IOWA DNR
DEPARTMENT OF NATURAL RESOURCES

WATER SUMMARY UPDATE

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A snapshot of water resource trends for the 2024 Water Year Summary

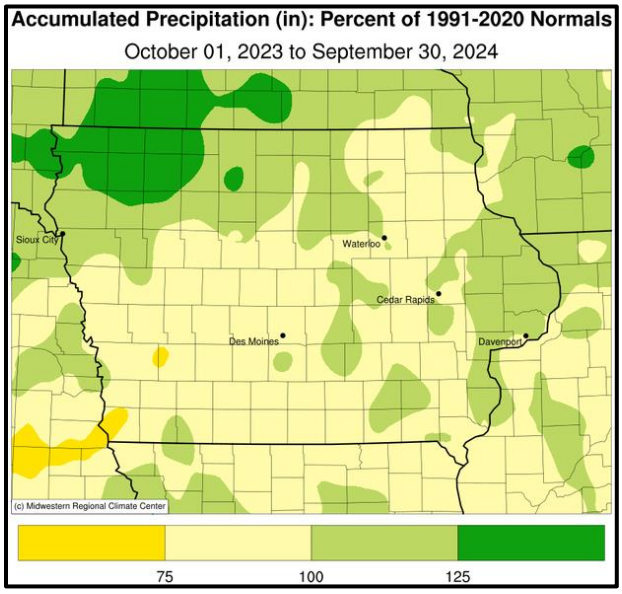
Overview - 4-Year Drought Ends - But Conditions at End of Water Year are Very Dry

The "Water Year" is defined as the period from October 1-September 30. After October 1, precipitation benefits the upcoming growing season, and winter snow can be the primary source of water runoff into streams during the next calendar year for many parts of the United States. The 2024 Water Year (WY) ended on September 30th, 2024, after four consecutive drier than normal water years. For the current WY, the state ended with a surplus of precipitation on the order of 0.38 inches, though with a very dry ending to this time period. Drought conditions were eliminated from the state in May 2024, but recent dryness, including the driest September on record, has resulted in a return of some Moderate Drought - D1 in northeast and western Iowa as well as a small pocket of Severe Drought - D2 along the Iowa-Nebraska border. The Iowa Drought Plan also showed a return to normal conditions across the state in May.

Water Year Precipitation and Temperature

The WY 2024 ended on September 30th, 2024, and was the first wetter than normal water year since the 2020 WY. During the four drought years (WY 2020 thru WY 2023) the cumulative precipitation deficit was more than 17 inches. The WY 2024 ended with a preliminary precipitation total for the 12-month period of 35.93 inches, or 0.38 inches above normal. Preliminary temperatures averaged 51.5 degrees, which is 3.3 degrees above the 1991-2020 climatological normal for Iowa. Preliminary rankings show this was the 42nd wettest water year, and the 4th warmest WY among 152 years of statewide records.

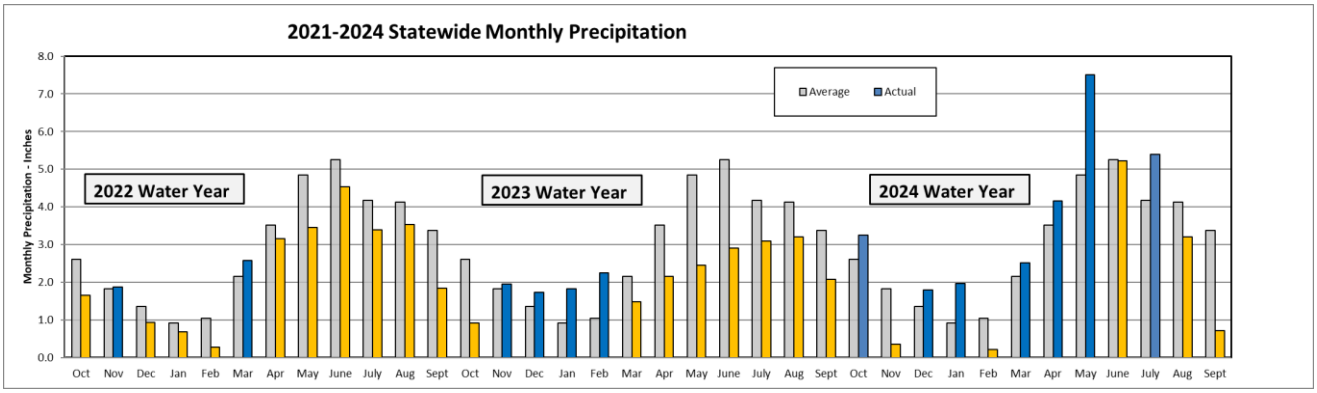
With the exception of southwest Iowa, all of the regions of the state recorded surplus precipitation for the Water Year. Southwest Iowa was the driest part of the state, and ended WY 2024 1.47 inches below normal for rainfall. Northwest Iowa was the wettest region of the state, ending WY 2024 with a surplus of more than ten inches of rainfall.



Notable months/seasons during the water year include the 12th driest November, the 3rd warmest December followed by the 2nd warmest and driest February on record; Winter 2023-2024 was also the 3rd warmest. May was the 8th wettest

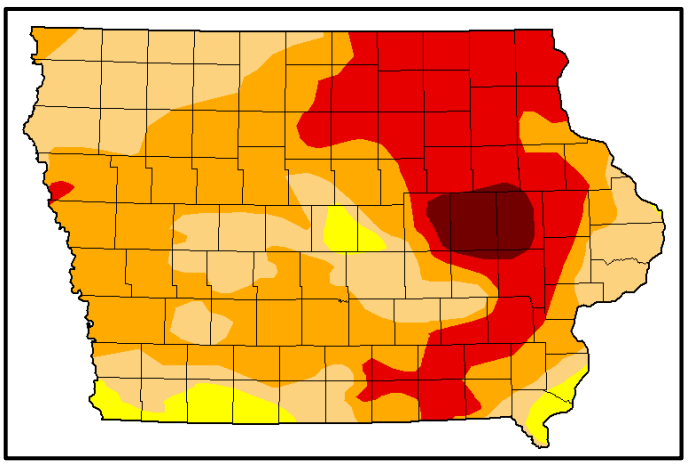
May on record for the state, while September broke the 1939 record as the driest ever in Iowa. Iowa's statewide observational period of record dates back to 1872.

The graph below shows the monthly rainfall of the last three water years. Blue bars are above normal monthly rainfall, and orange bars are below normal monthly rainfall. WY 2024 included seven months of above normal rainfall, with June coming in at nearly normal. This is a significant improvement over the two previous water years when 18 of 24 months were below normal for precipitation.

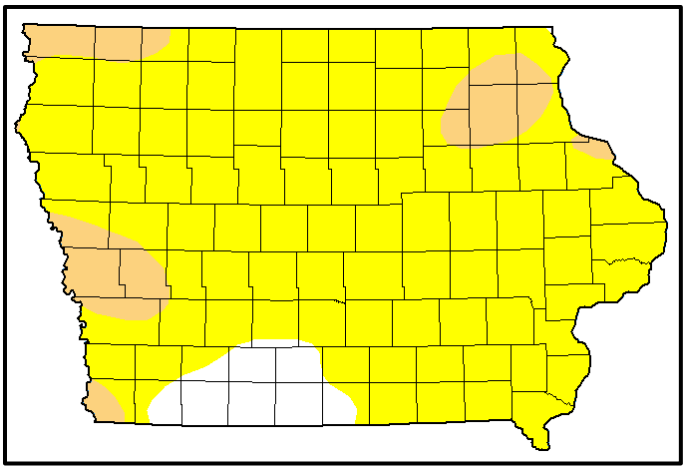


DROUGHT MONITOR

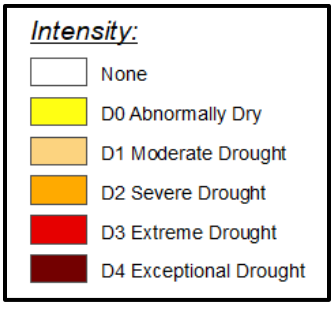
The US Drought Monitor (USDM) provides a simplified way to look at regional and statewide trends in drought conditions. Over the course of the last year drought conditions began at a high level late September 2023, then steadily declined until they were eliminated from the state in July. After two months of little to no drought designation in Iowa, conditions began to deteriorate in late August, and worsened throughout September. Despite these deteriorating conditions, the state is in a much better position this year compared to last year. Areas of D2 - Severe Drought, D3 - Extreme Drought, and D4 - Exceptional Drought are gone from Iowa.

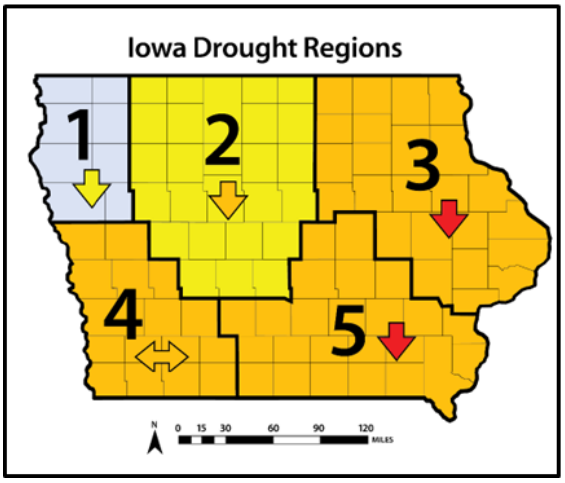


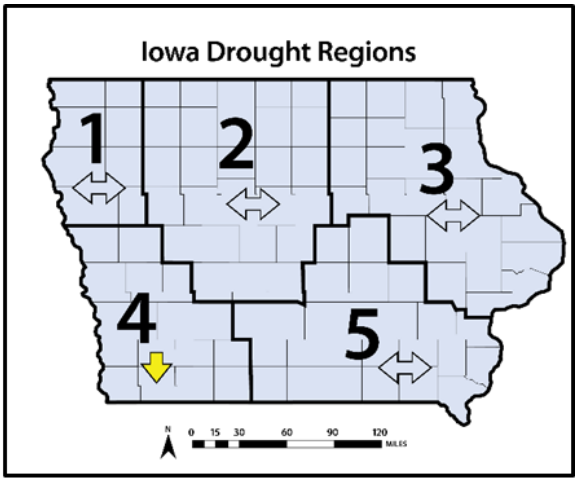
USDM - October 3, 2023



USDM - September 26, 2024

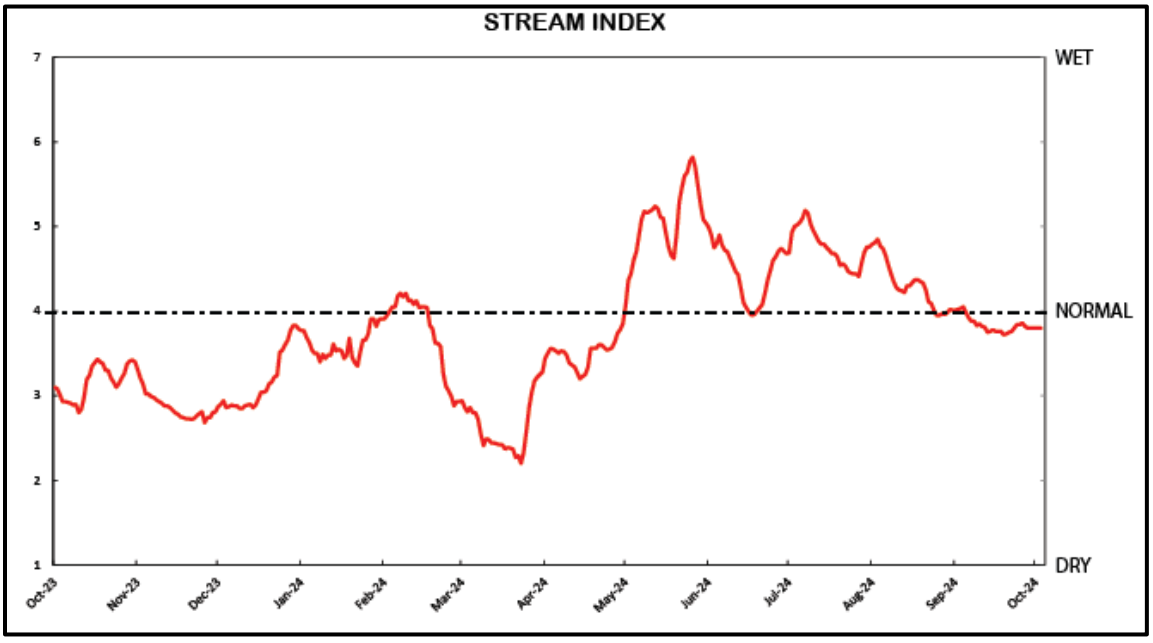






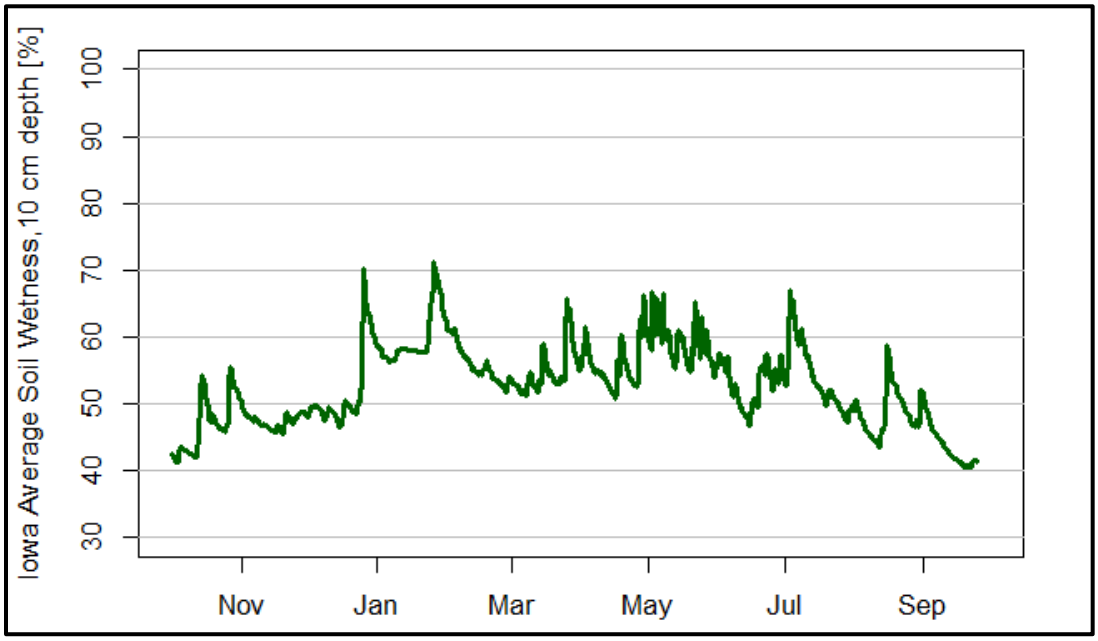
STREAMFLOW

The U.S. Geological Survey (USGS) streamflow index is an average of stream flows at all USGS stream gauges across the state compared to the average streamflow at all those points at that time. This index provides a simplified way of looking at stream flows throughout the year. The WY 2024 graph below shows below normal stream flow across the state from October 2023 until about May 2024, when consistently wetter than normal conditions pushed average streamflow above normal. For the most part, streamflow remained above normal through the rest of the summer, finally dropping below normal with the onset of dry weather in September.



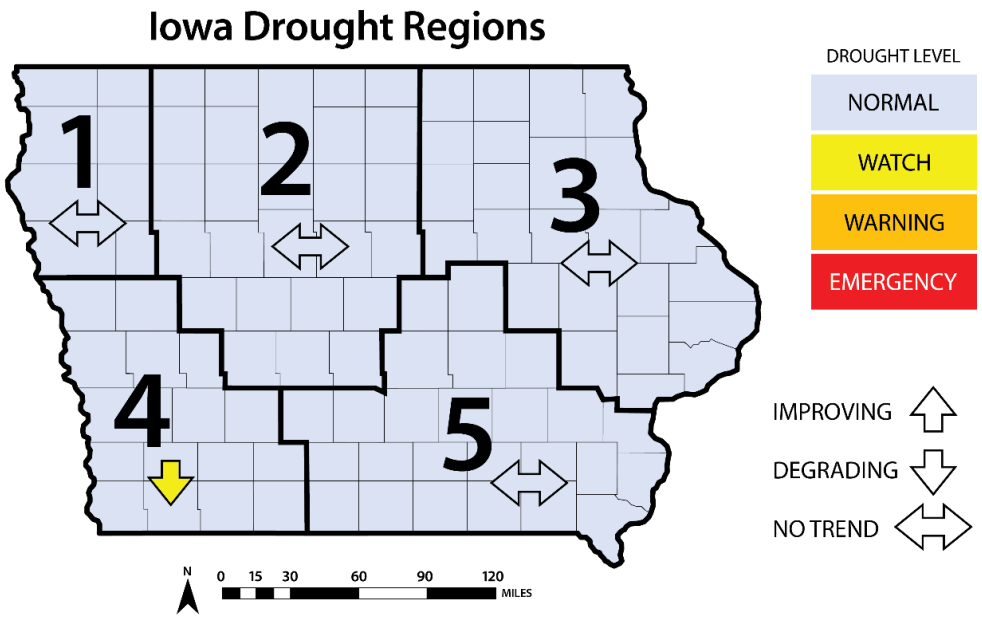
SOIL MOISTURE

Soil moisture levels were improved over the WY. In October 2023 nearly all of the state had soil moisture levels that were below the 20th percentile. Precipitation in July increased soil moisture levels, but conditions have been drying out since then.



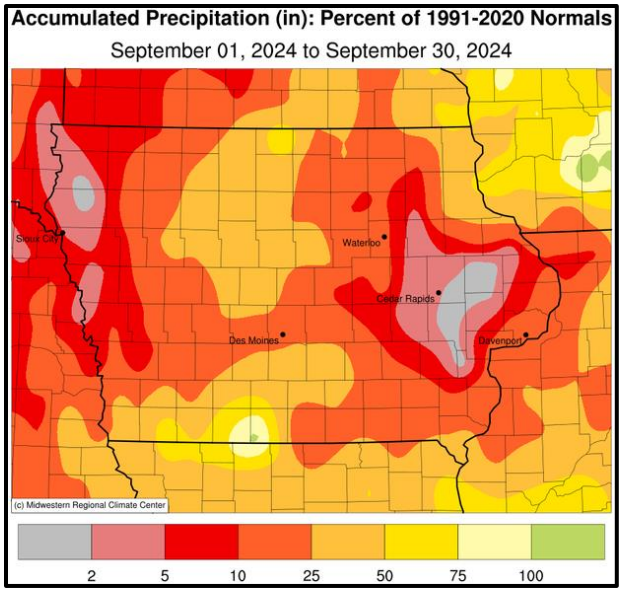
A snapshot of water resource trends for September 2024

IOWA DROUGHT CONDITIONS



September (2024) Precipitation & Temperature

Iowa's preliminary statewide average precipitation totaled just 0.72, or 2.76 inches below normal. This was the driest September on record for the state, drier than the previous record of 0.84 inches recorded in 1939 at the end of the Dust Bowl decade. Statewide temperatures came in at 67.0 degrees, 3.3 degrees above normal.



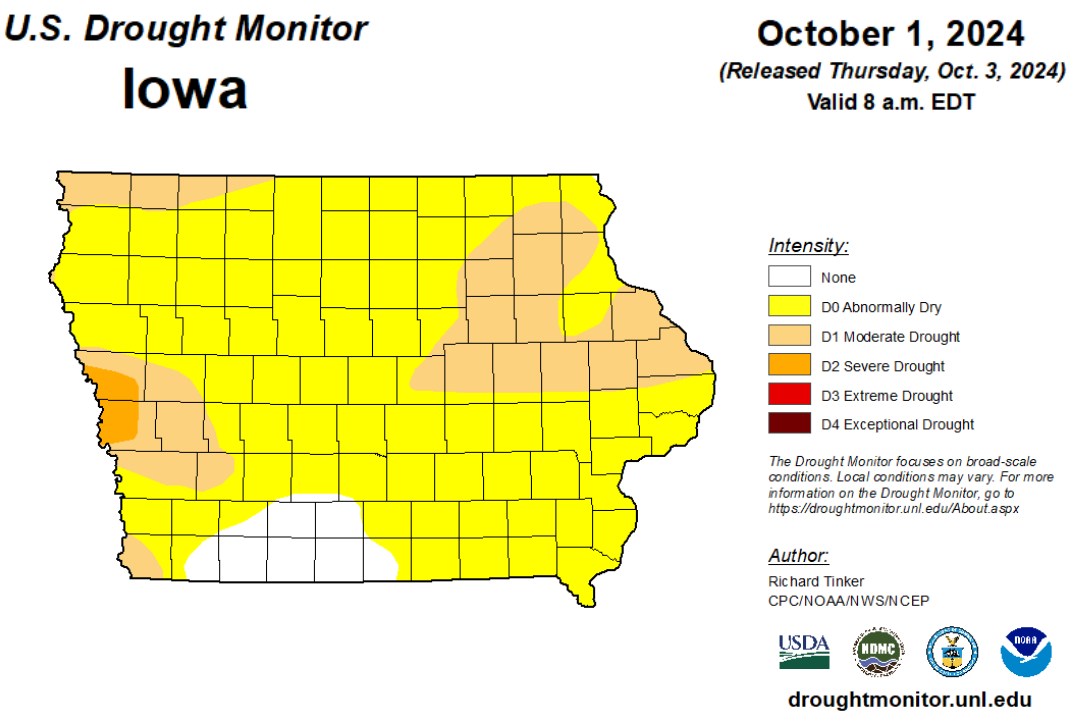
Standardized Precipitation Index (SPI)
The SPI is an index based on accumulated precipitation for various time scales. SPI is the most commonly used indicator worldwide for detecting and characterizing meteorological droughts. The SPI indicator measures precipitation differences based on a comparison of observed total precipitation amounts over the period of interest with the long-term historical precipitation record for that period. Droughts are characterized by negative SPI values, while positive SPI values indicate wet periods. The range of SPI values is between -3 and +3, denoting “extremely dry” to “extremely wet”.

The 90-day and SPI values for all Drought Regions in September are negative - reflection the recent dry stretch in Iowa. The 180-day SPI values are all positive, which is an indication of wetter conditions going back to April 2024. These values maintain all drought regions in normal conditions for this indicator, but conditions are degrading drought regions 1, 2, 3, and 4.

Standardized Streamflow Index (SSI) and Streamflow
SSI is a metric that compares current streamflow against the historical record to determine how far away the current streamflow value is from the river’s historical mean observed on the same date. SSI values in all five drought regions are steady or degrading, reflecting recent very dry conditions across the state

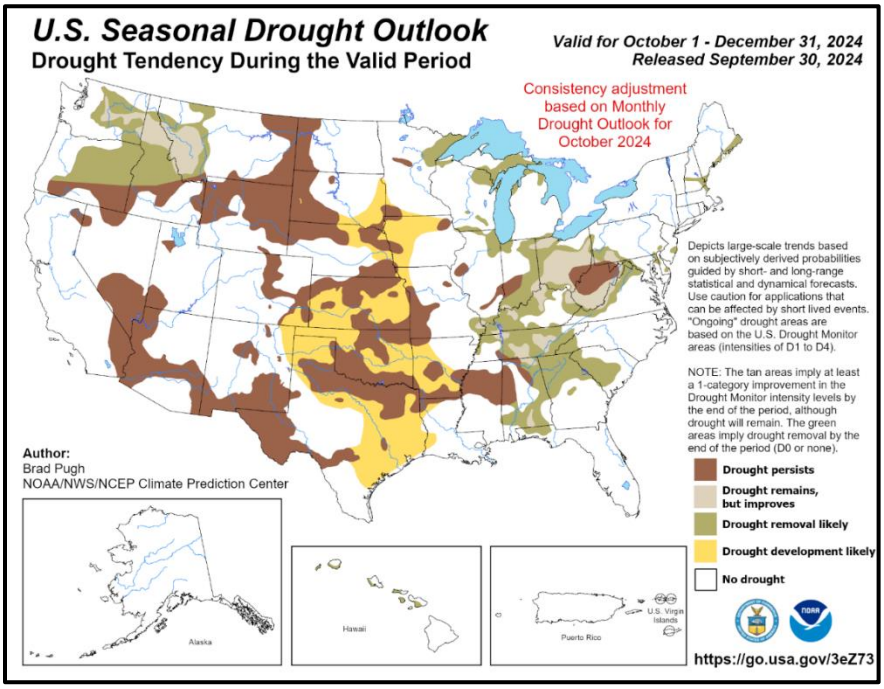
While stream flow levels are lower across the state, the fall months usually bring decreasing streamflow. So, according to the US Geological Survey, stream flows are largely normal across Iowa.

US Drought Monitor and Drought Conditions
The current US Drought Monitor (USDM) reflects the continued deterioration in conditions that started in August of this year. At the start of October nearly 94 percent of the state is in some form of dryness or drought. 23 percent of Iowa is rated as D1 - Moderate Drought, nearly double the coverage of just one week ago. Particularly noteworthy is the introduction of a small area of D2 - Severe Drought in Harrison and Monona Counties. This is the first D2 coverage in Iowa since May of this year. A pocket of normal conditions exists in southern Iowa, around Clarke, Decatur, Ringgold, Taylor and Union Counties; about six percent of the state.



On a national scale, about 70 percent of the United States has some form of dryness or drought. The largest area that is free from drought or dryness is in the eastern coastal states that have been impacted by recent hurricanes and tropical storms.

The Seasonal Drought Outlook issued on September 30 by the Climate Prediction Center (CPC), valid through December 31, shows drought development likely across western and northern Iowa. The outlook also shows drought conditions likely to remain or worsen from Texas up into parts of Nebraska and the Dakotas.



Other Water Resource Information

Border River Conditions

For the Missouri River, the US Army Corps of Engineers reported on October 1 the volume of water stored in the reservoir system is 53.5 million acre feet (MAF) which is slightly below the average storage volume for this time of the year. Precipitation over the last month has been well below normal for most of the Basin except in Montana. For widespread areas across the Basin, less than 25% of the normal rainfall occurred. Recent above normal rainfall in the Ohio River basin should help to increase Ohio River flow, and improve conditions for barge traffic on the lower Mississippi River this fall.

September Soil Moisture

Conditions during the last days of September show a considerable reduction in soil moisture, especially in areas of northeastern and central Iowa, where saturation has decreased up to 10%.

Additional Information

This edition of the Water Summary Update continues to reflect use of the 2023 Iowa Drought Plan (IDP), which was developed as a collaborative effort between the Department of Natural Resources, the Department of Agriculture and Land Stewardship, and the Department of Homeland Security and Emergency Management. The IDP can be seen in its entirety on the DNR's website: The Iowa Drought Plan.

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