



April 7, 2017

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](http://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 |

The current water supply conditions have recovered from the drought that occurred in 2016. The mandatory “No Lawn Watering” water use restrictions and “Voluntary Measures” are no longer in effect; however, we ask our water customers to please continue to use water wisely, minimize waste, and incorporate water efficient fixtures and appliances whenever possible. In an effort to support this goal, the City continues to offer all residential water customers rebates for the installation of low-flow toilets and high-efficiency washing machines. More details can be found in the Public Works Billing Information section of the City’s website.

Precipitation events in late-2016 and early-2017 have helped to recharge the Bellamy Reservoir, increase stream flows and cause groundwater levels to rise to conditions typical for this time of year. Water operations staff continue to assess the supply conditions and will provide updates at least monthly.

Additional updates and tips regarding water efficiency can be accessed at the cityofportsmouth.com.

Current Customer Water Demand

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

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

Customer's continued efforts to use water efficiently have helped to keep water demand below normal in March. 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) |
|----------------|----------------------------------------------------|---------------------------------------------|
| 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 |
| November 2016 | 3.59 | 4.01 |
| December 2016 | 3.79 | 3.60 |
| January 2017 | 3.69 | 4.11 |
| February 2017 | 3.54 | 4.15 |
| March 2017 | 3.68 | 4.11 |

Average daily water demand was 3.68 million gallons per day (MGD) in March 2017, which is 10.6% below the 10-year normal for this time of year and 0.41 MGD lower than demand in March 2017.

Precipitation Status

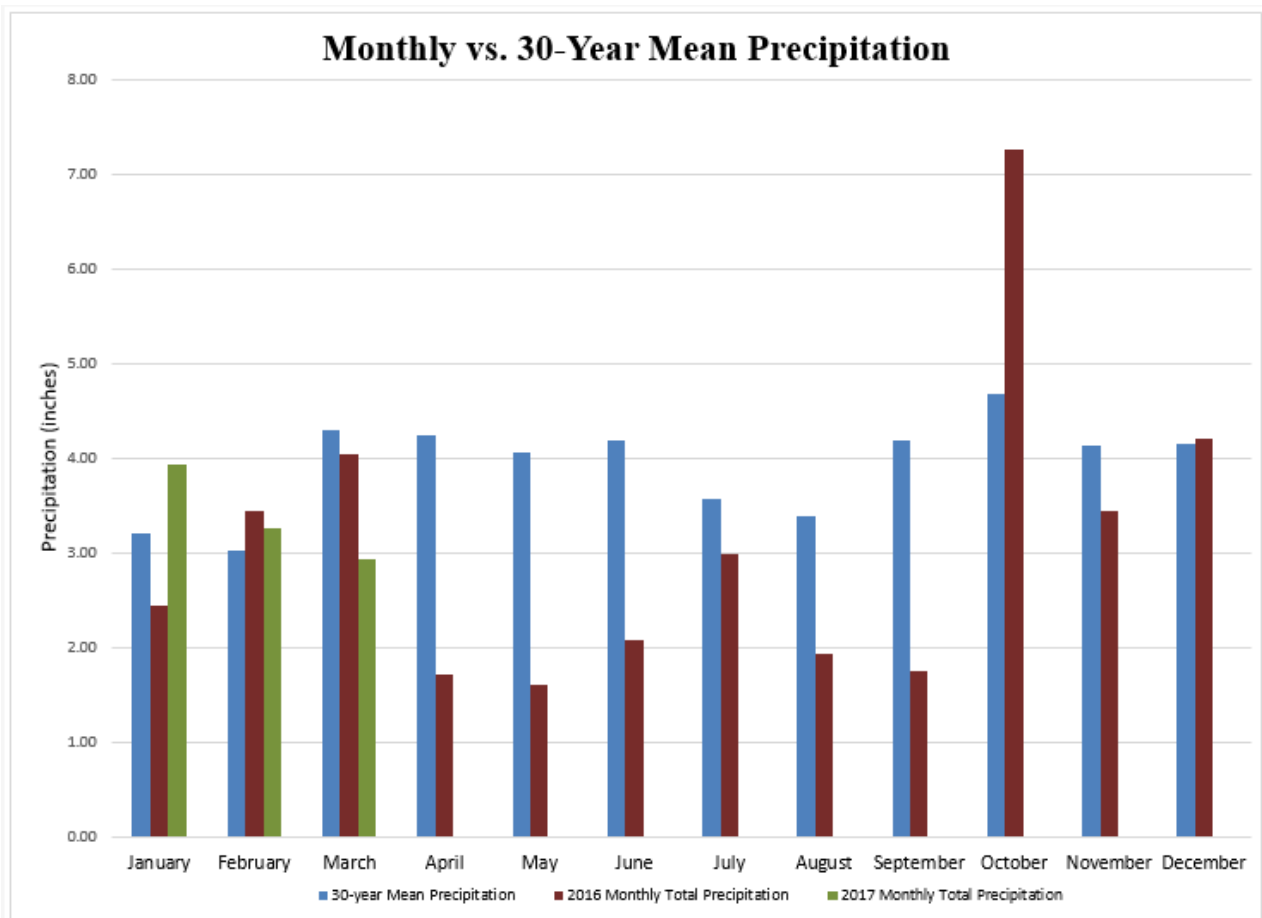
| |
|----------------------|
| Precipitation |
| Above Average |
| Average |
| Below Average |
| Dry |
| Very Dry |
| Drought |

Total March precipitation in Portsmouth was 2.93 inches. This is 1.37 inches less than normal for the month. Over the past three months there has been 10.13 inches of precipitation which is 4% less than the normal precipitation over this period. However, the rain effects that occurred during the first week of April yielded approximately 3.46 inches of rain which exceeds the average precipitation for the entire month of April.

In order to assess annual precipitation conditions, total precipitation over a rolling 12-month period is compared to the mean annual precipitation of 47.20 inches. Precipitation over the past 12-months, through March, equaled 37.18 inches which is below normal. Given the recent storms in April, this deficit is expected to be reduced by the end of April.

The precipitation status is currently considered as **Below Average** conditions

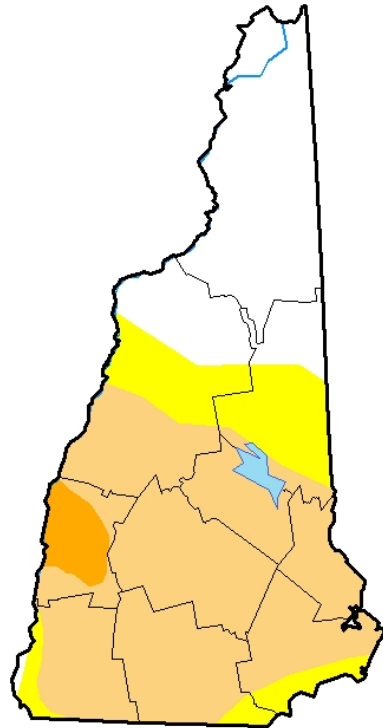
The following graphic illustrates the monthly deviations from average precipitation over 2016 and 2017.



New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:

U.S. Drought Monitor New Hampshire



April 4, 2017

(Released Thursday, Apr. 6, 2017)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---------------------------------------------|-------|-------|-------|-------|-------|------|
| Current | 29.18 | 70.82 | 55.60 | 3.31 | 0.00 | 0.00 |
| Last Week 03-28-2017 | 28.96 | 71.04 | 59.40 | 10.04 | 0.00 | 0.00 |
| 3 Months Ago 01-03-2017 | 8.41 | 91.59 | 75.35 | 44.93 | 0.00 | 0.00 |
| Start of Calendar Year 01-03-2017 | 8.41 | 91.59 | 75.35 | 44.93 | 0.00 | 0.00 |
| Start of Water Year 09-27-2016 | 15.33 | 84.67 | 62.44 | 40.49 | 19.27 | 0.00 |
| One Year Ago 04-05-2016 | 86.55 | 13.45 | 0.00 | 0.00 | 0.00 | 0.00 |

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.

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NOAA/NWS/NCEP/CPC



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

The National Drought Summary for April 4, 2017 identifies the seacoast area along with much of southern New Hampshire is in Stage 1 (Moderate) Drought conditions. The recent precipitation has improved the drought conditions from their previous Stage 3 (Extreme) and Stage 2 (Severe) levels throughout the majority of southern New Hampshire.

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 are considered **Average**. Recent precipitation has returned groundwater levels to levels that typically occur during this time of year.

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.

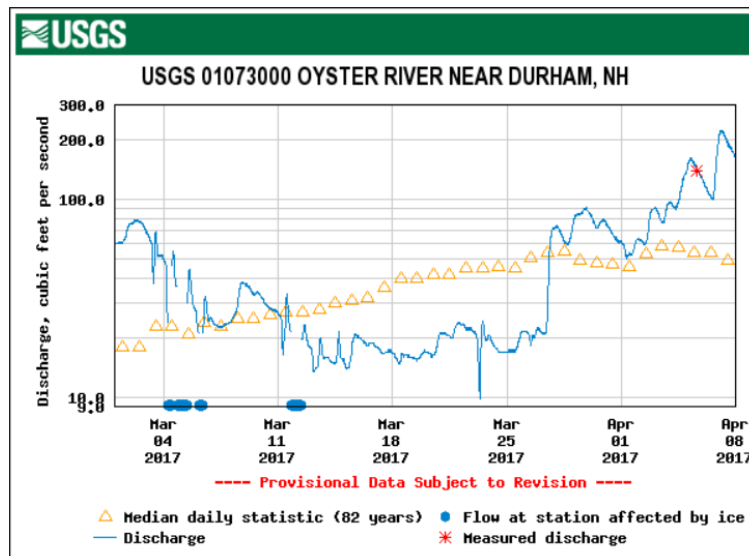
Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers, with the remaining 55% to 66% from the Bellamy Reservoir. In March 2017, 33% of the supply came from wells, 67% from the reservoir.

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.

Storms and snow melt in late February and late March and early April caused increased flow in the Oyster River. The average daily flow rate in March was slightly below the historic March flow but April is well above.



The monthly mean stream flow in the Oyster River at the USGS gauge was 34.9 cfs in March. This is 6.5 cfs (16%) lower than the 30-year March median flow rate of 41.4 cfs.

The monthly mean March stream flow in the Lamprey River at the USGS gauge was 429 cfs, which is 82 cfs (16%) lower than the 30-year March median flow rate of 511 cfs.

The storms in early April have caused the Lamprey River flow to peak in excess of 2,000 cfs, and the Oyster River to peak in excess of 200 cfs, so despite the slightly lower average flow in March, the current conditions are considered **Above Average**.

Reservoir Level

| |
|------------------------|
| Reservoir Level |
| Above Average |
| Average |
| Below Average |
| Low |
| Very Low |
| Drought |

The current stage of the reservoir is considered to be **Average** for this time of year. The precipitation that has occurred over the past five months has caused the reservoir to recharge and remain at levels typical 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.

At this time the Bellamy Reservoir water level is 1.0 feet above the spillway and the reservoir has approximately 746 million gallons of water above the surface water intake.

Water Supply Capability

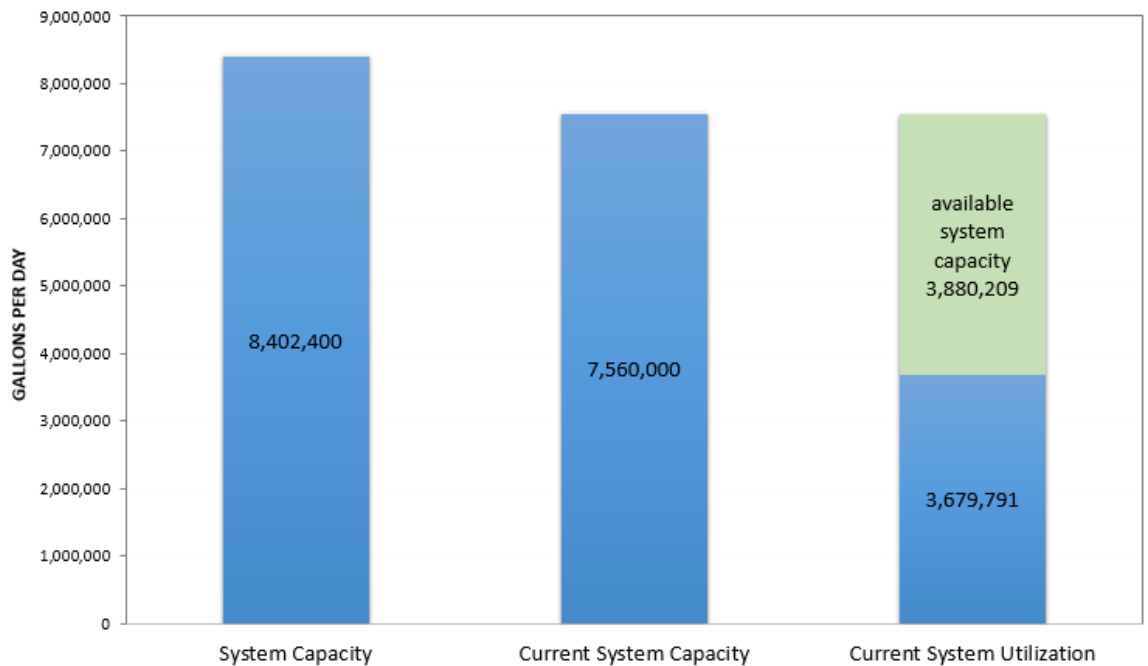
| |
|-----------------------------------|
| Water Supply Capability |
| Above Normal |
| Normal |
| Below Normal |
| Restrictions Necessary |
| Additional Restrictions Necessary |
| Emergency |

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. As a result of this reduced capacity, the water supply capability is considered **Below Normal** at this time.

All of the other wells and the treatment plant are in excellent operational conditions, thus the water demand is currently being met with conservative protections and redundancy in the system. Average daily demand is currently 49% of the current system capability.

System Capacity & Utilization (March 2017)



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.