



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

October 1, 2013

MEMORANDUM

TO: Governor Pat McCrory
John E. Skvarla, III, Secretary, NCDENR
Environmental Review Commission
The Honorable Brent Jackson, Chair
The Honorable Ruth Samuelson, Co-Chair
The Honorable Make Hager, Co-Chair

FROM: Neal Robbins, Director of Legislative Affairs

SUBJECT: 2013 Drought Management Advisory Council Report on Water Resources Act

DATE: October 1, 2013

Pursuant to G.S.143-355.1(g), the Drought Management Advisory Council shall submit a report to report on the implementation of this section to the Secretary, the Governor, and the Environmental Review Commission. Please consider the attached as the formal submission of this report. If you have any questions or need additional information, please contact me by phone at (919) 707-8618 or via e-mail at neal.robbsins@ncdenr.gov.

cc: Mitch Gillespie, Assistant Secretary for the Environment, NCDENR
Tom Reeder, Director of Water Resources, NCDENR

**North Carolina Department of
Environment and Natural Resources
Division of Water Resources**

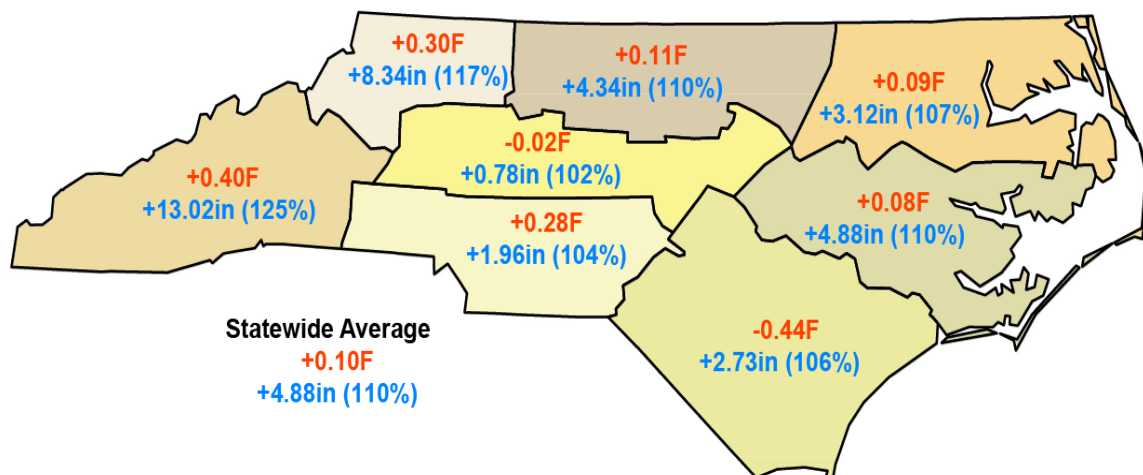
**STATUS REPORT TO THE GENERAL ASSEMBLY
ON
THE NORTH CAROLINA DROUGHT MANAGEMENT ADVISORY COUNCIL
JULY 1, 2012 THROUGH JUNE 30, 2013**

Introduction

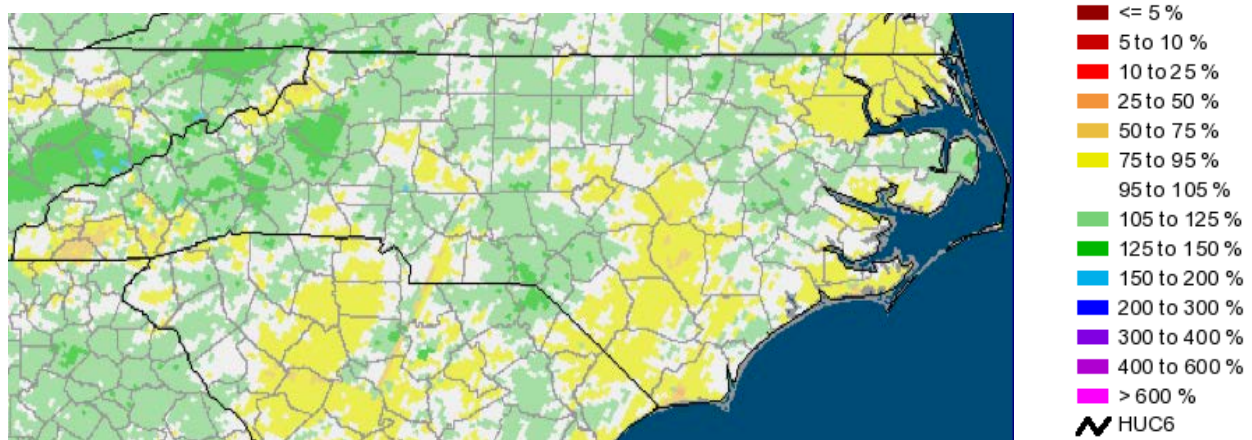
This is the ninth annual report of the North Carolina Drought Management Advisory Council required by North Carolina General Statute 143-355.1. In accordance with statutory requirements, the council submits the report to the Secretary of the N.C. Department of Environment and Natural Resources, the Governor of North Carolina and the N.C. Environmental Review Commission by Oct. 1 of every year.

Climate Summary: July 2012 – June 2013

Temperature and Precipitation by Climate Division
Departures from Normal for July 2012- June 2013
Based on Preliminary Data



Precipitation for July 2012 – June 2013: Percent of Normal
Based on estimates from NWS Radar; Data Courtesy NWS/NCEP
<http://www.nc-climate.ncsu.edu/precip>



Temperatures in mid-summer were very warm, with most sites reporting one of the five warmest Julys on record. However, moderate precipitation fell in the summer, preventing widespread severe drought conditions. Fall brought more moderate temperatures, and by November conditions were cool and quite dry. Most reporting stations recorded both a top 10 coolest and top 10 driest Novembers on record.

Winter was generally warm and wet. Most stations reported winter average temperatures that were three degrees Fahrenheit above normal. In western North Carolina, precipitation amounts were generally two to eight inches above normal. Coastal areas were a bit dry, but there were limited impacts due to the time of year. Spring of 2013 brought seasonally cool temperatures and widespread wet conditions. The exception was along the coast, where conditions were dry until early summer.

Overall, this period averaged out with near-normal temperatures, with statewide average temperatures ranked as the 61st warmest since 1985. Average statewide rainfall ranked as the 19th wettest for the period since 1895.

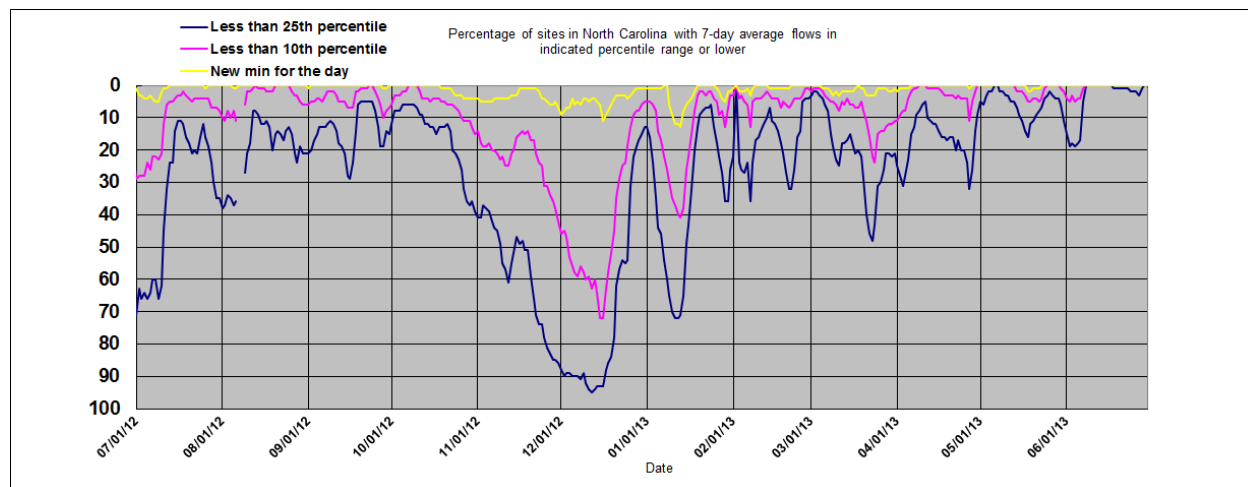
Streamflow and Groundwater Conditions

Streamflow conditions at U.S. Geological Survey (USGS) continuous-record stream gages exhibited wide swings in conditions across various parts of North Carolina from July 1, 2012 through June 30, 2013. The overall pattern was characterized as below-normal conditions across much of the state during the first six months of the period, followed by an improvement in conditions from west to east across the state beginning in January. By the end of June, hydrologic conditions had improved to levels sufficient to help justify the removal of abnormally dry and/or drought categories shown for North Carolina on the weekly U.S. Drought Monitor map. To see the map, go to <http://droughtmonitor.unl.edu/>. These patterns are reflected in the graph shown below that indicates the percentage of U.S.G.S. stream gages in North Carolina with 7-day flows less than the 25th, 10th, and 1st percentiles, or record-low for the calendar date.

Widespread below-normal streamflow conditions began to occur in early October. By mid-December there were declines that resulted in 94 percent of streamflows below the 25th percentile and 72 percent of streamflows below the 10th percentile. In January, streamflow conditions in the Blue Ridge and western Piedmont regions began to improve following a shift in the weather pattern that brought sustained and beneficial precipitation across western North Carolina. By the end of April, streamflow conditions in the central and eastern Piedmont improved in response to precipitation sufficient to raise flows on a sustained basis. And with the passage of Tropical Storm Andrea along the eastern U.S. coastal regions in early June, streamflow conditions in the Coastal Plain improved to levels that helped justify the removal of all remaining abnormally dry conditions for North Carolina.

Because the winter period is a critical recharge period for the hydrologic system, the occurrence of beneficial precipitation during the 2013 winter and spring seasons was ideal due to the higher evaporation and higher demands that are typical of the warmer months. The timing of this precipitation allowed streamflows to more quickly and effectively improve to higher levels on a sustained basis.

Examination of provisional daily discharges indicates that no new record minimum daily flows for the period of record were set at the U.S.G.S. streamgages across North Carolina during July 1, 2012 through July 31, 2013. However, provisional new monthly minimum average flows were set at three stream gages during the same period, with one site located in the eastern Piedmont and the other two sites located in the Sand Hills region of the state.



Water levels monitored at 17 USGS observation wells within the N.C. Climate Response Network often indicated a wide range of conditions on a weekly basis during July 1, 2012, through June 30, 2013. Groundwater conditions commonly echo streamflow patterns, but on a generally slower timescale. The groundwater levels during this period at the nine Blue Ridge and Piedmont wells within the network were generally characterized by below-normal conditions during the first six months of the period. This was followed by overall increases beginning in January, which was partly a reflection of the typical annual cycle in water levels, as well as the beneficial precipitation across western North Carolina in early 2013. By the end of June, water levels at these nine wells were commonly sustained in the above-normal ranges, a pattern generally not observed during the warmer months when higher demands are placed on the groundwater system. Water levels at the one Sand Hills well and the six Coastal Plain wells within the network followed a similar pattern as the Blue Ridge and Piedmont wells during the period. However, the substantial water level increases in these wells did not occur until the passage of Tropical Storm Andrea in early June.

Agriculture

Wet conditions made farming difficult in 2013. Spring was both wet and cool, delaying planting of corn, with some frost damage to peaches and blueberries reported. Through May and into early June, wheat harvest was hampered by rain. As a result, some double-crop soybeans were planted late or not at all. Tobacco had a slow start in the green houses due to cool temperatures, but in most cases recovered nicely after a late transfer to the field. Hay producers found the first six months of the year difficult with frequent, widespread rains making harvesting difficult. As a result, hay prices will likely remain high for the winter of 2013-2014.

Soil moisture across most of the state remained high through July and into August, with flooding in the eastern and western parts of the state, resulting in the loss of some corn, soybeans, and wheat. A number of counties realized losses severe enough to trigger requests for Secretarial Disaster Designations. As difficult as the early and middle months were for planting and harvesting in much of the central part of the state, as of mid-August, most soybeans and tobacco appear to be in reasonably good shape. While the heavy rains have abated to some degree, frequent, spotty showers and storms continue to hinder hay harvest.

Forest Resources

Across North Carolina there were few notable drought and precipitation-related impacts during the past year. From January through July, there were more than 2,139 wildfires across the state that burned approximately 7,161 acres. This is about two-thirds of what is expected to occur in an average year. The favorable fire control weather has also been beneficial for prescribed burning, enabling 81,436 acres to be treated with prescribed fire during the past fiscal year.

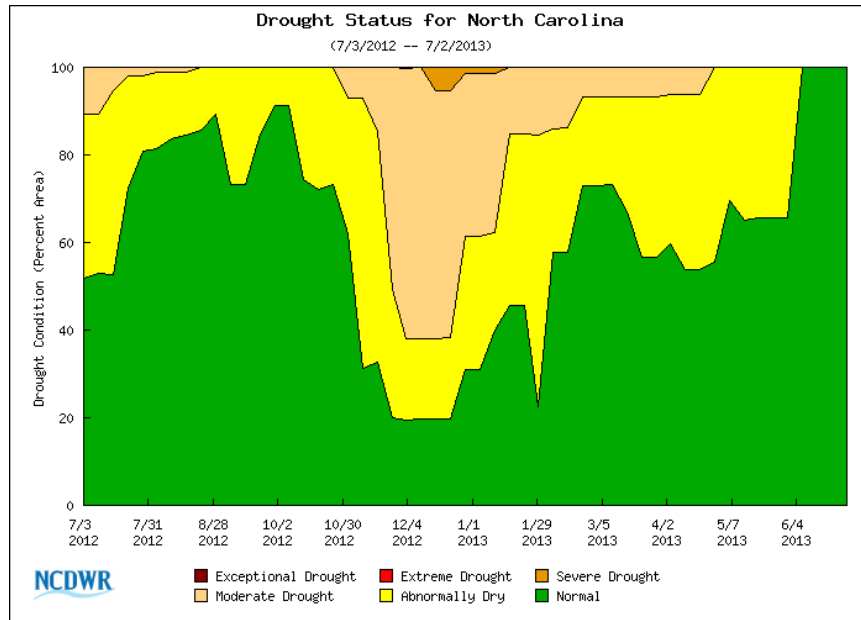
The high amounts of precipitation did prompt the N.C. Commissioner of Agriculture and the N.C. Forest Service to issue a wet-weather logging advisory. A news release was sent out that reminded loggers and the forestry community to adhere to forestry best management practices (BMPs), especially when working on tracts with water bodies and wetter soils. Utilizing the right BMPs are the best way to stay in compliance with North Carolina's forest practices guidelines related to water quality. The N.C. Forest Service is planning similar outreach if the high levels of precipitation continue. However, there are also many tracts across the state that are fairly dry, which is enabling landowners to prepare for the upcoming planting season.

From a forest health standpoint, while Ips beetle activity is not as noticeable as in years past, it continues to attack and kill scattered pines weakened by drought conditions from recent years. Oak decline, which is caused by a complex combination of stressors including drought, is also evident in some trees. Once a tree has been severely stressed by drought, it may not fully recover for several years. If it is infested by opportunistic insects or infected with a disease, it is likely to die.

Drought Conditions

During the past year, the worst drought conditions occurred in the week ending December 25, 2012, with eight counties in severe drought, 57 counties in a moderate drought, and 16 counties considered abnormally dry. The best conditions occurred during the month of June 2013 with no drought designations. During the week ending December 25, 2012, the number of water systems that were affected by the drought conditions were:

- 77 water systems experiencing abnormally dry conditions (D0);
- 324 water systems listed as in a moderate drought (D1); and
- 47 water systems listed as in a severe drought (D2).



Council Meetings

Drought conditions in North Carolina are discussed weekly through a webinar telecom with the Technical Drought Advisory Team, which is a sub-group of the N.C. Drought Management Advisory Council. The team consists of experts on climate, weather, geology, water supply, forestry and agriculture that report each week on streamflows, groundwater levels, reservoir levels, wildfire activity and the impacts on agriculture. Based on this information, the team makes a recommendation to the U.S. Drought Monitor author on the state's drought conditions for that week, which is used for the national drought map each Thursday. To see or download a copy of the current drought map, go to www.ncdrought.org.

The Drought Management Advisory Council (DMAC) is required by law to meet at least once each calendar year. The annual council meeting was held on April 18, 2013 with 24 representatives and associates of the DMAC in attendance. Items discussed at the meeting included current conditions on streamflows and ground water levels, lake and reservoir levels, agriculture, forestry and public water system impacts.