New Hampshire Drought Conditions, April 2012
Drought Management Team Meeting
April 19, 2012
NHDES

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**Drought Outlook**

Deficits in cumulative precipitation across the state range from 3 to 10 inches with the highest deficits occurring within Cheshire and western Sullivan Counties. Multiple storm systems are forecasted to move over New England from the April 21-24. Estimated four-day cumulative rainfall totals range from one inch east to three inches west. Soil moisture conditions will improve throughout the state, alleviating some short-term drought impacts. The forecasted rainfall amounts will not close the precipitation deficit for most locations and abnormally dry conditions may persist through at least the next week. Long-term, enhanced demand for surface evaporation driven by above normal temperatures has the potential to produce a positive feedback mechanism in which early spring soil moisture deficits persist through the remainder of the season.

Despite medium-range forecasts for a significant northeast rainfall event for the 23-24 of April, short-term drought impacts on soil moisture may persist through May due to a combination of meteorological and atmospheric boundary layer factors including:

1) Early snow melt for the northern tier of the US from the Great Plains through New England;
   - Spring snow melt across the northern US provides a source of moisture for storm systems crossing the northern US interior toward New England.
   - This moisture source has been reduced by early spring snowmelt across the northern tier of the US and storms following this track may produce less precipitation.

2) Long-range forecasts project above normal temperatures through the rest of spring and into the summer season;
   - Evaporation of surface moisture increases as temperatures increase (known as the climatic demand for moisture).
   - A positive feedback mechanism may develop where warmer temperatures reduce soil moisture at a fast rate.

3) Significant soil moisture deficits that developed in early spring.
   - Lower layers of the atmosphere draw moisture from the surface and the upper layer of the soil, cooling the surface by evaporation.
   - Low soil moisture reduces the amount of moisture available for the atmosphere leading to lower humidity and lower evaporative cooling rates may lead to higher surface temperatures.

The projected above average seasonal temperatures combined with low soil moisture may strengthen this feedback between surface and near-surface atmospheric moisture.

References:
National Drought Mitigation Center – *Drought Monitoring*
http://drought.unl.edu/MonitoringTools.aspx
NOAA/NWS Climate Prediction Center – *Land Surface Monitoring and Prediction*
NOAA/NWS Climate Prediction Center – *Medium and Long Range Forecasts*
http://www.cpc.ncep.noaa.gov/products/forecasts/
NOAA/NWS National Operational Hydrologic Remote Sensing Center – *National Snow Analyses*
http://www.nohrsc.noaa.gov/nsa/
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