North Carolina

Drought Management Advisory Council

Activities Report - 2005

Oct. 1, 2005

North Carolina Division of Water Resources

Department of Environment and Natural Resources

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Introduction

This is the first report of the North Carolina Drought Management Advisory Council on the implementation of North Carolina General Statute 143-355.1, which created the council in 2003. The General Assembly amended this statute in 2004, adding a new section requiring an annual report : "(g) The Council shall report on the implementation of this section to the Secretary, the Governor, and the Environmental Review Commission no later than 1 October of each year. The report shall include a review of drought advisories issued by the Council and any recommendations to improve coordination among local, State, and federal agencies; public water systems; and water users to improve the management and mitigation of the harmful effects of drought. (2003-387, s. 2; 2004 195, s. 2.5.)"

Drought Management Advisory Council

The Drought Monitoring Council was an interagency coordination and information exchange body created in 1992. The council did a creditable job of monitoring and coordinating drought responses in 2002 and increased public awareness of its functions and its effectiveness. The General Assembly recognized the Drought Monitoring Council's leadership and performance by giving it an official statutory base and by changing its name to Drought Management Advisory Council (DMAC), reflecting the broader role of the council, which goes beyond monitoring of drought conditions.

North Carolina General Statute 143.355.1., ratified July 17, 2003, assigns the DMAC an important new role, the need for which became evident in 2002. A number of local governments indicated that it would be helpful to have official, objective drought status advisories, to give them a reliable basis for their management responses. The new statute assigns this role to the DMAC and specifies that the drought advisories are to be based on technical data and are to be crafted to fit varying conditions in different parts of the state. This system will avoid the problems that some states have experienced in

declaring drought warnings statewide, when conditions did not warrant it in all parts of the state.

Section 1 of this Act also makes drought response provisions mandatory in local government water supply plans and extends this planning responsibility to all community water systems that serve 1,000 or more connections or 3,000 or more individuals.

The intent of the new statute is for the DMAC to continue with essentially the same membership and functions that the Drought Monitoring Council previously exercised, but with new statutory authority and a new responsibility for providing a system of drought advisories when needed. Most important, the operations of the DMAC will carry on the same role as the Drought Monitoring Council did in support of the North Carolina Emergency Operations Plan.

Current Drought Conditions

Due to the impact of moderate drought conditions on some water supply systems and reservoirs in the state, the DMAC chairman has called for a meeting of the council on Oct. 5, 2005.

- 31 of 575 water systems being tracked are on voluntary water conservation because of drought-related causes

- The U.S. Drought Monitor (a national drought indicator issued each week) for the week of Sept. 20 marks the first time in 2005 that any part of North Carolina has been classified as being in a drought condition.

- Due to concerns about the dry conditions and rapidly depleting storage in Falls and Jordan lakes, DENR has been working with the Corps of Engineers to reduce minimum releases from these lakes to

conserve water. Reductions started at Falls Lake on Sept. 6 and at Jordan Lake Sept. 21.

- Streamflow conditions for this time of year are low in a large part of the state. The Broad, Cape Fear, Chowan, Lumber, Neuse, New, Pasquotank, Tar-Pamlico, Watauga and Yadkin-Pee Dee river basins are all in the 10 to 30 percentile range of flows compared to average flows for this time of year.

- Ground water levels are generally closer to normal than streamflows. However, in the Broad, Chowan, Neuse, Tar-Pamlico, Watauga and Yadkin-Pee Dee basins, some monitoring well levels are in the 10 to 30-percentile range compared to normal levels for this time of year.

- The U.S. Department of Agriculture's biggest current concern is with soybeans and pastures in several counties on the North Carolina-Virginia border. These counties are considering requesting an agricultural drought disaster designation.

Annual Council Meeting April 27, 2005

Twenty-nine participants were represented from various agencies at the North Carolina Drought Management Advisory Council Annual Meeting on April 27, 2005, at the Archdale Building in Raleigh.

Items on the meeting agenda included assessment and forecast reports about the weather outlook for summer 2005; streamflow and ground water levels; lake and reservoir levels; and agriculture, forestry and public water system conditions.

Water resources in the state were at near-normal levels for the time of the year. Many water systems that experienced severe water shortages due to

drought in 2002 were reported as having completed or nearly completed water supply improvements that will make them less vulnerable to drought. The following recommendations were made at the 2005 annual meeting to develop a new drought index for water supply and identify ways for depicting drought for agriculture and forest resources in North Carolina:

1. The Drought Advisory Study Team will continue to develop and refine the methodology to depict drought conditions in North Carolina. The study team was called for in October 2003 by the chair of the DMAC to develop a new drought index for water supply in North Carolina. The team consists of DMAC members from the Division of Water Resources, State Climate Office, Division of Emergency Management, U.S. Geological Survey, Division of Environmental Health and the U.S. Army Corps of Engineers. This system will allow the Council to make decisions based on the best information available and to issue drought advisories to individual water suppliers or to a region.

2. The North Carolina Weather & Crops weekly reports by the N.C. Department of Agriculture and Consumer Services was selected as the best resource for depicting agriculture drought.

3. The Current Keetch-Byram Drought Index (KBDI) that is reported weekly by the N.C. Division of Forest Resources was identified as the best drought index for forest resources.

4. The U.S. Drought Monitor will be the reference for broad scale drought conditions. The drought monitor provides a weekly overview of where in the United States drought is emerging, lingering, subsiding or forecast. The Monitor is produced jointly by the National Weather Service's Climate Prediction Center, the U.S. Department of Agriculture and the National Drought Mitigation Center at the

University of Nebraska-Lincoln. The U.S. Drought Monitor focuses on broad scale conditions. Local conditions may vary.

Drought Advisories The North Carolina Drought Management Advisory Council issued no drought advisories or news releases during the period of Jan. 1 through September 2005.

Improving Coordination and Drought Depiction

Drought Indicator Wells

Drought indicator wells are a network of wells that monitor the effects of droughts and other climate variability on ground water levels in the surficial aquifers (water table). The Division of Water Resources has a goal of increasing the number and geographic distribution of drought indicator wells. DWR currently has 41 actively monitored wells in the network and has a short-term goal of adding two wells to that network this fiscal year. The long-term goal is to have a minimum of 60 drought indicator wells. This will allow a much more complete assessment of impending or actual drought conditions in each of the major river basins of the state.

Water System Water Conservation Status

Because public water systems are so important for public health, household, and business needs, it is essential to monitor their status during droughts. During 2002, information about the water supply status for more than 200 water systems was reported weekly to the DMAC by the regional offices of the Public Water Supply Section. To ease this reporting effort for PWS and to make timely online information available for DMAC and the public, electronic reporting of the water conservation status for water systems is now being used. The Division of Water Resources and Public Water Supply (PWSS) regional offices are working together to make this reporting and data on the Web possible. This database provides a consistent way to document and track impacts to public water supply systems. The system is operational and being used, with tracking of the more than 575 water systems throughout

the state provided by PWSS. This information can be accessed at: http://www.ncwater.org/Drought_Monitoring/reporting/.
As far as we know, North Carolina is the first state in the nation to have the ability to track impacts to public water suppliers through timely electronic reporting.

Drought Advisory Study Team of the DMAC
The Drought Advisory Study Team is working to fill in a missing piece for North Carolina drought assessment: a water supply drought index. For example, there are good techniques to measure impacts of drought on agricultural and forest resources, but not water supply drought. Progress to date to develop techniques to measure drought impacts from a water supply point of view includes:

- An Experimental Drought Index based on streamflows and ground water levels was completed in June 2004 and is currently being used to supplement other data. A need for a more robust index has been identified to include more than just streamflows and ground water levels.

- Catawba River Basin Drought Model. As part of the Duke Power Company hydropower relicensing, Duke is funding a study to develop a Catawba River Basin drought index. The target date for completion is the spring of 2006. The study is being conducted by the State Climate Office of North Carolina at N.C. State University, working with partners at the S.C. Climatology Office and the University of South Carolina. They are developing a high-resolution database that will allow users to view local drought conditions using a variety of standard drought indexes, including streamflow, precipitation, Palmer Drought Index and others. This tool, in development for Duke Energy and the Catawba basin, will allow users to choose weights for each selected index, then calculate a blended index similar to national-scale

products used by the U.S. Drought Monitor. Once the Catawba is completed as a prototype, the team will evaluate how to apply it statewide.

- CRONOSh2o North Carolina currently does not have a comprehensive source for both hydrology and climate information. The State Climate Office at NCSU and the Division of Water Resources are working together to combine hydrology observations (including stream flow, groundwater, and reservoir data) and weather observations to form a single archive of historical and real-time data. Called CRONOSh2o, the database combines observations taken by the Army Corps of Engineers, US Geological Survey, DENR Water Resources, the National Weather Service, and most other publicly supported high-quality monitoring networks to integrate environmental monitoring into a single data source. Data will be publicly available through NCSU and DENR websites. Preliminary data products are expected by the end of 2005. For the first time, there will be just one place to go to get information on water resources in NC.

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