



**State of Rhode Island and Providence Plantations
Water Resources Board**

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**Assessment of Drought Conditions
January 18, 2017**

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Current Drought Level: Statewide Advisory

December Conditions Summary

- December precipitation across the State ranged from 3.4 to around 4 inches. This precipitation was generally 0.5 to 1 inch below normal, except for the Northeast Drought Region where precipitation was about 1.3 inch below normal.
- Monthly streamflows showed improvement in October and November and remained somewhat stable in December. Streamflow in Southern and Eastern regions of the state have been below normal since May, though slightly improving in December. Wood River Junction (figure 1) improved to normal, but at the very minimal side of normal. Stream gages for the Chipuxet and Usequepaug are still measuring below normal conditions.
- December groundwater levels declined throughout the state. Woonsocket, for example, which was normal in November, dropped to below normal in December.
- November reservoir levels were reported normal for Newport and above normal from Providence Water for this time of year.
- NOAA projects that January precipitation will provide at least short term relief to the drought conditions.
 - For the month of January it is probable that precipitation will be normal to above normal. Temperatures are expected to average above normal through the end of the month.
 - January precipitation is expected to maintain or increase streamflow and ground water. However, this will not be sufficient to fully offset the long term drought. Thus drought conditions may persist for the next three months.
- Normal to above normal precipitation is needed during winter into spring for continued drought recovery. This recovery potential would need to be reflected in the streamflow and ground water levels to allow for a return from Drought Advisory, to Normal conditions.

Criteria for Removing a Drought Advisory

Two (2) consecutive months of groundwater levels at or above normal and near normal precipitation for past 3 months. These criteria have not been met.

Criteria for Issuing a Drought Watch

In order to increase the level of drought from Advisory to Watch for either a drought region or statewide, three of the four triggers related to the major drought indices must be met.

Assessment of Indices and Triggers by Region

The tables below provide an assessment of the major indicators to determine the drought level. Based upon an assessment of the regions, the evaluation is provided below. In order to change the level from Advisory to Watch, three of the four criteria below need to be met.

All Regions except Southern and Eastern

<u>Precipitation</u>	<u>Streamflow – Other Regions</u>	<u>Groundwater</u>	<u>PDI</u>	<u>Drought Phase</u>
1 of the following criteria met: 3 month cum. <65% or 6 month cum. <70% or 12 month cum. <70%	At least 4 out of 5 consecutive months below normal	4-5 consecutive months below normal	-3.0 to -3.99	Watch

Southern and Eastern Regions

<u>Precipitation</u>	<u>Streamflow-</u>	<u>Groundwater</u>	<u>PDI</u>	<u>Drought Phase</u>
1 of the following criteria met: 3 month cum. <65% or 6 month cum. <70% or 12 month cum. <70%	At least 4 out of 5 consecutive months below normal	4-5 consecutive months below normal	-3.0 to -3.99	Watch

White- does not meet Watch criteria Yellow-approaching criteria Red-meets or exceeds criteria

Major Indicators Summary

1. **Precipitation-** December precipitation was somewhat below normal across the State. However, both short and long term precipitation totals through December do not indicate a substantial improvement, or deterioration, of drought conditions.
2. **Stream flow-**The Southern and Eastern Drought Regions monthly flows have been below normal since May. For the rest of the state, monthly streamflow for December remained normal.
3. **Groundwater Levels-** Groundwater throughout the state returned to below normal status (November levels were normal). The Woonsocket observation well measured below normal. This marks 9 of the last 10 months water levels were measured below normal at that site. The exception was in November, when levels were measured about normal. The Southern and Eastern regions remain below normal and have been since June (seven months).
4. **Palmer Drought Index (PDI)** – The Palmer Drought Index was in the normal range as of the end of December. This index does not indicate a deterioration of drought conditions.

Other Considerations

Precipitation – Normal to above normal precipitation is needed this winter and spring for drought recovery. This recovery potential would need to be reflected in the streamflow and ground water levels to return from Advisory, to Normal conditions.

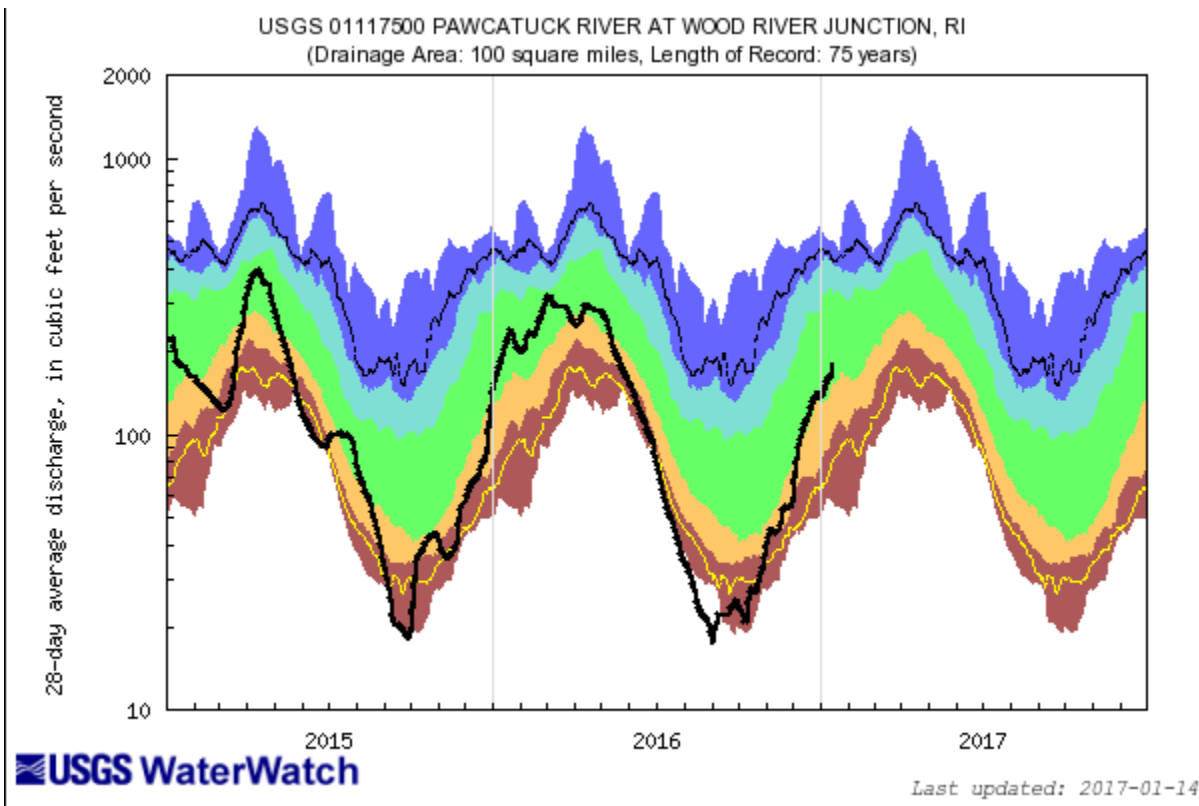
Water Supply Reservoir Levels - The current (December 6, 2016) Scituate Reservoir Elevation (276.95 feet) compared to capacity (81%) is reported to be above normal for the time of year. Newport reports that as of Dec 6th the Newport reservoirs are at 60% capacity, which is normal for this time of year, closer to the lower side of normal.

Timing/Seasonal Considerations- The low groundwater levels and low flows for surface water are of continued concern for groundwater water supply and recharge. The state will need normal to above normal precipitation throughout the winter and early spring to realize any lasting recovery.

Crop Moisture- With the growing season at an end, the Crop Moisture Index loses its utility in Rhode Island during the winter and early spring months.

Private Wells- The RI Department of Health has received periodic reports from private well owners who continue to experience drought-related problems.

Three Year Streamflow at a long term gage: Pawcatuck River at Wood River Junction- The graph below shows the impacts over the last three years of dry conditions at a location in the Southern drought region. This is the third year in a row that the site reached record-low monthly streamflow levels. The low flows occurred during the months of July, August and September. These are the lowest monthly flows recorded at the site since 1980.



Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest
Much below Normal		Below normal	Normal	Above normal	Much above normal	
Flow						