MONTHLY WATER INVENTORY REPORT FOR OHIO

November 2003

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

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PRECIPITATION during November was above normal across most of the state, but below normal in some areas of northwestern, northeastern and east-central Ohio. The average for the state as a whole was 3.59 inches, 0.61 inch above normal. Regional averages ranged from 5.62 inches, 2.69 inches above normal, for the South Central Region to 2.55 inches, 0.21 inch below normal, for the Northwest Region. This was the 6th wettest November during the past 109 years for the South Central Region and the 10th wettest for the Southeast Region. South Point (Lawrence County) reported the greatest amount of November precipitation, 7.69 inches. Paulding (Paulding County) reported the least amount, 1.87 inches.

Precipitation during November fell mostly as rain. The first 10 days of the month were rather dry with most of the state receiving less than 0.25 inch of rain. The remainder of the month was much wetter as several weather systems brought widespread precipitation to Ohio. A strong storm system affected the state during November 11-12, bringing damaging winds, tornadoes and locally heavy downpours. The heaviest rains were in southeastern Ohio where 2-3 inches were reported with amounts decreasing to the north and west to around 0.25 inch in extreme northwestern Ohio. However, the most severe storms occurred in northeastern and east-central areas of the state, where damaging winds and a few tornadoes caused millions of dollars in damage. The hardest hit area was in Wayne County where, during the evening hours of November 12, a F2 tornado damaged or destroyed several homes and businesses. Fortunately, only minor injuries where reported as a result of these strong late-season storms. Widespread precipitation during November 18-19 brought generally 0.25-1.0 inch of rain throughout much of the state with southeastern Ohio receiving the greatest amounts. The next weather system moved through the state during November 24 and produced the greatest amounts of precipitation in western Ohio where amounts of 0.25-0.50 inch were reported. Showers and locally heavy downpours occurred during November 27-28 and for many areas of the state this system included the first measurable snow of the season. Precipitation amounts ranged generally from 1.0-2.5 inches across most of the state, with lesser amounts reported in extreme northwestern and southeastern Ohio. The precipitation ended as a mix of rain and snow across most of the state and as all snow in northeastern Ohio, where up to 4 inches was reported.

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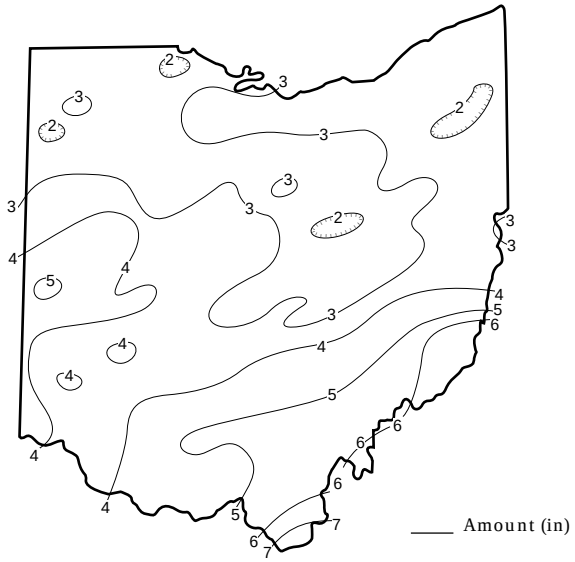
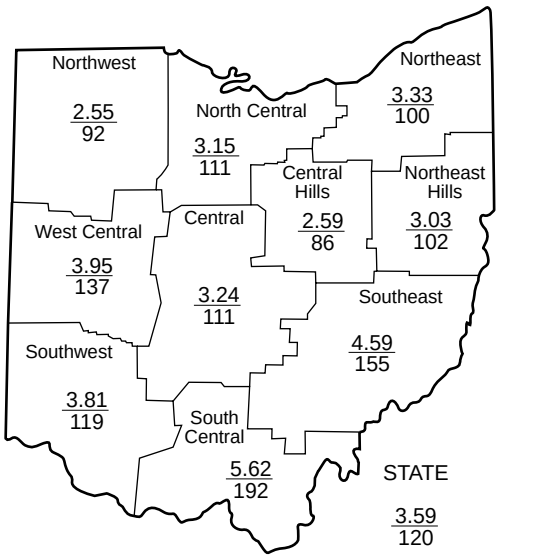
PRECIPITATION

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	-0.21	+2.70	+6.38	+6.75	+3.37	+3.9
North Central	+0.32	+3.45	+5.51	+5.73	+5.41	+3.7
Northeast	-0.01	+3.41	+7.97	+10.07	+9.00	+5.5
West Central	+1.06	+4.56	+13.09	+13.83	+13.60	+5.1
Central	+0.32	+3.45	+6.66	+7.11	+8.08	+3.4
Central Hills	-0.43	+3.19	+6.18	+5.87	+4.70	+3.5
Northeast Hills	+0.07	+4.48	+9.19	+9.22	+7.03	+4.5
Southwest	+0.60	+3.20	+7.07	+7.21	+11.75	+4.2
South Central	+2.69	+5.15	+10.41	+12.49	+16.23	+4.7
Southeast	+1.62	+5.34	+10.28	+10.33	+12.11	+4.5
State	+0.61	+3.90	+8.27	+8.85	+9.10	

*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 NOVEMBER





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	1,076	98	151	182	139
Great Miami River at Hamilton	3,630	5,730	353	324	276	153
Huron River at Milan	371	540	570	278	204	161
Killbuck Creek at Killbuck	464	397	139	264	213	121
Little Beaver Creek near East Liverpool	496	851	258	330	313	135
Maumee River at Waterville	6,330	4,526	173	220	243	133
Muskingum River at McConnelsville	7,422	8,078	144	404	294	98
Scioto River near Prospect	567	748	772	431	300	167
Scioto River at Higby	5,131	5,487	218	265	200	129
Stillwater River at Pleasant Hill	503	1,105	1,124	464	312	141

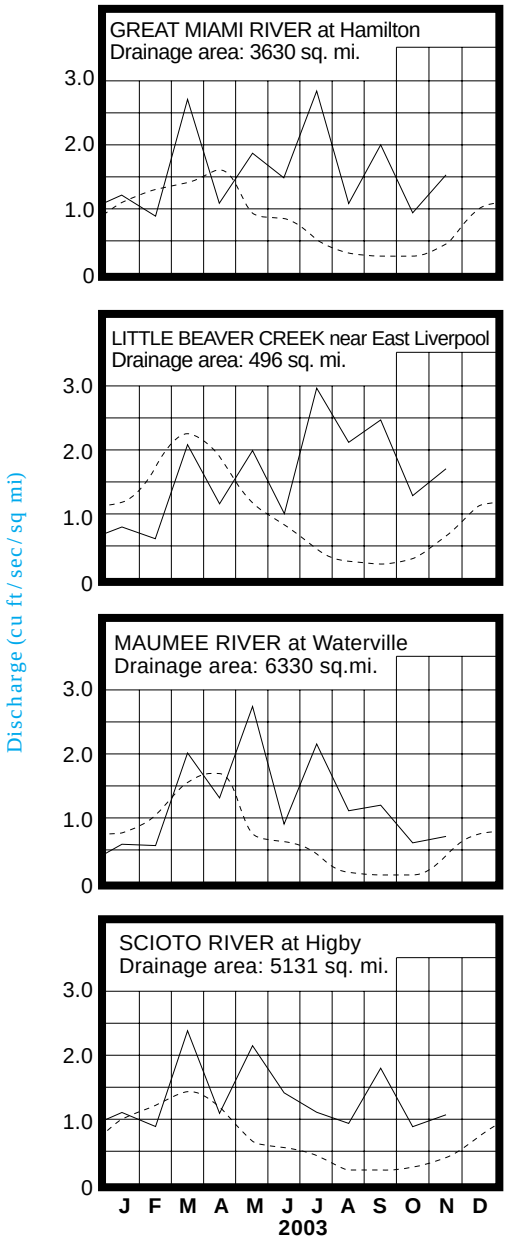
STREAMFLOW during November was above normal nearly statewide. Flows were high enough to be considered excessive across much of Ohio, most notably in the western half of the state. Flows during November increased seasonally from the October flows across most of Ohio.

Flows at the beginning of the month were above normal across most of the state. Flows decreased the first 10 days of November statewide, reaching a monthly low flow throughout most of Ohio during November 10-11. Flows increased in response to local precipitation that fell on several days throughout the remainder of the month. Greatest flows for the month occurred during November 28-30 statewide, following precipitation that fell on November 27-28. At the end of the month, flows were above normal statewide.

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

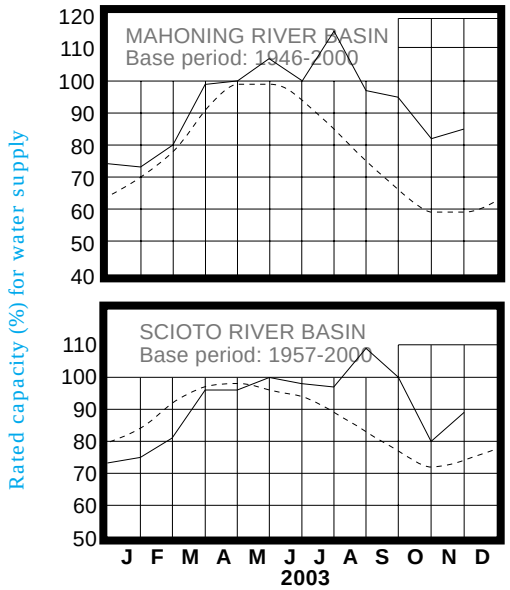
Reservoir storage at the end of November in the Mahoning basin index reservoirs was 85 percent of rated capacity for water supply compared with 82 percent for last month and 66 percent for November 2002. Month-end storage in the Scioto basin index reservoirs was 89 percent of rated capacity for water supply compared with 80 percent for last month and 70 percent for November 2002.

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	14.16	+3.42	-0.15	+3.77
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.93	+1.10	+0.18	+1.83
Fr-10	Columbus, Franklin Co.	Gravel	45.51	-1.39	+0.27	+0.57
H-1	Harrison, Hamilton Co.	Gravel	23.13	+0.55	+0.50	+0.45
Hn-2a	Dola, Hardin Co.	Dolomite	6.41	+3.16	+0.08	+6.77
Po-1	Windham, Portage Co.	Sandstone	18.49	+2.30	-0.11	+2.57
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.88	+1.12	-1.44	+3.39

GROUND WATER levels during November showed mixed responses across the state, generally rising in most aquifers but declining in northeastern and east-central Ohio aquifers. Levels tended to decline during the first 10 days of the month, then rose or remained stable during the remainder of November. Ground water levels across the state are higher than those levels observed during November 2002, ranging up to nearly 7 feet higher in some consolidated aquifers in northwestern Ohio.

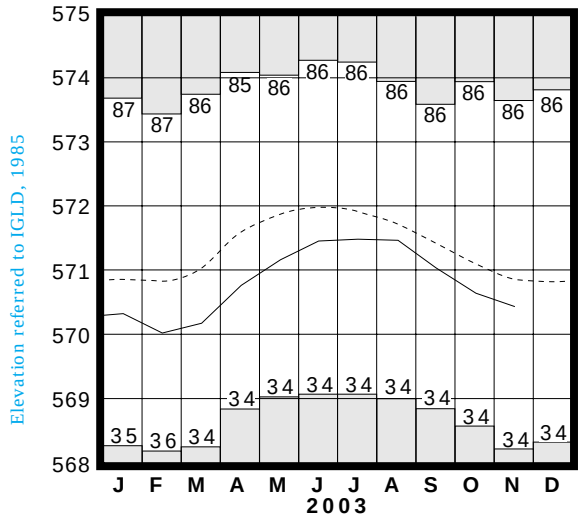
Ground water levels remain above normal across most of the state. The 2004 water year recharge season is generally off to a good start as far as precipitation is concerned. Conditions seem favorable for continued improvement in ground water storage during the current recharge period provided precipitation and other climatic conditions are near normal. The Ohio Agricultural Statistics Service reports that on November 21, soil moisture across the state was rated as being adequate in 52 percent of the state and surplus in 48 percent of the state.

LAKE ERIE level declined during November. The mean level was 570.44 feet (IGLD-1985), 0.20 foot lower than last month's mean level and 0.43 foot below normal. This month's mean level is 0.07 foot higher than the November 2002 level and 1.24 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 3.33 inches, which is 0.48 inch above normal. For the entire Great Lake basin, November precipitation averaged 3.69 inches, which is 0.94 inch above normal. For calendar year 2003 through November, the Lake Erie basin has averaged 34.46 inches of precipitation, 2.08 inches above normal, while the entire Great Lakes basin has averaged 30.73 inches, 0.70 inch 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 between 5-8 inches below the long-term seasonal average for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from 3 inches above to 19 inches below the normal seasonal average.

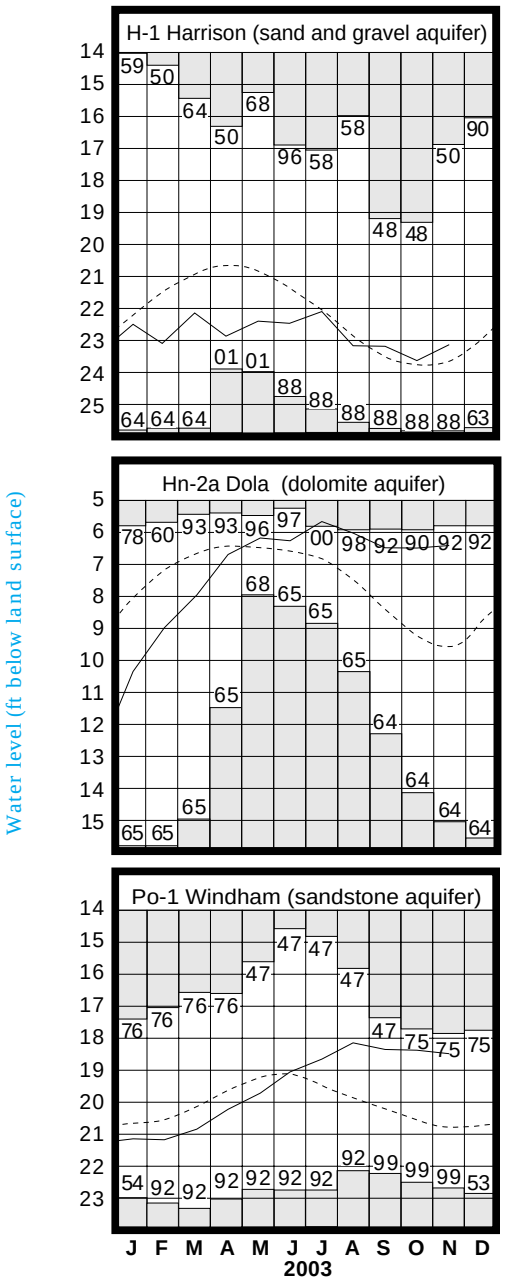
LAKE ERIE LEVELS



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———

(Precipitation continued from front)

Precipitation for the 2003 calendar year is above normal statewide. The average for the state as a whole is 44.16 inches, 8.90 inches above normal. Regional averages range from 49.91 inches, 12.33 inches above normal, for the South Central Region to 38.38 inches, 5.78 inches above normal, for the North Central Region. Cumulative 2003 calendar year precipitation totals statewide have already exceeded the annual average by several inches. With December's precipitation remaining to be added, some regions have the potential to approach record or near-record annual precipitation amounts.

Precipitation for the 2004 water year is above normal across most of the state, but below normal in areas of the Northwest and Central Hills regions. The average for the state as a whole is 6.18 inches, 0.73 inch above normal. Regional averages range from 8.31 inches, 2.94 inches above normal, for the South Central Region to 4.77 inches, 0.64 inch below normal, for the Central Hills Region.

SUMMARY

Precipitation during November was above normal across most of the state, but below normal in some areas of northwestern, northeastern and east-central Ohio. Streamflow was above normal across most of the state. Reservoir storage increased in both the Mahoning and Scioto river basins and remained above normal. Ground water levels generally rose in most aquifers and were above normal across most of the state. Lake Erie level declined 0.20 foot and was 0.43 foot below the long-term November average.

NOTES AND COMMENTS

Division of Water Employees Receive Awards

Three Division of Water employees received awards recently for their dedicated service in the field of water resources. Cynthia Crecelius, Program Manager for the Floodplain Management Program, was awarded the *Wayne S. Nichols Award* at the Water Management Association of Ohio (WMAO) fall conference. This award is presented to a person who exemplifies public leadership, innovation and accomplishments in the water resources field. Cindy's contributions and accomplishments far exceed the criteria set for this award. In addition to serving as manager of the Floodplain Management Program, she is the State Coordinating Officer for the National Flood Insurance Program. Cindy, a strong advocate of wise floodplain management, has been instrumental in placing Ohio's Floodplain Management Program in the forefront of water-resource management in our region and the nation.

Ron Gray and Steve Dorsten, Canal Operation Managers in the Hydraulic/Canal Operations Program, each received the *Technician of The Year Award* at the WMAO fall conference. This award is given annually to a paraprofessional or technical water service employee who best exemplifies dedication, leadership and outstanding service in the water resources field. Ron and Steve's excellent dedication and management of Ohio's canals have earned them this award. Through their efforts, Ron, with the Ohio & Erie Canal Operation's Akron office, and Steve, from the Miami & Erie Canal Operation's St. Marys office, have helped reduce the flooding potential to adjacent properties, ensured water supply to local businesses and industries, and preserved Ohio's rich canal history.

From The Editors

The purpose of this report is to disseminate current hydrologic and other pertinent data in a timely manner and in a brief format. Observation points have been selected which are considered to be sufficiently representative of the hydrologic conditions across the state to permit a cursory evaluation of the water supply situation. The key observation points offer the best available data based on accuracy, length of record, minimal artificial effects on data, and availability of records.

Data from these stations are collected by various agencies at the end of each month and processed immediately. Because of the time limitations involved, all data presented in this report must be considered preliminary and may be subject to revision before publication in regular form by the agencies involved. The authors are indebted to the various agencies and individuals who make these data available.

The remarks in this report include the writers' opinions of the cause and significance of the phenomena reported therein. The reader is urged to examine the data and formulate their own evaluation. The authors wish to acknowledge the Division of Water staff that assist with the preparation of this report including Dave Orr, who takes care of the design, layout, publication and posting on the Division of Water's web site. The authors also wish to express their appreciation to current and previous Division of Water and Department of Natural Resources administrations that have supported the publication of this report for nearly 50 years.

More complete and detailed information regarding water resources can be obtained by contacting the Division of Water at (614) 265-6717 or visiting the Division's web site at: http://www.dnr.state.oh.us/water.

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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