State of Rhode Island and Providence Plantations
Water Resources Board
One Capitol Hill, Third Floor
Providence, RI 02908
(401) 222-7901 FAX: (401) 222-2083

Assessment of Drought Conditions
February, 2017

Prepared by Nicole M. Belk, CFM Senior Service Hydrologist, National Weather Service, Richard J. Verdi, Chief, Hydrologic Surveillance and Surface Water Investigations, USGS New England Water Science Center (MARI), Kathleen Crawley, Acting General Manager, Rhode Island Water Resources Boar

Current Drought Level: Statewide Advisory

February Conditions Summary

- February precipitation across the State ranged from 2.2 to 3.2 inches. This precipitation was 0.4 inch to 1.5 inches below normal. Precipitation was closest to normal in the Northeast and Central East Drought Regions, and the farthest below normal in New Shoreham.
- Monthly streamflows across the state are reporting normal conditions for the month of February. Figure 1 shows streamflow conditions over the past five years at Pawcatuck at Wood River Junction gage.
- Groundwater levels throughout the state returned to normal conditions, with the exception of the southwest part of the state reporting a mix of normal to below normal.
- Providence Water Supply Board reports levels at full capacity and Pawtucket reported slightly below normal but expects to be above normal within the month.
- The first half of March brought near normal precipitation. However, the next 7 days may bring below normal precipitation. This may limit March precipitation totals to normal or below normal.
- Temperatures are expected to average below normal for the Month.
- Normal to above normal precipitation is needed 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

Precipitation	**Streamflow – Other Regions**	**Groundwater**	**PDI**	**Drought Phase**
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

Precipitation	**Streamflow-**	**Groundwater**	**PDI**	**Drought Phase**
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-** February precipitation was within an inch of normal across the northern half of the State, but 1 to 1.5 inches below normal across the southern half of the State. Short term precipitation totals indicate an improvement of short-term drought conditions. Long term precipitation totals through February indicate some stabilization of long term drought conditions.
2. **Stream flow**-Streamflow conditions continue on a normal trend.
3. **Groundwater Levels**- Groundwater levels throughout the state returned to normal conditions, with the exception of the southwest part of the state reporting a mix of normal to below normal.
4. **Palmer Drought Index** (PDI) – The Palmer Drought Index was in the normal range as of the end of February. This index does not indicate a deterioration of drought conditions.

Other Considerations

Precipitation – Normal to above normal precipitation is needed into the 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 (March 16, 2017) Scituate Reservoir Elevation is 284.70 (ie. 100% at full capacity. Pawtucket reports slightly below normal levels but expects to be above normal in the next month.

Timing/Seasonal Considerations- The state will need normal to above normal precipitation into the spring months to realize any lasting recovery of surface and groundwater levels.

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 received periodic reports from private well owners who experienced 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.