



MONTHLY WATER INVENTORY REPORT FOR OHIO

September 2009

<http://www.ohiodnr.gov/tabid/4191/Default.aspx>

Compiled By David H. Cashell and Scott C. Kirk

Hydrologists
Water Inventory Unit

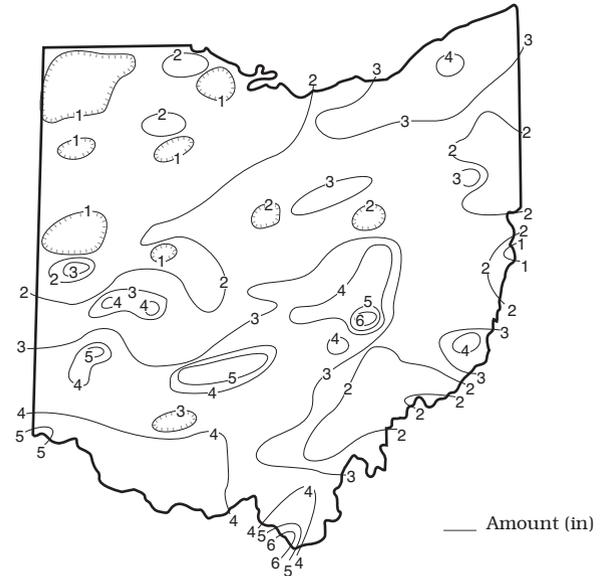
PRECIPITATION during September was below normal across much of the state, but generally above normal in central, southwestern, south-central and areas of northeastern Ohio. The state average was 2.57 inches, 0.38 inch below normal. Regional averages ranged from 3.40 inches, 0.53 inch above normal, for the Southwest Region to 1.33 inches, 1.43 inches below normal, for the Northwest Region. This was the 12th driest September during the past 127 years for the Northwest Region. South Point (Lawrence County) reported the greatest amount of September precipitation, 6.56 inches. Elmore (Ottawa County) reported the least amount, 0.53 inch. Several stations in northwestern and west-central Ohio reported less than 1 inch of precipitation for the month.

The first week of September was dry throughout the state with little or no rain reported. The first significant precipitation of the month occurred during September 7-10. While much of Ohio reported less than 0.50 inch of rain during this period, scattered locations received more than 2 inches. The next 10 days were again rather dry across most of the state. During the first 20 days of the month, a few locations in northwestern Ohio received less than 0.25 inch of rain. The last 10 days of the month were marked by several days with precipitation. The two most notable of these included storms on September 21 and then during September 26-27. On September 21, light showers fell throughout much of the state, but an area with 1-3 inches fell across southwestern Ohio. Rain during September 26-27 was greatest in the southeastern half of the state where generally 1-2 inches fell, with amounts tapering to less than 0.10 inch in northwestern Ohio. Rain fell in northeastern Ohio on September 28 and 29 with generally 0.50-1.0 inch falling and more than 1 inch reported at a few locations in counties along Lake Erie.

Precipitation for the 2009 calendar year is below normal throughout most of the state with only the Northeast and South Central regions averaging above normal. The average for the state is 28.51 inches, 1.30 inches below normal. Regional averages range from 33.60 inches, 1.39 inches above normal, for the South Central Region to 25.62 inches, 3.42 inches below normal, for the West Central Region.

Precipitation for the 2009 water year (October 1, 2008–September 30, 2009) was below normal across much of the state, but above normal in both northern and south-central Ohio. The average for the state was 37.42 inches, 0.60 inch below normal. Regional averages ranged from 42.28 inches, 1.66 inches above normal, for the South Central Region to 33.79 inches, 3.11 inches below normal, for the West Central Region (see Precipitation table, departure from normal, past 12 months column). South Point (Lawrence County) reported the greatest amount of precipitation for the 2009 water year, 57.61 inches.

PRECIPITATION SEPTEMBER



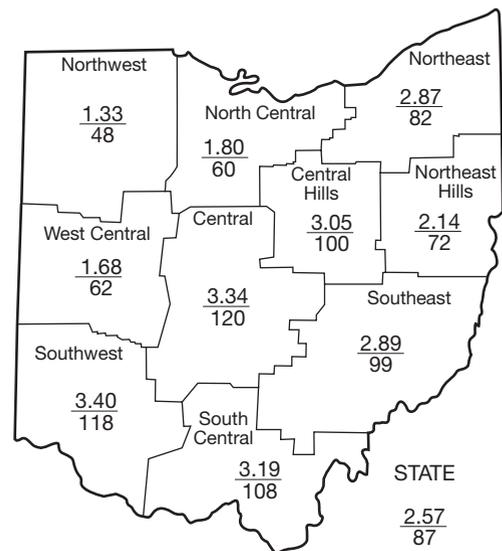
(continued on back)

PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-1.43	-2.82	-2.59	+1.03	+9.58	-0.2
North Central	-1.20	-2.31	-1.97	+0.40	+10.70	+0.3
Northeast	-0.62	-0.33	-0.67	+2.87	+15.11	-0.5
West Central	-1.05	-1.20	-1.26	-3.11	+6.14	-0.8
Central	+0.55	+0.67	+0.75	-1.11	+7.38	0.0
Central Hills	-0.01	-0.44	-0.62	-1.19	+5.20	-0.4
Northeast Hills	-0.82	-0.91	-2.12	-3.18	+2.70	-1.4
Southwest	+0.53	+0.22	+1.50	-2.36	+6.88	+1.3
South Central	+0.24	+1.63	+4.17	+1.66	+10.07	+0.8
Southeast	-0.02	-1.66	-0.28	-0.95	+7.17	-0.7
State	-0.38	-0.72	-0.32	-0.60	+8.07	

*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	68	39	47	66	111
Great Miami River at Hamilton	3,630	920	95	72	94	78
Huron River at Milan	371	12	27	18	58	125
Killbuck Creek at Killbuck	464	101	90	48	59	65
Little Beaver Creek near East Liverpool	496	80	70	52	69	75
Maumee River at Waterville	6,330	535	69	35	91	111
Muskingum River at McConnelsville	7,422	1,500	61	78	100	63
Scioto River near Prospect	567	45	147	25	65	65
Scioto River at Higby	5,131	1,108	83	58	64	59
Stillwater River at Pleasant Hill	503	31	51	51	108	78

STREAMFLOW during September was below normal nearly statewide with only a few basins in central Ohio having above normal flows. Flows were low enough to be considered deficient in a few basins in the northwestern quarter of the state. September flows in most drainage basins declined from those flows recorded during August.

Flows at the beginning of the month were below normal across northeastern and west-central Ohio, and above normal elsewhere. Greatest flows for the month in northwestern and southeastern Ohio basins occurred on the first day of the month. Flows decreased statewide during the first week, then increased in response to precipitation during September 7-10. Greatest flows in north-central, central and southwestern Ohio basins occurred during this period with minor urban and small stream flooding reported in several areas. Basins in northeastern and south-central Ohio had their

greatest flows recorded near or at the end of September. Lowest flows for the month occurred between September 18 and 21 throughout most of the state except in northwestern Ohio drainage basins where flows were lowest on September 30. At the end of September, flows were generally below normal in western Ohio and above normal in eastern Ohio.

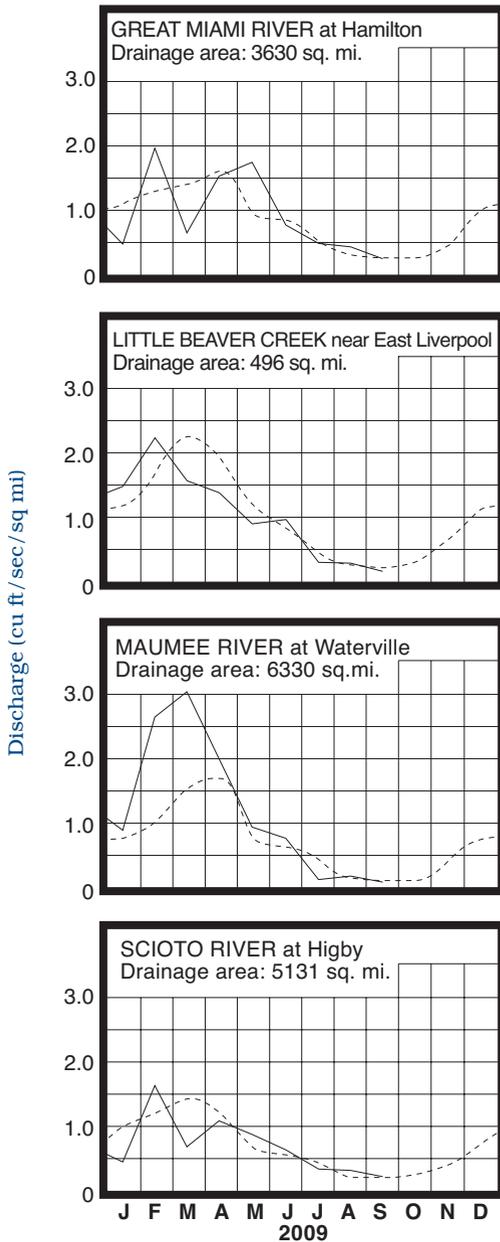
Streamflow during the 2009 water year was generally below normal across the southern two-thirds of the state and above normal in the northern one-third (see Mean Stream Discharge table, percent of normal, past 12 months column). Flows were below normal nearly statewide during October. For the next 6 months, flows were generally above normal across both northern and southeastern Ohio, and below normal elsewhere. Flows were below normal across most of the state during the last 5 months of the water year with August being the only month during this period where streamflow was above normal throughout most of the state. There were no major flooding events during the 2009 water year. The most noteworthy event occurred during the second week of February following precipitation and runoff from melting snow that resulted in flooding along several streams, mainly in northern Ohio. Ice jams along many streams exasperated some of this flooding. Mean monthly flow for several gauging stations in northern Ohio ranked in their top 10 greatest for February. Other minor, isolated flooding events occurred during the summer months following locally heavy downpours.

RESERVOIR STORAGE for water supply during September 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 September in the Mahoning basin index reservoirs was 76 percent of rated capacity for water supply compared with 83 percent for last month and September 2008. Month-end storage in the Scioto basin index reservoirs was 90 percent of rated capacity for water supply compared with 94 percent for last month and 78 percent for September 2008.

Surface water supplies were adequate throughout the 2009 water year. Storage in the Mahoning basin index reservoirs was above normal nearly the entire water year. Storage in the Scioto basin index reservoirs was below

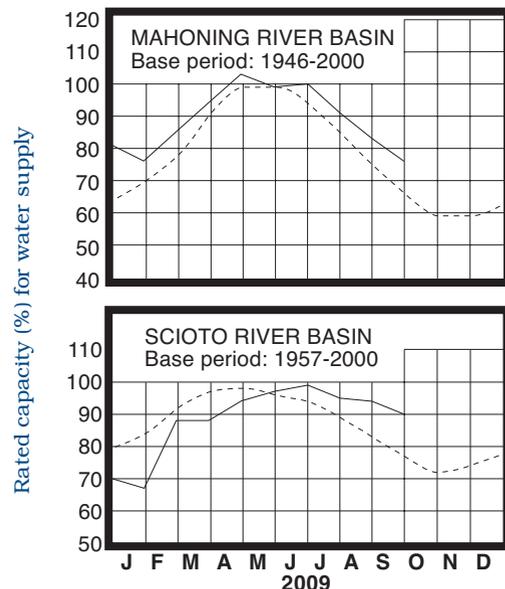
MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

Normal - - - - Current ———

RESERVOIR STORAGE FOR WATER SUPPLY



GROUND-WATER LEVELS

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

normal from October 2008 through April 2009, reflecting below normal precipitation that fell during the July-November, 2008 period. However, above normal precipitation during the second half of the 2009 water year in the Scioto River basin helped increase storage to above normal from May through the end of the water year. Also, cooler than normal summer temperatures most likely lowered the overall demand for surface water supplies during this normally high-use period. Surface water supplies are in good shape across the state as we enter the 2010 water year.

GROUND WATER levels during September declined throughout most of the state, but a few consolidated aquifers in northeastern Ohio showed some positive net improvement. Net declines during September from last month's levels were greater than usually observed in most aquifers. Generally, ground water levels declined steadily throughout most of the month, but began to rise in many aquifers near the end of the month in response to the precipitation that fell during the last 10 days of September. Ground water levels are below normal throughout most of the state except in some consolidated aquifers in eastern Ohio where levels continue to be above normal.

The 2009 water year was adequate, but not particularly favorable for ground water supplies. Ground water levels began the 2009 water year below normal across most of the state, but above normal in some consolidated aquifers in eastern Ohio. Below normal precipitation during the winter and spring months across the southern two-thirds of the state resulted in less improvement to ground water storage than would be normally anticipated. At the end of the water year, ground water levels remained below normal throughout most of the state with the exception of those consolidated aquifers in eastern Ohio where levels remained above normal. Current levels range from about 0.5 foot higher to around 1 foot lower than the September 2008 levels. However, ground water supplies were adequate during the entire 2009 water year. With near-normal precipitation during the upcoming recharge season, ground water supplies should continue to be adequate throughout the state.

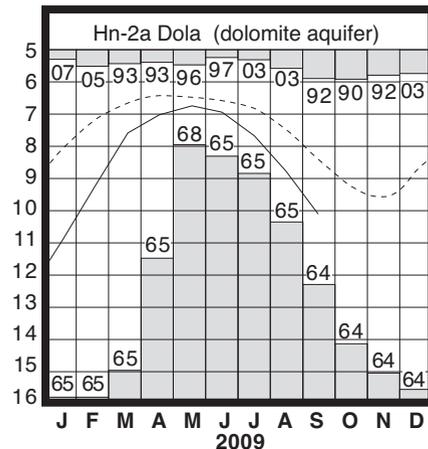
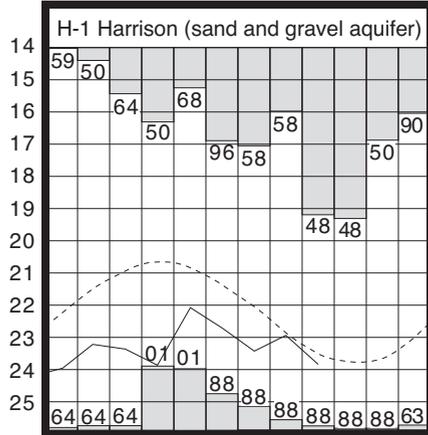
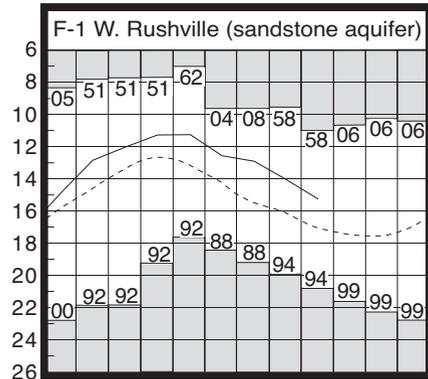
The Ohio Agricultural Statistics Service reports that near the end of September, topsoil moisture was rated as being short or very short in 34 percent of the state, adequate in 61 percent of the state, and surplus in 5 percent of the state.

LAKE ERIE water level declined during September. The mean level was 571.65 feet (IGLD-1985), 0.36 foot lower than last month's mean level and 0.23 foot above normal. This month's mean level is 0.36 foot higher than the September 2008 level and 2.45 feet above Low Water Datum.

The level of Lake Erie was below normal during the first 3 months of the 2009 water year. Precipitation was noticeably above normal in the Lake Erie basin during November and December and by January, the lake level had risen to above normal. Above normal precipitation in the Lake Erie basin helped keep Lake Erie at above normal level the remainder of the 2009 water year. 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 above normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as much as 11 inches above normal to around 9 inches below the normal seasonal level.

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	15.26	+1.70	-1.21	-1.14
Fa-1	Jasper Mill, Fayette Co.	Limestone	9.23	-0.46	-0.75	+0.46
Fr-10	Columbus, Franklin Co.	Gravel	45.75	-1.46	-0.41	-0.61
H-1	Harrison, Hamilton Co.	Gravel	23.83	-0.33	-0.89	+0.01
Hn-2a	Dola, Hardin Co.	Dolomite	10.10	-1.70	-1.33	-0.89
Po-124	Freedom, Portage Co.	Sandstone	76.36	+1.81	+0.46	+0.21
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.89	-2.09	-0.36	-0.94

GROUND-WATER LEVELS

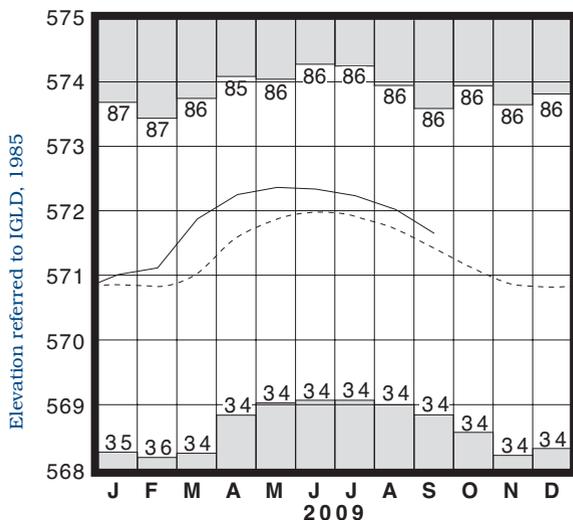


Water level (ft below land surface)

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

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

LAKE ERIE LEVELS



Base period: 1918-2000

■ Record high and low, year of occurrence

Normal - - - - Current ———

(Precipitation continued from front)

St. Marys (Auglaize County) reported the least amount, 26.25 inches. An isohyetal map and regional averages with percentages of normal for the 2009 water year appear below.

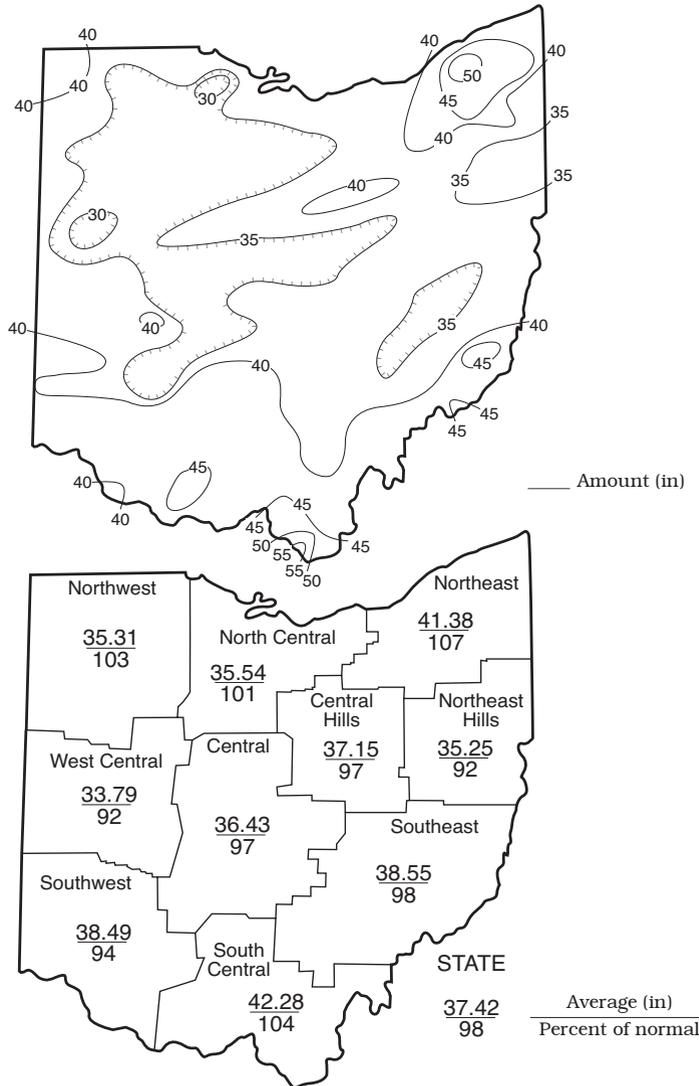
The 2009 water year began with below normal precipitation across most of the state during October and November. December precipitation was noticeably above normal, ranking as the 5th wettest December for the state as a whole. January precipitation was above normal in the southeastern half of the state while during both February and March, it was above normal in the northern one-third of Ohio, and below normal elsewhere. April precipitation was above normal across most of the state, while May precipitation was below normal across much of the state. Precipitation during the last 4 months of the 2009 water year was generally above normal in the southwestern quarter of Ohio and below normal elsewhere.

SUMMARY

Precipitation during September was below normal across much of the state, but above normal in central, southwestern, south-central and areas of northeastern Ohio. Streamflow was below normal nearly statewide. Reservoir storage for water supply decreased in both the Mahoning and Scioto river basins, but remained above normal in both basins. Ground water storage showed a net decline in most aquifers and remained below normal across most of the state. Lake Erie level declined 0.36 foot and was 0.23 foot above the long-term September average.

Precipitation during the 2009 water year was below normal across much of the state, but above normal in both northern and south-central Ohio. Streamflow was below normal across the southern two-thirds of the state and above normal in the northern one-third. Surface water and ground water supplies were adequate throughout the water year.

PRECIPITATION 2009 WATER YEAR



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.



An Equal Opportunity Employer-M/F/H



Ohio Department of Natural Resources

Division of Soil and Water Resources

2045 Morse Road

Columbus, Ohio 43229-6693

Ted Strickland
Governor

Sean D. Logan
Director

David Hansehlmann
Chief

Printed on recycled paper containing 30% post consumer waste.

