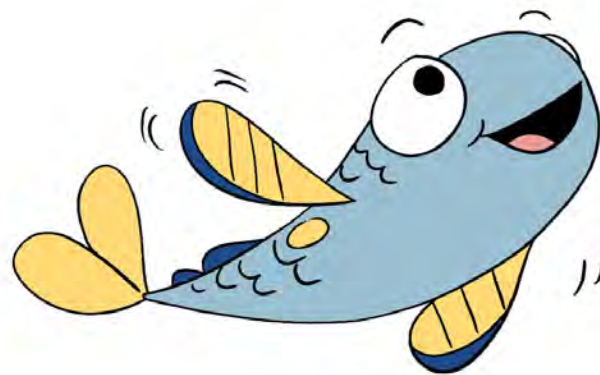


# Water Efficiency Overview and City of Portsmouth's Efforts

Integrating Water Efficiency Into Daily Water System Operations

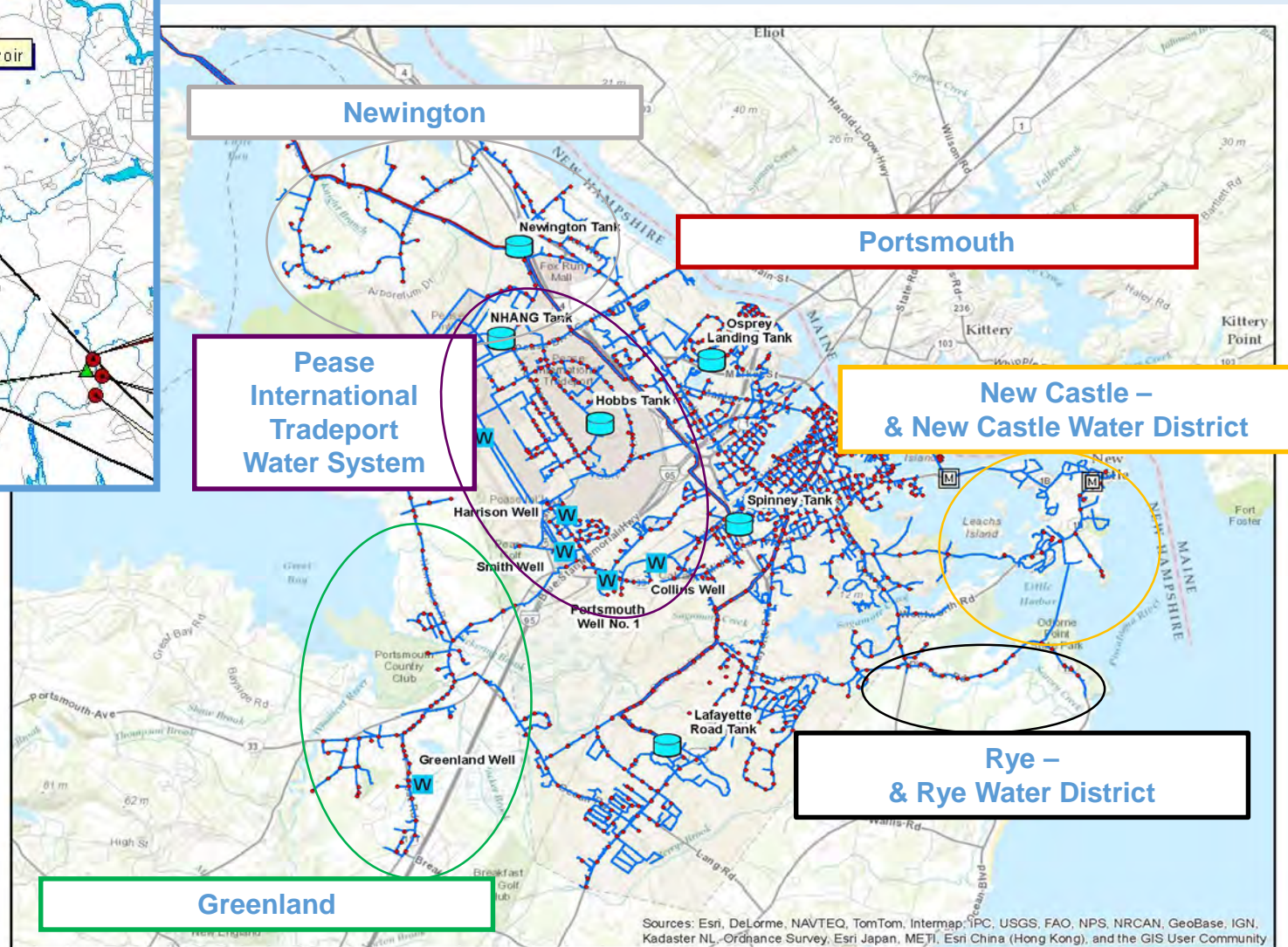
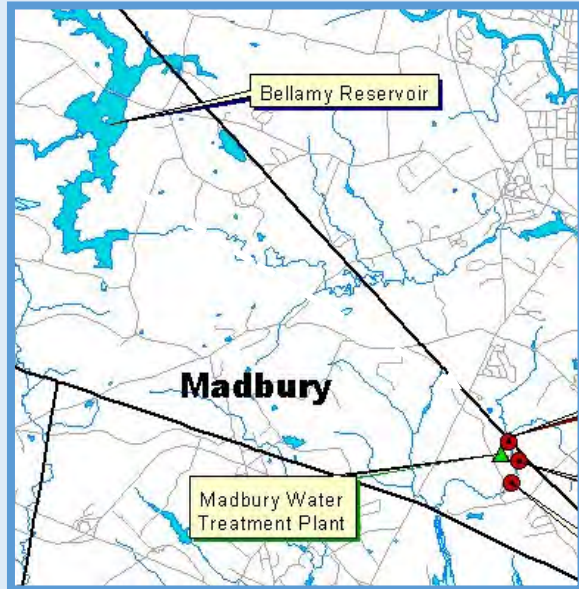
**Updated - June, 2022**



Think Blue – What Can You Do?  
Water | Wastewater | Stormwater



# Portsmouth Regional Water System and Pease International Tradeport 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



# Water Efficiency Efforts in Portsmouth



Watersense Appreciation



Water Efficiency Rebates



1,775 Water Conservation Kits Distributed Free to Portsmouth Customers

Water Conservation Kits



Water Sustainability Award



Public Outreach Award

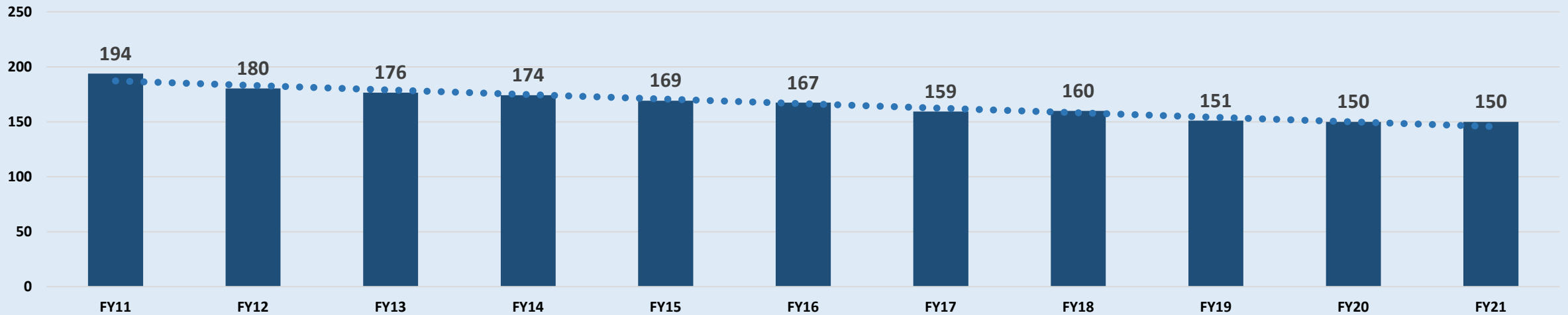


Distinguished Public Involvement Award

# Water Efficiency Timeline



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



# City of Portsmouth Water Conservation Retrofit Kits 2006 to 2008

Portsmouth Water Div.  
680 Peaverly Hill Rd.  
Portsmouth, NJ 08861-5366

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

May we have your phone number for a follow-up call? (The call will be from the Portsmouth Water Div. personnel relative to your experience with the water conservation kit. NO SALESMAN WILL CALL.) \_\_\_\_\_

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

Niagara Conservation Corp.  
PO Box 581  
Cedar Knolls, NJ 07927

Address label with account number

Free Water Conservation Kit

Portsmouth Water Div.  
680 Peaverly Hill Rd.  
Portsmouth, NJ 08861-5366

**Save money** and help us to conserve water and energy. You can save money on your water and sewer bill AND energy costs on heating water by taking advantage of this 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 massage showerhead, low flow kitchen sink faucet aerator, two toilet tank water displacement bags, two packets of leak detector tablets, shower flow meter bag and complete instructions.

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

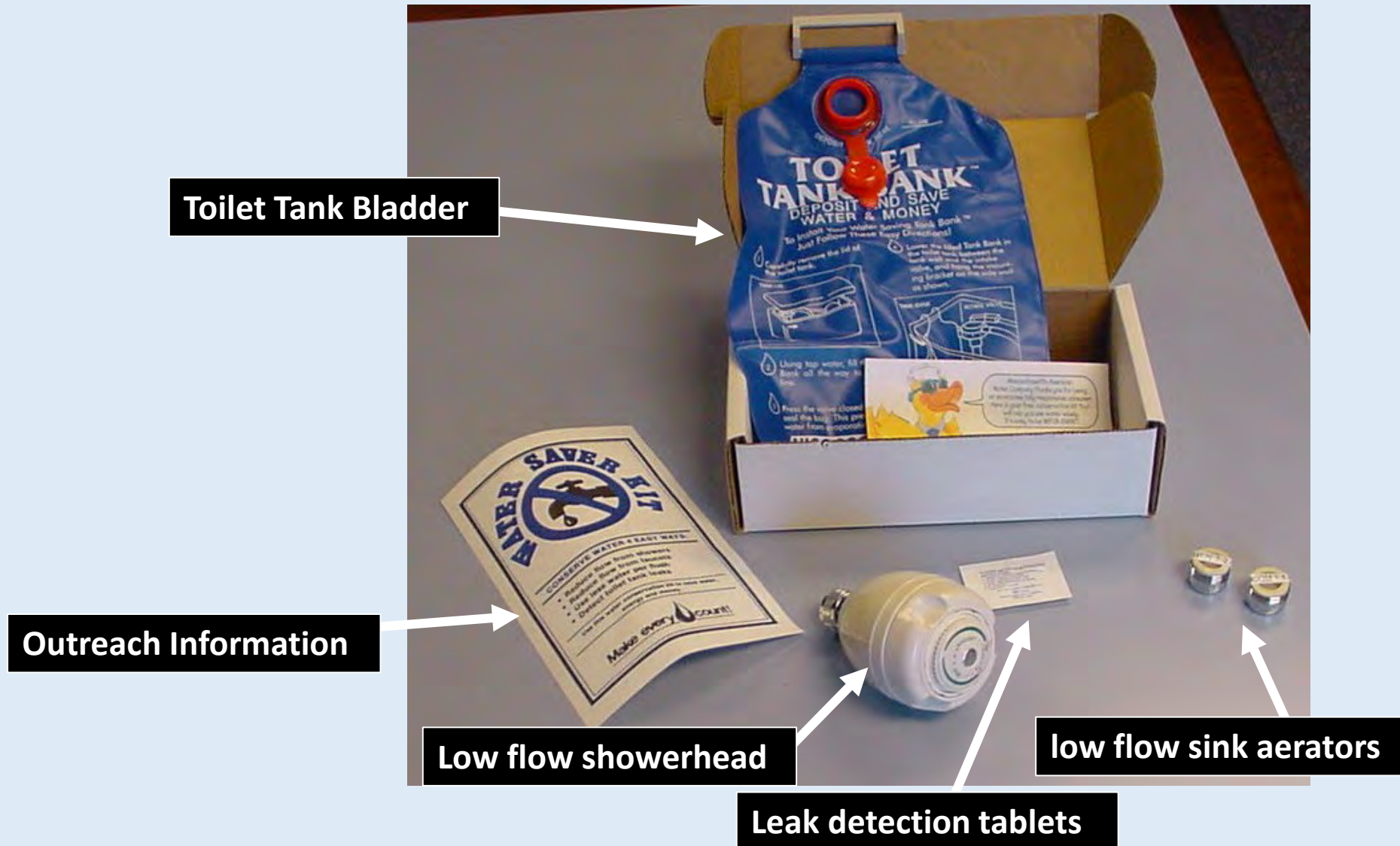
Compliments of City of Portsmouth, Water Division 786-1413

1,775  
Water Conservation  
Kits Distributed  
Free to Portsmouth  
Customers





# Low-flow Retrofit Kits



# Tiered Water Rates

## Inclining Block Tiered Rates implemented in 2007

**Tier 1:** First 10 units of consumption billed at a rate of \$4.40 per unit.

**Tier 2:** Consumption above 10 units billed at a rate of \$5.30 per unit.

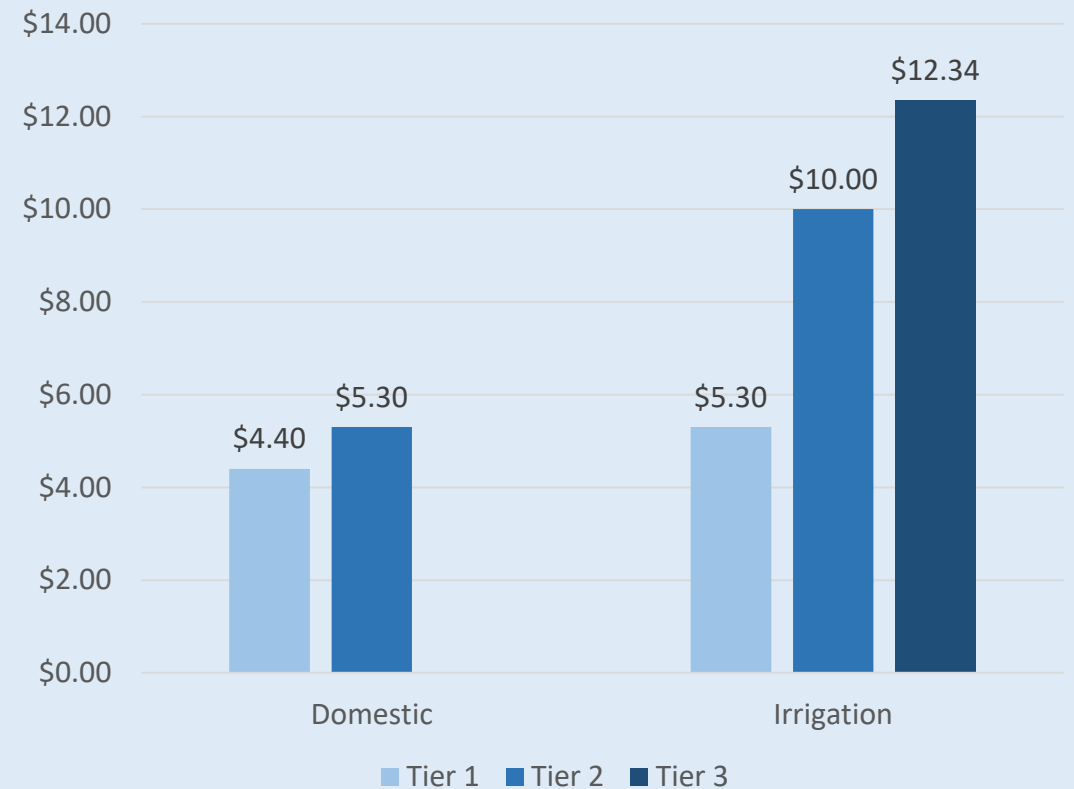
## Irrigation Rates implemented in 2017

**Tier 1:** First 10 units of consumption billed at the rate of \$5.30 per unit.

**Tier 2:** Consumption above 10 units and up to 20 units billed at the rate of \$10.00 per unit.

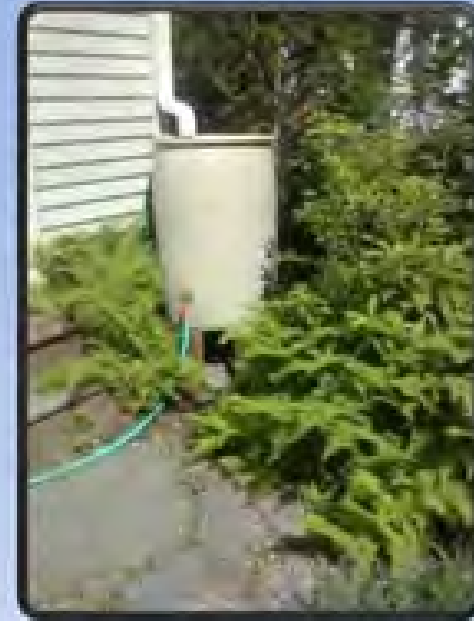
**Tier 3:** Consumption above 20 units billed at the rate of \$12.34 per unit.

Portsmouth Water Rates – FY22



# Rain Barrel Program 2009 to 2011

- Offered Rain Barrels to City of Portsmouth Residents
- Promoting water efficiency and stormwater management





# Radio Read Water Metering System Upgrades Started in 2010. Complete 2012.

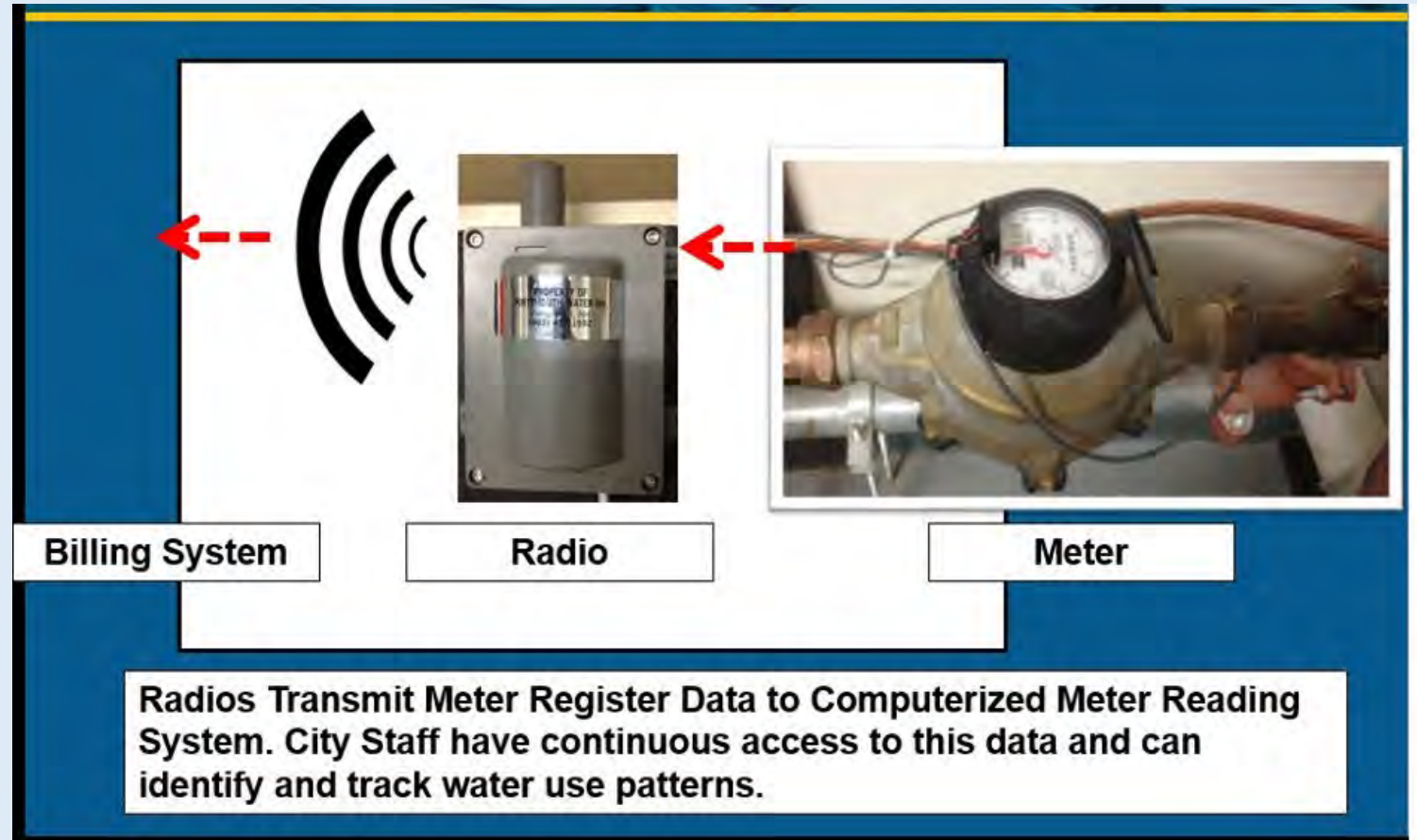


1914 – Water Meter with  
Manual read dial



Current System:

Water Meter with Radio read system



# Metering, Meter Reading and Billing System

**Billing System**



**Radio**



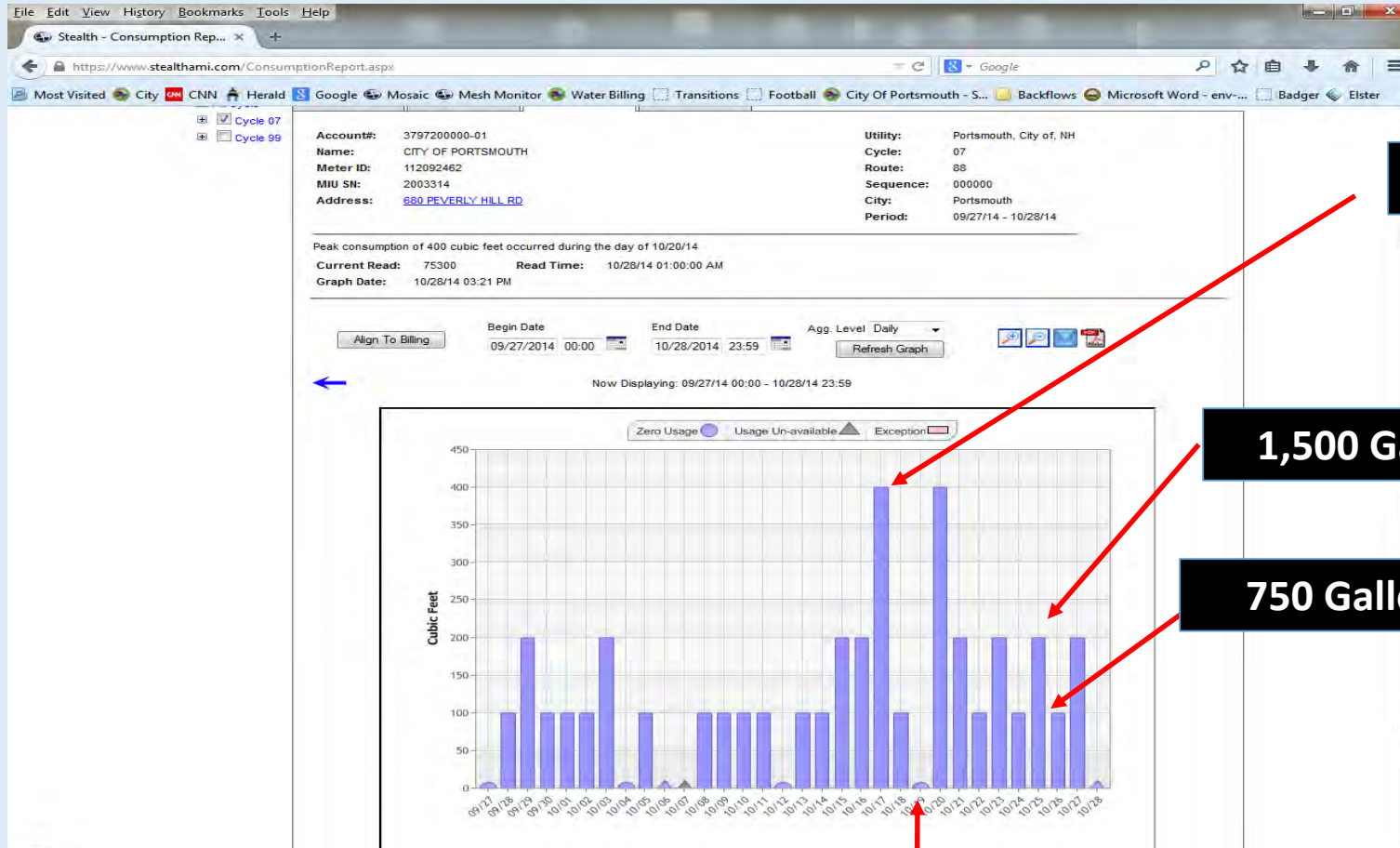
**Meter**

**Radios Transmit Meter Register Data to Computerized Meter Reading System. City Staff have continuous access to this data and can identify and track water use patterns.**

# Benefits of AMR Program:

- 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.

# Tracking Daily Consumption, Example: - Public Works Facility



3,000 Gallons

1,500 Gallons

750 Gallons

No Use



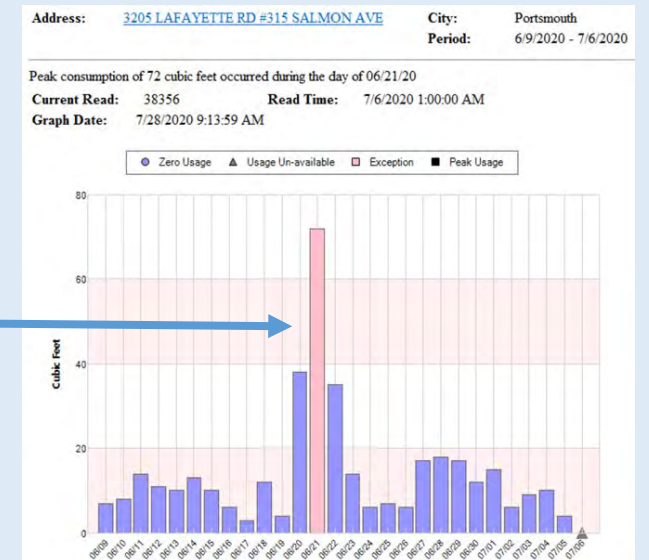
# Customer Water Meter Replacements And Notifications of Leaks

## 2021 Data:

- 1038 - meters changed out
- 647 - new meter radios installed
- 531 tagged events for Le60 (leak code)
- 110 direct communications with customers notifying of leak
- 450 Unique locations notified of leaks

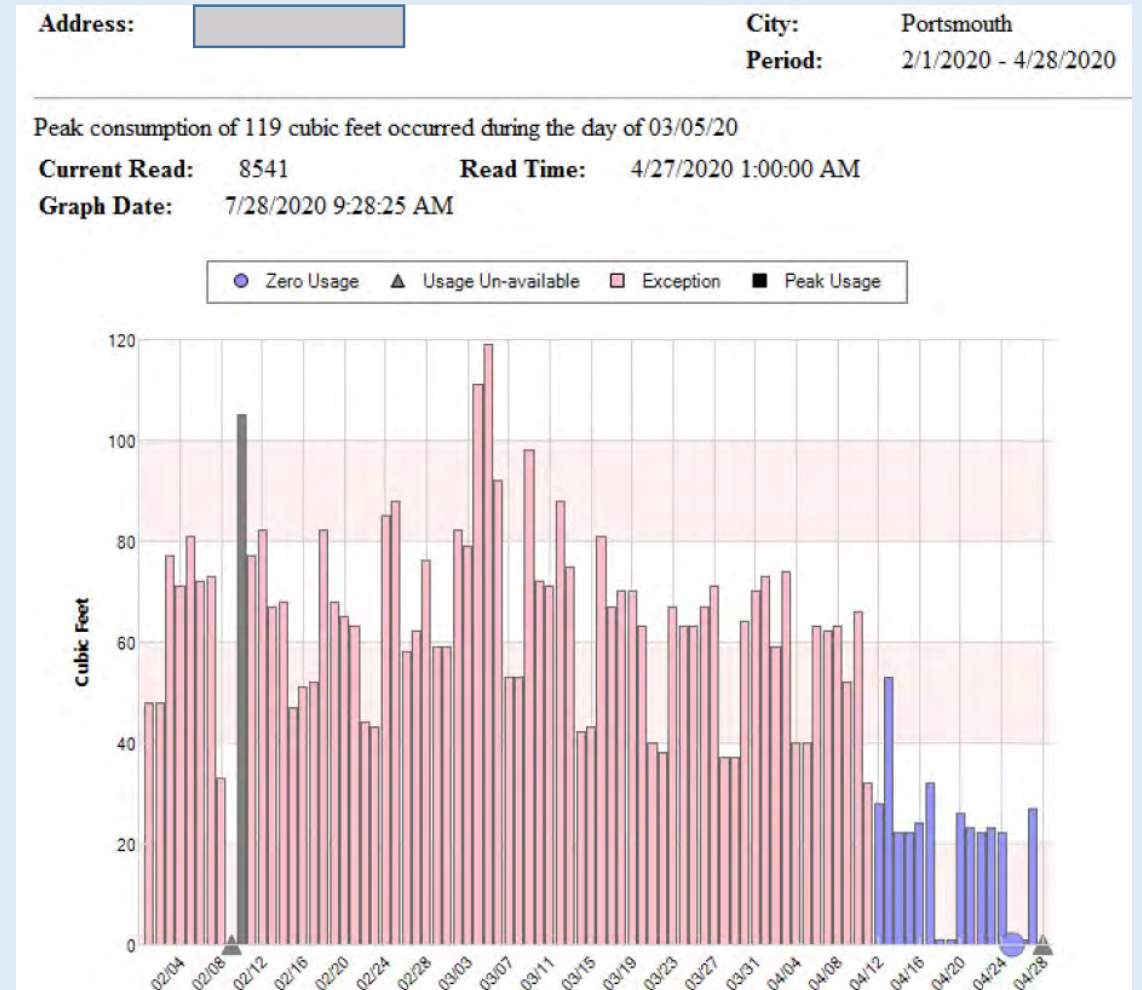


Example of Daily Reading with Leak Code



# Customer Leak Code Example:

- Owner called about a high consumption water bill,
- We explained the Le60 from the report
- Owner was not convinced it was their issue and pointed at a faulty meter.
- Meter crew visited the site on 4/7 and explained to maintenance about a Le60 and found 1 toilet running, the crew also gave the customer
- As the graph indicates, the leaks were fixed



# Bills with Usage History

1 Unit = 748 gallons or 100 cubic feet - unless otherwise indicated

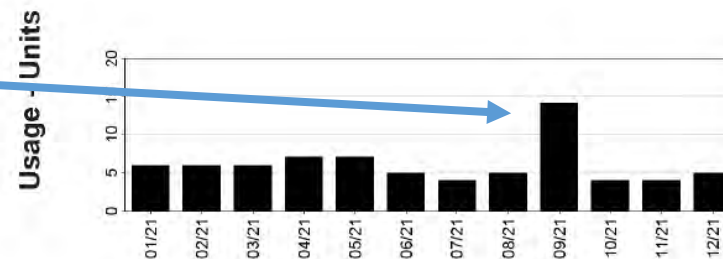
## Usage History

Month	Units
12/21	5
11/21	4
10/21	4
09/21	14

## Billing Summary

Previous Balance	\$82.11
Payments Since Last Bill	\$-82.11
Balance Forward	\$0.00
WATER USAGE RES	\$22.00
MTR CHRG RESID 5/8"	\$4.95
SEWER USAGE RES	\$74.45
Total New Charges	\$101.40
Total Due	\$101.40

Ability to See High Usage Trend Graphically



# Customer Feedback:

## **August 21, 2019 Call to Water Billing Department:**

- “I wanted to share a wonderful conversation I just had with the water customer at 296 Peverly Hill Rd. He wanted to express his appreciation for the City’s “Water Conservation Initiative”. He stated that a “wonderful person” stopped at his home and informed him he may have a leak. He discovered that a toilet he thought he had fixed was still leaking and he was able to correct it. He asked me to pass along his appreciation for the City implementing this program and the positive experience he had.”

## **February 24, 2020 Email to City’s webmaster:**

- address: 188 Union St Portsmouth
- comments: I had a situation where my January water bill seemed way too high. I went into the Water Works Office un-announced. The receptionist called Jim who came down, greeted me and had me up to his office. He had me sit beside him as he went through a day by day, hour by hour, review of my account. He made me feel like I was the only person in Portsmouth who mattered. He spent a solid 45 minutes with me. He diagnosed what the problem was and sent me home with printed graphs showing it. Please pass this to Jim's superiors. He was awesome.



# Joined EPA's WaterSense Program - 2014



WaterSense, a voluntary partnership program sponsored by the U.S. Environmental Protection Agency (EPA), is both a label for water-efficient products and a resource for helping you save water.

The WaterSense label makes it simple to find water-efficient products, new homes, and programs that meet EPA's criteria for efficiency and performance. WaterSense-labeled products and services are certified to use at least 20 percent less water, save energy, and perform as well as or better than regular models.

WaterSense partners with manufacturers, retailers and distributors, homebuilders, irrigation professionals, and utilities to bring WaterSense to your community. Our partnerships encourage innovation in manufacturing and support sustainable jobs for American workers.



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>



# Water Efficiency Rebate Program

Introduced in 2015

The First Such Program in New Hampshire



\$100



\$150



## Residential Toilet and Washing Machine Rebate Program Additional Information

Q. Why is Portsmouth offering toilet and washing machine rebates?

A. We are offering this program to our customers as an incentive to replace older, inefficient toilets and washing machines with high efficiency models. This is another step toward making our water and sewer systems as efficient as possible. When customers use less water then we have to produce and treat less water and wastewater, which saves water and money for everyone in the long run.



# Water Efficiency Rebates – Through FY21

## City of Portsmouth - Water and Sewer Division Water Efficiency Rebate Program - Status Report



**Date:** 6/30/2021

**Total Rebates Issued as of:** June 30, 2021

Rebate Type	FY16	FY17	FY18	FY19	FY20	FY21	TOTAL	Rebate/ each	Total Rebates
Low-Flow Toilet	253	368	161	79	102	98	1061	\$100	\$106,100
High-Efficiency Washing Machine	34	24	26	36	68	95	283	\$150	\$42,450
	287	392	187	115	170	193	1344		\$148,550



# 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





# Water Savings ...



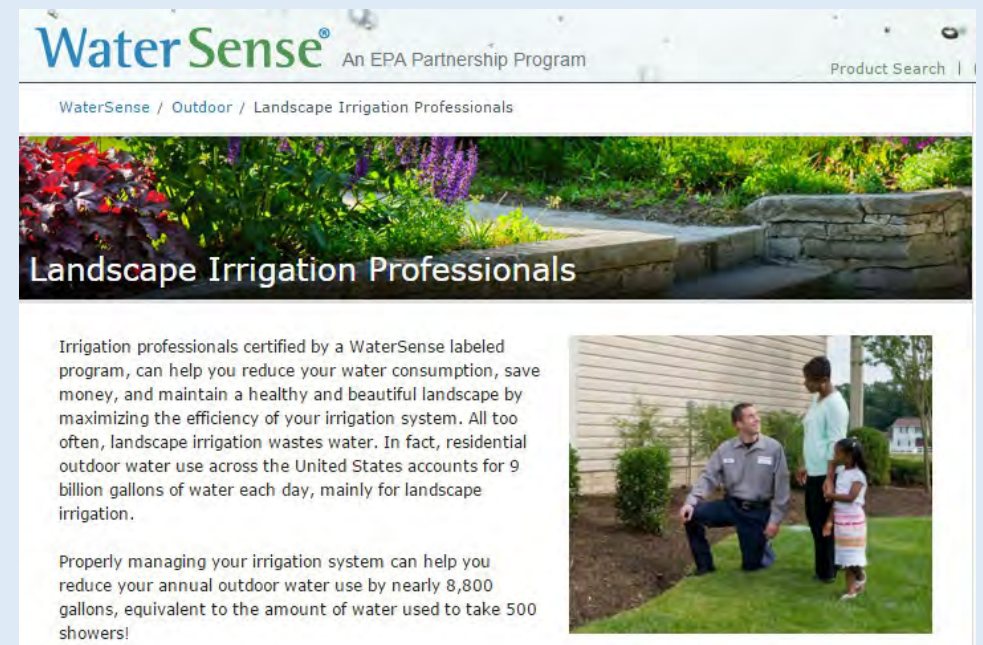
Most full-sized **High Efficiency washers** use 13 gallons of water per load, compared to the 27 to 40 gallons used by standard top loading machines.

# Water Savings Potential

- **Typical Family of Four, each flushing 4x/day:**
  - 3.5 gallon toilet = 56 gallons/day
  - 1.28 gallons toilet = 20.5 gallons/day
  - **Savings of 13,000 gallons/year**
- **One Load of Laundry a Day:**
  - Older Top Loading Washer = 40 gallons/day
  - High Efficiency Washer = 13 gallons/day
  - **Savings of 10,000 gallons/year**

# Implemented WaterSense Irrigation Requirements and Third Tier Irrigation Rate in 2017

- Chapter 11 of City Ordinances:
  - Only a landscape irrigation system designed and installed by an Environmental Protection Agency Watersense Certified Irrigator



The screenshot shows the WaterSense website page for Landscape Irrigation Professionals. The header includes the WaterSense logo and the text "An EPA Partnership Program". Below the header, there is a navigation menu with "WaterSense / Outdoor / Landscape Irrigation Professionals". The main content area features a large image of a garden with a stone wall and the title "Landscape Irrigation Professionals". Below the image, there is a paragraph of text explaining the benefits of certified irrigation professionals and a smaller image of a professional working with a family in a garden.

**WaterSense**® An EPA Partnership Program

Product Search |

WaterSense / Outdoor / Landscape Irrigation Professionals

## Landscape Irrigation Professionals

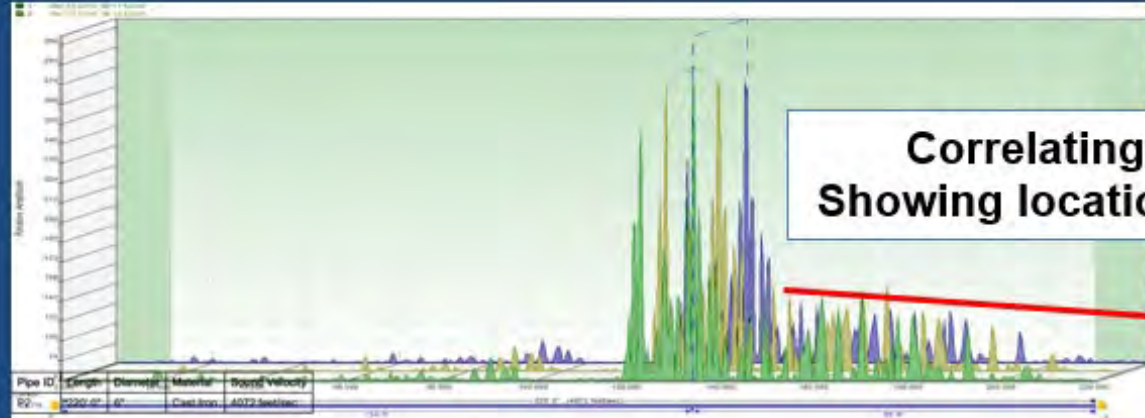
Irrigation professionals certified by a WaterSense labeled program, can help you reduce your water consumption, save money, and maintain a healthy and beautiful landscape by maximizing the efficiency of your irrigation system. All too often, landscape irrigation wastes water. In fact, residential outdoor 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!

# Leak Detection:



2002 3 6

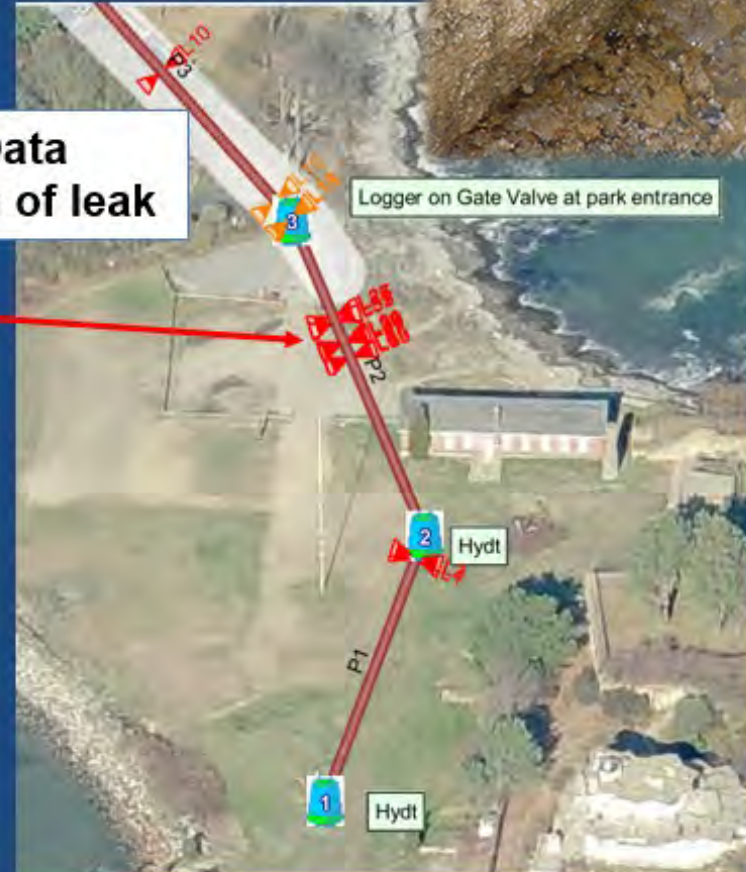


**Correlating Data  
Showing location of leak**

Pipe ID	Length	Diameter	Material	Record Velocity
P2	520'	6"	Cast Iron	4072.36ft/sec

Leak ID	Leak Position	Correlation Between	Confidence	Recording Time
L4	304' 7" from 1	1 → 3	85.8%	Mar 23 2014, 06:11:52AM
L5	304' 2" from 1	1 → 3	86.8%	Mar 23 2014, 06:12:52AM
L6	304' 2" from 1	1 → 3	85.5%	Mar 23 2014, 06:13:52AM
L7	134' 3" from 2	2 → 3	83.7%	Mar 23 2014, 06:11:52AM
L8	122' 9" from 2	2 → 3	83.0%	Mar 23 2014, 06:12:52AM
L9	133' 9" from 2	2 → 3	84.5%	Mar 23 2014, 06:13:52AM
L25	152' 5" from 2	2 → 4	80.9%	Mar 23 2014, 06:11:52AM
L26	152' 10" from 2	2 → 4	81.1%	Mar 23 2014, 06:12:52AM
L27	152' 10" from 2	2 → 4	77.2%	Mar 23 2014, 06:13:52AM
L28	134' 3" from 2	2 → 3	83.7%	Mar 23 2014, 06:11:52AM
L29	122' 9" from 2	2 → 3	83.0%	Mar 23 2014, 06:12:52AM
L30	133' 9" from 2	2 → 3	84.5%	Mar 23 2014, 06:13:52AM
L31	860' 2" from 4	4 → 2	80.7%	Mar 23 2014, 06:11:52AM
L32	659' 9" from 4	4 → 2	81.0%	Mar 23 2014, 06:12:52AM
L33	659' 9" from 4	4 → 2	77.2%	Mar 23 2014, 06:13:52AM
L34	65' 4" from 3	3 → 2	83.7%	Mar 23 2014, 06:11:52AM
L35	96' 10" from 3	3 → 2	83.0%	Mar 23 2014, 06:12:52AM
L36	85' 9" from 3	3 → 2	84.5%	Mar 23 2014, 06:13:52AM
L37	134' 3" from 2	2 → 3	83.7%	Mar 23 2014, 06:11:52AM



Logger on Gate Valve at park entrance

Logger on Gate Valve at park entrance

Hydt

Hydt



# Water Leak Reporting Via City's Click N' Fix Reporting Tool on Website and Apps



- People can report problems, including water main breaks, any time on City's website or through downloadable apps
- Information is forwarded to appropriate staff for a response

# Click N'Fix Submission: Leaking Water Main

- Reported and Acknowledged on June 21, 2019
- Repaired on June 25, 2019




#6069932

Leaflet | Powered by Esri | City of Portsmouth, NH, Esri, HERE, Garmin, INCREMENT P, NGA, USGS  
43.0729908217146, -70.7745037033673 [Edit Location](#)

**Water** Created Date:  
06/21/2019 7:07 PM

63-199 Pine St Portsmouth 03801, United States


**Details**  
Water main dumping water

 **City of Portsmouth** | Verified Official  
Acknowledged

The City of Portsmouth has received this issue. It is registered as service request #0621196.

06/21/2019 7:08 PM

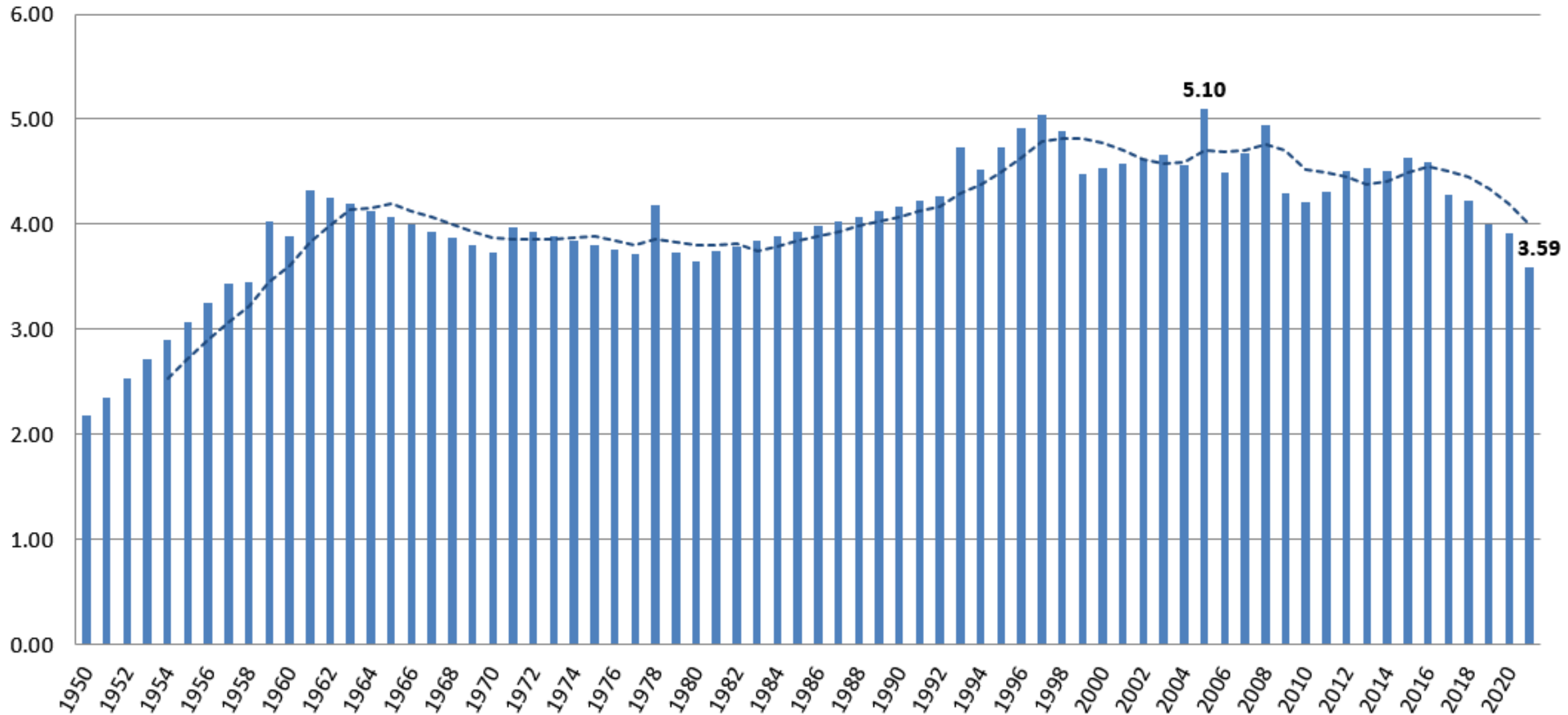
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 **City of Portsmouth** | Verified Official  
Closed

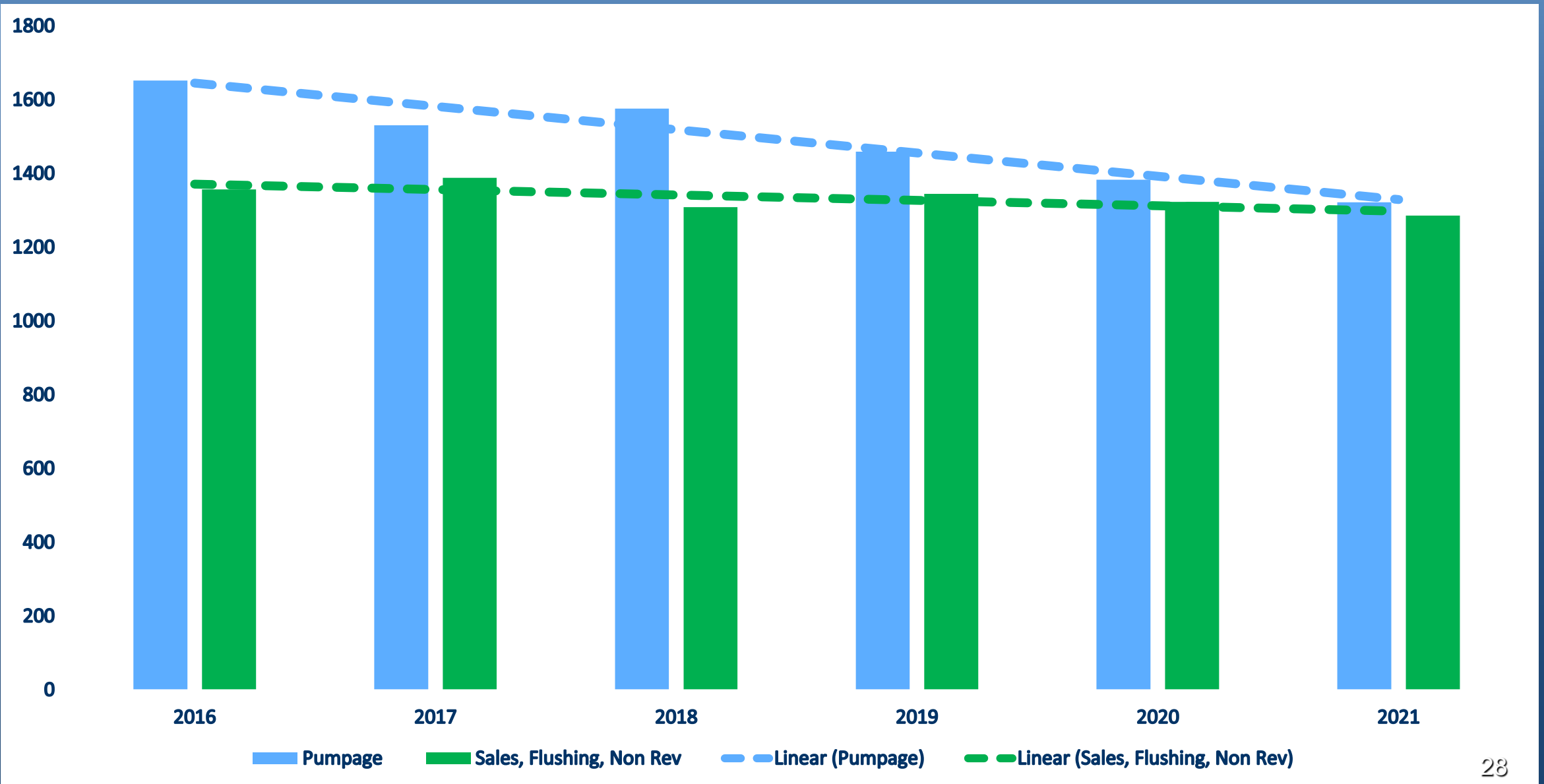
The City of Portsmouth has addressed this issue, service request #0621196.

06/25/2019 2:40 PM

# Portsmouth Annual Water Pumpage - Million Gallons per Day and 5-Year Running Average - 1950 to 2021



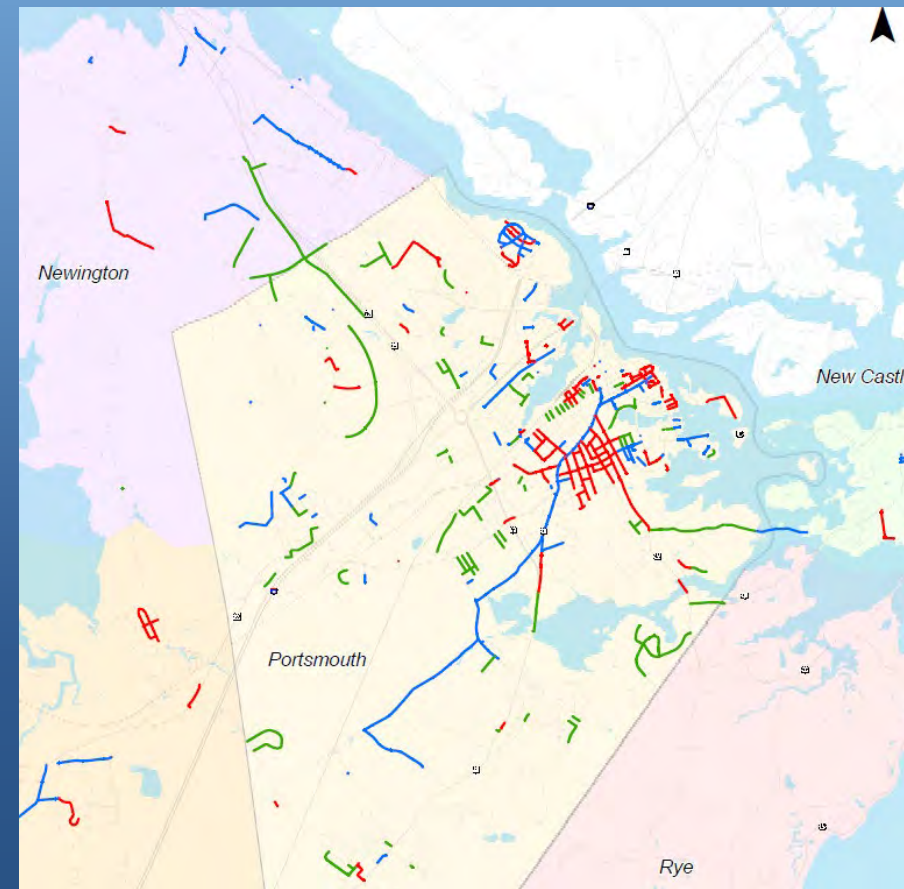
# Water Balance Trend – Pumped versus Sales and Other Use





# Pipe Replacements

- 42 miles of pipe replacements in last 20 years

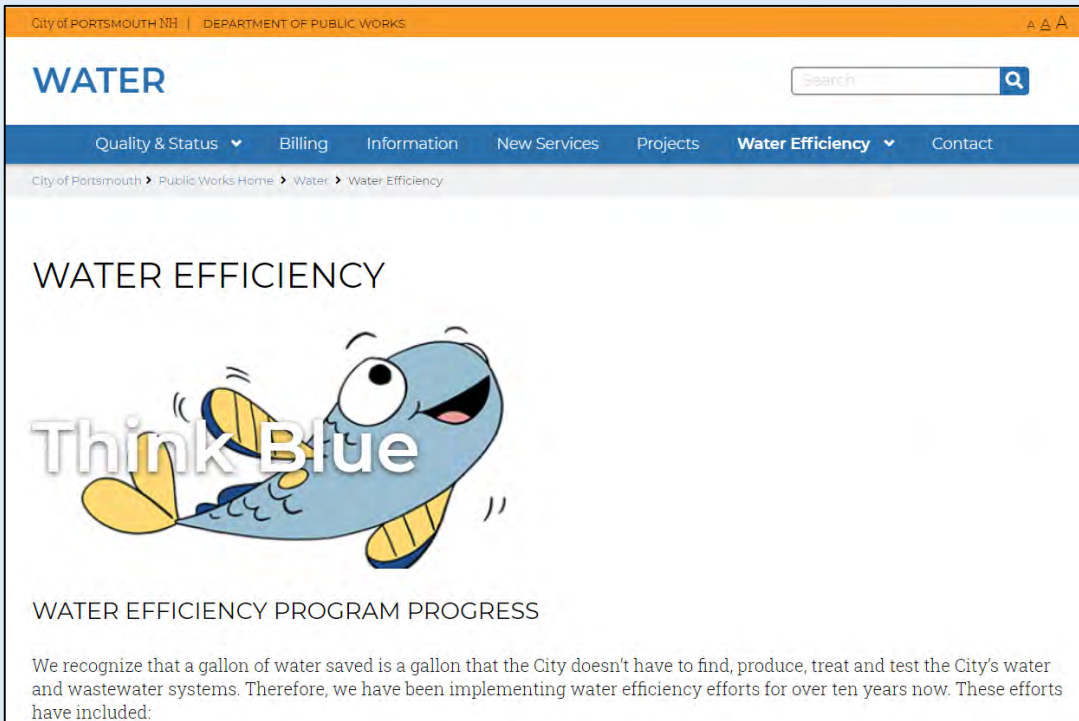


Year Installed	
—	1990 - 2000
—	2001 - 2010
—	2011 - 2018



# Public Outreach:

## City Website, Mailers and Brochures:




City of PORTSMOUTH NH | DEPARTMENT OF PUBLIC WORKS

### WATER

Quality & Status | Billing | Information | New Services | Projects | **Water Efficiency** | Contact

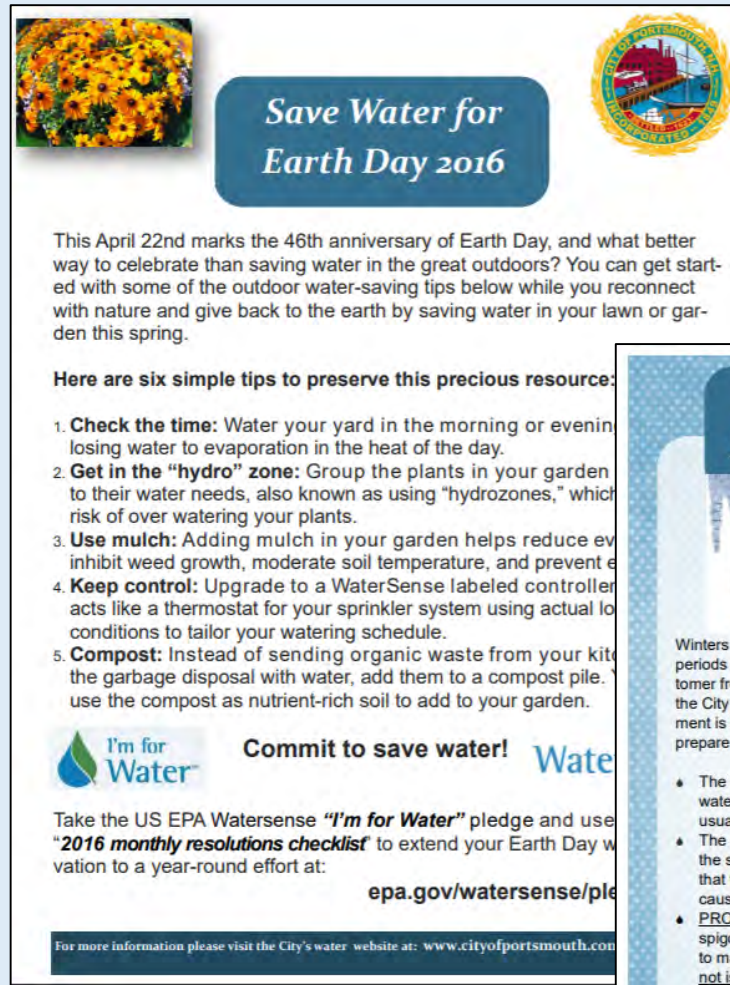
City of Portsmouth > Public Works Home > Water > Water Efficiency

## WATER EFFICIENCY



### 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:



### 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.

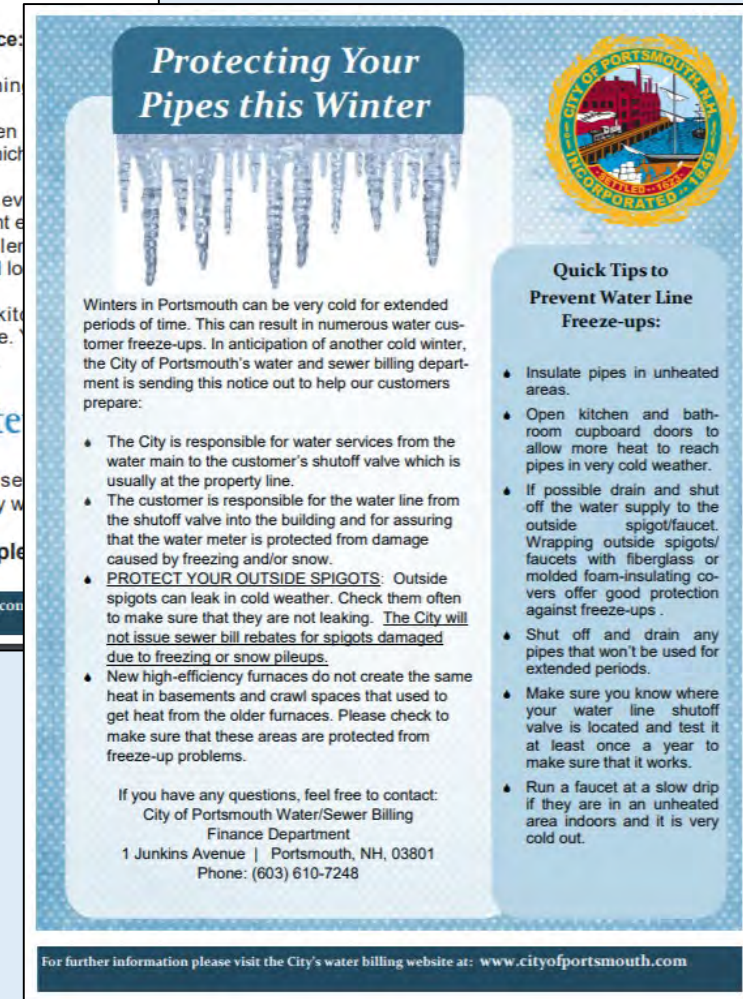
Here are six simple tips to preserve this precious resource:

- 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 to their water needs, also known as using "hydrozones," which reduces 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. Smart controllers act 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 to the garbage disposal with water, add them to a compost pile. Use the compost as nutrient-rich soil to add to your garden.

**I'm for Water** Commit to save water! [epa.gov/watersense/pledge](http://www.epa.gov/watersense/pledge)

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

For more information please visit the City's water website at: [www.cityofportsmouth.com](http://www.cityofportsmouth.com)



### Protecting Your Pipes this Winter

Winters in Portsmouth can be very cold for extended periods of time. This can result in numerous water customer freeze-ups. In anticipation of another cold winter, the City of Portsmouth's water and sewer billing department is sending this notice out to help our customers prepare:

- The City is responsible for water services from the water main to the customer's shutoff valve which is usually at the property line.
- The customer is responsible for the water line from the shutoff valve into the building and for assuring that the water meter is protected from damage caused by freezing and/or snow.
- **PROTECT YOUR OUTSIDE SPIGOTS:** Outside spigots can leak in cold weather. Check them often to make sure that they are not leaking. The City will not issue sewer bill rebates for spigots damaged due to freezing or snow pileups.
- New high-efficiency furnaces do not create the same heat in basements and crawl spaces that used to get heat from the older furnaces. Please check to make sure that these areas are protected from freeze-up problems.

If you have any questions, feel free to contact:  
City of Portsmouth Water/Sewer Billing  
Finance Department  
1 Junkins Avenue | Portsmouth, NH, 03801  
Phone: (603) 610-7248

#### Quick Tips to Prevent Water Line Freeze-ups:

- Insulate pipes in unheated areas.
- Open kitchen and bathroom cupboard doors to allow more heat to reach pipes in very cold weather.
- If possible drain and shut off the water supply to the outside spigot/faucet. Wrapping outside spigots/faucets with fiberglass or molded foam-insulating covers offer good protection against freeze-ups.
- Shut off and drain any pipes that won't be used for extended periods.
- Make sure you know where your water line shutoff valve is located and test it at least once a year to make sure that it works.
- Run a faucet at a slow drip if they are in an unheated area indoors and it is very cold out.

For further information please visit the City's water billing website at: [www.cityofportsmouth.com](http://www.cityofportsmouth.com)



# Public Outreach: Water Supply Updates

## Website Updates

City of PORTSMOUTH NH | DEPARTMENT OF PUBLIC WORKS

### WATER

Quality & Status | Billing | Information | New Services | Projects | Water Efficiency | Contact

## Water Operations

### WATER NEWS

**WA** PORTSMOUTH WATER SUPPLY STATUS REPORT FOR AUGUST 2020  
August 6, 2020  
MODERATE DROUGHT CONTINUES FOR SEACOAST AREA  
Despite some recent rain events, the Sea...  
[Read More >](#)

**PW** PORTSMOUTH WATER SUPPLY STATUS REPORT  
July 1, 2020  
MODERATE DROUGHT DECLARED Due to the dry weather and below normal precipitation in May and most of June, th...  
[Read More >](#)

**WA** PORTSMOUTH WATER DIVISION RELEASES ANNUAL DRINKING WATER QUALITY REPORTS

**WA** PORTSMOUTH WATER DIVISION REQUESTS VOLUNTARY WATER RESTRICTIONS  
August 24, 2020  
The Drought Monitor issued on August 18, 2020 elevated New Hampshire's drought conditions in the Seacoast area...

**Intensity:**  
None  
D1 Abnormally Dry  
D2 Moderate Drought  
D3 Severe Drought  
D4 Extreme Drought  
D5 Exceptional Drought

**Author:**  
David Sestini  
Western Regional Climate Center

## News

Seacoastonline.com

## Portsmouth asks residents to limit water use

Posted Aug 25, 2020 at 5:26 PM

[f](#) [t](#) [e](#) [p](#)

PORTSMOUTH — The state Drought Management Task Force last week elevated drought conditions in the Seacoast from moderate to severe.

The Seacoast has received only 8 inches of precipitation since the beginning of May, compared to the 14-inch average for that time. The task force advises public water systems including Portsmouth's to implement outdoor restrictions as needed.

Based on the severe drought conditions and the state's recommendation, the city is encouraging voluntary restrictions. Customers are requested to restrict their use of water for outdoor irrigation, to be as efficient as possible and refrain from outdoor watering between 10 a.m. and 6 p.m.

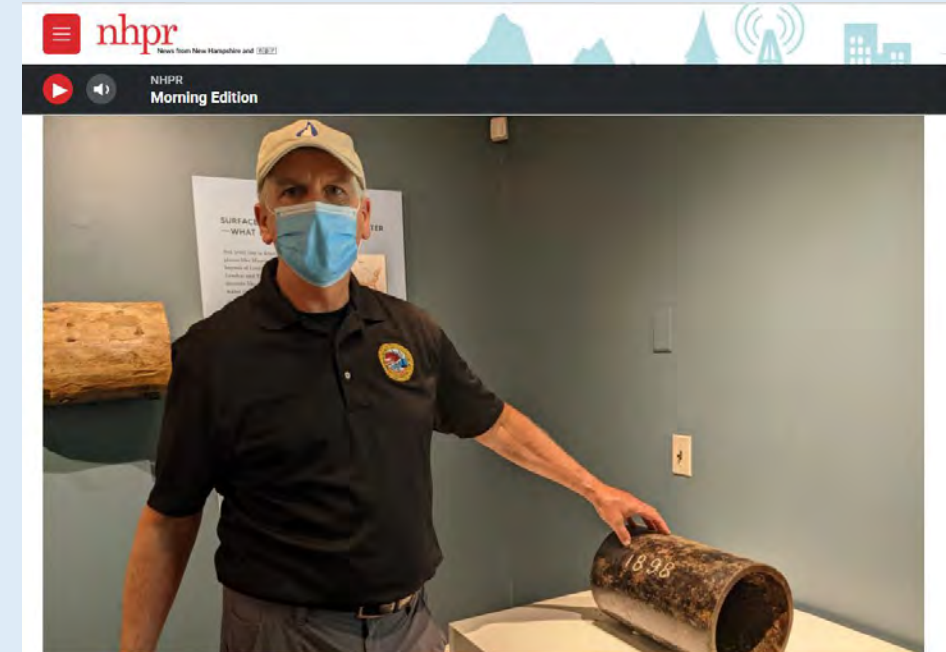
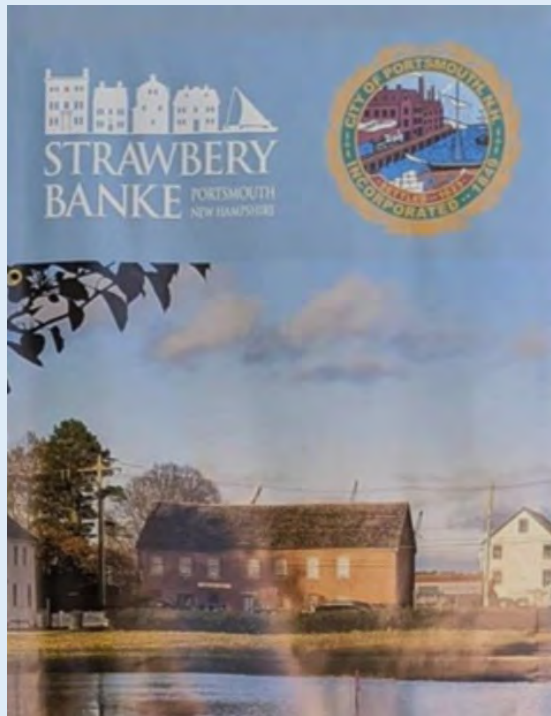
"Although our groundwater levels remain fairly good, according to data tracked by the city's water operations staff, river levels are very low for this time of year and the reservoir is also lower than normal," said Deputy Director of Public Works Brian Goetz. "While we've had recent rain events, they have not produced much volume and it will take additional rainfall to recover from drought conditions."

Goetz said it is important that customers be efficient with their water use.

"If we can get good compliance with voluntary measures, and some precipitation," he said, "then we may not need to increase the restrictions."

BY PHOTO | HIDE CAPTION

# Strawbery Banke – “Water Has A Memory” Exhibit with “Think Blue!” Outreach Component



Annie Ropeik / NHPR

Brian Goetz is deputy director of Portsmouth's Department of Public Works. In a way, his role is a government descendent of one of Portsmouth's original colonists.



# 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

# 2015 New Hampshire Water Sustainability Award



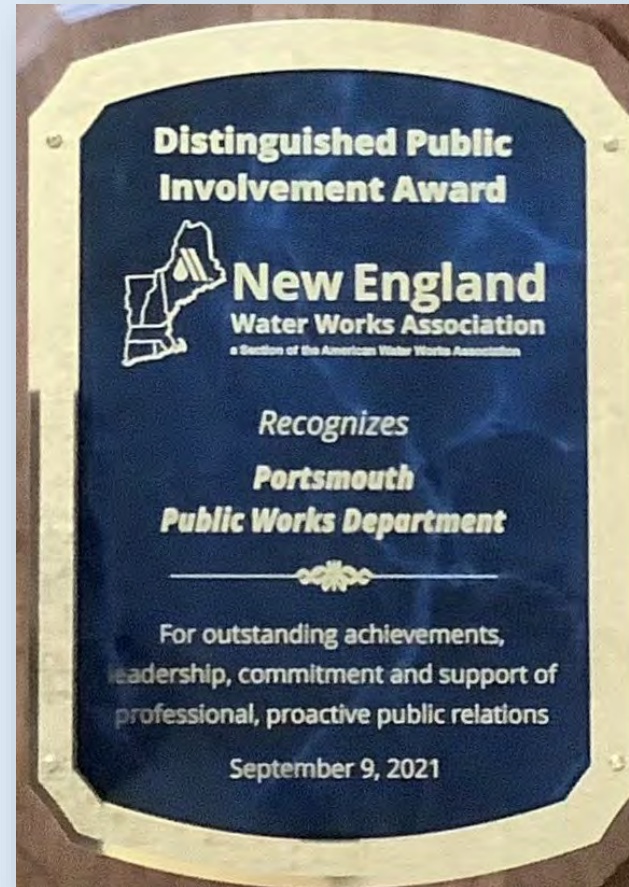
The Source Water Sustainability Award recognizes work to preserve the sustainability of New Hampshire's drinking water resources.

# 2018 Public Communications Award



For excellence in communications through comprehensive public outreach materials and programs.

# 2021 Distinguished Public Involvement Award



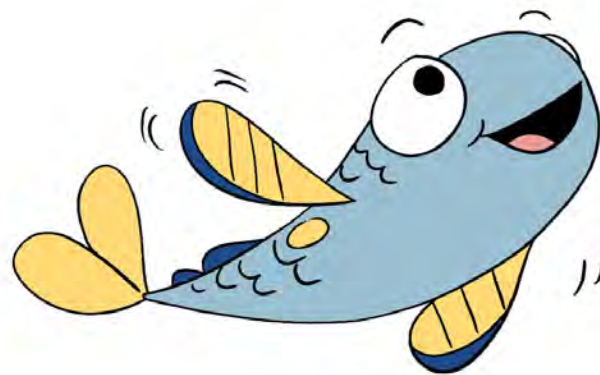
The award recognizes outstanding achievements, leadership, commitment and support of professional, proactive public relations.



# Water Efficiency Overview and City of Portsmouth's Efforts

Integrating Water Efficiency Into Daily Water System Operations

**Updated - January, 2022**



Think Blue – What Can You Do?  
Water | Wastewater | Stormwater

