



August 30, 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
Two-Days per Week Watering
No Outdoor Use

Due to current supply and demand conditions, mandatory Odd/Even Water Use Restrictions began on August 16th and remain in effect. If drought conditions persist, additional restrictions or an outdoor water use ban may be required.

Odd/Even Water Use Restriction requires 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. 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 below average groundwater levels.

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 **Above Normal** at this time.

Customer 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

There has been some reduction in water demand since the water use restrictions went into effect and the daily average temperatures have lowered; however, the demand is still above normal relative to typical average daily demand for August. Average daily water demand was 5.66 million gallons per day (MGD) in August, which is approximately 3% higher than the ten-year mean August demand of 5.52.

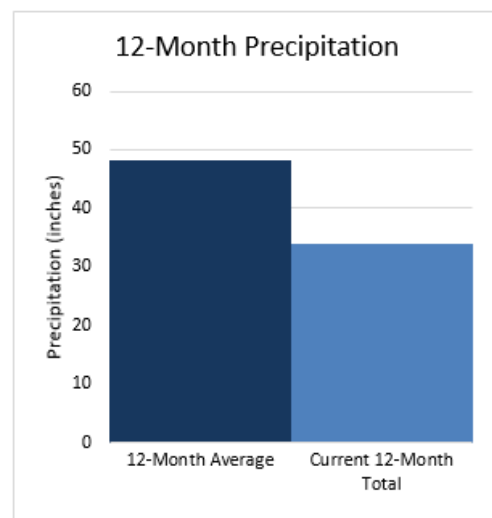
Precipitation Status

Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total August precipitation in Portsmouth is 1.94 inches as of August 29th. This is 1.41 inches less than the historic August average. The largest storm in August yielded 0.79 inches on the 22nd. Six other rain events occurred over the month of August, each producing between 0.08 and 0.40 inches. This is the eleventh consecutive month with less than average precipitation.

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 33.94 inches which is 14.25 inches below normal, 70% of the normal annual amount.

The precipitation status is currently considered to be in **Drought** conditions

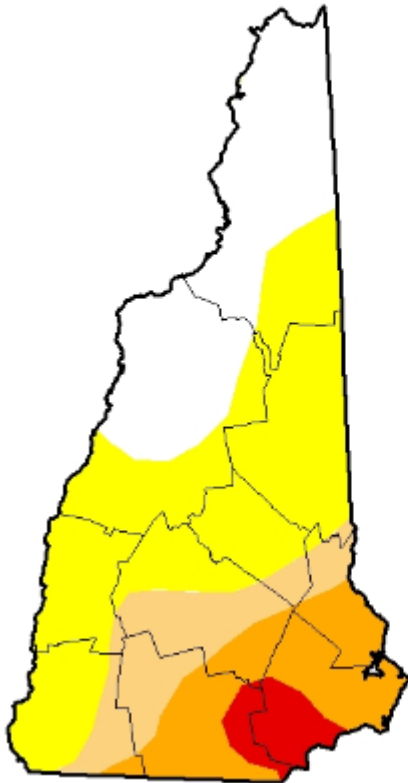


New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:

U.S. Drought Monitor New Hampshire

August 23, 2016
(Released Thursday, Aug. 25, 2016)
Valid 8 a.m. EDT



Intensity:

- 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. See accompanying text summary for forecast statements.

Author:

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U.S. Department of Agriculture



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

New Hampshire's Drought Management Team met on August 18, 2016 in Concord to discuss the latest drought and climate conditions. The City of Portsmouth is a member of the Drought Team and Brian Goetz, Deputy Director of Public Works, attended the meeting. There were updates at this meeting about current status of the drought and projections through the rest of the summer. The drought status in portions of Rockingham County and Hillsborough County have been upgraded to the **Extreme Drought** classification. The Seacoast currently remains in the **Severe Drought** classification. The NOAA Climate Prediction Center extended the U.S. Seasonal Drought Outlook forecast through the end of November, indicating the drought will persist through this period. There are currently 115 community water systems and three towns that are implementing water restrictions and bans. Efforts to protect water supplies are needed now to avoid or at least delay potential impacts from water shortage emergencies if drought conditions persist.

Groundwater Levels

Groundwater Levels
Above Average
Average
Below Average
Low
Very Low
Drought

Currently the groundwater levels considered **Below Average**. Wells in Madbury and at Pease have water levels that are within typical ranges for this time of year. Groundwater levels in the Portsmouth wells are slightly 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.

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. The monthly mean stream flow in the Oyster River at the USGS gauge is 0.47 cfs as of August 29th. This is 5.51 cfs (92%) lower than the 30-year August mean flow rate of 6.0 cfs. This is the lowest average monthly flow measured for August over the 80-year historic record at this gauge.

The monthly mean stream flow in the Lamprey River at the USGS gauge as of August 29th is 7.5 cfs, which is 78 cfs (91%) lower than the 30-year August mean flow rate of 86 cfs.

At this time the current river flow rates are considered at **Drought** levels for this assessment. This condition reflects the absence of recharge to the Bellamy Reservoir from its tributaries.

Reservoir Level

Reservoir Level
Above Average
Average
Below Average
Low
Very Low
Drought

The current stage of the reservoir is considered **Very Low** for this time of year.

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 ceased flowing over the spillway during the last week of May. This typically occurs at the end of June or early July. This is a result of the ongoing deficit in precipitation. Generally, recharge to the reservoir can occur with storm events that produce substantial runoff from the 22 square mile watershed. Currently the reservoir level is 2.8 feet below the spillway and approximately 1 foot above the top of the upper water intake.

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 and declining water quality in the reservoir are prompting the need for reducing withdrawal from the reservoir and reducing water demands. 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.

Portsmouth Water Division

August 30, 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 Outdoor Use