MONTHLY WATER INVENTORY REPORT FOR OHIO

January 2009

http://www.dnr.state.oh.us/tabid/4191/Default.aspx

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PRECIPITATION during January was generally above normal in the southeastern half of the state and below normal in the northwestern half. The state average was 2.58 inches, 0.01 inch above normal. Regional averages ranged from 3.62 inches, 0.64 inch above normal, for the South Central Region to 1.31 inches, 0.73 inch below normal, for the Northwest Region. South Point (Lawrence County) reported the greatest amount of January precipitation, 5.65 inches. Sandusky (Erie County) reported the least amount, 0.41 inch.

Precipitation during January fell as mainly snow across the northern half of Ohio and as rain, snow and a wintry mix in the southern half of the state. Snow amounts for January were above normal statewide and noteworthy across northern Ohio. Dorset (Ashtabula County), located in the northeast Ohio snowbelt, reported 69.5 inches of snow, a record amount for January and more than 3 times their January average snowfall. Mansfield Airport (Richland County) reported 43.8 inches of snow, which was also a record amount for January. Precipitation during January 6-10 fell mainly as snow in northern Ohio and as rain in southern Ohio. Most areas received 0.50-1.0 inch of liquid precipitation with as much as 1.5 inches falling in areas of northeastern Ohio. A few areas in northern Ohio reported more than 12 inches of snow during this period. The next two weeks were very cold and rather dry with only light snow showers falling across the state on a few days, except on January 13-14 when 4-8 inches of snow (0.25-0.50 inch liquid precipitation) fell across the northern half of the state. The most notable storm period for the month was during January 27-28 when heavy snow fell across northern Ohio and mixed precipitation fell across southern Ohio. Most of the state received at least 6 inches of snow with a few areas in northern Ohio reporting up to 12 inches during this period. Some areas in southern Ohio also received significant ice accumulations during this storm, resulting in widespread power outages. Melted precipitation during this period was around 1.5-2.0 inches in southern Ohio, tapering to 0.25-0.50 in northwestern Ohio. Much of the precipitation that fell during the second half of January remained frozen on the ground at month's end.

The 2009 calendar year is off to an adequate start as far as precipitation is concerned across most of the state. However, some areas of northwestern Ohio began the new year rather dry. Near-normal precipitation during the next several months will be beneficial in helping replenish Ohio's water resources.

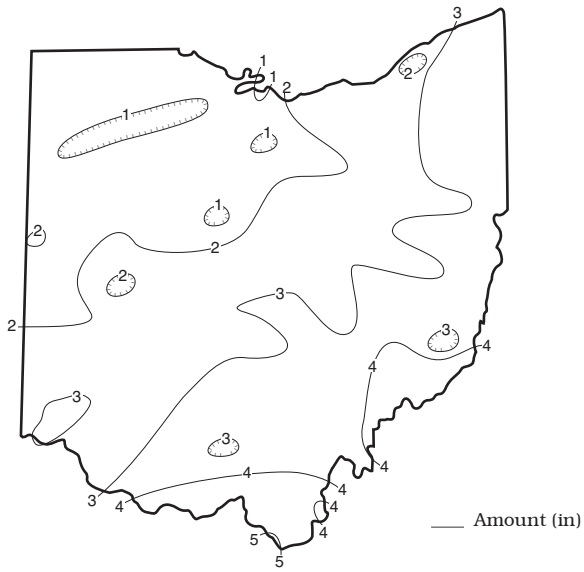
Precipitation for the 2009 water year is above normal across most of the state, but below normal in the Southwest Region. The average for the state is 11.56 inches, 0.78 inch above normal. Regional averages range from 14.51 inches, 2.76 inches above normal, for the Northeast Region to 10.26 inches, 0.63 inch above normal, for the Northwest Region.

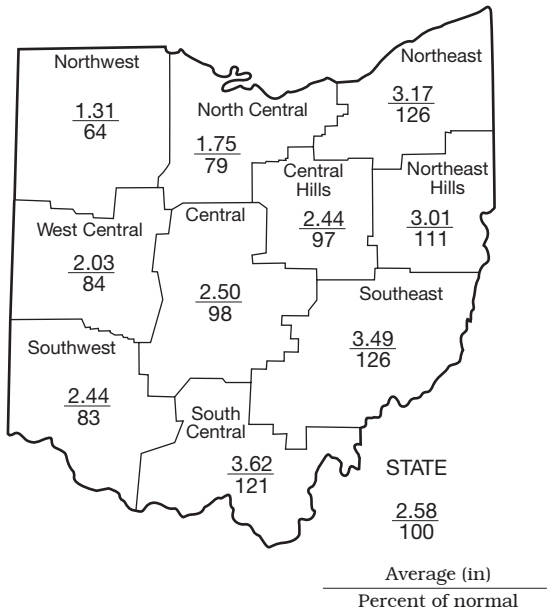
PRECIPITATION

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	-0.73	+1.02	-0.47	+6.43	+11.52	+2.6
North Central	-0.46	+1.16	+0.10	+8.62	+13.73	+3.8
Northeast	+0.65	+2.85	+2.17	+10.87	+14.06	+4.5
West Central	-0.39	+1.00	-2.58	+6.78	+10.94	+0.9
Central	-0.05	+0.93	-1.60	+6.25	+8.25	+0.1
Central Hills	-0.08	+1.35	-1.42	+4.28	+7.27	+0.8
Northeast Hills	+0.29	+1.31	-0.83	+4.68	+7.78	+0.8
Southwest	-0.49	-0.17	-4.42	+4.80	+2.37	+0.1
South Central	+0.64	+1.95	-1.03	+5.98	+1.85	+1.1
Southeast	+0.71	+2.61	-0.81	+7.93	+5.90	+1.0
State	+0.01	+1.40	-1.10	+6.65	+8.34	

*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 JANUARY





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	1,491	99	135	118	139
Great Miami River at Hamilton	3,630	1,696	42	56	59	150
Huron River at Milan	371	197	46	106	94	181
Killbuck Creek at Killbuck	464	264	50	58	55	111
Little Beaver Creek near East Liverpool	496	710	121	81	72	107
Maumee River at Waterville	6,330	5,641	115	88	73	129
Muskingum River at McConnelsville	7,422	6,888	75	109	104	111
Scioto River near Prospect	567	126	25	41	37	147
Scioto River at Higby	5,131	2,302	36	43	43	134
Stillwater River at Pleasant Hill	503	133	30	47	44	146

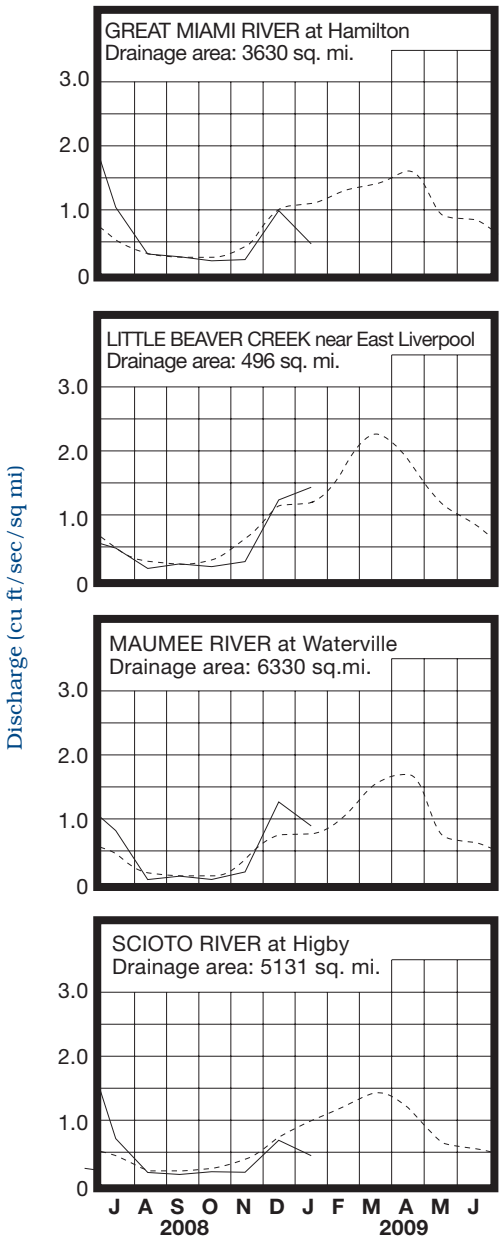
STREAMFLOW during January was below normal across most of the state, with just a few exceptions in northwestern and east-central Ohio where some flows were above normal. Flows were low enough to be considered deficient, especially in some basins in the western half of the state. Flows during January were less than those observed during December throughout nearly the entire state.

Streamflow at the beginning of January was above normal in many areas of the state, but below normal in northeastern and south-central Ohio. Greatest flows for the month occurred at the beginning of January across most of the state although a few basins in north-central and northeastern Ohio recorded their greatest flows just after mid-month. Flows in most basins generally decreased during the first half of the month, and then were rather stable during the second half of January. Lowest flows for the month varied across the state, but generally occurred around mid-month. At the end of January, flows were below normal across most of the state, but were above normal in some basins in northwestern and northeastern Ohio.

RESERVOIR STORAGE during January decreased in both the Mahoning and Scioto river basins. At the end of January, storage remained above normal in the Mahoning River basin and below normal in the Scioto River basin.

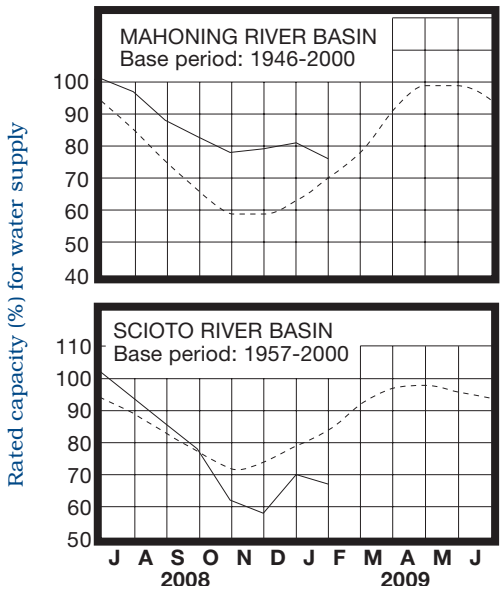
Reservoir storage at the end of January in the Mahoning basin index reservoirs was 76 percent of rated capacity for water supply compared with 81 percent for last month and 77 percent for January 2008. Month-end storage in the Scioto basin index reservoirs was 67 percent of rated capacity for water supply compared with 70 percent for last month and 91 percent for January 2008. Surface water supplies remain adequate across the state.

MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

RESERVOIR STORAGE FOR WATER SUPPLY



Normal – – – – Current ———

GROUND-WATER LEVELS

GROUND WATER levels during January rose in most aquifers throughout the state. Net changes from the December levels were greater than usually observed. Levels in consolidated aquifers gradually rose throughout the month, while levels in most unconsolidated aquifers rose during the first half of the month, and then declined during the second half as recharge was greatly reduced by the notably below normal temperatures and frozen soils.

Ground water levels remain below normal across most of the state with the exception of some consolidated aquifers in eastern Ohio where levels are above normal. Also, current levels are lower than they were at this time last year in most aquifers, ranging up to as much as 4.5 feet lower than the January 2008 levels. In spite of this, ground water supplies remain adequate throughout most of the state.

Note: After more than 62 years as a state operated observation well and published in this report as an index well for nearly 55 years, PO-1 (Portage County), located in Windham, is no longer available for our instrumentation. As a replacement, we will now use observation well PO-124 to represent the sandstone aquifers of eastern and northeastern Ohio. Observation well PO-124 was drilled in 2005 as a future replacement for PO-1. PO-124 is located approximately 5.5 miles west of PO-1 in Portage County at the Freedom Township garage. Since PO-124 has a limited period of record, we have statistically derived averages and extremes based on a correlation between its available data and that of observation well PO-1. Also, due to the short period of record for PO-124, we have opted to replace the graph of PO-1 as represented in this report with a graph of index observation well F-1 (Fairfield County), representing sandstone aquifers in eastern and southeastern Ohio.

LAKE ERIE level rose during January. The mean level was 571.01 feet (IGLD-1985), 0.23 foot higher than last month's mean level and 0.14 foot above normal. This month's mean level is 0.34 foot higher than the January 2008 level and 1.81 feet above Low Water Datum.

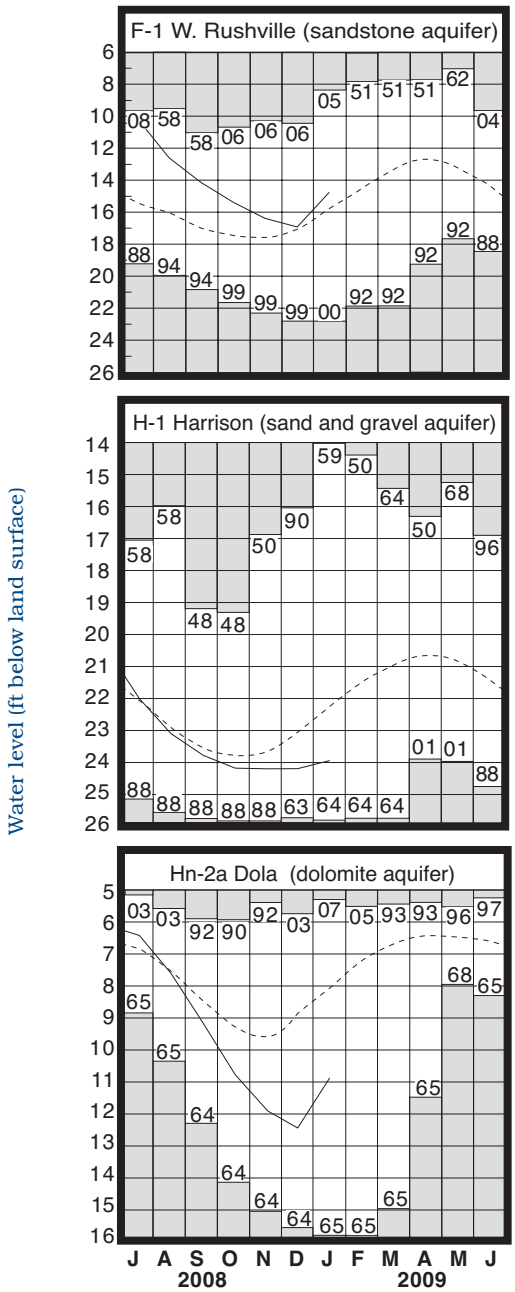
The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during January averaged 2.01 inches, 0.46 inch below normal, while the entire Great Lakes basin averaged 1.40 inches, 0.80 inch below normal. In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain near normal through early summer, and then fall to below normal. Deviations from the anticipated weather patterns could result in the levels of Lake Erie ranging from about 6 inches above to as much as 14 inches below the normal seasonal levels.

GROUND-WATER LEVELS

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

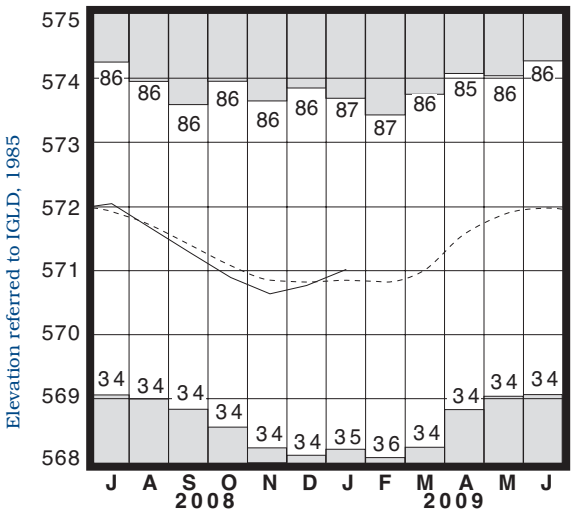
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	14.76	+1.03	+2.15	-1.43
Fa-1	Jasper Mill, Fayette Co.	Limestone	10.10	-2.58	+1.09	-1.24
Fr-10	Columbus, Franklin Co.	Gravel	44.75	-1.41	+0.46	-0.24
H-1	Harrison, Hamilton Co.	Gravel	23.94	-1.71	+0.33	-1.14
Hn-2a	Dola, Hardin Co.	Dolomite	10.88	-2.80	+1.62	-4.43
Po-124	Freedom, Portage Co.	Sandstone	76.59	+1.73	+0.21	+0.96
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.65	-1.53	+0.80	-1.70

GROUND-WATER LEVELS



Base periods: F-1, 1947-2000 H-1, 1951-2000. Hn-2a, 1955-2000 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 January was above normal in the southeastern half of Ohio and below normal in the northwestern half. Streamflow was below normal across most of the state, but above normal in some northwestern and northeastern Ohio basins. Reservoir storage decreased in both the Mahoning and Scioto river basins, and remained above normal in the Mahoning River basin, but below normal in the Scioto River basin. Ground water levels rose in most aquifers throughout the state. Lake Erie level rose 0.23 foot and was 0.14 foot above the long-term January average.

NOTES AND COMMENTS

Retired State Ground Water Geologist Passes

It is with great sadness that we report that Alfred C. Walker, former principal ground water geologist and administrator of the ODNR, Division of Water, Ground Water Inventory Section, passed away on February 2, 2009. Al was born on January 7, 1923 at Dennison, Ohio. He graduated from New Philadelphia High School in 1941 and then enlisted in the United States Army Air Corps in 1942. Al spent 11 months as a P.O.W. during World War II. After the war, he attended Denison University, the University of Michigan and Marietta College. He completed his graduate work at the University of Kansas while serving as an assistant geologist for the Kansas Geological Survey. Upon completion of his education, Al became one of the first ground water geologists in the nation, and was the ground water geologist for the Virginia Geological Survey from 1949 to 1953. Al moved back to Ohio where he then spent the next 33 years as principal geologist and Administrator for the Ohio Division of Water, authoring more than 70 technical publications on the subject of ground water during his career. He retired from the Division of Water on February 1, 1986. In 2001, Al was presented the Mather Medal, awarded in recognition of lifelong contributions to the knowledge of geology in Ohio by the ODNR, Division of Geological Survey. For those of us who had the pleasure to know or work with Al, we will always remember his dedication and long lasting impact he had on bringing awareness to our ground water resources.

CoCoRaHS-Because Every Drop Counts!

As of February 2, 2009 volunteers across Ohio will have the opportunity to join 38 other states that are already implementing the Community Collaborative Rain, Hail and Snow (CoCoRaHS) network. CoCoRaHS is a rapidly growing volunteer network that measures and reports rain, snow, hail and other noteworthy weather. Currently there are approximately 12,000 volunteers nationwide in the CoCoRaHS network. Observers play an active role in meteorological reporting and research by using inexpensive equipment in their own yards. The network of observers submits daily precipitation to the CoCoRaHS website. Tables and maps are then made available for viewing online. This information can provide a detailed look at rainfall patterns from across the state. Hydrologists and water managers at the Ohio Department of Natural Resources, the National Weather Service and many other agencies will use this information to assist in such things as flood forecasting and drought assessment.

Volunteers will need a standard 4 inch cylindrical rain gauge and a yardstick to measure snow depth. A short online training course is required before volunteers can begin reporting. If you want to learn more about CoCoRaHS, go to: www.cocorahs.org. If you are interested in becoming a CoCoRaHS volunteer, please go to this website and register by clicking on "Join the CoCoRaHS Network."

National Ground Water Awareness Week

The week of March 8-14, 2009 is National Ground Water Awareness Week. During this week, Ohioans are urged to learn more about the state's ground water resources, from wise use to protection. The ODNR, Division of Water, Water Resources Section collects, researches, interprets and disseminates information on 138 ground water observation wells located across the state; produces several types of ground water maps, addressing various aspects of ground water resources in the state including availability, pollution potential and horizontal direction of ground water flow; and collects water use data on all facilities that have the capacity to withdraw over 100,000 gallons of water per day. To learn more about these and other programs at the Division of Water, please visit their website at: www.dnr.state.oh.us/tabid/3252/Default.aspx.

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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