
City of Portsmouth

Department of Public Works



Portsmouth and Pease International Tradeport Drinking Water Status Report 2025 – First Quarter (January 1, 2024 – March 31, 2025)

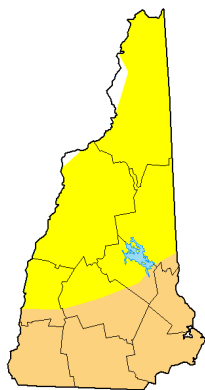
The City of Portsmouth NH water supply sources have been resilient to the effects of drought conditions that have persisted since late summer of 2024. The Bellamy Reservoir surface-water source has recovered from the low levels observed in October due to snowmelt and late winter to early-spring precipitation. Groundwater levels are generally lower than normal for this time of year; however, they are rising due to the spring thaw and precipitation. The southern portion of the state is currently in moderate drought according to the US Drought Monitor. The Water Division will continue to monitor the water supply, and if drought conditions persist through the spring, water use restrictions may need to be implemented this summer. As always, the Division asks that customers be vigilant and efficient with their water usage.

Precipitation and Weather

New Hampshire is experiencing drought conditions along with much of the U.S. As of April 1, 2025, the US Drought Monitor has identified Seacoast NH in a “moderate” drought.

U.S. Drought Monitor New Hampshire

April 1, 2025
(Released Thursday, Apr. 3, 2025)
Valid 8 a.m. EDT



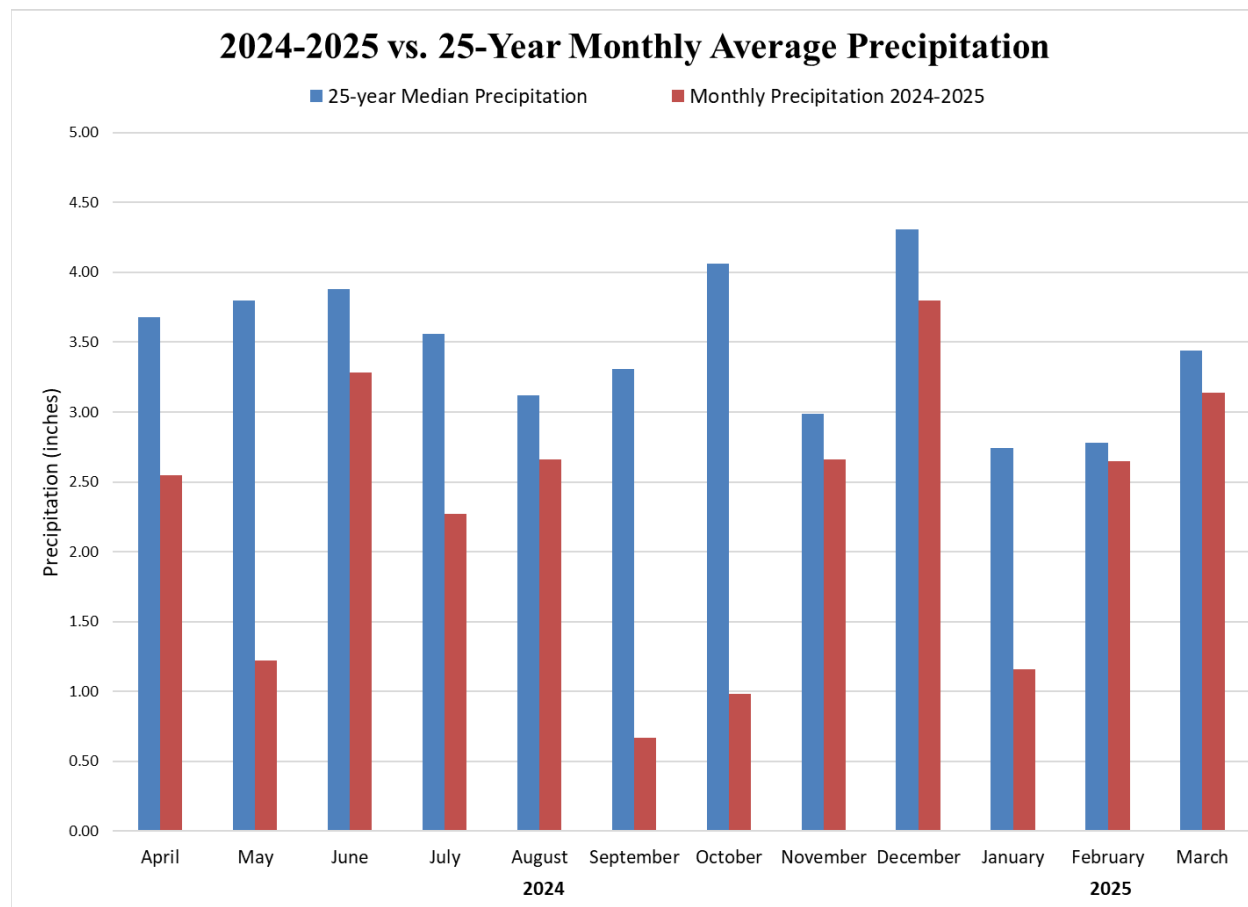
Intensity:
None
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
David Simeral
Western Regional Climate Center



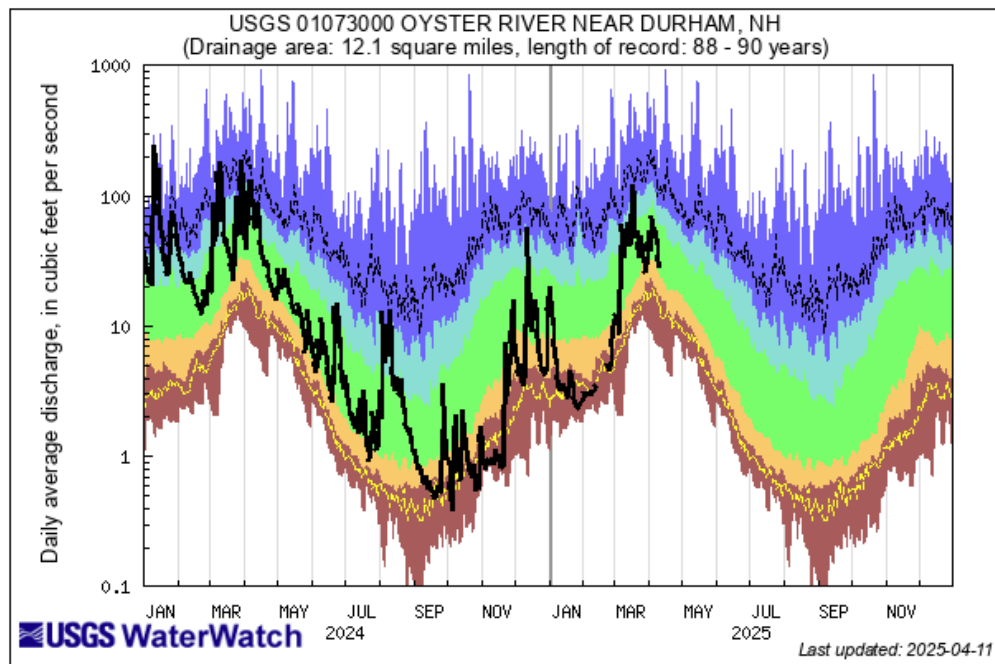
The following graph shows the variability of precipitation Portsmouth has experienced in the last twelve months. Over the past year, the amount of precipitation received has consistently remained below the 25-year average resulting in drier than normal conditions. January precipitation was 58% below average before an increase in rainfall brought us to 6% and 11% below average in February and March, respectively.



The 12-month rolling average precipitation through March 2025 was 35% below normal at a total of 27.0 inches versus the normal of 41.7 inches. Precipitation in February totaled 2.65 inches, and in March totaled 3.14 inches.

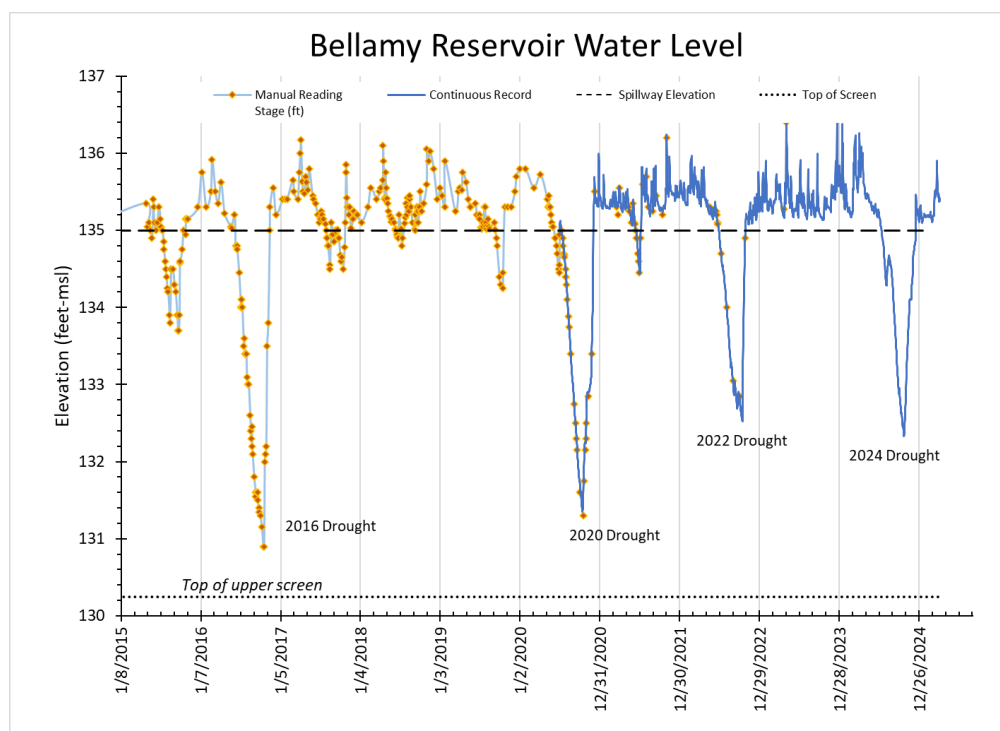
River Flows and Reservoir Levels

The following graph shows the flow trend, recorded by the US Geological Survey gauge in Oyster River which the Division uses to proportionally evaluate the flow into the Bellamy Reservoir surface water supply. “Normal” to “Above Normal” flows persisted until September 2024 where the flows fell rapidly to a “Much Below Normal” level in September and remained there until the early-November storms. A high flow period occurred in mid-December but quickly returned to a “Below Normal” flow at the start of 2025. As of April 2025, Oyster River flow has returned to its historic average for this time of year. These normal flows are reflected in the water levels and outflow that we are currently observing in the Bellamy Reservoir.



Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		
						Flow

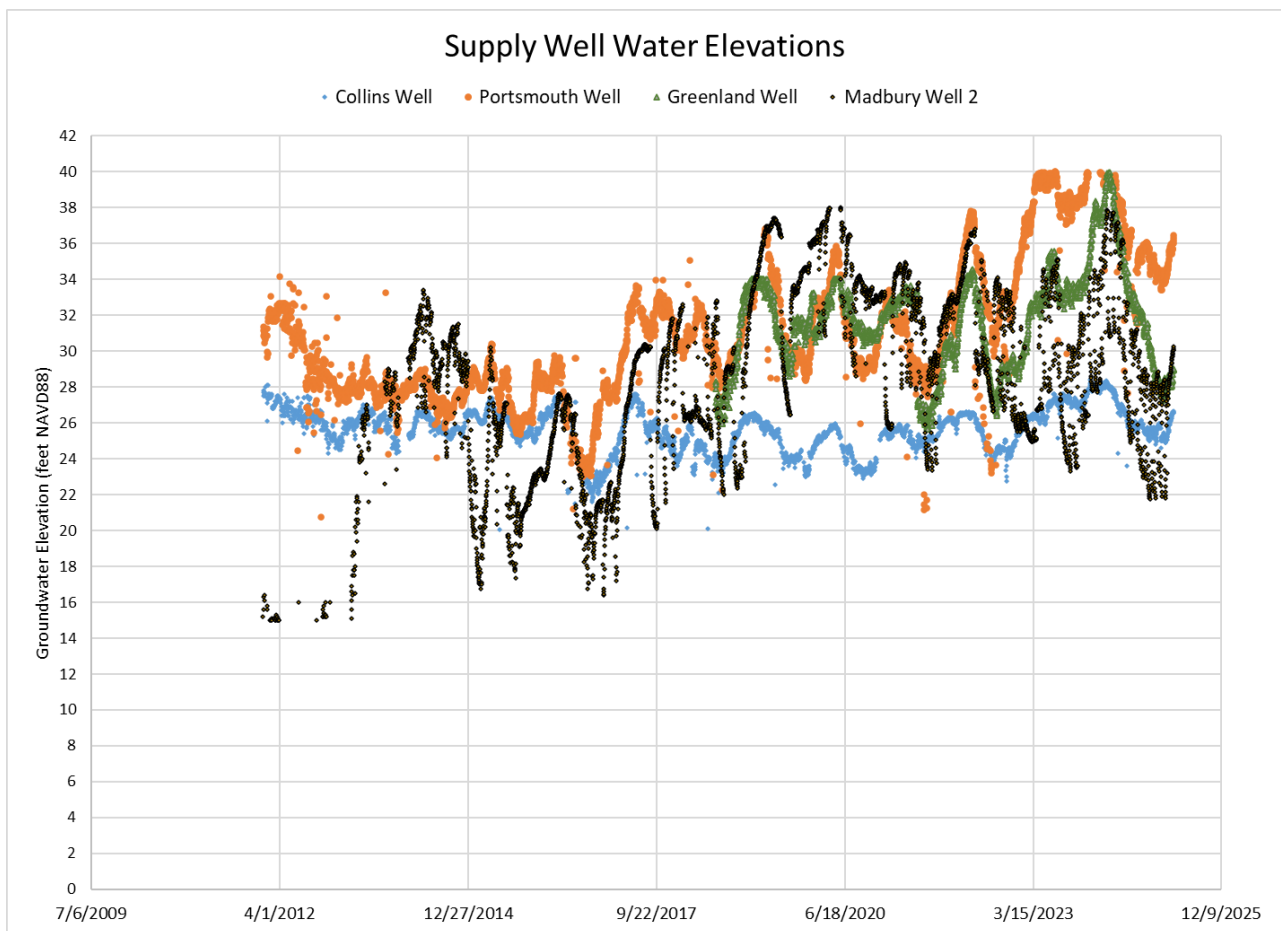
The Bellamy Reservoir trends below also compare recent 2024 drought impacts to the extreme drought experienced in 2016 and the 2020 and 2022 droughts. The Bellamy level dropped to below-2022 levels in October, but recovered with the early November storms and late-winter snowmelt and rainfall.



Groundwater Levels and Status

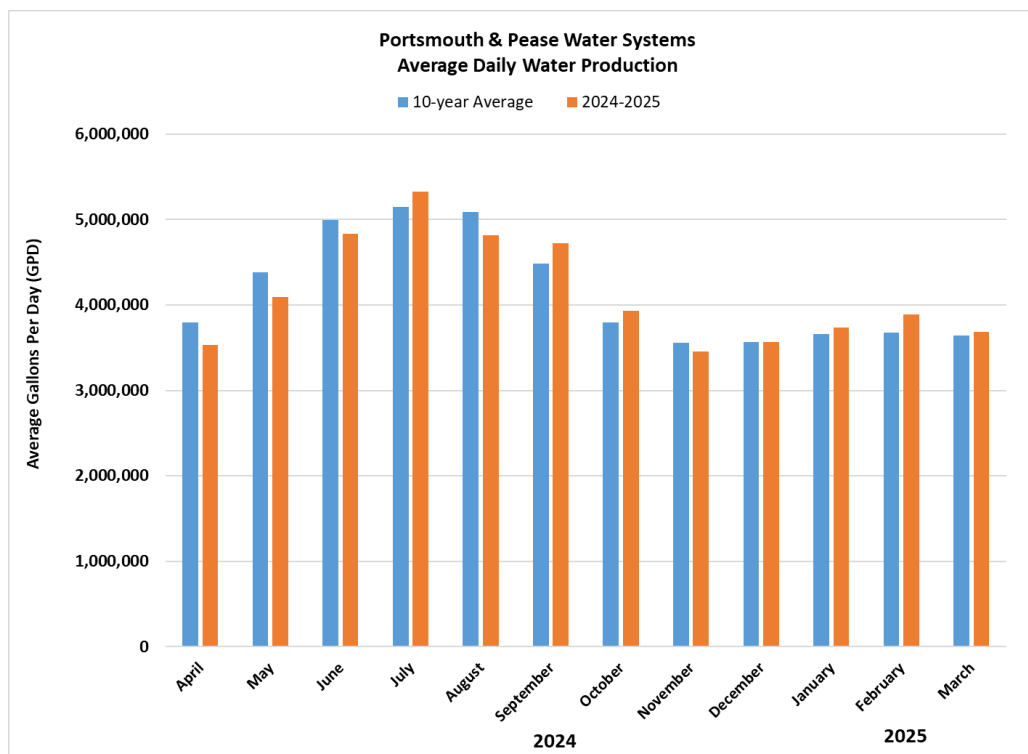
Levels in the City's groundwater water supply wells declined over the summer and fall as expected. Spring water levels in most of the supply wells are slightly lower than normal, however the snowmelt and spring rain has begun to recharge the aquifers causing the levels to rise through March. Water was drawn from the Madbury Wells more over the late summer of 2024 through December 2024 to balance the reduced withdrawal from the reservoir, thus Madbury groundwater levels were slightly lower than they have been in the past six years. Since the recovery of the Bellamy Reservoir toward the end of December, operators have increased withdrawal from the reservoir to minimize well withdrawals and allow time for aquifers to recharge before the return of high demand in the summer of 2025.

The following graphic shows the overall water level trends associated with four wells in the City's groundwater supply.

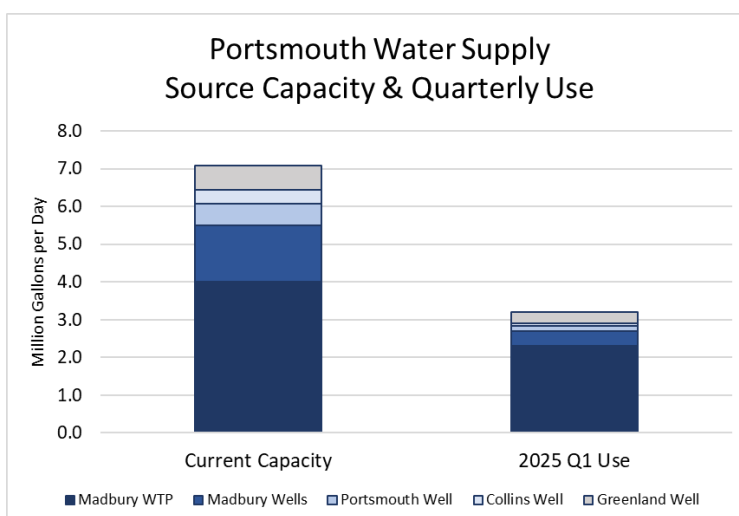


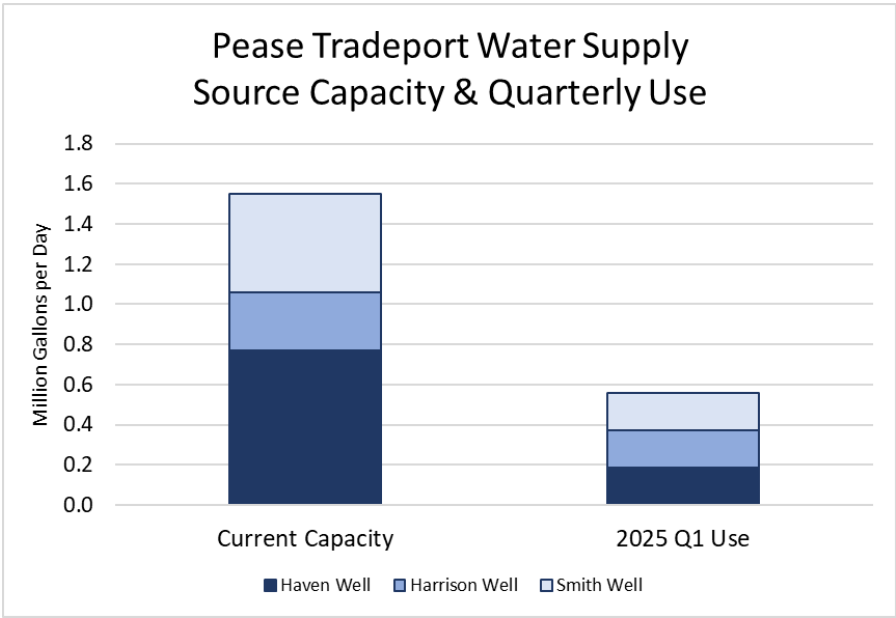
Current Water Production and Demand

The Portsmouth and Pease Drinking Water Systems experienced slightly above-average demand from January to the end of March. This followed a period of generally average demand throughout Fourth Quarter of last year. The annual total water demand has remained constant at 1.5 billion gallons per year over the past five years.

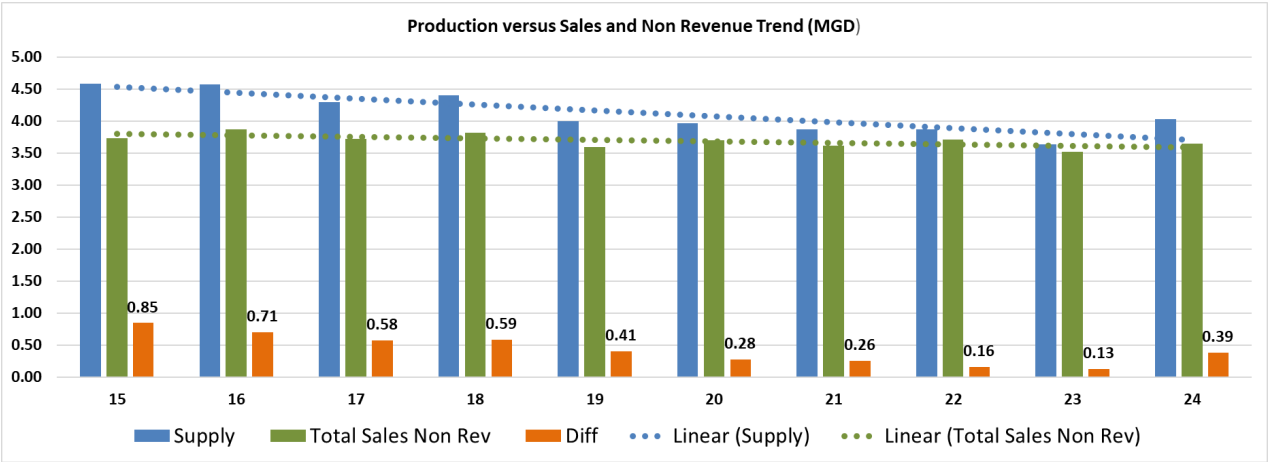


The following graphs illustrate the current Quarter's water production relative to the current supply capability for the Portsmouth and Pease Drinking Water System supply sources. Both systems are showing a good buffer of available supply versus demand. The current supply capability varies depending upon the conditions of the source including water levels and source water quality.





The next graph shows the running water balance for the Portsmouth and Pease Drinking Water Systems. This is the difference between the volume of water both systems produce, versus the demand from sales and other uses in each system. System improvements in metering upgrades, water main replacements and leak detection have considerably improved the water balance over time, but in 2024, both systems experienced several water main breaks that lead to unbilled water loss.






Water Efficiency

The City continues to offer water efficiency rebates of \$100 for the purchase of a low-flow toilet and \$150 for the purchase of a high-efficiency washing machine. These rebates are available to all residential Water customers, including multi-family customers. To date, the City has issued over 1,600 rebates. According to the NH Department of Environmental Services (NHDES), Portsmouth is currently the only public water system in New Hampshire offering these rebates.

Additional information on this program can be found on obtained from the City's water billing department and on the City's website: <https://portsnh.co/water-efficiency-rebate>

Water Efficiency Rebate Program
Introduced in 2015
The First (and still only) Water Efficiency Rebate Program in New Hampshire



\$100 **\$150**

Residential Toilet and Washing Machine Rebate Program
Additional Information

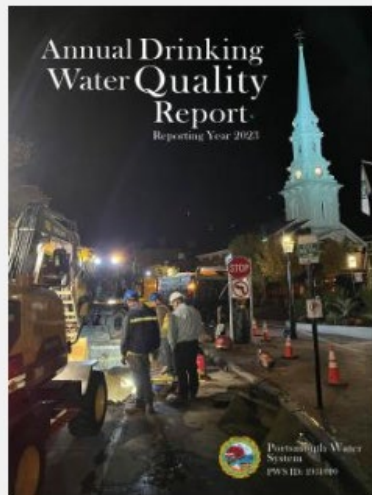
Q. Why is Portsmouth offering toilet and washing machine rebates?
A. We are offering this program to our customers as an incentive to replace older, inefficient toilets and washing machines with high efficiency models. This is another step toward making our water and sewer systems as efficient as possible. 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.

The City intends to continue with the rebate program and expand outreach efforts to focus on ways that customers can be more efficient with summertime water use for irrigation and cooling needs.

Water Quality Information

Annual Water Quality Reports for the Portsmouth and Pease Drinking Water Systems that highlight all water quality data collected throughout 2024 will be issued to every customer by the end of June 2025. Copies of existing reports that include water quality data compiled through 2023 are also available online from the City's website: <https://portsnh.co/3Rn5yVi>

ANNUAL WATER QUALITY REPORTS



Portsmouth 2023



Pease 2023

The Portsmouth Water Division routinely monitors water quality parameters and performs water quality sampling and analysis as directed by the Federal Safe Drinking Water Act and the NHDES. Water sources are monitored for radioactive, biological, inorganic, volatile organic and synthetic organic contaminants. Critical water treatment parameters for turbidity, pH, chlorine, orthophosphate and fluoride are continually monitored and tracked by Water System operators. The regulations require the City to monitor certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included in the report, along with the year in which the sample was taken.

PFAS Water Quality Sampling and Tracking

The City's work to track and treat PFAS contamination at the Pease International Tradeport and Portsmouth Water System continues. The term "PFAS" covers a broad group of perfluoroalkyl and polyfluoroalkyl substances found in many commercial products including firefighting foam. On September 30, 2019, the state's NHDES established limits on the concentrations of four per- and polyfluoroalkyl substances (PFAS) in drinking water. The NHDES maximum contaminant level (MCL) for drinking water and groundwater remains at 15 parts per trillion (ppt) for perfluorooctane-sulfonic acid (PFOS), 12 ppt for perfluorooctanoic acid (PFOA), 11 ppt for Perfluorononanoic Acid (PFNA), and 18 ppt for Perfluorohexane sulfonic acid (PFHxS). These limits were based on an annual rolling average of sample results collected throughout the state.

On April 10, 2024, the US EPA finalized regulations that limit acceptable concentrations of six PFAS compounds in drinking water; establishing legally enforceable levels, called Maximum Contaminant Levels (MCLs), for six PFAS substances in drinking water. Those compounds include: PFOA, PFOS, PFHxS, PFNA, and HFPO-DA as contaminants with individual MCLs, and PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS. The new regulation uses a Hazard Index MCL to account for the combined and co-occurring levels of these PFAS in drinking water. The EPA also finalized health-based, non-enforceable Maximum Contaminant Level Goals (MCLGs) for these PFAS types.

The City of Portsmouth continues to comply with all standards regulating levels of PFAS in both the Portsmouth and Pease Drinking Water Systems. Until the EPA rules go into effect in 2027, Portsmouth, along with all community water suppliers in New Hampshire, must continue to comply with the PFAS maximum contaminant levels (MCLs) established in 2019 by the NHDES for four regulated PFAS compounds.

According to information provided by the NHDES on April 10, 2024:

"No immediate action by water systems is required at this time." A general summary of how and when the new regulations will impact NHDES and water systems from a regulatory standpoint based on our current understanding is provided below:

1. **NHDES Rulemaking: NHDES will need to adopt rules that are no less stringent than the new federal PFAS drinking water regulations within two years.**
2. **Water System Sampling: Applicable water systems will need to complete initial monitoring to comply with the new federal PFAS drinking water regulations within three years.** Water systems in New Hampshire have completed initial monitoring for PFAS dating back to 2019/2020 to comply with New Hampshire's drinking water standards. Water systems that completed testing for all analytes covered by USEPA Methods 533 or 537.1 as recommended by NHDES in 2019 may have the data needed to satisfy the initial monitoring requirements of the new federal PFAS regulations. Water systems that only analyzed for the four PFAS (PFOA, PFOS, PFNA and PFHxS) that New Hampshire currently regulates will have to complete initial monitoring for HFPO-DA and PFBS even though these compounds very likely will not occur at a concentration that will exceed the new federal drinking water standards.

3. **Water System Public Notification: Applicable public water systems will need to notify the public if finished drinking water exceeds the new federal PFAS drinking water regulations within three years.** The notification to the public will not specifically be required and enforced by NHDES until its rulemaking (described in item 1 above) is complete. However, public water systems already have PFAS results for PFOA, PFOS, PFNA and PFHxS and can notify the public sooner. NHDES will follow up with recommended notification language for water systems that elect to notify the public sooner than required by the new federal PFAS regulation.
4. **Water System Drinking Water Quality Compliance and Violations: Applicable public water systems will need to comply with the new federal PFAS standards for the six PFAS within five years.** Public water systems that produce drinking water that will exceed the federal drinking water standards may implement corrective action sooner than five years to protect public health and avoid violations of the federal standard and the associated public notification requirements.

The City has tracked and sampled PFAS and responded to PFAS regulations since these compounds were first discovered in the Pease drinking water sources in May 2014. The City of Portsmouth maintains a multi-pronged approach to addressing PFAS in water supplies. Actions include:

- Sampling all Portsmouth drinking water sources quarterly for PFAS compounds to assess the 12-month rolling averages for the four New Hampshire regulated compounds, working with regulators and other waterworks professionals to track and respond to the evolving water quality information, regulations and treatment technologies related to PFAS compounds.
- Evaluating the need for and piloting effective treatments that may be necessary at any other drinking water supply sources serving the City's drinking water system.
- Working with the Air Force to monitor and respond to PFAS compounds in the Pease southern wellfield aquifer.
- Included funds in the capital improvement plan that total \$7 million dedicated to the design and construction of a treatment facility for the Greenland Well. This well currently has just over the 4 parts per trillion level of PFOA. An engineer is currently engaged in this design work, with bidding and construction anticipated in 2026.
- Conducted a preliminary design of treatment for the Portsmouth and Collins wells, and requesting funds from the Air Force for final designs.

The City samples for PFAS in its water supply sources quarterly and periodically posts this data on the City's website at: <https://portsnh.co/PFASTesting>

PFAS Average – 12 Month Rolling New Hampshire Regulated Compounds - All Sources In Compliance (Oct. 2024-Dec. 2024)

12-MONTH ROLLING AVERAGE 2025 Q1		EPA MCL (2024)	NH MCL	RAW*	MADBURY WTP FINISHED	MADBURY WELL 2	MADBURY WELL 3	MADBURY WELL 4	MADBURY WELL 5	PORTSMOUTH WELL	COLLINS WELL	GREENLAND WELL
Perfluorohexanesulfonic acid (PFHxS)	ng/L	10	18	0.0	0.2	0.4	0.2	0.2	0.8	7.2	2.7	1.1
Perfluorooctanesulfonic acid (PFOS)	ng/L	4	15	0.7	0.6	0.7	0.8	0.2	0.5	5.1	4.5	3.3
Perfluorooctanoic acid (PFOA)	ng/L	4	12	2.7	2.7	2.7	2.8	1.4	3.4	7.6	4.0	4.4
Perfluorononanoic acid (PFNA)	ng/L	10	11	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perfluorobutanesulfonic acid (PFBS)	ng/L			0.5	0.6	0.8	0.7	0.7	3.3	4.2	12.3	2.2
Hazard Index*		1		0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.3	0.1

* Hazard Index MCL = (HFPO-DA/10)+(PFBS/2000)+(PFNA/10)+(PFHxS/10)



According to the City's ongoing monitoring, the following water sources have detection averages above the projected EPA finalized MCLs:

- Portsmouth well: 5.1 ppt of PFOS, 7.6 ppt of PFOA
- Collins well: 4.5 ppt of PFOS, 4.0 ppt of PFOA
- Greenland well: 4.4 ppt of PFOA
- No sources are currently over the Hazard Index
- The Pease Water Treatment Facility continues to remove these compounds from the system's supply wells.

The Pease Tradeport's dual treatment system of ion exchange and granular activated carbon continues to perform very well. After four years of operation and nearly 834 million gallons of water treated, the levels of the regulated compounds remain "Non-Detect."

Pease Water PFAS Treatment System Performance

- Treatment system online since April 2021
- 834 million gallons treated
- 6 of 12 Ion-Exchange Resin Vessels - Media Replaced 2024
- 1 of 3 Granular Activated Carbon (GAC) Vessels – Media Replaced 2024
- No Regulated PFAS Detected in Treated Water

Total Trihalomethanes (TTHMs)

Total Trihalomethanes (TTHMs) are disinfection byproducts (DBPs) which are created when added chlorine disinfectants (sodium hypochlorite) react with natural organic matter in the water. On average, the Water Treatment Facility in Madbury removes about 64% of the total organic carbon (TOC) through the treatment process. The EPA Disinfectants and Disinfection Byproducts Rules (Stage 1 and Stage 2) requires TOC removal of 50% for the type of water that is typical from the Bellamy Reservoir. The TOC that remains in the water after treatment reacts with chlorine and creates DBPs. Historically the TTHM concentration in the Portsmouth Water System averaged 56 parts per billion (ppb).

A storage tank mixer and aeration system were installed at the Newington Booster Pumping Station as part of the upgrade to that facility in September 2019. These improvements were designed to reduce the concentration of trihalomethanes in the water distribution system. So far, the highest average TTHM in the distribution system in 2025 is 32 ppb. The Pease system has near “Non-Detect” TTHM concentrations due to the source water quality and the Pease Water Treatment process which includes granular activated carbon filtration.

TTHM Running Average – 2025 – Portsmouth Water System

DATE	SITE		TTHM	HAA5
Quarter I 2025		MCL's =>	80	60
ID #		Reference	ppb	ppb
Q4	Locational Running Average		Locational Running Average	Locational Running Average
321	30 SPINNAKER WAY		32	41
325	1550 WOODBURY PLAZA		29	38
323	120 SPAULDING TURNPIKE		31	41
324	WATER STREET		32	41

TTHM Running Average – 2024 – Pease Water System

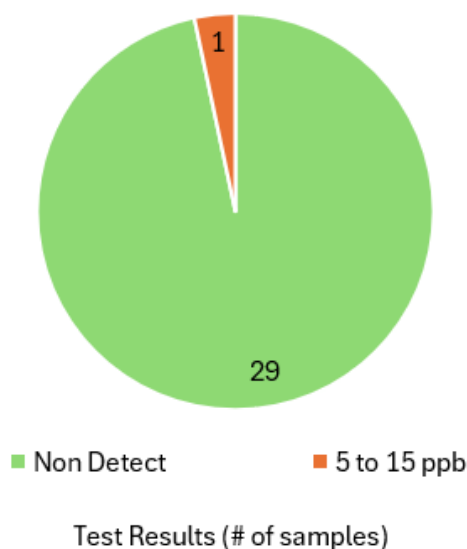
DATE	SITE		TTHM	HAA5
Quarter IV 2024		MCL's =>	80	60
ID #		Reference	ppb	ppb
Q4	Locational Running Average		Locational Running Average	Locational Running Average
321	135 CORPORATE DRIVE		19	2
322	14 MANCHESTER SQUARE		1	ND

Lead Sampling

The City of Portsmouth implemented a Lead & Copper Corrosion Control Program in 2003 and remains in compliance with its requirements. The general purpose of the Corrosion Control Program is to minimize the potential for water supplied by the City to leach potentially harmful metals such as lead and copper from pipes, fixtures and solder containing lead into drinking water. Because the City of Portsmouth water supply sources that are regularly monitored do not contain measurable quantities of lead, the primary source of any lead and copper detected in drinking water comes from internal household plumbing systems, plumbing components within other privately owned buildings and the service lines feeding these properties.

Household water sampling conducted in 2024 throughout the Portsmouth Water System found one residential location (out of 30 sampled) with measurable concentrations of lead. This one detection of lead was reported at a concentration of 6.6 ppb, which is less than half of the “action level exceedance” concentration of 15 parts per billion (ppb). The other 29 water samples had no traces of lead.

2024 Portsmouth Lead Monitoring Results



Lead is not present in the water when it leaves the City’s well and treatment facilities, or in the water mains that run below the streets. However, lead can be present in old service line connections that tie homes to the water system or plumbing inside homes and businesses. Due to the age of many homes in Portsmouth and surrounding towns (built before leaded solder was banned in 1986, and the associated potential for leaded plumbing components eliminated), the City encourages customers to have their water tested by a certified laboratory, especially if there are children under six or pregnant women in the household. The City actively adjusts the water chemistry at the treatment facility and well facilities according to the established Corrosion Control Program, to reduce the potential for lead in households to dissolve into the water and end up at the tap. But if lead is present in a private plumbing system, and is in contact with water,

some risk remains. Information about the Corrosion Control Program can be accessed on the City website: <https://portsnh.co/LeadCopperProgram>.

Service Line Inventory Efforts

The U.S. Environmental Protection Agency (EPA) Lead and Copper Rule Revision required all public water suppliers including the City of Portsmouth to submit a baseline inventory of every service line and its material composition by October 16, 2024. The City of Portsmouth Water Division submitted this inventory for the Portsmouth and Pease Tradeport Water Systems and notified customers whose water service line material was identified as galvanized steel or whose service line material has not been identified. No lead service lines have been identified in the Portsmouth or Pease Water Systems. These notifications are intended to raise awareness of service line materials and help customers avoid possible exposure to lead from their household plumbing in their drinking water.

Customers who receive a notification letter are being asked to assist the City by following the directions outlined in the notice. The information letters include:

- A statement that the service line material is either galvanized steel and requires replacement, or is unknown;
- Information on replacing galvanized steel service lines requiring replacement;
- Actions to take if the material of the water service line is unknown;
- An explanation of the health effects of lead; and
- Steps to reduce any exposure to lead.

In accordance with the federal regulation, letters must be sent to property owners on an annual basis until service lines that might contain lead are removed, or the public water system is able to verify that a service line does not contain lead. Anyone not receiving a letter by the end of the year should be assured that the Water Division has determined that their service line material does not contain lead.

More detailed information about this inventory effort can be found on the City website: <https://portsnh.co/servicelineinventory>.

Safe Water Advisory Group (SWAG)

The Safe Water Advisory Group was created by the Mayor and City Council on October 5, 2020. Its mission is to review and communicate the latest science on the health and environmental effects of drinking water contaminants (with a heavy focus on PFAS), to monitor federal and state level legislative changes and to anticipate policy changes that could impact the City of Portsmouth.

The SWAG met four times in 2024. The public is invited to attend future meetings and encouraged to be involved with the community and informed of all aspects of the City's water supply. Video recordings, information, meeting agendas and minutes, and annual reports of the SWAG are posted on the City's website: <https://portsnh.co/safe-water-advisory-group>

Further Updates and Information

This information is updated on the City of Portsmouth's website in the Department of Public Works > Operations > Water section. More detailed updates on capital improvement projects can be found here: <https://www.portsmouthnh.gov/publicworks/projects>

For additional information or questions contact Al Pratt, Water Resources Manager at 603-520-0622 or Mason Caceres, Assistant Water Resource Manager at 603-312-3804.