MONTHLY WATER INVENTORY REPORT FOR OHIO

November 2009

http://www.ohiodnr.gov/tabid/4191/Default.aspx
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PRECIPITATION during November was noticeably below normal statewide. The state average was 1.03 inches, 1.95 inches below normal. This was the 5th driest November during the past 127 years of record for the state as a whole. Regional averages ranged from 1.46 inches, 1.88 inches below normal, for the Northeast Region to 0.71 inch, 2.12 inches below normal, for the North Central Region. All 10 of the state's climatic regions ranked in their top 11 driest Novembers of record including 3rd driest for the Central Region, 4th driest for the Southwest Region and 5th driest for the North Central Region. Dorset (Ashtabula County) reported the greatest amount of November precipitation, 2.10 inches. The London Fish Hatchery (Madison County) reported the least amount, 0.37 inches.

Precipitation fell as mainly rain during November with only nominal amounts of snow reported at a few locations. The first 16 days of the month were rather dry with many locations receiving no rain. However, light precipitation did fall across southeastern Ohio on November 1, and across mainly areas of eastern Ohio on November 5-6, with amounts of generally less than 0.25 inch. The first widespread precipitation of the month fell across the state during November 18-19. Areas in the western one-third and in eastern Ohio received 0.50-1.0 inch during this period, while the remainder of the state received less than 0.25 inch. Precipitation fell on several days during November 24-30. Scattered precipitation fell during November 24-28 with most locations receiving less than 0.10 inch on any given day during this period. Precipitation during November 29-30 was more widespread but still generally less than 0.25 inch was reported except in eastern Ohio where some locations received more than 0.25 inch of rain.

Precipitation for the 2009 calendar year is below normal across much of the state, being above normal in only the Northwest, Northeast and South Central regions. The state average is 33.76 inches, 1.50 inches below normal. Regional averages range from 38.56 inches, 0.98 inch above normal, for the South Central Region to 30.66 inches, 5.02 inches below normal, for the Northeast Hills Region.

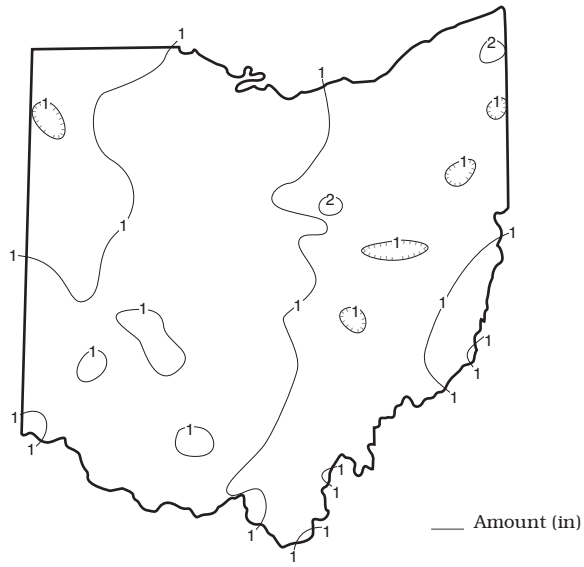
Precipitation for the 2010 water year is generally above normal across western Ohio and below normal in eastern Ohio. The state average is 5.25 inches, 0.20 inch below normal. Regional averages range from 6.15 inches, 0.32 inch above normal, for the Southwest Region to 4.16 inches, 1.33 inches below normal, for the Northeast Hills Region.

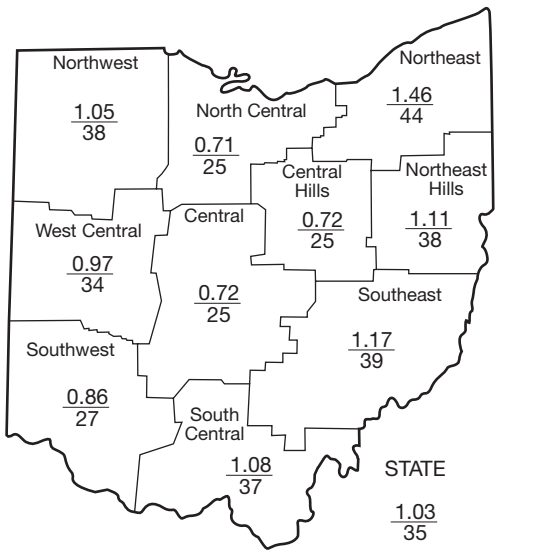
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-1.71	-0.64	-2.41	+2.54	+9.76	-0.2
North Central	-2.12	-1.70	-2.97	+0.14	+9.25	+0.1
Northeast	-1.88	-1.36	-0.70	+1.61	+12.83	-0.8
West Central	-1.92	-0.56	-1.11	-0.92	+5.97	-0.3
Central	-2.20	+1.02	+1.88	+1.06	+6.59	-0.1
Central Hills	-1.81	-0.04	-0.49	+0.36	+3.45	-0.4
Northeast Hills	-1.85	-2.15	-1.70	-3.17	+0.60	-1.3
Southwest	-2.35	+0.85	+2.07	+0.42	+5.21	+1.2
South Central	-1.85	-0.17	+1.56	+2.59	+8.53	+0.7
Southeast	-1.80	-1.07	-2.57	-0.68	+5.63	-0.1
State	-1.95	-0.58	-0.65	+0.37	+6.75	

*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

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS) This Month	% of Normal	% of Normal Past 3 Mos.	% of Normal Past 6 Mos.	% of Normal Past 12 Mos.
Grand River near Painesville	685	284	26	32	41	101
Great Miami River at Hamilton	3,630	1,463	90	84	78	82
Huron River at Milan	371	54	57	25	35	123
Killbuck Creek at Killbuck	464	230	80	73	57	68
Little Beaver Creek near East Liverpool	496	133	40	42	59	76
Maumee River at Waterville	6,330	1,666	64	54	60	114
Muskingum River at McConnelsville	7,422	3,468	62	102	84	65
Scioto River near Prospect	567	114	118	53	44	69
Scioto River at Higby	5,131	3,272	130	100	75	66
Stillwater River at Pleasant Hill	503	87	89	33	49	78

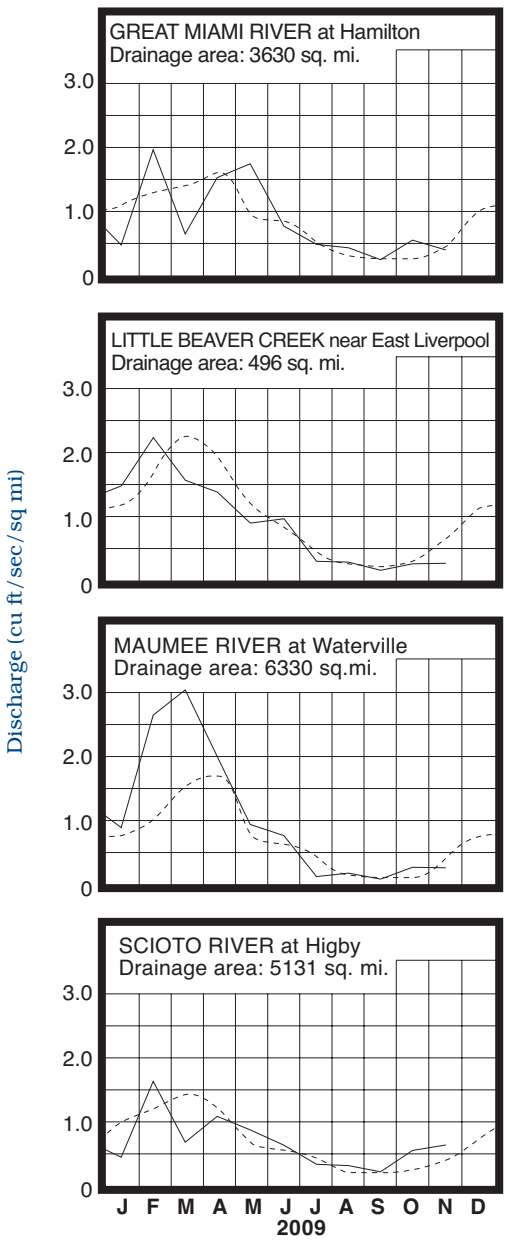
STREAMFLOW during November was below normal throughout most of the state with only a few exceptions of above normal flow noted across central and south-central Ohio. Flows were low enough to be considered deficient in eastern Ohio. Flows during November increased seasonally from the October flows in most of eastern and west-central Ohio, but decreased across the remainder of the state as these areas were still reflecting the excessive streamflow of last month.

Flows at the beginning of November were above normal in the western two-thirds of Ohio and below normal in the eastern one-third. Greatest flows for the month occurred at the beginning of the November statewide. Flows generally declined until near the end of the month with slight increases observed in some drainage basins around November 19 in response to precipitation. Most streams had their lowest flow for the month during November 16-18, except in southwestern and central Ohio where lowest flows were observed during November 27-29. Flows increased slightly during the last couple of days of the month in response to the precipitation that fell on November 29 and 30. However, flows at the end of the month remained below normal statewide.

RESERVOIR STORAGE for water supply during November decreased in both the Mahoning and Scioto river basins. At the end of November, storage continued to remain above normal in both basins.

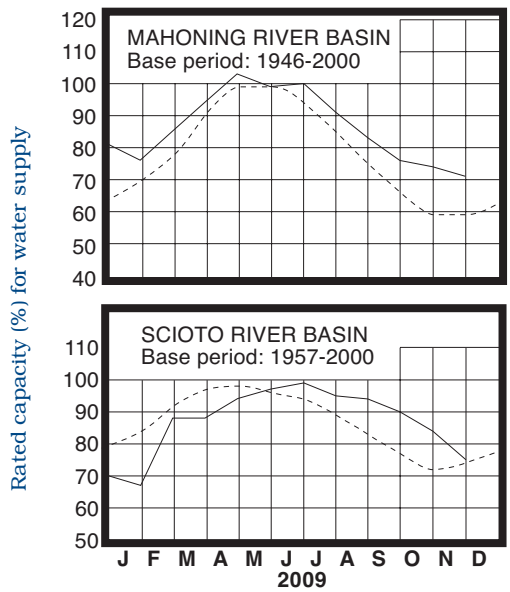
Reservoir storage at the end of November in the Mahoning basin index reservoirs was 71 percent of rated capacity for water supply compared with 74 percent for last month and 79 percent for November 2008. Month-end storage in the Scioto basin index reservoirs was 75 percent of rated capacity for water supply compared with 84 percent for last month and 58 percent for November 2008. Surface water supplies remain in good condition as we approach the end of the 2009 calendar year.

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	13.13	+4.45	+1.16	+3.26
Fa-1	Jasper Mill, Fayette Co.	Limestone	9.01	+0.02	+0.47	+1.89
Fr-10	Columbus, Franklin Co.	Gravel	45.40	-1.28	+0.13	+0.06
H-1	Harrison, Hamilton Co.	Gravel	23.18	+0.50	+0.55	+1.10
Hn-2a	Dola, Hardin Co.	Dolomite	12.64	-3.07	-0.91	-0.68
Po-124	Freedom, Portage Co.	Sandstone	76.67	+1.78	-0.13	+0.11
Tu-1	Strasburg, Tuscarawas Co.	Gravel	16.33	-2.33	-0.16	-0.77

GROUND WATER levels during November rose in aquifers in southern Ohio and declined in aquifers in northern Ohio. Net changes from October's levels were more favorable than usually observed in southern Ohio aquifers, but less favorable in northern Ohio aquifers. Levels in most aquifers across the state showed some improvement during the first week of the month in response to recharge from October's above normal precipitation. Levels in most unconsolidated aquifers across the state declined during the remainder of the month. Generally, levels in consolidated aquifers in southern Ohio rose through mid-month, then declined or remained rather stable the remainder of the month, while in northern Ohio, they tended to decline steadily after the first week.

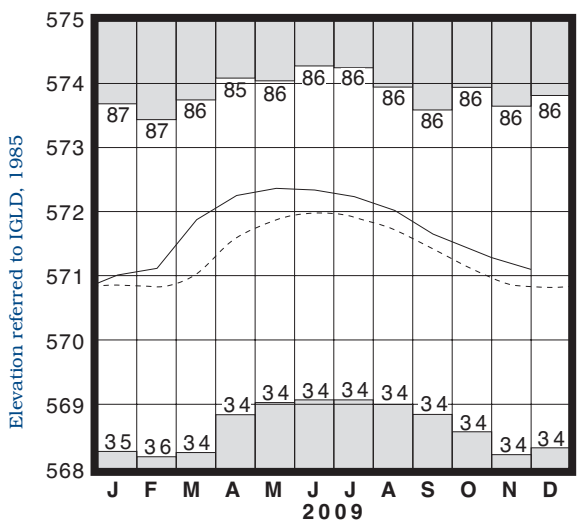
Although precipitation during November was below normal, ground water supplies remain adequate throughout the state. Ground water levels are above normal across most of southern Ohio and also in some consolidated aquifers in northeastern Ohio, but below normal through much of northern Ohio. Levels range from about 4.5 feet above normal to more than 3 feet below normal. Also, current levels are generally higher than they were at this time last year across most of the state. The Ohio Agricultural Statistics Service reports that topsoil moisture near the end of November was rated as being short in 2 percent of the state, adequate in 81 percent of the state, and surplus in 17 percent of the state. Near-normal precipitation and other climatic conditions throughout the current recharge season should provide conditions favorable for ground water supplies.

LAKE ERIE level declined during November. The mean level was 571.10 feet (IGLD-1985), 0.19 foot lower than last month's mean level and 0.23 foot above normal. This month's mean level is 0.46 foot higher than the November 2008 level and 1.90 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 1.15 inches, 1.70 inches below normal. For the entire Great Lakes basin, November precipitation averaged 1.42 inches, 1.33 inches below normal. For calendar year 2009 through November, the Lake Erie basin has averaged 34.46 inches, 1.83 inches above normal, while the entire Great Lakes basin has averaged 29.85 inches, 0.34 inch below normal.

In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain near normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from around 10 inches above normal to as much as 11 inches below the normal seasonal level.

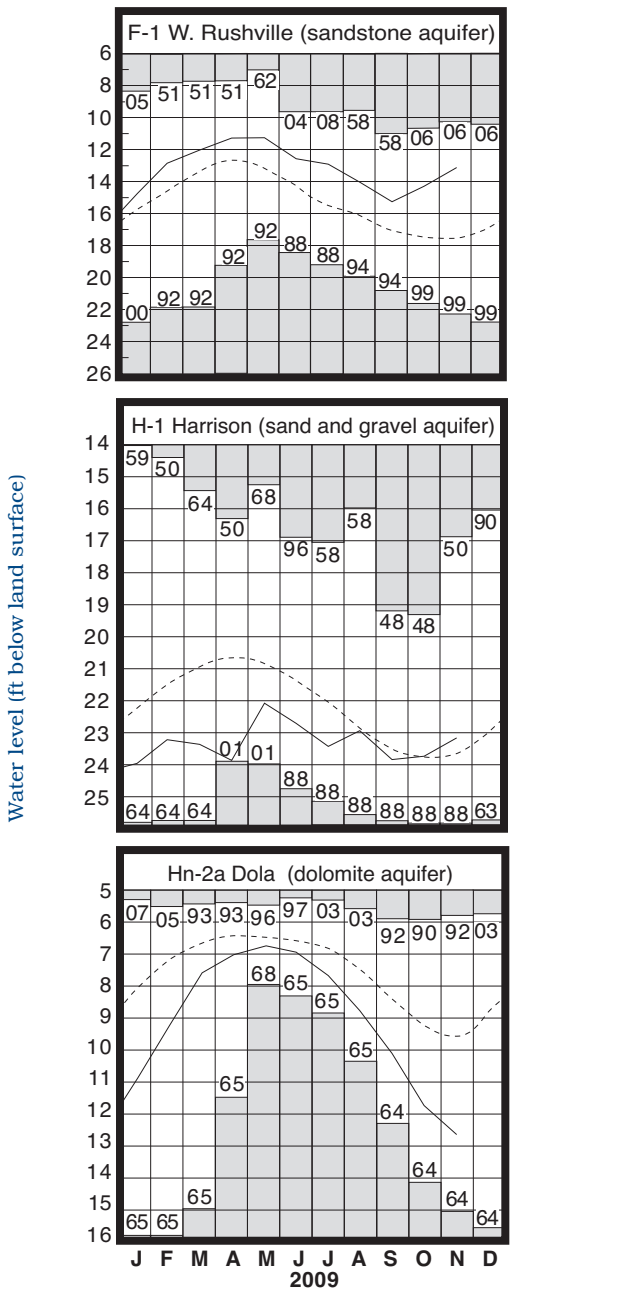
LAKE ERIE LEVELS



Base period: 1918-2000

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: F-1, 1947-2000 H-1, 1951-2000.

Hn-2a, 1955-2000 Record high and low, year of occurrence

Normal – – – – Current ———

SUMMARY

Precipitation during November was noticeably below normal statewide. Streamflow was below normal throughout most of the state. Reservoir storage decreased in both the Mahoning and Scioto river basins, but remained above normal in both basins. Ground water levels rose in southern Ohio and declined in northern Ohio. Lake Erie level declined 0.19 foot and was 0.23 foot above the long-term November average.

NOTES AND COMMENTS

CoCoRaHS-Because Every Drop Counts!

In February 2009 volunteers across Ohio had the opportunity to join 38 other states that were already implementing the Community Collaborative Rain, Hail and Snow (CoCoRaHS) network. Since that time CoCoRaHS has grown to cover all 50 states. CoCoRaHS is a volunteer network that measures and reports rain, snow, hail and other noteworthy weather. Currently there are about 17,000 volunteers nationwide in the CoCoRaHS network. In Ohio, there are nearly 300 with an average of 120 of those reporting daily. By the end of 2010, the goal is to have at least 600 active observers in Ohio. Observers play an active role in meteorological reporting and research by using inexpensive equipment in their own yards. The network of observers submits daily precipitation to the CoCoRaHS website. Tables and maps are then made available for viewing online. This information can provide a detailed look at rainfall patterns from across the state. Hydrologists and water managers at the Ohio Department of Natural Resources, the National Weather Service and many other agencies will use this information to assist in such things as flood forecasting and drought assessment.

Volunteers use a standard 4 inch cylindrical rain gauge and a yardstick to measure snow depth. A short online training course is required before volunteers can begin reporting. If you want to learn more about CoCoRaHS, go to: www.cocorahs.org. If you are interested in becoming a CoCoRaHS volunteer, please go to this website and register by clicking on "Join the CoCoRaHS Network."

ACKNOWLEDGMENTS

This report has been compiled from Division 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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