MONTHLY WATER INVENTORY REPORT FOR OHIO

September 2000

http://www.dnr.state.oh.us/odnr/water/pubs/newsltrs/mwirmain.html

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PRECIPITATION during September was above normal across most of Ohio. The state average was 3.88 inches, 0.88 inch above normal. Regional averages ranged from 4.38 inches, 1.20 inches above normal, for the South Central Region to 3.28 inches, 0.10 inch above normal, for the Northeast Region. Marietta State Nursery (Washington County) reported the greatest amount of precipitation for September, 7.56 inches. Charles Mill Lake (Ashland County) reported the least amount for the month, 2.22 inches.

The first 9 days of the month were rather dry across most of the state. An exception was in isolated areas of southern Ohio where locally heavier showers, mostly around September 4, produced about an inch of rain. Showers and thunderstorms during September 10-12 were heaviest in the northern half of the state where amounts of 1-2 inches were common, with areas in northwestern Ohio receiving as much as 2-4 inches. Drier conditions returned until September 20 when a weather system moved through the state producing severe thunderstorms, especially across west-central and central Ohio. Damaging winds and tornadoes accompanied this system. The hardest hit area was Xenia (Greene County) where a tornado struck during the early evening hours on September 20, tragically killing one person. Other counties receiving significant damage from winds and tornadoes include Delaware and Licking. Damages are estimated at $30 million. Rainfall from this system ranged up to 0.50-1.0 inch across central and southeastern Ohio. Three days later another weather system with strong tornadic thunderstorms and locally heavy rain affected the state. Precipitation amounts during September 23-25 were the greatest across the southern half of the state with totals of 1-2 inches common and isolated areas in central, southwestern and west-central Ohio receiving 2-4 inches. The northern half of the state received generally 0.5-1.0 inch of rain with scattered areas, especially in northeastern Ohio, receiving 1-2 inches.

Precipitation for the 2000 calendar year is above normal statewide. The average for the state as a whole is 33.77 inches, 3.77 inches above normal. Regional averages range from 36.56 inches, 3.24 inches above normal, for the South Central Region to 31.00 inches, 4.21 inches above normal, for the Northwest Region.

Precipitation for the 2000 water year was above normal across most of the state. The state average was 41.12 inches, 3.55 inches above normal. Regional averages ranged from 46.21 inches, 4.92 inches above normal, for the South Central Region to 36.61 inches, 2.79 inches above normal, for the Northwest Region (see Precipitation table, departure from normal, past 12 months column). Waterloo (Lawrence County) reported the greatest amount of precipitation for the water year, 52.38 inches. Dayton International Airport (Montgomery County) reported the least, 31.55 inches. An isohyetal map and regional averages with percentages of normal precipitation for the 2000 water year appear on the back of this report.

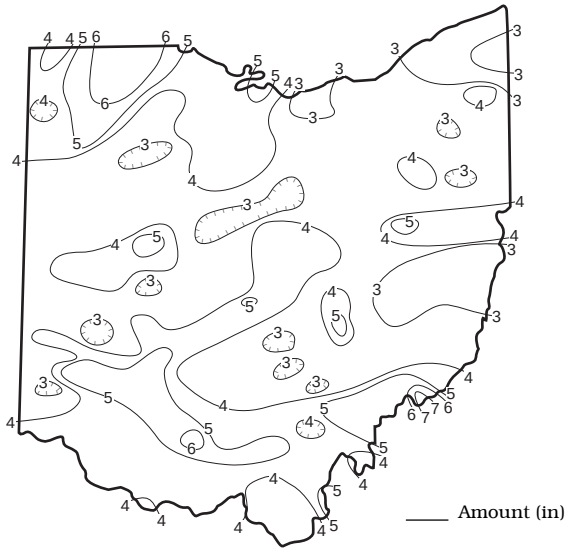
(continued on back)

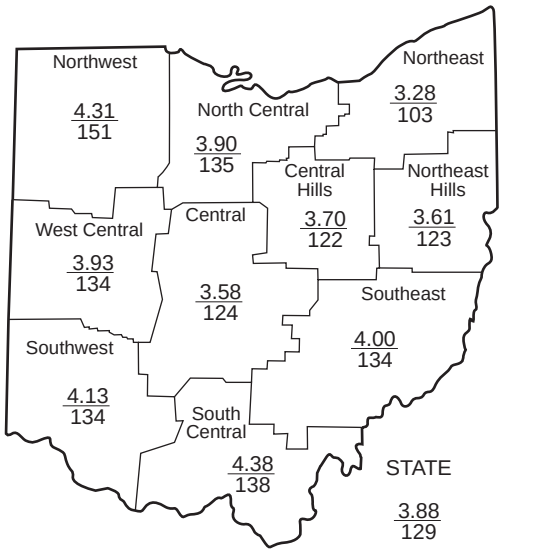
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	Palmer Drought Severity Index*
Northwest	+1.46	+1.32	+5.85	+2.79	-0.31	+1.7
North Central	+1.02	+3.00	+7.85	+7.48	+3.12	+1.9
Northeast	+0.10	+0.74	+5.36	+4.74	+2.95	+0.8
West Central	+1.00	+0.88	+3.54	+1.20	-3.42	+1.1
Central	+0.69	+0.44	+2.53	+2.80	-3.10	-0.4
Central Hills	+0.67	+0.85	+4.13	+4.34	+1.20	+0.8
Northeast Hills	+0.67	+1.66	+4.72	+3.39	+1.39	0.0
Southwest	+1.04	+1.41	+2.16	+1.83	-6.61	+1.1
South Central	+1.20	+2.22	+2.10	+4.92	-3.04	+1.0
Southeast	+1.01	-0.70	+0.12	+1.98	-3.52	+0.7
State	+0.88	+1.18	+3.83	+3.54	-1.16	

*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

River and Location	Drainage Area (Sq. Mi.)	This Month: 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	81	36	37	116	82
Great Miami River at Hamilton	3,630	1,148	149	114	88	66
Huron River at Milan	371	224	681	478	222	131
Killbuck Creek at Killbuck	464	130	129	97	99	82
Little Beaver Creek near East Liverpool	496	135	147	107	105	80
Maumee River at Waterville	6,330	2,088	329	172	126	75
Muskingum River at McConnelsville	7,422	2,220	113	85	96	84
Scioto River near Prospect	567	50	162	109	120	76
Scioto River at Higby	5,131	1,611	132	105	97	78
Stillwater River at Pleasant Hill	503	88	178	120	109	63

STREAMFLOW during September was above normal across most of the state, except in extreme northeastern Ohio basins where flows were below normal. Flows were high enough to be considered excessive in many northwestern and north-central Ohio basins. Flows in some extreme northeastern Ohio basins were low enough to be considered deficient. September flows decreased from the August flows across much of the state but were greater in areas of northwestern, west-central, central and south-central Ohio.

Streamflow at the beginning of September was below normal across much of the state. Flows declined during the first 10 days of the month and then rose in response to precipitation that occurred during September 10-12. Flows declined after this precipitation until around September 20 when showers and thunderstorms again affected most of Ohio. Lowest flows for the month across most of the state were observed just prior to the passage of this weather system. Greatest flows for the month occurred during or just after the passage of a weather system during September 23-25. Flows at the end of September were above normal throughout most of the state except in extreme northeastern Ohio where streamflow was below normal.

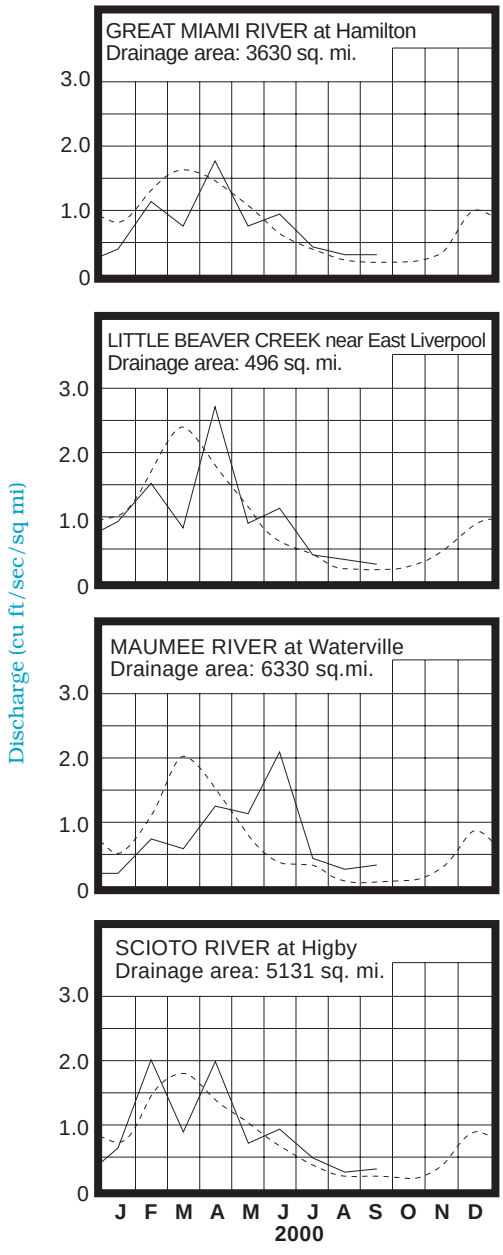
Streamflow for the 2000 water year was below normal across most of the state, except in north-central Ohio where flows were above normal (see Mean Stream Discharge table, percent of normal, past 12 months column). Flows were generally below normal during the first half of the water year and above normal during the second half. Flows during October 1999-January 2000 were below normal across most of the state, except for basins in north-central Ohio where they were above normal. During February streamflow was above normal through the central third of the state and below normal elsewhere. March flows were below normal statewide and were low enough to be considered deficient across most of Ohio. Flows were generally above normal across most of the state from April through August, except during July when they were below normal in the eastern half of the state.

RESERVOIR STORAGE for water supply during September declined seasonally in both the Mahoning and Scioto river basins. Storage was above normal in both basins.

Reservoir storage at the end of September in the Mahoning basin index reservoirs was 83 percent of rated capacity for water supply compared with 86 percent for last month and 65 percent for September 1999. Month-end storage in the Scioto basin index reservoirs was 76 percent of rated capacity for water supply compared with 79 percent for last month and 58 percent for September 1999.

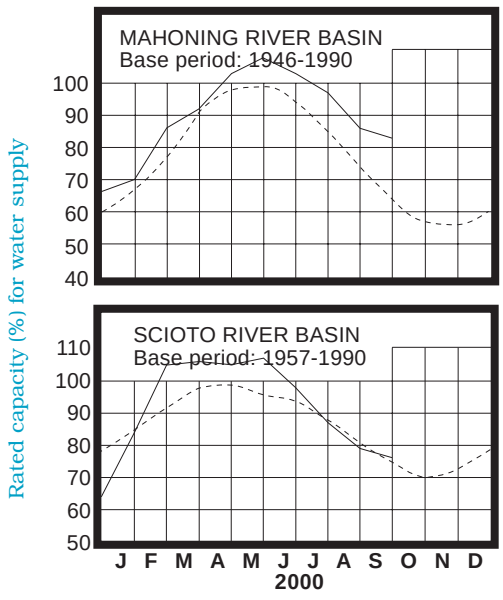
Storage remained above normal in the Mahoning River basin throughout the entire 2000 water year. Storage in the Scioto River basin was below normal from October 1999 through January 2000, reflecting the drought conditions that existed through much of 1999. Storage rose to above normal in the Scioto River basin during February 2000 where it generally remained through the end of the 2000 water year. Reservoir storage throughout Ohio is in a more favorable condition than it was a year earlier due to the adequate rainfall the state has received during much of the 2000 water year.

MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

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	18.36	-1.94	-0.86	+1.85
Fa-1	Jasper Mill, Fayette Co.	Limestone	9.09	-0.42	-0.75	+3.16
Fr-10	Columbus, Franklin Co.	Gravel	46.54	-2.04	-0.21	+0.38
H-1	Harrison, Hamilton Co.	Gravel	24.49	-1.02	-0.44	-0.11
Hn-2a	Dola, Hardin Co.	Dolomite	7.46	+1.15	-0.79	+2.50
Po-1	Windham, Portage Co.	Sandstone	21.06	-0.94	-0.31	+0.98
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.29	-1.78	-0.43	+0.73

GROUND WATER levels during September declined seasonally throughout the state. Net declines during September from August's levels were less than normally observed in most aquifers, but were greater than normally observed in a few consolidated aquifers in the southern half of the state. Levels declined steadily the entire month except for temporary rises in some aquifers around mid-month and during the last week of the month in response to recharge from locally heavy precipitation.

The 2000 water year was beneficial for ground water supplies. Adequate precipitation throughout much of the 2000 water year eased demand on ground-water usage statewide. However, ground water levels still remained below normal across most of the state the entire water year. Only some carbonate aquifers in northwestern Ohio recovered to above-normal levels in July. Ground water levels are still recovering from the drought conditions that existed throughout much of 1999. Early in the 2000 water year, several observation wells reached either new monthly or record-low water levels. During January 2000, water levels were as much as 6.5 feet below normal. However, the favorable precipitation during much of this year had a positive impact on ground-water supplies across the state as reflected by current levels that range up to 3 feet above the September 1999 levels. At the end of the 2000 water year, ground water levels range up to 2 feet below their normal seasonal level. With continued favorable precipitation and other climatic conditions, ground water levels should continue to rebound from the effects of the 1999 drought conditions.

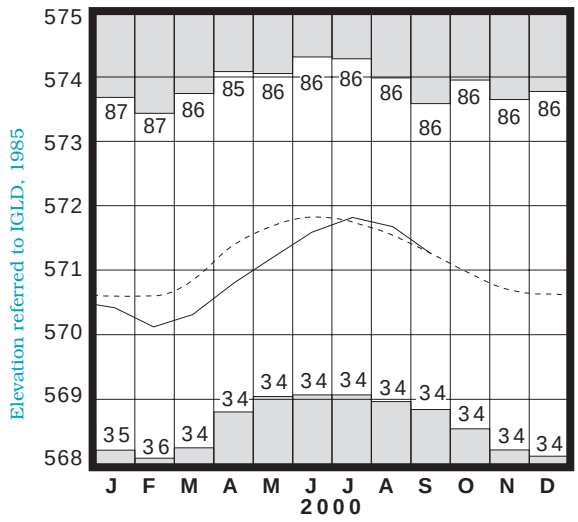
Soil moisture has also benefited from the adequate precipitation falling during this year. The Ohio Agricultural Statistics Service reports that near the end of September (September 29) soil moisture was rated as being short or very short in 3 percent of the state, adequate in 83 percent of the state and surplus in 14 percent of the state. In contrast, during the same week last year soil moisture was rated as being short or very short in 74 percent of the state, adequate in 25 percent and surplus in 1 percent of Ohio. Current soil moisture conditions bode well for future recharge to the state's ground water supplies during the upcoming recharge season.

LAKE ERIE level declined seasonally during September. The mean level was 571.26 feet (IGLD-1985) which is its long-term September average. This month's level is 0.43 foot lower than last month's mean level, 0.16 foot higher than the September 1999 level and 2.06 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during September averaged 4.63 inches, 1.47 inches above normal. The entire Great Lakes basin averaged 3.56 inches for the month, 0.15 inch above normal. For calendar year 2000 through September, the Lake Erie basin has averaged 32.03 inches of precipitation which is 5.24 inches above normal, and the entire Great Lakes basin has averaged 26.51 inches, 2.07 inches above normal.

Lake Erie levels were generally below normal during most of the 2000 water year. However, levels were slightly above normal during July and August. The USACE predicts that, based on the current condition of the Great Lakes and anticipated future weather conditions, the level of Lake Erie should range from near to about 1.5 feet below the long-term average for the foreseeable future.

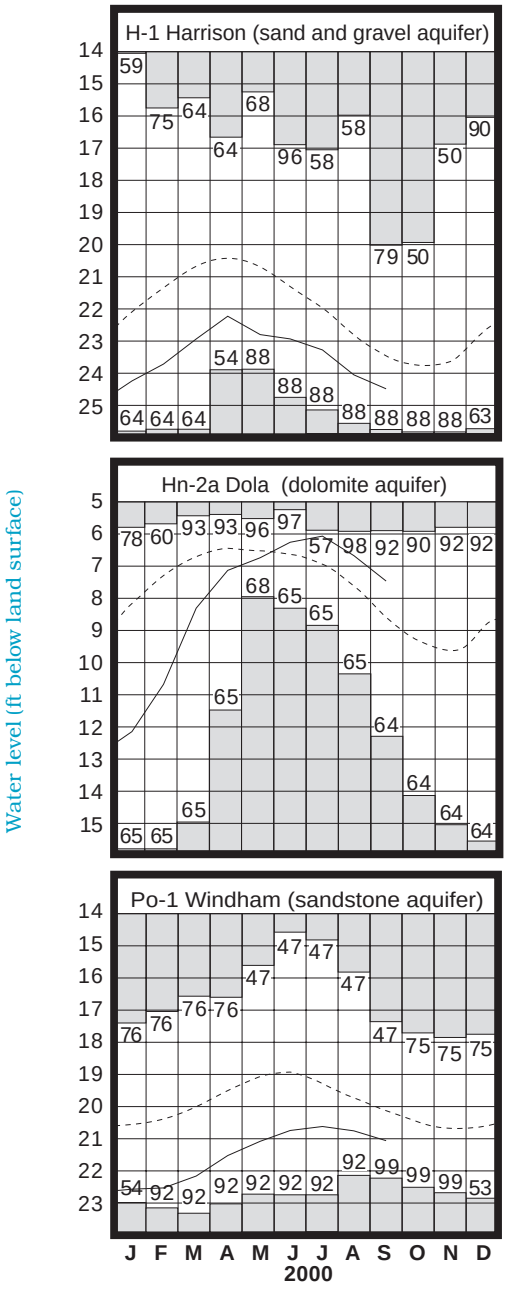
LAKE ERIE LEVELS at Fairport



Base period: 1900-1991

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: H-1, 1951-1990. Hn-2a, 1955-1990. Po-1, 1947-1990

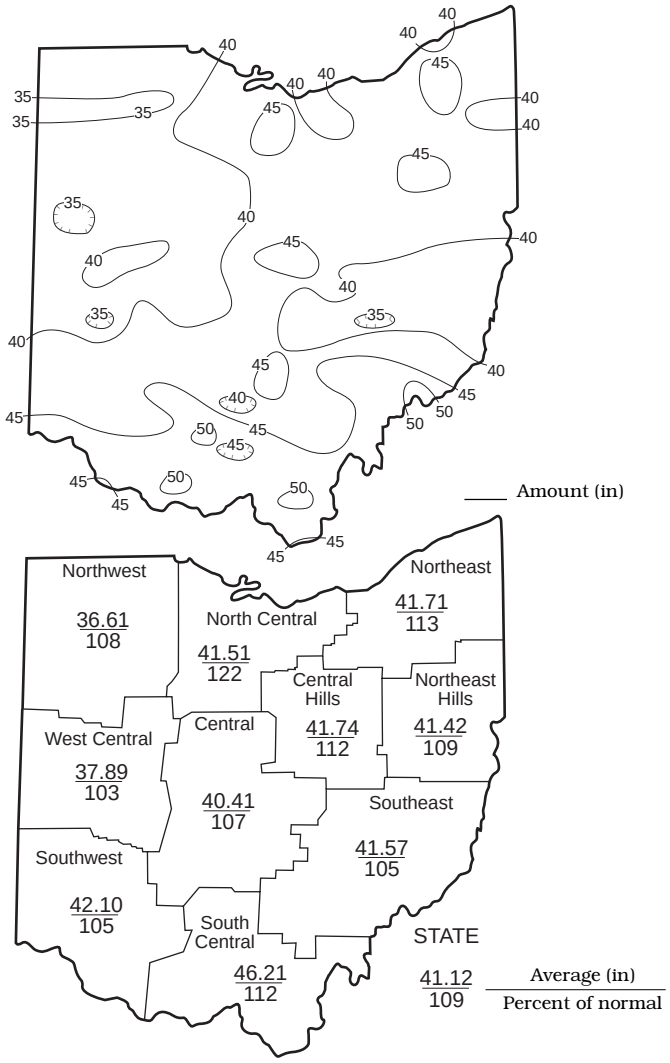
Record high and low, year of occurrence

Normal – – – – Current ———

(Precipitation continued from front)

The 2000 water year began with above normal precipitation in portions of northern and south-central Ohio, but below normal elsewhere during October. November precipitation was above normal in the eastern half of the state and below normal in the western half, followed by near normal precipitation during December. January precipitation ranged from near to above normal statewide except for northwestern and southeastern Ohio. February precipitation was above normal across most of the state, but March was noticeably dry statewide. April through June precipitation was above normal across most of the state. It was the 4th wettest May of record for the North Central Region, the 5th wettest May for the Northwest Region and the 8th wettest May for the Northeast Region. For June, it was the 5th wettest of record for the Northwest Region and the 7th wettest June for the North Central Region. July precipitation was above normal in areas of north-central, northeastern, south-central and southwestern Ohio, but generally below normal elsewhere. Precipitation during the last two months of the water year was above normal across most of the state.

TOTAL PRECIPITATION 2000 WATER YEAR



SUMMARY

Precipitation during September was above normal statewide. Streamflow was above normal across most of the state, but below normal in extreme northeastern basins. Reservoir storage declined seasonally but remained above normal. Ground water levels declined statewide and were below normal throughout most of the state. Lake Erie level declined 0.43 foot and was at the long-term September average.

Precipitation for the 2000 water year was above normal across most of the state. Streamflow was below normal during much of the year. Ground water storage improved during the 2000 water year, but remains below normal across most of the state. Lake Erie levels were generally below normal during most of the water year, but was at its long-term September average as the water year ended. Favorable climatic conditions erased most of the 1999 drought effects throughout the state.

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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