



September 12, 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

Water Use Restrictions

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

There are **no water use restrictions** at this time. The total precipitation over July and August was 4.49 inches which is 2.49 inches less than normal for this time period. Despite the lower than normal precipitation, groundwater levels, reservoir levels and river flow rates are within typical ranges for this time of year. This is due primarily to the favorable precipitation that the Seacoast of New Hampshire received over the winter and spring of 2017.

We continue to ask our water customers to please use water wisely, minimize waste, and incorporate water efficient fixtures and appliances whenever possible. In an effort to support this goal, the City offers 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.

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

Water operations staff continue to assess the supply conditions and will provide updates at least monthly.

Current Customer Water Demand

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

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

Generally cooler and wetter weather this spring and early summer helped keep water demand below normal for the beginning of the summer. July and August average daily temperatures were slightly lower than the previous two years which helped to reduce demands. Overall the water demand was slightly lower than normal in August, but still within the normal range for this time of year.

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. Average daily water demand was 5.34 million gallons per day (MGD) in August 2017, which is 1.7% below the 10-year normal for this time of year and 0.32 MGD lower than demand in August 2016.

Month	Monthly Demand (Million Gallons per Day (MGD))	Historic Average Demand (ten-year average (MGD))
August 2016	5.66	5.40
September 2016	4.47	4.96
October 2016	4.02	4.23
November 2016	3.59	4.01
December 2016	3.72	3.93
January 2017	3.69	4.11
February 2017	3.54	4.20
March 2017	3.68	4.18
April 2017	4.01	4.14
May 2017	4.14	4.73
June 2017	4.83	5.15
July 2017	5.15	5.46
August 2017	5.34	5.43

Precipitation Status

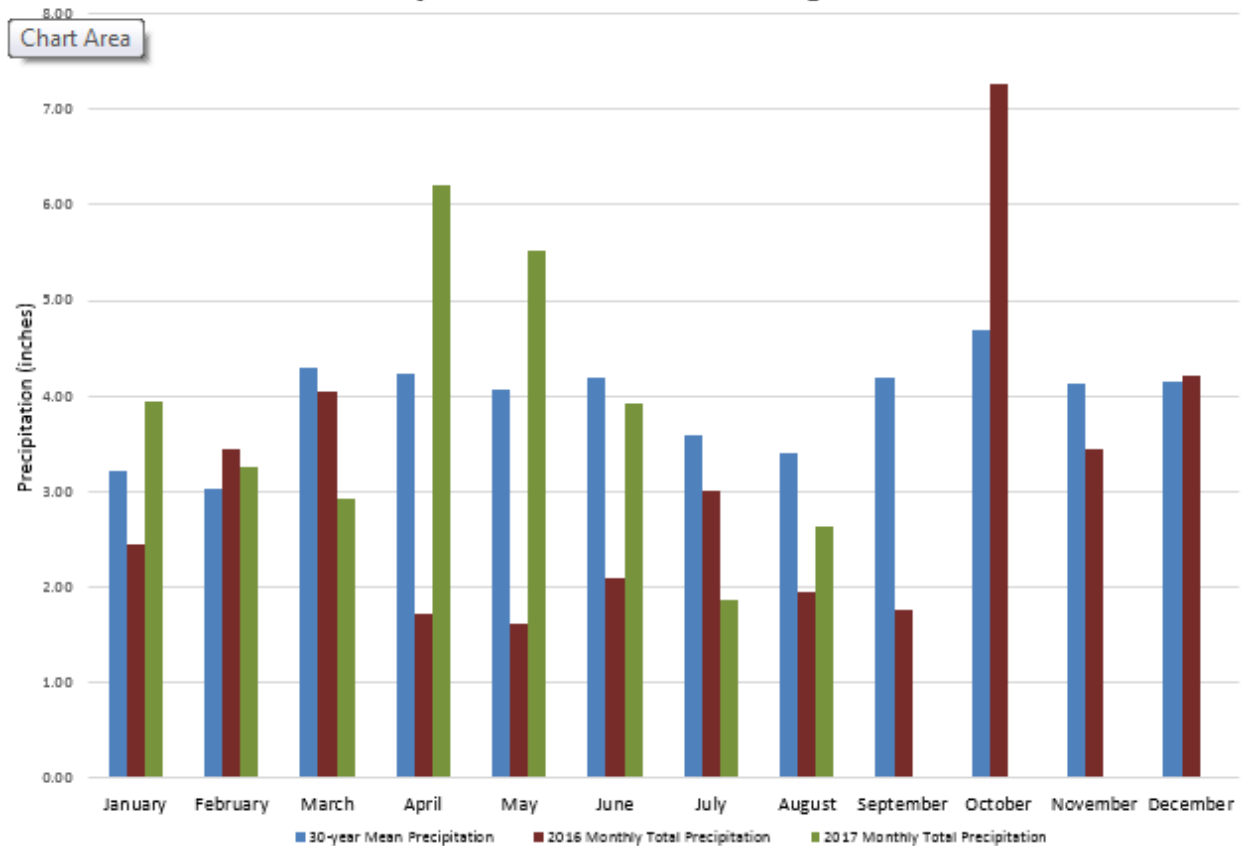
Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total August precipitation in Portsmouth was 2.63 inches. This is 0.77 inches less than normal for the month. Over the past three months there has been 8.40 inches of precipitation which is 25% less than the normal precipitation over this period. Three storm events, each yielding from 0.24 to 1.57 inches, occurred in August. In terms of the water-year (October through September), the cumulative precipitation is currently 1.30 inches above the historic average for this time period.

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 August, totals 46.94 inches.

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

Monthly vs. 30-Year Mean Precipitation



Groundwater Levels

Groundwater Levels
Above Average
Average
Below Average
Low
Very Low
Drought

Currently the groundwater levels are considered **Average**. Groundwater levels are above normal for 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.

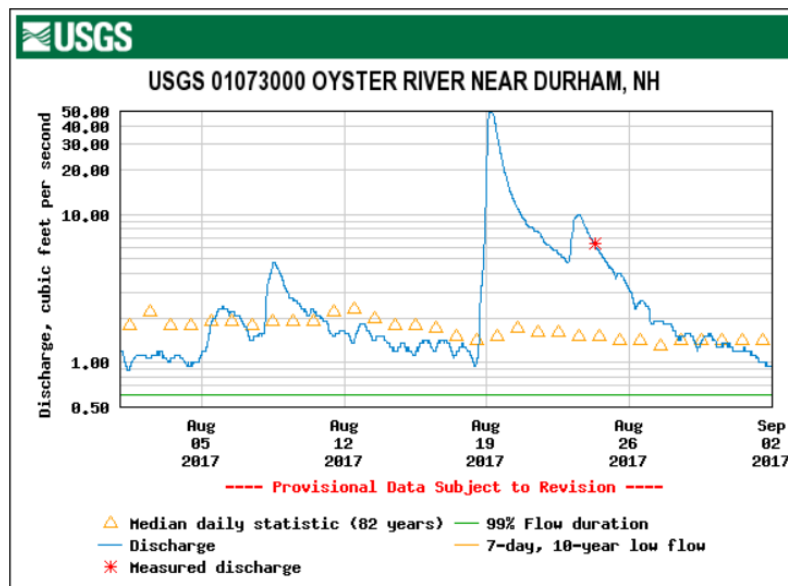
Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers, with the remaining 55% to 66% from the Bellamy Reservoir. In August 2017, 33% of the supply came from wells, 67% from the reservoir.

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.

Flow in the Oyster River remained near average during the beginning of August. The storm on August 17th which yielded 1.57 inches of rain caused flow in the Oyster River to peak at rates considerably higher than average historic flows.



The monthly mean stream flow in the Oyster River at the USGS gauge was 3.79 cfs in August. This is 0.54 cfs (17%) higher than the 30-year August median flow rate of 3.25 cfs.

The monthly mean August stream flow in the Lamprey River at the USGS gauge was 41 cfs, which is 17 cfs (29%) lower than the 30-year August median flow rate of 58 cfs.

The current river flow conditions are considered **Average**.

Reservoir Level

Reservoir Level
Above Average
Average
Below Average
Low
Very Low
Drought

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 current stage of the reservoir is considered to be **Above Average** for this time of year. The precipitation that has occurred over the past nine months has continued to recharge the reservoir and maintain its level near the spillway.

Flow over the dam spillway ceased on August 1st. This typically occurs at the beginning of July. The lowest water level in the Bellamy Reservoir this year was 6 inches below the spillway as measured on August 18th. The reservoir level has risen since mid-August and overtopped the spillway by the end of the month. Last year the lowest water level was over 4 feet below the spillway in early October. Water flow past the dam is controlled by an outlet valve. The flow into the Bellamy River is adjusted to rates that correlate with the Oyster River flow rate. The reservoir currently has approximately 637 million gallons of water above the lower surface water intake.

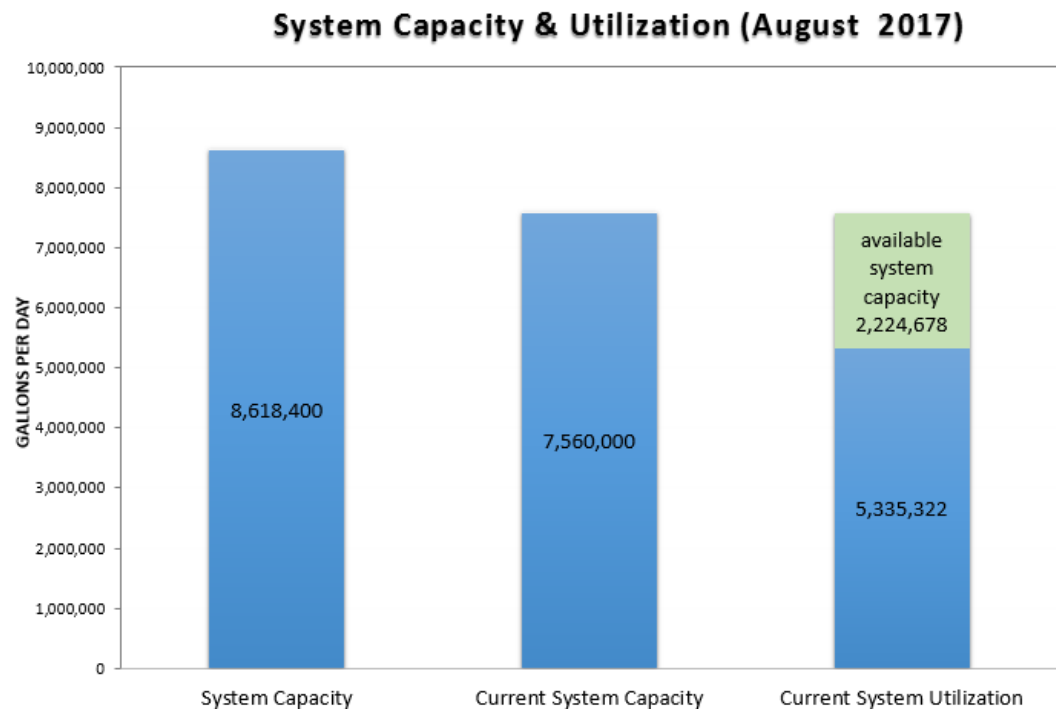
Water Supply Capability

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 facility 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 71% of the current system capability.



Further Updates and Information

This information will be distributed electronically on the City of Portsmouth's website at: <https://www.cityofportsmouth.com/publicworks/water/supply-status>. 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.

