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:
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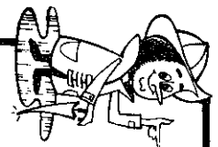
Editing, cartography, and production by staff of the Division of Geological Survey, Ohio Department of Natural Resources.



OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation for the water year thus far remains very favorable throughout most of the state. Precipitation was noticeably above normal for the state as a whole. Streamflow, reservoir storage, and groundwater storage were generally at or above normal for the month. Lake Erie level declined slightly, but remained 0.79 foot above normal.

NOTES AND COMMENTS

NEW PUBLICATIONS

The Division of Water announces the availability of *The ground-water resources of Geauga County,* the fourth in a series of county ground-water maps. The multicolored 24- by 30-inch map showing the groundwater resources of Geauga County was prepared by Alfred C. Walker, hydrogeologist with the Division of Water. The map is designed as a guide to locating new ground-water supplies or as an aid for expanding supplies already established. It will be useful to homeowners, developers, and planners. The cost of the map is $2.85, including tax and mailing.

The Division of Geological Survey announces the availability of Report of Investigations No. 107, *Lake Erie shore erosion and flooding, Lucas County, Ohio,* by D. Joe Benson, 99 p., 64 figs., 35 tables, 2 pls. The comprehensive report on shore erosion in Lucas County examines the physical setting and shore erosion processes and rates from a historical point of view based on maps and aerial photographs from 1877 to 1973. Changes in land use, location and number of manmade structures, distribution and size of beaches, and shoreline shape are documented. A recession forecast for 2010 A.D. and erosion-control suggestions are included. A large-scale (1:4,800) map shows the position of the recession line in Lucas County in 1877, 1940, 1957, 1968, 1973, and 2010 (projected). Cost of the report is $5.70, including tax and mailing.

These publications are available from Publications, Division of Geological Survey, Ohio Department of Natural Resources, Fountain Square, Building B, Columbus, Ohio 43224.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

JANUARY 1979

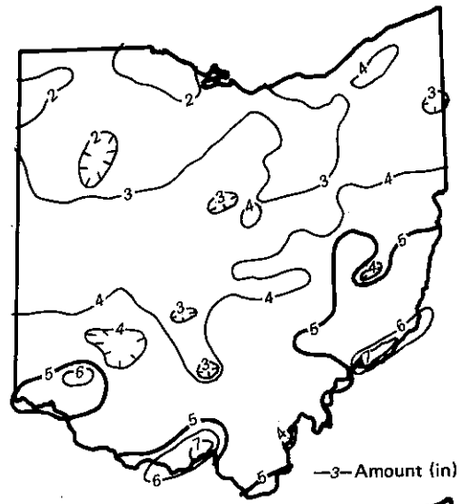
monthly water inventory report for ohio

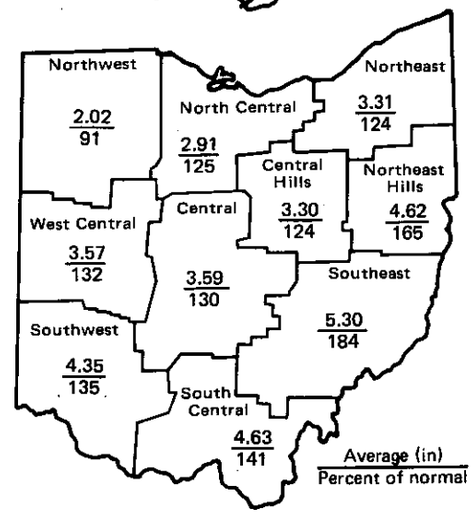
Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for January was above normal throughout most of the state; the only exception was the Northwest region, where precipitation was slightly below normal. The average for the state as a whole was 3.76 inches, 1.00 inch above normal. Regional averages ranged from 5.30 inches, 2.42 inches above normal, for the Southeast region to 2.02 inches, 0.21 inch below normal, for the Northwest region. Marietta, Washington County, reported the greatest amount of precipitation, 7.98 inches, for the month, and Toledo Express Airport, Lucas County, reported the least amount, 1.24 inches. Most of the state received 3 to 5 inches of precipitation; however, the North Central and Northwest regions received 1 to 3 inches, and several areas along the Ohio River received greater than 5 inches. There were measurable amounts of precipitation, mostly in the form of snow, during every week of the month throughout most of the state. The bulk of January precipitation came in the form of rain on the first day of the month. Snowfall has been noticeably above normal throughout most of the state, especially in the southern portions. Snowfall in the snow belt east of Cleveland has been below normal. Generally there were noticeable amounts of snow on the ground throughout the state at the month end.

Precipitation for the first four months of the 1979 water year was noticeably above normal for the state as a whole; the only exceptions were the northern and west-central portions of the state, where precipitation has been near normal. The average for the state as a whole was 13.87 inches, 3.61 inches above normal. Regional averages ranged from 19.36 inches, 8.18 inches above normal, for the South Central region to 8.78 inches, 0.64 inch below normal, for the Northwest region. The above-normal precipitation for the water year thus far has produced excellent recharge to water supplies throughout the state. The water-supply situation should improve markedly during the remaining months of the current recharge season.

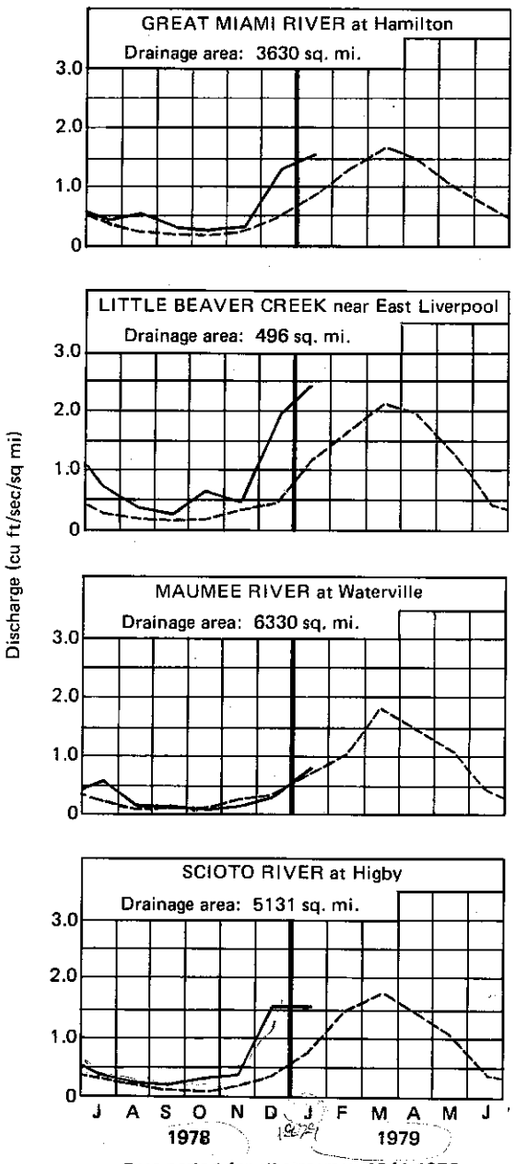




DIVISION OF WATER

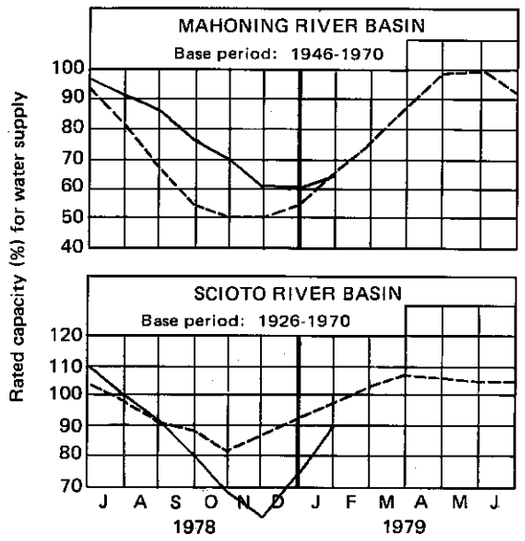
Wayne S. Nichols, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

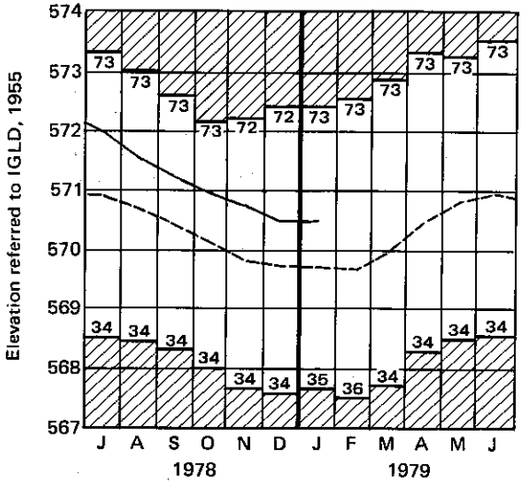
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for January showed noticeable increases throughout the state, but remained below normal in both the Mahoning River and the Scioto River basin index reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 65 percent of rated capacity for water supply compared to 60 percent for last month and 61 percent for January 1978. Storage at the month end for the Scioto basin index reservoirs was 90 percent of rated capacity for water supply compared to 75 percent for last month and 111 percent for January 1978.

STREAMFLOW for January was above normal throughout most of the state; the only exception was in the northeast, where streamflow was excessive. The heavy rains on December 31, 1978, and January 1, 1979, produced excessive flows during the first week of January; after the first week, flows were near normal. A sizeable amount of runoff remained frozen on the ground at the month end. Mean discharge and percent of normal for January for the index gaging stations were as follows: Great Miami River, 5,723 cfs, 196 percent; Little Beaver Creek, 1,195 cfs, 213 percent; Maumee River, 5,042 cfs, 114 percent; Scioto River, 8,054 cfs, 213 percent.

LAKE ERIE LEVELS

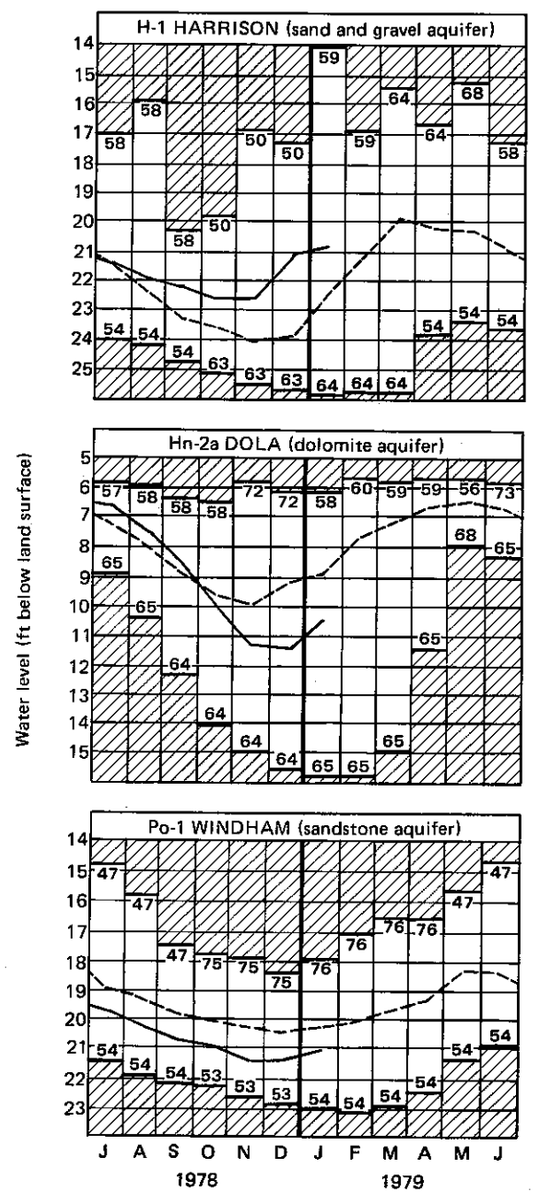


Base period: 1900-1974

LAKE ERIE mean level for January was 570.50 feet above IGLD (1955), 0.02 foot below last month's mean level and 0.79 foot above normal. The lake level is 0.82 foot below the level observed for January 1978 and 1.90 feet above Low Water Datum.

GROUND-WATER LEVELS for January throughout the state showed net rises for the month. Water levels in consolidated-rock aquifers rose throughout the month in response to delayed recharge. Water levels in unconsolidated sand and gravel aquifers rose at the beginning of the month, but declined during the remainder of the month because a significant portion of the month's recharge remained frozen on the ground. Generally, water levels in consolidated-rock aquifers are above the levels observed for January 1978, and levels in unconsolidated aquifers are slightly below the levels observed a year ago. Ground-water levels are generally above normal throughout most of the state; the only exception is in the consolidated-rock aquifers in the northwestern portion of the state, where water levels are noticeably below normal owing to lack of recharge. Precipitation in the northwestern portion of the state for the water year thus far has been only about normal. Ground-water storage remains very satisfactory throughout the state except in the northwestern portion, where it is noticeably low in a few aquifers. Conditions are most favorable for recharge to ground-water storage during the remaining two or three months of the nominal recharge season.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal ----- current ——

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This report has been compiled from Division of Water data and from information supplied by the following:

Precipitation data:
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Editing, cartography, and production by staff of the Division of Geological Survey, Ohio Department of Natural Resources.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation remains very satisfactory throughout the state. Precipitation was above normal for the state as a whole for the third consecutive month. Streamflow and reservoir storage were above normal. Ground-water storage was generally below normal because most of the potential recharge for January and February remained frozen on the ground until the last week of February. Lake Erie level declined slightly and was at the lowest level observed since February 1977.

NOTES AND COMMENTS

ALASKAN EARTHQUAKE MAKES ITS MARK IN OHIO

The earthquake which shook wide areas of Alaska and Yukon Territory, Canada, on Wednesday, February 28, 1979, made its mark on Ohio's water levels. Records from ground-water observation well Vw-1 located at the Marsh Foundation at Van Wert, Van Wert County, showed that the water level in the well changed a total of 1.1 feet when seismic waves from the quake passed through Ohio. The National Earthquake Information Center at Golden, Colorado, said that preliminary readings showed the quake registered 7.5 to 8.0 on the Richter scale. This same well recorded a change in water level of 5.8 feet when seismic waves from the quake near Anchorage, Alaska, on March 27, 1964, passed through the state. That quake registered 8.4 on the Richter scale. The water level in this well also showed a change of 0.25 foot in response to seismic waves from a quake in Guatemala City, Guatemala, on February 4, 1976; that quake registered 7.5 on the Richter scale. Ground-water observation well Vw-1 is reported to be 340 feet in depth and is in the carbonate aquifer which is the primary source of ground water in the northwestern portion of the state. Earthquakes have registered their effects on water levels in about 30 ground-water observation wells throughout the state during the past 33 years; presently the Division of Water is actively monitoring 118 ground-water wells.

NEW PUBLICATION

The Division of Water announces the availability of *The ground-water resources of Union County,* the fifth in a series of county ground-water maps. The multicolored 24- by 32-inch map showing the ground-water resources of Union County was prepared by James J. Schmidt, hydrogeologist with the Division of Water. The map is designed as a guide to locating new ground-water supplies or as an aid for expanding supplies already established. It will be useful to homeowners, developers, and planners. Copies of the map may be ordered from Publications, Ohio Department of Natural Resources, Division of Geological Survey, Fountain Square, Building B, Columbus, Ohio 43224 at a cost of $2.85, including tax and mailing.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

FEBRUARY 1979

monthly water inventory report for ohio

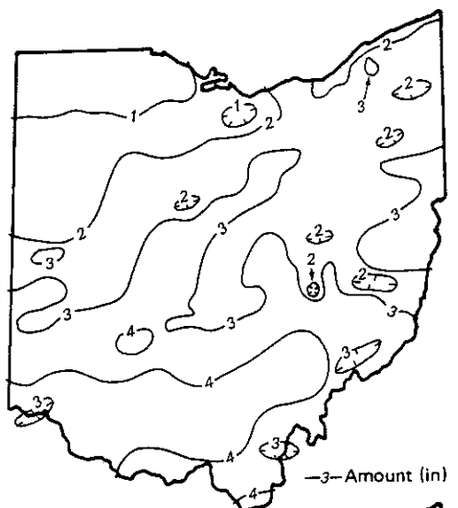
Compiled by Leonard J. Harstine

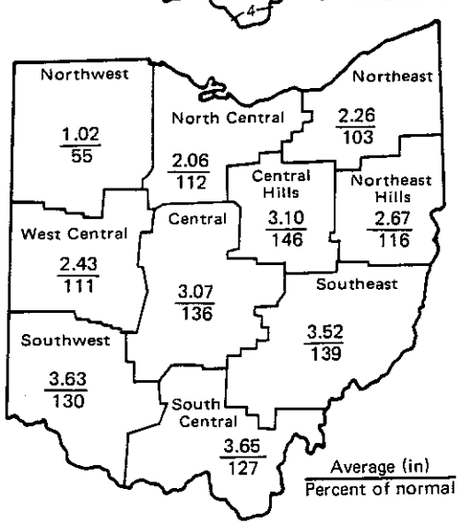
PRECIPITATION

PRECIPITATION for February was above normal throughout most of the state; the only exception was the Northwest region, where precipitation was below normal. The average for the state as a whole was 2.74 inches, 0.45 inch above normal. This was the third consecutive month in which precipitation has been above normal for the state as a whole. Regional averages ranged from 3.65 inches, 0.78 inch above normal, for the South Central region to 1.02 inches, 0.84 inch below normal, for the Northwest region. Hillsboro, Highland County, reported the greatest amount of precipitation, 4.62 inches, for the month, and Wauseon, Fulton County, reported the least amount, 0.46 inch. Precipitation for February followed the normal distribution pattern for Ohio—greatest in the south and southwest, diminishing toward the north, and least in the northwest. Most of the state received between 2 and 4 inches of precipitation in February. The northwestern portion of the state received between 0.5 and 2 inches of precipitation, and the southern portion along the Ohio River received greater than 4 inches. There were measurable amounts of precipitation, mostly in the form of snow, during every week of the month throughout the state; however, the bulk of the precipitation fell as rain on the 25th and 26th of February. As it was in January, snowfall in February was below normal in the northern portion of the state and above normal in the southern portion. Generally, the total snowfall for January and February lay frozen on the ground until about the 21st of February. Thus, the "January thaw" did not materialize until the latter part of February. This thawing, plus the heavy rains on the 25th, not only produced considerable flooding throughout the state, but also produced greater than normal recharge to water supplies.

Precipitation for the first two months of the 1979 calendar year was above normal for the state as a whole. The average for the state was 6.50 inches, 1.45 inches above normal. Regional averages ranged from 8.82 inches, 3.41 inches above normal, for the Southeast region to 3.04 inches, 1.05 inches below normal, for the Northwest region.

Precipitation for the first five months of the 1979 water year continues to be above normal for most of the state; the only exception is the Northwest region, where precipitation is noticeably below normal. The average for the state as a whole is 16.61 inches, 4.06 inches above normal. Regional averages range from 23.01 inches, 8.96 inches above normal, for the South Central region to 9.80 inches, 1.48 inches below normal, for the Northwest region. The above-normal precipitation during the first five months of the current recharge season has produced excellent recharge to water supplies.

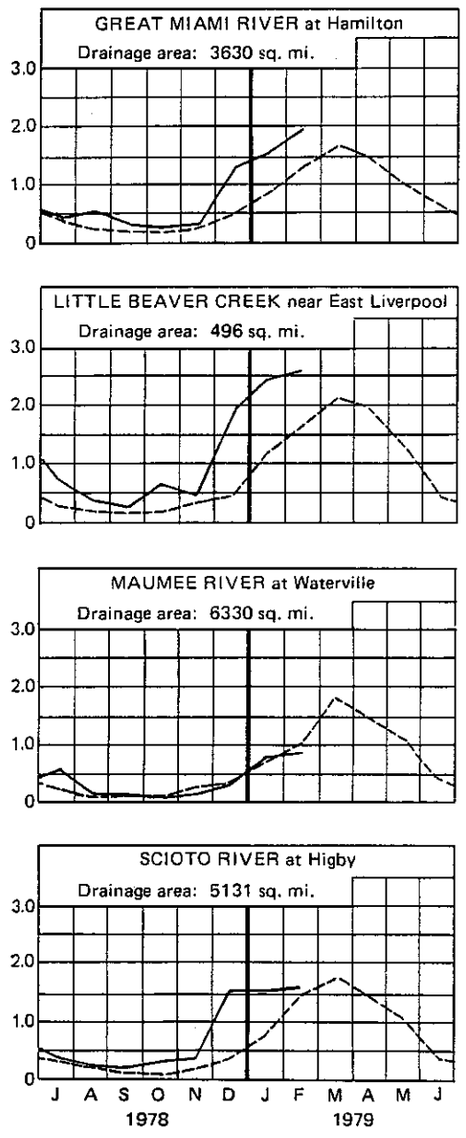




DIVISION OF WATER

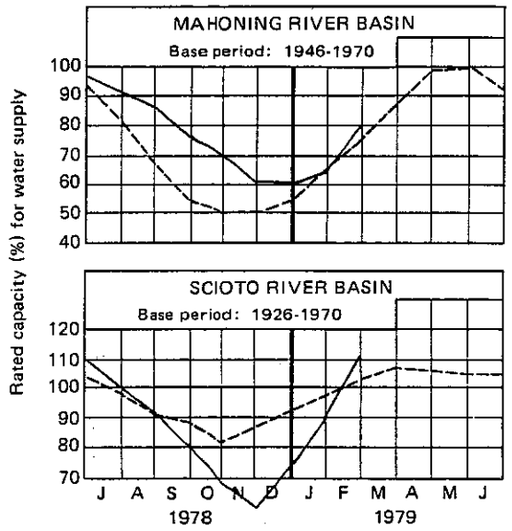
Wayne S. Nichols, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

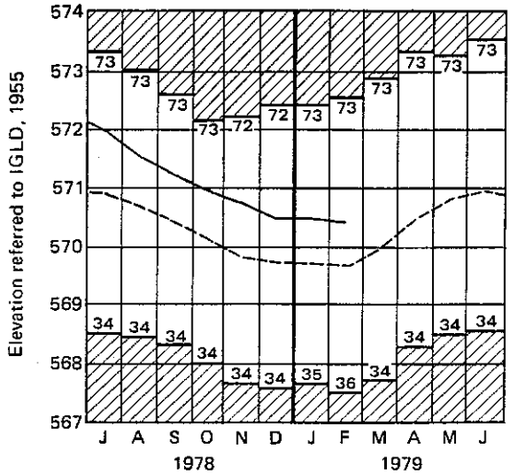
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for February showed marked increases and was above normal in both the Mahoning River basin and the Scioto River basin index reservoirs. Storage increased markedly at the month end in response to runoff from the heavy rains and melting snow during the last week of February. Reservoir storage at the month end for the Mahoning basin index reservoirs was 80 percent of rated capacity for water supply compared to 65 percent for last month and 60 percent for February 1978. Storage at the month end for the Scioto basin index reservoirs was 111 percent of rated capacity for water supply compared to 90 percent for last month and 100 percent for February 1978.

STREAMFLOW for February was normal throughout the state during the first three weeks of the month and excessive during the last week owing to increased runoff from the heavy rains and melting snow. Minor flooding was observed in many areas of the state, and serious flooding occurred in the southern portion of the state and in the Ohio River valley at the month end. Mean discharge and percent of normal for February for the index gaging stations were as follows: Great Miami River, 7,018 cfs, 145 percent; Little Beaver Creek, 1,284 cfs, 155 percent; Maumee River, 4,871 cfs, 74 percent; Scioto River, 8,107 cfs, 105 percent.

LAKE ERIE LEVELS



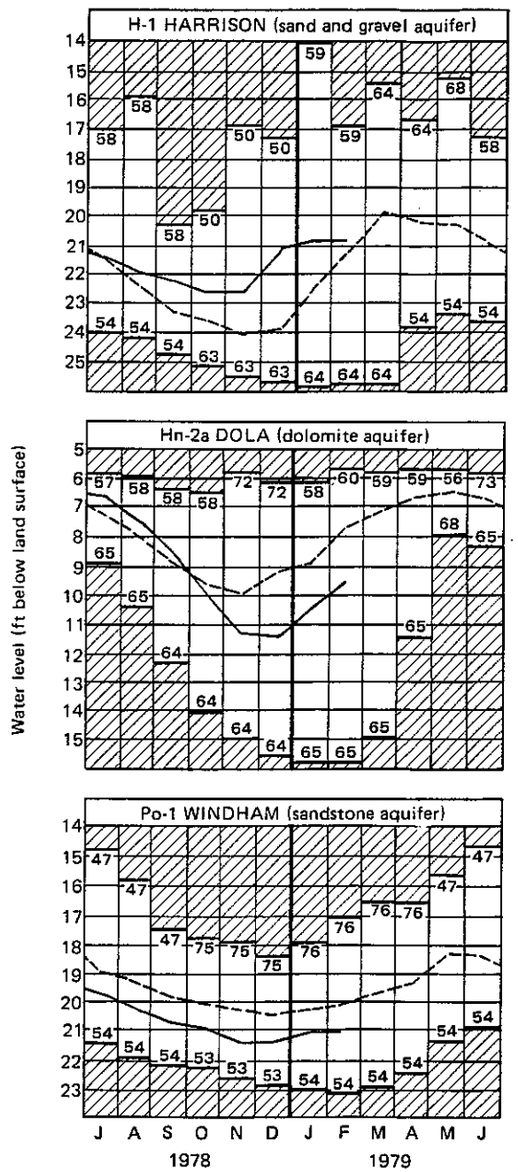
Base period: 1900-1974

LAKE ERIE mean level for February was 570.41 feet above IGLD (1955), 0.09 foot below last month's mean level and 0.72 foot above normal. The lake level is 0.77 foot below the level observed for February 1978 and 1.81 feet above Low Water Datum. The lake level is the lowest it has been since February 1977.

GROUND-WATER LEVELS for February throughout the state declined or remained rather stable during the first three weeks of the month and showed marked rises during the last week in response to recharge produced by the February thaw and heavy rains. Water levels in consolidated-rock aquifers were generally above the levels observed for last month except for consolidated-rock aquifers in northwestern Ohio, which were below levels observed last month; levels in unconsolidated sand and gravel aquifers were below the levels observed for last month. Ground-water levels are generally below the levels observed for February 1978 and below normal owing to the lack of recharge in January and February. However, ground-water storage remains satisfactory throughout the state. The marked recharge at the month end augurs well for continued improvements in the ground-water storage situation during the balance of the nominal recharge season.

normal - - - - - current ———

GROUND-WATER LEVELS



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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

RESERVOIR STORAGE—*continued*

state during March. Although the flood storage in most of the reservoirs was only about normal, it is significant to note that at Bolivar Dam, a Muskingum Conservancy District flood-control reservoir in Tuscarawas and Stark Counties, the greatest amount of storage since completion of the dam in 1938 was recorded on March 8, 1979.

SUMMARY

The water-supply situation remains very favorable for the state as a whole, despite the fact that precipitation in March was noticeably below normal throughout the state. Reservoir storage, streamflow, and groundwater storage continued to show marked improvements for the water year thus far. Lake Erie level showed a significant rise for the first time this year.

NOTES AND COMMENTS

Ohio Department of Natural Resources Director Robert W. Teater has announced the appointment of John H. Cousins as Chief of the Division of Water effective April 1, 1979. Cousins replaces Wayne S. Nichols, who is now the Department Deputy Director for Resource Protection. Cousins recently retired as a Professional Engineer with the U.S. Army. His most recent position was Director of the Coastal Engineering Research Center at Fort Belvoir, Virginia; before that he was Deputy Division Engineer at the Ohio River Division, U.S. Army, Corps of Engineers in Cincinnati.

NEW PUBLICATIONS

The Division of Water announces the availability of two new county ground-water maps, the fifth and sixth in a series to be completed for each of Ohio's 88 counties.

The ground-water resources of Delaware County, a 23- by 38-inch map prepared by James J. Schmidt, hydrogeologist with the Division of Water.

The ground-water resources of Mahoning County, a 24- by 38-inch map prepared by Katie Crowell, hydrogeologist with the Division of Water.

These maps are designed as a guide to locating new ground-water supplies or as an aid for expanding supplies already established. They will be useful to homeowners, developers, and planners. Copies of each map may be ordered from Publications, Ohio Department of Natural Resources, Division of Geological Survey, Fountain Square, Building B, Columbus, Ohio 43224 at a cost of $2.85 each, including tax and mailing.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

MARCH 1979

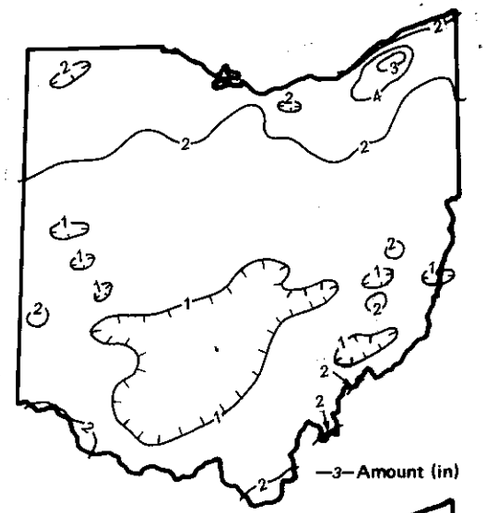
monthly water inventory report for ohio

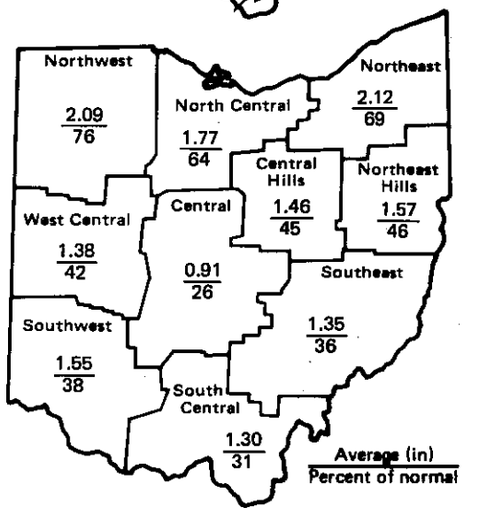
Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for March was noticeably below normal throughout the state. The average for the state as a whole was 1.55 inches, 1.86 inches below normal. Regional averages ranged from 2.12 inches, 0.96 inch below normal, for the Northeast region to 0.91 inch, 2.62 inches below normal, for the Central region. Departures from normal ranged from 2.93 inches below normal for the South Central region to 0.67 inch below normal for the Northwest region. Chardon, Geauga County, reported the greatest amount of precipitation, 4.75 inches, for the month, and Williamsport, Pickaway County, reported the least amount, 0.36 inch. The majority of the state received between 0.5 and 2.0 inches of precipitation in March; a few areas along the Ohio River valley and the northern one-fourth of the state received greater than 2 inches. Precipitation for the Northwest region has been below normal for the calendar year thus far. Recharge conditions at the beginning of the month were excellent; thus the below-normal precipitation for March has had very little adverse effect on the water-supply situation. Precipitation for the first three months of the 1979 calendar year averaged 8.05 inches, 0.41 inch below normal. Regional averages ranged from 10.17 inches, 1.03 inches above normal, for the Southeast region to 5.13 inches, 1.72 inches below normal, for the Northwest region. Only the Northeast Hills and the Southeast regions showed above-normal precipitation for the calendar year thus far.

Precipitation remains above normal for most of the state for the first six months of the 1979 water year; the only exception is the Northwest region, where precipitation has been below normal throughout the current water year. The average for the state as a whole is 18.16 inches, 2.20 inches above normal. Regional averages range from 24.31 inches, 6.03 inches above normal, for the South Central region to 11.89 inches, 2.15 inches below normal, for the Northwest region. The water-supply situation for the 1979 water year thus far remains very favorable throughout the state.

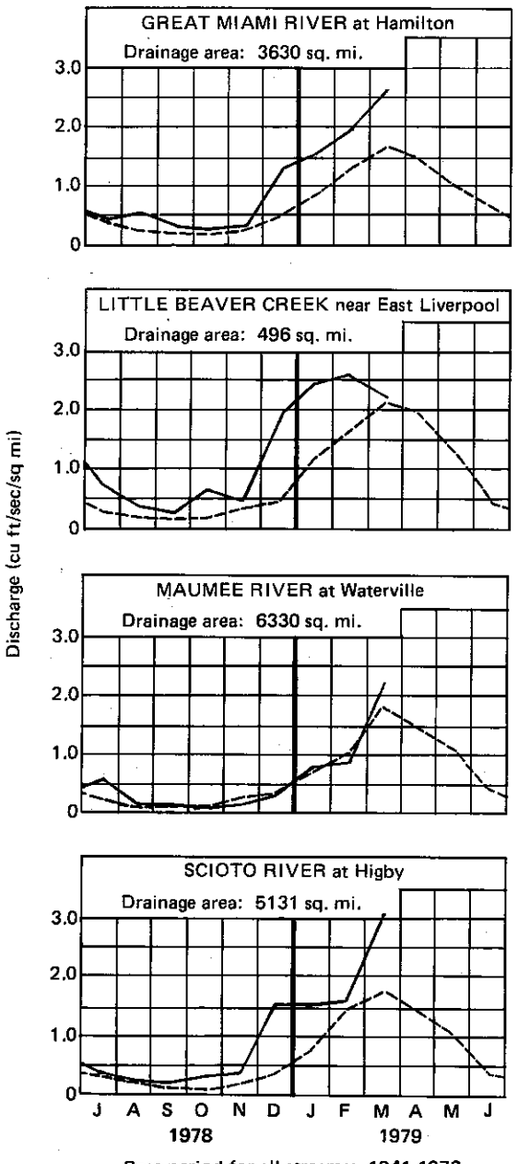




DIVISION OF WATER *John H. Cousins, Chief*

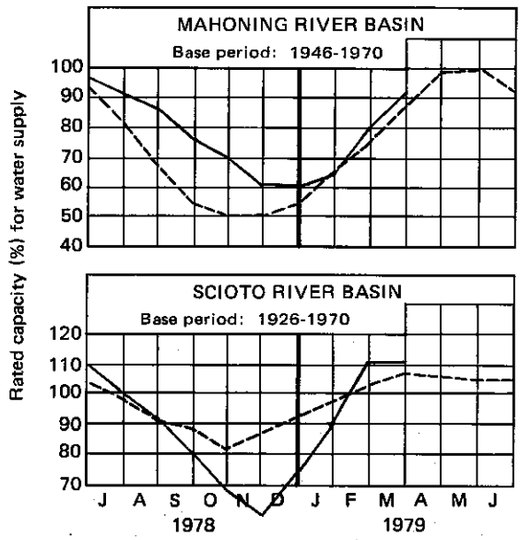
[redacted]

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

RESERVOIR STORAGE FOR WATER SUPPLY

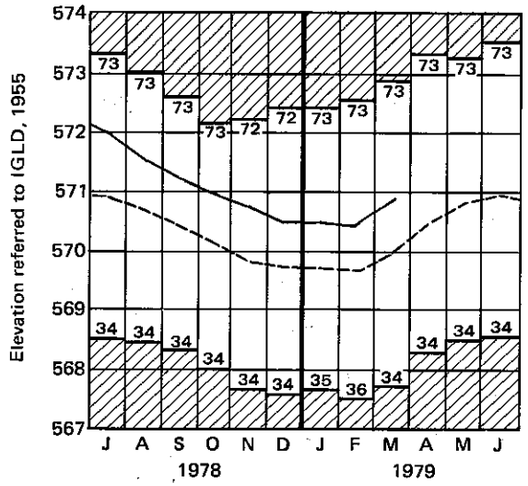


RESERVOIR STORAGE for water supply in March increased significantly in the Mahoning River basin index reservoirs and remained unchanged for the month in the Scioto River basin index reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 93 percent of rated capacity for water supply compared to 80 percent for last month and 92 percent for March 1978. Storage at the month end for the Scioto basin index reservoirs was 111 percent of rated capacity for water supply, the same as that observed for last month, compared to 117 percent for March 1978. Once in a while we must be reminded that some reservoirs have multipurpose uses such as water supply, recreation, and flood control; a number of reservoirs were built for flood control only. Most reservoirs played a very important role in flood control throughout the

Continued on back page

STREAMFLOW for March in terms of mean discharge for the month was excessive for most of the state; the only exception was in the northeast, where it was normal. Generally, flows were excessive during the first and second week of the month in response to the excessive precipitation and melting snow during the last days of February. The flows diminished rather rapidly during the remainder of March and were deficient for most areas of the state during the last week of the month. Mean discharge and percent of normal for March for the index gaging stations were as follows: Great Miami River, 9,624 cfs, 158 percent; Little Beaver Creek, 1,113 cfs, 110 percent; Maumee River, 14,380 cfs, 126 percent; Scioto River, 15,840 cfs, 177 percent.

LAKE ERIE LEVELS

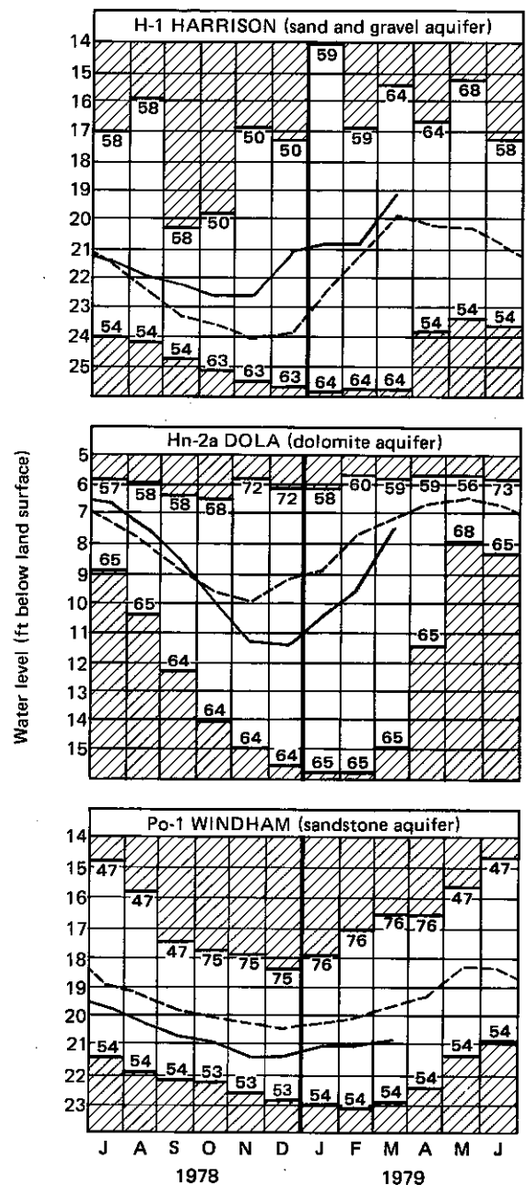


Base period: 1900-1974

LAKE ERIE mean level for March was 570.93 feet above IGLD (1955), 0.52 foot above last month's mean level and 1.01 feet above normal. The lake level is 0.35 foot below the level observed for March 1978, and 2.33 feet above Low Water Datum.

GROUND-WATER LEVELS for March showed marked rises throughout the state. These rises resulted primarily from the recharge produced by the melting snow and heavy rains following the thaw late in February. Water levels in unconsolidated sand and gravel aquifers rose markedly during the first two weeks of the month and declined steadily during the latter half of the month owing to the lack of continued recharge. Water levels in consolidated-rock aquifers rose steadily throughout the month in response to delayed recharge. Ground-water levels in March were noticeably higher than those levels observed last month and were generally above those levels observed a year ago in the southern portion of the state and below levels observed a year ago in the northern portion. Water levels are near or above normal in unconsolidated sand and gravel aquifers and at or below normal in consolidated-rock aquifers. The ground-water storage situation remains very satisfactory throughout the state. Some improvements can still be expected during April and May.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal ----- current ——

ACKNOWLEDGMENTS

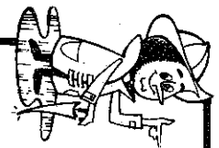
This report has been compiled from Division of Water data and from information supplied by the following:

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. Corps of Engineers, Detroit District.

Editing, cartography, and production by staff of the Division of Geological Survey, Ohio Department of Natural Resources.



OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation continues to improve and maintain a good position during the current water year. Precipitation for April for the state as a whole was noticeably above normal. Reservoir storage, streamflow, and ground-water storage were generally very favorable. Lake Erie level rose significantly during the month and was noticeably above normal.

NOTES AND COMMENTS

SOUTHEAST OHIO WATER PLAN AVAILABLE

The Ohio Department of Natural Resources announces the availability of the *Southeast Ohio Water Plan.* This is the fifth and final regional plan completed as a part of the Ohio Water Development Plan. The report contains detailed recommendations for water-supply sources, water-treatment facilities, floodplain management, water conservation, and use of water resources for recreational purposes in a 24-county area. The counties covered by the plan are: Ashland, Belmont, Carroll, Columbiana, Coshocton, Guernsey, Harrison, Holmes, Jefferson, Knox, Licking, Medina, Monroe, Morgan, Morrow, Muskingum, Noble, Perry, Richland, Stark, Summit, Tuscarawas, Washington, and Wayne.

Copies of the *Southeast Ohio Water Plan* will be distributed to public agencies in the planning region and to libraries throughout the state. Copies of the report can also be obtained from Publications, Ohio Department of Natural Resources, Division of Geological Survey, Fountain Square, Building B, Columbus, Ohio 43224 for $25.00, including tax and mailing. Checks should be made payable to the Division of Geological Survey. The four other regional plans available are:

Central Ohio Water Plan, $20.00 including tax and mailing
Northeast Ohio Water Plan, $20.00 including tax and mailing
Northwest Ohio Water Plan, $28.00 including tax and mailing
Southwest Ohio Water Plan, $25.00 including tax and mailing.

DEPARTMENT OF NATURAL RESOURCES
James A. Rhodes Governor *Robert W. Teater Director*

APRIL 1979

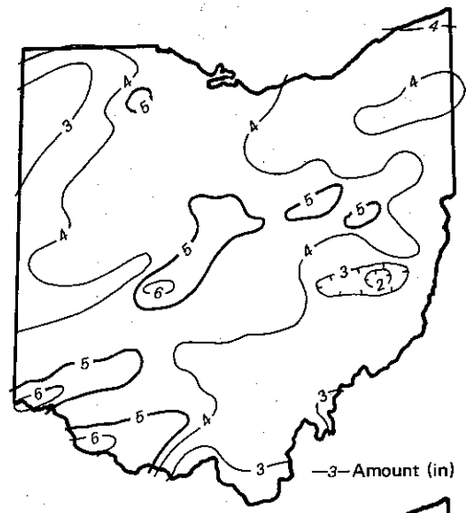
monthly water inventory report for ohio

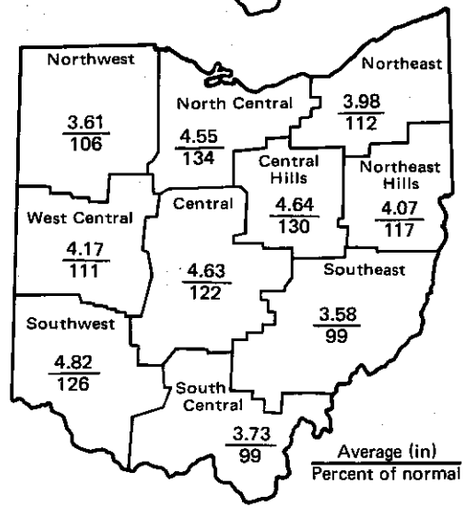
Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for April was above normal throughout the state; the only exceptions were the South Central and Southeast regions, where it was only slightly below normal. The average for the state as a whole was 4.18 inches, 0.56 inch above normal. Regional averages ranged from 4.82 inches, 0.98 inch above normal, for the Southwest region to 3.58 inches, 0.05 inch below normal, for the Southeast region. Fernbank, Hamilton County, reported the greatest amount of precipitation, 6.68 inches, for the month, and Middlebourne, Guernsey County, reported the least amount, 1.96 inches. The majority of the state received between 3 and 5 inches of precipitation during April. Isolated areas in northwest and southeast Ohio received less than 3 inches, and numerous stations on a diagonal line across the state from Cincinnati through Columbus to Millersburg received greater than 5 inches. There was precipitation throughout the state during the first, second, and fourth weeks of the month. Thus, it was a wet month insofar as agriculture was concerned. Generally, it was a good month for recharge to water supplies. Precipitation for the first four months of the 1979 calendar year averaged 12.23 inches, 0.15 inch above normal. Regional averages ranged from 14.35 inches, 0.45 inch above normal, for the Southwest region to 8.74 inches, 1.52 inches below normal, for the Northwest region.

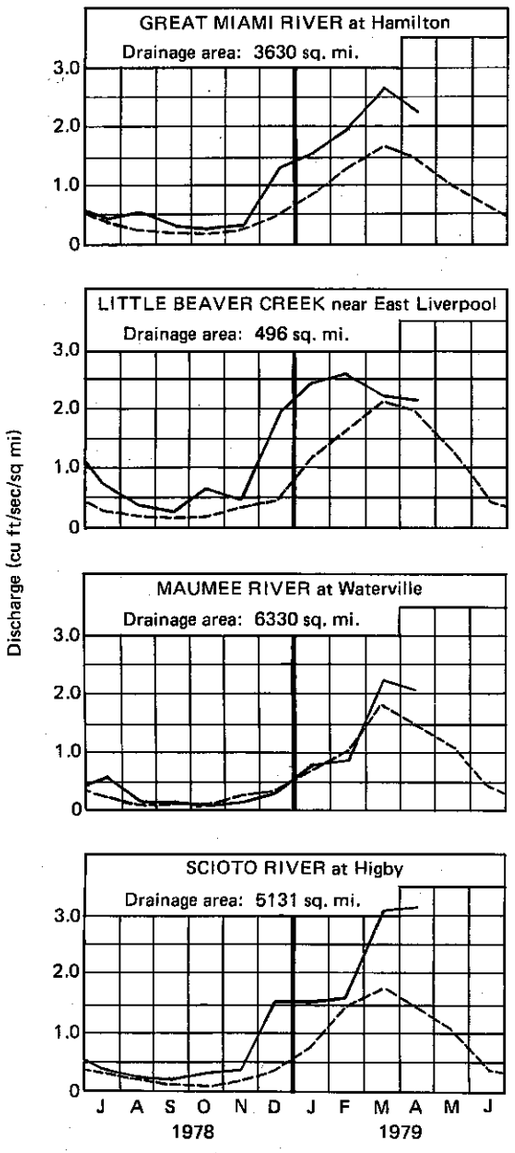
Precipitation is above normal throughout the state for the 1979 water year thus far; the only exception is the Northwest region, where precipitation has been noticeably below normal. The average for the state as a whole is 22.34 inches, 2.76 inches above normal. Regional averages range from 28.04 inches, 6.01 inches above normal, for the South Central region to 15.50 inches, 1.95 inches below normal, for the Northwest region. There has been excellent replenishment to water supplies during the current recharge season.





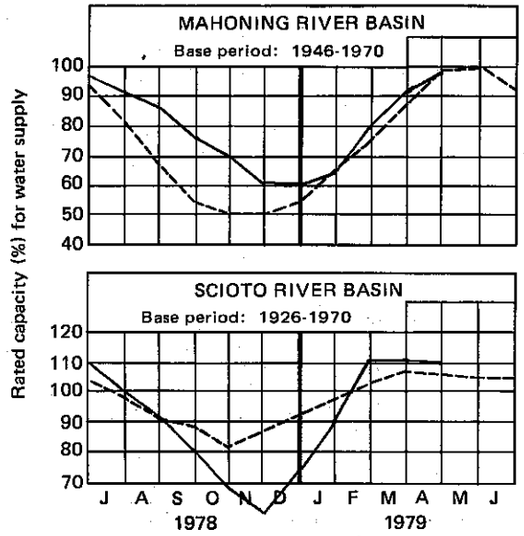
DIVISION OF WATER *John H. Cousins, Chief*

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

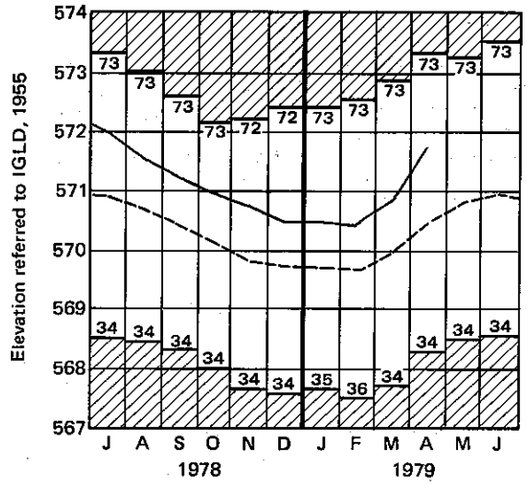
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for April remained rather stable during the month and was at or above normal in both the Mahoning River basin index reservoirs and the Scioto River basin index reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 98 percent of rated capacity for water supply compared to 93 percent for last month and 97 percent for April 1978. Storage at the month end for the Scioto basin index reservoirs was 110 percent of rated capacity for water supply compared to 111 percent for last month and 113 percent for April 1978.

STREAMFLOW for April was normal throughout the state; the only exception was in central Ohio, where streamflow for the Scioto River at Higby was moderately excessive for the month. Mean discharge and percent of normal for April for the index gaging stations were as follows: Great Miami River, 8,314 cfs, 161 percent; Little Beaver Creek, 1,093 cfs, 120 percent; Maumee River, 12,820 cfs, 141 percent; Scioto River, 16,020 cfs, 215 percent. Cumulative runoff and departures from normal for the water year thus far for the index gaging stations are as follows: Great Miami River, 11.73 inches, 4.88 inches above normal; Little Beaver Creek, 14.01 inches, 5.25 inches above normal; Maumee River, 7.10 inches, 0.01 inch below normal; Scioto River, 13.11 inches, 4.99 inches above normal.

LAKE ERIE LEVELS

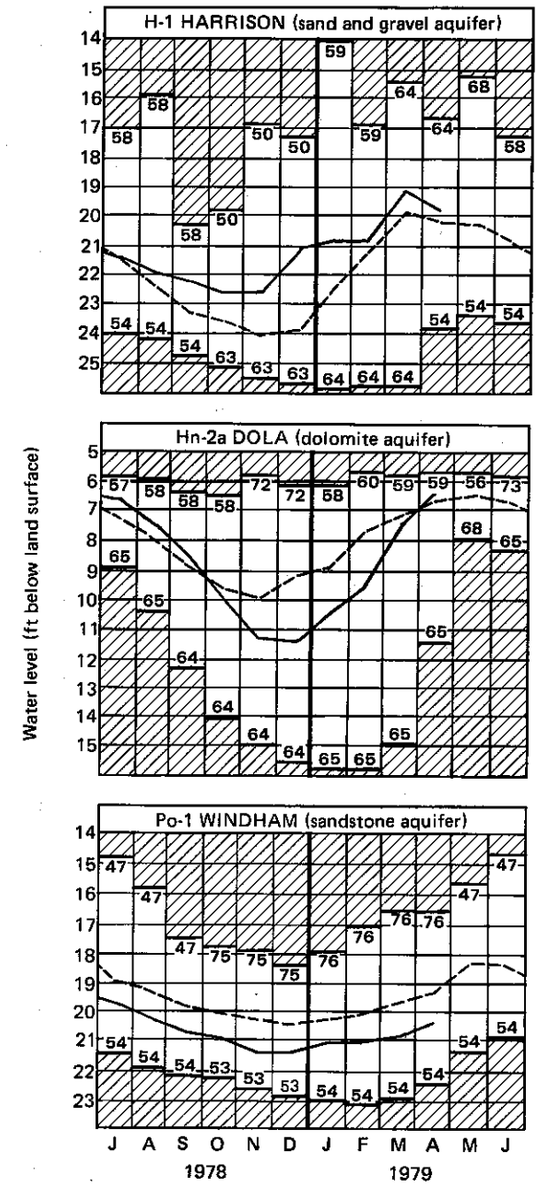


Base period: 1900-1974

LAKE ERIE level rose markedly during April in response to the above-normal precipitation over the Lake Erie drainage basin and a noticeable reduction in evaporation owing to below-normal temperatures and a high percentage of cloud cover in March and April. The mean level for April was 571.79 feet above IGLD (1955), 0.86 foot above last month's mean level and 1.31 feet above normal. The lake level is 0.47 foot below the level observed for April 1978 and 3.19 feet above Low Water Datum.

GROUND-WATER LEVELS for April in general showed normal rises throughout the state; the only exception was in the southern portion of the state, where precipitation was below normal in March and recharge for March and April was below that normally observed. Water levels in consolidated-rock aquifers showed marked rises in response to delayed recharge from the previous month's precipitation; in fact, rises this month were noticeably above those normally observed. Water levels in unconsolidated sand and gravel aquifers generally remained rather constant or showed a moderate decline owing to the lack of recharge during the month. Generally, water levels throughout the state are slightly below those levels observed for April 1978, but are slightly above normal. The ground-water supply situation remains very favorable for the water year thus far.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal ----- current ——

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Streamflow and reservoir storage data:
U.S. Geological Survey, Water Resources Division.

Lake Erie level data:
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Editing, cartography, and production by staff of the Division of Geological Survey, Ohio Department of Natural Resources.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation at the end of the current recharge season, although satisfactory, was not as good as might have been expected. Precipitation for May was generally above normal, despite the lack of rain during the first three weeks of the month. Reservoir storage was at or slightly above normal. Streamflow and ground-water storage fell below normal for most areas in the state. Lake Erie level rose slightly and was noticeably above normal for May.

NOTES AND COMMENTS

NEW PUBLICATIONS

The Division of Water announces the availability of three new county ground-water resources maps.

The ground-water resources of Holmes County, by Katie Crowell.
The ground-water resources of Lake County, by James J. Schmidt.
The ground-water resources of Portage County, by Alfred C. Walker.

The cost of each map is $2.85, including tax and mailing.

The Division of Geological Survey announces the availability of two Reports of Investigations.

Report of Investigations 108. *An evaluation of "Newberry" analysis data on the Brassfield Formation (Silurian), southwestern Ohio,* by David A. Stith and Ronald D. Stieglitz. 11 p., 7 figs., 1 table, 1979. $1.25 plus 5 cents tax in Ohio.

Report of Investigations 109. *Surficial materials of Summit County, Ohio,* by Robert G. Van Horn. Map, one sheet with text, 1979. 75 cents plus 4 cents tax in Ohio.

The Division of Water and Division of Geological Survey publications may be ordered from Publications, Ohio Department of Natural Resources, Division of Geological Survey, Fountain Square, Building B, Columbus, Ohio 43224. Checks should be made payable to the Division of Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
James A. Rhodes Governor *Robert W. Teater Director*

MAY 1979

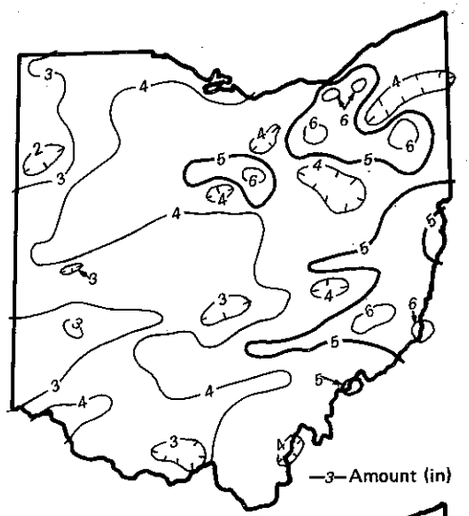
monthly water inventory report for ohio

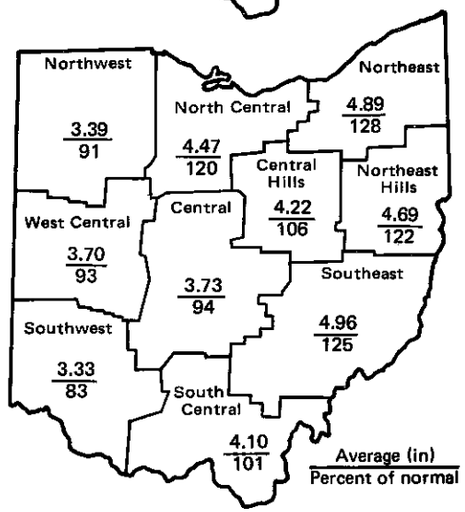
Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for May was above normal throughout most of the state; the only exceptions were the Northwest, West Central, Central, and Southwest regions, where precipitation was below normal. The average for the state as a whole was 4.15 inches, 0.24 inch above normal. Regional averages ranged from 4.96 inches, 0.98 inch above normal, for the Southeast region to 3.33 inches, 0.67 inch below normal, for the Southwest region. Barnesville, Belmont County, reported the greatest amount of precipitation, 6.97 inches, for the month, and Van Wert, Van Wert County, reported the least amount, 1.79 inches. About two-thirds of the state received between 4 and 5 inches of precipitation during May. The western and central areas received between 2 and 4 inches, and areas in the northeastern and eastern portions of the state received between 5 and 6 inches. Isolated areas in northern and eastern Ohio received more than 6 inches of precipitation. The bulk of May precipitation came during the last seven days of the month. Generally, the first three weeks were very dry; the only exceptions were amounts of 1 inch or more produced by local thunderstorms in isolated areas. Thus, the nominal recharge season for water supplies abruptly ended. Precipitation for the 1979 calendar year for the state as a whole averaged 16.38 inches, 0.39 inch above normal. Regional averages ranged from 18.71 inches, 1.96 inches above normal, for the Southeast region to 12.13 inches, 1.87 inches below normal, for the Northwest region.

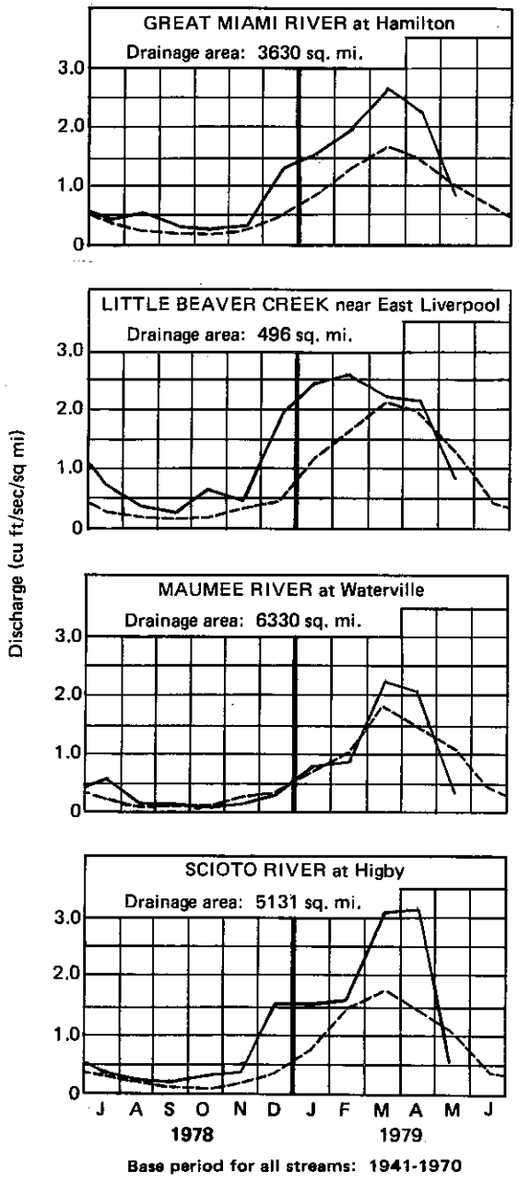
Precipitation for the first nine months of the 1979 water year for the state as a whole averages 26.52 inches, 3.04 inches above normal. Regional averages range from 32.14 inches, 6.04 inches above normal, for the South Central region to 18.89 inches, 2.30 inches below normal, for the Northwest region. All regions in the state with the exception of the Northwest region have recorded above-normal precipitation for the water year thus far. Departures from normal range from 6.99 inches above normal for the Southeast region to 2.30 inches below normal for the Northwest region. The 1979 recharge season proved to be very good throughout the state. Recharge for the water year started early in October in most areas of the state and ended about the first week of May.





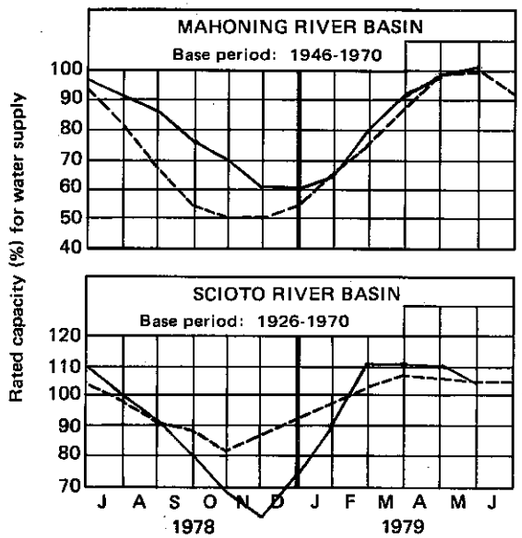
DIVISION OF WATER *John H. Cousins, Chief*

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

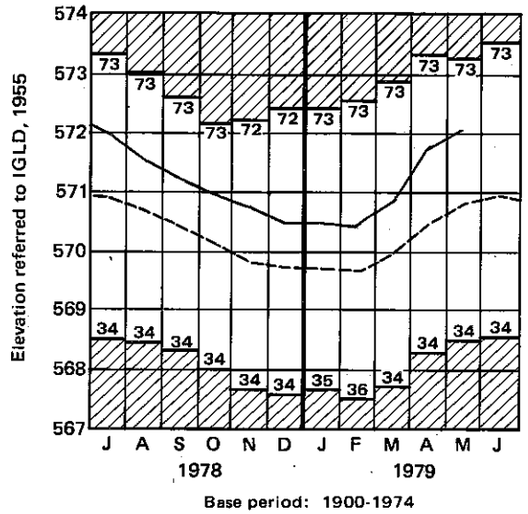
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for May increased slightly in the Mahoning River basin index reservoirs and declined slightly in the Scioto River basin index reservoirs. Storage for water supply was at or only slightly above normal in both index basins. Reservoir storage at the month end for the Mahoning basin index reservoirs was 101 percent of rated capacity for water supply compared to 98 percent for last month and 108 percent for May 1978. Storage at the month end for the Scioto basin index reservoirs was 104 percent of rated capacity for water supply compared to 110 percent for last month and 113 percent for May 1978. The rains during the last week of the month helped to maintain reservoir storage at normal levels.

STREAMFLOW for May was below normal throughout most of the state. However, flow in the southwestern portion of the state was only slightly deficient. Flows were generally deficient throughout most of the state during the last two weeks of the month. Mean discharge and percent of normal for May for the index gaging stations were as follows: Great Miami River, 2,882 cfs, 85 percent; Little Beaver Creek, 386 cfs, 62 percent; Maumee River, 2,760 cfs, 42 percent; Scioto River, 2,647 cfs, 47 percent.

LAKE ERIE LEVELS

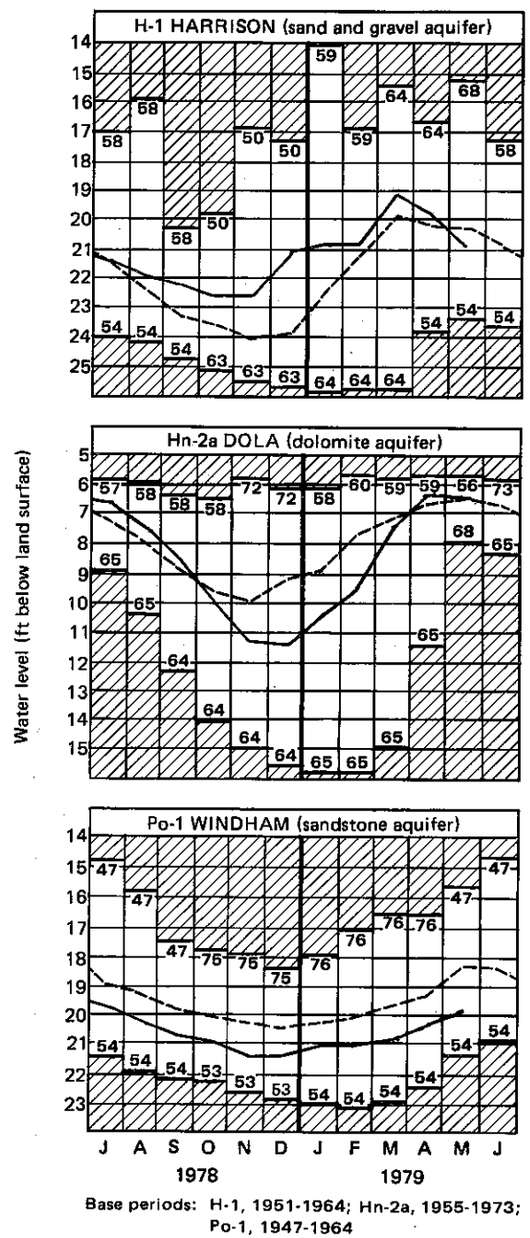


Base period: 1900-1974

LAKE ERIE mean level for May was 572.09 feet above IGLD (1955), 0.30 foot above last month's level and 1.29 feet above normal. The level is 0.29 foot below the mean level observed for May 1978 and 3.49 feet above Low Water Datum.

GROUND-WATER LEVELS for May in general showed marked declines throughout the state in response to the below-normal precipitation during the first three weeks of the month; the only exception was in some consolidated-rock aquifers, where water levels continued to rise slightly or leveled off during the month. Water levels in unconsolidated sand and gravel aquifers adjacent to streams rose slightly at the month end in response to the heavy rains during the last week of May. Generally, net declines in water levels were noticeably greater than normal in most index wells; the only exception was the sandstone aquifer represented by index well Po-1 at Windham, Portage County, which showed a net rise for the month. Ground-water levels in general were below normal and below those levels observed for May 1978. The ground-water supply situation throughout the state remains satisfactory at the present time.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal ----- current ——

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Editing, cartography, and production by staff of the Division of Geological Survey, Ohio Department of Natural Resources.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation at the end of June remained favorable throughout the state. Precipitation for the state as a whole was normal for the month. Streamflow and reservoir storage continued to be near normal; ground-water storage was generally below normal. Lake Erie level rose slightly, which is normal for June, and continues to be noticeably above normal.

NOTES AND COMMENTS

INDUSTRIAL WATER-USE SURVEY FOR OHIO BEING CONDUCTED BY OHIO DEPARTMENT OF NATURAL RESOURCES

The Ohio Department of Natural Resources (ODNR) will survey more than 17,000 manufacturing plants in Ohio to help the state plan for its future water needs. More than 1,000 plants in Delaware and Licking Counties were surveyed in a pilot study during the past year. Manufacturing plants using more than 1,000 gallons of water daily will be surveyed through a questionnaire distributed by ODNR Division of Water. The Division of Water is conducting the survey in cooperation with the U.S. Geological Survey as part of a national water-use survey.

"This water-use information and other data to be gathered are important to water-resource management and planning in Ohio, "said, Robert W. Teater, ODNR Director. "The inventory will provide a base which can be used in planning for future water needs." The first complete state water-use inventory was prepared by the Division of Water in 1955. At that time manufacturing plants used a total of 3.1 billion gallons of water daily with 255 million gallons of that from public supplies. Although the number of industrial plants have increased in Ohio, there was a 6.5 percent decrease in the total industrial use of water from 1955 to 1970. This is because supply and demand for water prompted water users to adopt plans for conservation of their water resources; recycling water has been one of the most effective conservation measures implemented by plants.

Information gathered through the water-use survey will include: type of water supply (public or private); source of water; amount of water used; purpose of water use; and amount of water discharged or recycled. Survey data will be evaluated and computerized in order to make information easily accessible to local and state officials and planners responsible for designing and building water-supply systems. Ohio is one of the five leading states in the use of industrial water; however, Ohio also has plentiful water resources from Lake Erie, the Ohio River and other rivers and streams, and ground-water supplies.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

JUNE 1979

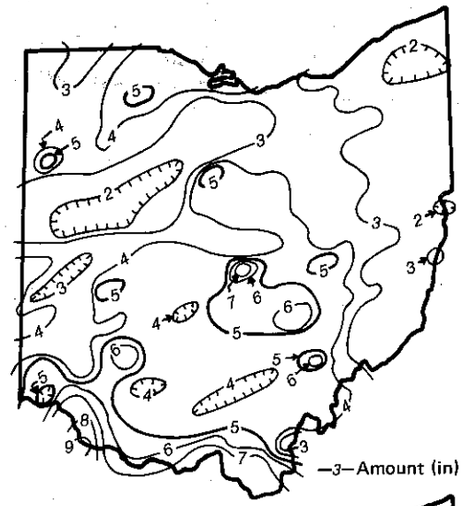
monthly water inventory report for ohio

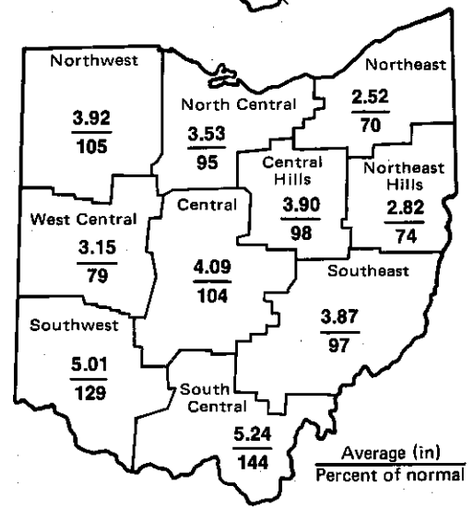
Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for June was normal for the state as a whole. Generally, precipitation was above normal in the western half of the state and below normal in the eastern half. The average for the state as a whole was 3.81 inches, 0.01 inch below normal. Regional averages ranged from 5.24 inches, 1.60 inches above normal, for the South Central region to 2.52 inches, 1.08 inches below normal, for the Northeast region. Anthony Meldahl Lock and Dam, Clermont County, reported the greatest amount of precipitation, 9.55 inches, for the month, and Colebrook, Ashtabula County, reported the least amount, 1.34 inches. The bulk of the month's precipitation was produced by heavy scattered thunderstorms throughout the state. Small areas in the west-central and northeastern portions of the state received less than 2 inches of precipitation for the month; a small area in southwestern Ohio along the Ohio River valley received in excess of 7 inches. Precipitation for the first six months of the 1979 calendar year is above normal for most of the state; the only exceptions are the Northwest, West Central, and Central regions, where precipitation is below normal. The average for the state as a whole is 20.19 inches, 0.38 inch above normal. Regional averages range from 22.69 inches, 0.92 inch above normal, for the Southwest region to 16.05 inches, 1.68 inches below normal, for the Northwest region.

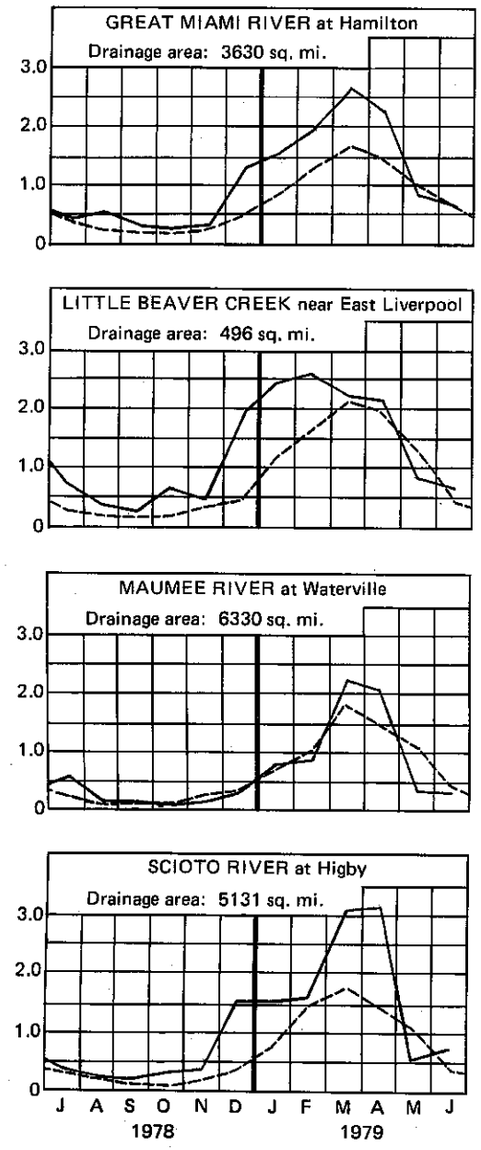
Precipitation for the 1979 water year thus far for the state as a whole averages 30.30 inches, 2.99 inches above normal. Regional averages range from 37.38 inches, 7.64 inches above normal, for the South Central region to 22.81 inches, 2.11 inches below normal, for the Northwest region. The Northwest region is the only region for which precipitation is below normal for the water year.





DIVISION OF WATER *John H. Cousins, Chief*

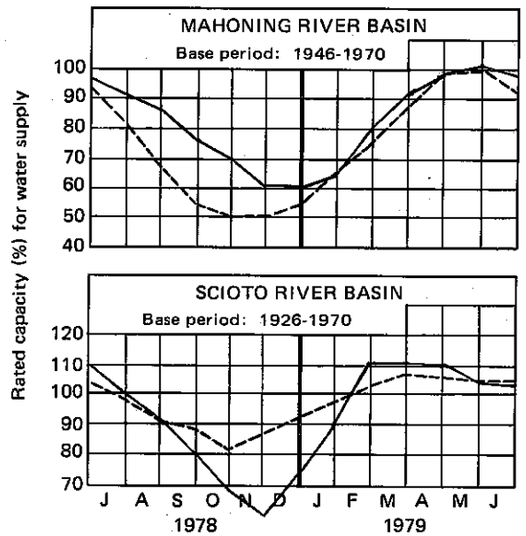
MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

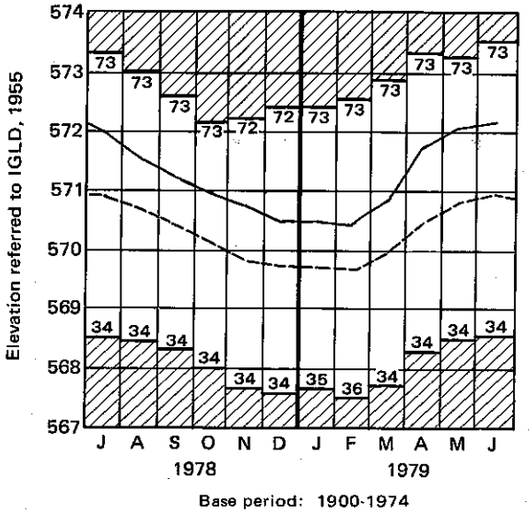
STREAMFLOW for June was normal throughout the state. The flows were primarily sustained by the excessive precipitation during the last week of May, which produced high flows during the first week of June. Mean discharge and percent of normal for June for the index gaging stations were as follows: Great Miami River, 2,257 cfs, 104 percent; Little Beaver Creek, 332 cfs, 151 percent; Maumee River, 1959 cfs, 75 percent; Scioto River, 3,874 cfs, 190 percent. Runoff for the first nine months of the 1979 water year is above normal throughout the state; the only exception is in the northwestern portion of the state, where runoff has been below normal.

RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply in June decreased slightly during the month and was above normal in the Mahoning River basin index reservoirs and slightly below normal in the Scioto River basin index reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 98 percent of rated capacity for water supply compared to 101 percent for last month and 98 percent for June 1978. Storage at the month end for the Scioto basin index reservoirs was 103 percent of rated capacity for water supply compared to 104 percent for last month and 110 percent for June 1978.

LAKE ERIE LEVELS



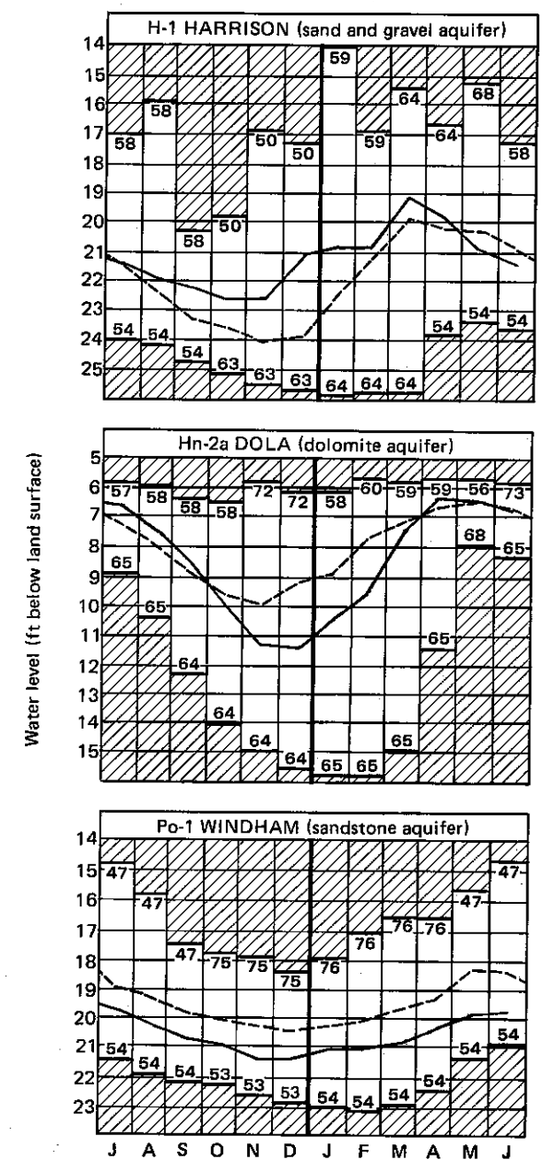
Base period: 1900-1974

LAKE ERIE mean level for June was 572.19 feet above IGLD (1955), 0.10 foot above last month's mean level and 1.25 feet above normal. The lake level is 0.06 foot below the mean level observed for June 1978 and 3.59 feet above Low Water Datum.

GROUND-WATER LEVELS in June declined somewhat less than normally observed; in fact, three of the index wells showed slight net rises for the month. The heavy rains during the last week of May, plus the below-normal temperatures and ample precipitation in June, which reduced evapotranspiration rates, allowed for some recharge to groundwater levels during the month. Water levels are generally below those levels observed for June 1978 and below normal; the only exceptions are observation well Fr-10 at Columbus, Franklin County, where water levels continue to be noticeably above normal, and observation well Hn-20, Hancock County, where water levels are slightly above normal.

normal ----- current ——

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

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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. Corps of Engineers, Detroit District.

Editing, cartography, and production by staff of the Division of Geological Survey, Ohio Department of Natural Resources.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation for Ohio remains very favorable for July. Precipitation was noticeably above normal for most areas of the state. Reservoir storage and streamflow were above normal for the month. Ground-water storage improved and was above normal in many areas of the state. Lake Erie mean level declined only 0.01 foot from last month's level and remains noticeably above normal.

NOTES AND COMMENTS

The purpose of this report is to disseminate current hydrologic data in brief form. Observation points have been selected which are considered to be sufficiently representative of water conditions in the state to permit an evaluation of the current water-supply situation. These key observation stations offer the best available data on the basis of (1) accuracy and length of record, (2) minimal artificial effects on data, and (3) availability of records. Data from these stations are collected by various agencies at the end of each month and processed immediately. Because of the time limitations involved, all data must be considered preliminary and may be subject to revision before publication in regular form by the agencies involved. The remarks in this report include the writer's opinions of the cause and significance of the phenomena reported therein. The reader is urged to examine the data and formulate his own evaluation. The author is indebted to the various agencies and individuals who make these data available.

More complete and detailed information can be obtained by writing to the Ohio Division of Water, Bldg. E, Fountain Square, Columbus, Ohio 43224.

NEW PUBLICATION

The Division of Geological Survey announces the availability of Report of Investigations No. 110, *Hydraulic properties of a limestone-dolomite aquifer near Marion, north-central Ohio,* by Stanley E. Norris, 23 p., 22 figs., 4 tables. The publication discusses tests conducted to determine the hydraulic properties of a regionally extensive carbonate-rock aquifer near Marion, Ohio.

The publication may be ordered from Publications, Ohio Department of Natural Resources, Division of Geological Survey, Bldg. B, Fountain Square, Columbus, Ohio 43224 at a cost of $1.25 plus 5 cents tax in Ohio and 13 cents mailing charge. Make checks payable to the Division of Geological Survey.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

JULY 1979

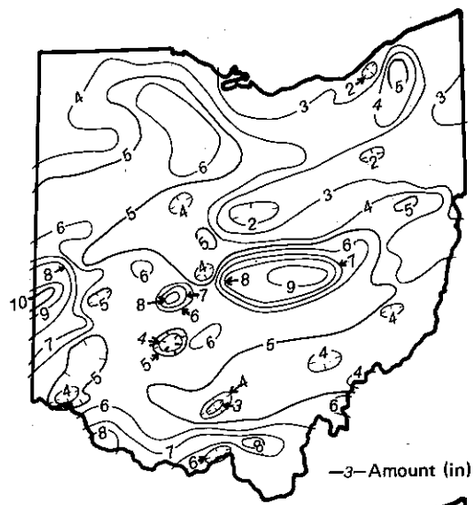
monthly water inventory report for ohio

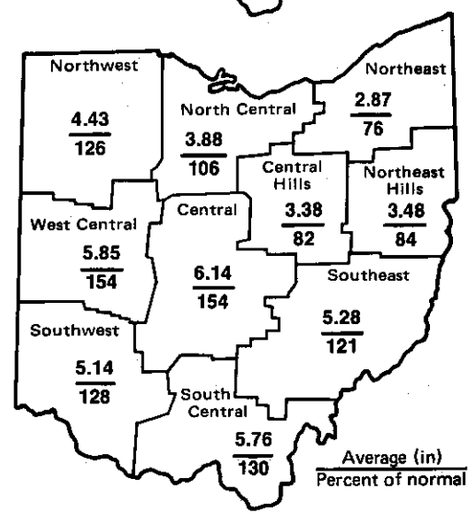
Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for July was above normal for most of the state; the only exceptions were the Northeast, Cental Hills, and Northeast Hills regions, where precipitation was below normal. The average for the state as a whole was 4.62 inches, 0.64 inch above normal. Regional averages ranged from 6.14 inches, 2.14 inches above normal, for the Central region to 2.87 inches, 0.91 inch below normal, for the Northeast region. West Manchester, Preble County, reported the greatest amount of precipitation, 10.17 inches, for the month, and Akron-Canton Airport Weather Service office reported the least amount, 1.96 inches. Generally the northern half of the state received between 2 and 5 inches of precipitation, and the southern half received between 4 and 8 inches; a few stations in the southern half of the state reported in excess of 9 inches for the month. The bulk of July precipitation was produced by widely scattered thunderstorms during every week of the month; several storms of high intensity were observed in the southern portion of the state, and several stations reported measurable amounts of precipitation on seven consecutive days during the last week of the month. Although it may be considered a wet month insofar as agriculture is concerned, it was most beneficial to ground-water supplies. Precipitation for the 1979 calendar year thus far is above normal throughout most of the state; the only exceptions are the Northwest and Northeast regions, where precipitation continues to be below normal. The average for the state as a whole is 24.81 inches, 1.02 inches above normal. Regional averages range from 28.41 inches, 2.13 inches above normal, for the South Central region to 20.48 inches, 0.76 inch below normal, for the Northwest region.

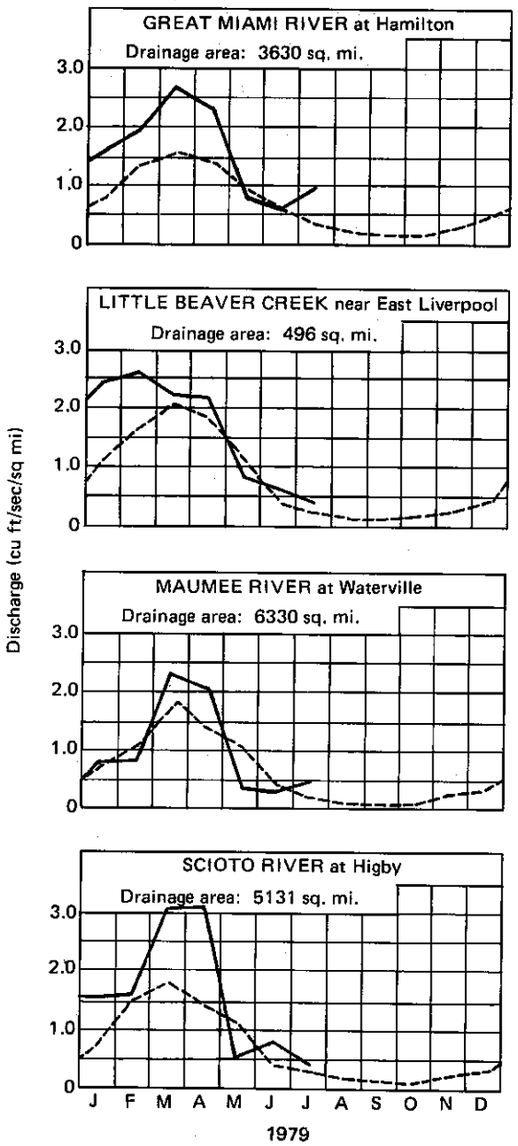
Precipitation for the first 10 months of the 1979 water year for the state as a whole averages 34.92 inches, 3.63 inches above normal. Regional averages range from 43.14 inches, 8.97 inches above normal, for the South Central region to 27.24 inches, 1.19 inches below normal, for the Northwest region.





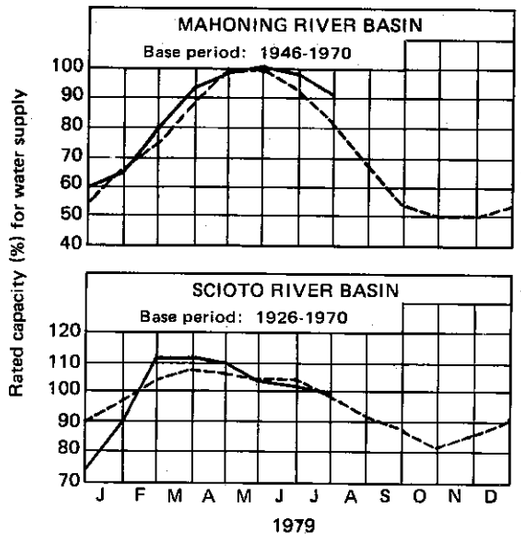
DIVISION OF WATER *John H. Cousins, Chief*

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

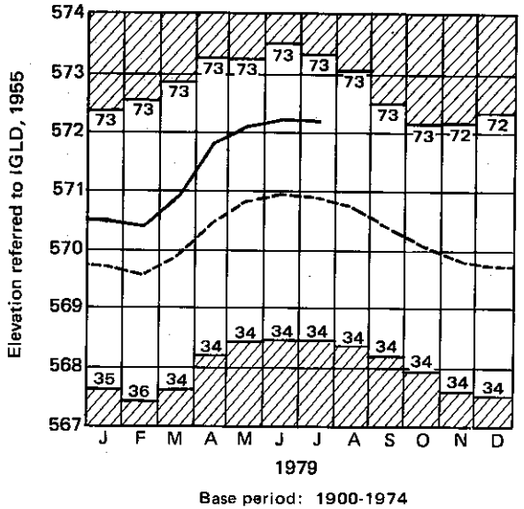
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply in July showed only a slight decline and was above normal at the month end for both the Mahoning River basin and the Scioto River basin index reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 91 percent of rated capacity for water supply compared to 98 percent for last month and 91 percent for July 1978. Reservoir storage at the month end for the Scioto basin index reservoirs was 99 percent of rated capacity for water supply compared to 103 percent for last month and 101 percent for July 1978. The above-normal precipitation for most areas of the state was instrumental in maintaining favorable storage in most water-supply reservoirs throughout the state.

STREAMFLOW for July was above normal throughout most of the state and was excessive in the western portion. Generally, flows in the central and western portions of the state were excessive during the first half of the month and normal the last half. Mean discharge and percent of normal for July for the index gaging stations were as follows: Great Miami River, 3,395 cfs, 253 percent; Little Beaver Creek, 209 cfs, 183 percent; Maumee River, 3,188 cfs, 238 percent; Scioto River, 2,198 cfs, 139 percent. Cumulative runoff and departures from normal for the respective gaging stations were as follows: Great Miami River, 14.42 inches, 5.39 inches above normal; Little Beaver Creek, 16.14 inches, 4.54 inches above normal; Maumee River, 8.53 inches, 1.57 inches below normal; Scioto River, 15.03 inches, 3.43 inches above normal.

LAKE ERIE LEVELS

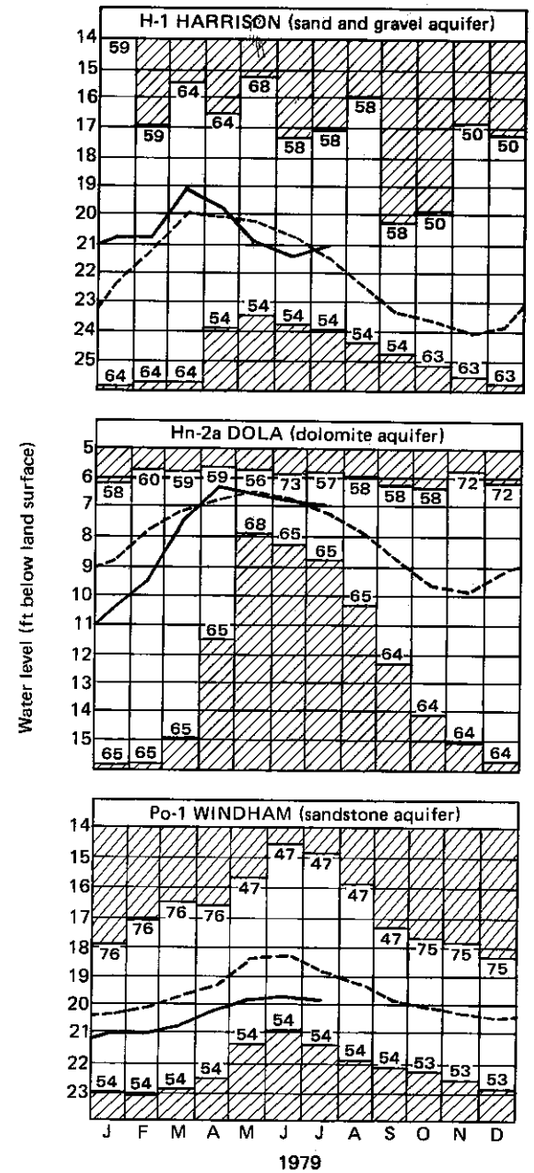


Base period: 1900-1974

LAKE ERIE mean level for July was 572.18 feet above IGLD (1955), 0.01 foot below last month's mean level and 1.28 feet above normal. The lake level is 0.23 foot above the level observed for July 1978 and 3.58 feet above Low Water Datum.

GROUND-WATER LEVELS throughout the state in July responded directly to the precipitation received in the respective areas during the month. As a result, ground-water storage in general benefited from the above-normal precipitation in most areas of the state. Generally, declines in ground-water levels were not nearly as great as normally expected in July. Water levels representing unconsolidated sand and gravel aquifers showed noticeable rises during the month in response to above-normal precipitation; the only exception was in the northeast, where water levels declined as usual in response to deficient precipitation. Water levels in consolidated-rock aquifers generally remained rather stable with minimal declines for the month. Ground-water levels in many areas of the state are now above those levels observed at this time last year and above normal. The ground-water storage situation improved noticeably during July.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal ----- current ——

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Lake Erie level data:
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Editing by staff of the Division of Geological Survey, Ohio Department of Natural Resources.

Cartography: Craig A. Schottenstein

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

STREAMFLOW-continued

Beaver Creek, 126 cfs, 184 percent; Maumee River, 4,923 cfs, 827 percent; Scioto River, 7,355 cfs, 814 percent. The mean discharge for the Great Miami River was the highest mean discharge observed for August since the beginning of record in 1927.

SUMMARY

August 1979 was the wettest August of record in the past five decades. Precipitation for August was a record high for many National Weather Service stations, and regional averages were record highs for six of the 10 regions. Streamflow, reservoir storage, and ground-water supplies showed marked improvements for the month. Lake Erie level declined slightly, but remained 1.35 feet above normal.

NOTES AND COMMENTS

NEW PUBLICATIONS

The Division of Water announces the availability of two new county ground-water resources maps.

The ground-water resources of Ashland County, **by James J. Schmidt**

The ground-water resources of Trumbull County, **by Katie Shafer Crowell.**

The cost of each map is $2.50, including tax and mailing, and may be purchased from Publicatons, Division of Geological Survey, Ohio Department of Natural Resources, Fountain Square, Bldg. B, Columbus, Ohio 43224.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

AUGUST 1979

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

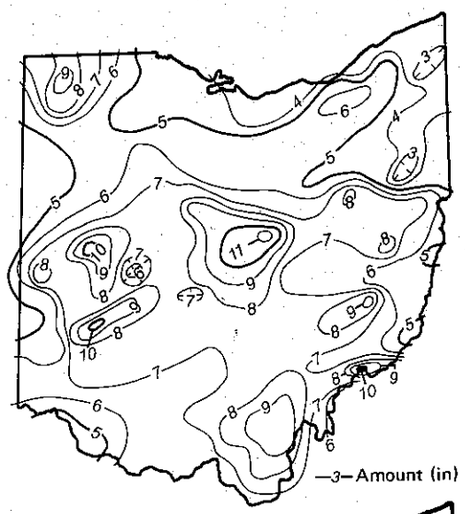
PRECIPITATION for August was the greatest amount recorded for the month in the past five decades. Averages for most regions were the highest observed in 50 years; the only exceptions were the Northwest, North Central, Northeast, and Northeast Hills regions, where regional averages for August were greatest in 1975. The average for the state as a whole was 6.55 inches, 3.55 inches above normal. Regional averages ranged from 8.08 inches, 5.16 inches above normal, for the Central region to 4.06 inches, 0.94 inch above normal, for the Northeast region.

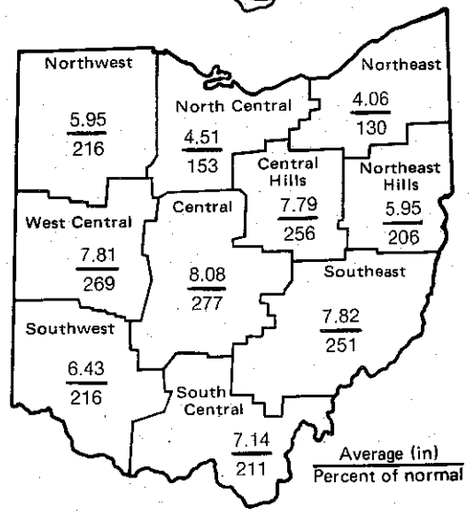
Mt. Liberty, Knox County, reported the greatest amount of precipitation, 11.14 inches, for the month and Colebrook, Ashtabula County, reported the least amount, 2.04 inches. Other stations reporting greater than 10 inches of precipitation for August were: Dayton 5SE, Montgomery County, 10.46 inches; Sidney, Shelby County, 10.17 inches; Centerburg, Knox County, 10.31 inches; Marietta Lock, Washington County, 10.37 inches; Utica, Licking County, 10.53 inches.

There was precipitation on the average of 15 days during the month and during every week of the month throughout the state. The bulk of August precipitation fell in widely scattered heavy thunderstorms. As a result there was considerable flooding of small tributaries in low-lying areas in many portions of the state; notable floods were observed at Fairfield, Butler County, on Pleasant Run and at Blancs Siding (Kerr), Gallia County, on Chickamauga Creek. The heavy rains produced noticeable recharge to water supplies in August. The wet weather also caused some problems with agriculture, namely lower quality grains because of increased moisture content, excessive smut in corn, low-grade melons because of high water content, and difficulty in harvesting truck crops from wet fields.

Precipitation for the 1979 calendar year was above normal throughout the state. The average for the state as a whole was 31.36 inches, 4.57 inches above normal. Regional averages ranged from 35.68 inches, 7.46 inches above normal, for the Southeast region to 26.01 inches, 0.20 inch above normal, for the Northeast region.

Precipitation for the 1979 water year is noticeably above normal throughout the state. The average for the state as a whole is 41.47 inches, 7.18 inches above normal. Regional averages range from 50.28 inches, 12.73 inches above normal, for the South Central region to 33.19 inches, 2.00 inches above normal, for the Northwest region.

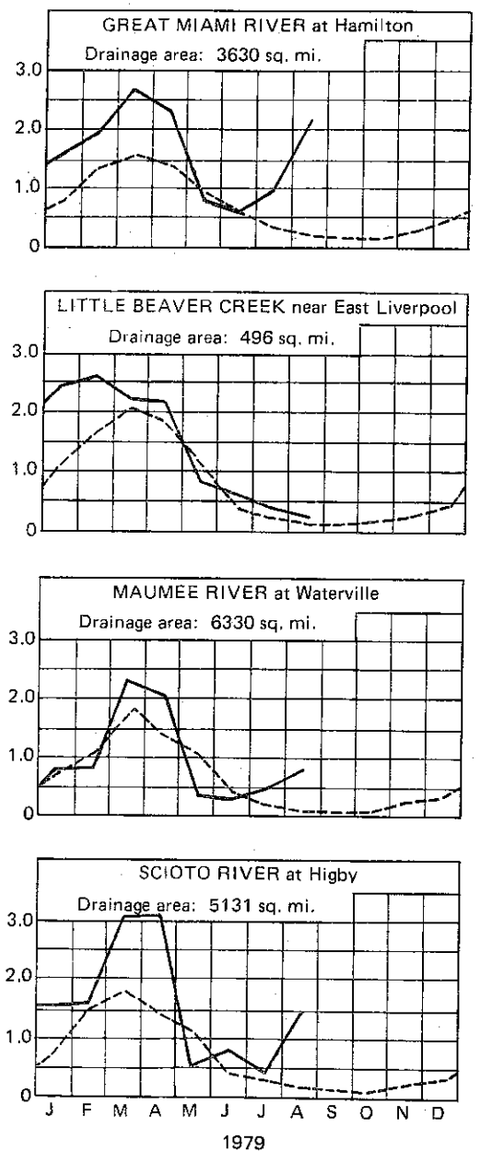




DIVISION OF WATER

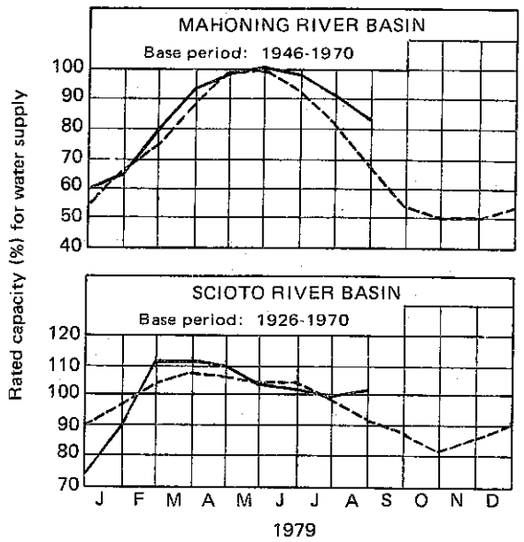
John H. Cousins, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

RESERVOIR STORAGE FOR WATER SUPPLY

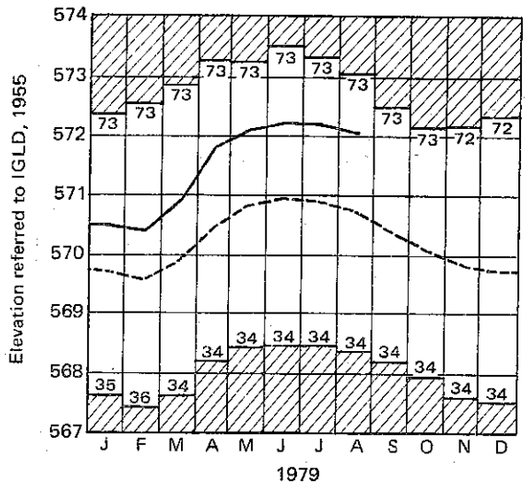


RESERVOIR STORAGE for water supply for August declined in the Mahoning River basin index reservoirs, but increased in the Scioto River basin index reservoirs in response to the excessive rainfall over the drainage areas. The above-normal to excessive precipitation throughout most of the state provided marked improvements in reservoir storage for water supply during August. Reservoir storage at the month end for the Mahoning basin index reservoirs was 83 percent of rated capacity for water supply compared to 91 percent for last month and 87 percent for August 1978. Reservoir storage at the month end for the Scioto basin index reservoirs was 102 percent of rated capacity for water supply compared to 99 percent for last month and 91 percent for August 1978.

STREAMFLOW for August was excessive throughout most of the state; the only exception was the eastern portion of the state, where it was normal. Reports of flash flooding were received from many low-lying areas throughout the state during the month. Two areas of notable interest and which have been verified were: Fairfield, Butler County, on Pleasant Run, where on August 1st several homes and a shopping center were flooded, and at Blancs Siding near Kerr, Gallia County, on Chickamauga Creek, where on August 19th where water backed up into about 30 homes. It was reported that more than 3 inches of precipitation fell in about one hour in each of these locations. Mean discharge and percent of normal for August for the index gaging stations were as follows: Great Miami River, 7,814 cfs, 1003 percent; Little

continued on back page

LAKE ERIE LEVELS



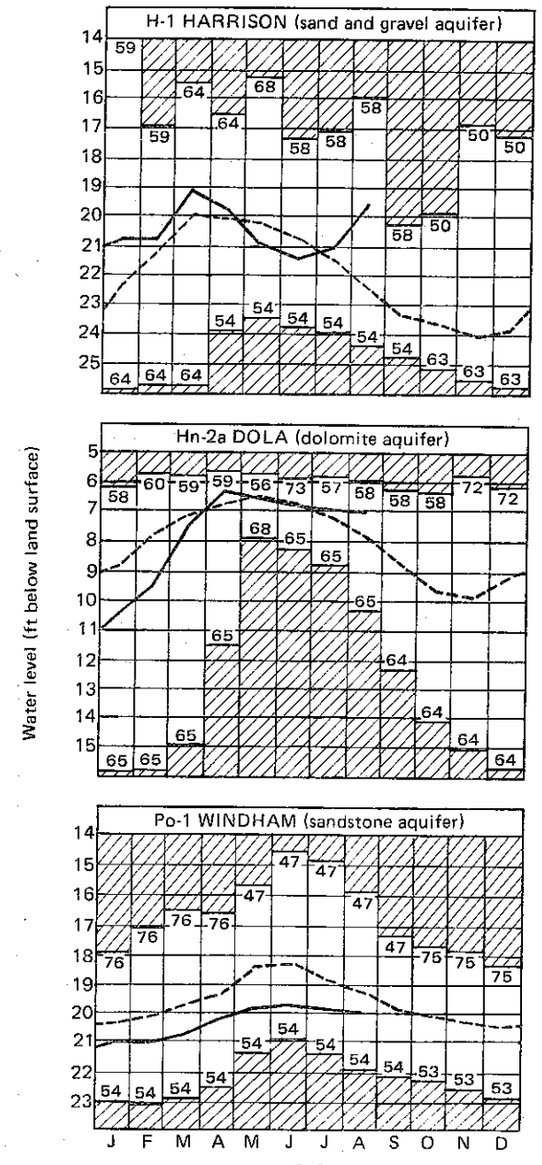
Base period: 1900-1974

LAKE ERIE mean level for August was 572.06 feet above IGLD (1955), 0.12 foot below last month's mean level and 1.35 feet above normal. The lake level is 0.40 foot above the mean level observed for August 1978 and 3.46 feet above Low Water Datum.

GROUND-WATER LEVELS showed unusual rises for August throughout th state; the only exceptions were the consolidated-rock aquifers in the northeast, where water levels remained stable or declined slightly. The record-high rains during the month produced above-normal recharge to ground-water supplies for August. Water levels were generally above those levels observed last month in about half of the wells and only slightly below July levels in the remaining wells, which primarily represent the consolidated-rock aquifers of the state. Water levels in general are above those levels observed for August 1978 and above normal. The total benefit to ground-water supplies from unseasonal recharge will not be known for several months. Ground-water supplies are certainly in a much better position now than they have been for the past several months.

normal ----- current ——

GROUND-WATER LEVELS



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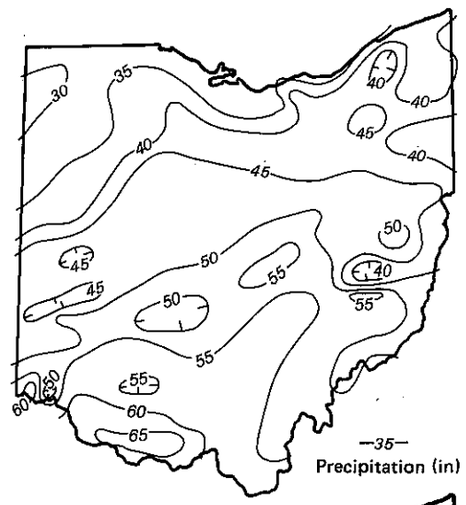
Cartography: Craig A. Schottenstein

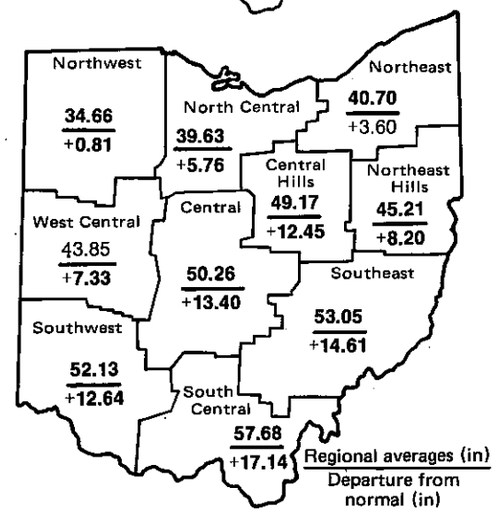
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation improved markedly during the last two months of the 1979 water year owing to unusual recharge to water supplies as a result of excessive precipitation in those months. In general, the water-supply situation was only slightly favorable during most of the water year. Precipitation for September was noticeably above normal except for the northwestern portion of the state. Reservoir storage, streamflow, and ground-water storage showed marked improvements during the month. Lake Erie level declined slightly, but remains noticeably high.

1979 WATER YEAR





DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

SEPTEMBER 1979

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

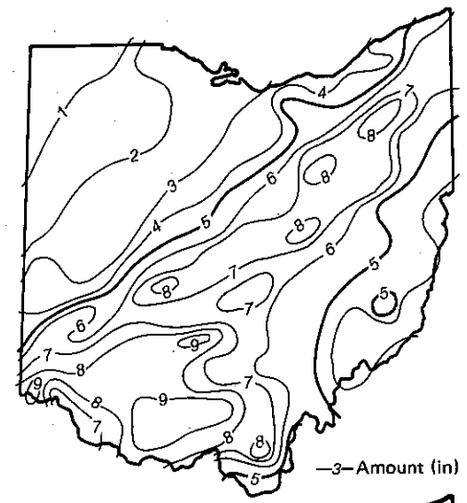
PRECIPITATION

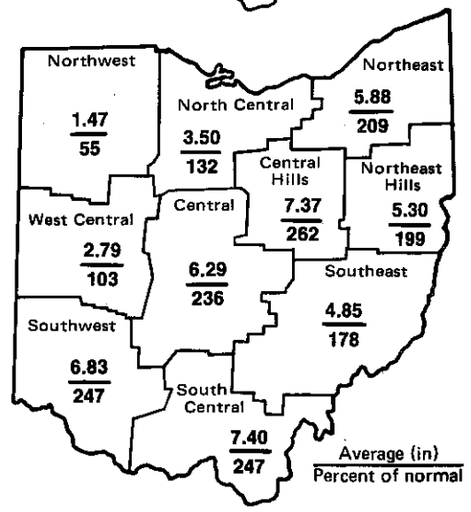
PRECIPITATION for September for most of Ohio was noticeably above normal for the second consecutive month; the only exception was the Northwest region, where precipitation was deficient. The average for the state as a whole was 5.17 inches, 2.42 inches above normal; this was the highest state average for September since 1972. Regional averages ranged from 7.40 inches, 4.41 inches above normal, for the South Central region to 1.47 inches, 1.19 inches below normal, for the Northwest region. The Central Hills region showed the greatest surplus of precipitation for the month, 4.56 inches. Piketon, Pike County, reported the greatest amount of precipitation, 9.63 inches, for the month, and Stryker, Williams County, reported the least amount, 0.67 inch.

The bulk of the month's precipitation was produced by the remnants of Hurricane Frederick, which passed through Ohio on the 13th and 14th and resulted in serious flooding of streams and claimed at least three lives. There was heavy rainfall within a band about 50 miles wide from Cincinnati through Columbus to Youngstown. The greatest amount of precipitation reported from this storm was 6.94 inches at Ravenna, Portage County. Many weather stations along the path of the storm reported in excess of 6.0 inches of precipitation. This storm was reported to have an intensity rating of a 200-year storm. Two other storms which produced substantial amounts of precipitation occurred on the 21st and 28th of September.

Precipitation for the first nine months of the 1979 calendar year remains above normal throughout the state. The average for the state as a whole is 36.53 inches, 6.99 inches above normal. Regional averages range from 42.95 inches, 10.30 inches above normal, for the South Central region to 27.90 inches, 1.24 inches above normal, for the Northwest region. The excessive precipitation during July, August, and September has resulted in marked improvements in the water-supply situation throughout the state.

The 1979 water year (October 1, 1978 to September 30, 1979) proved to be one of the wettest of record in the past 50 years. The average for the state as a whole was 46.64 inches, 9.60 inches above normal. Regional averages ranged from 57.68 inches, 17.14 inches above normal, for the South Central region to 34.66 inches, 0.81 inch above normal, for the Northwest region. An isohyetal map and regional averages and departures from normal for the 1979 water year appear on the last page of this report. Precipitation was above normal in all but three months during the year; these months were November 1978 and March and June 1979. Precipitation was 2.76 inches above normal during the first seven months of the water year, the nominal recharge period. Recharge to water supplies during this period was about average. Precipitation was 6.84 inches above normal during the remaining five months of the water year, the nominal water-supply depletion period. The excessive precipitation during the summer months produced unusual recharge to water supplies, thus resulting in marked improvements in the water-supply situation at the end of the water year.

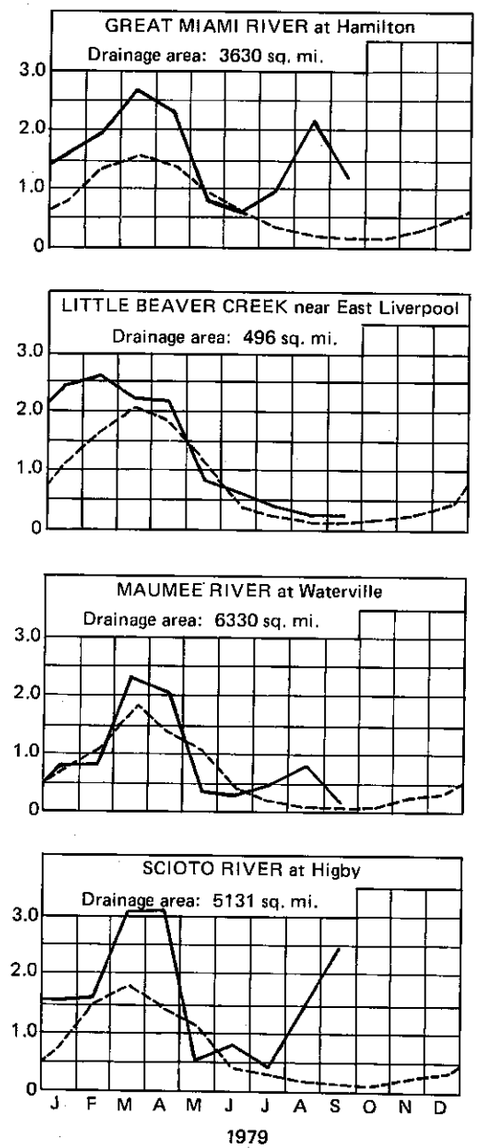




DIVISION OF WATER

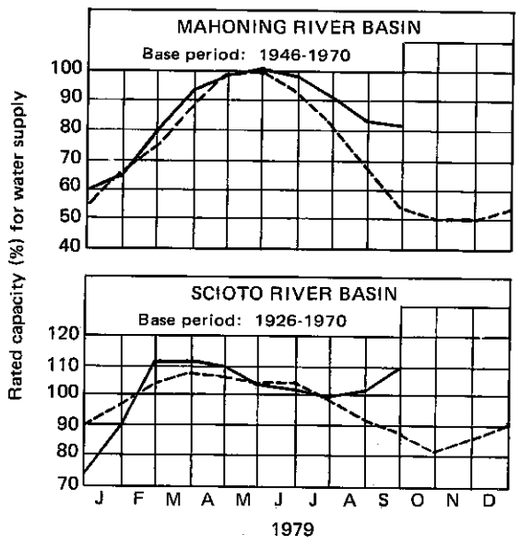
John H. Cousins, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

RESERVOIR STORAGE FOR WATER SUPPLY



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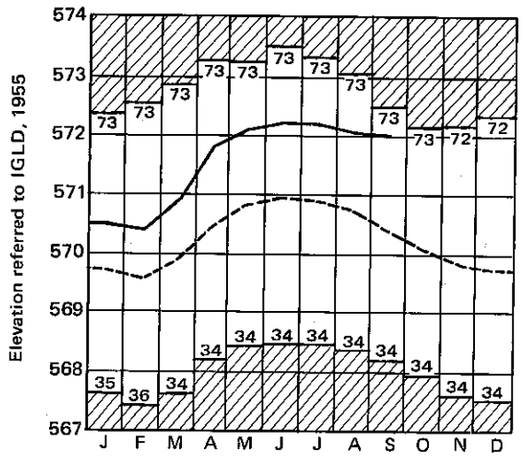
STREAMFLOW for September was excessive throughout the state as a result of the above-normal precipitation in August and September. The heavy rains from the remnants of Hurricane Frederick on September 13th and 14th caused major flooding of many streams throughout the state, with some major damage in low-lying areas and the loss of three lives in central Ohio. Mean discharge and percent of normal for September for the index gaging stations were as follows: Great Miami River, 4,380 cfs, 722 percent; Little Beaver Creek, 130 cfs, 213 percent; Maumee River, 1,391 cfs, 375 percent; Scioto River, 12,460 cfs, 2066 percent. The mean monthly discharge for the Great Miami River at Hamilton was a record high for September for the period of record beginning in 1927. The daily discharge for the Great Miami River, 23,300 cfs, and the Scioto River, 41,700 cfs, exceeded the past record for September for their respective periods of record.

Streamflow was generally normal to excessive throughout most of the state during the 1979 water year; the only exception was in the Maumee River basin, where streamflow was within the lower range of normal flow. Although streamflow was noticeably excessive in many areas of the state throughout the year, there was only a few occurrences of major flooding or serious flood damage in Ohio this year.

LAKE ERIE LEVELS



Base period: 1900-1974

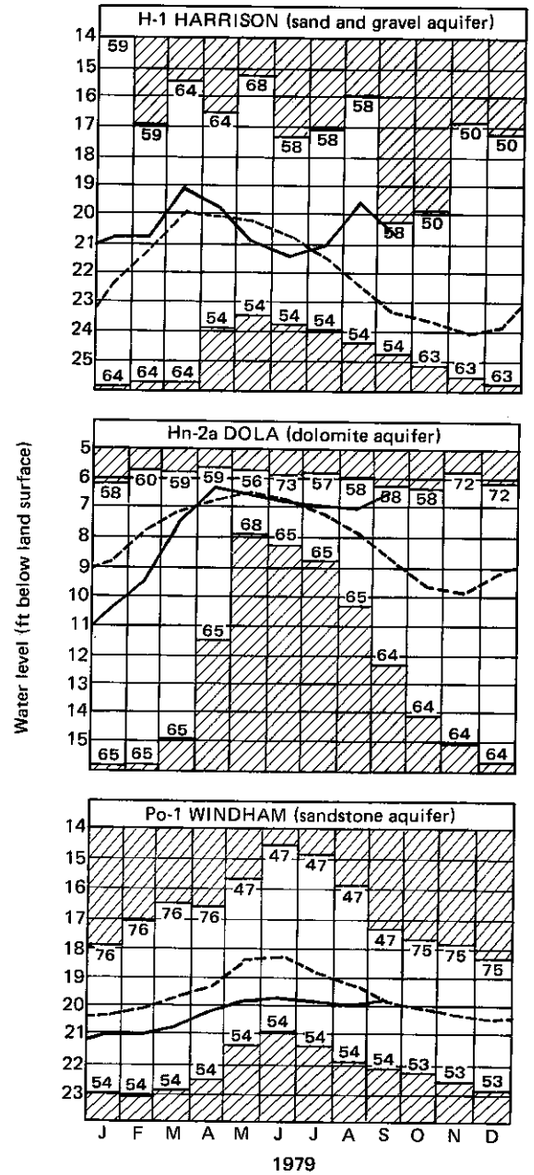
LAKE ERIE mean level for September was 572.00 feet above IGLD (1955), 0.06 foot below last month's mean level and 1.59 feet above normal. The lake level is 0.71 foot above the mean level observed for September 1978 and 3.40 feet above Low Water Datum. The lake level, which had declined to about 1 foot above normal in March, rose markedly in April, May, and June and is now noticeably high for the seventh consecutive year.

GROUND-WATER LEVELS for September showed unequaled rises during September in response to recharge as a result of the excessive precipitation in August and September. As a result, water levels are noticeably above normal throughout most of Ohio. The only index well which did not show a net rise for the month was H-1 near Harrison, Hamilton County; the water level in this well was exceptionally high in August and remained noticeably above normal at the end of September. Ground-water levels in general are noticeably above those levels observed for September 1978 and at or markedly above normal.

Ground-water levels in general were at or below normal for most of the 1979 water year. Although there was good recharge during most of the recharge season, water levels had only returned to near-normal levels by the end of the recharge season. Seasonal declines began in May, and water levels were noticeably below normal until August and September, when unseasonal recharge produced marked rises in water levels. Thus, the ground-water storage situtation was much improved at the end of the water year.

normal ----- current ——

GROUND-WATER LEVELS



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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. Corps of Engineers, Detroit District.

Editing by staff of the Division of Geological Survey, Ohio Department of Natural Resources.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation at the beginning of the 1980 water year for the state as a whole is probably the best it has been in the past 20 years. Precipitation for the first month of the new water year was slightly below normal. Reservoir storage, streamflow, and ground-water storage all remain noticeably above normal. Lake Erie level declined slightly, but remained markedly above normal.

NOTES AND COMMENTS

NEW PUBLICATIONS

The Division of Water announces the availability of two new county ground-water resources maps.

THE GROUND-WATER RESOURCES OF WAYNE COUNTY, by Katie Shafer Crowell.

THE GROUND-WATER RESOURCES OF CUYAHOGA COUNTY, by Katie Shafer Crowell.

In addition, ground-water resources maps are available for the following counties: Ashland, Ashtabula, Columbiana, Delaware, Geauga, Holmes, Lake, Mahoning, Medina, Portage, Trumbull, and Union. The cost of each map is $2.50, including tax and mailing and may be purchased from Publications, Division of Geological Survey, Ohio Department of Natural Resources, Fountain Square, Bldg. B, Columbus, Ohio 43224. Make checks payable to the Division of Geological Survey.

DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

OCTOBER 1979

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

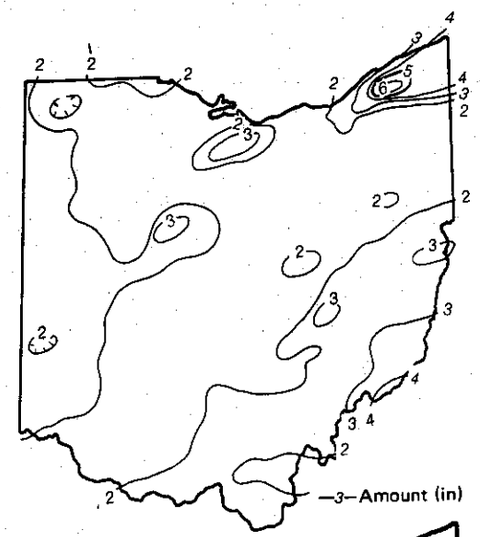
PRECIPITATION

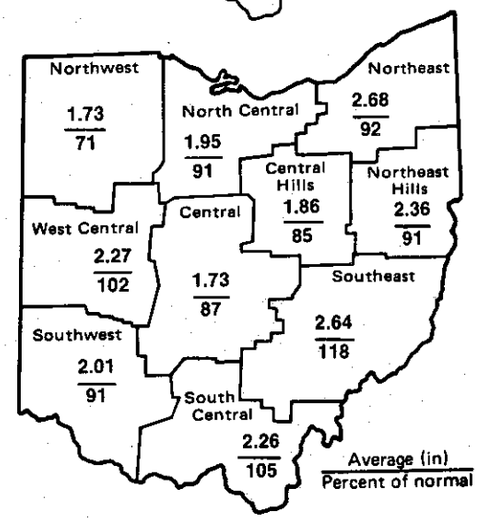
PRECIPITATION for October was below normal for most of the state for the first time in the past four months; the only exceptions were the West Central, South Central, and Southeast regions, where precipitation was slightly above normal. The average for the state as a whole was 2.15 inches, 0.16 inch below normal. Regional averages ranged from 2.68 inches, 0.24 inch below normal, for the Northeast region to 1.73 inches, for the Northwest and the Central region, 0.72 and 0.25 inch below normal, respectively. Chardon, Geauga County, reported the greatest amount of precipitation, 6.29 inches, for the month, and Stryker, Williams County, reported the least amount, 0.57 inch.

October precipitation was produced by intermittent light rainfall during every week of the month. There were measurable amounts of rainfall on an average of 12 days during the month. About half of the state received between 1 and 2 inches of precipitation for the month, and much of the remainder of the state received between 2 and 3 inches; a few isolated stations reported in excess of 3 inches. The extreme northeast corner of the state received 4 to 6.29 inches; it is normal for this part of the state to receive greater amounts of precipitation during the winter months because the winds pick up moisture as they pass over the Great Lakes.

Precipitation continues to be noticeably above normal throughout the state for the 1979 calendar year; the only exception is the Northwest region, where it is normal. The average for the state as a whole is 38.68 inches, 6.83 inches above normal. Regional averages range from 45.21 inches, 10.40 inches above normal, for the South Central region to 29.63 inches, 0.52 inch above normal, for the Northwest region. The water-supply situation for the state insofar as precipitation is concerned is very favorable at this time.

This is the first month of the 1980 water year, which began on October 1,1979, and ends on September 30, 1980. The water year, a common reference period for surface-water reports, also is useful in discussions of ground-water phenomena. Precipitation for the first month of the water year was below normal for most of the state. However, the water-supply recharge season was off to a good start early in September for most of the state as a result of the excessive rainfall in August and September.

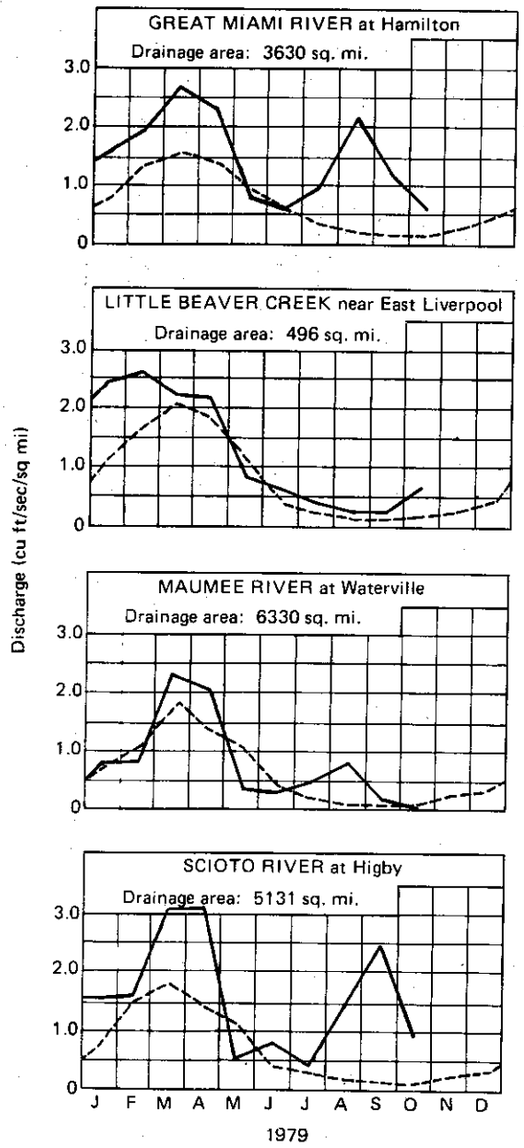




DIVISION OF WATER

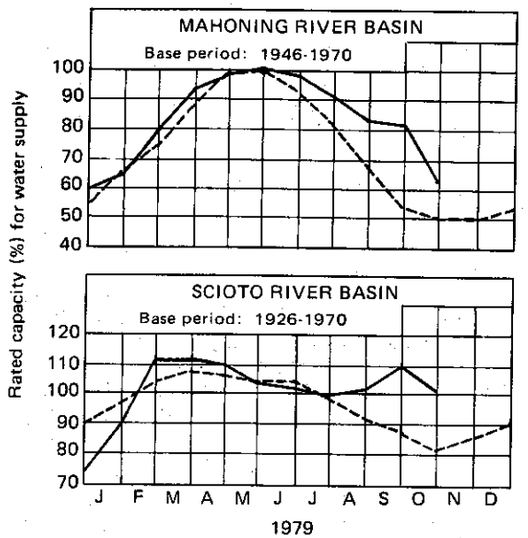
John H. Cousins, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

RESERVOIR STORAGE FOR WATER SUPPLY

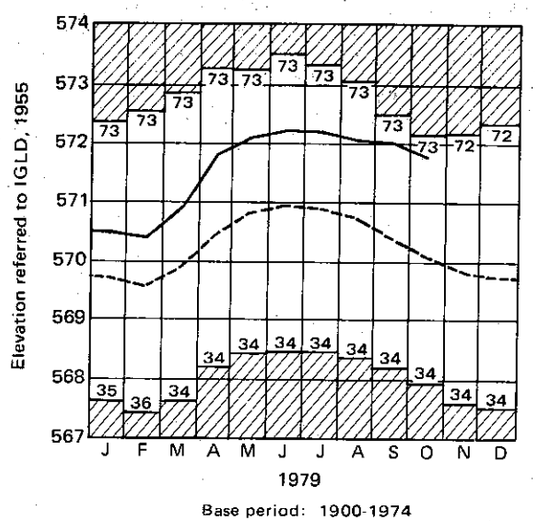


RESERVOIR STORAGE for October showed marked declines for the month, but remained noticeably above normal for the Mahoning River basin index reservoirs and the Scioto River basin index reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 63 percent of rated capacity for water supply compared to 82 percent for last month and 71 percent for October 1978. Reservoir storage at the month end for the Scioto River basin index reservoirs was 102 percent of rated capacity for water supply compared to 110 percent for last month and 69 percent for October 1978. Reservoir storage for water supply throughout the state remains very favorable.

STREAMFLOW for October was excessive throughout the state; the only exception was the northwestern portion of the state, where it continues to be normal. Flows in general remained markedly high throughout the month in response to runoff from the heavy rains on the last few days of the previous month and to increased effluent flow from abnormally high ground water in most areas of the state. Flows were generally about normal at the month end.

Mean discharge and percent of normal for October for the index gaging stations were as follows: Great Miami River, 2,397 cfs, 402 percent; Little Beaver Creek, 322 cfs, 425 percent; Maumee River, 354 cfs, 70 percent; Scioto River, 5,005 cfs, 858 percent. The monthly mean discharge for the Scioto River at Higby, 5,005 cfs, was the highest for October since the beginning of record in 1930.

LAKE ERIE LEVELS

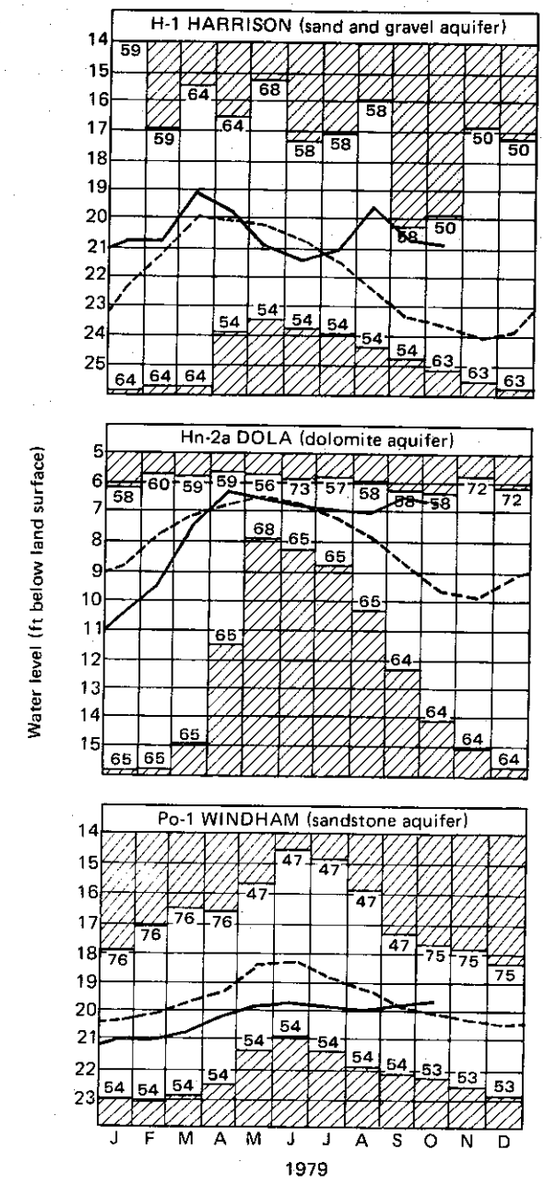


Base period: 1900-1974

LAKE ERIE mean level for October was 571.72 feet above IGLD (1955), 0.28 foot below last month's mean level and 1.63 feet above normal. The lake level is now only 0.46 foot below the record high for October set in 1973. The lake level is 0.73 foot above the level observed for October 1978 and 3.12 feet above Low Water Datum.

GROUND-WATER LEVELS for October in general remained rather stable in most areas of the state. Net changes in water levels from last month showed mixed reaction to recharge; some wells showed net rises for the month, while others showed net declines. These net changes were not significant. Ground-water levels are generally from 1 to 5 feet above those levels observed at this time last year and from 1 to 4 feet above normal. Water levels in index observation wells F-1 at West Rushville, Fairfield County, Hn-2a at Dola, Hardin County, and Tu-1 at Strasburg, Tuscarawas County, recorded record-high levels for October for their respective periods of record. Record-high levels were also observed in September for index observation wells F-1, Tu-1, and H-1 near Harrison, Hamilton County. The ground-water storage situation has shown marked improvements during the past year and holds an excellent position for the beginning of the new water year.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal ----- current ——

ACKNOWLEDGMENTS

This report has been compiled from Division of Water data and from information supplied by the following:

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Lake Erie level data:
U.S. Corps of Engineers, Detroit District.

OHIO DEPARTMENT OF NATURAL RESOURCES
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COLUMBUS, OHIO 43224

STREAMFLOW-continued

Scioto River at Higby, 7,947 cfs, was the second highest for November since the beginning of record in 1930, the record for November is 15, 460 cfs in 1972.

SUMMARY

The water supply situation continues to be excellent for the state as a whole. Precipitation for November was above normal throughout the state. Streamflow, reservoir storage and ground-water storage are all above normal. Lake Erie level continues its seasonal decline but remains noticeably above normal.

NOTES AND COMMENTS

This is the first of a series of comments on the data presented in this report. It is not practical to include this information on a monthly basis. We hope that you will preserve these comments for future reference; however, we will repeat them from time to time.

The purpose of this report is to disseminate current hydrologic data in brief form. Observation points have been selected which are considered to be sufficiently representative of water conditions in the state to permit an evaluation of the current water-supply situation. These key observation stations offer the best available data on the basis of (1) accuracy and length of record, (2) minimal artificial effects on data, and (3) availability of records. Data from these stations are collected by various agencies at the end of each month and processed immediately. Because of the time limitations involved, all data must be considered preliminary and may be subject to revision before final publication in regular form by the agencies involved. The remarks in this report include the writer's opinions of the cause and significance of the phenomena reported therein. The reader is urged to examine the data and formulate his own evaluation.

The author is indebted to the various agencies and individuals who make the data available. More complete and detailed information can be obtained by writing to the Division of Water, Ohio Department of Natural Resources, Bld. E., Fountain Square, Columbus, Ohio 43224.

DEPARTMENT OF NATURAL RESOURCES

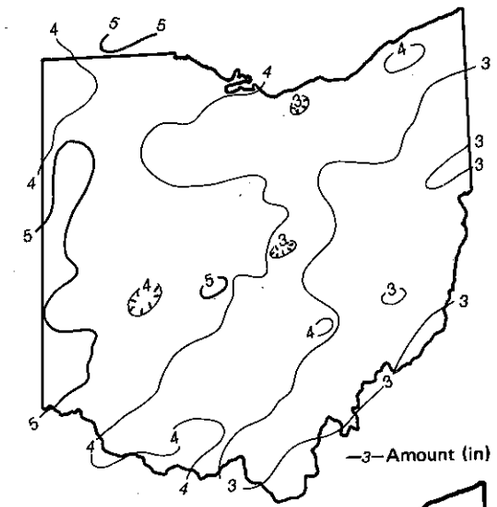
James A. Rhodes Governor *Robert W. Teater Director*

NOVEMBER 1979

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

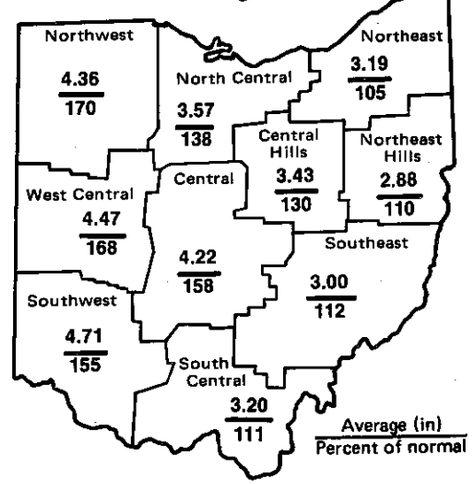


PRECIPITATION for November was above normal throughout the state. The average for the state as a whole was 3.70 inches, 0.96 inch above normal. Regional averages ranged from 4.71 inches, 1.68 inches above normal, for the Southwest region to 2.88 inches, 0.25 inch above normal, for the Northeast Hills region. Hamilton, Butler County, reported the greatest amount of precipitation, 5.84 inches, for the month and Dillon Dam, Muskingum County, reported the least amount, 2.29 inches.

Precipitation for November showed an unusual pattern of distribution being least in the eastern portion of the state and increasing towards the west in almost horizontal bands across the state. Most of the precipitation occurred during the second and fourth weeks. Heavy rains during the weekend of 24 and 25 November produced minor flooding in the lower portion of the Scioto River, primarily in Pickaway County.

Precipitation for the 1979 calendar year is noticeably above normal throughout the state; in fact totals thus far for the first 11 months in some regions are approaching record amounts for the year. The average for the state as a whole is 42.38 inches, 7.79 inches above normal. Regional averages range from 48.41 inches, 10.73 inches above normal for the South Central region to 33.99 inches, 2.32 inches above normal, for the Northwest region. Precipitation for the Central region is 12.02 inches above normal. The above normal precipitation has produced excellent recharge to our water supplies and yet has had very little adverse affect on other aspects of the environment or agriculture.

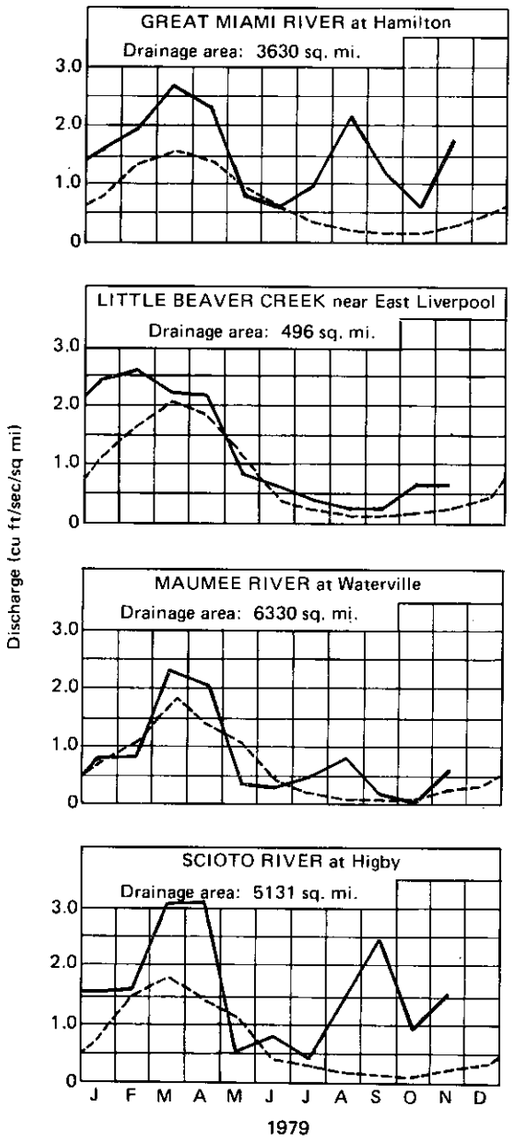
Precipitation is above normal for the first two months of the new 1980 water year; the only exception is in the Northeast region where precipitation is 0.10 inch below normal. The average for the state as a whole is 5.85 inches, 0.80 inch above normal. Regional averages ranged from 6.74 inches, 1.86 inches above normal, for the West Central region to 5.24 inches, 0.01 inch above normal, for the Northeast Hills region.



DIVISION OF WATER

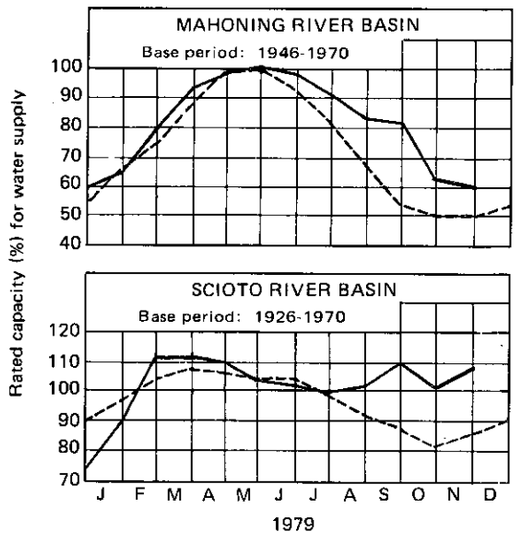
John H. Cousins, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for November declined slightly in the Mahoning River basin index reservoirs, but remained above normal. Storage in the Scioto River basin index reservoirs increased and was markedly above normal for the month. Reservoir storage at the month end for the Mahoning basin index reservoirs was 60 percent of rated capacity for water supply compared to 63 percent for last month and 61 percent for November 1978. Reservoir storage for the Scioto basin index reservoirs was 109 percent of rated capacity for water supply compared to 102 percent for last month and 60 percent for November 1978. Reservoir storage for water supply remains very favorable for the state as a whole.

STREAMFLOW for November in terms of mean discharge was excessive throughout the state. Flows were moderately above normal during the first three weeks of the month and increased markedly during the last week of the month in response to excessive precipitation. The only exception was in the Scioto river basin where streamflow was excessive for the entire month. Flows in the lower reaches of the Scioto River basin were slightly above flood stage during the last week of the month, primarily in Pickaway County.

Mean discharge and percent of normal for November for the index gaging stations were as follows: Great Miami River, 6,799 cfs, 680 percent, Little Beaver Creek, 310 cfs, 214 percent; Maumee River, 3,970 cfs, 255 percent; Scioto River, 7,947 cfs, 703 percent. The monthly mean discharge for the

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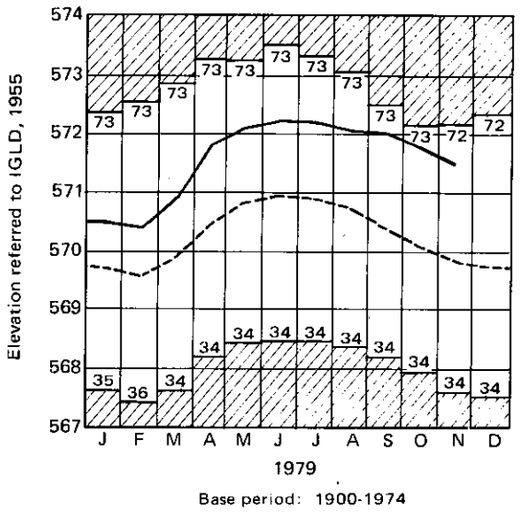
LAKE ERIE LEVELS



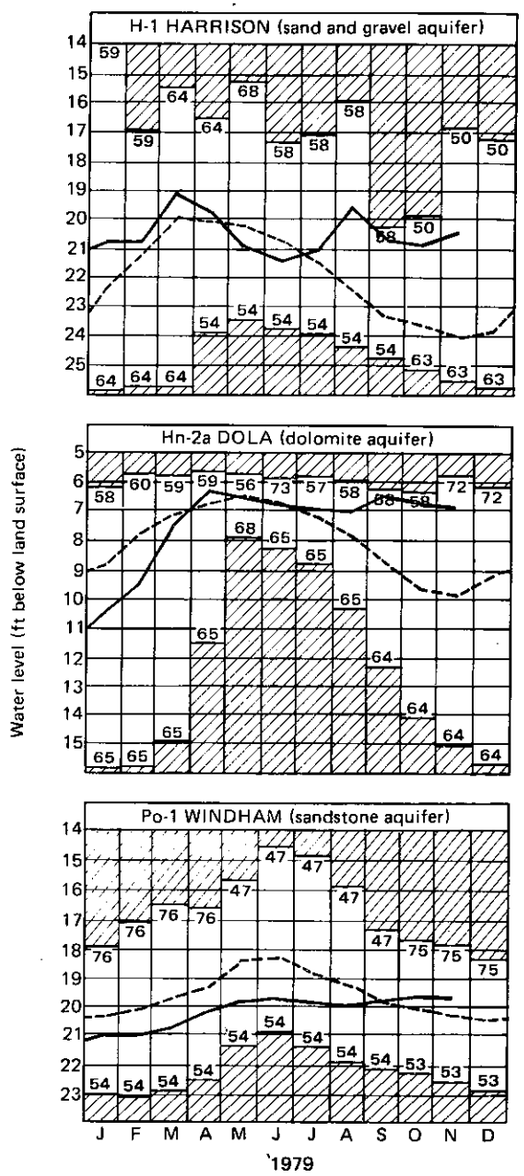
Base period: 1900-1974

LAKE ERIE mean level for November was 571.41 feet above IGLD (1955), 0.31 foot below last month's mean level and 1.59 feet above normal. The lake level is now 0.67 foot above that level observed for November 1978 and 2.81 feet above Low Water Datum. Lake Erie continues to maintain a noticeably high level.

GROUND-WATER LEVELS for November throughout the state maintained a constant level during the first three weeks of the month and rose in response to recharge during the last week of the month. Water levels in the index wells were generally below those levels observed for October; the only exceptions were in observation wells Fr-10 at OSU farms, Franklin County and H-1 near Harrison, Hamilton County, where water levels were slightly above those levels observed in October. Ground-water levels for November in the index observation wells are generally from 0.5 to 4.5 feet above those levels observed a year ago and 0.5 to 4 feet above normal.

Past records, which began in 1946 for most observations, indicate that water levels for November have only been at or above that level observed this month about 10 to 20 percent of the time. Observation well Fr-10 at the OSU farms recorded a record high level for November for the period of record starting in 1948; this is the third consecutive month for which a record high level for that well has been recorded. Ground-water levels throughout the state are unusually high for this time of year which augurs well for continued improvements to ground water storage during the current recharge season.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal - - - - current ——

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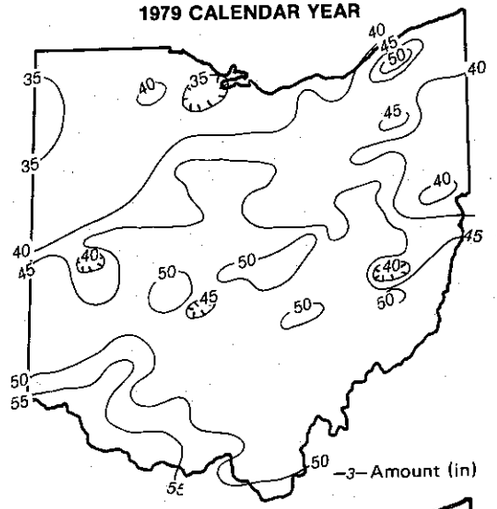
U.S. Corps of Engineers, Detroit District.

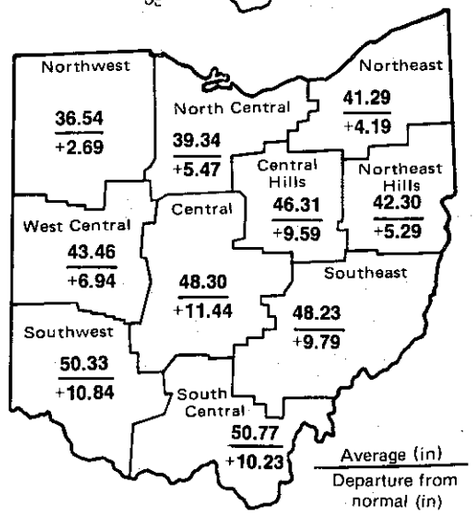
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water-supply situation for Ohio at the year end is probably the best it has been in the past four decades. Precipitation for December was below normal for most of the state, however, the below normal precipitation has no effect on the overall trend of the water-supply situation at the present time. Streamflows were generally excessive. Reservoir storage and ground-water storage continued to be noticeably above normal. Lake Erie level rose slightly and continued to be markedly high.

PRECIPITATION
1979 CALENDAR YEAR





DEPARTMENT OF NATURAL RESOURCES

James A. Rhodes Governor *Robert W. Teater Director*

DECEMBER 1979

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for December was below normal throughout most of the state; the only exceptions were in the Northwest, North Central and Northeast regions where precipitation was above normal. The average for the state as a whole was 2.31 inches, 0.14 inch below normal. Regional averages ranged from 3.53 inches, 1.03 inches above normal, for the Northeast region to 1.82 inches, 0.58 inch below normal, for the Central region. Colebrook, Ashtabula County, reported the greatest amount of precipitation, 4.78 inches, for the month and Carrollton, Carroll County, reported the least amount, 1.32 inches. Generally, there were measurable amounts of precipitation during every week of the month for most of the state. However, the bulk of the month's precipitation fell on 23 and 24 December. A few stations in the northern and southwestern portions of the state reported 1.5 to 2 inches in the first 24 hours of this storm. The nominal amount of precipitation this month was a welcomed relief from the excessive precipitation of the previous months. Even Chardon, the snow capital of Ohio, reported only 11 inches of snow for the month, 12.4 inches below normal.

The below normal precipitation for December was in contrast with most months in 1979 which proved to be one of the wettest calendar years of record. Eight months recorded above normal precipitation. The total precipitation for the year represented an average for the state as a whole of 44.69 inches, 7.65 inches above normal. Regional averages ranged from a high of 50.77 inches, 10.23 inches above normal, for the South Central region to 36.54 inches, 2.69 inches above normal, for the Northwest region. An isohyetal map and regional averages and departures from normal for 1979 calendar year appears on the last page of this report. The wettest year of record for the state as a whole was 1950 when the average precipitation was 47.62 inches. Other unusually wet years in this century were 1929, 1937, 1945 and 1957.

The station reporting the greatest amount of precipitation in 1979 was West Union, Adams County, with 58.24 inches, while Hicksville, Defiance County, reported the least amount, 29.99 inches. The period of record at West Union is too short for comparative purposes, but for Fernbank, Hamilton County, the 57.35 inches, 18.95 inches above normal, reported for 1979 represents the greatest amount of precipitation for the period of record beginning in 1914. For many stations in the central and southwestern portions of the state 1979 proved to be the third or fourth wettest of record with many reporting in excess of 50 inches, 10 to 15 inches above normal. The bulk of the excessive precipitation at many stations was produced by the remnants of Hurricane Frederick which passed through the state on the 13th and 14th of September. Many stations received more than 6 inches of precipitation from that storm.

The wet year produced excellent benefits to water supplies throughout the state. Reservoir storages were generally full to capacity, ground-water levels were noticeably above normal, Lake Erie mean level remained markedly high, and streamflows were excessive throughout the state. Despite the excessive precipitation, there were

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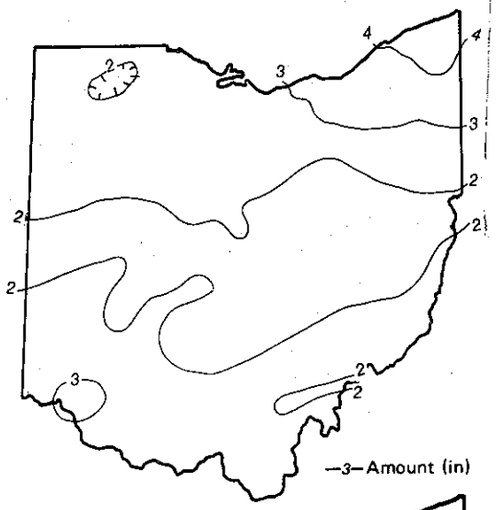
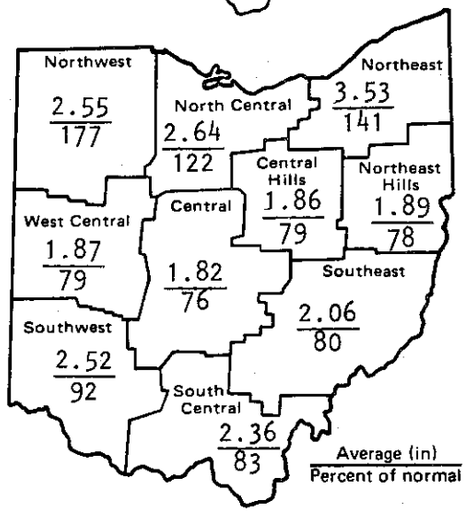
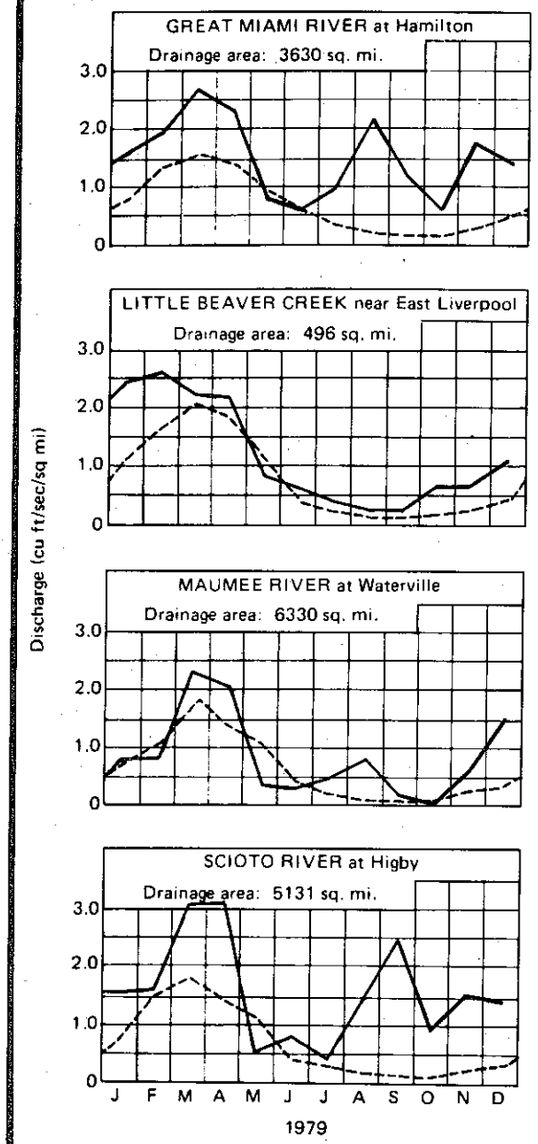




DIVISION OF WATER

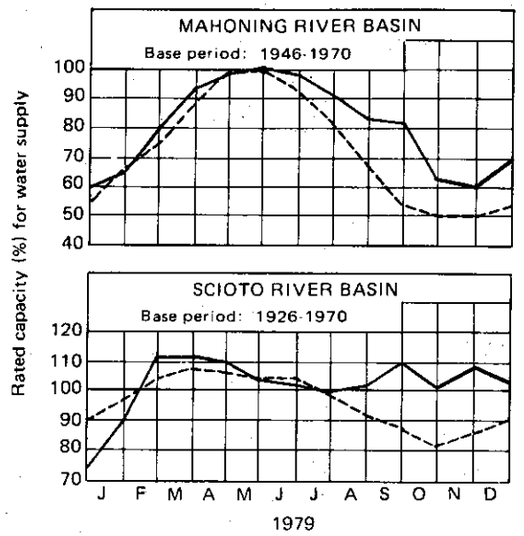
John H. Cousins, Chief

MEAN STREAM DISCHARGE



Base period for all streams: 1941-1970

RESERVOIR STORAGE FOR WATER SUPPLY



PRECIPITATION—*Continued*

only a few occurrences of major flooding or serious flood damage in Ohio this year. The saturated ground conditions, however, as we enter 1980 could result in increased runoff from winter storms and spring thaws raising the likelihood of flooding.

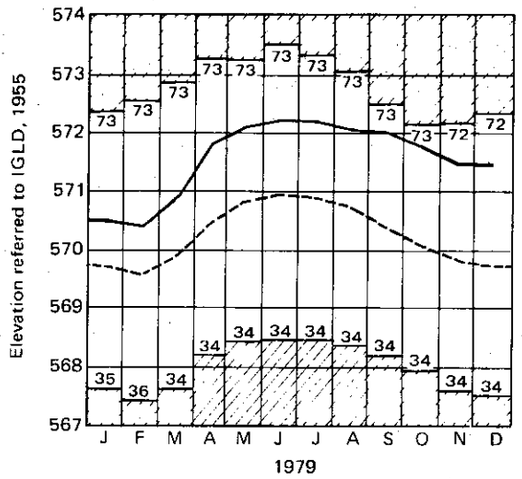
Precipitation for the first three months of the 1980 water year for the state as a whole averaged 8.16 inches, 0.66 inch above normal. Regional averages ranged from 9.40 inches, 0.93 inch above normal, for the Northwest region to 7.13 inches, 0.52 inch below normal, for the Northeast Hills region.

RESERVOIR STORAGE for water supply for December increased in the Mahoning River basin index reservoirs in response to the above normal precipitation in the drainage basin, while storage for water supply in the Scioto River basin index reservoirs declined slightly. Storage for both index basins remained noticeably—above normal at the month end. Reservoir storage at the month end for the Mahoning basin index reservoirs was 70 percent of rated capacity for water supply compared to 60 percent for last month and the same for December 1978. Reservoir storage at the month end for the Scioto basin index reservoirs was 104 percent of rated capacity for water supply compared to 109 percent for last month and 75 percent for December 1978.

STREAMFLOW for December was excessive throughout most of the state for the sixth consecutive month; the only exception was in the eastern portion of the state where it continues to be normal. The normal precipitation and unusually high ground-water levels were most instrumental in maintaining the exceptionally high streamflows throughout the state during the month.

Mean discharge and percent of normal for December for the index gaging stations were as follows: Great Miami River, 5,264 cfs, 324 percent; Little Beaver Creek, 587 cfs, 248 percent; Maumee River, 9,417 cfs, 417 percent; Scioto River, 7,726 cfs, 475 percent.

LAKE ERIE LEVELS



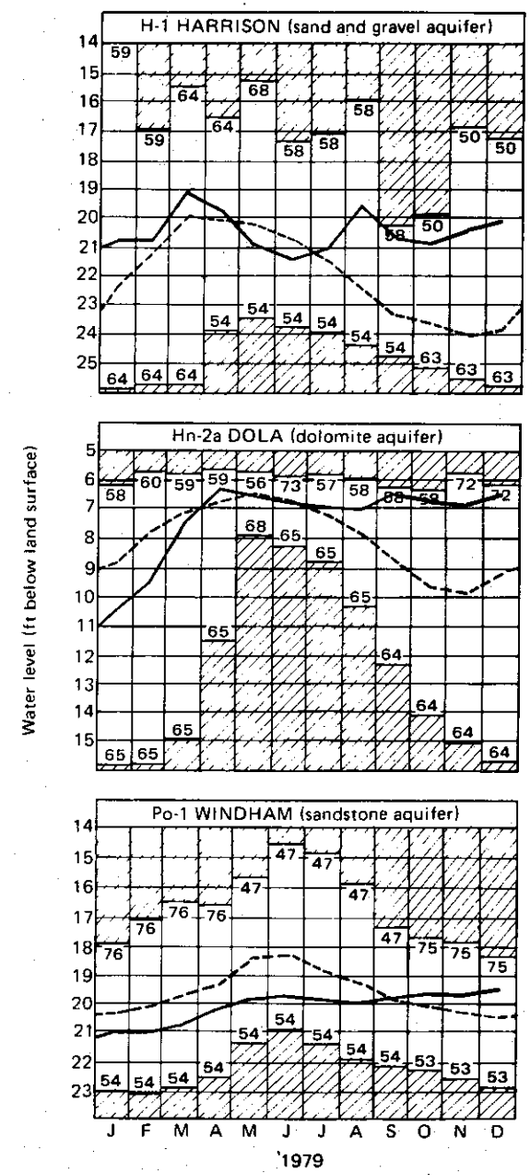
Base period: 1900-1974

LAKE ERIE mean level showed a slight rise for December. The mean level for the month was 571.45 feet above IGLD (1955), 0.04 foot above last month's mean level and 1.70 feet above normal. The lake level is now 0.93 foot above that level observed for December 1978 and 2.85 feet above Low Water Datum.

GROUND-WATER LEVELS for December remained unusually high throughout the state. Water levels in consolidated rock aquifers rose throughout the month in response to delayed recharge from the excessive precipitation in previous months while levels in unconsolidated sand and gravel aquifers declined throughout most of the month and rose during the last week in response to the heavy rains on 23 and 24 November. Water levels in most all the index wells showed net rises for the month; the only exception was observation well Tu-1 at Strasburg representing a sand and gravel aquifer which showed a slight net decline for the month.

Generally ground-water levels are from 1 to 5 feet above those levels observed for December 1978 and 0.5 to 4.5 feet above normal. Observation wells Fr-10 at OSU farms, Franklin County and Hn-2a at Dola, Hardin County, recorded record highs for December for the periods of records beginning in 1948 and 1954 respectively. This is the fourth consecutive month for which a record high level for Fr-10 has been recorded. Ground-water levels are noticeably high throughout the state. Past records indicate that current ground water levels for December have only been exceeded about 10 to 15 percent of the time. Thus, the ground-water storage situation is about as good as it has ever been for the state as a whole.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1964; Hn-2a, 1955-1973; Po-1, 1947-1964

normal - - - - current ——