MONTHLY WATER INVENTORY REPORT FOR OHIO

August 2010

http://www.ohiodnr.gov/tabid/4191/Default.aspx
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PRECIPITATION during August was below normal throughout most of the state, but above normal in the West Central and South Central regions. Scattered locations throughout the state also had above normal precipitation for the month. The state average was 2.74 inches, 0.70 inch below normal. Regional averages ranged from 3.83 inches, 0.05 inch above normal, for the South Central Region to 1.94 inches, 1.47 inches below normal, for the Southwest Region. Lancaster (Fairfield County) reported the greatest amount of August precipitation, 5.85 inches. Dayton MCD (Montgomery County) reported the least amount, 0.62 inch.

Precipitation during August fell as scattered showers and thunderstorms. Most of the state received precipitation during August 3-6 with 0.50-1.0 inch common, although some areas in extreme northern and southwestern Ohio received little or no rain. The most notable storms during this period occurred on August 4 when strong thunderstorms with damaging wind and heavy rain moved through west-central, central and southeastern Ohio. Several locations within this area received 2-3 inches of rain. Storms during August 10-15 were widely scattered, but some were strong and accompanied by heavy rain. The most significant of these storms occurred on August 11 and again on August 14-15. While much of the state received around 0.50 inch of rain during this 6-day period, heavier downpours brought more than 2 inches to some locations, especially across southern Ohio. Some minor localized flooding was reported. The second half of the month was rather dry across most of the state. The only significant precipitation during this period occurred on August 21 when scattered showers and storms moved across northern and eastern Ohio. Much of these areas received around 0.50 inch, but several locations in southeastern Ohio received more than 2 inches of rain from these storms. Minor flooding was reported in some areas of southeastern Ohio. On August 25, widely scattered showers moved across eastern Ohio, but most of the state remained dry.

Precipitation during the 2010 water year is below normal in the eastern half of the state and the Southwest Region, but above normal elsewhere. The state average is 35.28 inches, 0.21 inch above normal. Regional averages range from 41.11 inches, 3.44 inches above normal, for the South Central Region to 32.22 inches, 0.08 inch above normal, for the North Central Region.

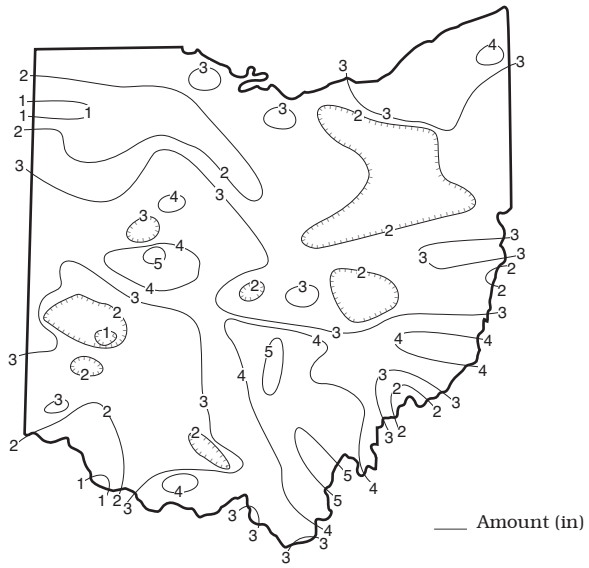
Precipitation for the 2010 calendar year is below normal throughout most of the state, except in northwestern and south-central Ohio where it is above normal. The state average is 26.94 inches, 0.08 inch above normal. Regional averages range from 32.45 inches, 3.19 inches above normal, for the South Central Region to 25.10 inches, 0.60 inch above normal, for the North Central Region.

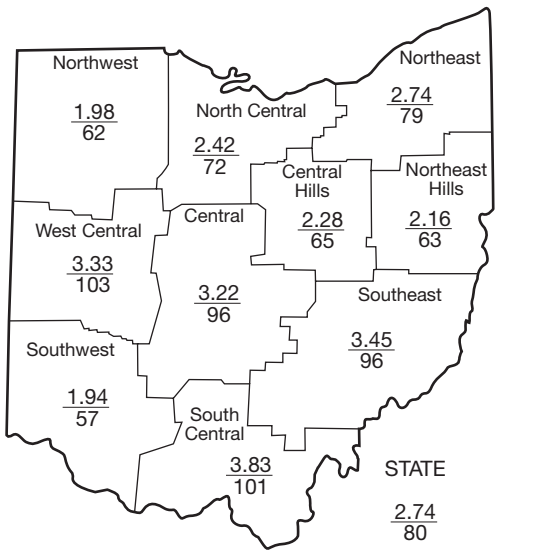
PRECIPITATION

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	-1.21	-0.03	+2.95	+1.28	+4.73	-1.3
North Central	-0.93	+2.12	+1.62	-1.12	+1.70	-0.7
Northeast	-0.75	+0.86	-0.45	-1.04	+2.65	-2.0
West Central	+0.09	+1.49	+1.14	-0.72	-3.52	-0.8
Central	-0.15	+1.88	+0.73	+1.02	-1.30	-1.2
Central Hills	-1.24	+2.08	+0.04	-0.33	-1.40	-1.7
Northeast Hills	-1.27	+1.03	-0.52	-2.26	-4.48	-2.1
Southwest	-1.47	+1.05	-0.50	-1.79	-5.95	-1.1
South Central	+0.05	+2.82	+4.29	+3.68	+2.98	-0.3
Southeast	-0.13	+0.45	-0.09	-0.50	-3.23	-1.8
State	-0.70	+1.37	+0.91	-0.19	-0.81	

*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 AUGUST





MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS) This Month	% of Normal This Month	% of Normal Past 3 Mos.	% of Normal Past 6 Mos.	% of Normal Past 12 Mos.
Grand River near Painesville	685	76	86	73	90	82
Great Miami River at Hamilton	3,630	937	81	121	123	100
Huron River at Milan	371	33	36	84	88	63
Killbuck Creek at Killbuck	464	107	76	123	99	84
Little Beaver Creek near East Liverpool	496	107	79	135	114	99
Maumee River at Waterville	6,330	936	96	103	126	93
Muskingum River at McConnelsville	7,422	1639	56	165	131	72
Scioto River near Prospect	567	54	119	142	105	80
Scioto River at Higby	5,131	1,043	79	106	101	92
Stillwater River at Pleasant Hill	503	63	89	124	136	96

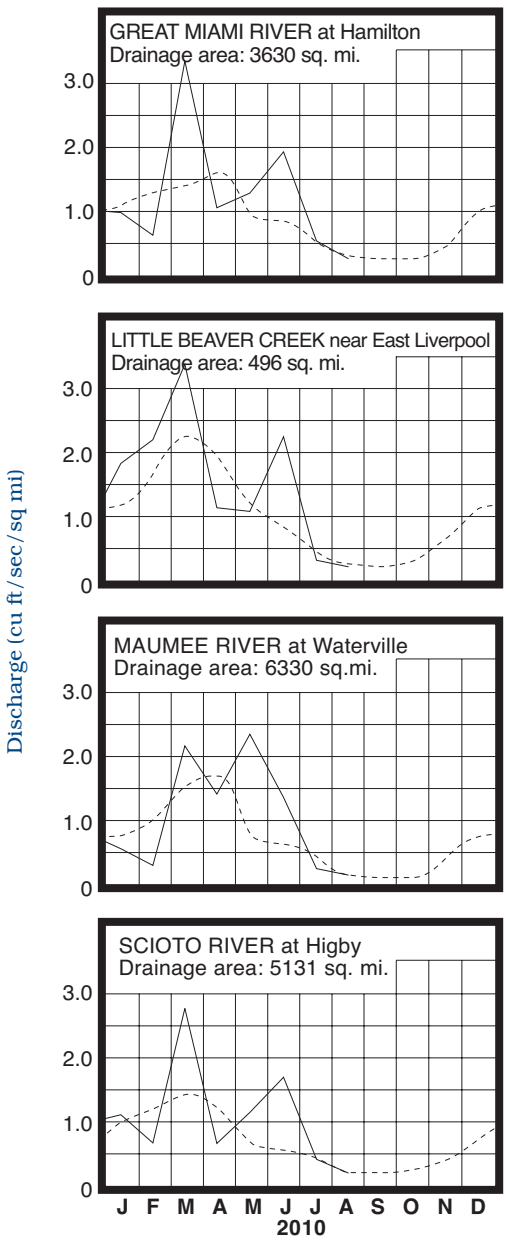
STREAMFLOW during August was below normal throughout most of Ohio. Flows were low enough to be considered deficient in some basins, especially in areas of northern Ohio. Flows during August were less than the July flows statewide.

Flows at the beginning of August were below normal across much of the state, but above normal in northwestern, west-central and northeastern Ohio. Flows declined the first few days of the month, then increased near the end of the first week in response to the precipitation that fell during August 3-6. Greatest flows for the month were recorded near the end of the first week across most of the state. Flows declined from these peaks during the second week, but near the end of the second week flows increased across most of the state as a result of scattered showers and isolated thunderstorms. Greatest flows for the month occurred around this time in southwestern and northeastern Ohio. Flows generally declined throughout the remainder of the month in western Ohio. In eastern Ohio, flows increased following the August 21 precipitation, and then declined through months end. Flows at the end of August were at their lowest for the month and below normal statewide.

RESERVOIR STORAGE for water supply during August decreased in both the Mahoning and Scioto river basins. At the end of the month, storage remained above normal in both basins.

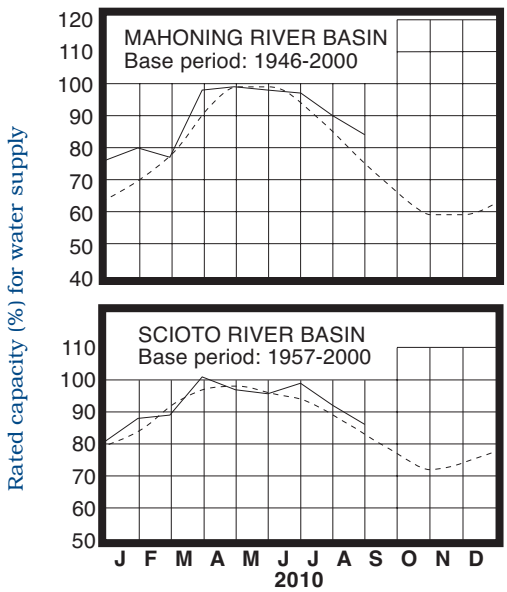
Reservoir storage at the end of August in the Mahoning basin index reservoirs was 84 percent of rated capacity for water supply compared with 90 percent for last month and 83 percent for August 2009. Month-end storage in the Scioto basin index reservoirs was 86 percent of rated capacity for water supply compared with 92 percent for last month and 94 percent for August 2009. In spite of the recent dry conditions much of Ohio has experienced, surface water supplies remain favorable across 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	13.64	+2.40	-0.05	+0.41
Fa-1	Jasper Mill, Fayette Co.	Limestone	9.53	-1.21	-1.05	-1.05
Fr-10	Columbus, Franklin Co.	Gravel	44.64	-0.84	-0.37	+0.70
H-1	Harrison, Hamilton Co.	Gravel	23.57	-0.70	-1.10	-0.63
Hn-2a	Dola, Hardin Co.	Dolomite	7.80	-0.31	-0.86	+0.97
Po-124	Freedom, Portage Co.	Sandstone	76.74	+1.22	-0.38	+0.08
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.40	-0.99	-0.79	+1.13

GROUND WATER levels during August declined in most of Ohio's aquifers. Net declines during August from July's levels were greater than normally observed in most aquifers, but were less than normally observed in some aquifers where precipitation was above normal. Ground water levels declined steadily throughout the month in most aquifers. A few exceptions were observed in some aquifers, especially in southeastern Ohio, where levels responded favorably to the above normal rainfall.

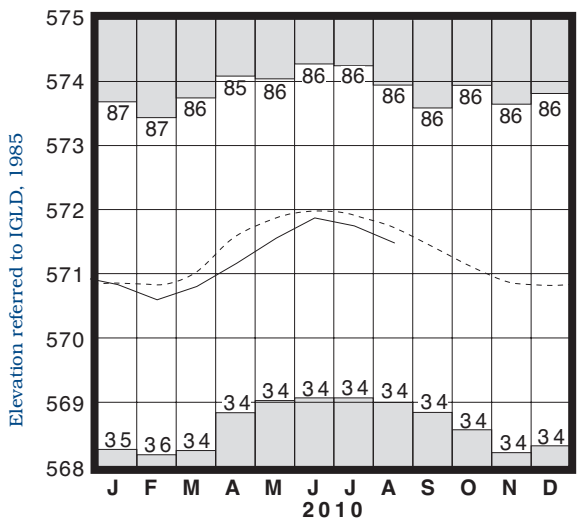
In spite of the dry conditions much of the state has experienced the past 2 months, ground water supplies continue to remain adequate throughout most of Ohio. Ground water levels are below normal across most of the state with only a few exceptions of above normal levels occurring in some consolidated aquifers in eastern Ohio. Current levels are higher than they were during August 2009 throughout much of the state, although they are lower in some aquifers in the southwestern quarter of Ohio. Ground water levels can be expected to continue to decline seasonally through autumn, thus a continuation of the recent dry conditions could have an adverse effect on some ground water supplies, especially in areas that have been the driest. Even with a return to near-normal precipitation and other climatic conditions during the next few months, little recharge is expected; however, overall demand on ground water supplies would be reduced and Ohio's ground water supplies should remain adequate. The Ohio Agricultural Statistics Service reports that near the end of August soil moisture was rated as being short or very short in 72 percent of the state and adequate in 28 percent of the state.

LAKE ERIE level declined during August. The mean level was 571.49 feet (IGLD-1985), 0.26 foot lower than last month's mean level and 0.23 foot below normal. This month's mean level is 0.52 foot lower than the August 2009 level and 2.29 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during August averaged 2.13 inches, 1.09 inches below normal. For the entire Great Lakes basin, August precipitation averaged 2.95 inches, 0.18 inch below normal. For calendar year 2010 through August, the Lake Erie basin has averaged 23.76 inches of precipitation, 0.09 inch below normal, while the entire Great lakes basin has averaged 19.15 inches, 2.01 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 16 inches below the normal seasonal level.

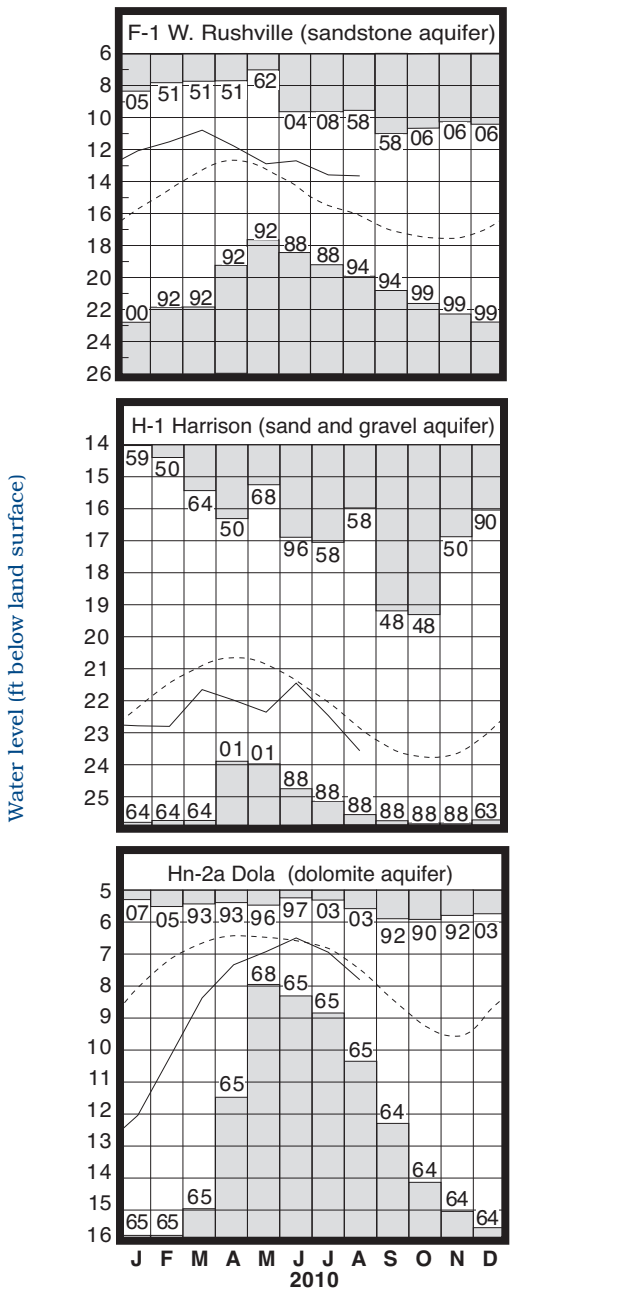
LAKE ERIE LEVELS



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 August was below normal throughout most of the state, but above normal in the West Central and South Central Regions, and other scattered locations throughout the state. Streamflow was below normal throughout most of Ohio. Reservoir storage decreased in both the Mahoning and Scioto river basins, and remained above normal in both basins. Ground water levels declined and were below normal throughout most of the state. Lake Erie level declined 0.26 foot and was 0.23 foot below the long-term August average.

NOTES AND COMMENTS

New Potentiometric Surface Maps Now Available

Seven new ground water potentiometric surface (water table) maps for four additional counties in Ohio are now available from the ODNR, Division of Soil and Water Resources. The new GIS shape files, in addition to the map PDF files, are available from the division's website at: www.dnr.state.oh.us/tabid/3623/default.aspx. The newly added shape files and maps are for Auglaize, Mercer, Paulding and Van Wert counties. Water table maps are created for consolidated and unconsolidated aquifers. Both of these maps are available for Auglaize, Mercer and Paulding counties. Only a map representing consolidated aquifers is available for Van Wert County.

A potentiometric surface map is a contour map that represents the elevation of the top of the ground water surface in an aquifer. The contour lines illustrate the potentiometric surface much like the contour lines of a topographic map represent a visual model of the land surface. Potentiometric surface maps are being created for bedrock (consolidated formations) and sand and gravel (unconsolidated formations) aquifers. County-based maps are available as PDF images and as GIS ArcView Shape files.

Potentiometric surface maps can be used to determine the direction and gradient of ground water flow, to determine ground water recharge and discharge areas, and as input data into ground water modeling programs. These maps can also be used to assist in preparing water resources plans and technical studies, mapping stressed areas, and in possible ground water diversion issues. Since these maps were created using existing data collected over a fifty-year period, field verification of the ground water flow direction should be conducted before the drilling of monitoring wells to satisfy compliance monitoring. If you have any questions concerning these maps, contact Jim Raab at jim.raab@dnr.state.oh.us or (614) 265-6747.

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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