MONTHLY WATER INVENTORY REPORT FOR OHIO

April 2012

http://www.ohiodnr.gov/tabid/4191/Default.aspx
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PRECIPITATION during April was below normal throughout most of the state with only a few isolated locations, mainly in southwestern Ohio, having above normal precipitation. The average for the state was 1.82 inches, 1.73 inches below normal. Regional averages ranged from 2.64 inches, 1.34 inches below normal, for the Southwest Region to 1.16 inches, 2.26 inches below normal for the Northeast Region. This was the driest April of record for the Northeast Region, seventh driest for the Northwest Region, eighth driest for the West Central and Northeast Hills regions, and the ninth driest for the Central Hills and North Central regions. Fairfield (Butler County) reported the greatest amount of April precipitation, 5.66 inches. Painesville (Lake County) reported the least amount, 0.29 inch. Many locations in northern Ohio reported less than 1 inch of precipitation in April.

The first two weeks of the month were rather dry throughout most of the state. Scattered showers during the first week of April produced around 0.50 inch of rain at some locations, trending along a line from northwestern Ohio through central and into portions of southeastern Ohio. However, several areas in the state received little or no rain during the first 13 days of the month. Steady rain on April 14 produced amounts of 0.50-0.75 inch across the southern half of Ohio with more than 1 inch reported in some areas of southwestern Ohio; much of northern Ohio received less than 0.25 inch. Precipitation during April 20-21 was greatest across the southeastern half of the state with 0.50-0.75 inch common. Most of the state received at least 0.50 inch of precipitation during the last week of the month, with some areas in central, southwestern and south-central Ohio reporting nearly 2 inches during this period. Showers and thunderstorms during April 25-26 were most numerous across the southwestern two-thirds of the state, while much of northeastern Ohio reported no rain. Extreme southern Ohio received around 0.50 inch on April 28 while the remainder of the state received light amounts. Storms on April 30 were most numerous in western and northeastern Ohio. However, throughout the last week of the month, there were areas in east-central Ohio that missed most of this precipitation. (Note: Much of the rain on April 30 fell after 8:00 am EDT and will be reported on May 1 at most recording stations and thus is not reflected in this report.)

Precipitation for the 2012 water year is above normal statewide. The state average is 24.38 inches, 4.22 inches above normal. Regional averages range from 27.62 inches, 5.16 inches above normal, for the Southwest Region to 22.55 inches, 3.11 inches above normal, for the West Central Region.

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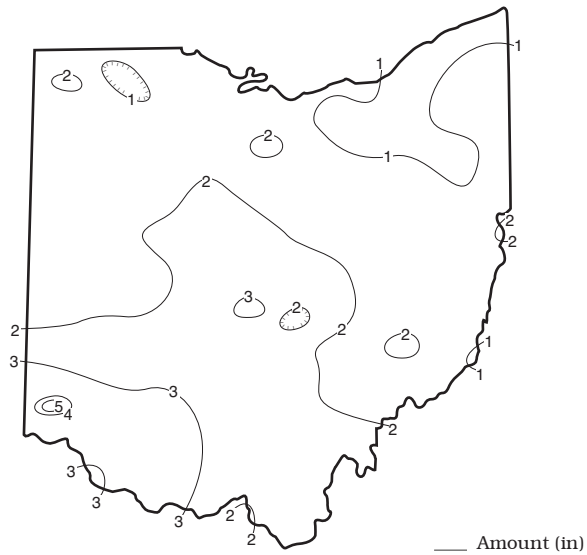
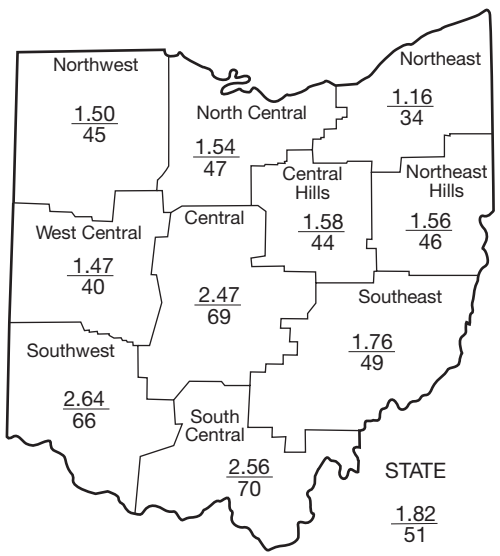
PRECIPITATION

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	-1.84	-1.66	+3.72	+11.48	+15.61	+0.4
North Central	-1.77	-0.58	+3.96	+14.02	+22.02	+2.3
Northeast	-2.26	-2.22	+2.03	+13.25	+21.81	+0.2
West Central	-2.16	-3.91	+1.93	+7.70	+14.46	-0.7
Central	-1.12	-1.30	+4.26	+10.71	+16.59	+0.4
Central Hills	-2.03	-2.21	+2.60	+8.86	+14.04	-0.4
Northeast Hills	-1.81	-2.76	+0.47	+7.87	+13.60	-2.0
Southwest	-1.34	-3.59	+4.48	+8.58	+15.40	+0.2
South Central	-1.08	-2.71	-0.17	+6.46	+20.65	-0.5
Southeast	-1.80	-2.27	+0.88	+7.10	+15.58	+0.1
State	-1.73	-2.33	+2.40	+9.58	+16.97	

*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 APRIL





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	193	13	57	103	136
Great Miami River at Hamilton	3,630	2,059	39	60	157	169
Huron River at Milan	371	64.6	11	67	140	179
Killbuck Creek at Killbuck	464	270	38	71	137	143
Little Beaver Creek near East Liverpool	496	242	29	67	104	106
Maumee River at Waterville	6,330	1,524	16	60	143	163
Muskingum River at McConnelsville	7,422	4,954	40	73	123	120
Scioto River near Prospect	567	146	17	54	160	212
Scioto River at Higby	5,131	2,369	33	66	142	167
Stillwater River at Pleasant Hill	503	141	21	40	124	127

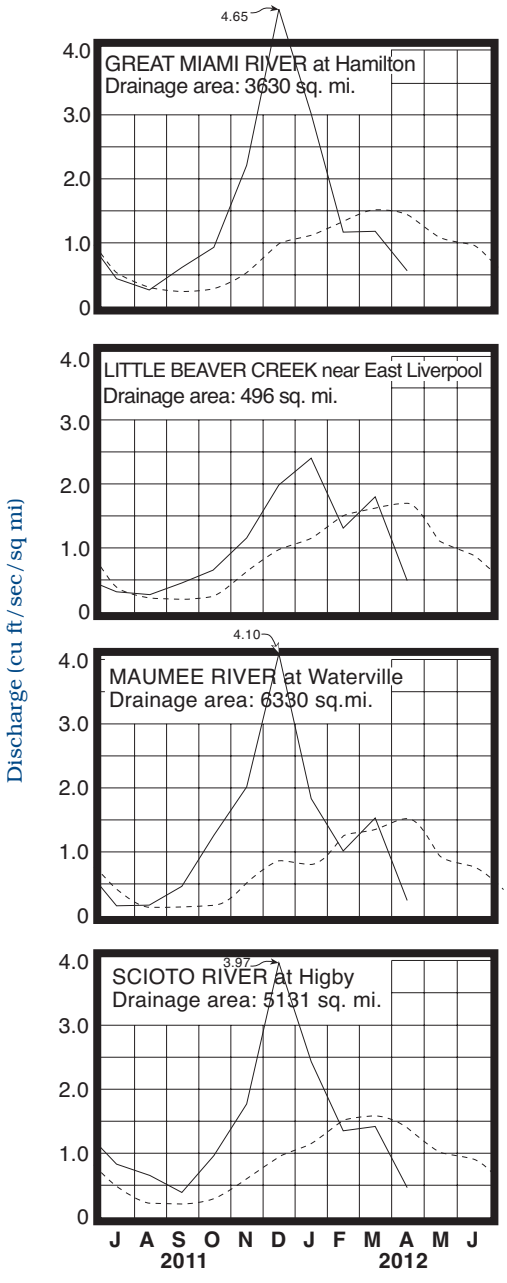
STREAMFLOW during April was noticeably below normal statewide. Flows in all areas of the state were low enough to be considered deficient. Flows during April were substantially less than the flows observed during March. Preliminary data indicates the mean monthly flows in the Grand River near Painesville and Huron River at Milan were the lowest ever recorded for April, and the second lowest in the Maumee River at Waterville and the Scioto River near Prospect.

Flows at the beginning of the month were below normal throughout the state. Most drainage basins in northern and eastern Ohio had their greatest flows for April during the first four days of the month. Flows declined throughout the state during the first two weeks of April with streams in west-central and south-central Ohio having their lowest monthly flows around April 13. Other low flows for the month occurred in north-central and central Ohio just prior to the precipitation that fell April 20-21, and at or near the end of the month in eastern and northwestern Ohio. Southwestern Ohio had its greatest flows on April 15 following the precipitation that fell on April 14. Streams in west-central Ohio and in the Scioto River basin had their greatest flows during April 27 and 28 following precipitation that fell April 25-26. Flows on April 30 were beginning to increase slightly in some basins in response to precipitation on that day, but streamflow remained much below normal throughout the state at month's end.

RESERVOIR STORAGE for water supply during April decreased in both the Mahoning and Scioto river basins. Storage continues to be below normal in both basins.

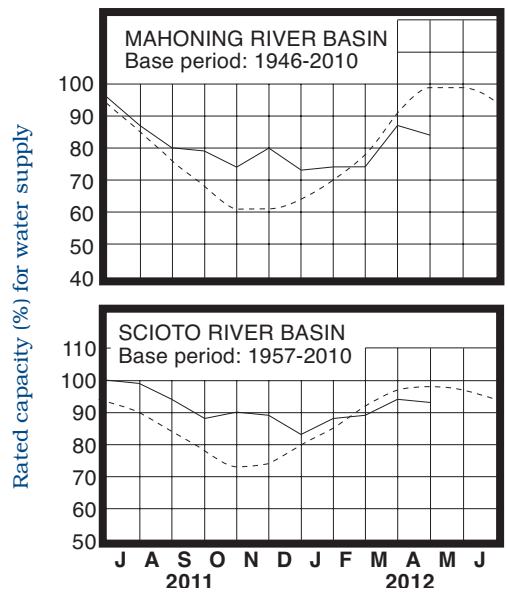
Reservoir storage at the end of April in the Mahoning basin index reservoirs was 84 percent of rated capacity for water supply compared with 87 percent for last month and 106 percent for April 2011. Month-end storage in the Scioto basin index reservoirs was 93 percent of rated capacity for water supply compared with 94 percent for last month and 103 percent for April 2011.

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	11.63	+0.88	-0.71	-1.72
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.21	-1.20	-0.22	-0.30
Fr-10	Columbus, Franklin Co.	Gravel	41.50	+1.04	+0.16	+1.67
H-1	Harrison, Hamilton Co.	Gravel	22.62	-1.71	-0.58	-2.65
Hn-2a	Dola, Hardin Co.	Dolomite	6.52	+0.08	-0.32	-0.04
Po-124	Freedom, Portage Co.	Sandstone	74.78	+1.47	+0.18	+2.15
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.96	-1.45	-0.94	-2.52

GROUND WATER levels during April showed mixed responses across the state. April is typically a month when ground water levels are continuing to rise throughout Ohio. This April, however, levels in most aquifers across the state showed a net decline for the month with only a few of the state's deeper aquifers showing an increase for the month. Even in the aquifers where levels rose for the month, the rises were much less than usually observed during April.

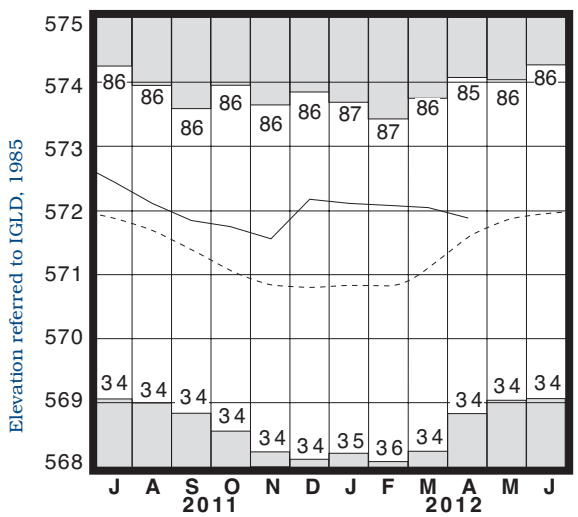
Ground water storage remains adequate throughout the state; however, the below normal precipitation in most of Ohio during the past three months, has not been beneficial for ground water supplies. Recharge during this period has been less than normal. Earlier this year, ground water levels were above normal statewide. Currently, levels remain above normal across much of the state but have fallen to below normal in many areas. In addition, current ground water levels are lower than the levels of a year ago in most areas of Ohio. A return to normal precipitation during the next several months would lessen the demand on ground water supplies, but little positive improvement can be expected through recharge. One positive aspect of the below normal precipitation is that farmers have been able to plant their crops earlier this spring. Near the end of April, 57 percent of the corn was planted compared to just 1 percent last year at this time. The Ohio Agricultural Statistics Service reports that near the end of April, soil moisture was rated as being short or very short in 22 percent of the state, adequate in 71 percent of the state, and surplus in 7 percent of the state.

LAKE ERIE level declined during April. The mean level was 571.88 feet (IGLD-1985), 0.17 foot lower than last month's mean level and 0.29 foot above normal. This month's mean level is 0.36 foot above the April 2011 level and 2.68 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during April averaged 1.84 inches, 1.32 inches below normal. For the entire Great Lakes basin, April precipitation averaged 1.96 inches, 0.58 inch below normal. For calendar year 2012 through April, the Lake Erie basin has averaged 9.66 inches of precipitation, 0.84 inch below normal, while the entire Great Lakes basin has averaged 8.13 inches, 0.57 inch below 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 fall below normal during late spring and 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 normal to as much as 13 inches below the normal seasonal average.

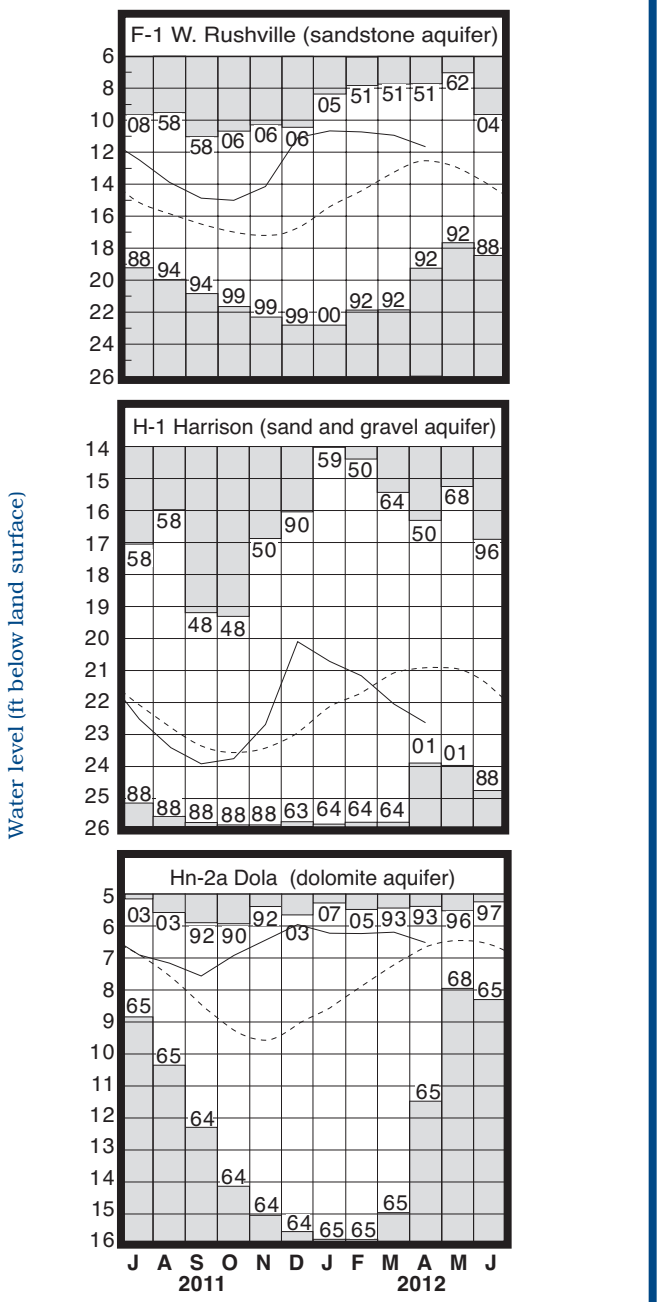
LAKE ERIE LEVELS



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 ———

(Precipitation continued from front)

Precipitation for the 2012 calendar year is below normal throughout most of the state but above normal in the North Central Region. The state average is 10.11 inches, 1.42 inches below normal. Regional averages range from 11.40 inches, 1.83 inches below normal, for the Southwest Region to 7.97 inches, 3.13 inches below normal, for the West Central Region.

SUMMARY

Precipitation during April was below normal across most of the state. Streamflow was below normal and low enough to be considered deficient throughout Ohio. Reservoir storage decreased in both the Mahoning and Scioto river basins and was below normal in both basins. Ground water levels declined in most aquifers. Lake Erie level declined 0.17 foot and was 0.29 foot above the long-term April average.

NOTES AND COMMENTS

Recent Earthquakes Leave Their Mark In Ohio

Several recent earthquakes have left their mark on Ohio. On March 20, 2012 at 9:02 am EST, an earthquake measuring 7.4 on the open-ended Richter scale struck Oaxaca, Mexico. On April 11, 2012 at 4:38 am EDT, an earthquake with a magnitude of 8.6 was centered in the Indian Ocean near the Indonesian province of Aceh. Several hours later on the same day, April 11, 2012 at 6:55 pm EDT, an earthquake measuring 6.5 on the Richter scale hit near Michoacan, Mexico. Shock waves radiating from the epicenter of these earthquakes traveled through rock formations and reached Ohio. Seismic waves passing through rock formations cause an alternating compression and expansion of the rock. Water levels in some wells finished in certain rock formations can rise and fall with the passage of these waves. Several wells in Ohio's observation well network respond to Western Hemisphere earthquakes. Minimum Richter scale readings of 6.5 to 7.0, depending on the earthquake's location, are usually necessary for wells in Ohio to show any response. The most sensitive well to these phenomena in Ohio's observation well network is VW-1, located in Van Wert (Van Wert County). Seismic waves from the Michoacan, Mexico earthquake caused a 0.7 foot fluctuation of water level in this well. The most notable fluctuation caused by an earthquake in VW-1 occurred March 27, 1964 when the water level changed 5.8 feet following the Alaskan Good Friday earthquake that had a Richter scale magnitude of 8.4.

New Employee Joins WIPS Staff

Emily Class recently joined the ODNR-Division of Soil and Water Resources, Water Inventory and Planning Section. Emily will be assisting in the operation and maintenance of the Ohio observation well network as well as collecting, evaluating and disseminating other hydrologic data.

Emily earned a Bachelor of Science degree in Geology from Ohio University in Athens. She graduated in June 2011. Away from work, Emily enjoys reading, writing, poetry, photography and spending time with her family and friends.

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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