



**May 10, 2018**

## 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
<b>None</b>
Voluntary Measures
Odd/Even Watering
Two-Days per Week Watering
No Lawn Watering

There are **no water use restrictions** at this time. There has been slightly less than the average amount of precipitation over the winter; however a wet April reduced the deficit and caused groundwater levels to rise. At this time, reservoir levels and river flow rates are within typical ranges based on historic records for April and groundwater levels are slightly above average.

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](http://cityofportsmouth.com).

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

## Current Customer Water Demand

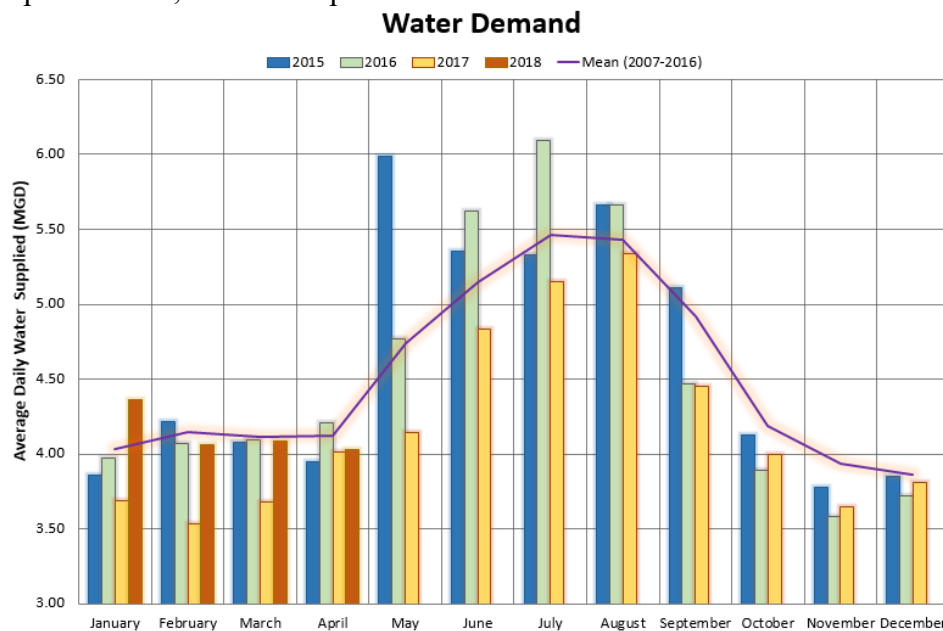
Current Water Demand
Below Normal
Normal
Above Normal
High
Very High
Historic High

Water demand is **Normal** for this time of year. Average daily water demand was 4.03 million gallons per day (MGD) in April 2018, which is 2.2% less than the 10-year average for April.

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	Monthly Demand (Million Gallons per Day (MGD))	Historic Average Demand (ten-year average (MGD))
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
September 2017	4.45	4.92
October 2017	4.00	4.19
November 2017	3.64	3.94
December 2017	3.81	3.86
January 2018	4.36	4.03
February 2018	4.06	4.15
March 2018	4.08	4.11
April 2018	4.03	4.12

The following chart illustrates the average daily water demand by month over the past four years. Note the generally lower than average (mean) demand over these recent years which may be attributed to water efficiency, infrastructure improvements, and leak repair efforts.

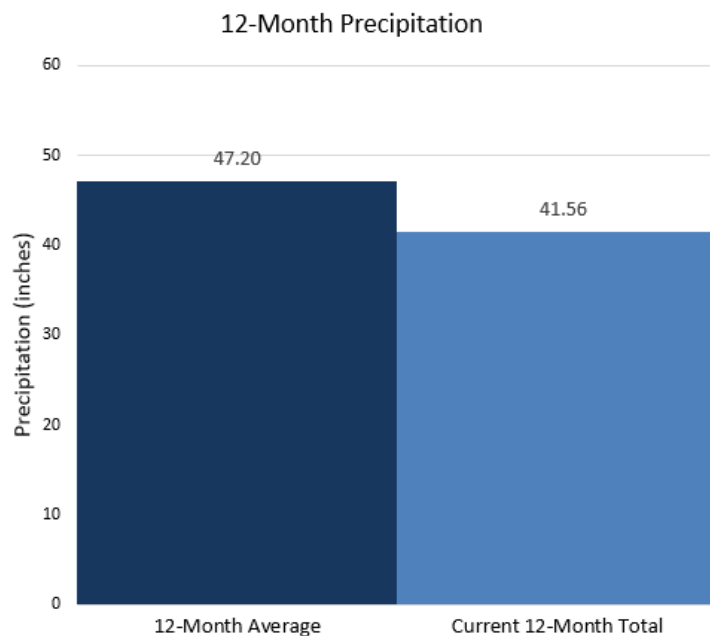
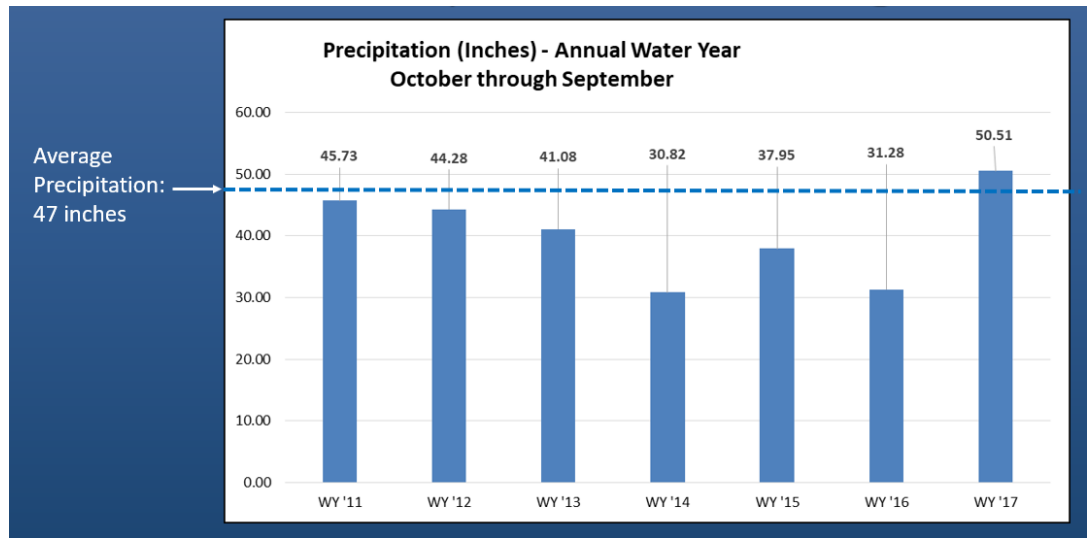


## Precipitation Status

<b>Precipitation</b>
Above Average
Average
<b>Below Average</b>
Dry
Very Dry
Drought

Total April precipitation in Portsmouth was 5.33 inches. This is 1.09 inches greater than normal for the month. Over the past six months there has been a total deficit of 3.54 inches from normal. There were seven precipitation events in April which yielded between 0.11 and 2.55 inches per storm.

Precipitation over the past 12-months totaled 41.56 inches, which is 88% of the mean annual amount of 47.20 inches. However, when looking at the water year tracking (October through September precipitation) the following graphic shows that last year was the wettest in 6 water years and much wetter than the three years leading up to the extreme drought during the summer of 2016.



## Groundwater Levels

Groundwater Levels
Above Average
Average
Below Average
Low
Very Low
Drought

Currently the groundwater levels are considered **Above Average**. Groundwater levels in the Portsmouth and Madbury aquifers are slightly higher than average for this time of year. This is primarily a result of an increase in aquifer recharge due to the frequency and quantity of precipitation over the past few months. Since the water quality in the reservoir is very good and there is sufficient volume in the reservoir to sustain seasonable downstream flow, we are utilizing the surface water resource more and resting our groundwater sources to allow for aquifer recovery and greater storage for drier seasons.

Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 23% and 42% of the water supply to Portsmouth customers, with the remaining 58% to 77% from the Bellamy Reservoir. In April 2018, 36% of the supply came from wells, 64% 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.

The monthly mean April stream flow in the Oyster River at the USGS gauge was 49.9 cfs, which is 4.1 cfs (9%) higher than the 30-year April median flow rate of 45.8 cfs.

The monthly mean April stream flow in the Lamprey River at the USGS gauge was 659 cfs, which is 65 cfs (11%) higher than the 30-year April median flow rate of 594 cfs.

The storms in April caused the Lamprey River and the Oyster River daily average flows to peak at 1830 cfs on April 18<sup>th</sup> and 213 cfs on April 17<sup>th</sup>, respectively.

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

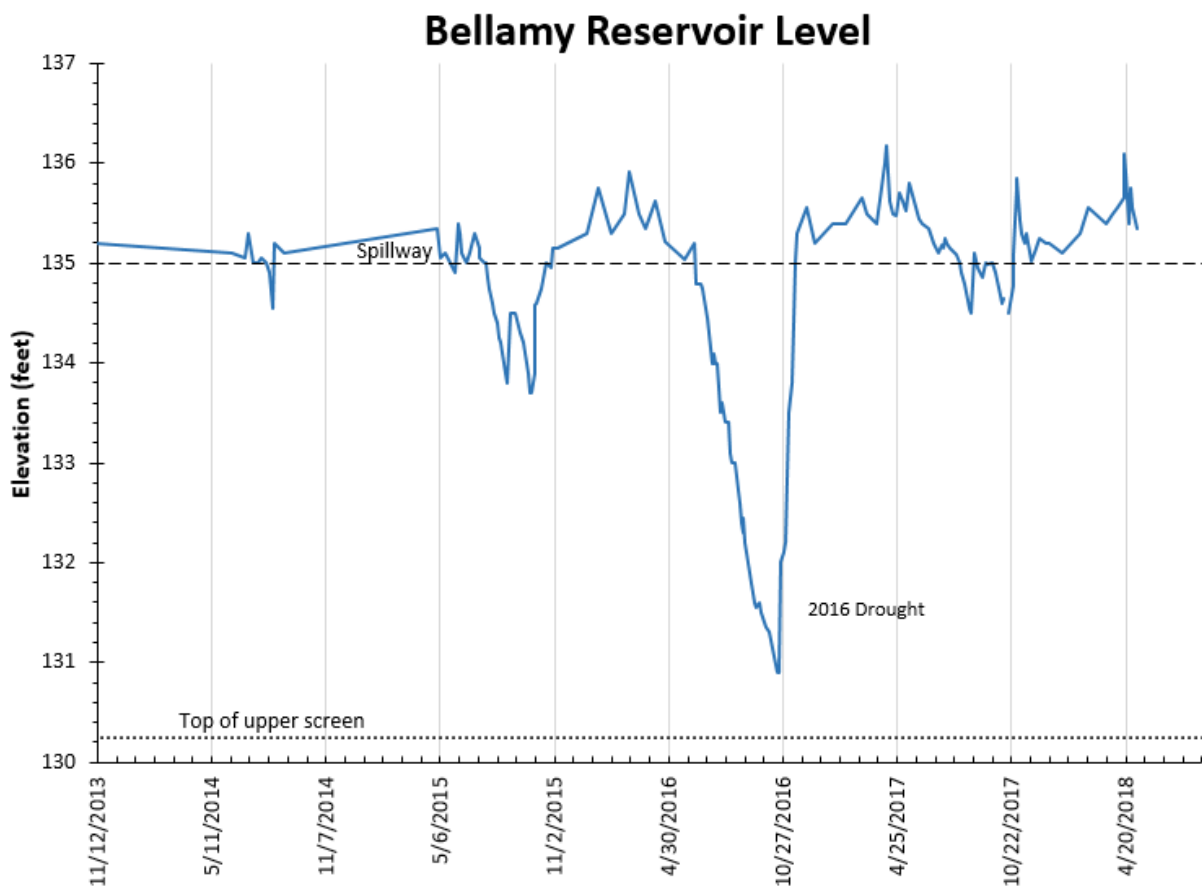
## Reservoir Level

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 **Average** for this time of year. The reservoir is flowing over the spillway as it typically does this time of year.

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 690 million gallons of water above the lower surface water intake.



## Water Supply Capability

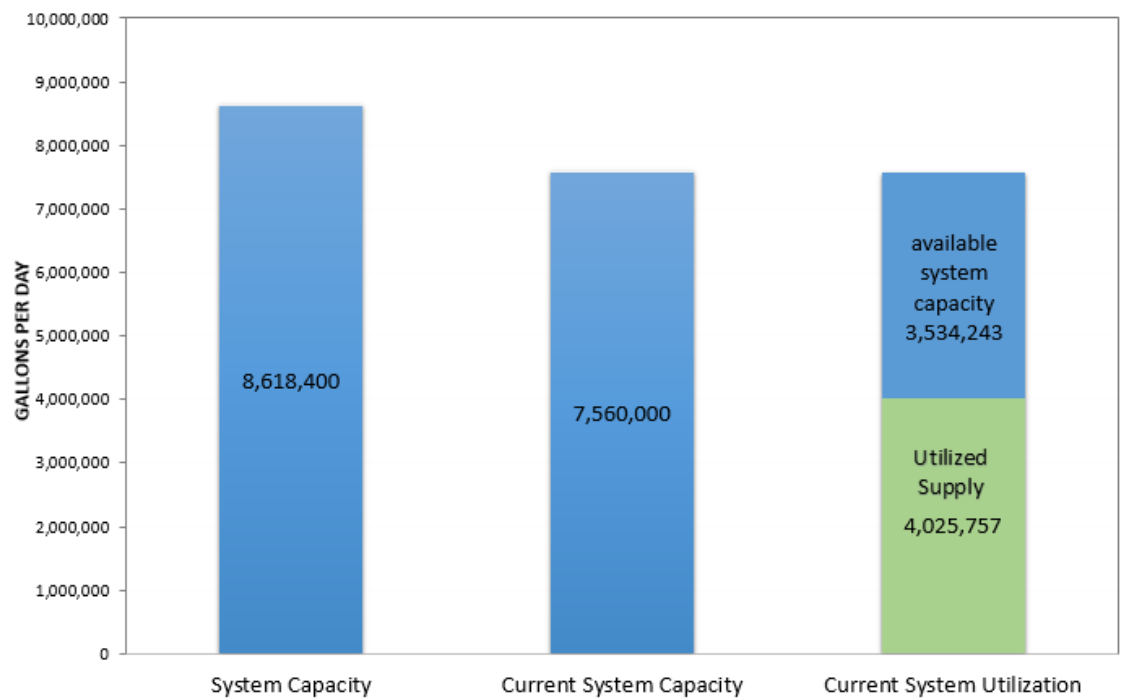
<b>Water Supply Capability</b>
Above Normal
Normal
<b>Below Normal</b>
Restrictions Necessary
Additional Restrictions Necessary
Emergency

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 54% of the current system capability.

**System Capacity & Utilization (April 2018)**



## Further Updates and Information

This information will be distributed electronically on the City of Portsmouth's website in the Department of Public Works > Operations > 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.