MONTHLY WATER INVENTORY REPORT FOR OHIO

June 2013

Compiled By Scott C. Kirk
Hydrologist
Water Inventory Unit

PRECIPITATION during June was above normal across much of Ohio, but below normal in some northwestern and west-central areas of the state. The average for the state was 6.13 inches, 2.22 inches above normal. This was the eleventh wettest June during the past 131 years for the state as a whole. Regional averages ranged from 8.03 inches, 3.99 inches above normal, for the Central Hills Region to 4.15 inches, 0.19 inch above normal, for the West Central Region. This was the wettest June on record for the Northeast Region, the fourth wettest for the Northeast Hills Region, fifth wettest for the Central Hills Region and the eighth wettest for the South Central Region. Dorset (Ashtabula County) reported the greatest amount of June precipitation, 12.41 inches. Kenton (Hardin County) reported the least amount, 2.75 inches.

Precipitation during June fell as showers and thunderstorms with locally severe storms often containing heavy rain. Most of Ohio received rain during June 1-2 with total amounts ranging from 1 to 1.5 inches in the northern half of the state and 0.25 inch or less across the southern half. Storms during June 5-6 produced 0.5 to 1.5 inches of rain in southern and eastern Ohio, but little rain fell in the northwestern quarter of the state during this period. Severe storms impacted Ohio during June 9-13 with most of the state receiving between 1 and 2.5 inches of rain. The strongest storms occurred during June 12-13 with at least four tornadoes confirmed across Ohio. The next nine days of June were drier across most of the state, but widely scattered storms occurred on June 16 and 18. Storms on June 18 brought heavy downpours to areas in southeastern Ohio, resulting in flash flooding in some southeastern counties. The last week of June was wet statewide with showers and thunderstorms occurring daily during June 23-30. Most of the state received at least 1 inch of rain during this period with as much as 4 inches reported at some locations in east central Ohio. Many areas, especially in the eastern half of the state, experienced minor flooding from the excessive rainfall.

Precipitation for the 2013 water year is above normal in the northern half of the state and below normal in the southern half. The state average is 29.06 inches, 0.90 inch above normal. Regional averages range from 32.38 inches, 4.13 inches above normal, for the Northeast Region to 25.49 inches, 0.44 inch above normal, for the Northwest Region.

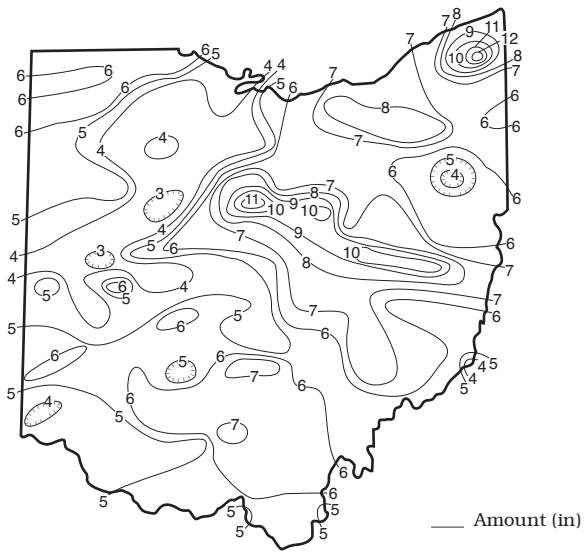
Precipitation for the 2013 calendar year is above normal in the northern one-third of Ohio and below normal in the southern two-thirds. The state average is 19.16 inches, 0.37 inch below normal. Regional averages range from 20.84 inches, 1.25 inches above normal, for the Central Hills Region to 18.26 inches, 2.39 inches below normal, for the Southeast Region.

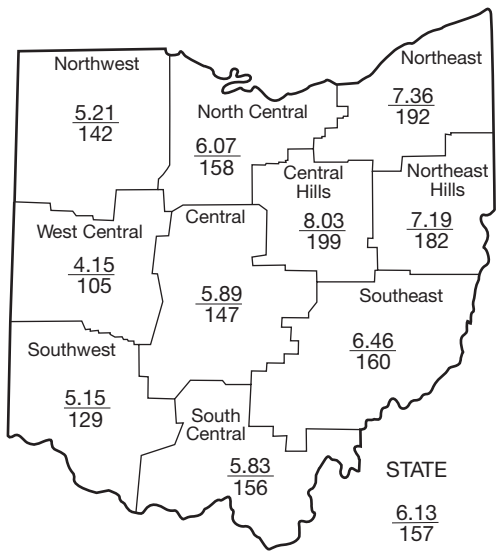
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1961-2010					Palmer Drought Severity Index*
	This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	
Northwest	+1.54	+1.28	+1.53	+1.68	+6.81	-1.2
North Central	+2.23	+2.02	+1.15	+4.88	+14.55	+0.3
Northeast	+3.53	+2.02	+0.57	+6.28	+13.05	+0.8
West Central	+0.19	-0.46	-0.39	+1.65	+4.85	-1.5
Central	+1.87	+0.75	-0.17	+0.48	+6.39	-1.0
Central Hills	+3.99	+2.81	+1.25	+3.06	+8.43	-0.1
Northeast Hills	+3.23	+1.08	-1.01	+0.94	+3.20	-1.6
Southwest	+1.17	+0.04	-1.15	-2.98	+1.52	-1.9
South Central	+2.10	-1.65	-2.97	-0.94	+2.28	-1.1
Southeast	+2.41	-0.66	-2.39	+0.16	+4.14	-1.4
State	+2.22	+0.70	-0.38	+1.50	+6.50	

*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 JUNE





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	1,316	439	85	86	91
Great Miami River at Hamilton	3,630	2,793	80	93	103	92
Huron River at Milan	371	226	74	97	90	115
Killbuck Creek at Killbuck	464	388	114	97	91	85
Little Beaver Creek near East Liverpool	496	240	55	68	81	71
Maumee River at Waterville	6,330	5,814	121	117	103	86
Muskingum River at McConnelsville	7,422	6,813	112	73	78	70
Scioto River near Prospect	567	456	114	117	117	124
Scioto River at Higby	5,131	4,418	94	75	80	77
Stillwater River at Pleasant Hill	503	439	107	97	109	95

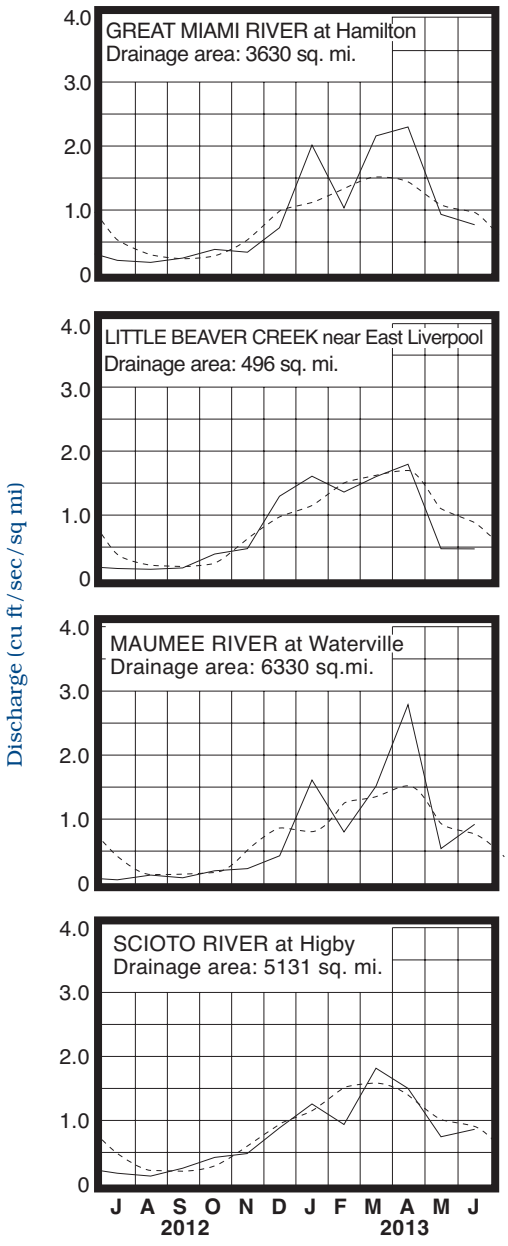
STREAMFLOW during June was above normal in the northwestern, northeastern, central and southeastern Ohio drainage basins and below normal in most north-central, southwestern and east-central Ohio drainage basins. A few flows in the northeastern areas of the state were high enough to be considered excessive. June flows were greater than the May flows throughout most of the state.

Flows at the beginning of the month were below normal in the southern two-thirds of Ohio and above normal in the northern third. Drainage basins in southeastern Ohio had their lowest flows for the month at the beginning of June. Basins across most of the remainder of the state had their lowest flows for the month during June 24-26. Greatest flows for the month occurred on June 2 in northwestern Ohio, June 14 in southwestern Ohio and during the last week of June in the central, northeastern and southeastern areas of the state. Minor small stream and urban flooding was reported following some of the local storms, especially during the last week of June. Flows at the end of the month were above normal across most of the state, but below normal in some southwestern Ohio basins.

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

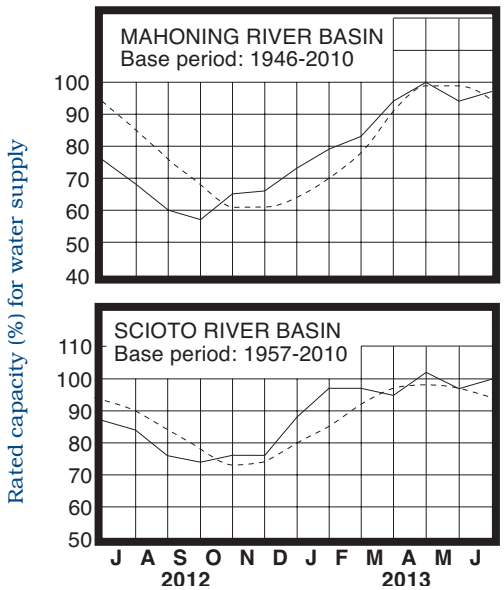
Reservoir storage at the end of June in the Mahoning basin index reservoirs was 97 percent of rated capacity for water supply compared with 94 percent for last month and 76 percent for June 2012. Month-end storage in the Scioto basin index reservoirs was 100 percent of rated capacity for water supply compared with 97 percent for last month and 87 percent for June 2012. Surface water supplies continue to remain in excellent condition throughout Ohio.

MEAN STREAM DISCHARGE



Base period for all streams: 1981-2010

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	14.37	-0.37	-1.23	-0.51
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.28	-0.71	-0.03	+0.68
Fr-10	Columbus, Franklin Co.	Gravel	43.42	-0.44	-0.39	-0.40
H-1	Harrison, Hamilton Co.	Gravel	22.80	-1.36	-0.59	+0.19
Hn-2a	Dola, Hardin Co.	Dolomite	6.46	+0.11	-0.27	+0.63
Po-124	Freedom, Portage Co.	Sandstone	76.68	-0.45	-0.08	-1.15
Tu-1	Strasburg, Tuscarawas Co.	Gravel	13.63	-1.29	-0.84	+0.81

GROUND WATER levels during June declined in most aquifers. Net declines from last month's levels were about equal to the declines usually observed during June. For the most part, ground water levels were rather stable or declined through much of the month; some shallower wells experienced temporary rises following local precipitation. Many aquifers in the state were rising at the end of the month in response to the widespread precipitation that fell during the last week of June.

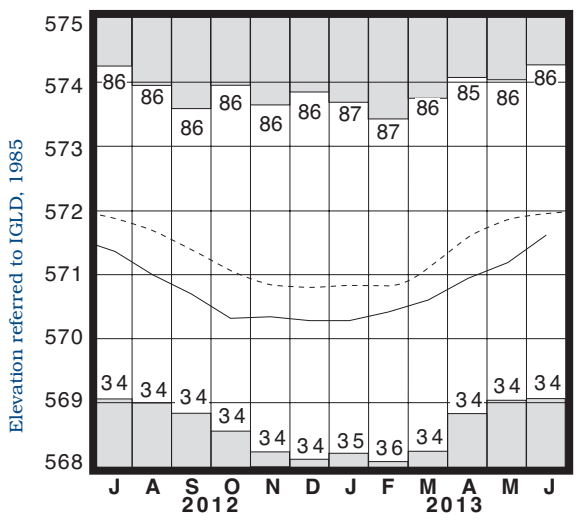
Ground water storage continues to remain below normal across most of the state with the exception of a few consolidated aquifers in northwestern Ohio where they are slightly above normal. Levels generally range from between 0.5 and 1.5 feet below normal. Current ground water levels are higher than they were a year ago in aquifers in the western half of the state and lower in most aquifers in the eastern half. Ground water supplies remain adequate across the state. The above normal precipitation during June improved soil moisture and lessened overall demand on ground water supplies. Continued near to above normal precipitation during the summer months will benefit the state's ground water situation. However, little if any recharge can normally be expected this time of the year. The Ohio Agricultural Statistics Service reports that soil moisture at the end of June was rated as being short in 5 percent of the state, adequate in 62 percent of the state and surplus in 33 percent of the state.

LAKE ERIE level rose during June. The mean level was 571.62 feet (IGLD-1985), 0.43 foot higher than last month's mean level and 0.33 foot below normal. This month's mean level is 0.03 foot above the June 2012 level and 2.42 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June averaged 4.99 inches, 1.52 inches above normal. For the entire Great Lakes basin, June precipitation averaged 3.55 inches, 0.32 inch above normal. For calendar year 2013 through June, the Lake Erie basin has averaged 18.62 inches of precipitation, 1.29 inches above normal, while the entire Great Lakes basin has averaged 16.88 inches, 1.93 inches above 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 3 inches above to as much as 14 inches below the normal seasonal level.

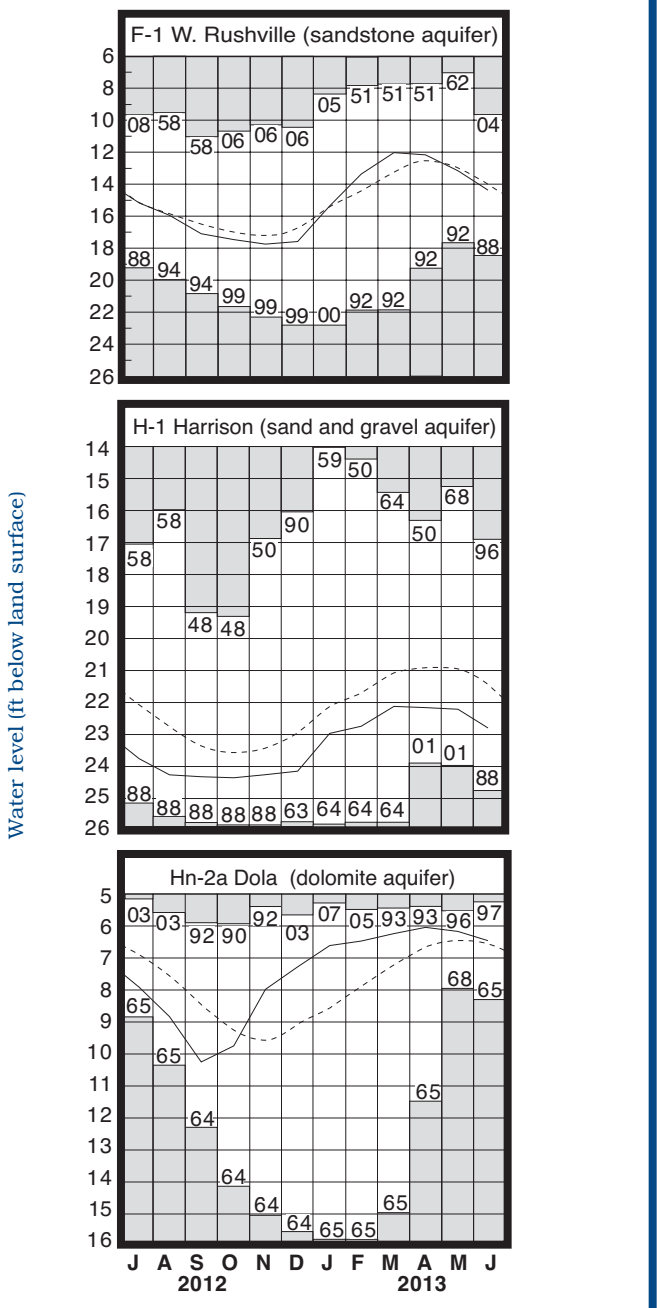
LAKE ERIE LEVELS



Base period: 1918-2010

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: F-1, 1947-2010; H-1 1951-2010.

Hn-2a, 1955-2010 Record high and low, year of occurrence

Normal – – – – Current ———

SUMMARY

Precipitation was above normal in most areas of the state but below normal in areas of northwestern and west-central Ohio. Streamflow was above normal in northwestern, northeastern, central and southeastern Ohio basins, and below normal elsewhere. Reservoir storage increased and was at above normal levels. Ground water levels declined in most aquifers and remained below normal throughout most of the state. Lake Erie level rose 0.43 foot and was 0.33 foot below the long-term June average.

NOTES AND COMMENTS

Editorial

The purpose of this report is to disseminate current hydrologic data in a timely and brief format. Observation points have been selected which are considered to be sufficiently representative of hydrologic conditions in the state to permit an evaluation of the current water-supply situation. These key observation stations offer the best available data on the basis of accuracy and length of record, minimal artificial effects on data, and availability of records. Data from these stations are collected by various agencies at the end of each month and processed immediately. Because of the time limitations involved, all data presented in this report must be considered preliminary and may be subject to revision before publication in regular form by the agencies involved. The remarks in this report include the writer's opinion of the cause and significance of the phenomena reported. The author is indebted to the various agencies and individuals who make this data available.

More complete and detailed information regarding water resources can be obtained by contacting the Division of Soil and Water Resources or visiting our website at: http://www.dnr.state.oh.us/tabid/21817/Default.aspx. Comments and suggestions regarding this report are always welcome.

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.

Ohio Department of Natural Resources
Division of Soil and Water Resources
2045 Morse Road
Columbus, Ohio 43229-6693