



# MONTHLY WATER INVENTORY REPORT FOR OHIO

November 1998

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

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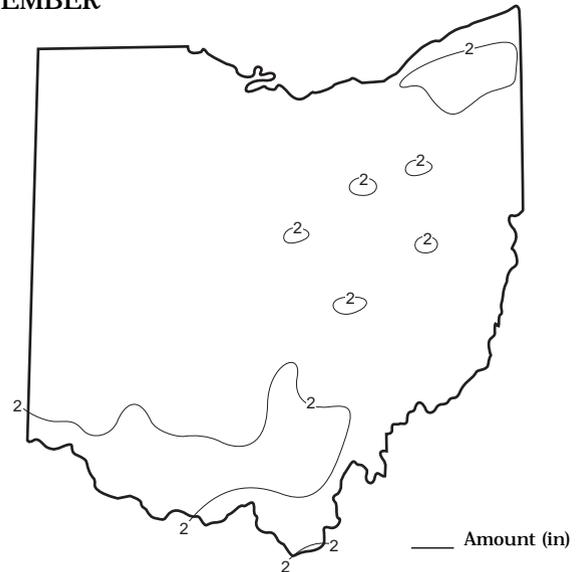
**PRECIPITATION** for November was noticeably below normal throughout the state. The average for the state as a whole was 1.66 inches, 0.99 inch below normal. Regional averages ranged from 1.99 inches, 0.78 inch below normal, for the South Central Region to 1.31 inches, 1.12 inches below normal, for the North Central Region. Stonelick State Park (Clermont County) reported the greatest amount of precipitation for the month, 2.79 inches. Millport (Columbiana County) reported the least precipitation in November, 1.00 inch.

Precipitation in November fell as rain. Only nominal amounts of snow were reported throughout the state for the month including only a trace in the snowbelt counties of northeast Ohio. The first week of the month was rather dry in the northern half of the state while scattered showers produced up to 0.5 inch or so of rain early in the week in the southern half of Ohio. Strong storms producing widespread rain pushed across the state between November 9-11. Rain amounts ranged from 0.5 to 1.25 inches with the greatest amounts reported in western and northern sections of Ohio. Strong winds associated with these storms caused scattered damage in some areas across the state. Little or no rain fell in the state during the next week of the month. Scattered showers around November 20 produced less than 0.5 inch of rain in most areas of Ohio. Only northwest Ohio received little or no rain during this period. Somewhat heavier showers returned to the state during November 25 and 26 with amounts of 0.25 to slightly more than 0.5 inch reported throughout most of Ohio.

Precipitation for the 1998 calendar year is above normal throughout the state except in the Northeast Region where it is slightly below normal. The state average is 38.20 inches, 3.21 inches above normal. Regional averages range from 41.90 inches, 3.57 inches above normal, for the South Central Region to 34.15 inches, 0.18 inch below normal, for the Northeast Region.

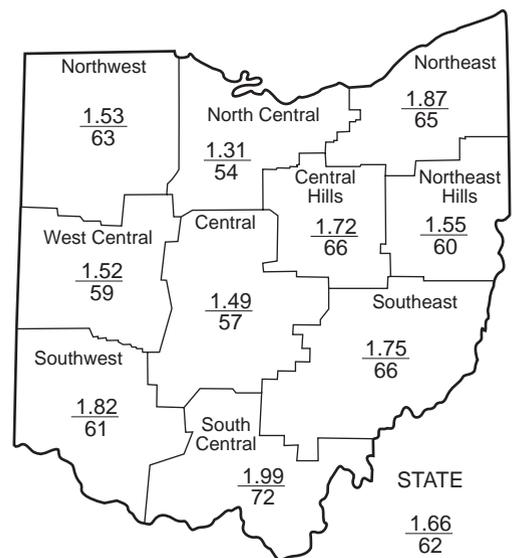
Precipitation for the 1999 water year is below normal across most of the state, but slightly above normal in the Central, Central Hills and Northeast Hills regions. The average for the state as a whole is 4.67 inches, 0.32 inch below normal. Regional averages range from 5.67 inches, 0.54 inch above normal, for the Northeast Hills Region to 3.18 inches, 1.39 inches below normal, for the North Central Region.

## PRECIPITATION NOVEMBER



## PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-0.90	-2.72	+3.07	+4.94	+12.53	+2.1
North Central	-1.12	-3.26	+2.69	+4.76	+10.65	-0.7
Northeast	-1.01	-2.31	-1.72	-0.30	+0.61	-2.0
West Central	-1.04	-2.55	+2.37	+3.25	+3.49	-0.3
Central	-1.13	-1.37	-0.27	+0.24	+2.22	-0.7
Central Hills	-0.89	-1.38	+1.91	+2.13	+3.55	+0.8
Northeast Hills	-1.05	-1.30	+2.75	+3.63	+3.70	+1.3
Southwest	-1.16	-2.26	-0.03	+2.99	+3.43	-0.6
South Central	-0.78	-2.12	+0.10	+2.94	+4.42	-0.9
Southeast	-0.89	-0.68	+1.96	+3.62	+6.55	-0.2
State	-0.99	-1.99	+1.29	+2.83	+5.12	-0.2



\*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

# MEANSTREAMDISCHARGE

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	84	7	8	10	76
Great Miami River at Hamilton	3,630	727	56	60	179	118
Huron River at Milan	371	32	37	40	309	171
Killbuck Creek at Killbuck	464	137	67	90	146	94
Little Beaver Creek near East Liverpool	496	144	63	79	95	107
Maumee River at Waterville	6,330	796	45	63	183	138
Muskingum River at McConnelsville	7,422	2,595	55	80	145	118
Scioto River near Prospect	567	22	23	27	146	102
Scioto River at Higby	5,131	1,231	65	61	158	120
Stillwater River at Pleasant Hill	503	61	66	47	270	106

**STREAMFLOW** for November was noticeably below normal throughout the state. November flows were greater than the October flows in most drainage basins, but slightly less than the October flows in east-central Ohio. Flows were low enough to be considered deficient in all but some western and east-central areas of Ohio.

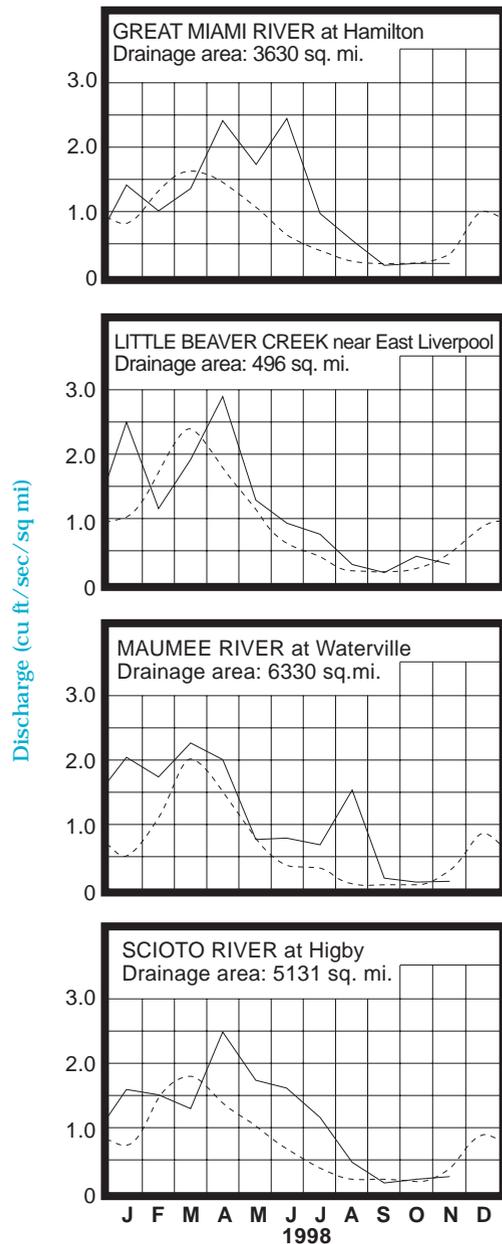
Flows at the beginning of the month were below normal statewide. Lowest flows for November occurred early in the month in most areas of the state. However, slightly lower flows occurred in some drainage basins in southwestern and extreme northeastern Ohio during November 19-25. Greatest flows for the month in most drainage basins occurred around November 11-12 in response to

the heaviest and most widespread precipitation of the month. An exception was in eastern and southeastern Ohio where flows were greatest on November 27. Flows generally remained below normal throughout the month.

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

Reservoir storage at the end of November in the Mahoning basin index reservoirs was 67 percent of rated capacity for water supply compared with 70 percent for last month and 68 percent for November 1997. Month-end storage in the Scioto basin index reservoirs was 64 percent of rated capacity for water supply compared with 65 percent for last month and 74 percent for November 1997. Surface water supplies remain adequate as we approach the end of the 1998 calendar year.

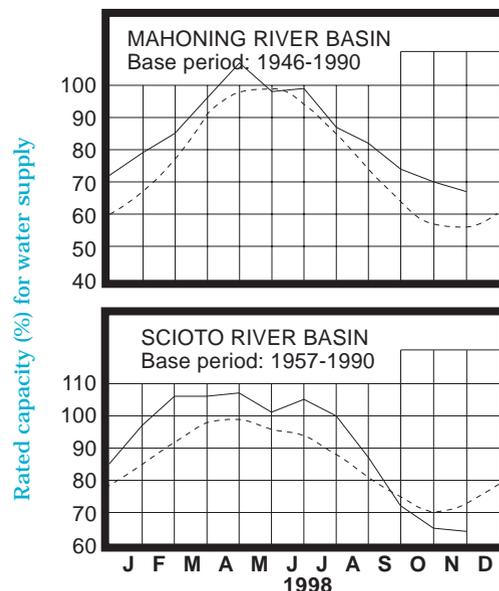
## MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

Normal - - - - Current - - - -

## RESERVOIR STORAGE FOR WATER SUPPLY



## GROUND-WATER LEVELS

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

**GROUND WATER LEVELS** declined during November in nearly all aquifers across the state. Generally, declines were greater than normal in most aquifers. A few exceptions were observed in some unconsolidated aquifers in south-western and central Ohio where ground water levels remained steady or rose slightly during the month.

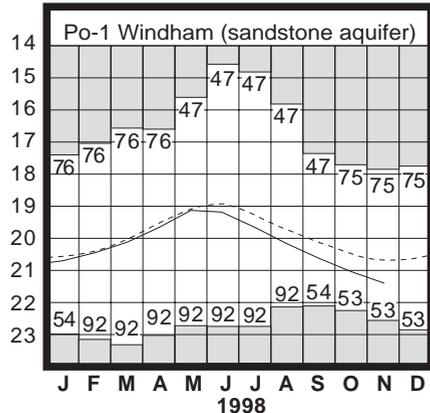
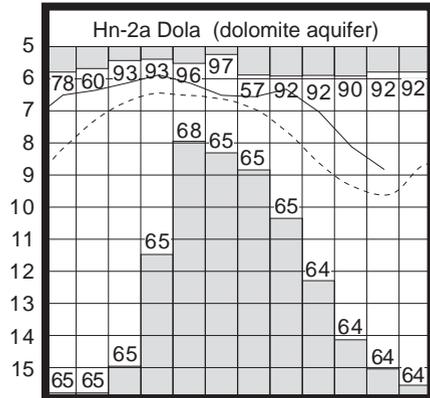
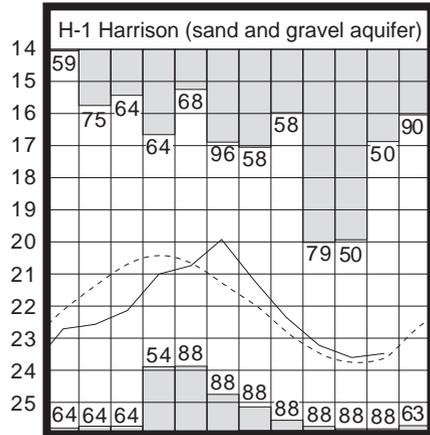
Ground water levels are lower than they were a year ago in most aquifers across the state. Current levels are also below normal in most areas of Ohio. The major exception is the consolidated carbonate aquifers of western and north-western Ohio where current levels remain above normal. Even with rather dry conditions across the state and little or no recharge occurring in November, ground water supplies remain adequate. However, continued below normal precipitation could begin to adversely affect ground water supplies in the near future. Soil moisture remained adequate in most areas of Ohio. The Ohio Agricultural Statistics Service reports that as of November 20, soil moisture was rated as being short or very short in 30 percent of the state, adequate in 67 percent of the state and surplus in 3 percent of the state. Water-supply managers with ground water sources should monitor their situations closely throughout the recharge season.

**LAKE ERIE** level declined during November. The mean level was 571.26 feet (IGLD-1985) which is 0.62 foot lower than last month's mean level and 0.56 foot above normal. This month's level is 1.34 feet lower than the November 1997 level and 2.06 feet above Low Water Datum.

The U. S. Army Corps of Engineers reports that precipitation in the Lake Erie basin for November averaged 1.7 inches, 1.1 inches below normal. The entire Great Lakes basin averaged 2.7 inches of precipitation during November, 0.1 inch below normal. For calendar year 1998 through November, the Lake Erie basin has averaged 31.8 inches of precipitation, 0.5 inch below normal, and the entire Great Lakes basin has averaged 29.4 inches, 0.6 inch below normal.

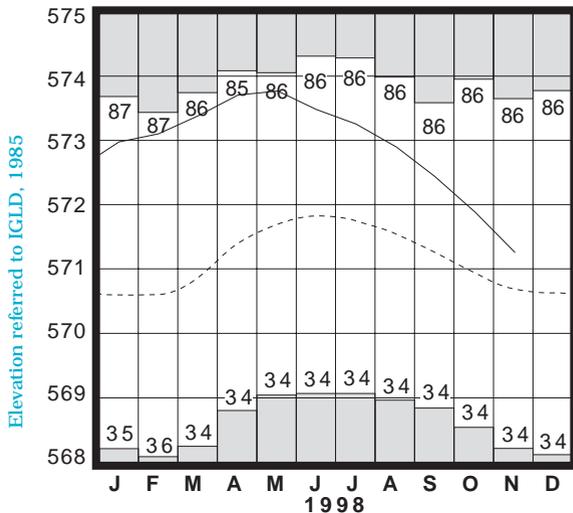
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	18.77	-1.51	-0.59	-0.05
Fa-1	Jasper Mill, Fayette Co.	Limestone	10.70	-1.75	-0.38	-2.13
Fr-10	Columbus, Franklin Co.	Gravel	44.79	-0.50	+0.43	-1.48
H-1	Harrison, Hamilton Co.	Gravel	23.49	+0.07	+0.01	+0.07
Hn-2a	Dola, Hardin Co.	Dolomite	8.82	+0.81	-0.70	-1.01
Po-1	Windham, Portage Co.	Sandstone	21.40	-0.72	-0.36	-0.72
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.11	-1.55	-0.48	+0.76

## GROUND-WATER LEVELS



Water level (ft below land surface)

## LAKE ERIE LEVELS at Fairport



Base period: 1900-1991

■ Record high and low, year of occurrence

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 the state. Streamflow increased seasonally in most drainage basins but was below normal statewide. Reservoir storage declined and remained slightly above normal in the Mahoning River basin and slightly below normal in the Scioto River basin. Ground water levels declined in nearly all aquifers and are below normal in most areas of the state. Lake Erie level declined 0.62 foot and was 0.56 foot above the normal November level.

## NOTES AND COMMENTS

### Chief Michele Willis Accepts New Position

On December 14, Division of Water Chief Michele Willis announced that she would be resigning her position as the Chief of the Division effective January 3, 1999. She is leaving the Division to accept a position with the Ohio Department of Health where she will become the Chief Engineer of the Environmental Engineering Section in the Bureau of Local Services.

Michele was appointed Chief in May 1994. Since that time the Division has had many significant accomplishments including: initiating the Quality Service through Partnerships effort in the Division; supporting the South Fork Licking River Watershed Initiative with federal, state and local partners; obtaining the approval of all eight of the Great Lake state governors for the Akron water diversion project; developing a strategic planning process and document for the Division; and revitalizing the Division's efforts on the water monitoring network in Ohio. In announcing her new position to the staff at ODNR, Director Anderson stated that she has done exemplary work with her Division's self-assessment and strategic planning. He further indicated that her leadership and professionalism would be missed.

Director Anderson has asked Division of Water Assistant Chief Dick Bartz to be the Acting Chief until the new Governor elect Taft's administration appoints a new chief.

## NEW PUBLICATION

The Ohio Department of Natural Resources announces the availability of the following new publication:

Natural Stream Processes (Ohio Stream Management Guide No. 3) by Michael Schiefer

This fact sheet is part of a series called "Ohio Stream Management Guides." Guide No.3 provides an overview of the stream's natural processes and of the human impacts on stream ecosystems. The guide describes how healthy stream ecosystems function to convey, store and transform water, sediment and organic matter. Human impacts that can disrupt the stream's natural processes, impair natural functions, and result in loss of beneficial uses are summarized. The information provided can be used by land managers, watershed groups, river conservationists, public agency officials and others to start a thoughtful inquiry into the true source of local stream management problems.

Single copies of this new publication are available free of charge from the ODNR Public Information Center, 1952 Belcher Drive, Building C-1 Columbus, Ohio 43224-1386; telephone (614) 265-6791 or e-mail: [infomail@dnr.state.oh.us](mailto:infomail@dnr.state.oh.us). For more information about the project call the ODNR, Division of Water at (614) 265-6761.

## 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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