MONTHLY WATER INVENTORY REPORT FOR OHIO

June 2004

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

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PRECIPITATION during June was generally above normal across the northern two-thirds of the state and below normal in the southern third. The average for the state as a whole was 4.87 inches, 1.02 inches above normal. Regional averages ranged from 6.79 inches, 2.77 inches above normal, for the Central Hills Region to 2.81 inches, 0.80 inch below normal, for the South Central Region. Regionally, this ranked as the 5th wettest June during the past 110 years for the Northeast Hills Region, the 10th wettest for the Central Hills Region and the 17th wettest for the West Central Region. Leesville Lake Dam (Carroll County) reported the greatest amount of June precipitation, 11.09 inches; New Philadelphia (Tuscarawas County) reported 10.13 inches. Captain Anthony Meldahl Locks and Dam (Clermont County) reported the least amount of June precipitation, 1.23 inches.

The first 8 days of June were rather dry across most of the state with a few widely scattered showers at the beginning of the month producing rain amounts of generally 0.25 inch or less. Most of the month's precipitation occurred during June 9-17. Locally severe storms were common during this period with urban and stream flooding reported following some of these storms. Tornadoes spawned by these storms touched down in Licking and Henry counties resulting in minor damage. During this period, generally 1-2 inches of rain was reported across isolated areas of northeastern and much of southern Ohio, while 3 to more than 6 inches fell across most of the remainder of the state. The reminder of the month was much drier with most areas receiving less than 0.50 inch of rain during this period. However, some locations, mostly in the northern half of the state, received 1-1.5 inches of rain from widely scattered storms, most notably on June 24 and 28.

Precipitation for the 2004 calendar year is above normal across all but some areas of northwestern Ohio. The average for the state as a whole is 23.64 inches, 4.30 inches above normal. Regional averages range from 27.47 inches, 7.80 inches above normal, for the Northeast Hills Region to 16.18 inches, 0.89 inch below normal, for the Northwest Region.

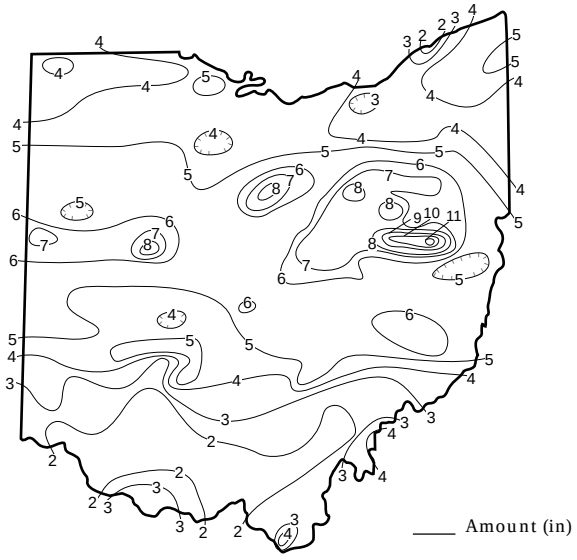
Precipitation for the 2004 water year is above normal across all but northwestern Ohio. The average for the state as a whole is 32.61 inches, 5.06 inches above normal. Regional averages range from 36.12 inches, 7.46 inches above normal, for the Southeast Region to 23.54 inches, 1.12 inches below normal, for the Northwest Region.

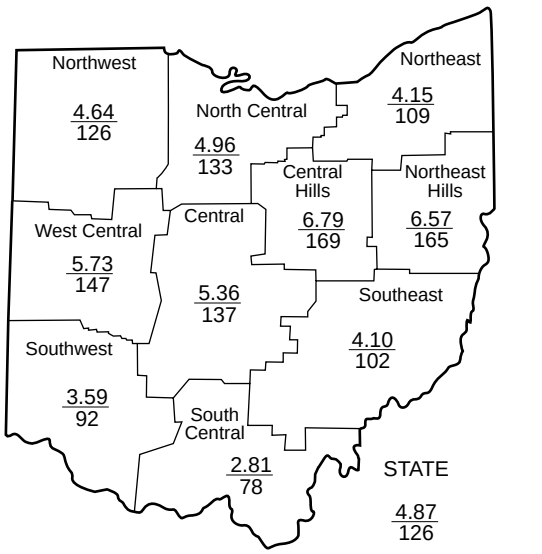
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000					Palmer Drought Severity Index*
	This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	
Northwest	+0.97	+1.27	-0.89	+6.23	+3.21	+0.3
North Central	+1.22	+4.77	+4.50	+10.98	+10.12	+2.5
Northeast	+0.36	+4.35	+4.96	+12.84	+12.83	+2.3
West Central	+1.84	+2.72	+2.75	+15.77	+14.10	+2.2
Central	+1.45	+4.90	+7.16	+13.82	+14.89	+1.9
Central Hills	+2.77	+6.00	+7.37	+14.03	+10.29	+2.5
Northeast Hills	+2.59	+6.38	+7.80	+17.18	+14.22	+2.7
Southwest	-0.30	+1.81	+1.92	+7.50	+8.46	+0.3
South Central	-0.80	+2.23	+2.08	+9.26	+13.67	+0.5
Southeast	+0.08	+3.94	+5.36	+14.34	+14.19	+2.3
State	+1.02	+3.84	+4.30	+12.17	+11.54	

*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	469	178	144	131	142
Great Miami River at Hamilton	3,630	7,895	255	125	128	171
Huron River at Milan	371	751	353	194	152	180
Killbuck Creek at Killbuck	464	1,223	367	197	147	168
Little Beaver Creek near East Liverpool	496	1,022	241	166	147	190
Maumee River at Waterville	6,330	15,660	391	126	99	140
Muskingum River at McConnelsville	7,422	20,680	348	266	217	148
Scioto River near Prospect	567	1,901	621	229	165	205
Scioto River at Higby	5,131	12,980	366	171	151	168
Stillwater River at Pleasant Hill	503	1,060	281	101	101	162

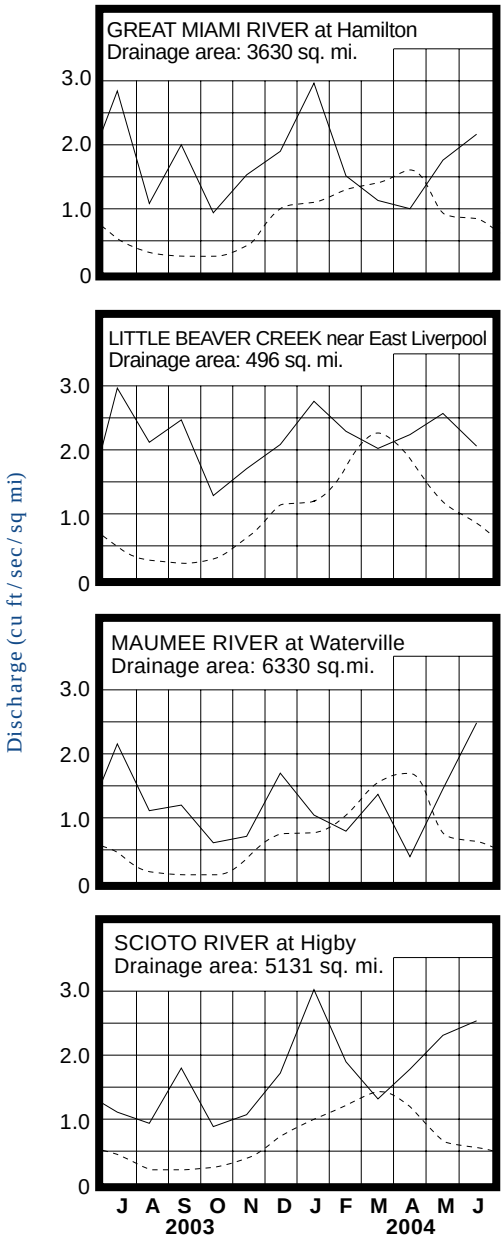
STREAMFLOW during June was above normal statewide. Flows were high enough to be considered excessive across most of the state.

Flows at the beginning of June were above normal statewide. Flows decreased statewide during the first 9 or 10 days as little rain fell during this period. Low flows for the month occurred around June 9-10 across eastern and southwestern Ohio. Flows began to increase on June 9 in northern Ohio and on June 10 elsewhere as showers and thunderstorms were numerous during the next 9 days. Greatest flows for the month occurred during this period across the state, most notably during June 14-18. Several rivers across the state were above flood stage during this period, closing roads and prompting some evacuations. Flows decreased from these peaks during the remainder of the month as drier weather conditions prevailed. Low flows for the month in drainage basins across northwestern, central and south-central Ohio occurred at month's end and were below normal across most of the state.

RESERVOIR STORAGE during June decreased in both the Mahoning and Scioto river basins. Storage remained above normal in both basins.

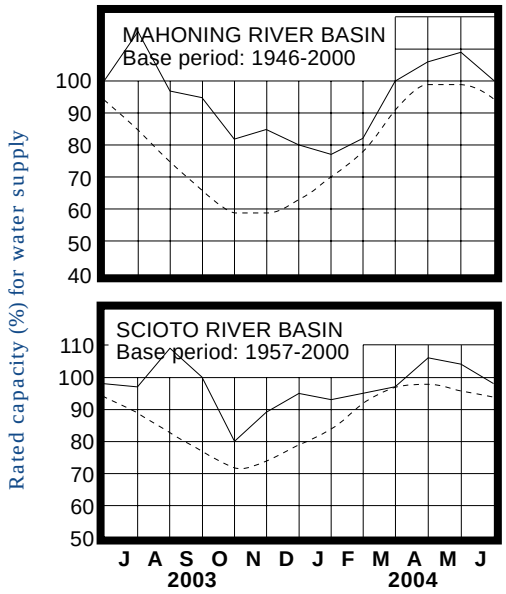
Reservoir storage at the end of June in the Mahoning basin index reservoirs was 100 percent of rated capacity for water supply compared with 109 percent for last month and 100 percent for June 2003. Month-end storage in the Scioto basin index reservoirs was 98 percent of rated capacity for water supply compared with 104 percent for last month and 97 percent for June 2003. Surface water supplies remain adequate throughout Ohio.

MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

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	10.24	+3.99	+0.89	+2.43
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.00	-0.60	-0.04	-0.13
Fr-10	Columbus, Franklin Co.	Gravel	43.29	-0.53	-0.09	+0.98
H-1	Harrison, Hamilton Co.	Gravel	22.00	-0.61	+0.36	+0.47
Hn-2a	Dola, Hardin Co.	Dolomite	5.65	+0.94	+0.43	+0.61
Po-1	Windham, Portage Co.	Sandstone	17.18	+1.93	-0.23	+1.89
Tu-1	Strasburg, Tuscarawas Co.	Gravel	10.51	+1.59	+1.13	+2.60

GROUND WATER levels during June showed mixed responses with some aquifers showing net improvements from May's levels while other aquifers showed the expected net declines from May's levels. Levels in consolidated aquifers were rather stable or rose during the first 3 weeks of the month and then declined during the last week of June, while levels in unconsolidated aquifers generally declined during the first week and a half, rose in response to precipitation during the next week, and then declined throughout the remainder of the month.

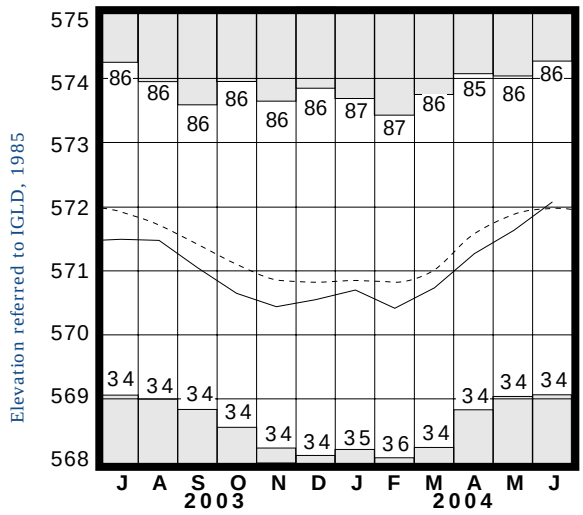
The above normal precipitation across most of the state during the past 2 months has been beneficial for ground water storage in Ohio, extending the recharge season through mid-June in some areas of the state. Ground water levels are above normal across much of Ohio, but are slightly below normal across the southwestern quarter of the state. Current levels are higher than they were a year ago across nearly all of Ohio. With near-normal precipitation and other climatic conditions during the next several months, ground water supplies should remain adequate across the state. The Ohio Agricultural Statistics Service reports that near the end of June, soil moisture was rated as being short or very short in 2 percent of the state, adequate in 60 percent of the state and surplus in 38 percent of the state.

LAKE ERIE level rose during June. The mean level was 572.08 feet (IGLD-1985), 0.46 foot higher than last month's mean level and 0.10 foot above normal. This month's mean level is 0.62 foot higher than the June 2003 level and 2.88 feet above Low Water Datum. This marks the first month since October 2000 that Lake Erie level has been above normal.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June averaged 3.16 inches, which is 0.29 inch below normal. For the entire Great Lakes basin, June precipitation averaged 2.76 inches, which is 0.44 inch below normal. For calendar year 2004 through June, the Lake Erie basin has averaged 18.38 inches of precipitation, 1.32 inches above normal, while the entire Great Lakes basin has averaged 16.84 inches of precipitation, 2.07 inches above normal.

In addition, the USACE predicts that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should range from slightly above normal to about 2 inches below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from 7 inches above normal to as much as 11 inches below the normal seasonal average.

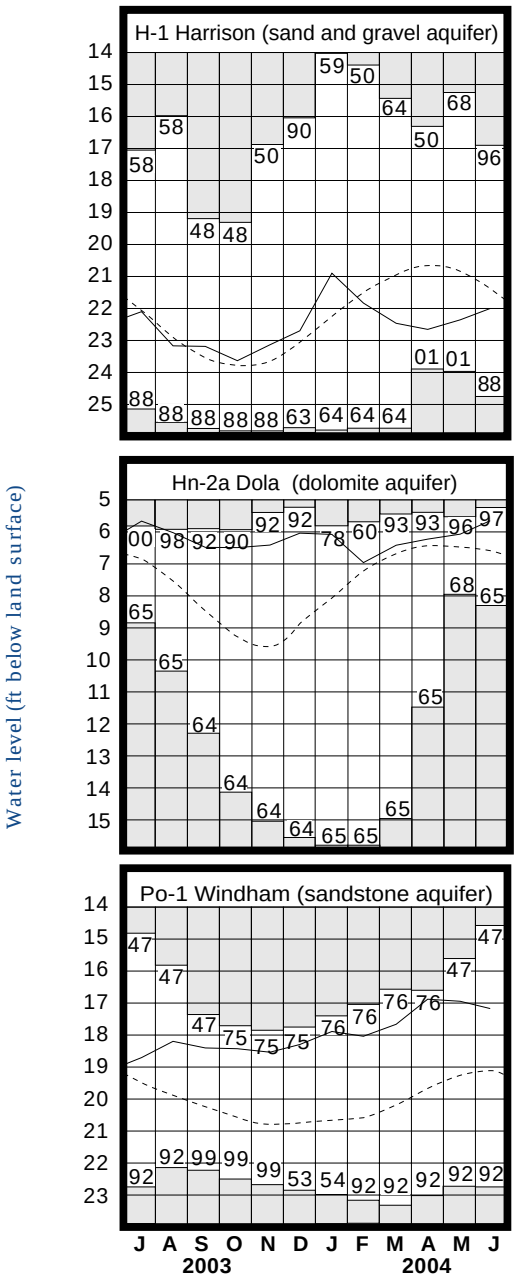
LAKE ERIE LEVELS



Base period: 1918-2000

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: H-1, 1951-2000. Hn-2a, 1955-2000. Po-1, 1947-2000

Record high and low, year of occurrence

Normal– – – – Current———

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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SUMMARY

Precipitation during June was generally above normal in the northern two-thirds and below normal in the southern third of the state. Streamflow was above normal statewide and was high enough to be considered excessive across most of the state. Reservoir storage declined but remained above normal seasonal levels. Ground water levels showed mixed responses and are above normal across much of Ohio. Lake Erie level rose 0.46 foot and was 0.10 foot above the long-term June level.

NOTES AND COMMENTS

New Publication

The Water Resources Division of the U.S. Geological Survey (USGS) announces the availability of the following new report:

Water Resources Data-Ohio Water Year 2003

This report, a two volume set, contains data from cooperative long-term surface-water and ground water networks as well as data collected as part of special short-term projects. Volume 1 comprises data from the Ohio River Basin while Volume 2 contains data from the St. Lawrence River Basin plus data from the special projects. To make these data readily available to interested parties outside of the USGS, they are published annually in the Water Resources Data-Ohio report. Copies can be obtained by writing U.S. Geological Survey, Water Resources Division, 6480 Doubletree Avenue, Columbus, Ohio 43229, phone (614) 430-7700. The report can also be viewed on the USGS web page for Ohio (http://oh.water.usgs.gov), click on Publications and then on "Water Data Report for Ohio."

Additional Counties To Receive Disaster Assistance

Residents and business owners in 15 additional flood-stricken counties in Ohio have been declared eligible for federal assistance. This brings the total to 23 counties now eligible for assistance for damage suffered from the flooding of May 18 through June 21. The counties eligible for federal aid, including the original 8 counties in the disaster declaration, are Athens, Carroll, Columbiana, Crawford, Cuyahoga, Delaware, Geauga, Guernsey, Harrison, Hocking, Holmes, Licking, Logan, Lorain, Mahoning, Medina, Noble, Perry, Portage, Richland, Stark, Summit, and Tuscarawas.

50-Year Anniversary Highlights

Notable June Events From The Past 50 Years

June 4-5, 1963: Heavy rains cause significant flooding in Guernsey, Coshocton and Muskingum counties. Nearly 8 inches of rain in 16 hours was reported in Cambridge, with estimates of nearly 14 inches at several locations. Most streams in the affected counties reported their greatest flows ever.

June 13, 1981: A tornado traveled through the center of Cardington (Morrow County), damaging the entire 9-block business district. About 100 homes were also destroyed or heavily damaged. Four people were killed and several others injured.

June 1988: Drought conditions continue to worsen across Ohio. The 0.87 inch state precipitation average ranked June 1988 as the driest June for the state as a whole during the previous 105 years, a record that still stands today. The Wauseon Water Plant (Fulton County) reported a scant 0.15 inch of rainfall for the month. June 25 was one of the hottest days ever across many parts of Ohio. Cleveland's 104-degree temperature was the city's hottest day ever since records began. Toledo also had a high that day of 104 degrees while Cincinnati had a high of 106 degrees. The drought negatively impacted agricultural production and water supplies. Governor Celeste created a drought task force in response to the severe drought conditions.

June 2, 1990: An F4 tornado swept into southwestern Ohio, traveling some 25 miles across Hamilton and Butler counties. This tornado destroyed 51 homes and 3 businesses while damaging at least another 900 homes, 31 businesses, several apartment complexes and 3 schools. Miraculously, there were no fatalities and only a few injuries from this large tornado that traveled through a highly populated area. The low number of casualties can be attributed to the tornado warning siren system.

June 14, 1990: An intense storm dumped an estimated 5.5 inches of rain in 3 hours, most of which fell in just 1 hour, in the Pipe and Wegee creek drainage basins near Shadyside (Belmont County). The rain fell on saturated soils and at a time when streamflow was already high. This combination resulted in a flash flood that produced a wall of water that was at times at least 20 feet high, destroying everything in its path. Tragically, 26 people lost their lives.

June 24-30, 1998: Areas of Ohio were impacted by strong thunderstorms during June 24-30. High winds, heavy rain and tornadoes were associated with many of these storms. Flooding was widespread across eastern and southeastern Ohio while storms were locally severe in central and north-central Ohio. As a result of the storm damage, 23 counties were declared disaster areas. Tragically, 11 people lost their lives. This ended up being the wettest June of record for the southern one-third of Ohio.