MONTHLY WATER INVENTORY REPORT FOR OHIO

March 2005

http://www.dnr.state.oh.us/water/pubs/newsltrs/mwirmain.htm
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Precipitation during March was generally below normal across the northern half of Ohio and near or above normal in the southern half. The average for the state as whole was 2.58 inches, 0.59 inch below normal. Regional averages ranged from 3.87 inches, 0.39 inch above normal, for the Southeast Region to 1.28 inches, 1.37 inches below normal, for the Northwest Region. Regionally, this was the 10th driest March during the past 111 years for the Northwest Region and the 13th driest for both the North Central and Northeast regions. Fairfield (Butler County) reported the greatest amount of March precipitation, 5.10 inches. Elmore (Ottawa County) reported the least amount, 0.50 inch.

Precipitation during March fell as both rain and snow. Snow totals for the month were above normal across most of the state. Chardon (Geauga County) reported 23 inches of snow for the month, about 6 inches above normal. Light snow or a wintry mix of precipitation fell on several of the first 12 days of the month. The most significant precipitation during this period fell on March 1 and 2 as rain that was falling at the end of February turned to snow across most of the state. Snow accumulations of 2-8 inches were reported with the greatest amounts falling in northern Ohio. Precipitation totals (liquid, melted) during these first 12 days of the month ranged from around 1 inch in eastern Ohio to 0.50 inch in western Ohio. Precipitation returned to Ohio on March 19 and fell on and off during the last 13 days of the month. During this period, amounts of 2-3 inches of rain fell in southern Ohio diminishing to as little as 0.25 inch in extreme northwestern Ohio. The most noteworthy precipitation during this period began late on March 27 in southwestern Ohio and spread northeast during March 28. Generally 1-2 inches of rain fell across the southern half of the state, decreasing to less than 0.50 inch in northeastern Ohio with little or no rain falling in northwestern Ohio. Flooding of low lying areas and areas of poor drainage were observed across many locations in southern Ohio.

Precipitation for the 2005 calendar year is above normal statewide. The average for the state as a whole is 11.44 inches, 3.44 inches above normal. Regional averages range from 13.48 inches, 4.65 inches above normal, for the Southeast Region to 9.05 inches, 2.52 inches above normal, for the Northwest Region (see Precipitation table, departure from normal, past 3 months column).

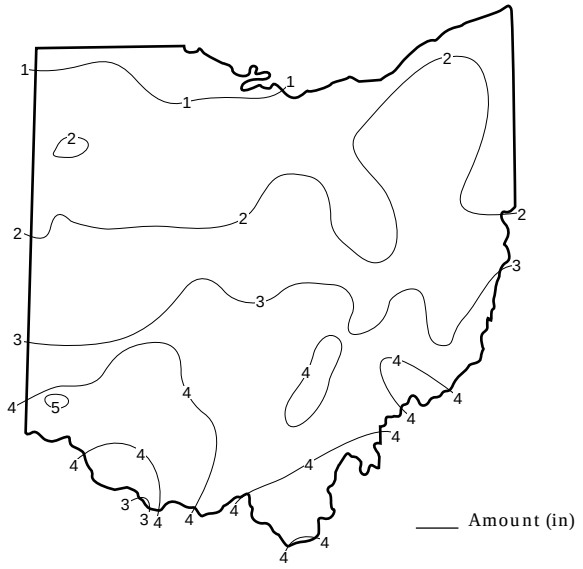
Precipitation for the first half of the 2005 water year is also above normal statewide. The average for the state as a whole is 21.11 inches, 4.90 inches above normal. Regional averages range from 23.45 inches, 6.34 inches above normal, for the Southeast Region to 17.21 inches, 3.09 inches above normal, for the Northwest Region (see Precipitation table, departure from normal, past 6 months column). Precipitation during the 2005 water year recharge season has been adequate for both surface and ground water supplies.

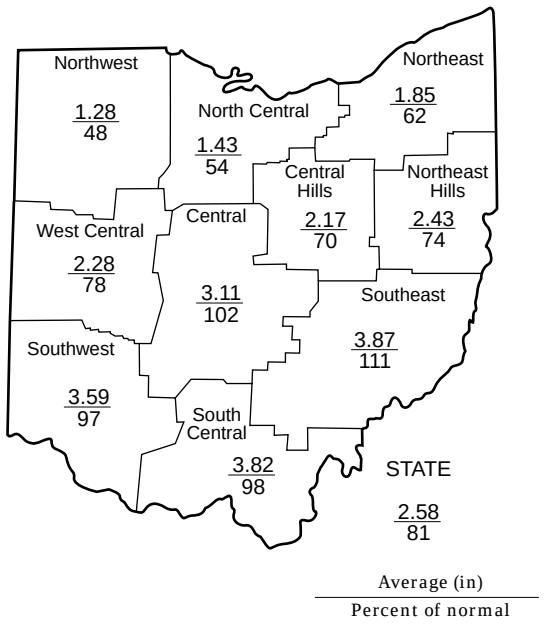
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000					Palmer Drought Severity Index*
	This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	
Northwest	-1.37	+2.52	+3.09	+6.32	+12.72	+3.5
North Central	-1.24	+2.48	+4.11	+8.80	+16.84	+4.6
Northeast	-1.14	+2.73	+3.39	+10.19	+21.52	+5.8
West Central	-0.65	+5.97	+7.72	+8.84	+22.40	+3.7
Central	+0.07	+5.44	+7.07	+12.88	+23.29	+4.5
Central Hills	-0.93	+3.66	+5.05	+13.93	+22.67	+5.2
Northeast Hills	-0.85	+3.12	+4.32	+19.28	+30.90	+6.6
Southwest	-0.12	+3.24	+5.25	+5.86	+13.04	+3.5
South Central	-0.07	+0.63	+2.70	+8.84	+20.47	+4.2
Southeast	+0.39	+4.65	+6.34	+19.21	+31.09	+5.9
State	-0.59	+3.44	+4.90	+11.42	+21.44	

*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 MARCH





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	1,453	87	165	138	146
Great Miami River at Hamilton	3,630	4,641	91	223	171	141
Huron River at Milan	371	507	84	240	218	208
Killbuck Creek at Killbuck	464	611	68	173	148	158
Little Beaver Creek near East Liverpool	496	746	67	154	159	191
Maumee River at Waterville	6,330	4,845	49	166	152	138
Muskingum River at McConnelsville	7,422	11,440	73	265	264	173
Scioto River near Prospect	567	551	60	231	191	185
Scioto River at Higby	5,131	10,010	110	236	200	179
Stillwater River at Pleasant Hill	503	421	59	247	188	135

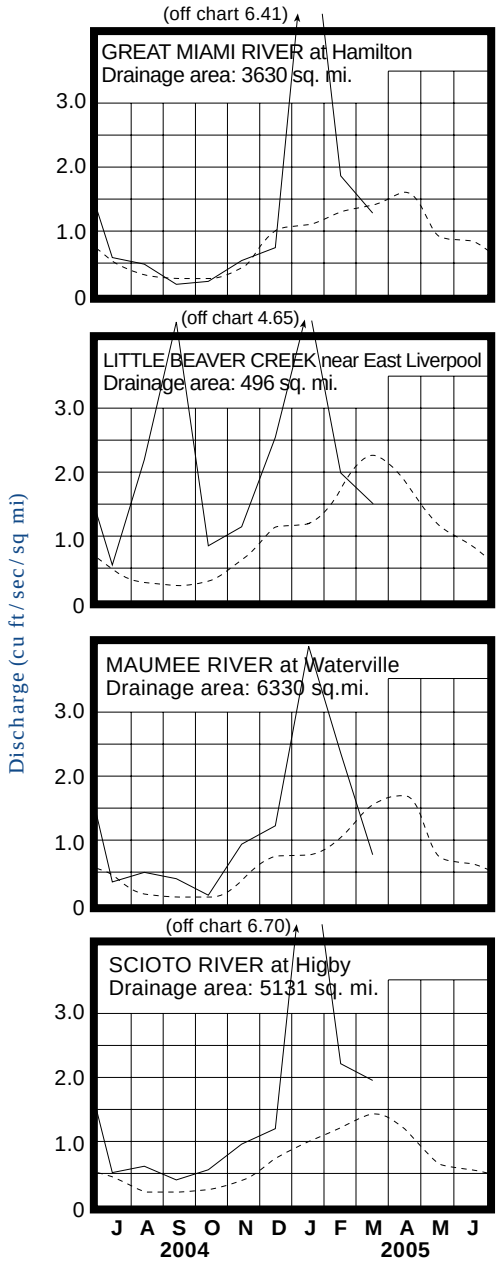
STREAMFLOW during March was below normal across most of the state, but above normal in south-central Ohio. Flows were low enough to be considered deficient in north-western Ohio.

Flows at the beginning of March were below normal throughout most of the state. Flows increased during the first week of the month in response to the precipitation that fell at the end of February and beginning of March. Greatest flows for the month occurred on March 8 across most of the northern third of Ohio. After peaking on the 8th, flows steadily decreased during the next 10-14 days, reaching their lowest monthly flow during March 18-22 across most of the state. Flows began to increase following precipitation that fell on March 19 and reached their greatest monthly flows during March 28-29 across the southern two-thirds of the state in response to the precipitation that fell on March 28. Following these peaks, flows declined the remainder of the month and were generally below normal in northern Ohio and above normal across southern Ohio at month's end.

RESERVOIR STORAGE during March increased in both the Mahoning and Scioto river basins. Storage fell to slightly below normal in the Mahoning River basin but remained above normal in the Scioto River basin.

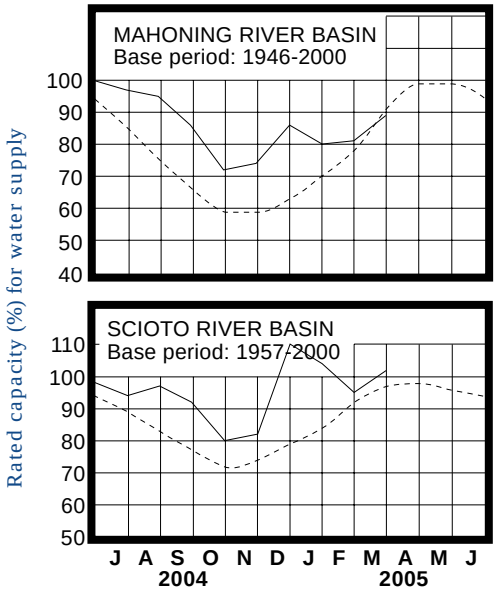
Reservoir storage at the end of March in the Mahoning basin index reservoirs was 89 percent of rated capacity for water supply compared with 81 percent for last month and 100 percent for March 2004. Month-end storage in the Scioto basin index reservoirs was 102 percent of rated capacity for water supply compared with 95 percent for last month and 97 percent for March 2004.

MEAN STREAM DISCHARGE



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

Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from: Last Month	Change in feet from: Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	10.72	+2.60	-0.08	+1.76
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.91	-0.99	-0.27	+0.32
Fr-10	Columbus, Franklin Co.	Gravel	42.35	+0.18	+0.29	+1.31
H-1	Harrison, Hamilton Co.	Gravel	22.09	-1.15	-1.23	+0.37
Hn-2a	Dola, Hardin Co.	Dolomite	6.00	+0.70	+0.07	+0.41
Po-1	Windham, Portage Co.	Sandstone	17.76	+2.43	+0.26	-0.10
Tu-1	Strasburg, Tuscarawas Co.	Gravel	10.50	+1.17	-1.00	+1.76

GROUND WATER levels during March showed mixed responses throughout the state. Many aquifers showed a net decline for March, which is counter to the normal seasonal trend. In aquifers in which water levels rose during the month, the rises were less than usually observed. Generally, levels in most aquifers declined during much of the first half of the month and then rose during the second half.

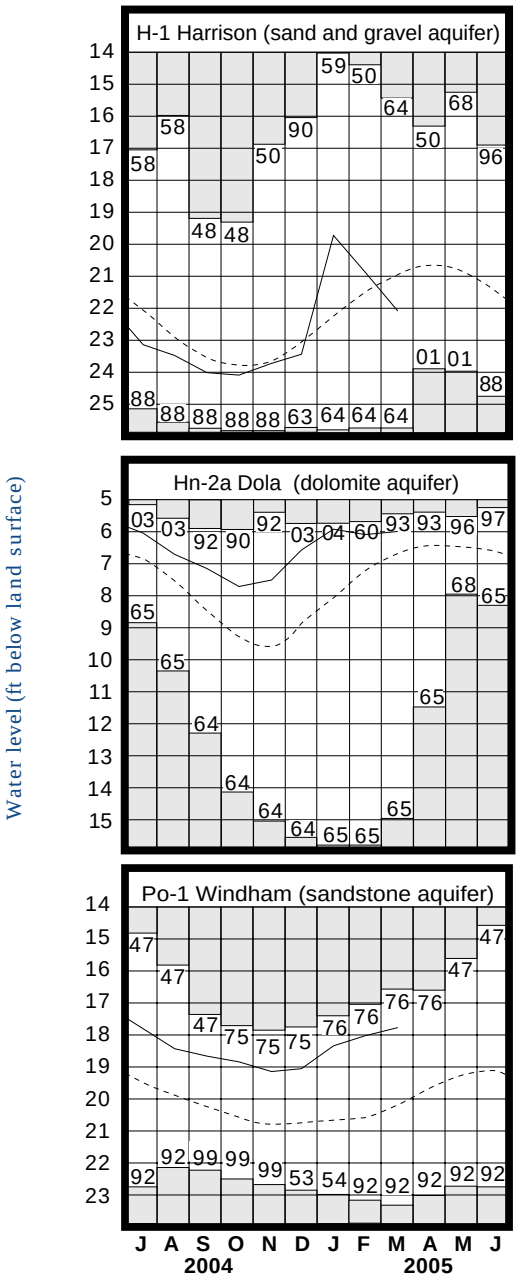
Ground water levels remain above normal across most of the state, but are below normal in aquifers in southwestern Ohio. Current levels are also higher than they were a year ago across most of the state. In spite of the less than ideal recharge conditions that have existed during the past 2 months, ground water storage remains in a favorable position throughout Ohio. The current recharge season has been adequate to this point, bolstered by the notably above normal precipitation during late December and January. With near-normal precipitation and other climatic conditions during the next month or two, additional recharge can still be expected.

LAKE ERIE level rose during March. The mean level was 571.85 feet (IGLD-1985), 0.10 foot higher than last month's mean level and 0.75 foot above normal. This month's mean level is 1.12 feet higher than the March 2004 level and 2.65 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during March averaged 1.18 inches, which is 1.58 inches below normal. For the entire Great Lakes basin, March precipitation averaged 1.23 inches, which is 0.94 inch below normal. For calendar year 2005 through March, the Lake Erie basin has averaged 8.07 inches, 0.77 inch above normal, while the entire Great Lakes basin has averaged 5.65 inches, 0.49 inch below normal.

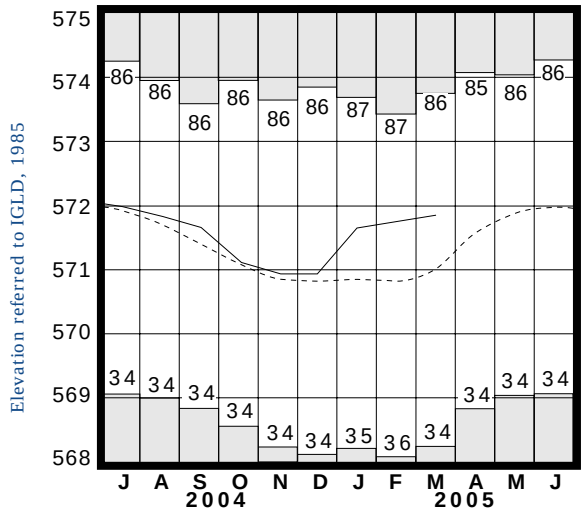
In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain above normal through mid-summer. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as high as 9 inches above to as much as 10 inches below the normal seasonal average.

GROUND-WATER LEVELS



Base periods: H-1, 1951-2000. Hn-2a, 1955-2000. Po-1, 1947-2000 ▭ Record high and low, year of occurrence

LAKE ERIE LEVELS



Base period: 1918-2000

▭ Record high and low, year of occurrence

Normal– – – – Current———

SUMMARY

Precipitation during March was below normal across the northern half of Ohio and near or above normal in the southern half. Streamflow was below normal throughout most of the state. Reservoir storage increased in both the Mahoning and Scioto river basins. Ground water levels showed mixed responses, but remained above normal in most aquifers. Lake Erie level rose 0.10 foot and was 0.75 foot above the long-term March average.

NOTES AND COMMENTS

Salt Fork Lake Dam Emergency

On February 15, 2005, the Division of Water's Dam Safety Engineering Program (DSEP) received a call from the maintenance manager for Salt Fork State Park (Guernsey County). A large seepage boil was noted at the downstream toe of the 61-foot-high state-owned Salt Fork Lake Dam. The boil was located 8 feet downstream of the toe of the dam. It was about 4 feet in diameter and about 2 feet deep. DSEP staff and park personnel proceeded to construct a sandbag ring levee around the seepage boil. Once the ring levee was constructed, a v-notch weir was installed to monitor the flow from the boil. The flow was determined to be about 70 gallons per minute.

A contractor was immediately contacted to construct a weighted filter berm on the downstream toe of the dam over the boil. The berm consisted of sand and gravel materials. Several smaller boils were also discovered after construction had started. The berm was expanded to cover these boils too. The berm measures 350 feet long by 100 feet wide. The lake drains are open to help lower the lake level. The Salt Fork State Park personnel are monitoring the condition of the dam daily and more frequently during periods of high pool level. An engineering consulting company has been hired to evaluate the overall safety of the dam to determine if additional remediation is required.

Division of Water Receives Recognition

The Division of Water, Water Resources Section (WRS) Mapping Unit recently received recognition from the Environmental Systems Research Institute (ESRI) for two of the Division's map projects. The two projects were selected for inclusion in Volume 1 of the ESRI State Map Book. The State Map Book is a compilation of the best projects/maps produced by state agencies from across the country utilizing Geographic Information Systems (GIS) technology. ESRI is the world leader in the development of GIS technology, and having a project included in one of their publications is a significant accomplishment. Selection of these maps by ESRI is a good indicator of the level of quality products and services provided by the Division of Water, WRS. The two projects selected are titled: *GIS Mapping of the Yields of Ohio's Aquifers* and *A Snapshot of Nitrate Contamination in 1994-2004*. This marks the second time ESRI has selected a project/map from the Division of Water for inclusion in one of their publications. In 2001 ESRI selected a WRS map for inclusion in Volume 16 of their ESRI Map Book.

50-Year Anniversary Highlights

Notable March Events From The Past 50 Years

March 1964: Much above normal precipitation during the month was a welcome relief from the drought conditions that had gripped the state for much of the previous 2 years. However, this relief came with a price tag for many, especially in central and southern Ohio where 3-8 inches of rain fell across the area during March 8-10. The heavy rains fell on soils already saturated from 2-4 inches of rain that fell just one week earlier. The resulting floods caused extensive damage and the loss of 8 lives. March 1964 still ranks as the wettest or second wettest March of record for most regions of the state.

March 1982: Melting snow and 1-2 inches of rain during March 11-13 resulted in one of the worst floods ever across northwestern Ohio. Flooding along the Maumee River basin nearly equaled the 1913 flood and some northern tributaries exceeded the flood peaks of the 1913 flood. Several counties in northwestern Ohio were declared disaster areas.

March 10, 1986: Severe storms affected a large portion of Ohio with strong winds, hail and tornadoes causing extensive damage and killing 3.

March 13, 1993: The eastern half of the state was on the fringe of a blizzard that became known as the "storm of the century." The eastern and southeastern areas of Ohio were hardest hit with snow totals of greater than 20 inches. Deep snowdrifts closed many roads.

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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