MONTHLY WATER INVENTORY REPORT FOR OHIO

June 1999

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

Compiled By David H. Cashell and Scott Kirk
Hydrologists
Water Inventory Unit

PRECIPITATION for June was noticeably below normal in most areas of the state except for a few locations in northwestern and southwestern Ohio where it was above normal. The state average was 2.07 inches, 1.89 inches below normal. For the state as a whole this was the 9th driest June during the past 117 years. Regional averages ranged from 3.22 inches, 0.83 inch below normal, for the Southwest Region to 1.15 inches, 2.81 inches below normal, for the Northeast Hills Region. This was the 2nd driest June of record for the Central Hills Region, the 3rd driest for the Central and Northeast Hills regions, the 5th driest for the Southeast and South Central regions and the 9th driest for the Northeast Region. Eaton (Preble County) reported the greatest amount of precipitation for the month, 5.82 inches. Newark (Licking County) reported the least amount, 0.48 inch. Several areas in central and east-central Ohio, as well as a few other scattered locations, reported less than 1 inch of rain for the month.

Much needed precipitation spread across the state during the first 3 days of the month. The heaviest rain fell across the western one-third of the state with many areas reporting 0.50- 0.75 inch of rain and a few stations in northwestern Ohio reporting between 1-2 inches of rain. The remainder of the state received less than 0.5 inch with many areas, especially in central Ohio, recording only meager amounts. Dry conditions returned for the next week or so until a series of scattered showers and thunderstorms, some accompanied by heavy downpours, developed across the western half of the state between June 10-13. The rains were spotty with some locations receiving little or no rain while other locations received around 2 inches with a couple of locations receiving in excess of 3.5 inches of rain during this period. The frontal system responsible for this rain finally pushed across the state bringing rain to the eastern two-thirds of Ohio on June 14. Areas in this part of the state received around 0.5 inch of rain from this weather system, but a few isolated locations received up to 0.75 inch. Conditions across most of the state again turned dry until the last few days of the month. Light showers fell in many areas during June 24-25 with only extreme northwestern and southwestern Ohio receiving more than 1 inch. Following this, light to moderate rain pushed across the state from northwest to southeast during June 27-29. The most significant rain from this weather system fell in the western and central portions of the state on June 27-28 and parts of southwest and extreme southeast Ohio on June 29. Amounts of 0.50-1.0 inch were common through much of this area. Although this event was the most widespread during the month, the showers were still spotty and some areas once again received very little rain.

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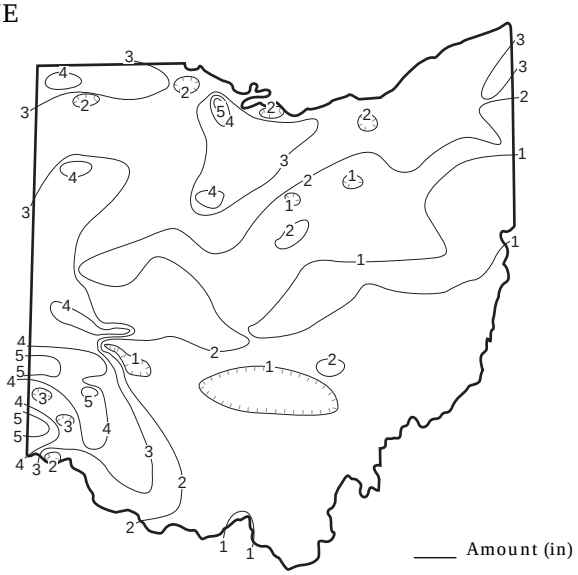
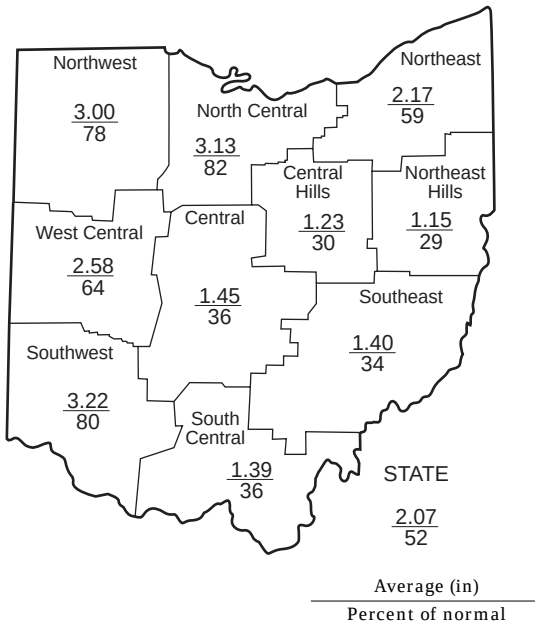
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	Palmer Drought Severity Index*
Northwest	-0.83	+0.70	+0.85	+1.81	+7.47	-3.4
North Central	-0.69	-0.79	-1.30	-2.08	+2.70	-2.6
Northeast	-1.51	-1.47	-1.65	-4.69	-5.04	-3.4
West Central	-1.46	-2.57	-1.21	-2.56	-0.70	-2.2
Central	-2.61	-3.93	-4.01	-7.74	-2.73	-2.8
Central Hills	-2.88	-3.12	-3.10	-4.90	-2.49	-3.1
Northeast Hills	-2.81	-2.48	-1.12	-2.48	+0.67	-3.5
Southwest	-0.83	-3.63	-3.35	-6.80	-3.70	-2.9
South Central	-2.49	-5.64	-4.86	-10.16	-4.12	-3.3
Southeast	-2.74	-3.94	-2.61	-7.44	+2.03	-3.4
State	-1.89	-2.69	-2.23	-4.71	-0.60	

*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 JUNE





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	69	27	72	68	49
Great Miami River at Hamilton	3,630	1,411	61	51	93	91
Huron River at Milan	371	90	52	93	93	109
Killbuck Creek at Killbuck	464	96	37	61	92	97
Little Beaver Creek near East Liverpool	496	116	37	60	103	90
Maumee River at Waterville	6,330	3,736	164	113	118	112
Muskingum River at McConnelsville	7,422	2,117	36	62	97	107
Scioto River near Prospect	567	121	45	64	86	85
Scioto River at Higby	5,131	936	27	41	74	82
Stillwater River at Pleasant Hill	503	174	65	51	96	93

STREAMFLOW during June was below normal throughout most of the state except in northwest Ohio where it was above normal. Flows were low enough to be considered deficient in most drainage basins in the southeastern half of the state. Flows for the month were seasonally less than the May flows statewide

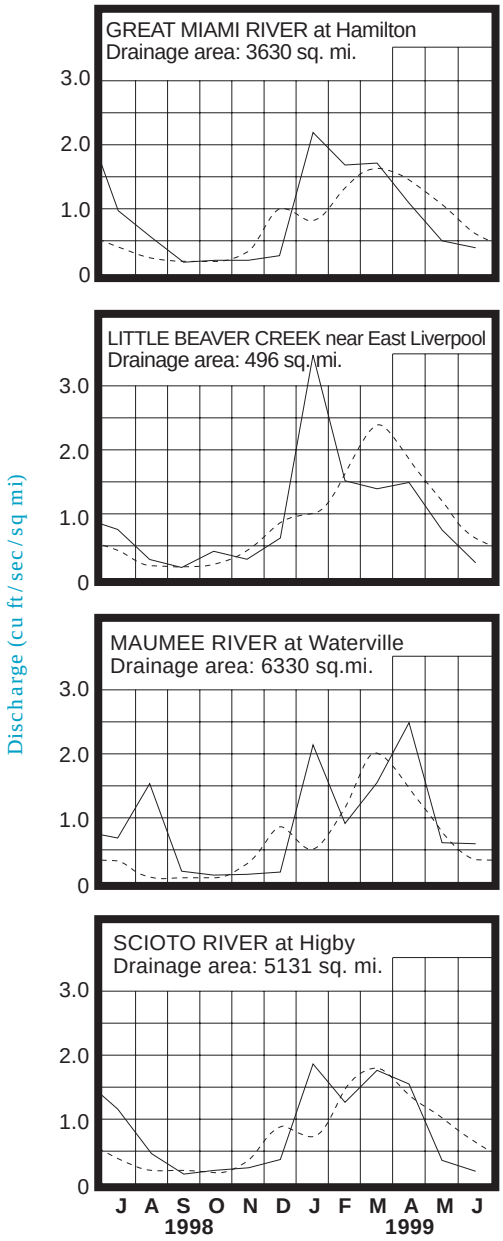
Streamflow was below normal statewide at the beginning of June. Flows quickly increased to above normal in the northwestern part of the state in response to rain that fell in the area during June 1. Greatest flows for the month were established during the first few days of the month in the northwestern portion of the state, and also in most basins in the eastern half of Ohio. Following these peaks, flows steadily declined statewide until mid-month when light to moderate rains returned to the state. Greatest flows for the month were observed following these rains in the western half of the state. During the second half of June, flows steadily decreased statewide until the last few days of the month. Low flows for the month occurred generally around June 26-27 in most drainage basins throughout the state. Although flows increased slightly in most basins across Ohio during the last days of the month due to the widespread rain of June 27-29, streamflow at the end of June remained below normal statewide.

RESERVOIR STORAGE for water supply during June declined in both the Mahoning and Scioto river basins. Storage fell to below normal in the Mahoning River basin and remained below normal in the Scioto River basin.

Reservoir storage at the end of June in the Mahoning basin index reservoirs was 90 percent of rated capacity for water supply compared with 101 percent for last month and 99 percent for June 1998. Month-end storage in the Scioto basin index reservoirs was 84 percent of rated capacity for water supply compared with 93 percent for last month and 105 percent for June 1998.

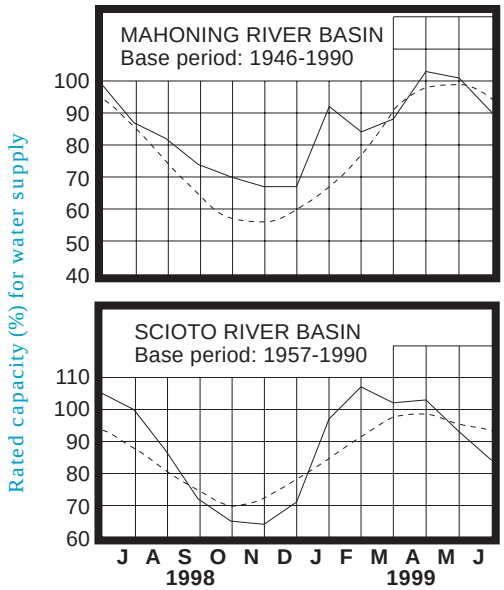
Surface water supplies remain adequate statewide despite the below normal precipitation and reduced streamflow of the past two months. Increased evaporation and higher consumptive use coupled with the below normal precipitation and streamflow have combined to reduce storage in reservoirs across the state to below normal levels. Local water supply managers with surface water supplies should monitor their respective situations closely.

MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

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	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	17.33	-3.42	-1.82	-2.28
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.36	-0.99	-0.66	-1.37
Fr-10	Columbus, Franklin Co.	Gravel	44.89	-1.84	-1.50	-2.79
H-1	Harrison, Hamilton Co.	Gravel	23.12	-1.82	-0.38	-3.18
Hn-2a	Dola, Hardin Co.	Dolomite	6.89	-0.26	-0.42	-0.37
Po-1	Windham, Portage Co.	Sandstone	20.74	-1.82	-0.23	-1.55
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.10	-2.21	-1.00	-0.59

GROUND WATER levels during June declined throughout Ohio. Net changes during June from May's levels were greater than usually observed. Levels in most aquifers declined steadily throughout the month. However, in some aquifers levels stabilized during the last week following some much needed, widespread precipitation.

Ground water supplies are below normal throughout the state with levels generally ranging from 1 to nearly 3.5 feet below the long-term seasonal average. Current levels are also noticeably lower than last year's levels reflecting the recent dry conditions as well as the sub-par recharge since the beginning of the 1999 water year. Much needed rains near the end of June helped improve soil moisture conditions, but even with near-normal precipitation and other climatic conditions during the next several months, little additional recharge can be expected. The Ohio Agricultural Statistics Service reported that near the end of June soil moisture was rated as being short or very short in 60 percent of the state, adequate in 39 percent of the state and surplus in 1 percent of the state.

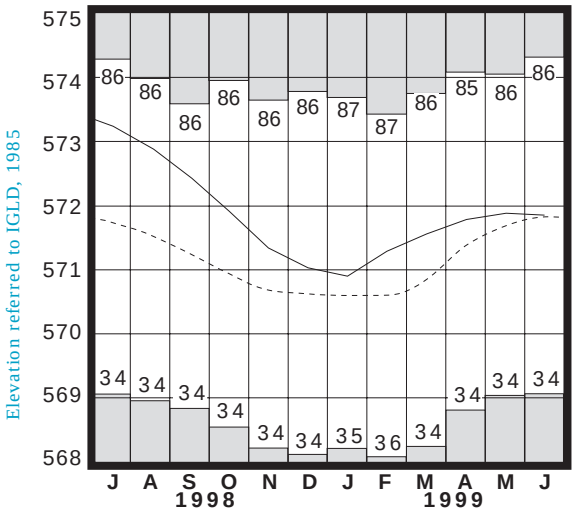
Ground water supplies remain adequate at this time. Although near-normal precipitation would help reduce demand during the summer high water-use season, ground water levels are expected to continue to decline seasonally through mid or late autumn. Water supply managers with ground water sources should closely monitor their situations throughout the summer months and plan accordingly.

LAKE ERIE level declined slightly during June. The mean level was 571.85 feet (IGLD-1985), 0.03 foot lower than last month's mean level and 0.03 foot above normal. This month's level is 1.64 foot lower than the June 1998 level and 2.65 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June averaged 2.6 inches, 0.8 inch below normal. The entire Great Lakes basin averaged 3.0 inches of precipitation during June, which is 0.2 inch below normal. For calendar year 1999 through June, the Lake Erie basin has averaged 17.1 inches of precipitation, which is normal, and the entire Great Lakes basin has averaged 14.9 inches, which is 0.2 inch below normal.

In addition, the USACE predicts that, based on the current condition of the Great Lakes basin and anticipated future weather conditions, the level of Lake Erie should remain slightly below the long-term average for the foreseeable future. This expected range of future levels is considerably lower than the levels that have been observed for the past 30 or more years.

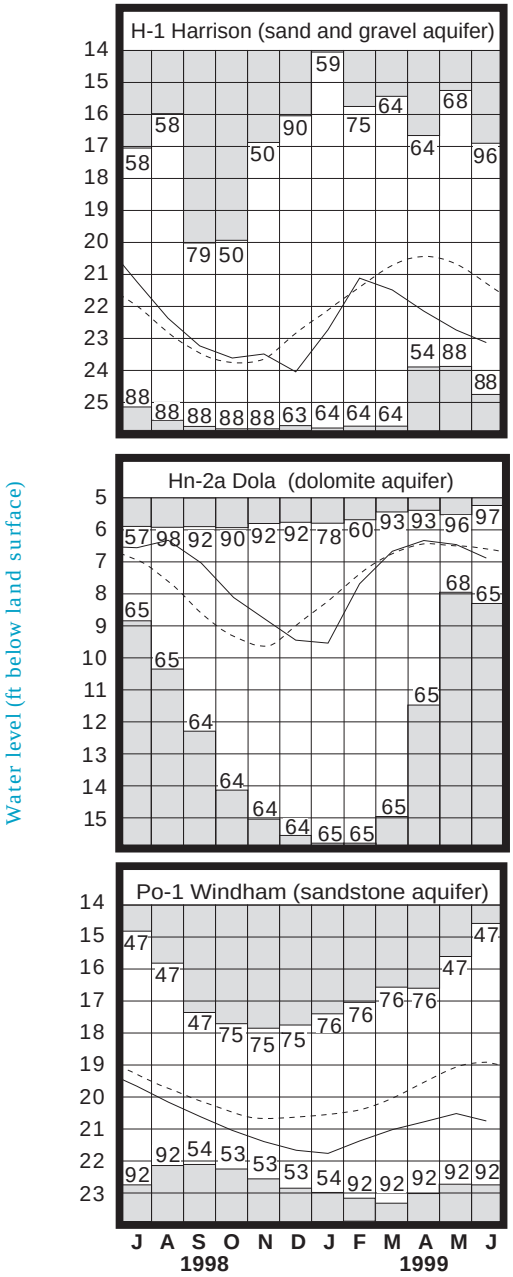
LAKE ERIE LEVELS at Fairport



Base period: 1900-1991

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: H-1, 1951-1990. Hn-2a, 1955-1990. Po-1, 1947-1990

Record high and low, year of occurrence

Normal – – – – Current ———

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Precipitation for the 1999 calendar year is below normal throughout most of the state except in the Northwest Region where it remains slightly above normal. The average for the state as a whole is 17.37 inches, 2.23 inches below normal. Regional averages range from 18.53 inches, 1.12 inches below normal, for the Northeast Hills Region to 15.91 inches, 4.01 inches below normal, for the Central Region.

Precipitation for the 1999 water year is below normal statewide. The state average is 24.12 inches, 3.05 inches below normal. Regional averages range from 26.37 inches, 3.37 inches below normal, for the Southwest Region to 20.95 inches, 3.51 inches below normal, for the North Central Region.

Much of the 1999 spring season has been unusually dry across Ohio with the May/June period being exceptionally dry in many areas of the state. During these two months an average of 4.34 inches of rain has fallen in Ohio which is 3.38 inches below normal. This ranks as the 7th driest May/June period during the past 117 years of record. Regional averages for these two months ranged from 6.02 inches, 1.35 inches below normal, for the Northwest Region to 3.13 inches, 4.74 inches below normal, for the Central Region. This was the 2nd driest May/June period of record for the Central and Central Hills regions, the 3rd driest for the South Central Region, the 7th driest in the Southeast Region, the 8th driest in the Northeast Hills and Southwest regions, the 9th driest in the Northeast Region and the 10th driest in the West Central Region. An example of how dry it has been in some areas of the state is in Circleville (Pickaway County) where a total of 1.58 inches of rain was recorded in May and June which is 6.56 inches below normal.

SUMMARY

Precipitation was below normal in most areas of the state except in a few locations in northwestern and southwestern Ohio where it was above normal. The state average of 2.07 inches ranks as the 9th driest June during the past 117 years. Streamflow was below normal statewide and was low enough to be considered deficient in the southeastern half of the state. Reservoir storage declined in both the Mahoning and Scioto river basins and is below normal statewide. Ground water levels declined throughout the state and are below normal statewide. Lake Erie level declined 0.03 foot and was just 0.03 foot above the long-term June average.

NOTES AND COMMENTS

Division of Water Website

Be sure to regularly visit the Division of Water's website. It is an easy method to quickly find information and answers to many questions. New and updated information as well as additional products are being routinely added. The address is: www.dnr.state.oh.us/odnr/water.

The website includes information about the Division of Water's programs and policies, Ohio Revised Code references, contact information for all staff members, a list of publications many of which can be downloaded and printed, updates on current projects and many links to other websites of interest. Also included is information about the Ohio Water Education Program and Project Wet. The website also includes a location map for ODNR.

The Division of Water's website will soon incorporate a major addition. Coming soon, water well logs will be available on-line. The Division is currently completing the preparation and review of an application that will make basic information extracted from well logs available on-line. More information will be provided in this report once the product is finalized and released.

Remember to visit the Division of Water website regularly at: www.dnr.state.oh.us/water.

Division of Water Principle Hydrogeologist Accepts New Position

Rebecca Petty, former administrator of the Water Resources Section, has accepted a new position with the Ohio Department of Health. In her new position, Ms. Petty will be involved with Ohio's Private Water Systems and Household Sewage Disposal Systems programs. These programs are currently undergoing many changes and improvements.

While at ODNR, Rebecca oversaw many technological changes and new projects including advancements in well log computerization, pollution potential mapping, improved well log forms and well log processing, Non-Point Source projects, state-wide aquifer mapping, and many others.

The Division of Water wishes Rebecca the best in her new position.

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.*

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