



# MONTHLY WATER INVENTORY REPORT FOR OHIO

September 2016

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

**PRECIPITATION** during September was above normal throughout most of Ohio but was below normal in the Southeast and South Central regions. The state average was 3.79 inches, 0.62 inch above normal. Regional averages ranged from 5.47 inches, 1.72 inches above normal, for the Northeast Region to 2.58 inches, 0.62 inch below normal, for the Southeast Region. This was the eleventh wettest September during the past 122 years for the Northeast Region. Hamilton (Butler County) reported the greatest amount of September precipitation, 6.74 inches. Sciotoville (Scioto County) reported the least amount, 1.14 inches.

The first week of the month was rather dry across most of the state with only a few light showers falling. Heavier showers and storms crossed the state during September 8-10. Most of the state received at least 1 inch of rain with more than 2 inches reported in some areas of northeastern and southwestern Ohio. However, counties bordering the Ohio River in southeastern and south-central Ohio reported less than 0.25 inch during this period. The next several days were dry with just some light showers at some locations on September 14. Showers and thunderstorms during September 17-18 were most numerous across the northwestern two-thirds of the state. Most areas in this part of Ohio received more than 1 inch of rain with isolated downpours bringing more than 3 inches to a few locations. However, the southeastern one-third received much less rain during this period. The last five days of the month were wet statewide with the greatest amount of rain falling during September 28-30. Several strong storms moved across the state during this time with periods of heavy rain. Most areas of Ohio received at least 1 inch of rain with more than 2.5 inches reported from several locations. The heavy rain resulted in small stream and urban flooding across various areas of the state. These rains were much needed in southeastern and south-central Ohio where conditions have been rather dry during August and much of September.

Precipitation for the 2016 calendar year thus far is above normal from southwestern to northeastern Ohio and in northwestern areas of the state, but below normal in the west-central, north-central, eastern and southeastern areas. The state average is 29.53 inches, 0.88 inch below normal. Regional averages range from 33.61 inches, 1.08 inches above normal, for the Southwest Region to 27.17 inches, 2.59 inches below normal, for the West Central Region.

Precipitation for the 2016 water year was above normal in the southwestern, central and northeastern areas of the state, but below normal in the northwestern, eastern and southeastern areas. The state average was 38.67 inches, 0.37 inch below normal. Regional averages ranged from 45.32 inches, 3.56 inches above normal, for the Southwest Region to 34.70 inches, 0.32 inch below normal, for the Northwest Region (see Precipitation table, departure from normal, past 12 months column). Cheviot (Hamilton County) reported the greatest amount of precipitation during the 2016 water year, 52.46 inches. Hoytville

(continued on back)

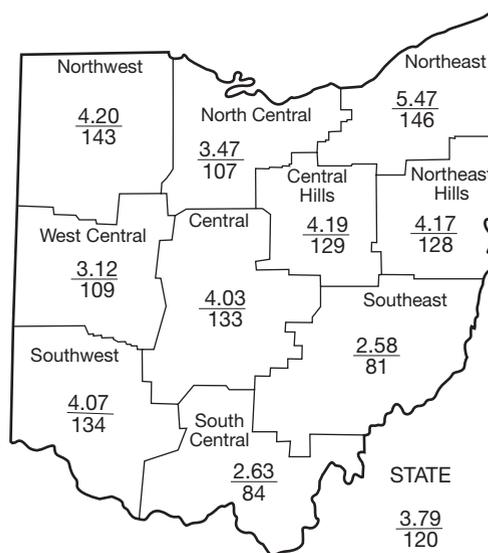
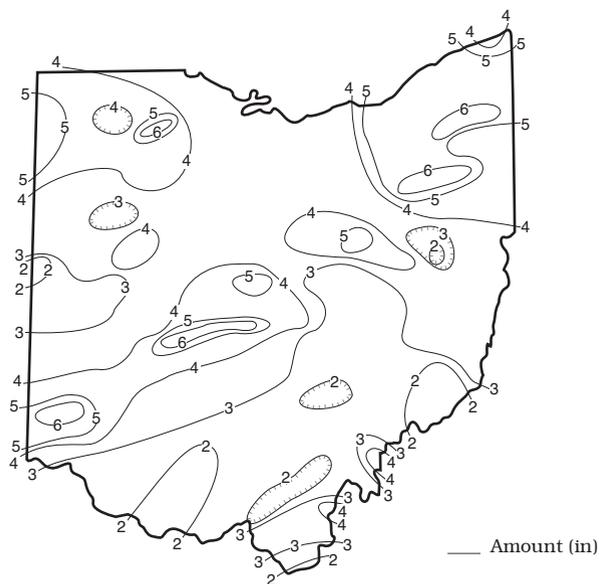
## PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1961-2010					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+1.27	+0.50	-0.97	-0.32	+4.15	+0.1
North Central	+0.22	-0.74	-2.26	-0.89	-0.09	-1.3
Northeast	+1.72	+1.47	-0.65	+0.34	+2.13	-1.9
West Central	+0.26	+0.24	-3.50	-0.44	+2.02	-2.4
Central	+0.99	+1.63	+0.15	+2.07	+1.44	-2.2
Central Hills	+0.95	-1.55	-3.08	-2.00	-2.75	-3.6
Northeast Hills	+0.92	-0.80	-2.66	-3.39	-3.32	-3.9
Southwest	+1.03	+2.87	+0.74	+3.56	+5.81	-0.9
South Central	-0.50	-0.54	-0.58	+0.14	+5.17	-3.1
Southeast	-0.62	-1.84	-1.82	-2.61	+0.63	-3.9
State	+0.62	+0.12	-1.48	-0.37	+1.48	

\*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



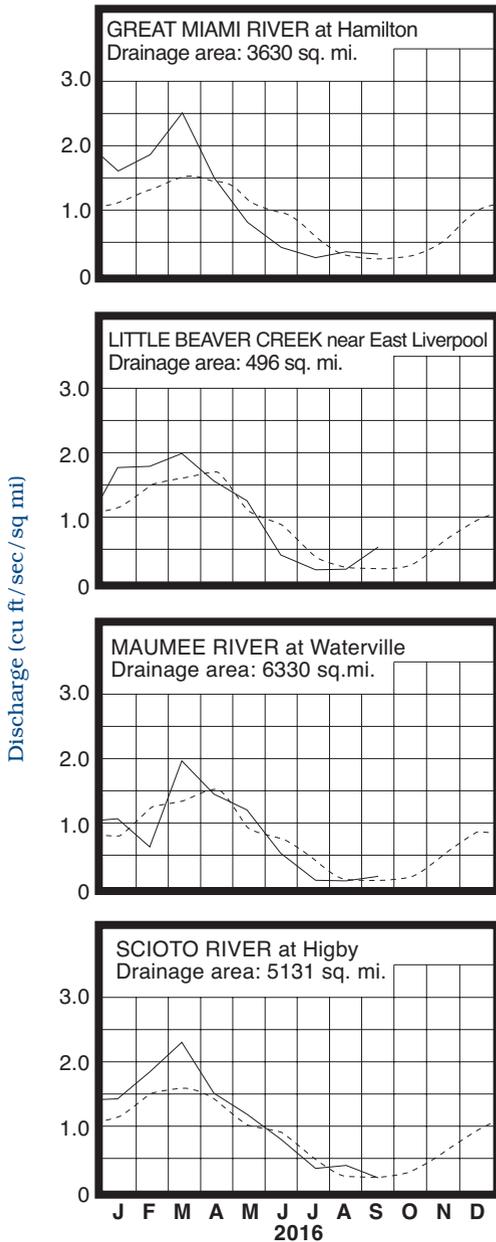
Average (in)  
Percent of normal

# 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	129	112	34	56	75
Great Miami River at Hamilton	3,630	1,171	134	61	63	103
Huron River at Milan	371	29	44	28	85	99
Killbuck Creek at Killbuck	464	87	80	35	73	76
Little Beaver Creek near East Liverpool	496	265	262	59	75	80
Maumee River at Waterville	6,330	1,083	123	34	75	79
Muskingum River at McConnelsville	7,422	1,232	65	36	69	69
Scioto River near Prospect	567	28	85	32	71	93
Scioto River at Higby	5,131	1,023	94	71	82	99
Stillwater River at Pleasant Hill	503	47	102	32	44	91

## MEAN STREAM DISCHARGE



Base period for all streams: 1981-2010

Normal - - - - Current ———

**STREAMFLOW** during September was generally above normal in the western one-third, north-east and east-central areas of the state and below normal in the central one-third and southeastern areas. Flows were high enough to be considered excessive in a few east-central Ohio basins. Conversely, flows in a few basins in southeastern Ohio were low enough to be considered deficient as this area of the state experienced below normal precipitation throughout most of the month.

Flows at the beginning of September were below normal in the northern one-third and southeastern areas of the state, and above normal in the southwestern, central and east-central areas. The greatest flows for September occurred at various times: beginning of the month in west-central Ohio, during September 9-13 across much of northern, western and southeastern Ohio, on September 17 in northeastern Ohio and on the

last day of the month along the Scioto River basin. Lowest flows for the month generally occurred during the first week in the northeastern quarter of the state and just prior to the precipitation that fell late in the month in western, southeastern and south-central Ohio. Flows at the end of September were above normal throughout most of the state, but below normal in southeastern Ohio basins.

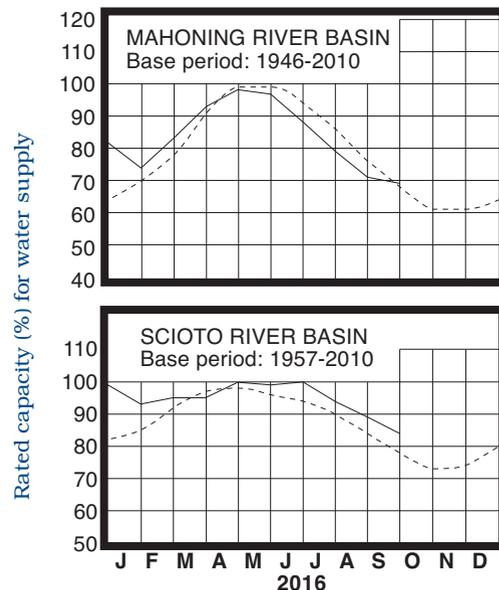
Streamflow for the 2016 water year was below normal in most areas of the state with only the southwestern drainage basins having slightly above normal flows (see Mean Stream Discharge table, past 12 months column). Flows in some eastern Ohio basins were low enough to be considered deficient. Although flows varied greatly across the state during most months of the water year, they were below normal statewide during November and above normal statewide during March. The June and July flows were noticeably below normal across most of Ohio with flows low enough to be considered deficient nearly statewide. Flows were above normal throughout most of the state in August, but continued to be below normal in basins in east-central and southeastern Ohio. There was some minor flooding that occurred at various times throughout the year. The most significant flooding occurred during August as heavy downpours resulted in small stream and urban flooding, especially across areas of southwestern Ohio.

**RESERVOIR STORAGE** for water supply during September decreased in the Mahoning and Scioto river basins. Month-end storage was above normal in both basins.

Reservoir storage at the end of September in the Mahoning basin index reservoirs was 69 percent of rated capacity for water supply compared with 71 percent for last month and 78 percent for September 2015. Month-end storage in the Scioto basin index reservoirs was 84 percent of rated capacity for water supply compared with 89 percent for last month and 90 percent for September 2015.

Surface water supplies were at favorable levels during the 2016 water year. Storage was above normal during the first six months of the 2016 water year in the Mahoning River basin, but fell to below normal during spring as a result of below normal precipitation. Storage in the Scioto River basin was above normal

## RESERVOIR STORAGE FOR WATER SUPPLY





(Precipitation continued from front)

(Wood County) reported the least amount, 29.65 inches. An isohyetal map and regional averages with percentages of normal precipitation for the 2016 water year appear below.

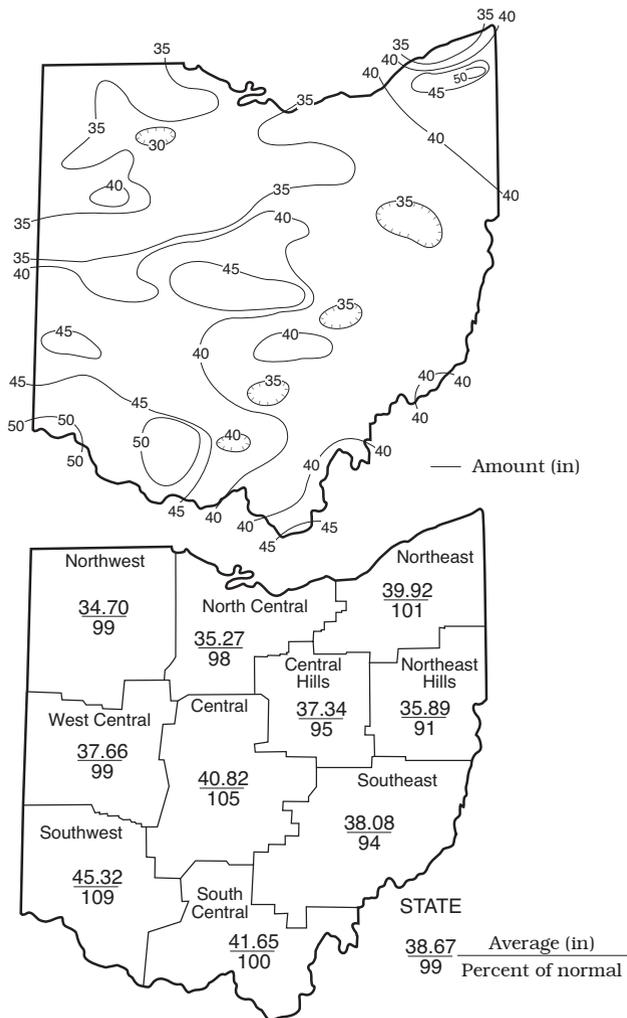
The 2016 water year started off with near to above normal precipitation across much of Ohio during October. Precipitation during November was below normal across most of the state. Precipitation during four of the next five months was above normal across most of Ohio with only January having below normal precipitation statewide. Below normal precipitation returned during May and the dry conditions remained throughout much of the summer period. Precipitation was noticeably below normal during June and July across most of the state. However, the South Central Region received above normal precipitation during both months. Precipitation varied greatly during August, but was generally above normal in northern and western Ohio, and below normal in eastern and south-central Ohio. The water year ended with above normal precipitation throughout most of the state, but areas in southeastern and south-central Ohio remained rather dry.

**SUMMARY**

Precipitation during September was above normal throughout most of Ohio; only the Southeast and South Central regions were below normal. Streamflow was generally above normal in the western one-third, northeastern and east-central areas of the state, but below normal elsewhere. Reservoir storage decreased but was above normal in both the Mahoning and Scioto river basins. Ground water storage declined throughout most of Ohio and remained below normal across much of the state. Lake Erie level declined 0.24 foot and was 0.75 foot above the long-term September average.

Precipitation for the 2016 water year was above normal in southwestern, central and northeastern areas of the state, but below normal in northwestern, eastern and southeastern areas. Streamflow was below normal in all but some southwestern Ohio drainage basins. Reservoir storage was above normal during the first half of the water year in the Mahoning River basin and nearly all water year in Scioto River basin. Ground water storage was generally below normal across much of the state. Lake Erie's level was above the long-term average throughout the water year.

**PRECIPITATION 2016 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.*



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