



MONTHLY WATER INVENTORY REPORT FOR OHIO

November 2015

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<http://soilandwater.ohiodnr.gov/water-use-planning/water-inventory-levels>

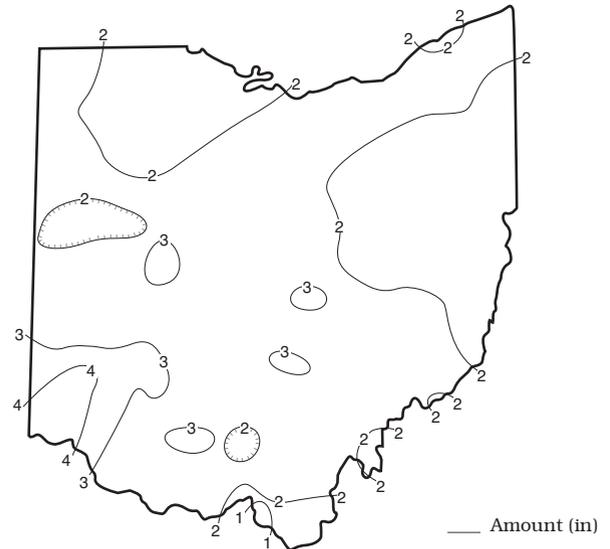
PRECIPITATION during November was below normal throughout most of the state but above normal in some areas in southwestern Ohio. The state average was 2.19 inches, 0.89 inch below normal. Regional averages ranged from 3.17 inches, 0.07 inch below normal, for the Southwest Region to 1.67 inches, 1.39 inches below normal, for the Northeast Hills Region. Fairfield (Hamilton County) reported the greatest amount of November precipitation, 4.40 inches. Greenup Locks and Dam (Scioto County) reported the least amount, 0.98 inch.

Most of the precipitation during November fell as rain; only northwest Ohio reported any significant snowfall. Chardon (Geauga County), located in the northeast Ohio snowbelt, received only 2 inches of snow for November, about 10 inches below normal. Some precipitation fell across the state on the first day of the month but amounts were light. The first significant precipitation for the month fell on November 6 with areas in southwestern Ohio receiving the greatest amounts, generally between 0.5 and 1 inch. Precipitation during November 10-12 was widespread with the greatest amounts of 0.5 to nearly 1 inch reported in the eastern half of Ohio. Most of the state reported some light rain on November 18, but areas in southwestern Ohio received amounts ranging from 0.5 to 1 inch. The precipitation on November 21 was light, but fell as snow in northern Ohio. Amounts of 2-5 inches of snow were common in the northwest Ohio counties. Precipitation was widespread during November 27-29 with most areas of the state receiving at least 0.5 inch of rain.

Precipitation for the 2015 calendar year is above normal throughout most of Ohio. The state average is 38.48 inches, 2.35 inches above normal. Regional averages range from 42.61 inches, 3.98 inches above normal, for the Southwest Region to 35.71 inches, 2.26 inches above normal, for the North Central Region.

Precipitation for the first two months of the 2016 water year is below normal across most of Ohio with only the Southwest and West Central regions having above normal precipitation. The state average is 4.93 inches, 0.79 inch below normal. Regional averages range from 6.70 inches, 0.60 inch above normal, for the Southwest Region to 3.75 inches, 1.47 inches below normal, for the Northwest Region.

PRECIPITATION NOVEMBER

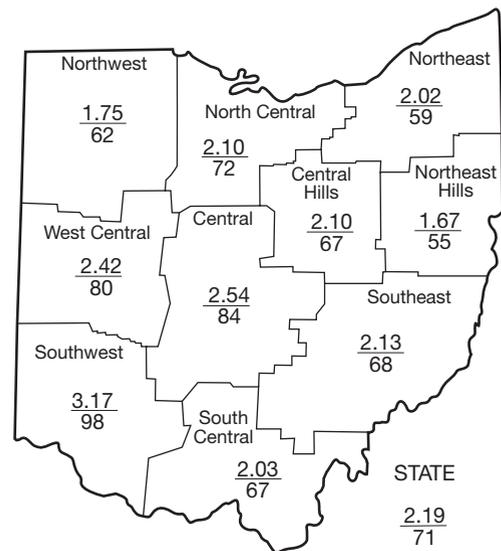


PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.) Base period 1961-2010				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-1.08	-2.52	+6.13	+4.12	+4.62	+0.5
North Central	-0.81	-0.63	+3.04	+1.15	+3.07	+1.8
Northeast	-1.40	-1.12	+0.85	+0.55	+7.15	-0.7
West Central	-0.60	-1.29	+5.20	+4.01	+5.66	-0.1
Central	-0.49	-0.95	+1.30	+0.84	+0.64	-1.3
Central Hills	-1.03	-0.34	-0.10	-0.35	+2.70	-1.7
Northeast Hills	-1.39	-0.87	+0.27	-0.39	+4.54	-1.6
Southwest	-0.07	-0.83	+4.84	+4.09	+2.97	+1.1
South Central	-1.00	-0.92	+2.24	+2.94	+2.32	-1.6
Southeast	-0.98	+0.41	+1.19	+2.34	+1.94	-1.7
State	-0.89	-0.91	+2.49	+1.91	+3.52	

*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

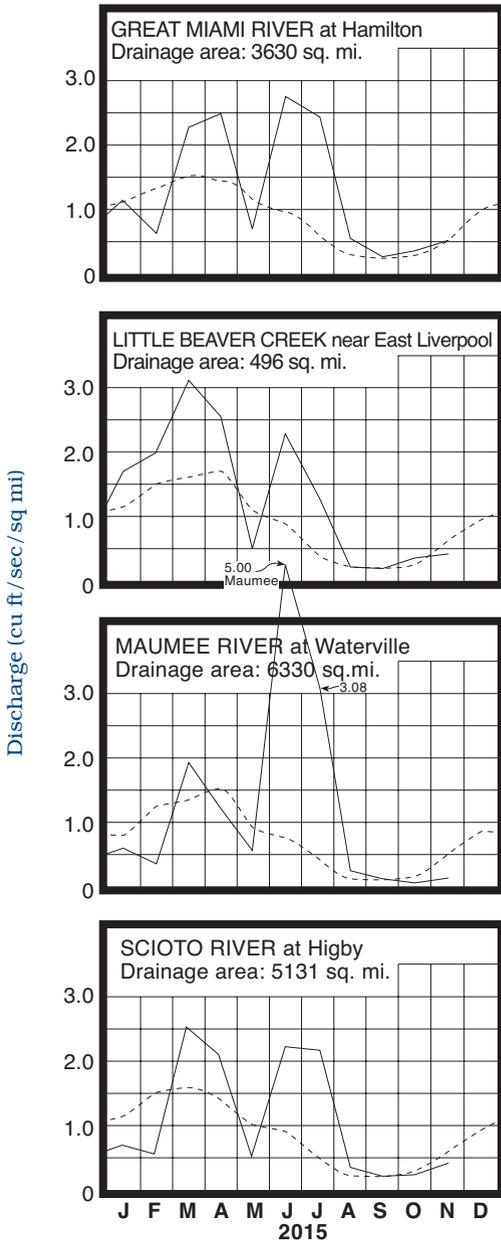
River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	410	40	41	136	104
Great Miami River at Hamilton	3,630	1,870	97	73	174	121
Huron River at Milan	371	88	49	60	143	113
Killbuck Creek at Killbuck	464	129	47	58	105	93
Little Beaver Creek near East Liverpool	496	208	66	57	123	109
Maumee River at Waterville	6,330	794	24	25	276	128
Muskingum River at McConnellsville	7,422	2,968	57	46	102	89
Scioto River near Prospect	567	92	47	36	249	129
Scioto River at Higby	5,131	2,168	71	63	155	104
Stillwater River at Pleasant Hill	503	140	68	44	184	116

STREAMFLOW during November was below normal throughout most of the state. Some flows were low enough to be considered deficient in northern Ohio. Flows during November increased seasonally from the flows recorded during October.

Flows at the beginning of the month were below normal across much of the state, but above normal in basins in the southwestern quarter of Ohio. A few basins in south-central and northeastern Ohio had their greatest flows for the month on the first day of November; however, greatest flows generally occurred between November 11 and 14 in eastern Ohio basins and on the last day of the month in western Ohio. Lowest flows for November occurred at various times throughout the month across the state. Flows ended the month much

as they began, below normal across much of the state, but above normal in the southwestern quarter of Ohio.

MEAN STREAM DISCHARGE

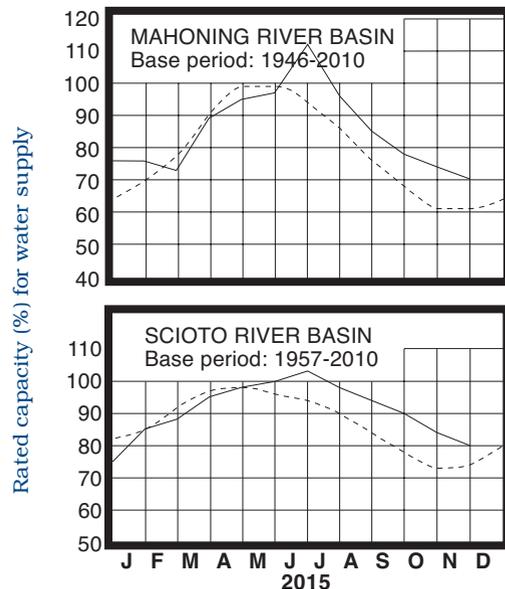


Base period for all streams: 1981-2010

RESERVOIR STORAGE for water supply during November decreased 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 71 percent of rated capacity for water supply compared with 74 percent for last month and 75 percent for November 2014. Month-end storage in the Scioto basin index reservoirs was 80 percent of rated capacity for water supply compared with 84 percent for last month and 75 percent for November 2014.

RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

GROUND-WATER LEVELS

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

GROUND WATER levels during November declined across much of the state, but rose in many aquifers in southwestern Ohio where precipitation has been more abundant during the past two months. Generally, in most areas of the state, ground water levels declined steadily throughout the month. However, aquifers in southwestern Ohio were rather stable or declined slightly during the first half of the month and then rose during the second half of November.

Even with rather dry conditions across most of the state and little or no recharge occurring in November in most aquifers, ground water supplies remain adequate. Ground water levels are above normal across much of the state, although they remain below normal in some aquifers in eastern Ohio. Current levels are generally higher than they were at this time last year in western Ohio and lower in eastern Ohio. 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 near the end of November, soil moisture was rated as being short or very short in 17 percent of the state, adequate in 72 percent of the state and surplus in 11 percent of the state. With the ground water recharge season still young, a return to near-normal precipitation during the next several months should provide adequate recharge to Ohio's ground water supplies.

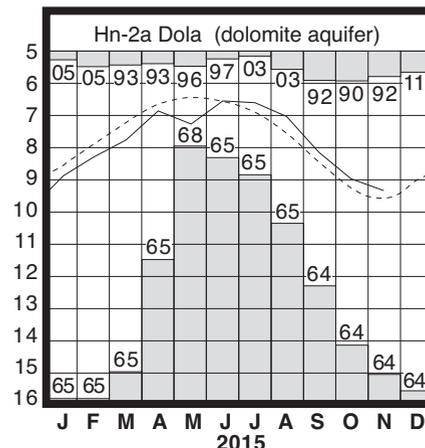
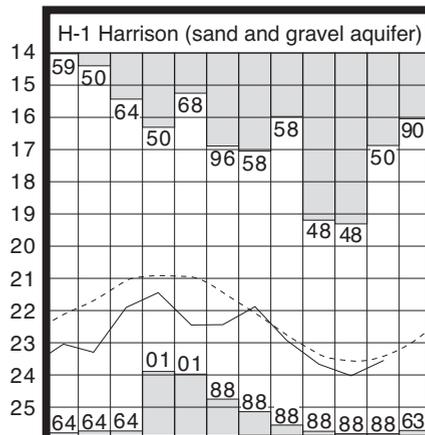
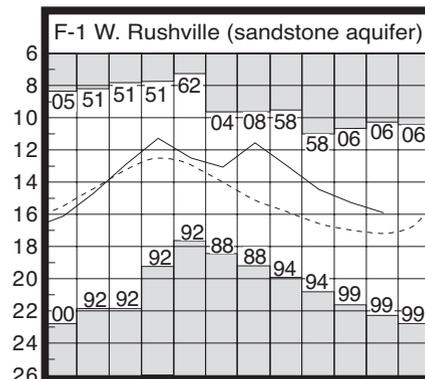
LAKE ERIE level declined during November. The mean level was 571.59 feet (IGLD-1985), 0.39 foot below last month's mean level and 0.76 foot above normal. This month's mean level is 0.23 foot above the November 2014 level and 2.39 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 1.82 inches, 1.05 inches below normal. For the entire Great Lakes basin, November precipitation averaged 2.40 inches, 0.36 inch below normal. For calendar year 2015 through November, precipitation in the Lake Erie basin has averaged 30.31 inches, 2.62 inches below normal, while the entire Great Lakes basin has averaged 26.66 inches, 3.70 inches below normal.

In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather patterns, the level of Lake Erie should remain above normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from about 3 inches below normal to as much as 21 inches above the normal seasonal average.

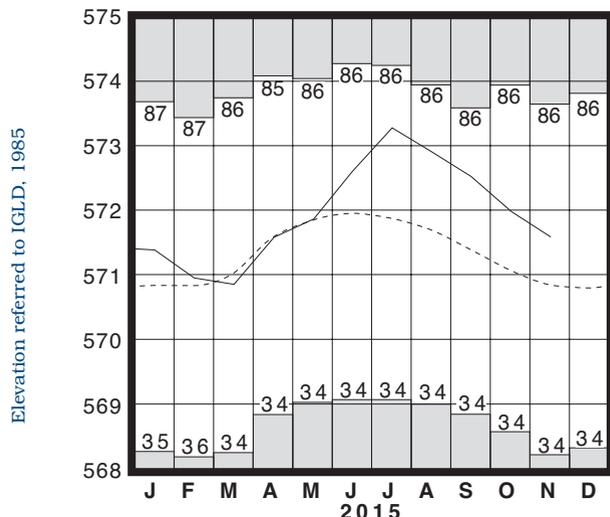
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	15.92	+1.27	-0.63	-0.63
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.91	+0.26	+0.76	+2.23
Fr-10	Columbus, Franklin Co.	Gravel	42.85	+1.70	-0.26	+0.49
H-1	Harrison, Hamilton Co.	Gravel	23.55	-0.14	+0.52	+0.71
Hn-2a	Dola, Hardin Co.	Dolomite	9.32	+0.25	-0.34	+0.68
Po-124	Freedom, Portage Co.	Sandstone	77.35	-0.26	-0.14	-0.20
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.13	-0.97	-0.27	-1.07

GROUND-WATER LEVELS



Water level (ft below land surface)

LAKE ERIE LEVELS



Base period: 1918-2010

■ Record high and low, year of occurrence

Base periods: F-1, 1947-2010; H-1 1951-2010.

Hn-2a, 1955-2010 ■ Record high and low, year of occurrence

Normal - - - - Current ———

SUMMARY

Precipitation during November was below normal throughout most of the state, but above normal in areas of southwestern Ohio. Streamflow increased seasonally from the October flows but was below normal across most of the state. Reservoir storage decreased and remained above normal. Ground water levels declined except in southwestern Ohio aquifers where levels rose. Lake Erie level declined 0.39 foot and was 0.76 foot above the long-term November average.

NOTES AND COMMENTS

Update On Lake White Dam

On August 29, 2014, employees at Lake White State Park discovered a leak in the Lake White dam. The Ohio Department of Natural Resources (ODNR) lowered the lake level to about 10 feet below winter pool to better address the problem. An engineering consulting company was hired to help determine the cause of the leak and the remediation that would be required to repair the dam. The consulting firm determined that voids under the spillway were causing the leak. Repairs necessary to fix the leak and upgrade the dam included replacing the bridge over the spillway, installing a lake drain, driving sheet piling into the dam to cut off seepage, armoring the embankment with roller compacted concrete to protect from overtopping, widening State Route 104 and relocating Crooked Creek.

The ODNR and Ohio Department of Transportation have teamed up to make the necessary repairs to Lake White dam. The repairs began in September 2015. As of this writing, most of the work completed thus far has been the relocation of Crooked Creek. The old route of the creek caused significant erosion along and near the dam, leading to instability. The rerouting of the creek will alleviate this problem. A coffer dam is being constructed to allow for the installation of a lake drain. Once the coffer dam is in place the road and surrounding embankment will be excavated for the installation of the pipe. It will be necessary for State Route 104 to be closed completely during this process. The road closure is scheduled to begin on January 4, 2016 and remain closed for about one year. The contractor has also completed work on extending the boat ramp and the boat docks at the Lake White State Park office.

Lake White State Park is currently closed and will remain closed until construction is completed. Updated information on the progress of the dam repairs is available on the ODNR Parks website at parks.ohiodnr.gov.

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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