

THIRD REPORT TO THE GOVERNOR AND THE GENERAL ASSEMBLY

Regarding the Progress of the:

DELAWARE WATER SUPPLY COORDINATING COUNCIL

July 27, 2001

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Delaware Department of Natural Resources and Environmental Control

(This report may be viewed on-line at www.wr.udel.edu, www.udel.edu/dgs, or www.dnrec.state.de.us.)

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DELAWARE WATER SUPPLY COORDINATING COUNCIL
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Introduction

In northern New Castle County, continued progress was made to develop new surface and ground-water supplies. The design of a 300 million gallon (mg) Newark Reservoir is underway. The City of Wilmington has identified that an additional 500 mg of water are available from deeper levels in Hoopes Reservoir to help meet regional drought needs. In the ground-water sector, Artesian Water Company constructed and put new wells on line and has stored over 100 mg in its aquifer storage and recovery wells. The City of Newark solicited bids for the design of a new treatment plant at its South Wellfield.

In response to the drought of 1999, the Governor's Water Supply Task Force on December 2, 1999 endorsed a report (www.wr.udel.edu) which recommended a series of options to secure additional water supplies in northern New Castle County. The report also recommended appointing a Water Coordinator and a Water Supply Coordinating Council that would consist of public agencies, water purveyors, and the public to work cooperatively to implement the selected water supply options.

This is the third semiannual report to the Governor and the General Assembly regarding the progress of the Delaware Water Supply Coordinating Council through June 2001. Gerald Kauffman (Water Coordinator) and Martin Wollaston (Senior Planner) of the Water Resources Agency at the University of Delaware - Institute for Public Administration; John Talley (Associate Director) of the Delaware Geological Survey; and Stewart Lovell (Manager of the Water Supply Section) of the Delaware DNREC authored this report on behalf of the WSCC. The first and second reports were issued on May 31, 2000 and March 1, 2001, respectively.

Water Coordinator

HB 549, which appointed Delaware's first Water Coordinator was signed by Governor Carper in July 2000. HB 549 appointed the Water Resources Agency at the University of Delaware - Institute for Public Administration as the State's Water Coordinator for a period that expires December 31, 2003, when the new water supply projects identified in the Task Force report are scheduled to be completed. The responsibility of the Water Coordinator is to work cooperatively with the water purveyors to ensure that new water supplies are developed on schedule without slippage. The DGS and the DNREC were appointed as water advisory agencies.

Water Supply Coordinating Council

The Water Supply Coordinating Council's tenure extends until December 31, 2003. The following public and private entities were appointed to the Council under HB 549:

Office of the Governor
Secretary of the Delaware Dept. of Natural Resources & Environmental Control (Chair)
Secretary of the Delaware Department of Public Safety
Secretary of the Delaware Department of Agriculture
Executive Director of the Public Service Commission

Director of the Delaware Emergency Management Agency
Director of the Delaware Geological Survey
Director of the Delaware Division of Public Health
Public Advocate
Executive Director of the Delaware River Basin Commission
New Castle County Executive
Artesian Water Company
City of Newark
City of Wilmington
New Castle Board of Water and Light (now Municipal Services Commission)
Tidewater Utilities, Inc.
United Water Delaware
New Castle County Chamber of Commerce
Delaware State Chamber of Commerce
Delaware Nursery and Landscape Association
Delaware Professional Grounds Management Society
Delaware State Golf Association
Delaware Nature Society
Coalition for Natural Stream Valleys
New Castle County Civic League

The Water Supply Coordinating Council has met on the following dates:

- Mar 3, 2000, Carvel State Office Building, Wilmington, DE
- Mar 24, 2000, Carvel State Office Building, Wilmington, DE
- May 22, 2000, Delaware Geological Survey, Newark, DE
- Jul 31, 2000, New Castle County Chamber of Commerce, Churchmans Crossing, DE
- Oct 4, 2000, Artesian Water Company, Churchmans Crossing, DE
- Jan 10, 2001, United Water Delaware, Stanton, DE
- Mar 14, 2001, Artesian Water Company, Churchmans Crossing, DE
- Jun 14, 2001, United Water Delaware, Stanton, DE

The charges to the Water Supply Coordinating Council are to:

- Encourage implementation of new water supplies (1,020 million gallons or 17 mgd over a 60-day drought) in northern New Castle County to meet peak demands during drought by December 31, 2003.
- Work cooperatively in a public-private effort between government and water purveyors to manage water supplies more efficiently in Delaware.

Water Conditions Update

Water supply conditions have been normal through June. However, streamflow conditions on watercourses in northern Delaware have declined into the below normal range during the first few weeks of July. The Delaware Geological Survey, WRA, and the DNREC will continue to closely monitor water conditions as we enter the traditional low flow months of August and September. A complete summary of water conditions for the period October 2000 through June 2001 is available on the Delaware Geological Survey web site at www.udel.edu/dgs/hydro.html. The report will be updated through July 31 during the first few days of August.

Precipitation – Cumulative precipitation for the first nine months of the 2001 Water Year (October 1, 2000 – June 30, 2001) was below normal across Delaware with the deficiencies ranging from 0.3 inches at Dover to 7.45 inches at Georgetown. In northern Delaware the precipitation near Wilmington was about 2 inches below normal. Precipitation increased during the past six months. During this period (January 1, 2001 – June 30, 2001), cumulative precipitation was near normal to slightly above normal with totals ranging from 2.05 inches above the long-term average in northern Delaware near Wilmington to 2.22 inches below the long-term average in southern Delaware. July has been relatively dry across Delaware and total precipitation for the month will be below normal in the absence of significant rainfall during the last four days of July.

Ground-Water Levels – Water levels in the shallow water-table observation wells have been in the normal range and are near the median levels for this time of year.

Streamflows – Monthly mean streamflows on Brandywine Creek, Red Clay Creek, White Clay Creek, and the Christina River have generally been in the normal range since December 2000 and have been declining seasonally since April. All four watercourses are used for public drinking water supplies in New Castle County. Streamflows in northern Delaware have declined significantly throughout July and are currently below normal on Brandywine Creek and White Clay Creek. The Delaware Geological Survey and UD Water Resources Agency are closely monitoring streamflow conditions on a daily basis. The DGS, UDWRA, DNREC, and the five water purveyors in northern Delaware will meet on July 31, 2001, to discuss the current water conditions in light of the recent dry weather.

On July 16, 2001, Pennsylvania commenced releases from Marsh Creek reservoir in Chester County when the streamflow in Brandywine Creek at Chadds Ford declined below the trigger of 140 cubic feet per second.

Hoopes Reservoir – The reservoir is currently full with 1.8 billions of usable capacity.

The Water Conditions Index for New Castle County – The Delaware Geological Survey WCI for NCC has been in the normal range since October 1999.

Chester County, Pennsylvania – Significant portions of the Brandywine, Red Clay, and White Clay Creek watersheds are located in Chester County, Pennsylvania. Thus, water conditions in Chester County have an impact on streamflows in northern Delaware. Chester County reported that cumulative precipitation for the period October 2000 – June 2001 was 3.3 inches below normal (90% of average) whereas precipitation for the period January 1 through June 30 was 0.9 inches below normal (96% of normal). Monthly mean streamflows have been close to historic averages

during the past several months. However, they have been declining and are expected to be below normal for July. Although ground-water levels have been declining seasonally and are generally below historic averages, only one well is below Pennsylvania’s drought warning level.

Public Water Demand

Regional Summary - During June and the first half of July 2001, public water demands in northern New Castle County have been mostly at or below normal. The peak demand recorded so far this summer was 84 mgd on June 29, 2001 compared to the normal June demand of 70 mgd. By comparison, water purveyors recorded a peak water demand of 89 mgd on July 19 during the drought of 1999 and 93 mgd on July 18, 1997 which is the highest peak day on record.

Peak Demands - The water purveyors recorded the following peak demands from June 1 through July 15, 2001:

<u>Water Purveyor</u>	<u>Peak Daily Demand (mgd)</u>	<u>Date (2001)</u>
Artesian Water Co.	26.7	June 30
City of Newark	6.0	June 29
City of Wilmington	32.1	June 29
New Castle MSC	0.6	June 28
United Water Delaware	25.1	June 29

The peak water transfer by the purveyors through interconnections was 3.8 mgd on June 29, 2001.

Future Supply/Demand Projections (2020)

The Governor's Water Supply Task Force compiled estimates of public water supply and demand in northern New Castle County for worst case drought conditions for the planning years 2000, 2010, and 2020. The estimate assumes a worst case historic drought scenario and that environmental standards for minimum instream flows (7Q10) are in effect along the Brandywine Creek and White Clay Creek. The supply and demand curves forecast a deficit of 17 million gallons per day (mgd) or 1,020 million gallons (mg) for a 60-day drought period by the year 2020:

<u>Scenario Year</u>	<u>Supply (mgd)</u>	<u>Demand (mgd)</u>	<u>+/- (mgd)</u>	<u>Volume (mg)</u>
2000	73	86	-13	-780
2010	73	88	-15	-900
2020	73	90	-17	-1,020

Future Water Supply Options

The Water Supply Coordinating Council is working to develop a series of water supply projects to close the 17-mgd (1,020-mg) gap between supply and demand for the year 2020 in northern New Castle County. The water purveyors have committed to the following “A” list options which have few environmental constraints, enjoy community support, and can be implemented by 2003:

"A" List - Future Water Supply Options Committed to by Water Purveyors:

<u>Project</u>	<u>Amount Targeted 12/2/99 Report</u>	<u>In-Service by Summer 2001</u>
Newark Reservoir	200 mg (3 mgd)	On-line by 2003
Wilmington Hoopes Reservoir Deep Storage Plan	500 mg (8 mgd)	500 mg (8.0 mgd)
Artesian Water Co. New Wells North of the C&D Canal	120 mg (2 mgd)	66 mg (1.1 mgd)
Newark South Wellfield Iron Treatment Plant	60 mg (1 mgd)	On-line by 2002
<u>Artesian Water Co. Aquifer Storage and Recovery</u>	<u>300 mg (5 mgd)</u>	<u>115 mg (1.9 mgd)</u>
Total	1,180 mg (19 mgd)	681 mg (11.0 mgd)

Progress and Activities

The members of the WSCC have made the following progress through June 2001:

Artesian Water Company

- In July 1999, AWC placed into service 0.4 mgd from a well located in Middle Run Crossing. DNREC granted an increased summer allocation of 0.7 mgd for its Old County Road Wellfield.
- AWC is seeking permits to place a new 0.4 mgd well (24 mg for 60 days) in service at Artisans Village by July 2001. AWC plans to construct a new well at Middle Run Crossing adding 0.4 mgd (24 mg for 60 days) to its supply by March 2002.
- AWC has completed several cycles of its Aquifer Storage and Recovery (ASR) testing program at a maximum rate of 1.9 mgd (115 mg for 60 days). AWC expects 1.7 mgd to be available from the Llangollen ASR wells and 0.2 mgd from the Fairwinds ASR to meet peak demands during the summer of 2001.
- AWC plans to place ASR on-line by September 2002 at an additional wellfield along the Delaware River (1.7 mgd) and by September 2003 at a site along the Route 40 corridor (1.4 mgd) if the additional supply is required by AWC or others.

City of Newark

- Newark is on schedule to build a 300 mg reservoir which would make the City nearly self-sufficient. This will be the first major water supply reservoir built in Delaware in almost 70 years. Permitting and design of the reservoir is scheduled for completion by the end of 2001. Reservoir construction is scheduled to begin in the spring of 2002 with a planned operational date of fall 2003.
- On April 10, 2001, Newark residents voted by a 4 to 1 margin to support a referendum to increase water rates to pay for the construction of the new reservoir and South Wellfield treatment plant.
- Newark City Council awarded a contract to Whitman Requardt to design an iron and manganese removal plant at its South Wellfield. This project is expected to increase drinking water

supplies from the South Wellfield by 1.0 mgd. The City is on schedule for this project with a planned completion date in June 2002.

City of Wilmington

- The City contracted with Metcalf and Eddy to conduct a dam safety inspection of Hoopes Reservoir. The City also authorized a study to evaluate the structural and hydraulic feasibility of raising the existing water level five feet to provide an additional 300 mg (5 mgd) of storage.
- The City of Wilmington completed an "Operating Plan for Hoopes Reservoir" which indicates that the City would release from 3 to 5 mgd of raw water as requested by other utilities such as United Water Delaware and the City of Newark, provided the reservoir level was between elevation 220 feet (full) and 210 feet (-10 feet). Below elevation 210 the City will reserve the remaining contents of the reservoir for its internal use.
- The Delaware Geological Survey conducted an investigation of water quality at various depths at five locations in Hoopes Reservoir. Based on the water quality analyses and review of the operation of the lower gates, the City concluded that 1,800 mg of Hoopes Reservoir water can now be considered usable in the event of extreme drought, a volume 500 mg greater than thought previously available. This "A" list alternative is now considered complete and includes provisions to operate the lower gates or pump the deep water (500 mg or 8 mgd) out of the reservoir during an extreme drought.

New Castle Municipal Services Commission (formerly Board of Water and Light)

- With a supply of 1.7 mgd and a peak demand of 0.5 mgd, the City of New Castle has excess capacity from its wells and can presently sell water to AWC through interconnections as needed. New Castle plans to construct a new 1.0 mg interconnection with the AWC at the Riveredge Industrial Park.

United Water Delaware

- UWDE retained consultants to conduct preliminary geotechnical and wetland evaluations for a potential 320 mg reservoir at Bread and Cheese Island. The studies are scheduled for completion in late 2001.
- UWDE and the City of Wilmington are currently meeting on a regular basis to negotiate a new contract for UWDE to purchase raw water supplies from Hoopes Reservoir.
- UWDE has signed a new interconnection agreement with Wilmington to transfer up to 3 mgd (expandable to 10 mgd) of treated water into the United system as needed. UWDE has also refurbished its Chatham Road interconnection with the City of Wilmington and proposes to build an additional interconnection with Wilmington at Murphy Road.
- UWDE has designed, developed, and implemented a chloride-monitoring plan that includes three stations along the tidal Christina River and White Clay Creek to provide early warning of elevated salt levels at the Stanton intake. This plan is designed to optimize fresh water

withdrawals from the creek and minimize sodium and chloride levels in drinking water supplies during low flows.

- UWDE retained CH2M Hill hydrogeological consultants to evaluate the feasibility of recharging treated surface water into Aquifer Storage and Recovery wells. A test well will be drilled during summer 2001.

Interconnected System

The five water purveyors conducted hydraulic testing and modeling to increase the northern New Castle County interconnected system capacity to move water during drought. As of June 2001, there are 26 interconnections in place or planned for, up from 1999 when 23 interconnections were in place.

Conservation Water Rates

- The DNREC signed an agreement with the University of Delaware Center for Energy and Environmental Policy to evaluate the potential for adopting conservation water rates to reduce peak water demands. This work is under the direction of the Water Conservation Oriented Rate (WCOR) Subcommittee and was completed in May 2001.
- AWC continues its conservation water rate structure that has been in place since 1992.
- Newark has raised its water rates as of July 2001 to fund its proposed reservoir and water treatment plant improvements and has temporarily discontinued its seasonal conservation water rate structure in place since 1999.
- The New Castle Municipal Services Commission has recently instituted a new conservation water rate structure.

Northern New Castle County Ground-Water Modeling Study

- The DNREC Division of Water Resources signed a contract on May 23, 2000 with the US Army Corps of Engineers to estimate the long-term safe yield of ground-water availability for water supply in northern New Castle County. The Corps of Engineers study will update earlier studies by the USGS and DGS which indicated ground-water availability from northern New Castle County in the coastal plain was 32 mgd. The capacity of wells allocated by DNREC in this area is 31 mgd. The ground-water modeling area is in the Coastal Plain and extends from Wilmington to Middletown and from New Jersey across New Castle County into Maryland. The ground-water investigation is currently in the conceptual model development phase and is scheduled for completion by December 2001.

Green Industry Guidelines

- The DNREC Division of Water Resources, the UD Water Resources Agency, and the Delaware Geological Survey worked with the Green Industry to revise the rules for water use during drought as they pertain to the State's nurseries, golf courses, and landscaping firms.

Transfer of CPCN to Public Service Commission

- In July 2000, Governor Carper signed SB 370 which transfers the jurisdiction for issuing water supply franchise areas (Certificates of Public Convenience and Necessity or CPCNs) from DNREC to the PSC effective July 1, 2001. On June 5, 2001 the PSC adopted regulations governing the awarding of CPCNs to public and investor-owned water purveyors statewide.

Summary

The water purveyors on the Water Supply Coordinating Council continued working to develop additional water supplies in northern New Castle County. To date, 681 mg of the goal to meet the projected deficit of 1,020 mg or 68% has been put into service and is available to meet peak water demands if needed. At least 439 million gallons of additional new storage are needed to meet projected peak demands during drought in northern New Castle County. If the outstanding projects noted in the following table are completed as anticipated, this remaining storage will be met by the end of 2003.

Water supply conditions have been normal through June. However, streamflow conditions on watercourses in northern Delaware have declined into the below normal range during the first few weeks of July. The Delaware Geological Survey, UDWRA, and the DNREC will continue to closely monitor water conditions as we enter the traditional low flow months of August and September.

Water demands during June and through July 2001 were mostly at or below normal.

The water purveyors have improved the capacity and reliability of the northern New Castle County interconnected system.

The following chart summarizes the updated status of the "A" list alternatives designed to meet the projected 17 mgd (1,020 mg) deficit forecast for northern New Castle County in 2020:

<u>Alternative</u>	<u>Targeted Capacity</u>	<u>Capacity in Service (6/01)</u>	<u>Status of Completion</u>
Newark Reservoir	200 mg (3 mgd)	-0-	In design, completion 2003 300 mg reservoir planned.
Wilmington Hoopes Reservoir -Deep Storage	500 mg (8 mgd)	500 mg (8.0 mgd)	Complete - deep storage now available for drought
Artesian Water Co. New Wells North C&D Canal	120 mg (2 mgd)	66 mg (1.1 mgd)	0.8 mgd wells planned completion 2002
Newark South Wellfield Iron Treatment Plant	60 mg (1 mgd)	-0-	In design completion 2002
Artesian Water Co. Aquifer Storage & Recovery	300 mg (5 mgd)	115 mg (1.9 mgd)	Next addition of ASR anticipated for 2002.
Total	1,180 mg (19 mgd)	681 mg (11.0 mgd)	
2020 Deficit	1,020 mg (17 mgd)		

The Water Coordinator plans to submit the next report regarding the progress of the Water Supply Coordinating Council to the Governor and General Assembly after January 2002.

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