



# MONTHLY WATER INVENTORY REPORT FOR OHIO

April 1999

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

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**PRECIPITATION** during April was above normal in most areas of the state, but below normal across portions of southern Ohio. The state average was 4.19 inches, 0.68 inch above normal. Regional averages ranged from 5.36 inches, 2.05 inches above normal, for the Northwest Region to 2.63 inches, 1.11 inches below normal, for the South Central Region. Springfield North (Clark County) reported the greatest amount of precipitation for the month, 6.60 inches. Marietta State Nursery (Washington County) reported the least amount of April precipitation, 1.46 inches.

Precipitation during April fell as rain with only a few stations in northeast Ohio reporting trace amounts of snow. The greatest amounts of precipitation for the month were reported in northwest and north-central Ohio where a few stations received more than 6 inches. Reports of greater than 6 inches of precipitation were also received from a few other scattered locations in the state as well. Across the state, precipitation amounts generally diminished from northwest to southeast with a few locations in extreme southern Ohio reporting less than 2 inches for the month. Light showers during the first few days of the month produced less than 0.5 inch of rain at most locations. Thunderstorms, some with heavy rains, moved across the state during April 9-11. Some of these thunderstorms reached severe levels with damaging winds and hail. A strong tornado, rated an F4 by the National Weather Service, touched down during the early morning hours on April 9 in the northern suburbs of Cincinnati causing severe damage and killing 4 people. Considerable damage from this tornado was reported in Butler, Hamilton and Warren counties. A weaker tornado touched down in Champaign County causing some damage. The heaviest rain associated with this storm system fell across the northern half of the state with amounts of 1-2 inches reported. Generally, 0.5-1.0 inch fell elsewhere, but many areas in southeastern Ohio received less than 0.5 inch during this period. A series of storm systems moved through the state during the April 15-24 period producing light showers and occasional heavier rain. Rain occurred somewhere in the state on everyday during this period. The greatest amounts were again reported in the northern half of the state where 2-3 inches of rain fell. The southern half of the state generally reported 1-2 inches of rain during this period, but less than 1 inch in portions of extreme southeast Ohio. Conditions turned much drier the last week of the month with little or no rain reported statewide.

Precipitation for the 1999 calendar year is near to above normal in most areas of the state with only the Southwest and South Central regions

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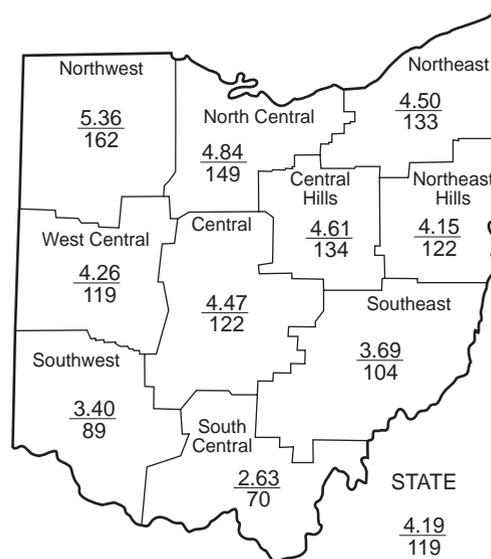
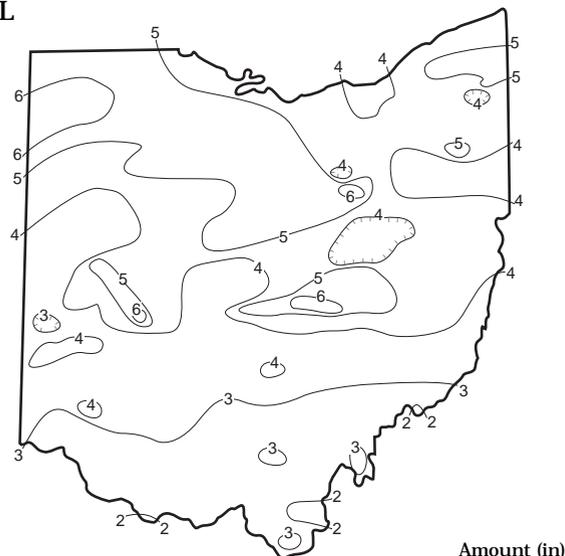
## PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+2.05	+0.78	-0.15	+2.62	+12.52	-1.5
North Central	+1.59	+0.42	-0.84	+0.74	+8.70	-0.5
Northeast	+1.11	-0.11	-0.61	-3.21	+0.40	-1.0
West Central	+0.68	+0.39	+0.28	+3.56	+4.57	+0.5
Central	+0.81	-0.06	-0.29	+0.28	+4.44	-0.7
Central Hills	+1.16	-0.04	+0.13	+2.49	+4.83	-0.6
Northeast Hills	+0.75	-0.50	+0.69	+4.23	+6.11	-1.4
Southwest	-0.41	-1.36	-1.07	+1.30	+3.12	-1.1
South Central	-1.11	-2.37	-1.58	-0.54	+1.31	-1.0
Southeast	+0.15	-1.03	-0.14	+3.07	+7.52	+0.2
State	+0.68	-0.38	-0.35	+1.45	+5.34	

\*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 APRIL



Average (in)  
Percent of normal

# MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	This Month		
				% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	1,537	107	70	60	51
Great Miami River at Hamilton	3,630	3,964	75	87	96	121
Huron River at Milan	371	766	148	87	97	126
Killbuck Creek at Killbuck	464	700	92	89	109	111
Little Beaver Creek near East Liverpool	496	741	82	77	108	100
Maumee River at Waterville	6,330	15,761	165	104	110	116
Muskingum River at McConnelsville	7,422	13,393	89	98	111	127
Scioto River near Prospect	567	872	107	85	91	98
Scioto River at Higby	5,131	5,375	76	77	83	108
Stillwater River at Pleasant Hill	503	504	70	75	94	118

**STREAMFLOW** during April was above normal across northern Ohio, and below normal elsewhere in the state. Flows in some areas of northwestern and north-central Ohio were high enough to be considered excessive. Flows during April were generally greater than the March flows in the northern third of Ohio, but less than the March flows in the southern two-thirds of the state.

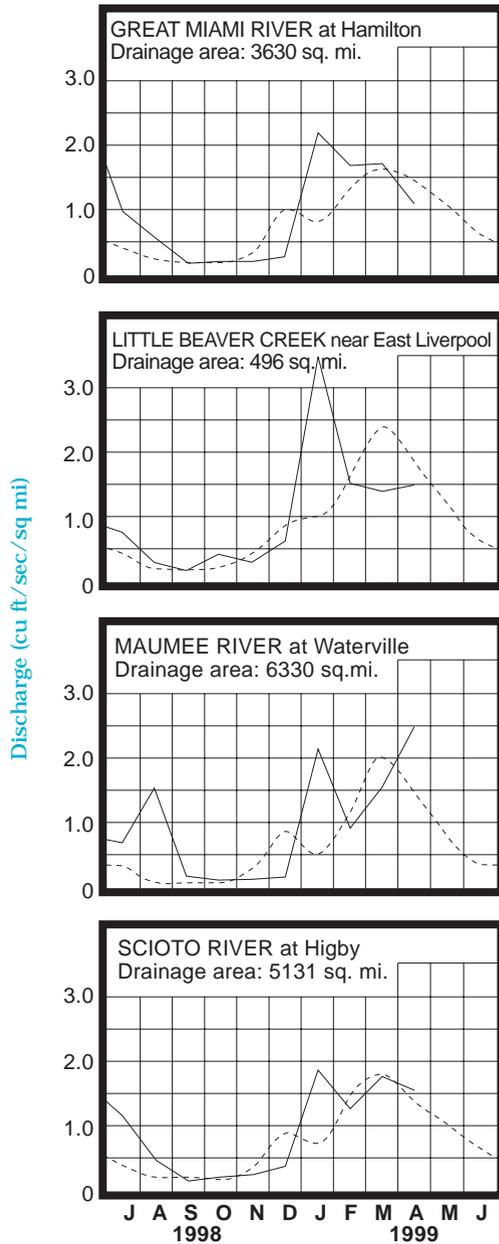
Flows at the beginning of the month were below normal statewide. Flows in most areas of the state declined during the first week of April and reached their low point for the month around April 7-8. This trend was in response to the dry conditions prevalent during the second half of March which continued during the first week of April when only light

amounts of rain fell. Thunderstorms, some with heavy rain, moved across the state during April 9-11 resulting in an increase in streamflow statewide. Most drainage basins in northeastern Ohio had their greatest flows for the month during this period with peak flows occurring around April 10-12. Generally, the remaining drainage basins in the state experienced their greatest flows during April 22-24 in response to a series of storm systems which moved across the state between April 15-24. Flows declined during the last week of April as little or no rain was reported statewide. At the end of the month flows throughout most of the state were below normal, but remained slightly above normal in some northwest Ohio drainage basins.

**RESERVOIR STORAGE** for water supply during April increased in both the Mahoning and Scioto river basins. Storage was above normal in both basins.

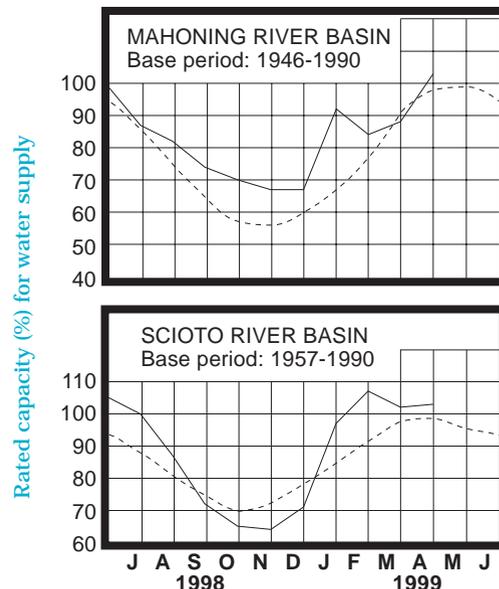
Reservoir storage at the end of April in the Mahoning basin index reservoirs was 103 percent of rated capacity for water supply compared with 88 percent for last month and 107 percent for April 1998. Month-end storage in the Scioto basin index reservoirs was 103 percent of rated capacity for water supply compared with 102 percent for last month and 107 percent for April 1998. Surface water supplies remain in good condition throughout the state.

## MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

## RESERVOIR STORAGE FOR WATER SUPPLY



## GROUND-WATER LEVELS

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

**GROUND WATER** levels during April generally remained stable or rose slightly in the northern half of the state, but declined in the southern half of Ohio. Typically, April is a time when levels are rising in all aquifers across the state.

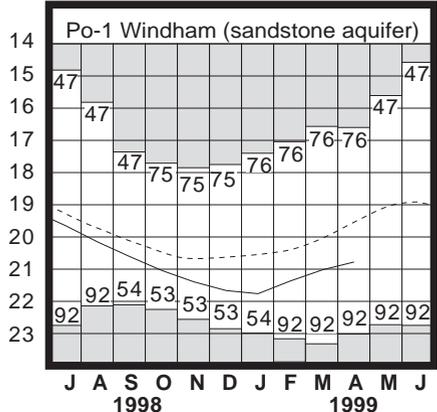
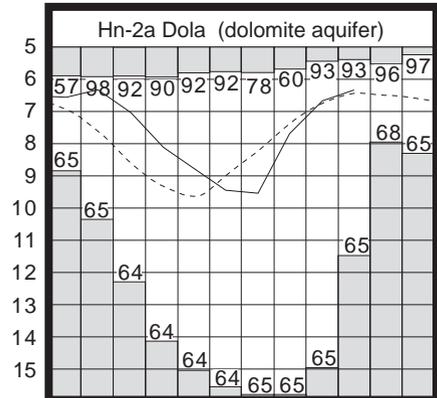
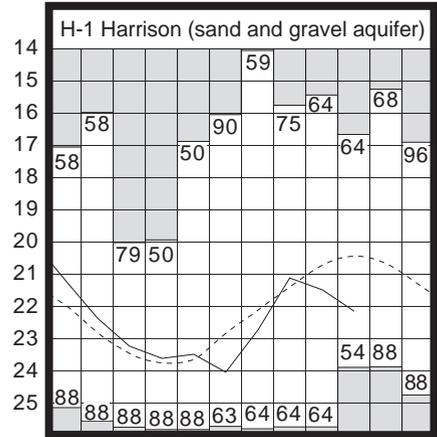
Ground water levels continue to decline contra-seasonally in many areas of the state or rise less than normal in others. Levels are still responding unfavorably to the below normal precipitation which fell during March. Levels in most aquifers statewide were steady or declining during the first week of the month. During the remainder of the month, levels in most aquifers in the northern half of the state remained steady or rose slightly in response to the precipitation the region received in April. Ground water levels in aquifers in the southern half of Ohio declined steadily during the month except for temporary rises in water levels in some shallow, unconsolidated aquifers following rain events. Current ground water levels are below normal in most areas of the state and are also lower than they were a year ago in most aquifers. Although ground water supplies remain adequate statewide, near normal precipitation and other climatic conditions during the next month or two and throughout the summer high use period would help alleviate the trend toward declining water levels and also reduce demand. However, even though there was little or no recharge occurring in April, the near to above normal precipitation for the month, especially in the northern two-thirds of the state, has improved soil moisture aiding the potential for some additional recharge. The Ohio Agricultural Statistics Service reports that near the end of April soil moisture was rated as being short in 4 percent of the state, adequate in 73 percent of the state and surplus in 23 percent of the state. Water supply managers with ground water sources need to continue monitoring their situation closely as we enter the later stages of the recharge season.

**LAKE ERIE** level continued its seasonal rise during April. However, the rise in water level was less than half the expected average. The mean level for April was 571.78 feet (IGLD-1985) which is 0.22 foot higher than last month's mean level and 0.39 foot above normal. This month's level is 1.94 feet lower than the April 1998 level and 2.58 feet above Low Water Datum.

The U.S. Army Corps of Engineers reports that precipitation in the Lake Erie basin during April averaged 4.2 inches, 1.1 inches above normal. The entire Great Lakes basin averaged 2.6 inches of precipitation during April which is 0.1 inch above normal. For the calendar year 1999 through April, the Lake Erie basin has averaged 12.3 inches of precipitation, 1.9 inches above normal, and the entire Great Lakes basin has averaged 8.5 inches, 0.1 inch below normal.

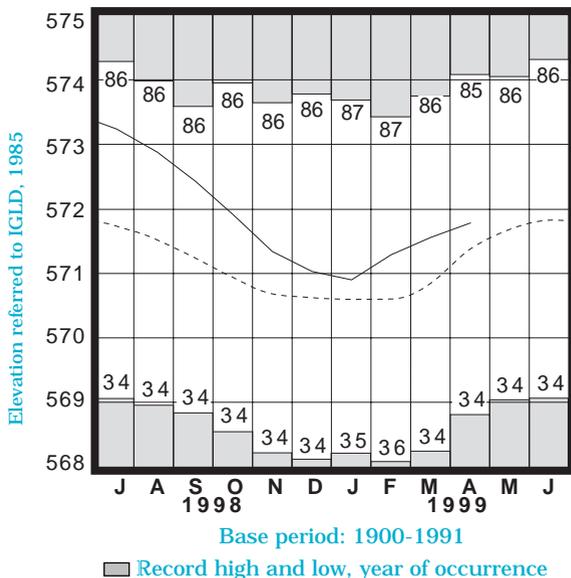
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	14.30	-1.87	-1.64	-1.11
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.47	-0.73	-0.23	-0.48
Fr-10	Columbus, Franklin Co.	Gravel	42.91	-0.51	+0.20	-1.14
H-1	Harrison, Hamilton Co.	Gravel	22.15	-1.72	-0.66	-1.15
Hn-2a	Dola, Hardin Co.	Dolomite	6.33	+0.14	+0.34	-0.43
Po-1	Windham, Portage Co.	Sandstone	20.77	-1.25	+0.30	-1.09
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.40	-1.60	-0.50	+1.71

## GROUND-WATER LEVELS



Water level (ft below land surface)

## LAKE ERIE LEVELS at Fairport



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

Po-1, 1947-1990 ■ Record high and low, year of occurrence

(continued from front page)

having slightly below normal precipitation. The average for the state as a whole is 13.03 inches, 1.14 inches above normal. Regional averages range from 14.10 inches, 1.48 inches above normal, for the Southeast Region to 11.36 inches, 1.08 inches above normal, for the North Central Region.

Precipitation for the 1999 water year is above normal in the central part of Ohio, but below normal in most of the northern and southern portions of the state. The state average is 19.79 inches, 0.33 inch above normal. Regional averages range from 21.81 inches, 2.19 inches above normal, for the Northeast Hills Region to 16.00 inches, 1.13 inches below normal, for the North Central Region. Although water supplies are adequate statewide, precipitation so far during the 1999 water year has not been especially good for recharge to ground water supplies.

#### SUMMARY

Precipitation was above normal throughout most of the state, but below normal in some locations in southern Ohio. Streamflow was above normal in the northern third of the state and below normal elsewhere. Reservoir storage increased and was above normal. Ground water storage remained steady or increased slightly in the northern half of the state, but declined in the southern half. Ground water levels are below normal in most aquifers statewide. Lake Erie level rose seasonally, but less than half that normally expected. Lake Erie level continues to remain above the long-term seasonal average.

#### NOTES AND COMMENTS

##### DIVISION OF WATER HAS "NEW" LEADERSHIP

The Ohio Department of Natural Resources' Director Samuel W. Speck recently announced the appointment of James R. Morris as chief of the Division of Water effective May 10, 1999. Jim Morris follows Michele Willis who recently accepted a position in the Ohio Department of Health's Bureau of Local Services as Chief Engineer of the Environmental Engineering Section.

Mr. Morris was previously chief of the Division of Water from March 1992 to April 1994. Since then he has served ODNR as a deputy director, chief of the Division of Real Estate and Land Management, and acting chief of the Division of Engineering.

In addition to the above experience, Mr. Morris brings a long and varied background to the Division. After serving in the U. S. Army as a technical engineering supervisor and chief construction surveyor, he was employed by ODNR's Division of Water from 1978 to 1985. During this time, he held various positions within the Floodplain Management and Dam Safety Sections (now combined into the Water Management Section).

In 1985, Jim joined the Arizona Department of Water Resources as chief of the Flood Management Section where he administered planning, construction and funding of flood control projects and flood warning systems, and coordinated floodplain management activities. He has also instructed various level college courses at colleges in both Ohio and Arizona.

Mr. Morris is a registered professional engineer in Arizona and Ohio. He has earned both a bachelor's and master's degree in civil engineering from The Ohio State University.

##### OHIO DISTRICT USGS MOVES TO A NEW LOCATION

The Ohio District, U. S. Geological Survey (USGS) has moved to a new location in the Busch Corporate Park in northwest Columbus. The new address is: USGS-Water Resources Division, 6480 Doubletree Avenue, Columbus, Ohio 43229, phone: (614) 430-7700, fax: (614) 430-7777.

## 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.*



**Bob Taft**  
*Governor*

**Samuel W. Speck**  
*Director*

**Richard S. Bartz**  
*Acting Chief*

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