MONTHLY WATER INVENTORY REPORT FOR OHIO

November 2010

http://www.ohiodnr.gov/tabid/4191/Default.aspx
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PRECIPITATION during November was above normal across the state with only a few locations in southeastern Ohio reporting below normal precipitation. The state average was 4.15 inches, 1.17 inches above normal. Regional averages ranged from 5.14 inches, 1.93 inches above normal, for the Southwest Region to 3.12 inches, 0.15 inch above normal, for the Southeast Region. Celina (Mercer County) reported the greatest amount of November precipitation, 6.49 inches. A few other areas in southwestern Ohio also reported more than 6 inches of precipitation in November. Caldwell (Noble County) reported the least amount for the month, 2.49 inches.

Precipitation during November fell mostly as rain; only a few areas in northeastern Ohio reported measurable snow. The first half of the month was extremely dry with much of the state receiving less than 0.25 inch of precipitation and, in some areas of Ohio, no rain was reported. The second half of the month was much wetter with three periods of widespread precipitation. The first was during November 16-17 with rain amounts of more than 1 inch reported across western Ohio, tapering to around 0.50 inch in eastern Ohio. The second period occurred during November 23-26 with most of the state receiving around 2 inches of precipitation. More than 3 inches was reported across parts of southwestern Ohio while less than 2 inches fell in areas of northern and southeastern Ohio. The greatest amount of rain during this period fell on Thanksgiving Day. The third period of precipitation occurred on November 29-30 with the greatest amounts falling across southeastern Ohio and decreasing in amount to the northwest. (Note: Much of the rain on November 30 fell after 8:00AM EDT and will be reported on December 1 at most recording stations and thus is not reflected in this report.)

Precipitation during the 2010 calendar year is below normal across much of the state, but above normal in the Northeast, North Central and South Central regions. The state average is 35.13 inches, 0.13 inch below normal. Regional averages range from 40.03 inches, 2.45 inches above normal, for the South Central Region to 31.69 inches, 0.13 inch below normal, for the Northwest Region.

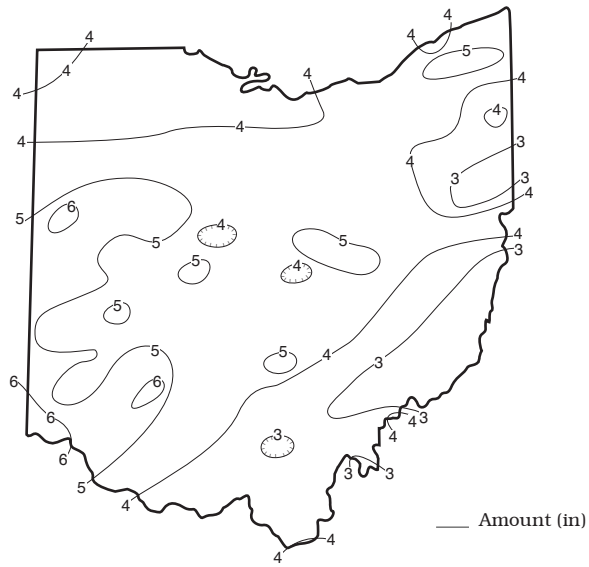
Precipitation during the 2011 water year is above normal throughout most of Ohio, but below normal in some northwestern areas of the state. The state average is 6.17 inches, 0.72 inch above normal. Regional averages range from 7.65 inches, 1.33 inches above normal, for the Northeast Region to 4.85 inches, 0.28 inch below normal, for the Northwest Region.

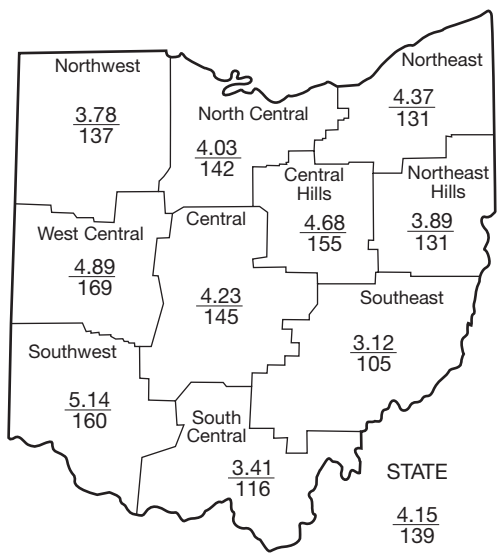
PRECIPITATION

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	+1.02	-1.40	-1.72	+0.14	+2.73	-0.2
North Central	+1.20	+1.47	+3.71	+2.06	+2.20	+1.3
Northeast	+1.03	+0.67	+1.43	+0.92	+2.55	+1.3
West Central	+2.00	+0.05	+1.28	-0.45	-1.37	-0.1
Central	+1.31	-0.29	+1.43	-0.23	+0.36	-0.2
Central Hills	+1.66	+0.85	+2.52	+0.22	+0.40	+0.1
Northeast Hills	+0.93	+0.63	+1.64	+0.36	-2.92	-0.1
Southwest	+1.93	-1.07	-0.02	-3.55	-3.33	-1.0
South Central	+0.48	-0.81	+1.85	+3.11	+5.70	+0.1
Southeast	+0.15	-0.78	-0.33	-0.34	-0.97	-0.1
State	+1.17	-0.07	+1.17	+0.22	+0.51	

*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	875	80	54	60	86
Great Miami River at Hamilton	3,630	1,209	74	47	93	96
Huron River at Milan	371	242	256	85	90	69
Killbuck Creek at Killbuck	464	205	72	52	92	82
Little Beaver Creek near East Liverpool	496	213	65	45	95	100
Maumee River at Waterville	6,330	944	36	21	72	90
Muskingum River at McConnelsville	7,422	3,444	61	77	133	70
Scioto River near Prospect	567	169	174	37	105	79
Scioto River at Higby	5,131	1,211	48	32	77	84
Stillwater River at Pleasant Hill	503	127	129	33	91	96

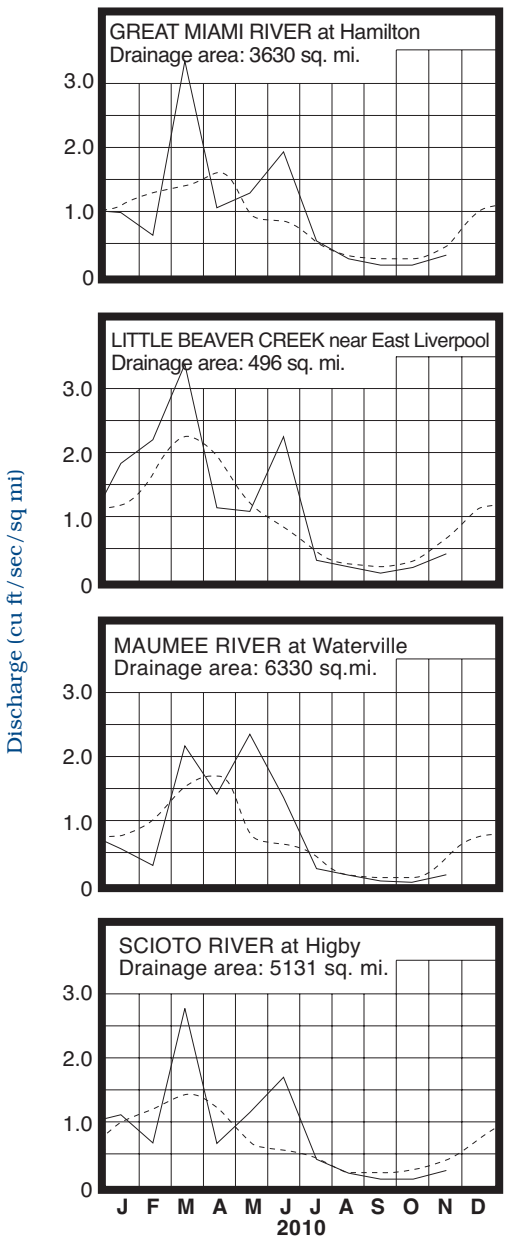
STREAMFLOW during November was below normal in most areas of the state, but above normal in the west-central, central and north-central drainage basins. Flows in southeastern Ohio were low enough to be considered deficient. Flows during November increased seasonally from the October flows statewide.

Flows at the beginning of the month were below normal statewide. Generally, flows declined during the first half of the month. Lowest flows for the month occurred during the first week across the western one-third of the state, and just before mid-month across the remainder of Ohio. Flows increased noticeably after mid-month following several days of precipitation. Greatest flows for the month occurred during November 26-28 following the precipitation that fell on Thanksgiving Day. At the end of the month streamflow throughout Ohio was above normal.

RESERVOIR STORAGE for water supply during November declined slightly in the Mahoning River basin and increased slightly in the Scioto River basin. Storage remained above normal in the Mahoning River basin and below normal in the Scioto River basin.

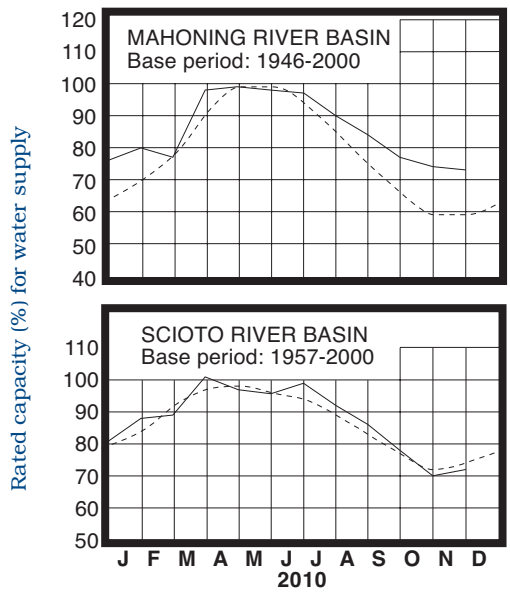
Reservoir storage at the end of November in the Mahoning basin index reservoirs was 73 percent of rated capacity for water supply compared with 74 percent for last month and 71 percent for November 2009. Month-end storage in the Scioto basin index reservoirs was 72 percent of rated capacity for water supply compared with 70 percent for last month and 75 percent for November 2009. Surface water supplies are in good condition throughout the state.

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	16.05	+1.53	-0.83	-2.92
Fa-1	Jasper Mill, Fayette Co.	Limestone	12.45	-3.42	-0.66	-3.44
Fr-10	Columbus, Franklin Co.	Gravel	45.42	-1.30	+0.04	-0.02
H-1	Harrison, Hamilton Co.	Gravel	24.62	-0.94	+0.01	-1.44
Hn-2a	Dola, Hardin Co.	Dolomite	11.85	-2.28	-1.26	+0.79
Po-124	Freedom, Portage Co.	Sandstone	77.85	+0.60	-0.41	-1.18
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.51	-1.51	-0.17	+0.82

GROUND WATER levels during November declined across most of the state. Generally, the declines were greater than normal in most aquifers. A few exceptions were observed in some unconsolidated aquifers, mainly in southwestern and central Ohio, where ground water levels rose slightly during the month. Levels generally declined during most of the month, but began to rise during the last week in response to the above normal precipitation that fell during the second half of November.

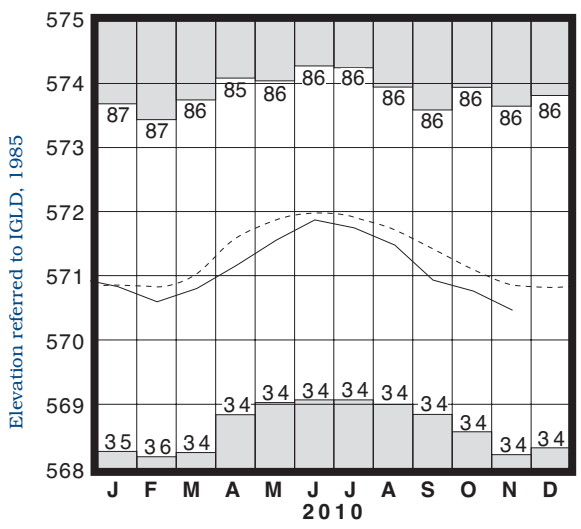
Ground water storage is at below normal levels in most of Ohio with only some consolidated aquifers in eastern Ohio being at above normal levels. Current levels range from about 1.5 feet above normal to nearly 3.5 feet below normal. Also, current levels are lower than they were at this time last year across most of the state. Climatic conditions during the past few months, including the first half of November, have not been favorable for recharge early in the 2011 recharge season. However, the above normal precipitation during the second half of the month has improved conditions considerably since mid-month. The Ohio Agricultural Statistics Service reports that near the end of November, soil moisture was rated as being short or very short in 35 percent of the state, adequate in 62 percent of the state and surplus in 3 percent of the state. This is an improvement from the mid-month report when soil moisture was rated as being short or very short in 72 percent of the state. In spite of this, near normal precipitation and other climatic conditions during the next several months will be necessary for this to be a favorable recharge period.

LAKE ERIE level declined during November. The mean level was 570.47 feet (IGLD-1985), 0.30 foot lower than last month's mean level and 0.40 foot below normal. This month's mean level is 0.63 foot lower than the November 2009 level and 1.27 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 3.00 inches, 0.13 inch above normal. For the entire Great Lakes basin, November precipitation averaged 2.00 inches, 0.76 inch below normal. For calendar year 2010 through November, the Lake Erie basin has averaged 32.24 inches of precipitation, 0.45 inch below normal, while the entire Great Lakes basin has averaged 28.15 inches, 2.04 inches 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 below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from about 5 inches above to as much as 17 inches below the normal seasonal level.

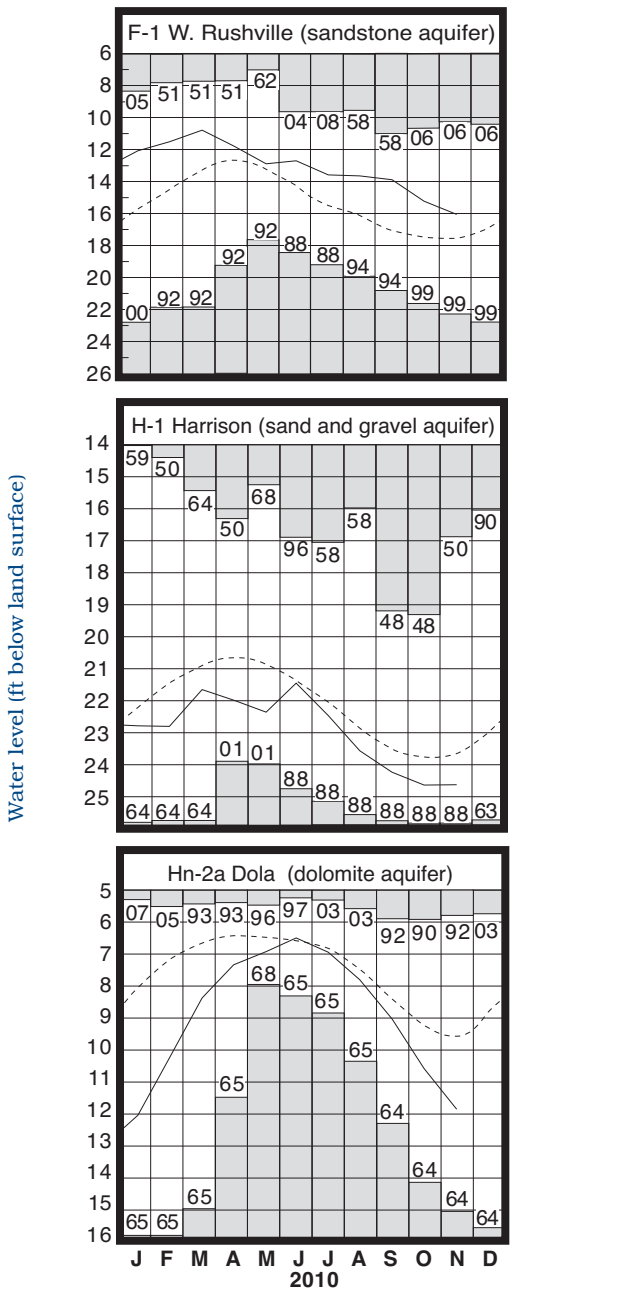
LAKE ERIE LEVELS



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 above normal throughout most of the state. Streamflow was below normal across most of the state, but above normal in west-central, central and north-central Ohio. Reservoir storage declined slightly in the Mahoning River basin and increased slightly in the Scioto River basin. Ground water levels declined in nearly all aquifers and are below normal across most of the state. Lake Erie level declined 0.30 foot and was 0.40 foot below the long-term November average.

NOTES AND COMMENTS

Observation Well Update

Observation well WN-8 (Wayne County), located on The Ohio State University campus of the Ohio Agricultural Research and Development Center (OARDC) in Wooster, is back in operation. The well was destroyed by a tornado on September 16, 2010. The casing on WN-8 was damaged by the tremendous amount of debris that struck it during the storm and had to be pulled. New casing was then set in the borehole. Data recording equipment was re-installed on November 17. Observation well WN-8 is equipped with automated equipment, providing near-real time ground water level information that can be accessed through the division's website. To view data for this well, go to the Division of Soil and Water Resources at: www.dnr.state.oh.us/tabid/21817/Default.aspx, select Water Inventory main page and click on "USGS Near real time data for select observation wells".

Observation well MT-55 (Montgomery County), located in West Carrollton, is still out of service. The status with this site is more complex, thus we are still uncertain when this observation well will be back in operation.

Debris surrounding damaged well casing (blue/gray pipe lower left) of observation well WN-8 on the OARDC campus after September 16th Wooster tornado.

Newly installed casing and equipment on observation well WN-8.

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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