



# MONTHLY WATER INVENTORY REPORT FOR OHIO

## September 2007

<http://www.dnr.state.oh.us/water/pubs/newsltrs/mwirmain.htm>

Compiled By Scott C. Kirk

Hydrologist  
Water Inventory Unit

**PRECIPITATION** during September was below normal throughout most of the state, but above normal in some areas of central, west-central, southwestern and northeastern Ohio. The state average was 2.41 inches, 0.54 inch below normal. Regional averages ranged from 3.00 inches, 0.13 inch above normal, for the Southwest Region to 1.81 inches, 1.14 inches below normal, for the South Central Region. Dorset (Ashtabula County) reported the greatest amount of September precipitation, 5.45 inches. Newport (Washington County) reported the least amount, 0.59 inch. Several stations in extreme southern Ohio reported less than 1 inch of precipitation for the month.

Most of the September precipitation fell during 2 periods. The first period was during September 7-9 when showers and thunderstorms brought 1-2 inches of rain across much of the state, with isolated areas receiving more than 3 inches; areas in extreme southern and southeastern Ohio received 0.50 inch or less during this period. The next 2 weeks were dry across the state, with only a few isolated showers reported in eastern Ohio. The second notable period was during September 25-27 when widespread showers and thunderstorms produced from 1 to more than 2 inches of rain in a band extending from southwestern to northeastern Ohio, tapering to less than 0.50 inch in northwestern and extreme southeastern Ohio.

Precipitation for the 2007 calendar year is above normal in the northern two-thirds of the state and below normal in the southern one-third. The average for the state as a whole is 30.76 inches, 0.95 inch above normal. Regional averages range from 33.30 inches, 4.26 inches above normal, for the West Central Region to 24.84 inches, 7.37 inches below normal, for the South Central Region.

Precipitation for the 2007 water year (October 1, 2006-September 30, 2007) was also above normal in the northern two-thirds of Ohio and below normal in the southern one-third. The average for the state as a whole was 41.88 inches, 3.86 inches above normal. Regional averages ranged from 44.91 inches, 9.77 inches above normal, for the North Central Region to 35.78 inches, 4.84 inches below normal, for the South Central Region (see Precipitation table, departure from normal, past 12 months column). This was the 2nd wettest water year of record for the North Central Region and the 4th wettest for the Northwest Region. Chardon (Geauga County) reported the greatest amount of precipitation for the water year, 57.53 inches. Portsmouth (Scioto County) reported the least amount, 26.34 inches. An isohyetal map and regional averages with percentages of normal for the 2007 water year appear on the last page of this report.

The 2007 water year started off with noticeably above normal precipitation during October, ranking as the 2nd wettest October of record for the state as a whole with all 10 of the state's climatic regions ranking in their top 10 wettest

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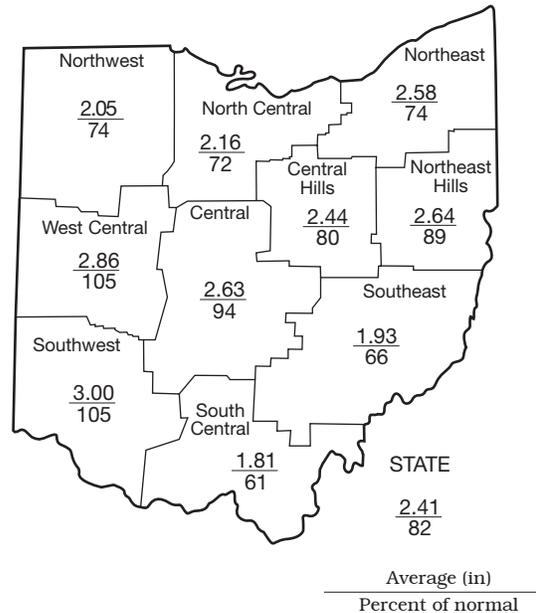
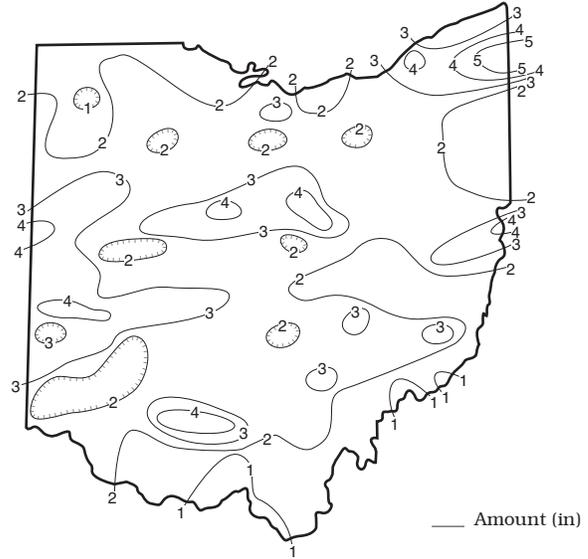
### PRECIPITATION

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	-0.71	+5.68	+2.90	+8.59	+11.66	+1.9
North Central	-0.84	+5.01	+1.70	+9.77	+13.05	+2.6
Northeast	-0.91	+1.85	-1.22	+4.91	+10.95	+0.2
West Central	+0.13	+1.52	-1.65	+7.78	+12.27	-0.8
Central	-0.16	+0.97	-3.16	+5.44	+9.01	-2.2
Central Hills	-0.62	+2.28	-0.89	+5.03	+6.96	+1.2
Northeast Hills	-0.32	+2.40	+0.33	+4.42	+8.54	-0.1
Southwest	+0.13	-2.04	-6.56	-1.18	+4.29	-3.7
South Central	-1.14	-2.64	-6.71	-4.84	-4.00	-4.2
Southeast	-0.98	-0.67	-4.80	-1.25	+0.93	-3.0
State	-0.54	+1.43	-2.01	+3.86	+7.04	

\*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 SEPTEMBER



## 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	280	20	24	70	143
Great Miami River at Hamilton	3,630	857	88	52	69	148
Huron River at Milan	371	127	278	226	124	171
Killbuck Creek at Killbuck	464	140	125	111	73	114
Little Beaver Creek near East Liverpool	496	139	122	118	71	119
Maumee River at Waterville	6,330	2,549	330	231	112	157
Muskingum River at McConnellsville	7,422	2,170	88	143	112	108
Scioto River near Prospect	567	134	441	96	73	168
Scioto River at Higby	5,131	876	66	45	50	131
Stillwater River at Pleasant Hill	503	95	156	38	58	148

**STREAMFLOW** during September was generally above normal in northern Ohio and below normal in southern Ohio. Flows were high enough to be considered excessive in a few basins in northern Ohio. Flows during September were less than observed during August across most of the state.

Flows at the beginning of September were above normal in the northeastern two-thirds and below normal in the southwestern one-third of Ohio. Flows declined during the first week of the month, then increased following widespread precipitation during September 7-9. Low flows for the month occurred prior to this precipitation in many basins in western Ohio while greatest flows for September were observed following this precipitation across most of the state. Flows declined from these peaks during the next 2 weeks at which time September's low flows were observed

in eastern Ohio. Flows again increased in response to widespread precipitation that fell during September 25-27. Flows at the end of the month were generally above normal in eastern Ohio and below normal in western Ohio.

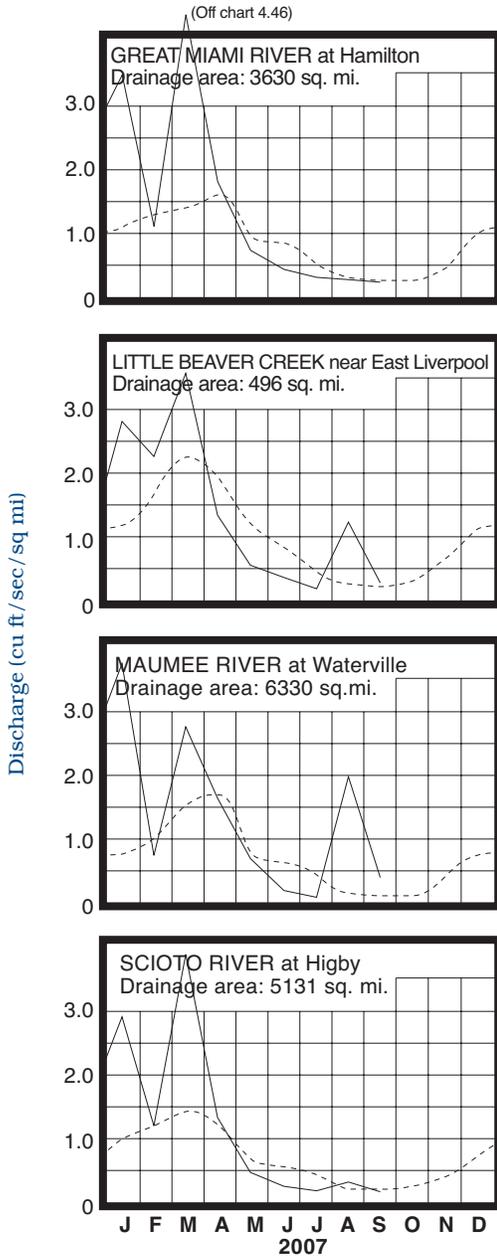
Streamflow during the 2007 water year was above normal statewide (see Mean Stream Discharge table, percent of normal, past 12 months column). Several stream gauges established record or near-record monthly maximum flows. Flows during the first 6 months of the water year were above normal, including unusual flooding in October, especially in south-central Ohio. Streamflow was below normal during the next 4 months as noticeably below normal precipitation fell throughout the state. Flows during the last 2 months of the water year were generally above normal in northern Ohio and below normal in southern Ohio. Torrential rain fell on areas of northern Ohio during August, resulting in significant flooding across the region, with an area from Van Wert County east to Summit and Holmes counties especially hard hit. President Bush declared 8 counties in northern Ohio a federal disaster area due to damage from the flooding.

**RESERVOIR STORAGE** during September decreased in both the Mahoning and Scioto river basins. Storage remained above normal in the Mahoning basin reservoirs and below normal in the Scioto basin reservoirs.

Reservoir storage at the end of September in the Mahoning basin index reservoirs was 80 percent of rated capacity for water supply compared with 87 percent for both last month and September 2006. Month-end storage in the Scioto basin index reservoirs was 73 percent of rated capacity for water supply compared with 79 percent for last month and 88 percent for September 2006.

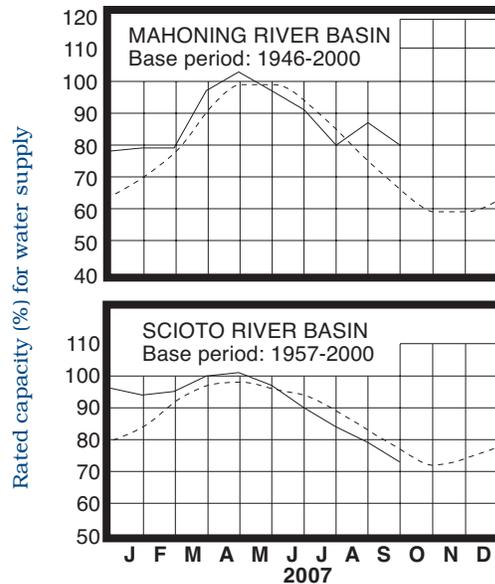
Surface water supplies were adequate during the 2007 water year. Reservoir storage across most of Ohio was at above normal levels through the fall, winter and spring months. Storage fell to below normal during early summer due to the markedly below normal precipitation that fell during May. Reservoir storage declined seasonally through the end of the water year and remained below normal in the Scioto basin reservoirs. Storage in the Mahoning basin reservoirs remained below normal during much of summer, but increased to above normal during August following the much above normal precipitation that fell across northern Ohio.

## 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	17.05	-0.09	-0.84	-2.82
Fa-1	Jasper Mill, Fayette Co.	Limestone	11.56	-2.79	-1.41	-2.48
Fr-10	Columbus, Franklin Co.	Gravel	45.94	-1.65	-0.40	-0.52
H-1	Harrison, Hamilton Co.	Gravel	24.75	-1.25	-0.30	-1.03
Hn-2a	Dola, Hardin Co.	Dolomite	7.41	+0.99	+0.72	+0.31
Po-1	Windham, Portage Co.	Sandstone	18.01	+2.20	-0.20	+0.93
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.93	-1.13	-0.25	-0.84

**GROUND WATER** levels during September declined seasonally in most aquifers. However, a few consolidated aquifers in northern Ohio showed some net rises due to delayed recharge from the much above normal precipitation the region received during August. Net declines during September from August's levels were greater than normally observed in southern Ohio and less than normally observed in northern Ohio.

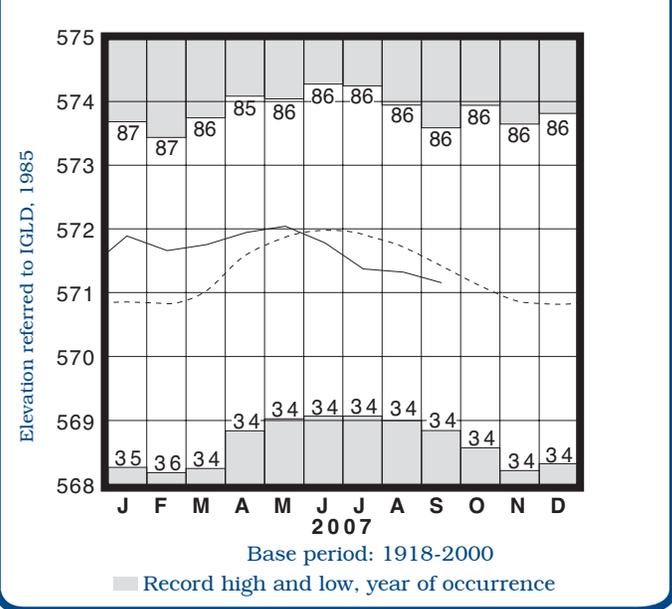
The 2007 water year was adequate for ground water supplies across most of the state. Much above normal precipitation near the end of the 2006 water year and beginning of the 2007 water year provided an early start to the recharge season and by the end of October, ground water storage was above normal nearly statewide. Ground water levels remained above normal through the winter and early spring, with some of the index observation wells presented in this report reaching several record-high monthly levels during this period. Index observation wells F-1 near West Rushville (Fairfield County), PO-1 near Windham (Portage County) and HN-2A near Dola (Hardin County), all established record-high monthly levels at various times during this period. Below normal precipitation during May began to reverse this trend. Dry conditions continued across much of the state during June and July and, by the end of July, ground water storage was below normal nearly statewide. Notably above normal precipitation in northern Ohio during August helped reduce the rate of decline and/or provided some recharge to aquifers in that part of the state. However, continued below normal precipitation in southern Ohio during the last 2 months of the water year offered no relief from the dry conditions. At the end of the 2007 water year, ground water storage was above normal and levels were higher than last year's levels in consolidated aquifers in northern and eastern Ohio, but below normal and lower than last year's levels elsewhere. The Ohio Agricultural Statistics Service reports that near the end of September, soil moisture was rated as being short or very short in 43 percent of the state, adequate in 55 percent of the state and surplus in 2 percent of the state. A return to more normal climatic conditions would be favorable for the replenishment of Ohio's aquifers during the upcoming recharge season. Water supply managers with ground water concerns in southern Ohio are urged to monitor their respective situations closely.

**LAKE ERIE** level declined during September. The mean level was 571.16 feet (IGLD-1985), 0.17 foot lower than last month's mean level and 0.26 foot below normal. This month's mean level is 0.20 foot lower than the September 2006 level and 1.96 feet above Low Water Datum.

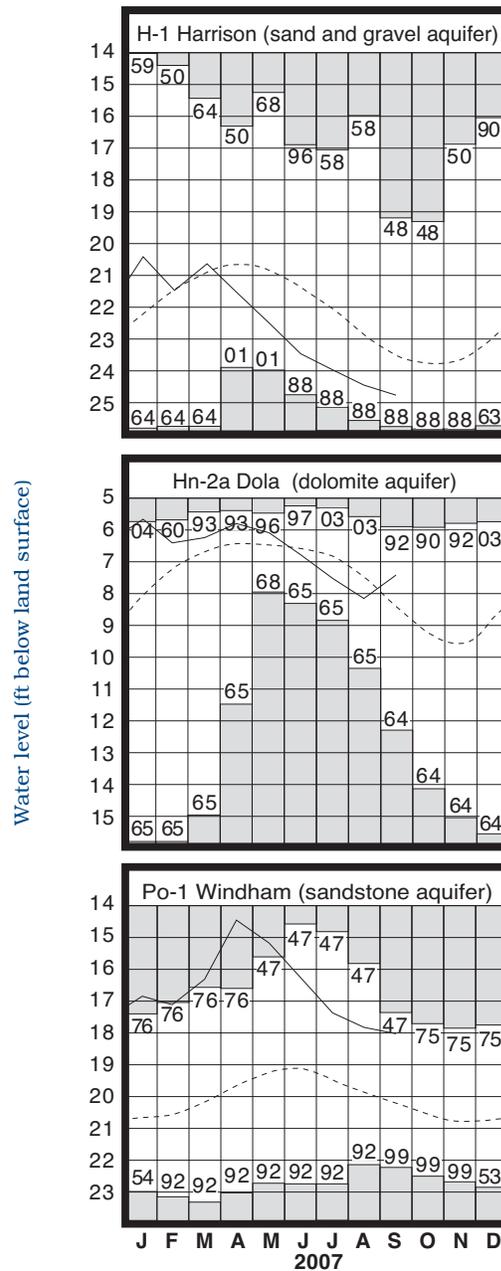
Lake Erie level was above normal during the first 8 months of the 2007 water year, then fell to below normal during the last 4 months. The USACE reports that based on the current condition of the Great Lakes basin and anticipated weather patterns, the level of Lake Erie should remain below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from about 2 inches above to as much as 18 inches below the normal seasonal average.

Note: The change in feet from last year's level as presented in the August issue of this report was incorrect. The August 2007 mean level was 0.32 foot lower than the August 2006 level, not higher than the August 2006 level as reported.

### LAKE ERIE LEVELS



### GROUND-WATER LEVELS



Normal - - - - Current - - - -

(Precipitation continued from front)  
 Octobers of record. Precipitation was below normal statewide during November and across southeastern Ohio during December. Precipitation was above normal throughout the state during January, the southern half of the state during February, and most of the state during March. Precipitation during April was below normal across most of the state, with only the northwestern one-third receiving above normal amounts. May precipitation was markedly below normal statewide, ranking as the 3rd driest May of record. Much of the southern one-third of the state reported less than 1 inch for the month. Unusually dry conditions continued across much of the state during June and July. August precipitation was much above normal across most of Ohio, being the wettest August of record for the Northwest, North Central and Northeast regions. Significant flooding occurred in areas of northern Ohio. However, the dry pattern continued during August across southwestern and south-central Ohio. The water year ended with below normal precipitation across most of the state during September.

**SUMMARY**

Precipitation during September was below normal throughout most of the state, but above normal in some areas of central, west-central, southwestern and northeastern Ohio. Streamflow was above normal in northern Ohio and below normal in southern Ohio. Reservoir storage decreased in both the Mahoning and Scioto river basins. Storage was above normal in the Mahoning River basin and below normal in the Scioto River basin. Ground water levels declined across most of the state and were below normal. Lake Erie level declined 0.17 foot and was 0.26 foot below the long-term September average.

Precipitation during the 2007 water year was above normal in the northern two-thirds and below normal in the southern one-third of Ohio. Streamflow was above normal statewide. Surface water and ground water supplies were adequate throughout the 2007 water year across most of the state. Lake Erie was above normal during the first 8 months and below normal during the last 4 months of the water year.

**ACKNOWLEDGMENTS**

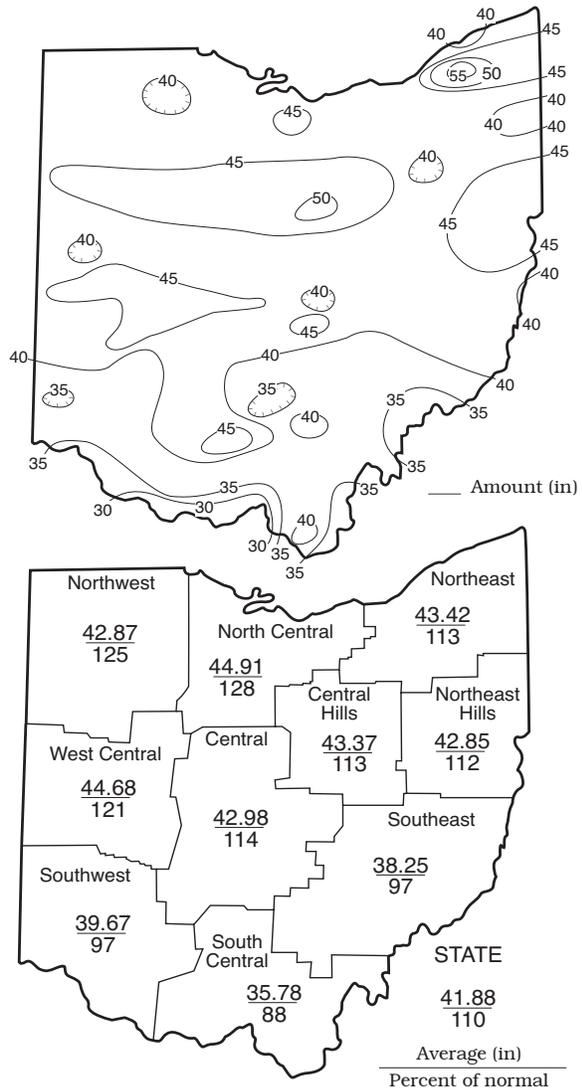
This report has been compiled from Division of Water data and from information supplied by the following:

- 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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**PRECIPITATION 2007 WATER YEAR**



Division of Water  
 2045 Morse Road  
 Columbus, Ohio 43229-6693

- Ted Strickland  
 Governor
- Sean D. Logan  
 Director
- Deborah F. Hoffman  
 Chief

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