



MONTHLY WATER INVENTORY REPORT FOR OHIO

March 1999

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

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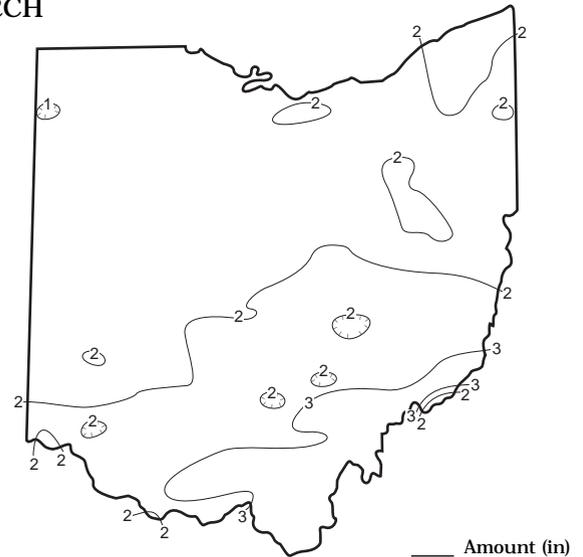
PRECIPITATION during March was noticeably below normal throughout Ohio. The state average was 1.97 inches, 1.41 inches below normal. For the state as a whole, this was the 19th driest March during the past 117 years. Regional averages ranged from 3.04 inches, 1.05 inches below normal, for the South Central Region to 1.35 inches, 1.52 inches below normal, for the Northwest Region. Racine Locks and Dam (Meigs County) reported the greatest amount of precipitation for the month, 3.73 inches. Hicksville (Defiance County) reported the least amount, only 0.60 inch.

Precipitation during March fell as rain and snow with most of it falling during the first half of the month. Many areas received no precipitation after March 10. Snowfall for the month was above normal at most locations. Precipitation changing between snow, rain and a wintery mix fell almost daily during the first 10 days of the month. Daily amounts were often small, but notable amounts of 0.5 inch or more (liquid) fell at some areas on March 3-4 and 5-6, falling as rain, and on March 8-9, falling as snow. Some areas in the southern third of the state, especially in extreme south-central Ohio, received quite a bit of snow during March 14 -15.

Precipitation for the 1999 calendar year is near or slightly above normal in most areas of the state. The average for the state as a whole is 8.84 inches, 0.46 inch above normal. Regional averages range from 11.02 inches, 0.78 inch above normal, for the South Central Region to 6.52 inches, 0.51 inch below normal, for the North Central Region.

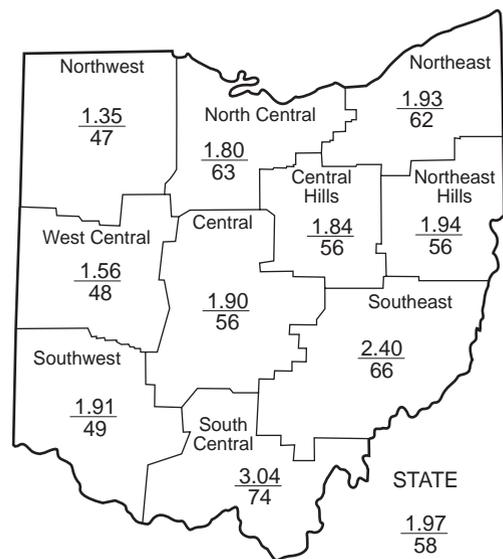
Precipitation for the first half of the 1999 water year is slightly above normal in the southern two-thirds of the state and below normal in the northern third. The state average is 15.60 inches, 0.36 inch below normal. Regional averages range from 18.28 inches, 0.07 inch above normal, for the South Central Region to 11.16 inches, 2.72 inches below normal, for the North Central Region (see Precipitation table, departure from normal, past 6 months column). Precipitation during the 1999 water year so far has not been especially good for ground water supplies. Near normal precipitation during the next couple of months, the remainder of the recharge season, could still contribute in a positive way toward improving the overall water supply situation.

PRECIPITATION MARCH



PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-1.52	+0.15	-2.13	+1.58	+8.38	-0.9
North Central	-1.06	-0.51	-2.72	+0.92	+5.82	-1.0
Northeast	-1.18	-0.18	-1.48	-1.58	-1.69	-1.1
West Central	-1.70	+1.36	+0.01	+4.47	+1.63	-0.7
Central	-1.47	-0.08	+0.09	+1.65	+1.36	-0.6
Central Hills	-1.42	+0.02	+0.47	+2.72	+2.03	-0.9
Northeast Hills	-1.51	+1.36	+1.44	+5.22	+4.00	-1.1
Southwest	-2.01	+0.28	+0.26	+5.68	+1.25	-0.7
South Central	-1.05	+0.78	+0.07	+3.15	+0.11	+0.9
Southeast	-1.22	+1.33	+0.39	+4.46	+5.31	+0.8
State	-1.41	+0.46	-0.36	+2.82	+2.81	



Average (in)
Percent of normal

*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

MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	This Month		% of Normal Past		
		Mean Discharge (CFS)	% of Normal	3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	1,243	65	75	50	59
Great Miami River at Hamilton	3,630	6,257	106	130	98	133
Huron River at Milan	371	567	81	97	89	129
Killbuck Creek at Killbuck	464	770	82	132	123	112
Little Beaver Creek near East Liverpool	496	688	58	129	122	111
Maumee River at Waterville	6,330	9,828	77	120	98	111
Muskingum River at McConnelsville	7,422	13,490	83	131	117	128
Scioto River near Prospect	567	1,102	113	121	90	100
Scioto River at Higby	5,131	9,028	98	103	91	121
Stillwater River at Pleasant Hill	503	679	82	127	94	126

STREAMFLOW during March was below normal across most of the state, but slightly above normal in portions of southwestern and central Ohio. Flows in some areas of northeastern Ohio were low enough to be considered deficient. Generally, flows during March were seasonally higher than the flows recorded during February.

Flows at the beginning of the month were above normal in the western two-thirds of the state and below normal in the eastern third. Greatest flows for March occurred at the beginning of the month in the western half of the state following the precipitation that fell at the end of February, while in the eastern half of the state, the greatest flows for the month generally occurred during

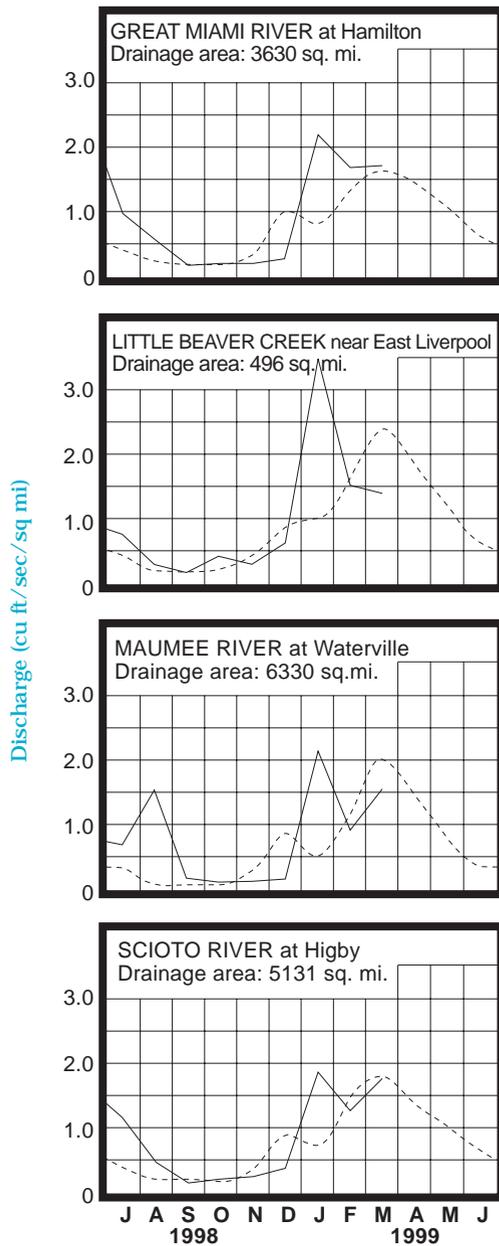
March 7-8. Following these peaks, flows declined throughout the remainder of the month with some slight increases noted around March 17. The lowest flows for March occurred at the end of the month and were noticeably below normal throughout the state.

RESERVOIR STORAGE for water supply during March increased in the Mahoning River basin but decreased in the Scioto River basin. Storage remained above normal in the Scioto basin reservoirs, but fell to below normal in the Mahoning basin reservoirs.

Reservoir storage at the end of March in the Mahoning basin index reservoirs was 88 percent of rated capacity for water supply compared with 84 percent for last month and 96 percent for March 1998. Month-end storage in the Scioto basin index reservoirs was 102 percent of rated capacity for water supply compared with 107 percent for last month and 106 percent for March 1998.

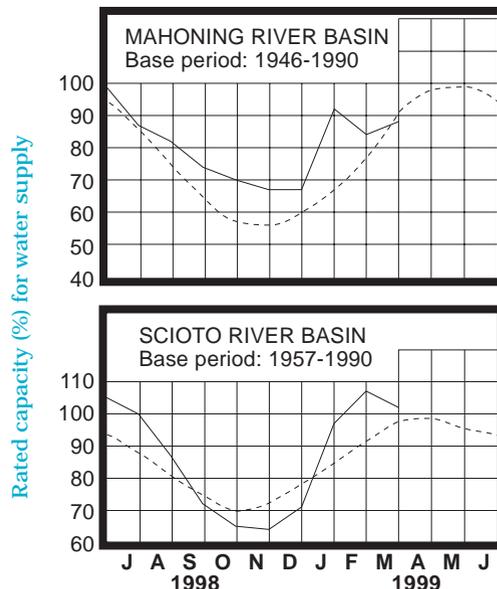
Surface-water supplies are adequate throughout the state. Recreational reservoirs will soon be filling to summer pool levels. Off-stream reservoirs have been able to do some filling during the late winter and early spring months and will continue to look for pumping opportunities to reach and maintain reservoir capacities.

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 March showed some net improvement in most aquifers across the state. However, net changes during March from February's levels were less than usually observed in all aquifers. Generally, levels in deeper aquifers rose gradually throughout the month in response to delayed recharge from February's precipitation. Levels in shallow aquifers rose during the first half of March responding to recharge from precipitation at the end of February and during the first 10 days of March and then declined during the second half of the month due to the lack of precipitation and unseasonably dry conditions.

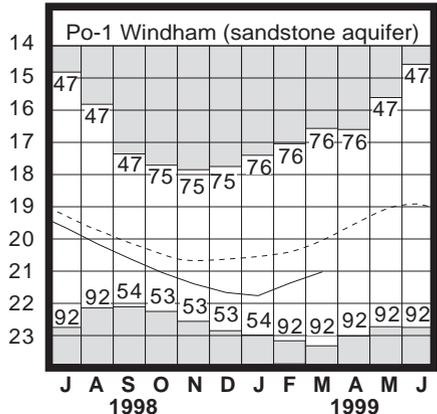
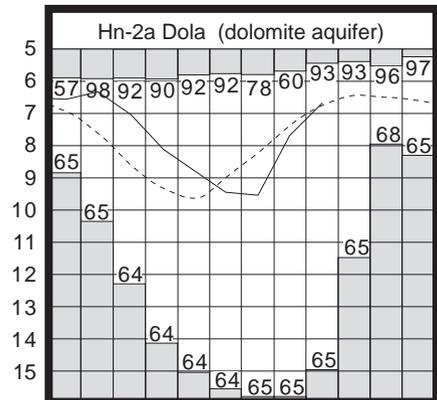
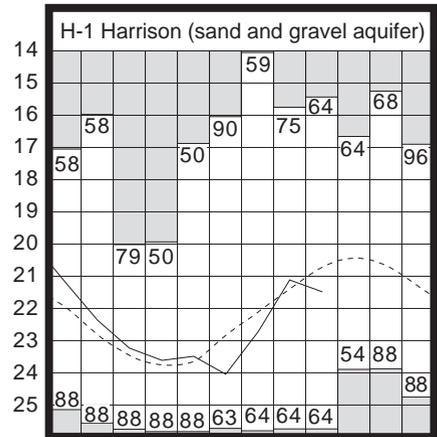
Precipitation so far during the 1999 water year has not been exceptionally good for ground water supplies. Below normal precipitation during the autumn and early winter months resulted in very little recharge and ground water levels continued to decline. Conditions finally improved during January and February, but unseasonably dry conditions during the second half of March reduced the rate of recharge considerably. Although ground water supplies are adequate statewide, current levels are below normal in most aquifers throughout the state. Current levels are also lower than they were a year ago in most aquifers, but this year's levels are somewhat higher in several shallow aquifers, especially those located in the eastern half of the state. With near normal precipitation and other climatic conditions, there is the opportunity for additional recharge during the next few months. However, current conditions are not exceptionally favorable for a significant overall improvement. The Ohio Agricultural Statistics Service reports that at the end of March soil moisture was rated as being short or very short in 32 percent of the state, adequate in 63 percent of the state and surplus in 5 percent of the state. Water supply managers with ground water sources should continue to monitor their situation closely throughout the recharge season and also throughout the summer months.

LAKE ERIE level continued its seasonal rise during March. The mean level for March was 571.56 feet (IGLD-1985) which is 0.27 foot higher than last month's mean level and 0.69 foot above normal. This month's level is 1.83 feet lower than the March 1998 level and 2.36 above Low Water Datum.

The U. S. Army Corps of Engineers reports that precipitation in the Lake Erie basin during March averaged 1.6 inches, 1.2 inches below normal. The entire Great Lakes basin averaged 1.2 inches of precipitation during March which is 1.0 inch below normal. For calendar year 1999 through March, the Lake Erie basin has averaged 7.2 inches of precipitation, 0.1 inch below normal, and the entire Great Lakes basin has averaged 6.2 inches, 0.1 inch above normal.

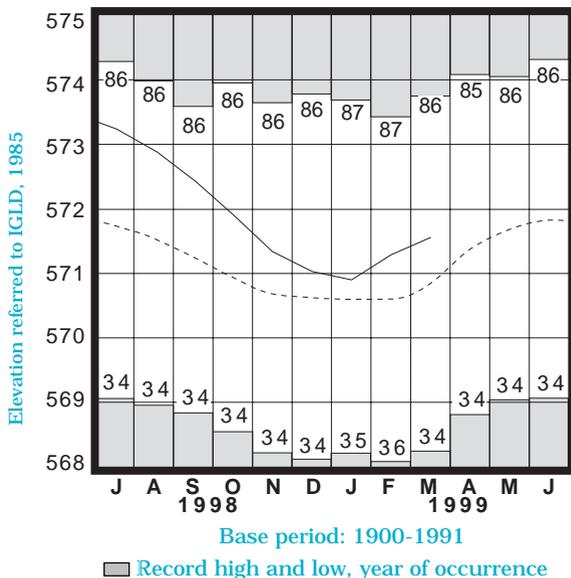
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	12.66	+0.65	+0.45	+0.49
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.24	-0.39	+0.36	-0.12
Fr-10	Columbus, Franklin Co.	Gravel	43.11	-0.44	+0.45	-0.98
H-1	Harrison, Hamilton Co.	Gravel	21.49	-0.78	-0.37	+0.65
Hn-2a	Dola, Hardin Co.	Dolomite	6.67	+0.11	+1.03	-0.53
Po-1	Windham, Portage Co.	Sandstone	21.07	-1.04	+0.32	-0.95
Tu-1	Strasburg, Tuscarawas Co.	Gravel	11.90	-0.50	+0.07	+2.19

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

SUMMARY

Precipitation was below normal throughout Ohio. The second half of the month was noticeably dry statewide. Streamflow was below normal in most areas of the state. Reservoir storage remained above normal in the Scioto basin, but fell to below normal in the Mahoning basin. Ground water showed some net improvement during the month, but is at below-normal levels in many areas of the state. Lake Erie level continued its seasonal rise during month and was 0.27 foot higher than last month's level which is 0.69 foot above the long-term March average. Water supplies are adequate statewide, but near-normal precipitation during the next few months would be beneficial and help to maintain this position.

NOTES AND COMMENTS

ODNR Set to Mark 50 Years

The Ohio Department of Natural Resources (ODNR) will celebrate its 50th birthday during 1999. An anniversary logo will be used throughout the year to note the occasion. The 50th anniversary logo shows a cardinal hopping out of the outline of the state giving everyone an opportunity to step in and celebrate the occasion.

Amended Senate Bill 13, passed by the Ohio House of Representatives on March 13, 1949 and by the Senate on April 20, 1949, created the Ohio Department of Natural Resources. Then Governor Frank J. Lausche signed the bill into law on May 9 to take effect 90 days later. Finally, ODNR became a reality on August 11, 1949.

Additional information about the celebration will be provided throughout the year.

WMAO Spring Conference

The Water Management Association of Ohio (WMAO) 1999 Spring Conference is scheduled for May 11, 1999. The focus of the conference will be the water resources and environmental programs of the new administration of Governor Bob Taft. The conference planning committee has scheduled the program to provide sufficient time for presentations along with ample time for questions. Agency directors, key staff, and legislative representatives are scheduled to attend.

The conference will be held from 9:00 a.m. to 3:00 p.m. at the Columbus Maennerchor, 966 South High Street, Columbus, Ohio, 43206. The registration fee is \$25.00. For more information, contact:

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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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