



# MONTHLY WATER INVENTORY REPORT FOR OHIO

February 2000

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

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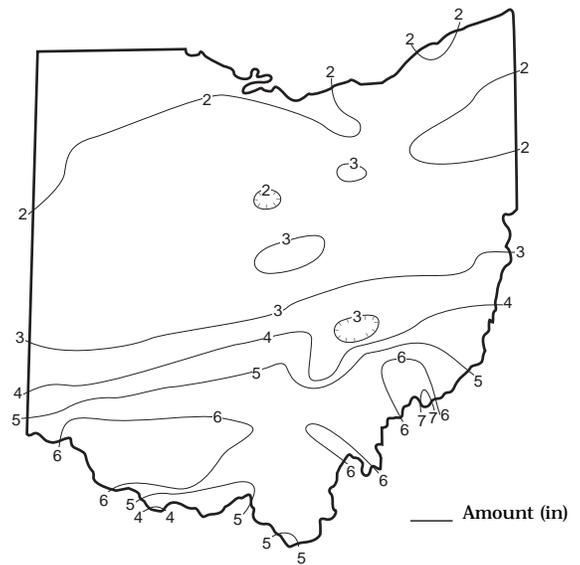
**PRECIPITATION** during February was above normal across most of the state, but was below normal in extreme northwestern and portions of northeastern Ohio. The state average was 3.17 inches, 0.93 inch above normal. Regional averages ranged from 5.64 inches, 2.86 inches above normal, for the South Central Region to 1.85 inches, 0.01 inch above normal, for the Northwest Region. This was the 8<sup>th</sup> wettest February of record for the South Central Region. Marietta State Nursery (Washington County) reported the greatest amount of precipitation for February, 7.74 inches. Montpelier (Williams County) reported the least amount for the month, 1.20 inches.

Precipitation during February generally fell as snow during the first week of the month and as rain the remainder of the month. Snowfall for the month ranged from near to slightly below normal across the state. The first 9 days of the month were rather dry with a few light snow showers early in the period producing up to 0.25 inch of liquid precipitation. Light showers moved through the state during February 10-11 resulting in 0.25-0.50 inch of rain in many areas. Moderately heavy rains on February 13-14 produced 1-2 inches of precipitation in the southern half of the state while the northern half experienced scattered showers which changed to light snow with 0.25-0.50 inch of precipitation falling during this storm. The most widespread and greatest precipitation of the month occurred during February 17-19. Heavy rain fell in the southern half of the state with storm totals of 1-3 inches common. Some areas in extreme south-central and southeastern Ohio received from 3 to more than 4 inches of rain resulting in small stream and river flooding. Details of the flooding resulting from this storm is presented under Notes and Comments on the last page of this report. Precipitation in the northern half of Ohio during this storm was less as a wintry mix produced 0.25-0.75 inch of precipitation. The remainder of February was relatively dry with above normal temperatures and a few light, spotty showers occurring.

Precipitation for the 2000 calendar year is above normal throughout most of the state except in areas of northeastern and northwestern Ohio where it is slightly below normal. The average for the state as a whole is 5.81 inches, 0.81 inch above normal. Regional averages range from 8.37 inches, 2.52 inches above normal, for the Southwest Region to 3.25 inches, 0.77 inch below normal, for the Northwest Region.

Precipitation for the 2000 water year is above normal across most of the state, but below normal in the Northwest, Northeast Hills and West Central Regions. The state average is 13.17 inches, 0.59 inch above normal. Regional averages range from 17.74 inches, 3.62 inches above normal, for the South Central Region to 8.86 inches, 2.19 inches below normal, for the Northwest Region.

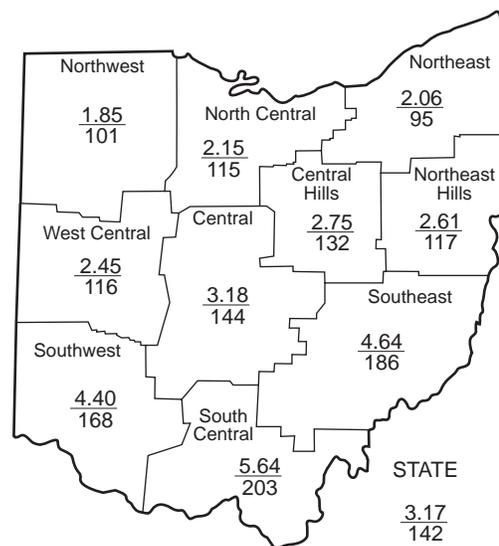
## PRECIPITATION FEBRUARY



## PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+0.01	-0.89	-3.21	-4.55	-0.76	-3.2
North Central	+0.28	+0.42	+0.05	-2.12	+0.35	+0.4
Northeast	-0.11	-0.26	+1.29	-0.82	-1.56	+0.1
West Central	+0.34	+0.35	-3.13	-7.62	-1.93	-2.3
Central	+0.97	+1.87	-0.02	-6.64	-4.70	-2.0
Central Hills	+0.66	+0.81	-0.15	-4.22	-0.73	+0.3
Northeast Hills	+0.38	-0.21	-0.91	-4.97	+0.81	-2.7
Southwest	+1.78	+2.66	-1.31	-9.91	-3.72	-0.9
South Central	+2.86	+2.29	+1.87	-5.62	-2.57	+1.8
Southeast	+2.15	+1.17	+0.71	-4.97	-0.39	+1.2
State	+0.93	+0.82	-0.49	-5.16	-1.55	

\*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



Average (in)  
Percent of normal

## MEAN STREAM DISCHARGE

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	1,601	81	80	77	66
Great Miami River at Hamilton	3,630	4,128	85	50	42	57
Huron River at Milan	371	795	171	98	98	85
Killbuck Creek at Killbuck	464	626	89	76	69	68
Little Beaver Creek near East Liverpool	496	756	90	81	72	63
Maumee River at Waterville	6,330	4,695	67	39	33	68
Muskingum River at McConnelsville	7,422	11,410	94	76	68	70
Scioto River near Prospect	567	951	142	77	62	68
Scioto River at Higby	5,131	10,360	137	81	69	62
Stillwater River at Pleasant Hill	503	490	88	38	30	46

**STREAMFLOW** during February was below normal in the western and eastern thirds of the state, but above normal in the central third of Ohio. Flows were high enough to be considered excessive in some north-central Ohio basins. The February flows increased seasonally from January's flows statewide.

Streamflow at the beginning of the month was below normal throughout most of the state. Lowest flows for February were recorded early in the month with most occurring on the 9<sup>th</sup> just prior to light rain showers that moved into the state. These rain showers, combined with melting snow, helped push streamflow rates higher which continued to rise following storms that crossed the state during February 13-14. Many basins

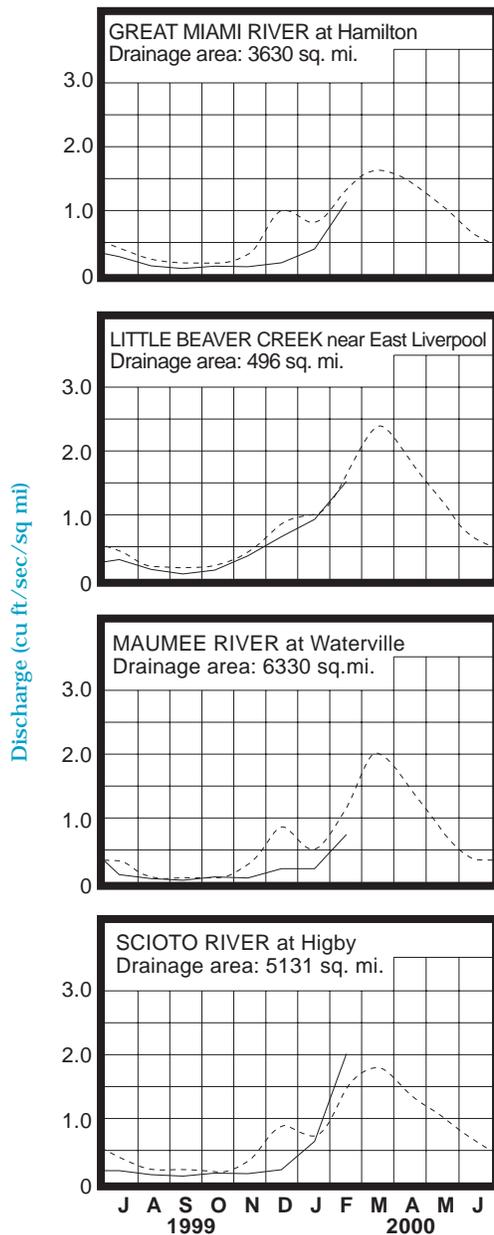
in the northeastern hill area of the state recorded their greatest February flows just after this storm. Following the passage of this system, flows declined for only a day or two before resuming their rise as a result of a storm that brought widespread precipitation to the state on February 17-19. Greatest flows for most of the state were observed during February 19-24 as a result of this weather system with some flooding in southern Ohio. Most of the flooding was minor, but some significant flooding affecting counties along the Ohio River in south-central and southeastern Ohio occurred. Federal assistance has been pledged for individuals and mitigation projects affected by the flooding (see Notes and Comments on the last page of this report). Following these peaks, streamflow declined statewide through the end of the month and was below normal in most basins, except for some basins in central Ohio where flows remained slightly above normal.

**RESERVOIR STORAGE** for water supply during February increased in both the Mahoning and Scioto river basins. Storage was above normal in both basins. This marks the first time since April 1999 that storage has been above normal across most of the state.

Reservoir storage at the end of February in the Mahoning basin index reservoirs was 86 percent of rated capacity for water supply compared with 70 percent for last month and 85 percent for February 1999. Month-end storage in the Scioto basin index reservoirs was 105 percent of rated capacity for water supply compared with 84 percent for last month and 106 percent for February 1999.

Adequate precipitation statewide during February combined with snowmelt was beneficial to surface-water supplies throughout the state. Recreational and water supply reservoirs will soon start capturing water and should be able to fill to summer pool or capacity provided there is continued near-normal precipitation during the next several months.

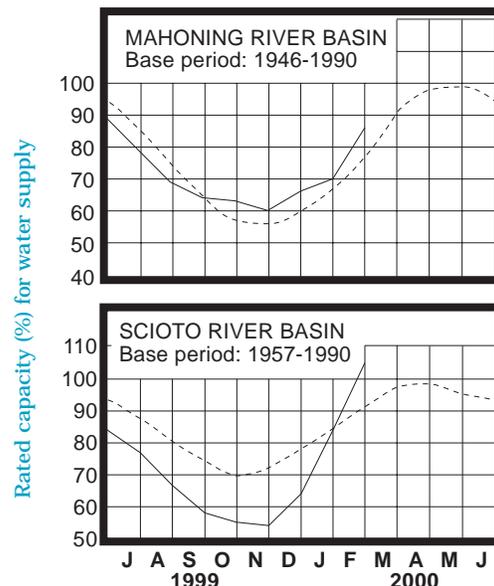
## MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

Normal - - - - - Current \_\_\_\_\_

## RESERVOIR STORAGE FOR WATER SUPPLY



## GROUND-WATER LEVELS

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

**GROUND WATER** levels during February showed net improvement throughout the state. Net changes from January's levels in consolidated aquifers were greater than usually observed while in unconsolidated aquifers, net changes were less than usually observed. Generally, levels in most aquifers across the state were rather stable during the first week or so of the month, and then rose steadily the remainder of the month in response to the combined effects of precipitation and snowmelt.

Ground water supplies remain below normal statewide with levels ranging from 2 to nearly 5 feet below normal. Current levels are also lower than they were at this time last year ranging from about 1 to more than 7 feet below the February 1999 levels. Observation well Tu-1 near Strasburg (Tuscarawas County), representing sand and gravel aquifers in eastern Ohio, reached a record-low level for February.

Although climatic conditions during February were beneficial for ground water supplies across the state, continued near normal precipitation and other hydrologic conditions during the next several months are needed to further improve the ground water situation in Ohio. Water supply managers with ground water sources should monitor their situations closely throughout this year's recharge season.

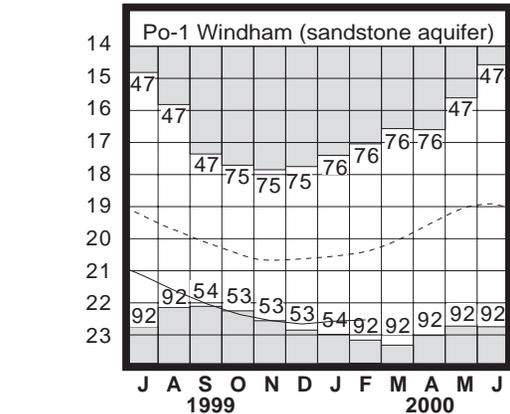
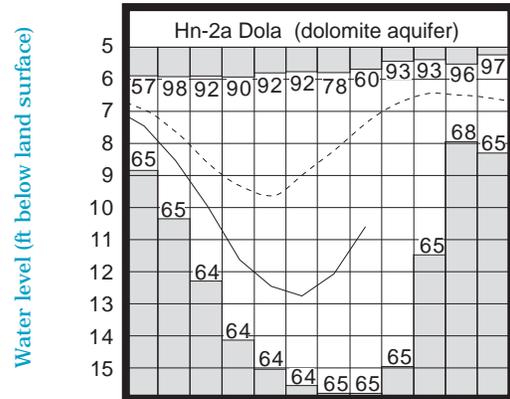
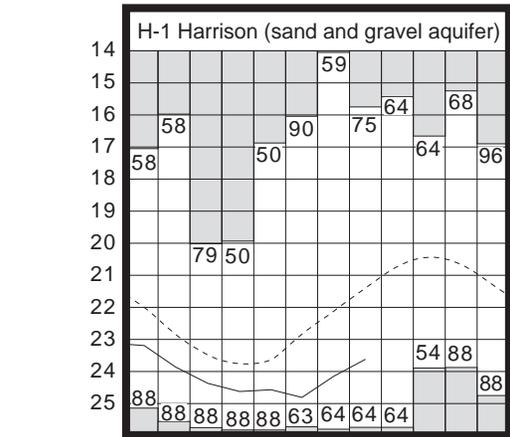
**LAKE ERIE** level declined during February. The mean level was 570.11 feet (IGLD-1985), 0.30 foot lower than last month's mean level and 0.49 foot below normal. This month's level is 1.18 feet lower than the February 1999 level and 0.91 foot above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during February averaged 1.55 inches, 0.51 inch below normal. The entire Great Lakes basin averaged 1.63 inches during February, which is 0.13 inch below normal. For calendar year 2000 through February, the Lake Erie basin has averaged 3.52 inches of precipitation, 0.98 inch below normal, and the entire Great Lakes basin has averaged 3.57 inches, which is 0.35 inch below normal.

In addition, the USACE predicts that, based on the current condition of the Great Lakes basin and anticipated future weather conditions, the level of Lake Erie should remain below the long-term average for the foreseeable future and generally range around 1 foot lower than last year's levels.

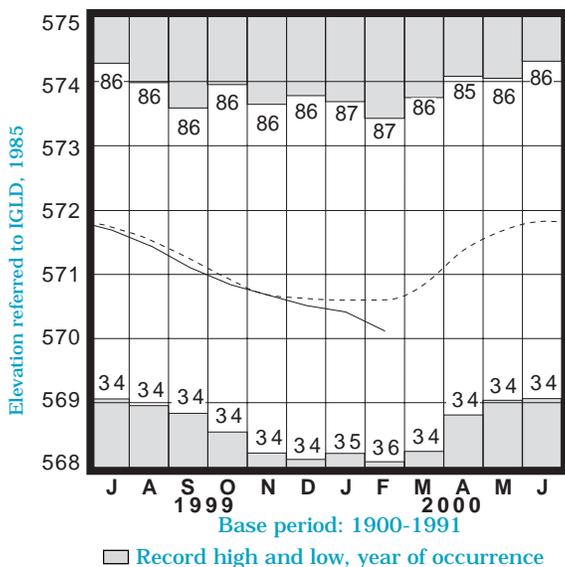
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	20.40	-4.85	+1.62	-7.29
Fa-1	Jasper Mill, Fayette Co.	Limestone	9.86	-2.78	+2.80	-2.26
Fr-10	Columbus, Franklin Co.	Gravel	45.47	-2.38	+0.32	-1.91
H-1	Harrison, Hamilton Co.	Gravel	23.62	-2.22	+0.53	-2.50
Hn-2a	Dola, Hardin Co.	Dolomite	10.60	-3.26	+1.47	-2.90
Po-1	Windham, Portage Co.	Sandstone	22.53	-2.13	+0.04	-1.14
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.42	-3.28	+0.36	-3.45

## GROUND-WATER LEVELS



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

## LAKE ERIE LEVELS at Fairport



Normal - - - - Current - - - -

## SUMMARY

Precipitation was above normal across most of the state except in extreme northwestern and parts of northeastern Ohio where it was below normal. Streamflow was generally below normal in the western and eastern thirds of the state and above normal in the central third. Reservoir storage increased statewide and was above normal throughout most of the state. Ground water levels showed net improvement statewide but remain below normal. Also, ground water levels range from about 1 to more than 7 feet below the February 1999 levels. Lake Erie level declined 0.30 foot and is 0.49 foot below the long-term February average.

## NOTES AND COMMENTS

### HEAVY RAINS CAUSE FLASH FLOODING ALONG OHIO RIVER

A storm system that crossed the region on February 17-19 brought heavy rains to the southern half of Ohio. Most areas in southern Ohio received between 1-3 inches of rain with the greatest amounts occurring in south-central and southeastern Ohio where from 3 to more than 4 inches fell. Flash flooding on small streams occurred as a result of the heavy rain, especially in counties bordering the Ohio River in south-central and southeastern Ohio. Tragically, two people lost their lives as a result of the flooding. Governor Taft's request to have five Ohio counties declared federal disaster areas was approved making people affected by the flooding in those counties eligible for a wide range of federal disaster assistance. The five counties are: Adams, Gallia, Lawrence, Meigs and Scioto.

The storm came just days after another weather system dumped 1-2 inches of rain across the same area. This precipitation, combined with recent snowmelt, increased soil moisture which probably contributed to the rapid runoff that quickly brought small streams and rivers out of their banks, inundating low-lying areas. The floodwaters entering the Ohio River, combined with flows from tributaries on the Kentucky side of the river where as much as 7 inches of rain were reported, raised river levels above flood elevations all the way downstream past Cincinnati. Many homes, businesses, roads and bridges were damaged by the floodwaters.

Preliminary data indicates that flows in most basins in the flooded area in Ohio ranged within a 2-5 year recurrence interval with some potentially ranging up to a 20 year recurrence interval.

## 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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