



MONTHLY WATER INVENTORY REPORT FOR OHIO

March 2011

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Compiled By Scott C. Kirk

Hydrologist
Water Inventory Unit

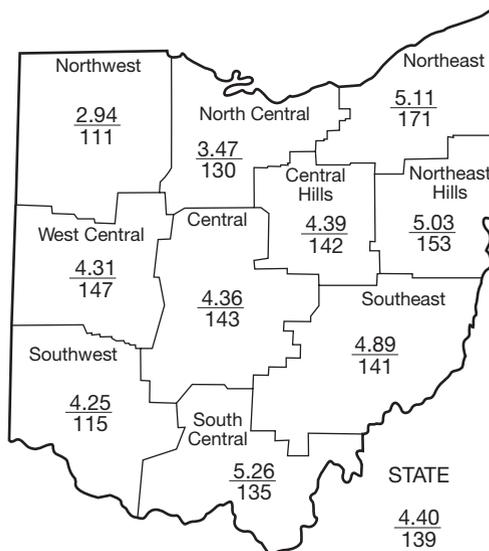
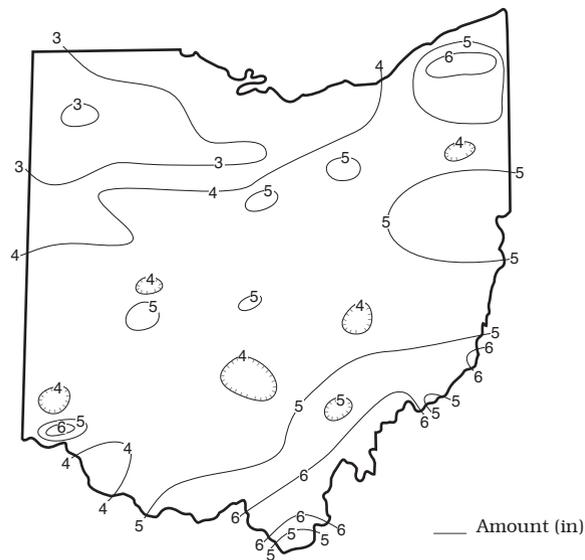
PRECIPITATION during March was above normal throughout most of Ohio, but below normal in some areas of northwestern Ohio and a few other scattered locations across the state. The state average was 4.40 inches, 1.23 inches above normal. Regional averages ranged from 5.26 inches, 1.37 inches above normal, for the South Central Region to 2.94 inches, 0.29 inch above normal, for the Northwest Region. Racine Locks and Dam (Meigs County) reported the greatest amount of March precipitation, 6.91 inches. Montpelier (Williams County) reported the least amount, 2.06 inches.

Precipitation during March fell as both rain and snow. Snow amounts were near-normal in northern Ohio and below normal in southern Ohio. Throughout most of the state, the bulk of the month's precipitation fell during the first half of the month. The first significant precipitation fell during March 4-6 throughout Ohio with most of the state reporting amounts of 1 to 2 inches, and more than 3 inches in areas of west-central and central Ohio. Most of the state received another 1 to 2 inches of precipitation during March 9-11, but lesser amounts fell in northwestern Ohio. The precipitation ended as light snow throughout much of the state, but areas in northern Ohio received from 3 to as much as 12 inches of snow. Major flooding was already occurring at the beginning of the month, especially in the northern half of Ohio. Flooding continued across much of the state during the first two weeks of March as flows remained high due to the runoff from this latest precipitation (see Notes and Comments on the last page of this report). Light precipitation on March 15 was widespread with most locations reporting between 0.25 and 0.50 inch. After a few dry days, precipitation returned to the state on March 21 and continued to fall on and off through March 23. Most of the state received 0.25-0.75 inch during this period. Some storms on March 23 were severe with large hail and damaging winds. Hail covered the ground in areas of central Ohio and high winds during one of these storms toppled a tree that killed one person in Scioto County. Light precipitation fell during March 30-31 across the state.

Precipitation for the first half of the 2011 water year is above normal statewide. The state average is 18.90 inches, 2.70 inches above normal. Regional averages range from 22.67 inches, 5.81 inches above normal, for the Northeast Region to 14.70 inches, 0.58 inch above normal, for the Northwest Region.

Precipitation for the 2011 calendar year is also above normal statewide. The state average is 10.67 inches, 2.67 inches above normal. Regional averages range from 11.84 inches, 4.21 inches above normal, for the Northeast Region to 8.62 inches, 2.09 inches above normal, for the Northwest Region.

PRECIPITATION MARCH



Average (in)
Percent of normal

PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+0.29	+2.09	+0.58	+2.53	-0.69	+0.5
North Central	+0.80	+2.84	+3.30	+5.41	+1.24	+2.3
Northeast	+2.12	+4.21	+5.81	+5.50	+4.10	+2.7
West Central	+1.38	+3.57	+3.36	+2.44	+1.03	+1.1
Central	+1.32	+2.42	+2.37	+2.25	+2.35	+0.8
Central Hills	+1.29	+2.76	+2.96	+2.21	+1.15	+1.1
Northeast Hills	+1.75	+2.76	+3.44	+2.66	-0.63	+1.0
Southwest	+0.54	+1.41	+0.79	-1.44	-1.69	+0.5
South Central	+1.37	+2.08	+1.84	+6.12	+8.72	+0.9
Southeast	+1.41	+2.55	+2.49	+2.51	+1.07	+1.1
State	+1.23	+2.67	+2.70	+3.04	+1.68	

*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

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	4,402	263	150	123	105
Great Miami River at Hamilton	3,630	15,890	311	161	122	107
Huron River at Milan	371	1,798	299	177	147	119
Killbuck Creek at Killbuck	464	2,184	244	145	118	100
Little Beaver Creek near East Liverpool	496	2,148	192	142	118	104
Maumee River at Waterville	6,330	21,140	216	120	89	102
Muskingum River at McConnellsville	7,422	31,220	200	174	149	82
Scioto River near Prospect	567	3,248	355	186	144	117
Scioto River at Higby	5,131	20,960	231	136	103	92
Stillwater River at Pleasant Hill	503	2,124	296	162	122	107

STREAMFLOW during March was above normal throughout Ohio. Flows were high enough to be considered excessive statewide. Flows during March were noticeably greater than the flows during February. Preliminary data indicates that several of the gauging stations cited in this report set record or near-record March flows for the period of systematic data collection: Grand River near Painesville had the greatest March flow for its respective period of record; Huron River at Milan, Killbuck Creek at Killbuck and Scioto River near Prospect had the second greatest; and Great Miami River at Hamilton, Maumee River at Waterville, Muskingum River at McConnellsville recorded their third greatest March flows. Record daily flows for March were also established on some streams, mainly in northern Ohio. Significant flooding occurred across areas of the state

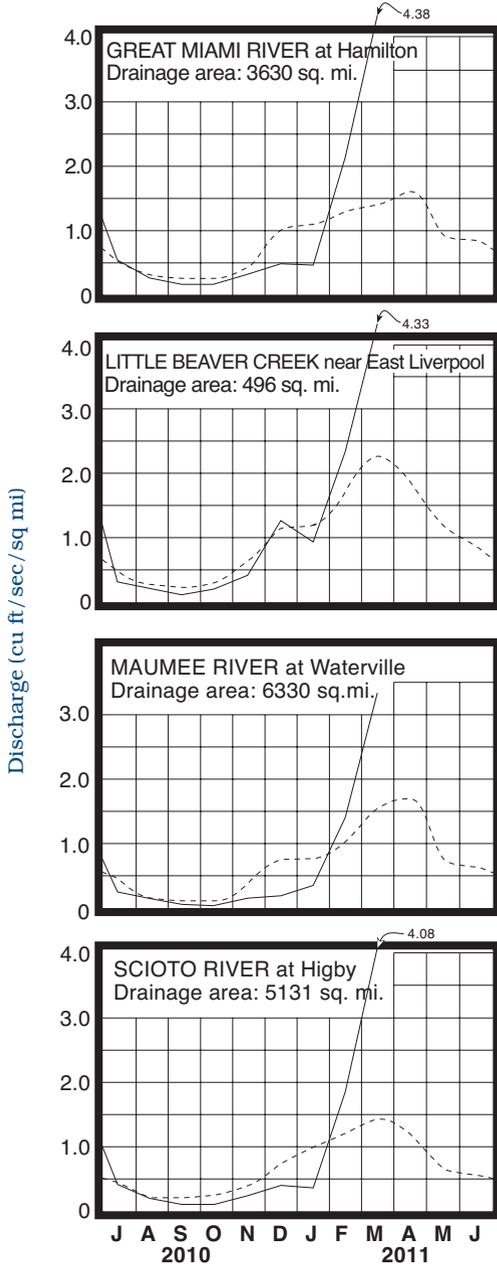
MEAN STREAM DISCHARGE

during the first two weeks of the month (see Notes and Comments on the last page of this report).

Streamflow at the beginning of the month was noticeably above normal throughout the state. Greatest flows for the month occurred at the beginning of March across most of northern Ohio as streams were still responding to the runoff from the abundant precipitation that fell during the last week of February. Flooding occurred in many areas of the state, most notably in northern Ohio, during this period. Additional flooding was reported across the state following precipitation that fell during February 4-6 and 9-11. Most drainage basins in southern Ohio recorded their greatest flows for March around March 6, but a few drainage basins in south-central Ohio recorded their greatest flow on March 11. Flows began to decline just before mid-month as drier conditions prevailed. Lowest flows for the month occurred at or near the end of March statewide. By the end of the month, flows had declined to below normal throughout Ohio.

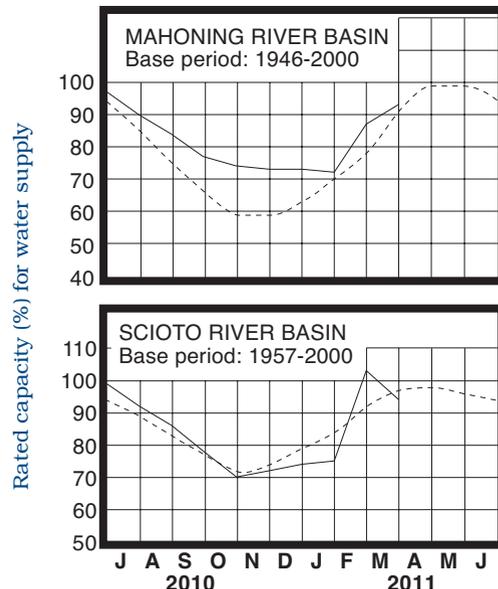
RESERVOIR STORAGE for water supply during March increased in the Mahoning River basin and decreased in the Scioto River basin. Storage at the end of the month remained above normal in the Mahoning basin reservoirs but fell to below normal in the Scioto basin reservoirs.

Reservoir storage at the end of March in the Mahoning basin index reservoirs was 93 percent of rated capacity for water supply compared with 87 percent for last month and 98 percent for March 2010. Month-end storage in the Scioto basin index reservoirs was 94 percent of rated capacity for water supply compared with 103 percent for last month and 101 percent for March 2010. Surface water supplies remain in excellent condition throughout the state.



Base period for all streams: 1971-2000

RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

GROUND-WATER LEVELS

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

GROUND WATER levels during March rose throughout the state in response to recharge from the above normal precipitation during the past two months. Net changes during March from the February levels were noticeably greater than usually observed. Generally, levels in shallow aquifers rose during the first half of the month and then declined during the second half of March while levels in deeper aquifers rose steadily throughout most of the month. Deeper aquifers in many areas of the state should continue to receive additional delayed recharge from the above normal precipitation.

Ground water levels have improved considerably the past two months as levels responded favorably to the above normal precipitation that fell during this period. Levels are near or above normal across much of the state. Exceptions are in some central and southwestern Ohio aquifers where levels remain below normal. Current levels in most aquifers are also near or above where they were a year ago. In addition, current soil conditions favor continued recharge to ground water supplies. The Ohio Agricultural Statistics Service reports that near the end of March, soil moisture was rated as being short in 3 percent of the state, adequate in 62 percent of the state and surplus in 35 percent of the state. With near-normal precipitation and other climatic conditions during the next month or two, further improvement in ground water storage can be expected.

LAKE ERIE level rose markedly during March. The mean level was 570.96 feet (IGLD-1985), 0.91 foot above last month's mean level and 0.14 foot below normal. This month's mean level is 0.16 foot above the March 2010 level and 1.76 feet above Low Water Datum.

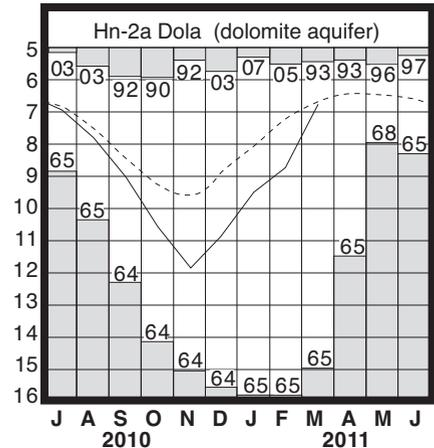
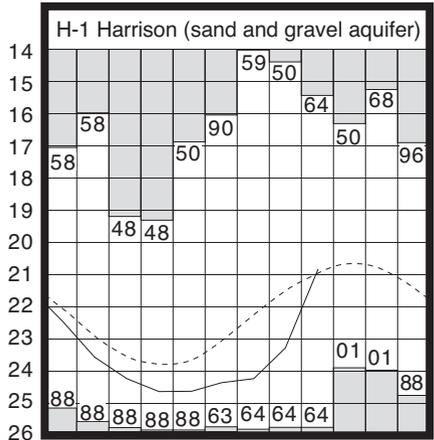
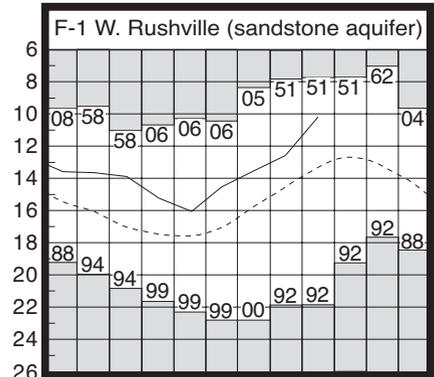
The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during March averaged 3.78 inches, 1.03 inches above normal. For the entire Great Lakes basin, March precipitation averaged 2.39 inches, 0.22 inch above normal. For calendar year 2011 through March, the Lake Erie basin has averaged 9.84 inches, 2.50 inches above normal, while the entire Great Lakes basin has averaged 5.84 inches, 0.32 inch 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 4 inches above to as much as 14 inches below the normal seasonal average.



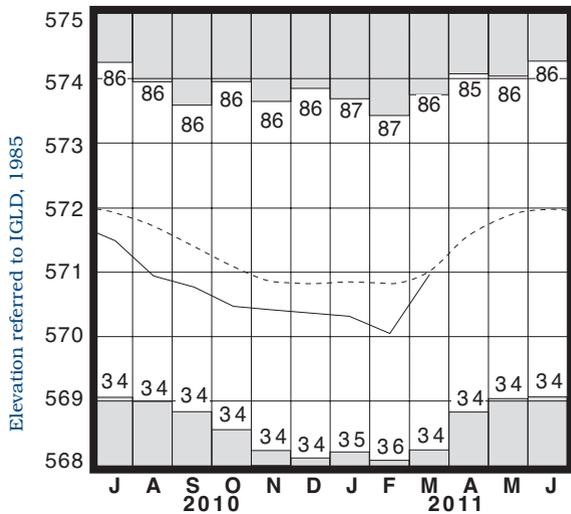
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	10.18	+3.14	+2.41	+0.67
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.18	-1.26	+0.89	-0.16
Fr-10	Columbus, Franklin Co.	Gravel	43.89	-1.36	+0.84	-0.25
H-1	Harrison, Hamilton Co.	Gravel	20.82	+0.12	+2.47	+0.83
Hn-2a	Dola, Hardin Co.	Dolomite	6.77	-0.07	+1.96	+1.62
Po-124	Freedom, Portage Co.	Sandstone	77.24	+0.79	+0.37	-0.82
Tu-1	Strasburg, Tuscarawas Co.	Gravel	11.09	+0.58	+3.38	+3.21

GROUND-WATER LEVELS



Water level (ft below land surface)

LAKE ERIE LEVELS



Base period: 1918-2000

■ Record high and low, year of occurrence

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

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

Normal - - - - Current ———

SUMMARY

Precipitation during March was above normal throughout most of the state. Streamflow was above normal and excessive statewide. Reservoir storage increased in the Mahoning River basin and decreased in the Scioto River basin. Ground water levels rose and were near or above normal across much of the state. Lake Erie level rose 0.91 foot and was 0.14 foot below the long-term March average.

NOTES AND COMMENTS

Fourteen Counties Eligible For Federal Aid

Three major storms during the last nine days of February resulted in major flooding in many areas of northern Ohio at the end of February and beginning of March. Additional moderate to locally heavy precipitation fell throughout most of the state during March 4-6 and 9-11. This precipitation fell on already saturated ground, resulting in high runoff rates. Flooding continued across much of the state with numerous roads closed for several days and many homes and businesses flooded. Areas in central, west-central and north-central Ohio were among the hardest hit with many homes and businesses receiving extensive damage. The Small Business Administration (SBA) issued a disaster declaration for Auglaize and Marion counties, allowing people and businesses impacted by flooding in these two counties and the contiguous counties of Allen, Crawford, Darke, Delaware, Hardin, Logan, Mercer, Morrow, Shelby, Union, Van Wert and Wyandot to apply for low-interest loans. The loans would cover uninsured losses resulting from the severe storms and floods from February 27 through March 9. People have until May 17, 2011 to submit an application for an SBA loan.

Japan Earthquake Makes Its Mark In Ohio

A catastrophic earthquake measuring 9.0 on the open-ended Richter scale occurred near the east coast of Honshu, Japan at 12:46 a.m. EST on March 11, 2011. The quake was centered about 231 miles northeast of Tokyo, Japan. Shock waves radiating from the epicenter of this quake traveled more than 6,000 miles 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 passing of these seismic waves. Several wells in the Ohio observation well network have historically responded to earthquakes in the western hemisphere. Usually, a minimum Richter scale reading of 6.5 to 7.0, depending on the earthquakes location, is necessary for wells in Ohio to show any response. The most sensitive well to these phenomena is observation well VW-1, located in Van Wert (Van Wert County). Seismic waves from the March 11 earthquake caused a 0.3 foot fluctuation of the water level in this well. The most notable earthquake related fluctuation in VW-1 occurred on 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.

Floodplain Management Statewide Conference

On July 27-28, 2011, the Ohio Department of Natural Resources (ODNR), Federal Emergency Management Agency, and the Ohio Floodplain Management Association will host the 2011 Ohio Statewide Floodplain Conference. This year's conference will be held at the Doubletree Hotel Worthington/Columbus located at 175 Hutchinson Avenue. Training during the conference will address a wide range of topics relating to floodplain management, insurance, mapping and regulations. An Advanced HEC-RAS course will also be offered. The Association of State Floodplain Manager's Certified Floodplain Manager exam will also be proctored in conjunction with the conference. For additional information, please contact ODNR at 614-265-6750, visit <http://www.dnr.state.oh.us/tabid/17934/Default.aspx> or email: alicia.silverio@dnr.state.oh.us.

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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Ohio Department of Natural Resources

Division of Soil and Water Resources

2045 Morse Road

Columbus, Ohio 43229-6693

John Kasich
Governor

David Mustine
Director

Ted Lozier
Chief

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