



MONTHLY WATER INVENTORY REPORT FOR OHIO

October 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

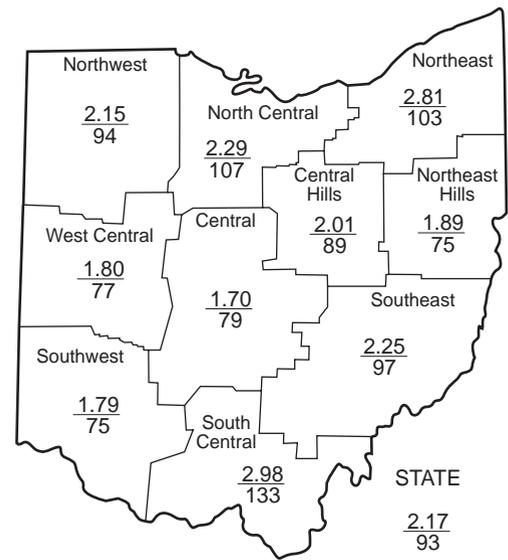
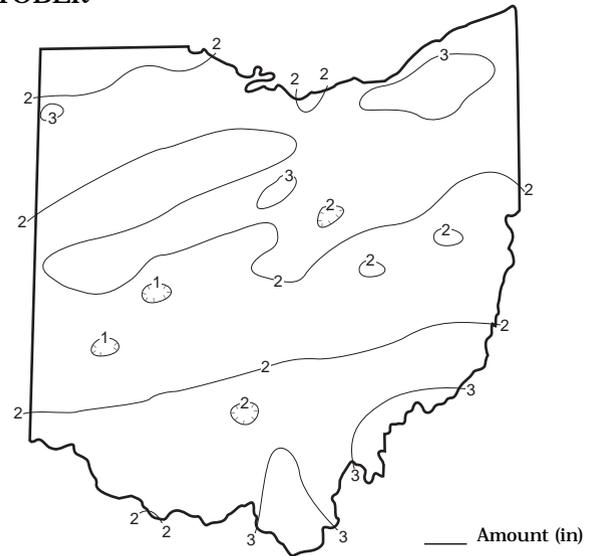
PRECIPITATION during October was above normal in portions of northern and south-central Ohio, but below normal in the remainder of the state. The state average was 2.17 inches, 0.17 inch below normal. Regional averages ranged from 2.98 inches, 0.74 inch above normal, for the South Central Region to 1.70 inches, 0.44 inch below normal, for the Central Region. Willow Island Dam (Washington County) reported the greatest amount of precipitation for October, 3.94 inches. Dayton (Montgomery County) reported the least amount for the month, 0.90 inch.

The first week of October was rather dry across most of the state. Some light and spotty showers fell around October 3 with the greatest amounts reported from northwestern Ohio where scattered areas received up to 1 inch of rain. Widespread precipitation around October 8-10 produced amounts of 0.25-0.50 inch of rain across most of the state with some areas in extreme southern Ohio receiving in excess of 1 inch. A cold front moved across the state during October 13-14 resulting in strong thunderstorms that contained a small tornado which touched down around Circleville (Pickaway County). Precipitation from this system was generally in the 0.50 inch range across most of the state with scattered locations in north-central and northeastern Ohio reporting around 1 inch. However, southwestern and west-central Ohio received little or no rain from this storm. Light showers fell across most of the state around October 17 with 0.25-0.50 inch amounts reported from northwestern Ohio, but less elsewhere. The next week was relatively dry across much of the state with only some light showers falling, except in northeastern Ohio where precipitation amounts of 0.5-1.0 inch were reported during October 23-24. The remainder of the month was dry statewide.

Precipitation for the 1999 calendar year is below normal statewide. The average for the state as a whole is 28.32 inches, 4.02 inches below normal. Regional averages range from 31.05 inches, 0.40 inch below normal, for the Northeast Region to 25.46 inches, 9.01 inches below normal, for the Southwest Region.

The 2000 water year (October 1, 1999 to September 30, 2000) is not off to an exceptionally good start as far as precipitation is concerned. A return to normal precipitation statewide during the next several months is needed for this to be a favorable recharge season.

PRECIPITATION OCTOBER



PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-0.14	-1.86	-3.08	-3.25	+2.65	-2.6
North Central	+0.15	-0.80	-2.87	-3.83	+1.61	-1.0
Northeast	+0.09	+0.20	-1.24	-1.94	-1.46	-0.3
West Central	-0.54	-3.17	-5.95	-5.57	-1.71	-3.7
Central	-0.44	-1.89	-7.14	-7.54	-6.08	-3.7
Central Hills	-0.25	-1.23	-4.83	-4.83	-1.82	-1.9
Northeast Hills	-0.64	-1.87	-4.80	-4.14	+1.47	-2.4
Southwest	-0.60	-3.70	-8.63	-9.99	-5.79	-3.0
South Central	+0.74	-0.08	-6.26	-7.71	-4.27	-3.0
Southeast	-0.08	-0.96	-6.06	-6.24	-1.00	-2.6
State	-0.17	-1.54	-5.10	-5.52	-1.66	

*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

Average (in)
Percent of normal

MEAN STREAM DISCHARGE

This Month

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	192	55	28	25	51
Great Miami River at Hamilton	3,630	504	66	48	45	79
Huron River at Milan	371	45	134	54	51	80
Killbuck Creek at Killbuck	464	88	88	61	46	82
Little Beaver Creek near East Liverpool	496	69	58	52	48	82
Maumee River at Waterville	6,330	487	80	40	59	90
Muskingum River at McConnelsville	7,422	1,163	62	53	41	87
Scioto River near Prospect	567	23	83	37	33	76
Scioto River at Higby	5,131	790	85	47	34	69
Stillwater River at Pleasant Hill	503	58	98	47	46	77

STREAMFLOW during October was below normal throughout most of the state except in north-central Ohio where it was above normal. Flows were low enough to be considered deficient in the southwestern area of the state and nearly deficient in some basins in eastern Ohio. Flows for the month were greater than the September flows statewide.

Streamflow at the beginning of the month was below normal across most areas of the state, but was slightly above normal in some basins in northern Ohio. Many of the basins in eastern Ohio recorded their highest flows for the month on October 1 as a result of the rainfall which occurred near the end of September. Flows generally declined throughout the month with some temporary increases noted following rain events.

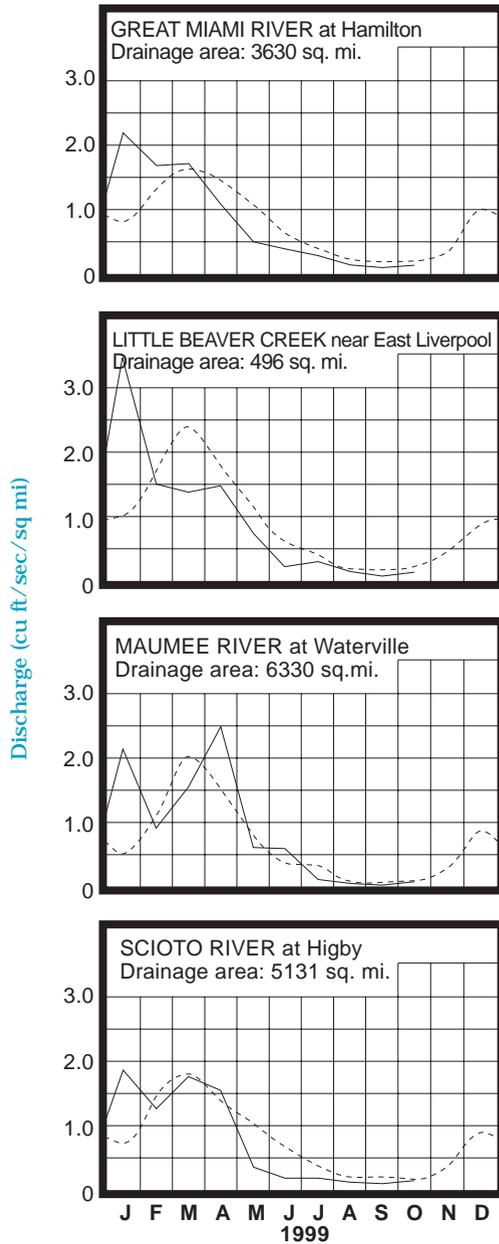
Low flows in most basins across the state were established toward the end of the first week, just prior to the precipitation which fell around October 8-10. Greatest flows for the month varied across the state occurring after periods of the greatest local precipitation. In addition to the previously mentioned highest flows in eastern Ohio on October 1, greatest flows generally occurred around October 9-10 in central and north-central basins, and between October 14-18 elsewhere. Flows at the end of October were lower than they were at the beginning of the month in most basins and below normal statewide.

RESERVOIR STORAGE for water supply during October declined in both the Mahoning and Scioto river basins. Storage remained above normal in the Mahoning basin reservoirs and below normal in the Scioto basin reservoirs.

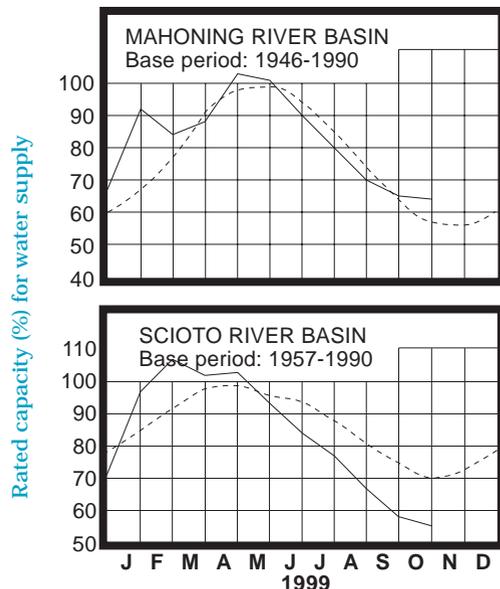
Reservoir storage at the end of October in the Mahoning basin index reservoirs was 64 percent of rated capacity for water supply compared with 65 percent for last month and 70 percent for October 1998. Month-end storage in the Scioto basin index reservoirs was 55 percent of rated capacity for water supply compared with 58 percent for last month and 65 percent for October 1998.

Although surface water supplies remain adequate in most areas of the state as we enter the 2000 water year, water supply managers with surface-water supplies should continue to monitor their respective situations closely during the upcoming recharge season.

MEAN STREAM DISCHARGE



RESERVOIR STORAGE FOR WATER SUPPLY



GROUND WATER levels during October declined throughout most of the state. In most aquifers the declines were greater than usually observed for October. Generally, levels in most aquifers across the state declined steadily throughout the month except for some unconsolidated aquifers in the southern half of the state where levels stabilized and then showed some slight improvement during the second half of the month.

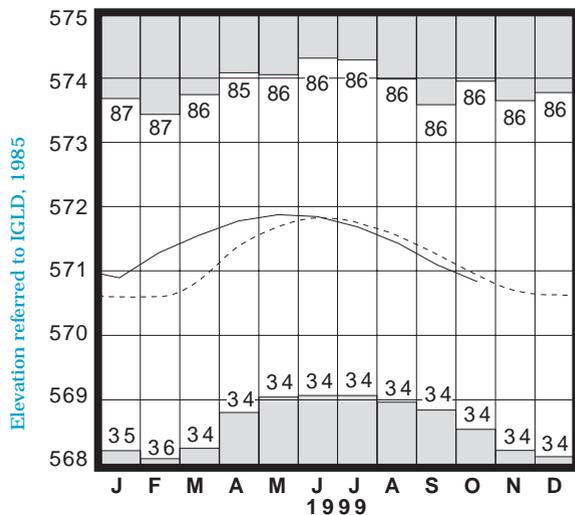
Ground water levels are below normal statewide with levels generally ranging from about 1 foot to more than 4.5 feet below normal. Current levels are also lower than they were at this time last year ranging from about 1 foot to nearly 3.5 feet below the October 1998 levels. Also, current levels in many aquifers are lower than they were during the months of October 1987, 1988 and 1992, recent benchmark years for drought in Ohio. Ground-water levels in many aquifers in eastern and southern Ohio are noticeably below the normal seasonal levels. This is illustrated by the fact that index observation wells F-1 near West Rushville (Fairfield County), representing sandstone aquifers in eastern and southeastern Ohio, Po-1 near Windham (Portage County), representing sandstone aquifers in eastern and northeastern Ohio, and Tu-1 near Strasburg (Tuscarawas County), representing sand and gravel aquifers in eastern and northeastern Ohio, reached record-low levels for October. In addition, index observation well Fa-1 near Washington Court House (Fayette County), representing limestone aquifers in south-central and southwestern Ohio, reached an all-time record low level during the month.

The 2000 water year is not off to a very good start for recharge to ground water supplies. Soil moisture is still not favorable for recharge throughout most of the state, although it has improved since the end of September. The Ohio Agricultural Statistics Service reports that near the end of October soil moisture was rated as being short or very short in 59 percent of the state and adequate in 41 percent of the state.

LAKE ERIE level declined during October. The mean level was 570.83 feet (IGLD-1985) which is 0.27 foot lower than last month's mean level and 0.13 foot below normal. This month's level is 1.05 feet lower than the October 1998 level and 1.63 feet above Low Water Datum.

The U. S. Army Corps of Engineers reports that precipitation in the Lake Erie basin during October averaged 2.4 inches which is 0.4 inch below normal. The entire Great Lakes basin averaged 2.7 inches of precipitation during October, 0.1 inch below normal. For calendar year 1999 through October, the Lake Erie basin has averaged 26.6 inches of precipitation, 2.9 inches below normal, and the entire Great Lakes basin has averaged 28.4 inches, 1.2 inches above normal.

LAKE ERIE LEVELS at Fairport



Base period: 1900-1991

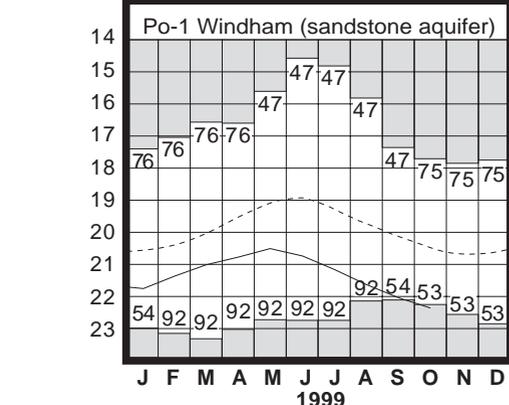
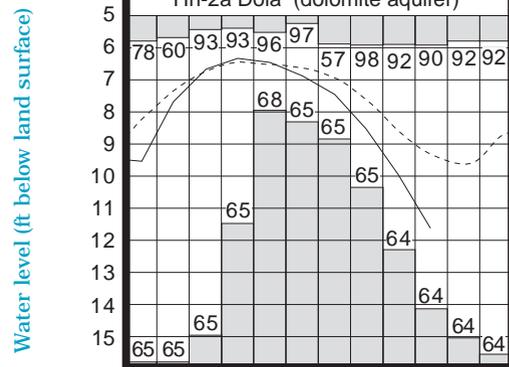
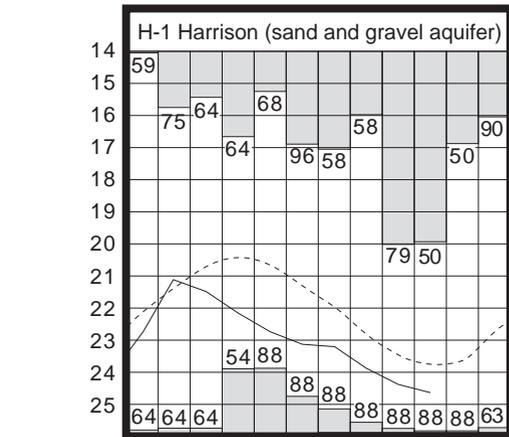
■ Record high and low, year of occurrence

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	21.23	-4.34	-1.02	-3.05
Fa-1	Jasper Mill, Fayette Co.	Limestone	13.56	-4.55	-1.31	-3.24
Fr-10	Columbus, Franklin Co.	Gravel	46.65	-2.21	+0.27	-1.43
H-1	Harrison, Hamilton Co.	Gravel	24.62	-0.86	-0.24	-1.02
Hn-2a	Dola, Hardin Co.	Dolomite	11.61	-2.28	-1.65	-3.49
Po-1	Windham, Portage Co.	Sandstone	22.37	-1.90	-0.33	-1.33
Tu-1	Strasburg, Tuscarawas Co.	Gravel	16.30	-2.69	-0.28	-1.67

GROUND-WATER LEVELS



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

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

SUMMARY

Precipitation was above normal in north-central, northeastern and south-central Ohio, but below normal elsewhere. Streamflow was below normal throughout most of the state. Reservoir storage declined statewide and remained above normal in the Mahoning basin reservoirs and below normal in the Scioto basin reservoirs. Ground water levels declined in most aquifers and are below normal statewide. Lake Erie level declined 0.27 foot and is 0.13 foot below the long-term October average.

NOTES AND COMMENTS NEW PUBLICATIONS

The Division of Water and/or the U. S. Geological Survey announce the availability of the following new publications:

Floods of June 28-29, 1998 in Ohio (U. S. Geological Survey Water-Resources Investigations Report 99-4192), by G. F. Koltun

This report, prepared cooperatively with the Ohio Department of Natural Resources (ODNR) Division of Water, describes the flooding in central and southeastern Ohio during the last week of June 1998. The report includes a summary of the meteorologic factors related to the storms, a general description of the flooding including specific data from streamflow gauges in the affected areas and flood-damage estimates. This 21-page report also presents numerous high-water elevations that were compiled by ODNR.

A limited number of this new publication is available from either the U. S. Geological Survey, Water Resources Division, 6480 Doubletree Avenue, Columbus, Ohio 43229, phone (614) 430-7700 or the ODNR Division of Water, 1939 Fountain Square, Building E-3, Columbus Ohio, 43224-1336, phone (614) 265-6750.

Also, a very limited number of the Flood of March 1997 in Southern Ohio (WRIR 97-4149) report is still available. Contact either agency for a copy.

Both reports are also available in a PDF format through the USGS's web page. The address is: <http://oh.water.usgs.gov/reports/abstract.html>.

1998 WATER WITHDRAWAL ANNUAL REPORT compiled by Al Lucyk

The Ohio Water Withdrawal Facility Registration Program: 1998 annual report pamphlet is now available. This four-page report depicts on a statewide basis the amount of water withdrawn by registered facilities in 1998. It also details on a county basis the water withdrawals for each of five reporting categories. Those categories are : power; public water supply; industrial; agriculture/irrigation (includes golf courses); and miscellaneous.

Owners of all facilities (surface and/or ground water sources) with the capacity to withdraw more than 100,000 gallons of water or more per day are required to register that facility with the ODNR Division of Water and submit annual reports of actual withdrawals pursuant to Section 1521.16 of the Ohio Revised Code. Copies of the 1998 annual water withdrawal report (in grey-tones) are available from the ODNR Division of Water at the address listed above or by calling (614) 265-6735. Both a color and grey-tone version of the report in a PDF format is available through the Division's web page. The address is: <http://www.dnr.state.oh.us/odnr/water/waterin/wwwfprog/wwwfprog.html>.

OHIO WATER WELL LOG SUMMARIES AVAILABLE ON INTERNET

Water well log summaries with detailed information for more than 720,000 water wells across Ohio are now available on the Internet. The site provides information for individual wells including the original owner's name, property address, driller's name, well depth, well capacity, casing length, and soil and geologic formation data. These well log summaries will be of interest to current and prospective home owners, health districts, well drillers, and others interested in water resource development and management. To access water well records through the new Internet site, users need to know the county and street where the well is located. Knowing the township or original well log number can also help the search, but is not required.

The address for the new well log site is: <http://www.dnr.state.oh.us/odnr/water/maptechs/wellogs/wellcomp.html>.

As the state's official repository for water well records, the ODNR Division of Water maintains water well records that have been filed with the state since 1945. This well log collection represents the most comprehensive and detailed geologic and hydrogeologic database in Ohio. Each well log is a legal document filed by water well drilling contractors pursuant to Ohio Revised Code 1521.05. More than 15,000 new well logs are received by the Division each year. Each year the Division receives and processes more than 8,500 requests for well log information.

Additional information regarding well records can be obtained by writing the Division of Water at the address listed above or by calling (614) 265-6740.

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

James R. Morris P.E.
Chief

An Equal Opportunity Employer-M/F/H

DIVISION OF WATER
1939 FOUNTAIN SQUARE
COLUMBUS, OHIO 43224