



City of Portsmouth Water Efficiency Efforts

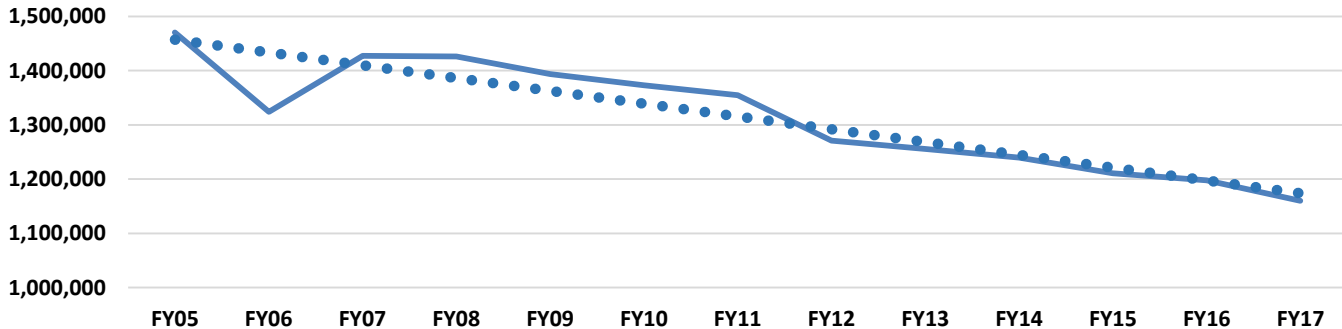
updated: October 2017



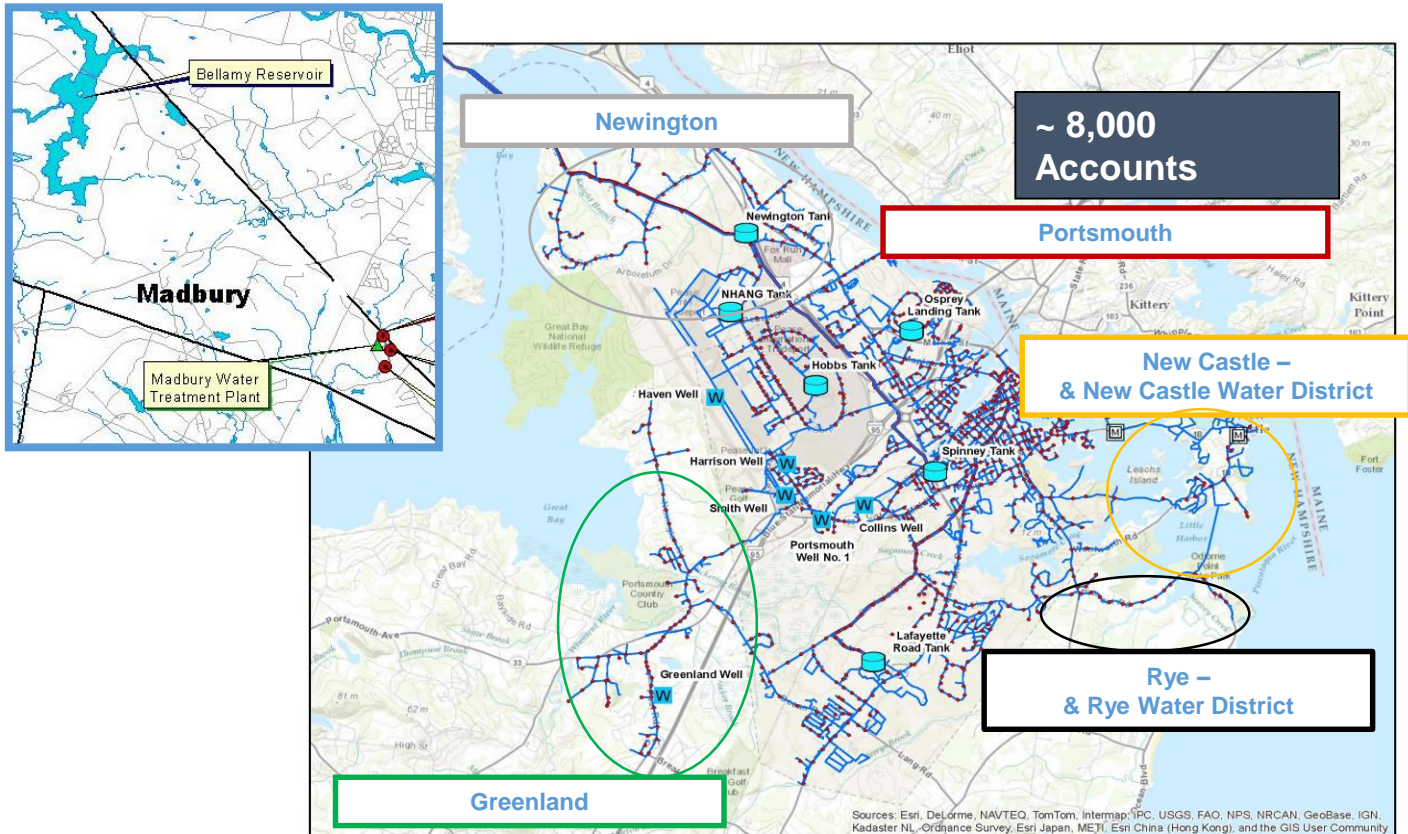
Water Efficiency Timeline



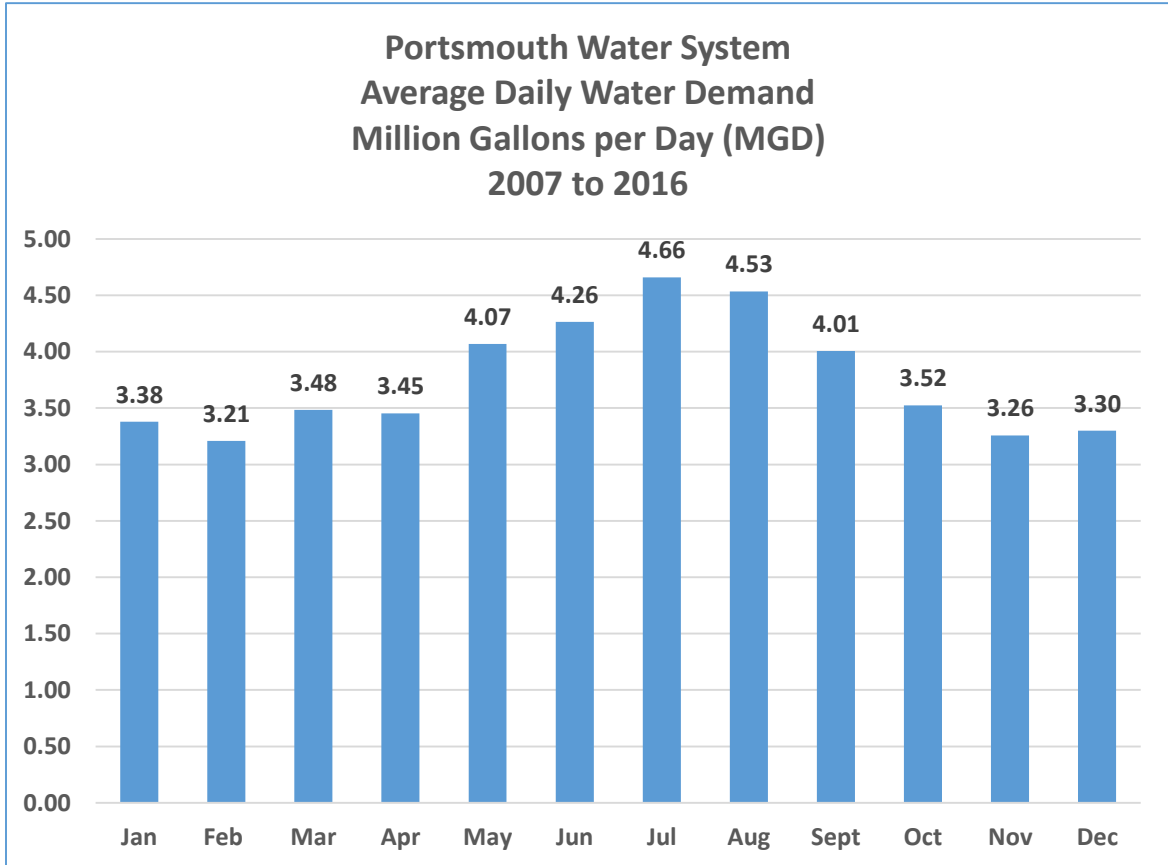
Trend - Total Residential Water Use Average (gallons per day)



Portsmouth Regional Water System Service Area

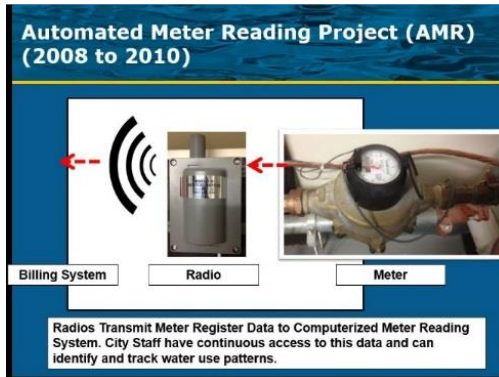


Seasonal Water Demand



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 (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)



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 Ferry Hill Rd.
Portsmouth, NH 03801-0516

Niagara Conservation Corp.
PO Box 261
Cedar Knolls, NJ 07927

How many people in household? _____

How do you have your phone number? Is it a cell phone call? (The call will be for the Portsmouth Water Div. - please advise to your supervisor for the appropriate contact person: NO DOLLAR WILL CALL.)

Daytime phone number: _____

Address (use with account number): _____

Portsmouth Water Div.
600 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) savings come in many ways 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: Aer 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 it?
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.

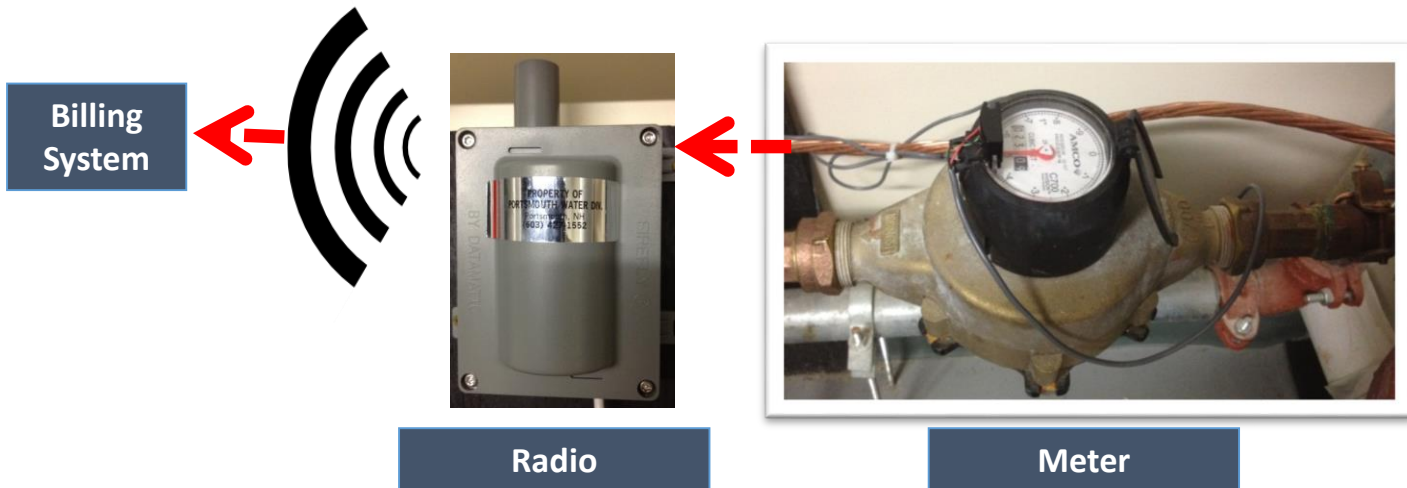
Irrigation consumption will be billed at the following rates effective July 1, 2016.

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)

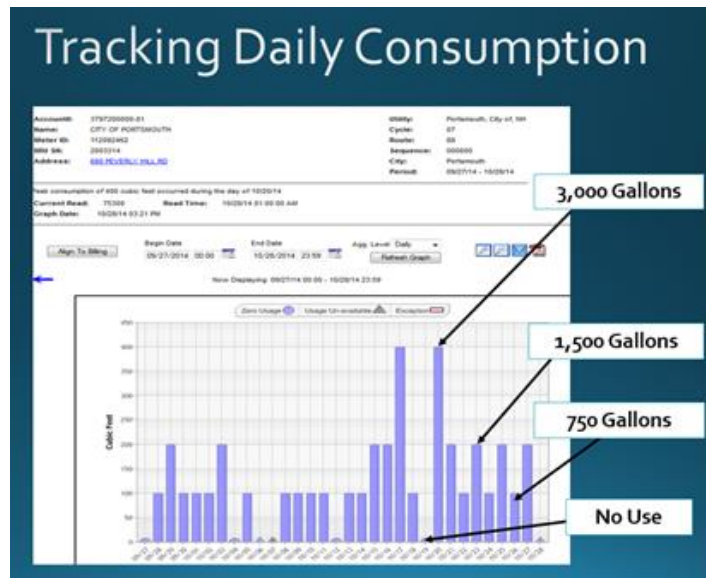


Additional Benefit of AMR Program: More frequent water billing

- 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.

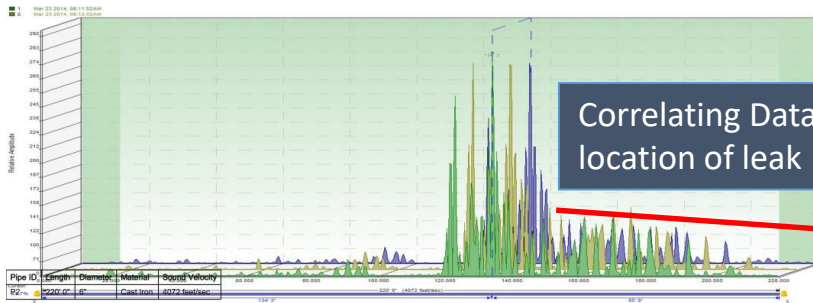
Meter Reading – Daily Water Use

- 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	Design Velocity
P2	2200 ft	4"	Cast Iron	4.072 feet/sec

Leak ID	Leak Position	Correlation Between	Confidence	Recording Time
L4	304' 2" 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



Correlating Data Showing location of leak

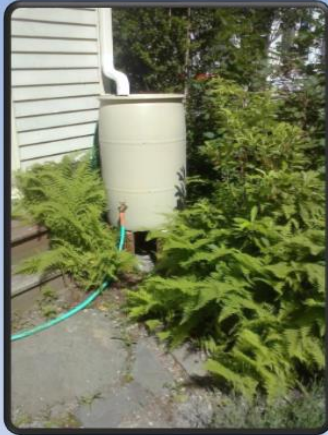
Logger on Gate Valve at park entrance

Hydt

Hydt

Hydt

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:

750 rebates issued (as of August 2017)

High Efficiency Washing Machines:

100 rebates issued (as of August 2017)

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

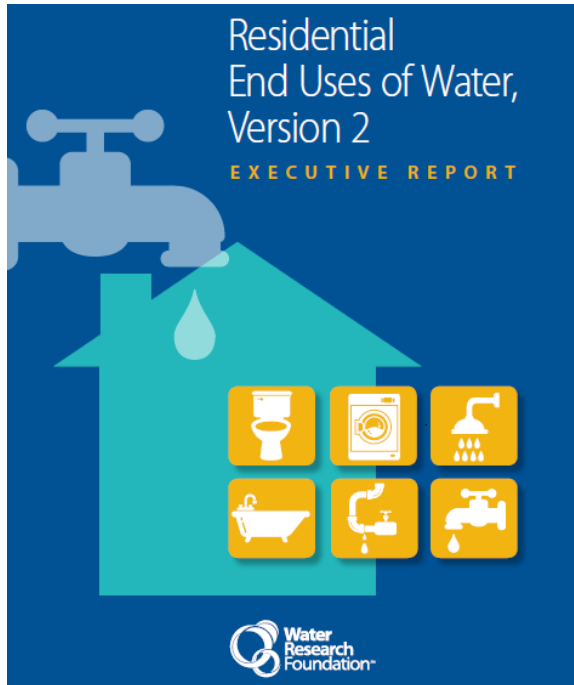
Portsmouth Water Demand Trends

- 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

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](#)

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

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

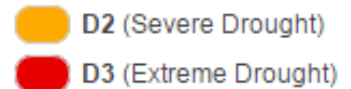
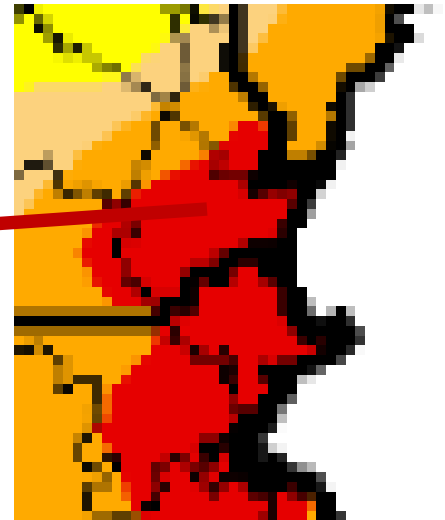
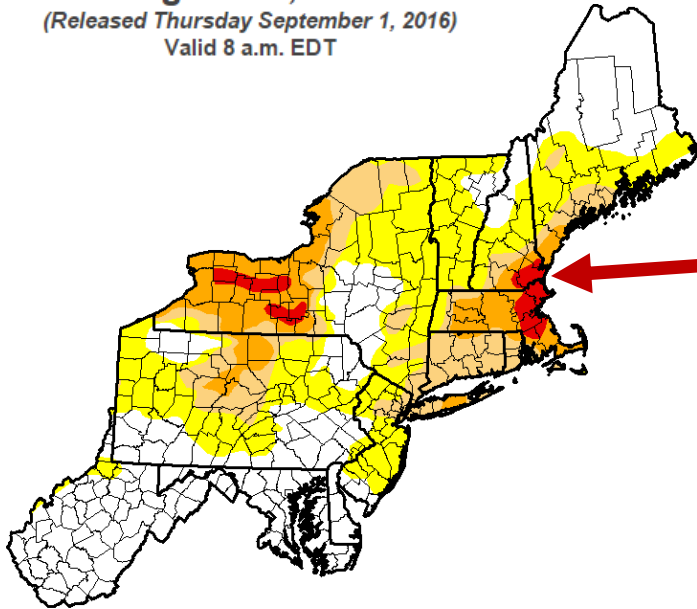
Customer Water Restrictions	Based on current water supply conditions, there are no water use restrictions at this time.
N/A	
None	The demand for water is typical for this time of year. Groundwater and surface water conditions are within ranges historically observed during January and February. Water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

2016 Drought

August 30, 2016

(Released Thursday September 1, 2016)

Valid 8 a.m. EDT



Water Supply Updates and Restriction Notices

City of
Portsmouth
Department of Public Works



August 16, 2016

Portsmouth Water Supply Status Report

Overview

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

Odd/Even Water Use Restrictions

Customer Water Restrictions
N/A
None
Voluntary Measures
Odd/Even Watering
Five days per Week Watering
No Outdoor Use

Based on current supply and demand conditions, mandatory Odd/Even Water Restrictions are in effect:

- i. Restrict irrigation water use as follows:
 - a. Odd-numbered days – Outdoor watering allowed between midnight and 10:00 AM.
 - b. Even-numbered days – No Outdoor watering allowed.

Water use restrictions are requested at this time due to the continued severe drought conditions on the Seacoast and water system demands that are higher than normal for this time of year. As the accompanying information shows, the recent weather conditions continue to be very dry. This has caused lower than typical reservoir levels, stream flow, and in some locations below average groundwater levels.

Additional information and tips regarding water efficiency can be accessed at the cityofportsmouth.com website or by calling the water/snow ban hotline at: 603-766-7669

- May 2015 – Dry Conditions
- June 27, 2016 – Voluntary Water Ban
- August 16, 2016 – Odd/Even Water Ban

Public Notice and Enforcement

City of
Portsmouth
Department of Public Works



August 30, 2016

Portsmouth Water Supply Status

Overview

The following Portsmouth Water Supply Status Report provides the assessment of the current water supply conditions. This report is available on the City of Portsmouth's website at: www.cityofportsmouth.com/publicworks/water

Odd/Even Water Use Restrictions

Customer Water Restrictions
N/A
None
Voluntary Measures
Odd/Even Watering
Tree Shrub and Wood Watering
No Outdoor Use

Due to current supply and demand conditions, Water Use Restrictions began on August 16th. If drought conditions persist, additional restrictions or a ban may be required.

Odd/Even Water Use Restriction requires as follows:

- Odd-numbered days – Outdoor watering from 10:00 AM to 10:00 PM.
- Even-numbered days – No Outdoor watering.

Water use restrictions are requested at this time due to drought conditions on the Seacoast. As the report shows, the recent weather conditions continue to cause lower than typical reservoir levels, stream and groundwater levels.

Compliance with this water use restriction is required and violations are subject to a fine of \$100 per violation.

Additional updates and tips regarding water efficiency are available on the cityofportsmouth.com website or by calling 603-766-7669.

CITY OF PORTSMOUTH



PRESS RELEASE

FOR IMMEDIATE RELEASE

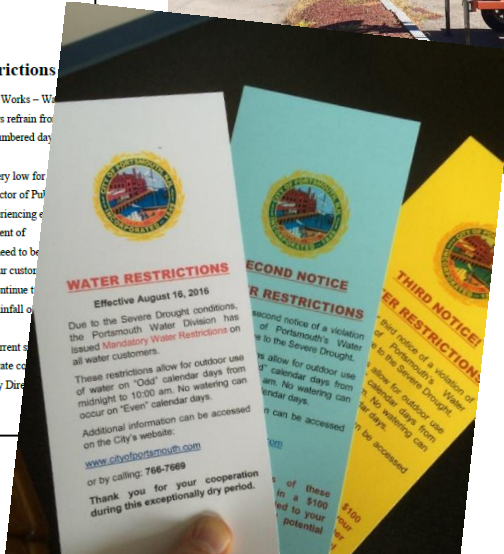
August 16, 2016

Portsmouth Water Division Enforces Water Restrictions

PORTSMOUTH, NH – Due to ongoing dry conditions, the Department of Public Works – Water Division is now enforcing water restrictions. The Water Division is requesting customers refrain from outdoor watering on even-numbered days, and to only water lawns and gardens on odd-numbered days from midnight to 10:00 a.m. (see attached Water Use Restriction sign).

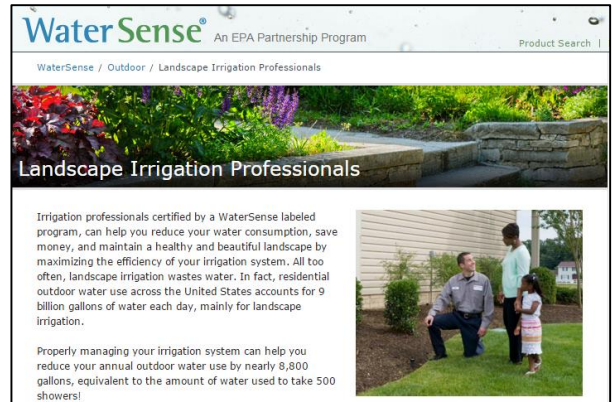
"According to data tracked by the City's water operations staff, river levels are very low for the time of year and the reservoir is also lower than normal," states Brian Goetz, Deputy Director of Public Works. "This is an issue that has grown beyond the Seacoast. The entire state is now experiencing abnormally dry to severely dry water conditions, according to New Hampshire's Department of Environmental Services. While we have experienced recent rain events, the amount will need to be substantial in order to recover from drought conditions. In turn, it is very important that our customers take this seriously and cooperate in being efficient with their water use." City staff will continue to monitor these conditions, but it is likely these measures will be in effect until substantial rainfall occurs and the Seacoast recovers from the current severe drought conditions.

Customers can read the full Water Supply Status Report and details behind the current status at www.cityofportsmouth.com/publicworks (click on "water"), and view current State emergency water restrictions at <http://nysui.com/nhwaterbas>. For more information, please contact Brian Goetz, Deputy Director of Public Works at 766-1420.



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 header features a photograph of a garden with the text "Landscape Irrigation Professionals" overlaid. The body of the page contains a paragraph explaining that certified irrigation professionals can help reduce water consumption and maintain a healthy landscape. To the right of this text is a photograph of a man, a woman, and a child standing in a garden. At the bottom, another paragraph states that properly managing an irrigation system can reduce annual outdoor water use by nearly 8,800 gallons, equivalent to 500 showers.

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!