City of Portsmouth

Department of Public Works

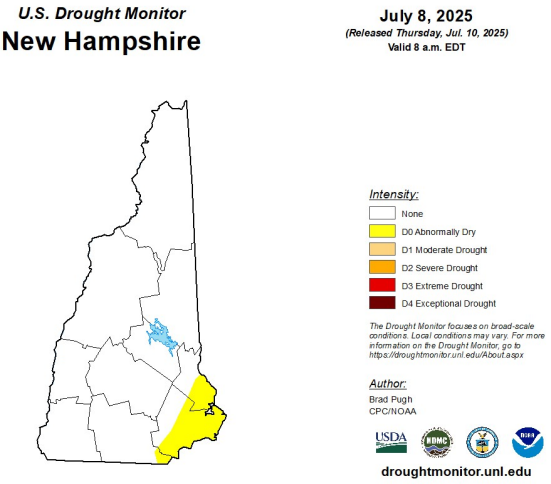
Portsmouth and Pease International Tradeport
Drinking Water Status Report
2025 – Second Quarter

(April 1, 2025 – June 30, 2025)

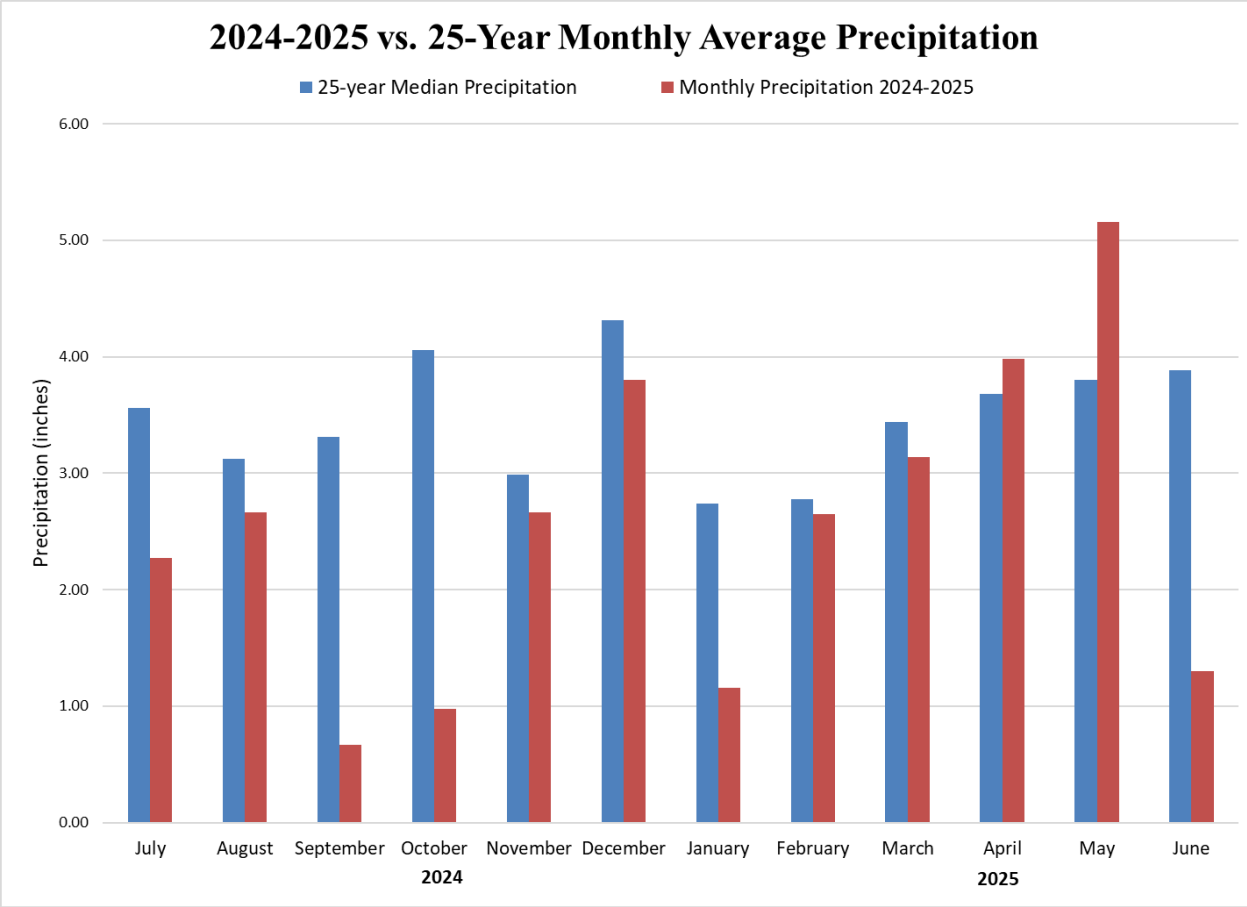
The City of Portsmouth, NH, water supply sources have recovered from the drought conditions that began in late summer 2024. The Bellamy Reservoir surface water source has rebounded from the significantly low levels recorded in September and October, aided by late winter snowmelt and spring precipitation. Groundwater levels, which were below average during the first quarter of 2025, have also returned to near-normal levels for this time of year. According to the U.S. Drought Monitor, the southeastern region of New Hampshire remains classified as abnormally dry, while the rest of the state is not currently experiencing drought conditions. The Water Division will continue to closely monitor the water supply and may implement water use restrictions if drought conditions return later this summer. Customers are encouraged to remain mindful of their water usage and to practice conservation wherever possible.

Precipitation and Weather

The Seacoast region of New Hampshire is currently experiencing abnormally dry conditions, in contrast to the rest of the state. According to the U.S. Drought Monitor, the "abnormally dry" classification applies to areas that are either recovering from drought or beginning to exhibit signs of dryness that could precede drought conditions.



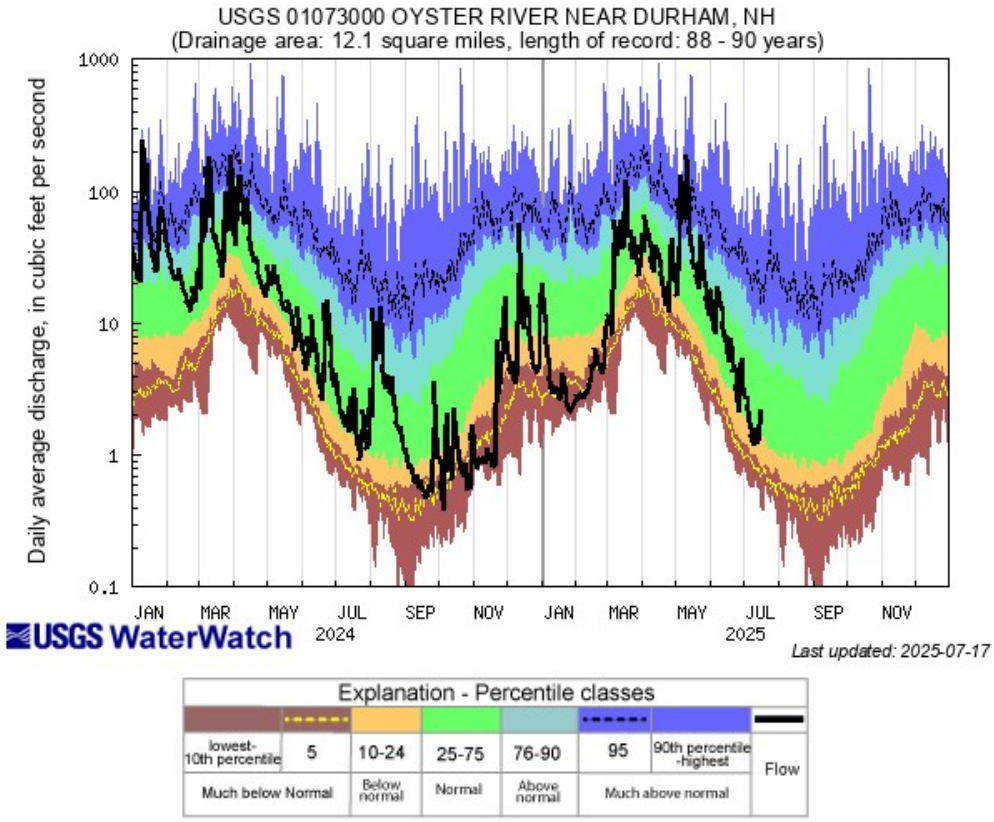
The following graph shows the variability of precipitation Portsmouth has experienced in the last twelve months. The amount of precipitation received in 2024 through January of 2025 remained below the 25-year average, resulting in drier than normal conditions. Rainfall in April and May increased, as total precipitation reached 8% and 36% above the 25-year average, respectively. Drier than normal conditions returned at the end of Quarter 2 as the monthly precipitation dropped from 5.2 inches in May to 1.3 inches in June.



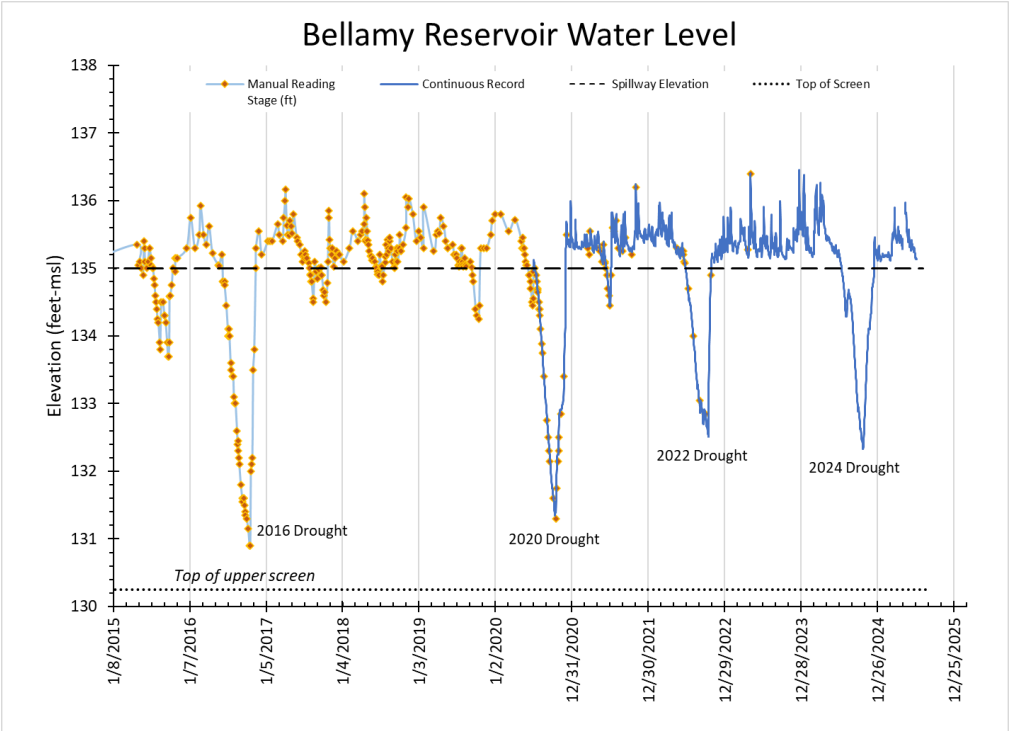
The 12-month rolling average precipitation through June 2025 was 27% below normal at a total of 30.4 inches versus the normal of 41.7 inches.

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. As of April 2025, Oyster River flow returned to its historic average for this time of year after the apparent drought conditions occurred at the end of 2024 and start of 2025. A drastic spike in flow occurred in May as total precipitation reached 5 inches by the end of the month. Currently, Oyster River remains "normal" when compared to the 88–90-year average. These normal flows are reflected in the water levels and outflow that we are currently observing in the Bellamy Reservoir.



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, late-winter snowmelt, and spring rainfall.

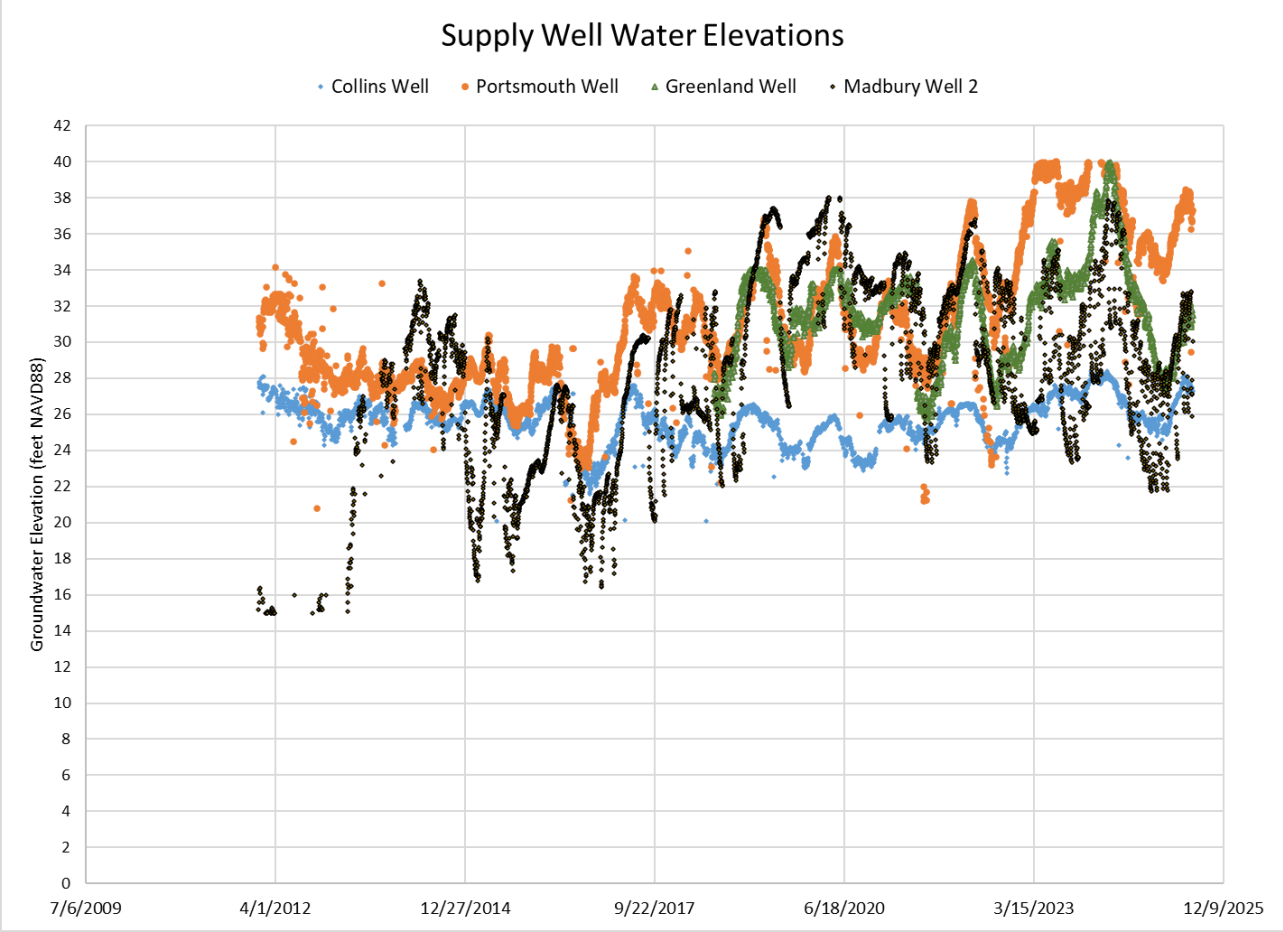


Groundwater Levels and Status

Most of the City's groundwater supply wells are currently at typical elevations for this time of year, following spring and early summer rainfall that has helped recharge the aquifers and raise water levels through May. During the late summer through December of 2024, increased reliance on the Madbury Wells was necessary to offset reduced withdrawals from the Bellamy Reservoir. As a result, groundwater levels in the Madbury system were slightly lower at the beginning of this year compared to the previous six years. Following the reservoir's recovery in late December, operators strategically increased withdrawals from the Bellamy Reservoir to reduce demand on the wells, allowing the aquifers additional time to recharge during the latter part of quarter 1 and into quarter 2.

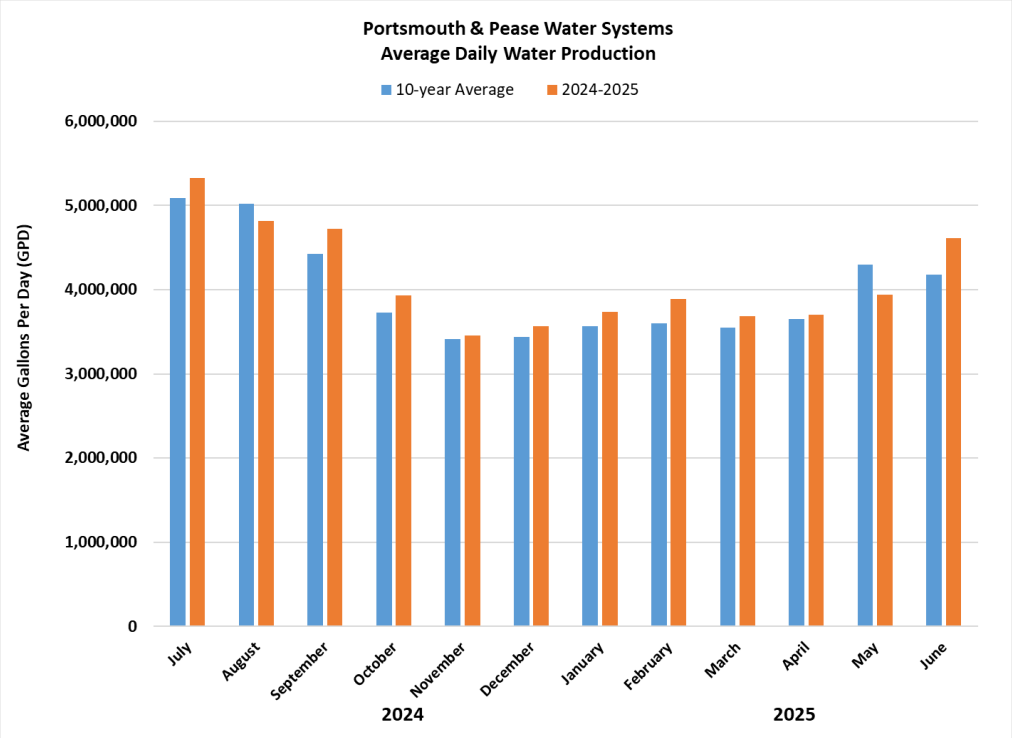
With the onset of warmer temperatures in June, water demand has risen sharply due to increased lawn irrigation and reduced rainfall. If these conditions persist, the Division anticipates a decline in groundwater levels.

The following graphic illustrates recent water level trends for four of the City's groundwater supply wells.

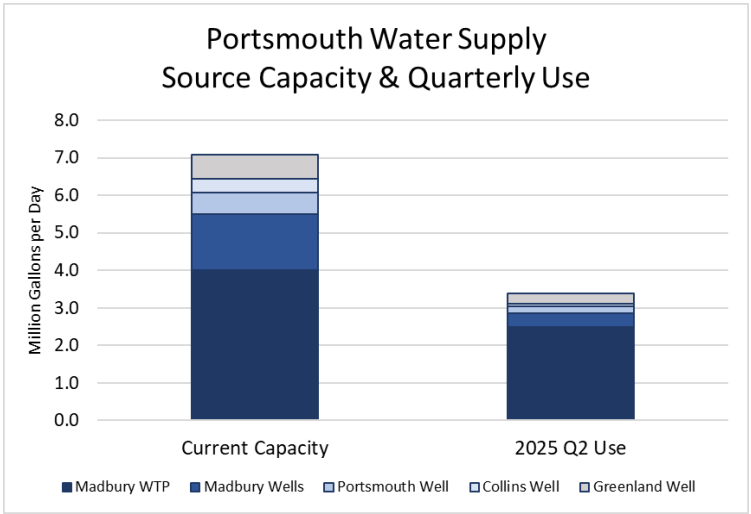


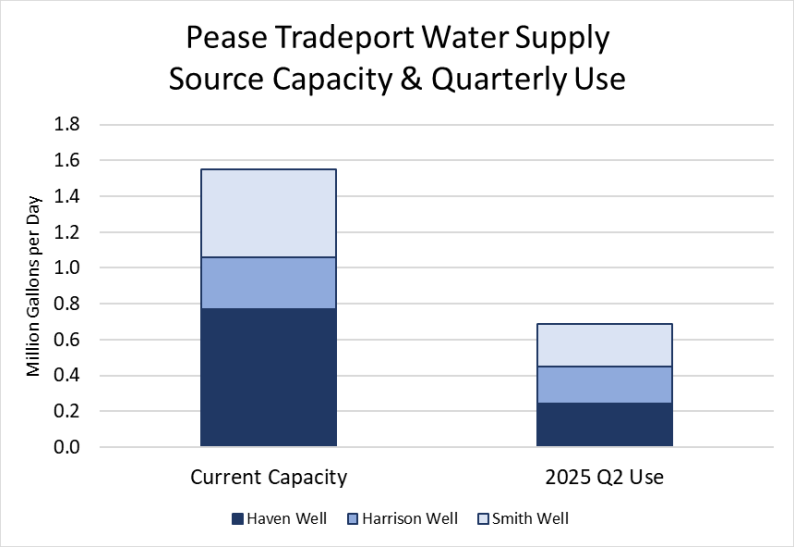
Current Water Production and Demand

From January through the end of April, the Portsmouth and Pease Drinking Water Systems experienced slightly higher-than-average demand. In contrast, water production in May declined below the 10-year average, largely due to increased rainfall, which typically reduces outdoor water usage such as lawn irrigation. Despite these fluctuations, total annual water demand has remained steady at approximately 1.5 billion gallons per year over the past five years.

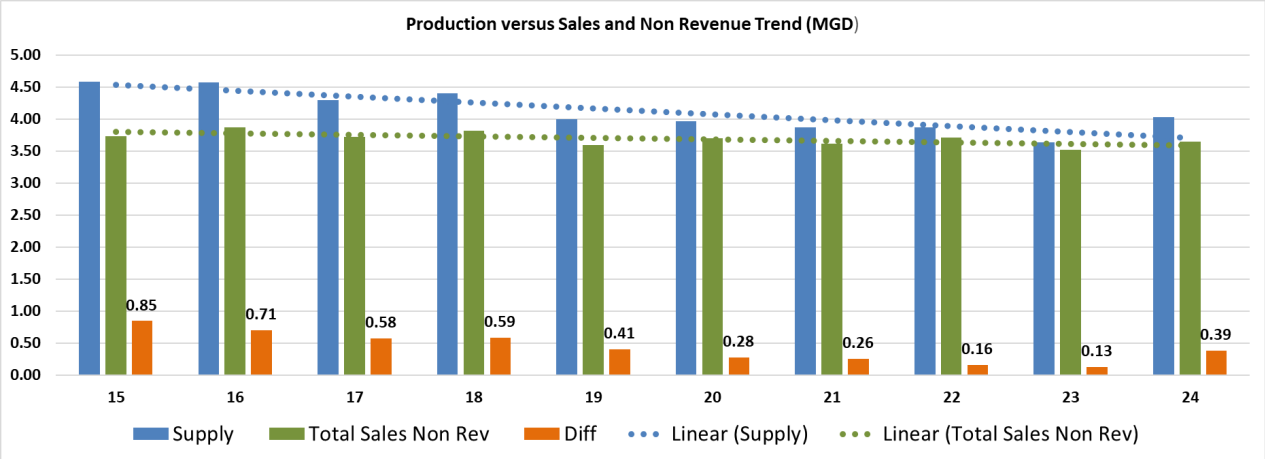


The following graphs illustrate the current Quarter's water production relative to the current supply capability for the Portsmouth and Pease Drinking Water System supply sources. Both systems are showing a good buffer of available supply versus demand. The current supply capability varies depending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





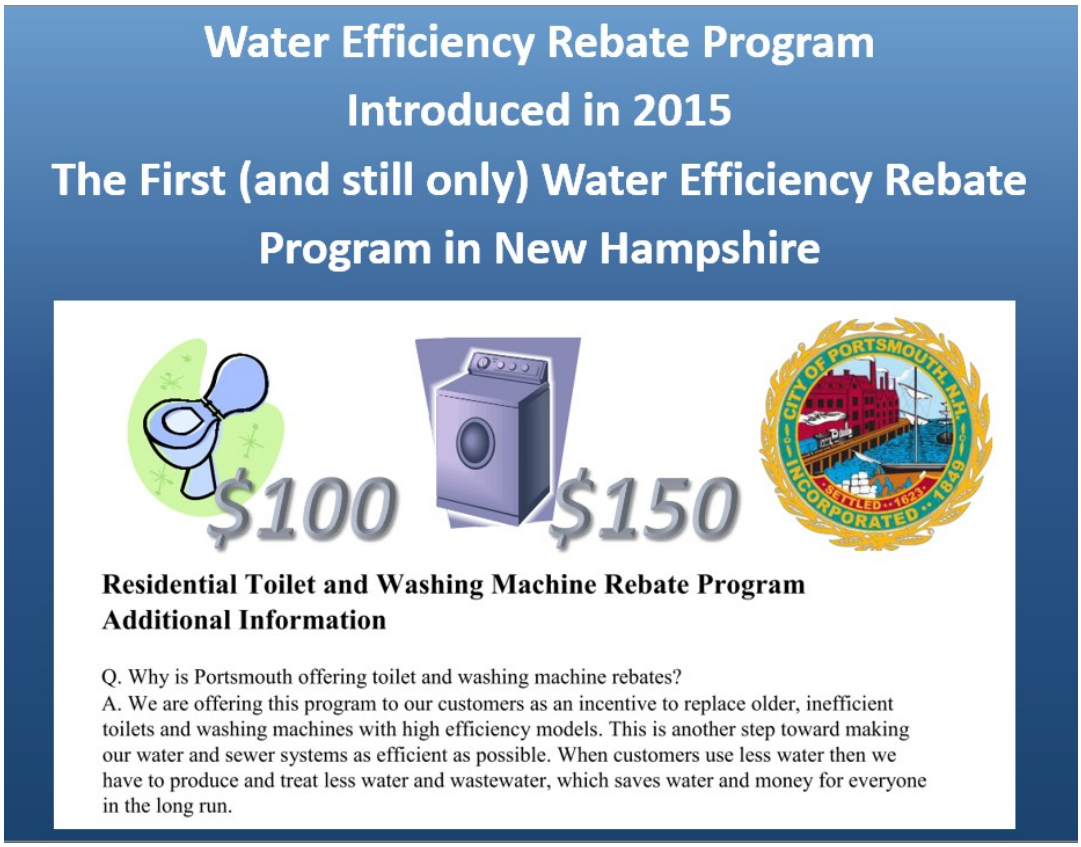
The next graph shows the running water balance for the Portsmouth and Pease Drinking Water Systems. This is the difference between the volume of water both systems produce, versus the demand from sales and other uses in each system. System improvements in metering upgrades, water main replacements and 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.

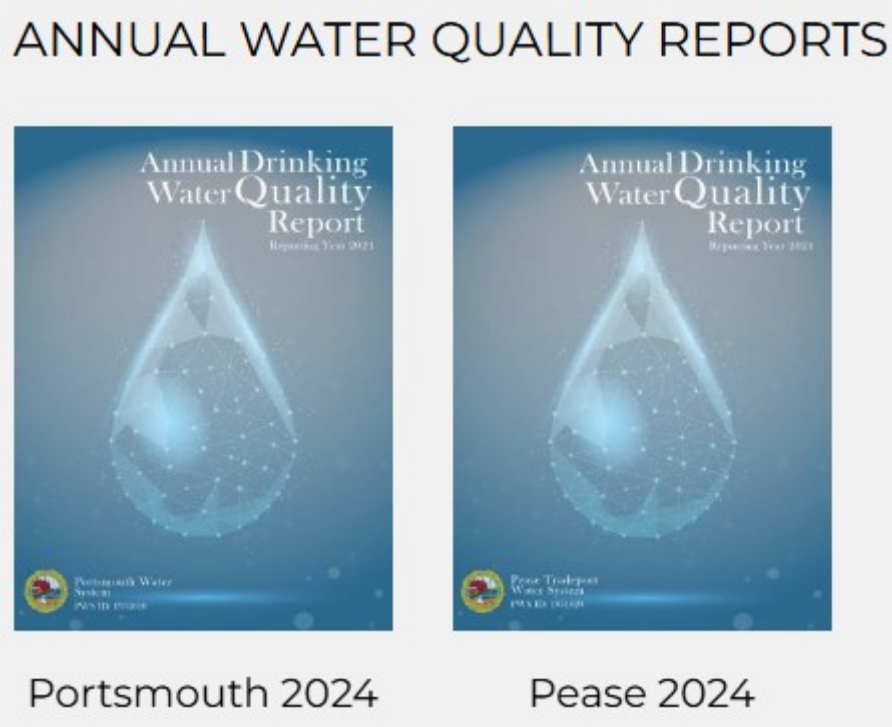
Additional information on this program can be found on obtained from the City's water billing department and on the City's website: https://portsnh.co/water-efficiency-rebate



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, which summarize all water quality data collected throughout 2024 and provide detailed information about each system, were distributed to all customers during the last week of June 2025. Updated copies of these reports are also available on the City's website: https://portsnh.co/3Rn5yVi



The Portsmouth Water Division conducts routine monitoring and analysis of water quality parameters in accordance with the Federal Safe Drinking Water Act and regulations established by the New Hampshire Department of Environmental Services (NHDES). Water sources are regularly tested for a range of potential contaminants, including radioactive, biological, inorganic, volatile organic, and synthetic organic compounds. Key treatment parameters - such as turbidity, pH, chlorine, orthophosphate, and fluoride - are continuously monitored and recorded by Water System operators. Regulatory guidelines permit less frequent monitoring for certain substances whose concentrations typically remain stable over time. In such cases, the most recent available data is included in the report, along with the year the samples were collected.

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. At that time, the US EPA gave public water systems until 2029 to comply with the MCLs.

On May 14, 2025, EPA announced the agency will keep the current National Primary Drinking Water Regulations (NPDWR) for PFOA and PFOS. As part of this action, EPA also announced its intent to extend the PFOA and PFOS Maximum Contaminant Level compliance deadlines and establish a federal exemption framework. Additionally, EPA announced its intent to rescind the regulations and reconsider the regulatory determinations for PFHxS, PFNA, HFPO-DA (commonly known as GenX), and the Hazard Index mixture of these three PFAS plus PFBS to ensure the determinations and any resulting drinking water regulation follow the Safe Drinking Water Act process.

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 MCLs established in 2019 by the NHDES for four regulated PFAS compounds.

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 (April 2025-June 2025)

12-MONTH ROLLING AVERAGE 2025 Q2		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	0.4	0.4	1.2	7.9	2.7	1.5
Perfluorooctanesulfonic acid (PFOS)	ng/L	4	15	1.0	0.9	1.0	1.1	0.4	0.8	**5.2**	**4.7**	3.3
Perfluorooctanoic acid (PFOA)	ng/L	4	12	2.5	2.7	2.4	2.6	1.9	3.1	**7.6**	**4.5**	**4.1**
Perfluorononanoic acid (PFNA)	ng/L	10	11	0.0	0.0	0.0	0.0	0.0	0.0	0.4	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			0.7	0.8	1.1	1.0	1.0	3.0	4.0	12.8	2.2
Hazard Index*		1		0.0	0.0	0.0	0.0	0.0	0.1	0.8	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: 5.2 ppt of PFOS, 7.6 ppt of PFOA
- Collins well: 4.7 ppt of PFOS, 4.5 ppt of PFOA
- Greenland well: 4.1 ppt of PFOA
- 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 950 million gallons of water treated, the levels of the regulated compounds remain "Non-Detect."

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 69% 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 36 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 II 2025		MCL's =>	80	60
ID #		Reference	ppb	ppb
Q2	**Locational Running Average**		Locational Running Average	Locational Running Average
321	30 SPINNAKER WAY		**34**	**43**
325	1550 WOODBURY PLAZA		**32**	**39**
323	120 SPAULDING TURNPIKE		**33**	**41**
324	WATER STREET		**36**	**44**

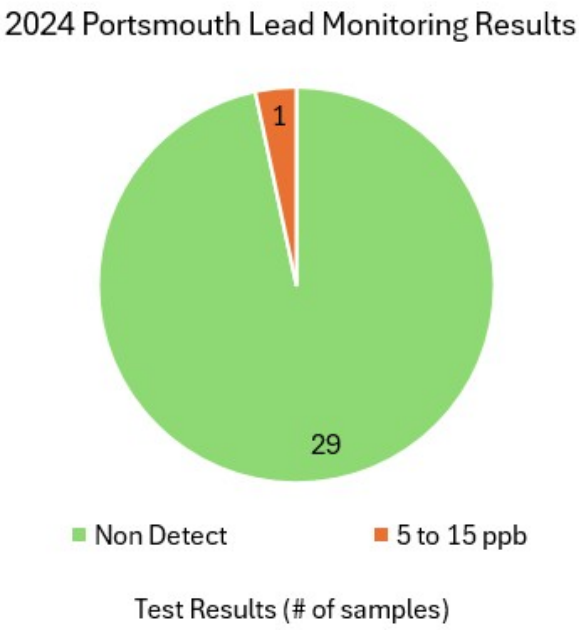
TTHM Running Average – 2024 – Pease Water System

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.



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. 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.

No lead service lines have been identified in the Portsmouth or Pease Water Systems.

Customers who received 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. Those who do not receive 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 has met twice in 2025 and the 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. 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.

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 Resource Director at anpratt@portsmouthnh.gov / 603-520-0622 or Mason Caceres, Assistant Water Resource Manager at mecaceres@portsmouthnh.gov / 603-312-3804.