



November 4, 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

Water Use Restrictions

Customer Water Restrictions
N/A
None
Voluntary Measures
Odd/Even Watering
Two-Days per Week Watering
No Lawn Watering

Due to current water supply conditions, the Mandatory Ban of Lawn Watering that began on September 8th remains in effect.

Eventhough there has been above average precipitation in October, drought conditions are still in place with respect to water supply resources. Below normal groundwater levels and storage in the Bellamy Reservoir continue to persist. Water use restrictions are still requested in order to minimize water demand and extend the existing supply resources through the winter period when aquifer and reservoir recharge is limited due to freezing conditions.

Compliance with this water use restriction is enforced with two warning notifications and fines of \$100 per violation after that.

Additional updates 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.

Current Customer Water Demand

Current Water Demand
Below Normal
Normal
Above Normal
High
Very High
Historic High

Water demand is considered **Below Normal** at this time.

Customer's continued efforts to conserve water have helped to keep water demand in October below normal. Water Demand is a factor in the supply status assessment that is measured by the amount of water delivered through the water system. This factor reflects customer usage and variations caused by daily, weekly and seasonal changes in business, residential and irrigation demands.

Month	Current Demand (Million Gallons per Day (MGD))	Average Demand (ten-year average (MGD))
January 2016	3.97	4.16
February 2016	4.07	4.17
March 2016	4.09	4.18
April 2016	4.21	4.19
May 2016	4.77	4.73
June 2016	5.62	5.07
July 2016	6.09	5.49
August 2016	5.66	5.52
September 2016	4.47	4.96
October 2016	3.89	4.23

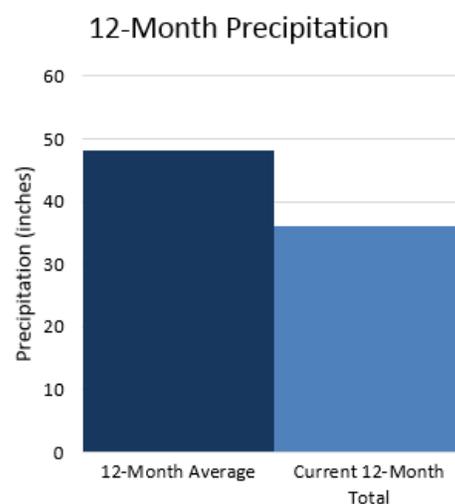
Average daily water demand was 3.89 million gallons per day (MGD) in October, which is approximately 8% lower than the ten-year mean October demand of 4.23.

Precipitation Status

Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total October precipitation in Portsmouth was 7.26 inches. This is 3.11 inches more than the historic October average. Three large storm events on the 9th, 21st-22nd, and 27th-28th yielded 1.28, 3.17 and 2.19 inches, respectively. This is the first month with higher than normal precipitation since September 2015.

In order to assess annual precipitation conditions, total precipitation over a rolling 12-month period is compared to the normal annual precipitation of 48.19 inches. As the accompanying graphic shows, precipitation over the past 12-months equals 36.20 inches which is 11.99 inches below normal, 75% of the normal annual amount. The precipitation status is currently considered as **Dry** conditions

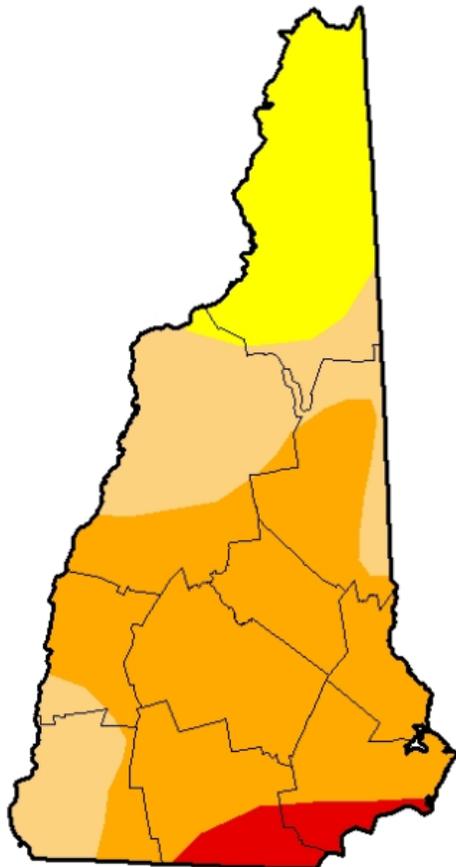


New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:

U.S. Drought Monitor New Hampshire

November 1, 2016
(Released Thursday, Nov. 3, 2016)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	82.31	57.42	4.67	0.00
Last Week 10/25/2016	0.00	100.00	82.31	57.42	19.25	0.00
3 Months Ago 8/2/2016	26.08	73.92	41.60	21.77	0.00	0.00
Start of Calendar Year 12/29/2015	50.84	49.16	14.88	0.00	0.00	0.00
Start of Water Year 9/27/2016	15.33	84.67	62.44	40.49	19.27	0.00
One Year Ago 11/3/2015	76.38	23.62	14.88	0.00	0.00	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

The National Drought Summary for November 1, 2016 summarized conditions in the Northeast as:

Rainfall accumulations in excess of 150 percent of normal eased drought conditions along the coast and eliminated short-term drought across much of the region. Southern Maine, southern New Hampshire, and eastern Massachusetts saw a reduction in severe (D2) and extreme drought (D3). Longer-term hydrologic impacts remain in this area.

To stay informed on the latest drought conditions and current drought related information go to the NHDES Drought Management Program webpage at:

<http://des.nh.gov/organization/divisions/water/dam/drought/index.htm>.

Groundwater Levels

Groundwater Levels
Above Average
Average
Below Average
Low
Very Low
Drought

Currently the groundwater levels considered **Below Average**. Groundwater levels in the Portsmouth, Pease and Madbury wells are lower than normal.

Overall conditions of aquifer water levels are assessed with respect to water levels that are continuously monitored in the Portsmouth Water Supply wells. Based on historic water-level data, average water levels have been identified for a representative well in each well-field area for each month of the year. Assessments of the aquifer levels are made relative to average levels, historic low levels, and available drawdown in the wells.

Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers with the remaining 55% to 66% from the Bellamy Reservoir. Over the summer approximately 37% of the supply came from the wells. In October 41% of the supply came from the wells as withdrawal from the reservoir was reduced to help extend the reservoir storage through the winter.

River Flow

River Flow
Above Average
Average
Below Average
Low
Very Low
Drought

Portsmouth Water System operators track the USGS stream flow gauges in the Oyster River and Lamprey River to assess flow conditions. These gauged watersheds are used to assess the relative recharge to the Bellamy Reservoir through its tributaries, the Bellamy River and Mallego Brook.

The monthly mean stream flow in the Oyster River at the USGS gauge was 5.83 cfs in October. This is 7.01 cfs (55%) lower than the 30-year October mean flow rate of 12.8 cfs.

The monthly mean October stream flow in the Lamprey River at the USGS gauge was 48 cfs, which is 164 cfs (78%) lower than the 30-year October mean flow rate of 212 cfs.

At the end of October, flow in the Oyster River and the Lamrey River were both near their historic normal October flows. Precipitation will need to continue at or above normal amounts for these flows to continue at normal rates.

At this time the current river flow rates are considered at **Low** levels for this assessment due to their below normal rates early in October, and likely drier than normal watershed soil conditions for this time of year.

Reservoir Level

Reservoir Level
Above Average
Average
Below Average
Low
Very Low
Drought

The current stage of the reservoir is considered to be **Very Low** for this time of year. Typically, precipitation in September and October along with reduced evaporation and transpiration causes the reservoir to begin flowing over the spillway during this time.

As the surface water source for the Madbury Water Treatment Facility, the Bellamy Reservoir is monitored to assess and predict the overall amount of water available for the Treatment Facility. Reservoir water levels are compared to typical monthly levels to assess the reservoir conditions.

The Bellamy Reservoir reached a low level of 4.1 feet below the spillway on October 20th prior to the large precipitation event on the 21st and 22nd. At this level the reservoir had approximately 254 million gallons (MG) available above the lower intake. This is about 40% of the total full reservoir capacity of 637 MG. The precipitation in October has caused the reservoir to rise to a level 2.8 feet below the spillway which equates to 353 MG (55% of full) of water available.

Water Supply Capability

Water Supply Capability
Above Normal
Normal
Below Normal
Restrictions Necessary
Additional Restrictions Necessary
Emergency

Water Supply Capability is a measure used to identify any issues with the Portsmouth Water Supply System that would result in a limitation to the amount of water that could be supplied. These could be lack of supply, issues with source water quality, or mechanical failures of system components.

The loss of the Haven Well as a water source (which contributed approximately 10% of the water system's overall capability) has reduced the amount of water that can be provided to the system. Also, the very low water level of the reservoir in the reservoir have prompted reduced withdrawal from the reservoir. At this time the water supply capability is considered **Restrictions Necessary**.

Further Updates and Information

This information will be distributed electronically on the City of Portsmouth's website in the Department of Public Work's "Water" section. If anyone needs additional information or has questions contact Brian Goetz, Deputy Director of Public Works at 766-1420 or Al Pratt, Water Resource Manager at 520-0622.

Water Supply Status

Portsmouth Water Division

November 4, 2016

Precipitation	Groundwater Levels	River Flow	Reservoir Level	Water Supply Capability	Current Water Demand	Customer Water Restrictions
Above Average	Above Average	Above Average	Above Average	Above Normal	Below Normal	N/A
Average	Average	Average	Average	Normal	Normal	None
Below Average	Below Average	Below Average	Below Average	Below Normal	Above Normal	Voluntary Measures
Dry	Low	Low	Low	Restrictions Necessary	High	Odd/Even Watering
Very Dry	Very Low	Very Low	Very Low	Additional Restrictions Necessary	Very High	Two-Days per Week Watering
Drought	Drought	Drought	Drought	Emergency	Historic High	No Lawn Watering