MONTHLY WATER INVENTORY REPORT FOR OHIO

July 1998

http://www.dnr.state.oh.us/odnr/water/pubs/newsltrs/mwirmain.html

Compiled By David H. Cashell
Hydrologist
Water Inventory Unit

PRECIPITATION during July was below normal throughout most of Ohio, but above normal in some areas in the western and north-central portions of the state. The state average was 3.42 inches, 0.50 inch below normal. Regional averages ranged from 4.96 inches, 1.25 inches above normal, for the West Central Region to 2.41 inches, 1.96 inches below normal, for the Southeast Region. St. Marys (Auglaize County) reported the greatest amount of precipitation for the month, 8.35 inches. Other notable amounts fell at Lima (Allen County) which reported 8.23 inches and Elmore (Ottawa County), Celina, and Ft. Recovery (both in Mercer County) which reported 7.65 inches, 7.55 inches, and 7.15 inches, respectively. On the other hand, many locations in eastern Ohio reported less than 2 inches of precipitation for the month with the lowest amount, 1.09 inches, reported at the Coschocton Agricultural Research Station (Coschocton County). Areas in east-central and southeastern Ohio welcomed the drying after the devastating floods just prior to the end of June, but many areas in extreme northeastern Ohio, especially the counties that border Lake Erie, have had below normal precipitation since mid-spring.

Precipitation during July fell in typical summer fashion as showers and thundershowers. Scattered showers fell during the long Fourth of July weekend, but generally did not dampen the celebrations. Rain amounts were around 0.5 inch, but some scattered locations in southern Ohio received more than 1 inch. The first full week of the month was moderately dry with showers crossing the state during July 7-8. About 0.5 inch of rain fell in the northern half of the state with less falling in the southern half. The next week was rather dry in many areas of the state. A few scattered showers popped-up on and off throughout July 14-17. Up to 0.5 inch was reported in some areas, but much less in most areas. The greatest amounts during this period generally fell in southwestern Ohio on July 17. Much stronger storms crossed Ohio during the third full week of July. Many areas received between 1 and 2 inches of rain for the week, but much less fell in some areas, especially in the eastern one-third of the state. Southwestern Ohio bore the brunt of storms during July 19-20. Nearly 4 inches of rain was reported in a few areas and wind damage was common there and also in a few northwestern Ohio counties. Storms during July 21-23 were more concentrated in northwestern and north-central Ohio with some areas receiving more than 2 inches for the period. Scattered showers fell across the state during July 29-31 with the stronger storms occurring in southwestern and southern Ohio.

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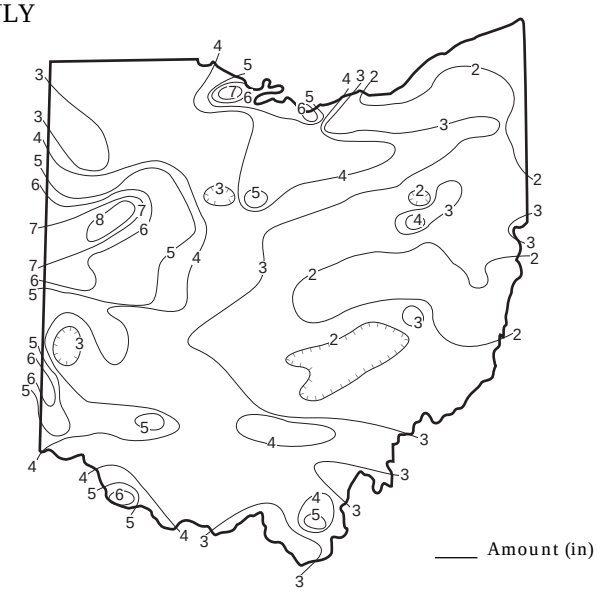
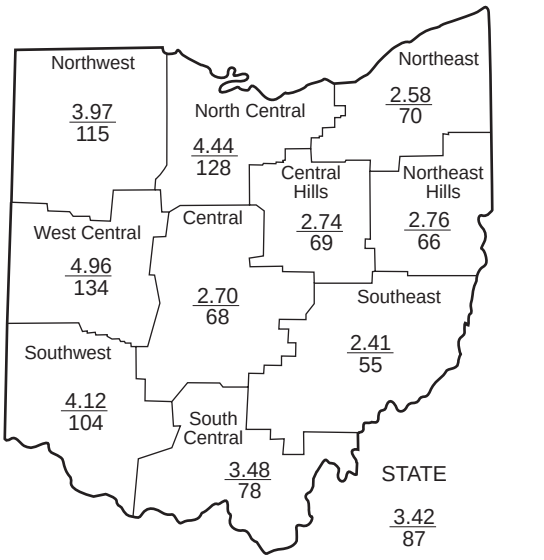
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	Palmer Drought Severity Index*
Northwest	+0.53	0.00	+2.77	+5.17	+10.09	+0.3
North Central	+0.98	+1.48	+4.40	+6.25	+14.63	-0.7
Northeast	-1.10	-2.36	-0.57	+0.78	+8.78	-2.2
West Central	+1.25	+3.88	+4.75	+2.98	+5.17	+1.4
Central	-1.26	+2.05	+3.27	+3.44	+5.14	-0.5
Central Hills	-1.25	+1.02	+1.86	+0.93	+5.85	-0.8
Northeast Hills	-1.45	+1.90	+2.68	+3.54	+6.05	-2.4
Southwest	+0.15	+4.85	+7.00	+3.93	+7.54	+1.7
South Central	-0.98	+4.08	+6.72	+5.57	+8.76	+1.0
Southeast	-1.96	+4.27	+5.31	+7.61	8.94	+0.6
State	-0.50	+2.12	+3.83	+4.03	+8.10	

*Above +4 = Extreme Moist Spell
3.0 To 3.9 = Very Moist Spell
2.0 To 2.9 = Unusual Moist Spell
1.0 To 1.9 = Moist Spell
0.5 To 0.9 = Incipient Moist Spell
0.4 To-0.4 = Near Normal
-0.5 To -0.9 = Incipient Drought
-1.0 To -1.9 = Mild Drought
-2.0 To -2.9 = Moderate Drought
-3.0 To -3.9 = Severe Drought
Below -4.0 = Extreme Drought

PRECIPITATION JULY





MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	This Month: Mean Discharge (CFS)	This Month: % of Normal	% of Normal Past: 3 Mos.	% of Normal Past: 6 Mos.	% of Normal Past: 12 Mos.
Grand River near Painesville	685	34	12	45	78	79
Great Miami River at Hamilton	3,630	3,537	241	224	132	116
Huron River at Milan	371	326	447	195	151	158
Killbuck Creek at Killbuck	464	528	290	144	91	89
Little Beaver Creek near East Liverpool	496	378	179	107	104	111
Maumee River at Waterville	6,330	4,281	190	134	121	136
Muskingum River at McConnelsville	7,422	14,830	344	196	119	117
Scioto River near Prospect	567	332	325	134	88	101
Scioto River at Higby	5,131	5,951	298	210	119	132
Stillwater River at Pleasant Hill	503	681	493	260	131	104

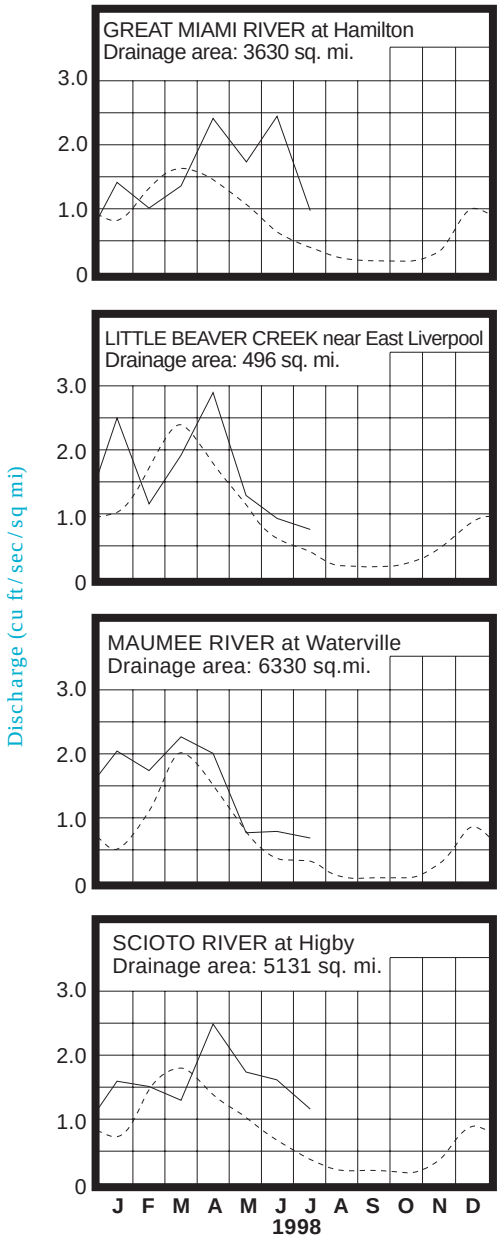
STREAMFLOW during July was noticeably above normal throughout most of the state and high enough to be considered excessive in nearly all drainage basins. The only exception was in extreme northeastern Ohio where flows were noticeably below normal.

Flows at the beginning of the month were noticeably above normal throughout Ohio with only the extreme northeastern area starting the month with below normal flows. Flows were exceptionally high, especially in the eastern half of the state, as a result of the heavy precipitation that fell during the last week of June. Greatest flows for July in these areas occurred on the first day. Generally, flows declined during the first week of the month with increases noted just after the end of the first week. Flows then continued to decline again until about July 19 before increasing following rain which was especially heavy in portions of western and southwestern Ohio. Most drainage basins in the western half of the state had their lowest July flows on that date. Flows in the eastern half of the state generally declined through the end of the month and were the lowest for July at that time. Flows at the end of the month had fallen to below normal in the eastern half of the state but remained above normal in the western half.

RESERVOIR STORAGE for water supply during July decreased in both the Mahoning and Scioto river basins. Storage remained at above-normal seasonal levels in both basins.

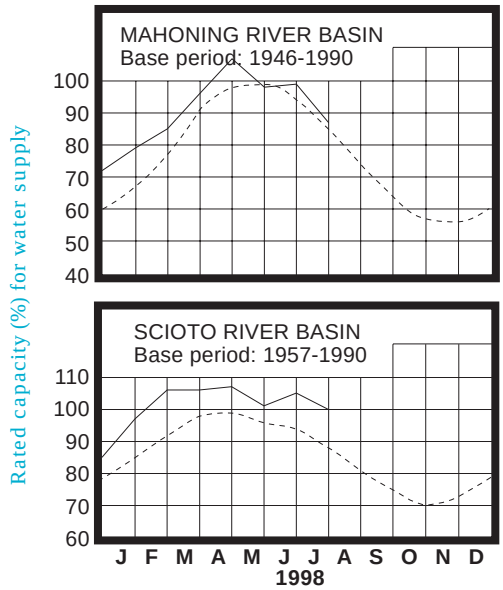
Reservoir storage at the end of July in the Mahoning basin index reservoirs was 87 percent of rated capacity for water supply compared with 99 percent for last month and 86 percent for July 1997. Month-end storage in the Scioto basin index reservoirs was 100 percent of rated capacity for water supply compared with 105 percent for last month and 97 percent for July 1997. Surface-water supplies continue to remain adequate throughout the state.

MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

GROUND WATER levels during July declined seasonally in most aquifers. Exceptions were noted in some aquifers in eastern and southeastern Ohio where levels showed net improvement as a result of recharge from the heavy precipitation during the last week of June. Generally, net declines during the month were less than usually observed.

Ground water levels declined steadily throughout the month in most aquifers. Levels in some aquifers in eastern and southeastern Ohio rose during the first half of the month and then declined during the second half. The abundant precipitation during June helped most aquifers maintain above normal levels during July, but levels remained slightly below normal in some consolidated aquifers in the eastern half of the state. Current levels are higher than they were a year ago in most aquifers, but somewhat lower than last year's levels in a few aquifers, especially those in northeastern Ohio were precipitation has been below normal in some areas since mid-spring. Ground water supplies continue to remain adequate throughout the state.

LAKE ERIE level declined during July. The mean level was 573.26 feet (IGLD-1985) which is 0.23 foot below last month's mean level and 1.51 feet above normal. This month's level is 0.85 foot lower than the July 1997 level and 4.06 feet above Low Water Datum.

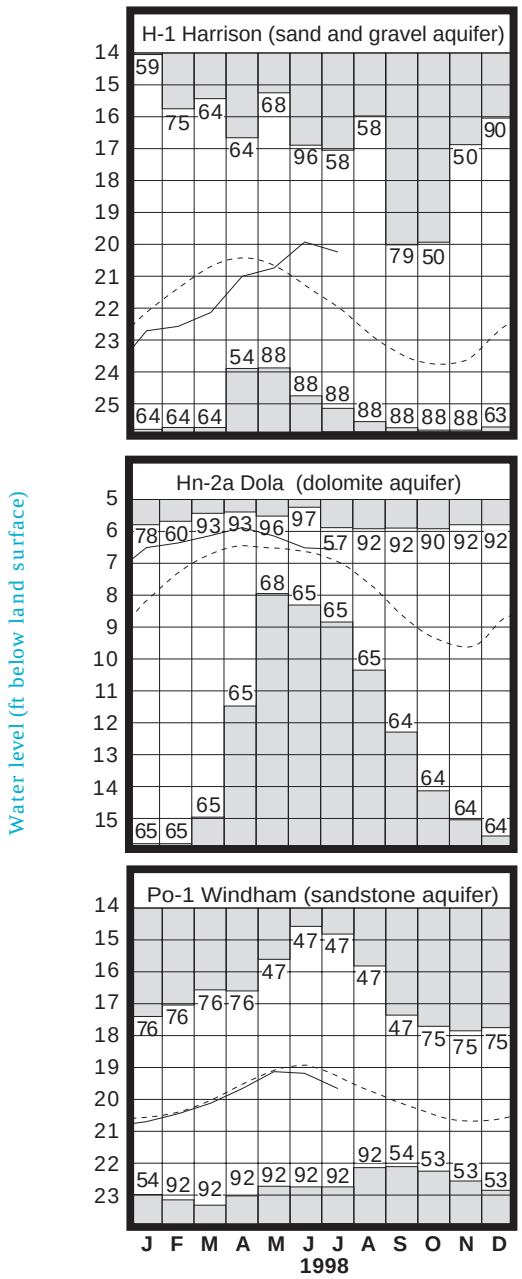
The U. S. Army Corps of Engineers reports that precipitation in the Lake Erie basin during July averaged 3.6 inches, 0.3 inch above normal. The entire Great Lakes basin averaged 2.3 inches of precipitation during July, 0.8 inch below normal. For calendar year 1998 through July, the Lake Erie basin has averaged 22.9 inches of precipitation, 2.5 inches above normal, and the entire Great Lakes basin has averaged 17.9 inches which is normal.

GROUND-WATER LEVELS

Based on daily lowest level in feet below land-surface datum

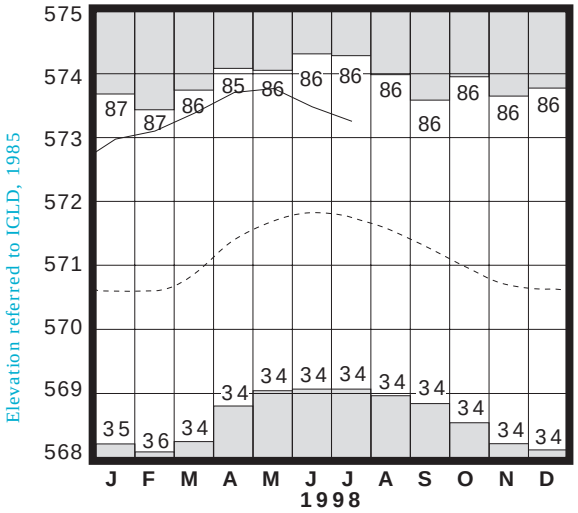
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from: Last Month	Change in feet from: Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	15.67	-0.55	-0.62	+1.73
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.46	+0.34	-0.47	+0.37
Fr-10	Columbus, Franklin Co.	Gravel	42.46	+1.00	-0.36	-0.13
H-1	Harrison, Hamilton Co.	Gravel	21.23	+0.73	-1.29	+0.50
Hn-2a	Dola, Hardin Co.	Dolomite	6.57	+0.38	-0.05	-0.48
Po-1	Windham, Portage Co.	Sandstone	19.66	-0.37	-0.47	-1.41
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.17	+0.35	+1.34	+1.02

GROUND-WATER LEVELS



Base periods: H-1, 1951-1990. Hn-2a, 1955-1990. Po-1, 1947-1990 Record high and low, year of occurrence

LAKE ERIE LEVELS at Fairport



Base period: 1900-1991

Record high and low, year of occurrence

Normal – – – – Current ———

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Note: The tornadic storms that crossed the Lake Erie shoreline last month occurred during the evening of June 24 into the morning hours of June 25, not during June 25-26 as reported in last month's report.

Precipitation for the 1998 calendar year is above normal throughout Ohio. The state average is 28.08 inches, 4.56 inches above normal. Regional averages range from 33.71 inches, 7.46 inches above normal, for the South Central Region to 23.12 inches, 0.97 inch above normal, for the Northeast Region.

Precipitation for the 1998 water year is above normal throughout most of the state with only the Northeast Region having slightly below normal precipitation. The state average is 34.42 inches, 3.33 inches above normal. Regional averages range from 40.23 inches, 6.01 inches above normal, for the South Central Region to 30.12 inches, 0.27 inch below normal, for the Northeast Region.

SUMMARY

Precipitation was below normal throughout most of Ohio, but above normal in a few areas in the southwestern and north-central areas of the state. Streamflow was noticeably above normal statewide except in extreme northeastern Ohio where it was below normal. Reservoir storage declined but remained at above-normal seasonal levels. Ground water levels also showed seasonal declines but remained adequate statewide. Lake Erie level declined 0.23 foot and was 1.51 feet above the long-term July average.

NOTES AND COMMENTS

FORMER DIVISION OF WATER ADMINISTRATOR PASSES

We are saddened to report that Andy Spencer, a former Administrator of the Division of Water's Water Resources Development Section, passed away on July 13. Andy retired from the Division of Water in 1988 ending a career of nearly 45 years of public service.

The first half of his public service began with a calling from Uncle Sam soon after graduating from The Ohio State University. During his 24-year U. S. Army career, he was stationed at several bases in Europe, the Far East, Panama, and the United States. He retired in 1966 as Commander of the Erie Proving Ground. Soon thereafter, the second half of his public service career started when he joined the Ohio Water Commission. The duties of that commission were transferred to the Division of Water in 1972.

During Andy's 13-year tenure as an Administrator in the Division of Water, he was instrumental in the development and implementation of comprehensive state water planning through the preparation of regional water plans. He oversaw the construction of a number of state cost-shared upground reservoirs and was well known in many communities for his help with various projects, assistance during times of emergencies, and administering the contracts for the sale of state-owned water supplies.

NEW STATEWIDE AQUIFER MAPPING PROJECT

The Water Resources Section of the Division of Water is currently involved in a three-year project to map the glacial and bedrock aquifers in Ohio. The goal of the project is to identify bedrock and glacial aquifer boundaries, quantify aquifer yields, develop a standardized naming system, and define aquifer thicknesses. Partial funding for the project is provided by a Clean Water Act Section 319 grant obtained from the United States Environmental Protection Agency through the Ohio Environmental Protection Agency.

Draft bedrock and glacial aquifer maps use standard USGS 7.5 minute (1:24,000) quadrangles as a base. Data for constructing the maps comes from a variety of geologic and hydrogeologic maps, reports, and test well data published by the ODNR Division of Water, ODNR Division of Geological Survey, the United States Geological Survey, and other public and private organizations, along with water well logs on file at the Division of Water

Completed 1:24,000 scale aquifer maps are then digitized into the ARC/INFO geographic information system (GIS) and electronically combined into 1:100,000 scale maps. When the project is completed in the spring of 2000, the areal extent, thickness, name, and yield of each individual aquifer will exist as a series of 1:100,000 scale map coverages within the ODNR GIS system. These coverages will be available to any person or organization with GIS capability for a nominal charge. Persons or organizations without GIS capability may obtain paper copies of the individual aquifer maps on an as-needed basis.

For more information on the State Bedrock and Glacial Aquifer Mapping project, please contact Mike Hallfrisch at (614) 265-6745 or e-mail at Mike.Hallfrisch@dnr.state.oh.us.

ACKNOWLEDGMENTS

This report has been compiled from Division of Water data and from information supplied by the following:

Precipitation data:
- *U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service: The Miami Conservancy District: U.S. Army Corps of Engineers, Muskingum Area.*

Streamflow and reservoir storage data:
- *U.S. Geological Survey, Water Resources Division.*

Lake Erie level data:
- *U.S. Army Corps of Engineers, Detroit District.*

Palmer Drought Severity Index:
- *U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service.*

OHIO Department of Natural Resources

DIVISION OF WATER
1939 FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

George V. Voinovich
Governor

Donald C. Anderson
Director

Michele Willis
Chief

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