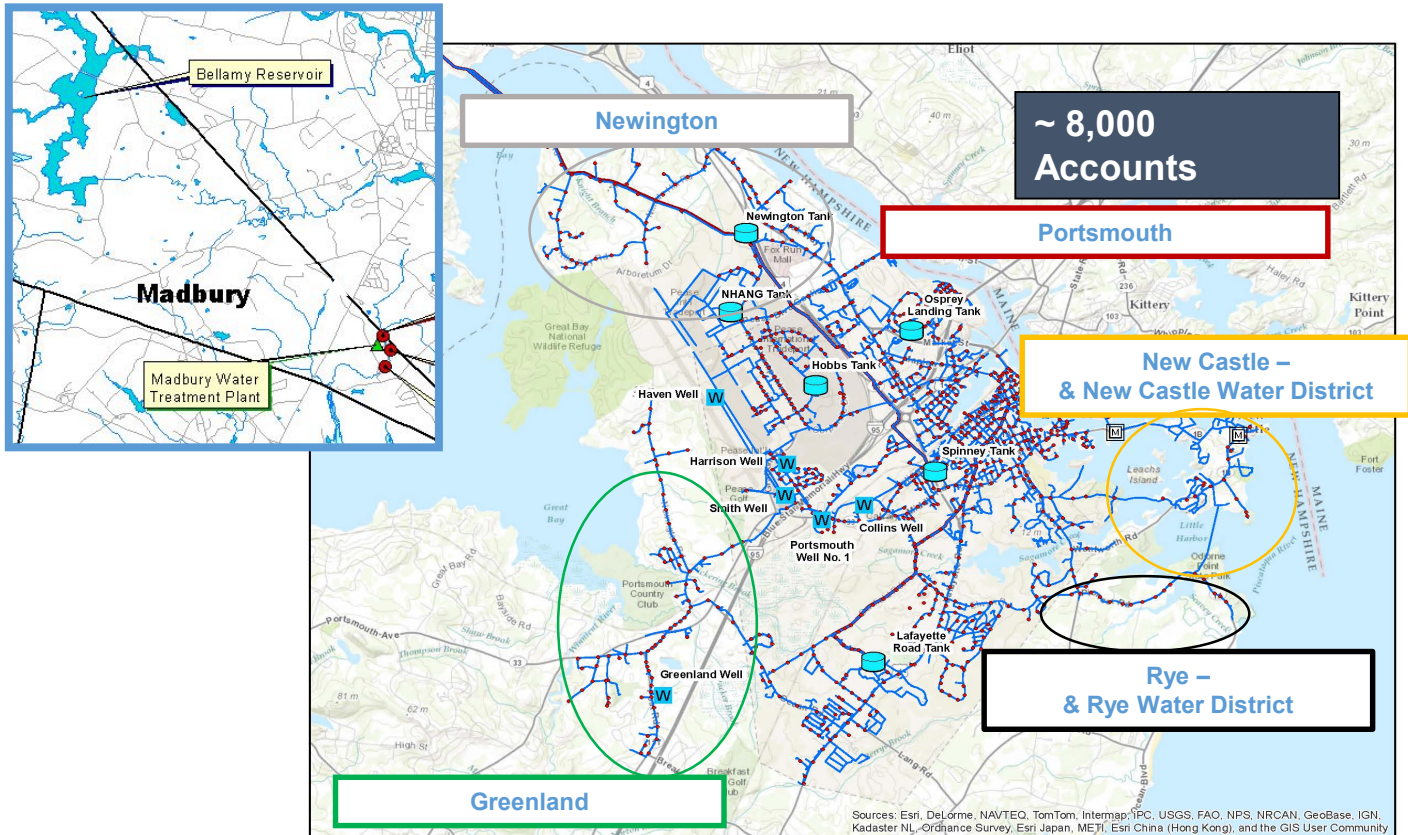




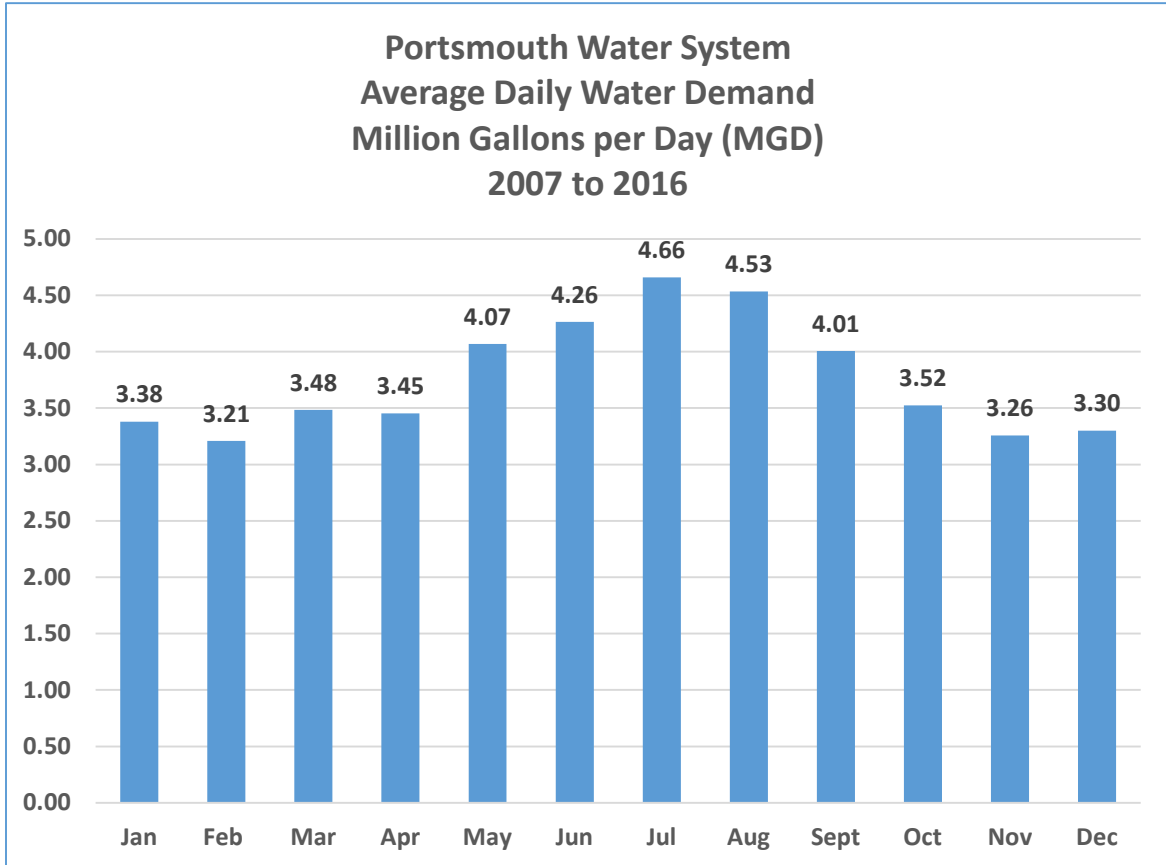
# City of Portsmouth Water Efficiency Efforts

updated: October 2018

# Portsmouth Regional Water System Service Area



# Seasonal Water Demand



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



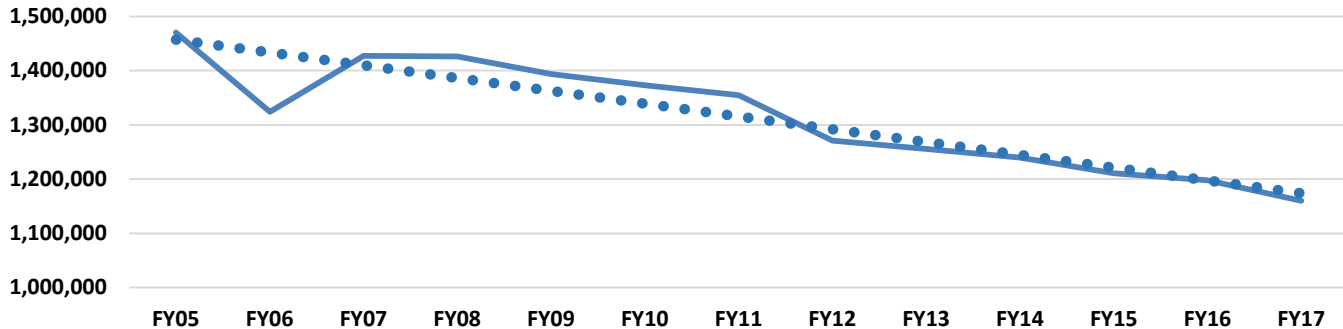
1. Water Conservation Kits (2006 to 2008)
2. Tiered Water Rates (starting FY07)
3. Rain Barrel Program (2009 to 2011)
4. Automatic Meter Reading Project (2008 to 2010)
5. EPA's WaterSense Program (joined in 2013)
6. Leak Detection Program (ongoing)
7. Water Efficiency Rebate Program (Introduced in 2014)
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)

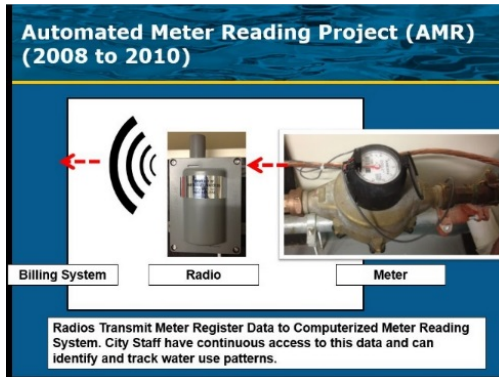


# Water Efficiency Timeline



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





# 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.  
500 Ferry Hill Rd.  
Portsmouth, NH 03801-0516

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

How many people in household? \_\_\_\_\_

How do we have your phone number? Use a following call! (This call will be for the Portsmouth Water Div. personnel relative to your application for the water conservation kit. NO SALESMAN WILL CALL.)

Daytime phone number: \_\_\_\_\_

Address (omit street number): \_\_\_\_\_

Portsmouth Water Div.  
500 Ferry Hill Rd.  
Portsmouth, NH 03801-0516

**Free Water Conservation Kit**

**Save money and help us to conserve water and energy.** You can save money on your water and energy bill (WEC) using water in healthy water by saving percentage of 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: low flow bath faucet, low flow showerhead, low flow kitchen sink faucet aerator, two leak leak water detection tablets, a pack of leak detection tablets, shower flow meter bag and complete instructions.

**How to use the kit?**  
The kit is free to all Portsmouth Water Customers. Just fill in the attached card and drop it in the mail.

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



# FY07 – Introduction of Tiered Water and Sewer Rates

**WATER RATES** - There will be no increase in the water user rates.

**Tier 1:** First 10 units of water consumed will be billed at a rate of \$4.15 per unit.

**Tier 2:** Consumption above 10 units of water will be billed at \$5.00 per unit.

**SEWER RATES** -Sewer rates will increase 4% on July 1, 2017 and be reflected on the bill received in August for July's consumption.

Sewer charges are based on water consumption.

**Tier 1:** First 10 units of consumption will be billed at the rate of \$12.73 per unit.

**Tier 2:** Consumption above 10 units will be billed at the rate of \$14.00 per unit.

**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**



# FY17 – Updated Tiers for Irrigation Customers – Added Third Tier

**IRRIGATION METERS** - irrigation meter usage.

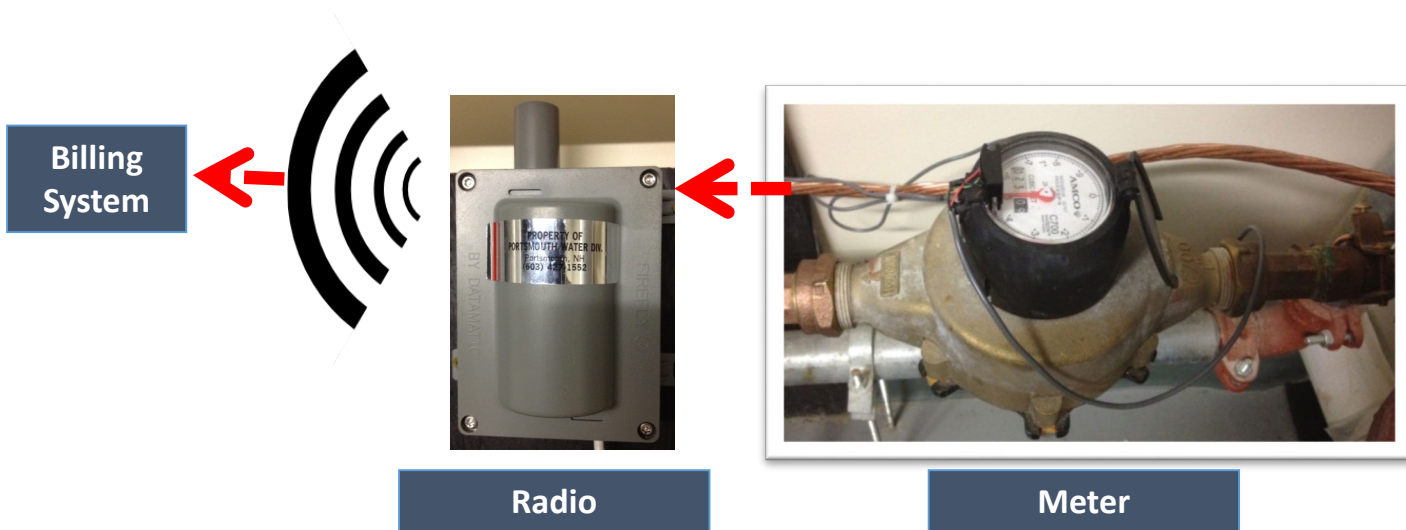
Irrigation consumption will be billed at the following rates effective July 1, 2016.

**Tier 1:** First 10 units of consumption will be billed at the rate of \$5.00 per unit.

**Tier 2:** Consumption above 10 units and up to 20 units will be billed at the rate of \$9.70 per unit.

**Tier 3:** Consumption above 20 units will be billed at the rate of \$12.05 per unit.

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

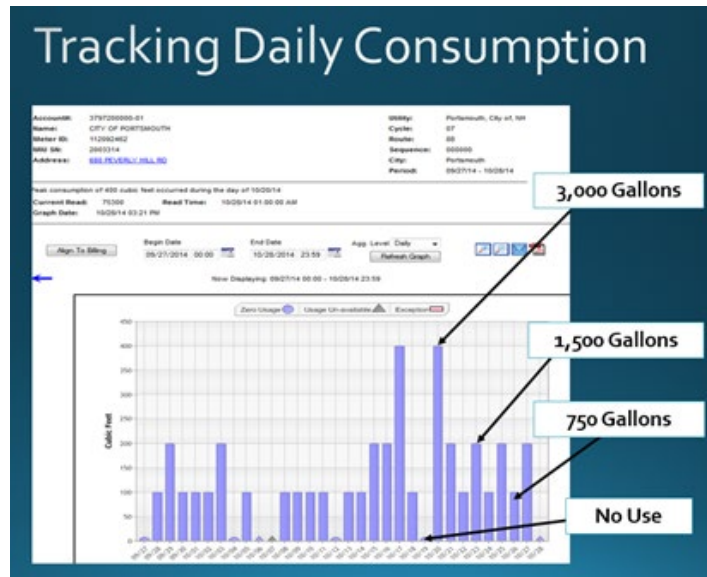


# Additional Benefit of AMR Program: More frequent water billing

- 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.

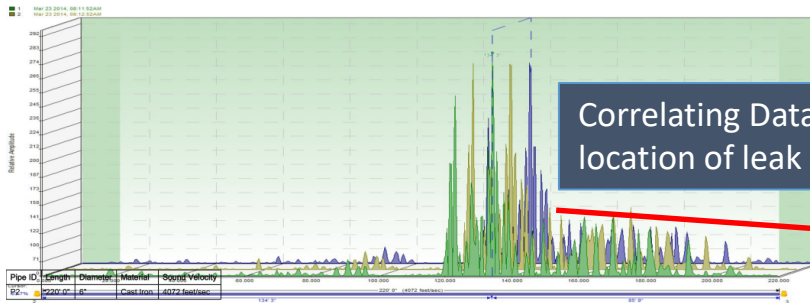
# Meter Reading – Daily Water Use

- 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



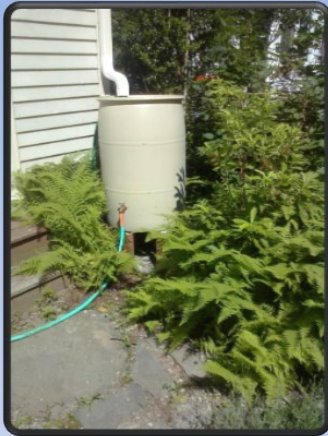
Pipe ID	Length	Diameter	Material	Original Velocity
P2	620' ft	4"	Cast Iron	4072 feet/sec

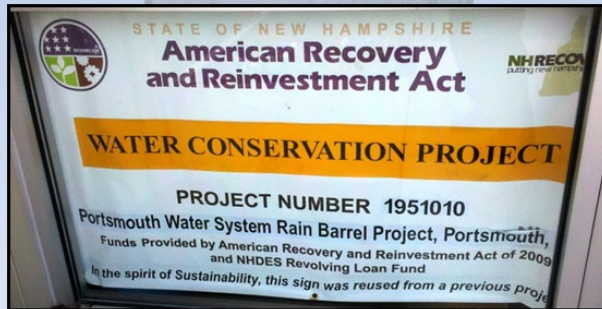
Leak ID	Leak Position	Correlation Between	Confidence	Recording Time
L4	304' 7" from 1	1->3	85.8%	Mar 23 2014, 08:11:52AM
L5	304' 2" from 1	1->3	86.6%	Mar 23 2014, 08:13:52AM
L6	304' 2" from 1	1->3	85.5%	Mar 23 2014, 08:13:52AM
L7	134' 3" from 2	2->3	83.7%	Mar 23 2014, 08:11:52AM
L8	122' 9" from 2	2->3	83.0%	Mar 23 2014, 08:12:52AM
L9	133' 9" from 2	2->3	84.5%	Mar 23 2014, 08:13:52AM
L25	152' 5" from 2	2->4	80.9%	Mar 23 2014, 08:11:52AM
L26	152' 10" from 2	2->4	81.1%	Mar 23 2014, 08:12:52AM
L27	152' 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	80.7%	Mar 23 2014, 08:11:52AM
L32	659' 9" from 4	4->2	81.0%	Mar 23 2014, 08:12:52AM
L33	659' 9" from 4	4->2	77.2%	Mar 23 2014, 08:13:52AM
L34	85' 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	85' 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:

797 rebates issued (as of July 2018)

## High Efficiency Washing Machines:

88 rebates issued (as of July 2018)



# 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**

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



## **HIGH EFFICIENCY TOILETS:**

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



# How Old Is Your Toilet? Water Use Per Flush

Pre-1980's:

5 Gallons



1980's:

3.5 Gallons



Now:

1.6 Gallons or less



Toilet Type	Gallons per Flush	Flushes per Day	Gallons per Day	Gallons per Year	Billed Units per Year	Cost Per Year		
						Water	Sewer	Total
Pre-80's	5.0	5	25.0	9,125	13	\$52.30	\$160.44	\$212.75
1980's	3.5	5	17.5	6,388	9	\$36.61	\$112.31	\$148.92
Current	1.6	5	8.0	2,920	4	\$16.74	\$51.34	\$68.08

1 Unit = 748 gallons

FY17 Billing Rates: \$4.15/unit – Water, \$12.73/unit - Sewer

# 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**

# Portsmouth Housing Authority Gosling Meadows Retrofit:

- 33 Buildings
- 118 Toilets replaced in early 2016
- 2,904 gallons/day water savings (18% reduction)
- Approx. \$26,000 year savings on water/sewer billing



# 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

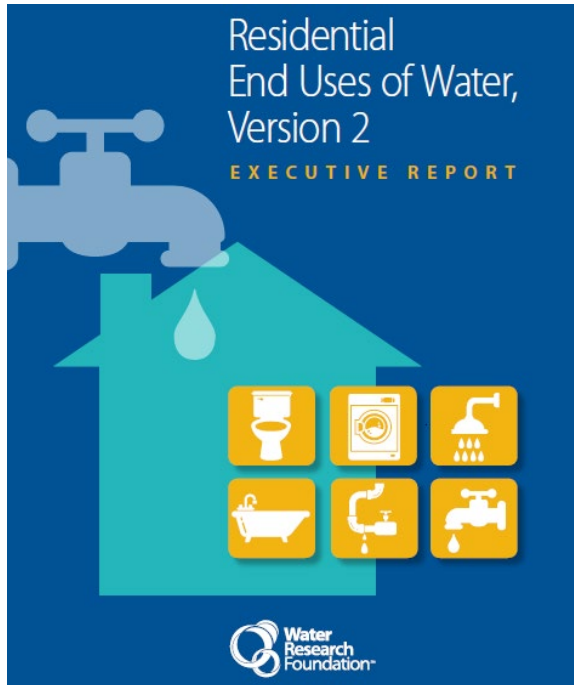
## May 2016 – City Council vote to amend sewer ordinance to include WaterSense Certification and adoption of Third Tier for Irrigation Meters

- **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

# 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

# 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

City of PORTSMOUTH NH | DEPARTMENT OF PUBLIC WORKS A A A

## WATER

[Quality & Status](#) ▾ [Water Efficiency](#) ▾ [New Service, Meters & Backflows](#) [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)
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)

### RESOURCES

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- [Water Efficiency Rebate Program](#)
- [Eco-Municipality](#)
- [EPA Watersense](#)
- [Alliance for Water Efficiency](#)
- [NH DES Water Conservation](#)
- [American Water Works Association's Drip Calculator](#)

# 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](http://epa.gov/watersense/pledge)

# 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*



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**February 5, 2016**

**Portsmouth Water Supply Status Report**

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**Overview**

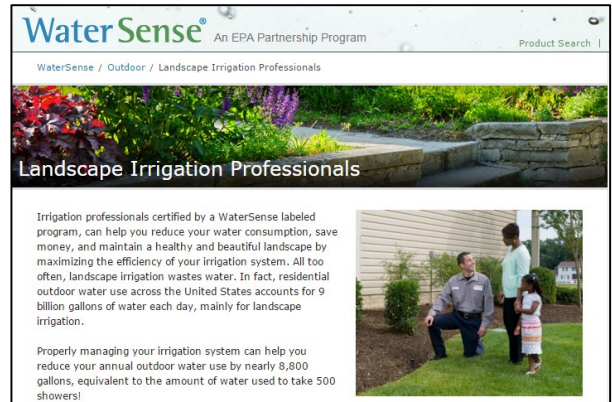
The following Portsmouth Water Supply Status Report provides the Portsmouth Water Division's customers an assessment of our current water supply conditions. This report will be distributed routinely via the City of Portsmouth's website at: [www.Cityofportsmouth.com/publicworks-water](http://www.Cityofportsmouth.com/publicworks-water)

**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.
<b>None</b>	
Water Use 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:  <a href="http://www.portsmouthwastewater.com/watersense.html">http://www.portsmouthwastewater.com/watersense.html</a>  <a href="http://www.epa.gov/watersense/">http://www.epa.gov/watersense/</a>
Indoor Watering	
Two-Flush/Wash Watering	
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 a webpage from the WaterSense program. At the top, the logo reads "WaterSense® An EPA Partnership Program" with a "Product Search" link on the right. Below the logo is a breadcrumb trail: "WaterSense / Outdoor / Landscape Irrigation Professionals". The main heading is "Landscape Irrigation Professionals" in white text over a background image of a garden. The text below explains that certified professionals can help reduce water consumption, save money, and maintain a healthy landscape by maximizing irrigation efficiency. It notes that residential outdoor water use in the US accounts for 9 billion gallons daily, mostly for landscape irrigation. A final paragraph states that proper management can reduce annual outdoor water use by nearly 8,800 gallons, equivalent to 500 showers. To the right of the text is a photograph of a man, a woman, and a child standing in a garden.

WaterSense® An EPA Partnership Program [Product Search](#)

[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!