



# Red River and Devils Lake Basins - 2023 Spring Flood Outlook

NWS Grand Forks • North Central River Forecast Center • February 9, 2023

This outlook is for the US portion of the basin and based on conditions through Monday, February 6, 2023. Visit our website at [weather.gov/fgf/currentfloodoutlook](https://www.weather.gov/fgf/currentfloodoutlook) for associated exceedance graphics, probabilities, and related discussions. Additional spring flood outlooks will be issued on February 23rd and March 9th.

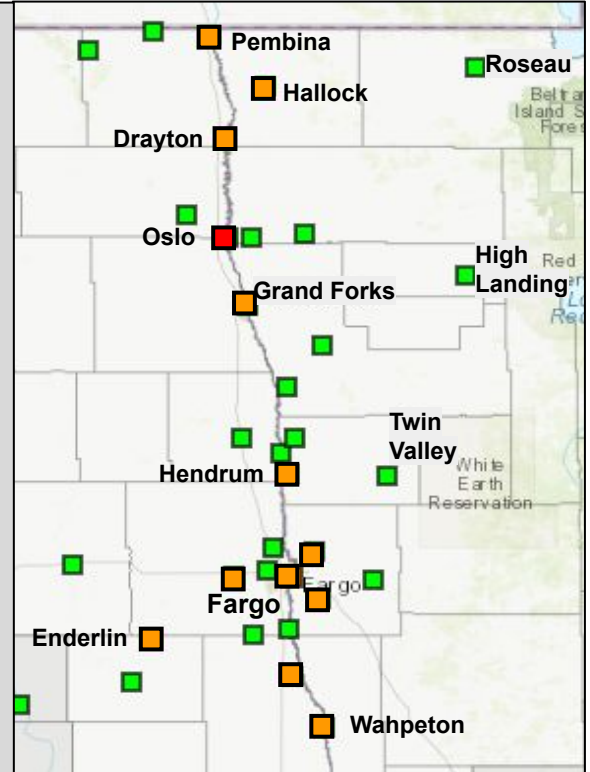
**Key Message: The risk for significant (moderate or higher) spring flooding remains low with this outlook issuance, running slightly below long-term historical averages across the the Red River Basin (US portion).**

### Key Points:

- Minor to isolated moderate spring flooding is depicted in this outlook (50% exceedance probability).
- Below normal soil moisture and near normal streamflows entering into freeze-up.
- Although January and early February have been dry, early season storms contributed to above normal winter snowfall/precipitation thus far.
- Above normal temperatures and dry conditions to continue into early next week before a cooler and more active weather pattern returns through the end of February.
- Late winter snowfall, spring precipitation, and snowmelt timing/thaw cycle will be the most important factors when assessing the spring flood risk.

Flood Risk Indicated as > 50% of category:

- Major
- Moderate
- Minor
- < 50%



Valid February 13, 2023 - May 14, 2023

### Snowmelt Flood Components:

- 1. Fall Precipitation and Soil Moisture at Freeze-up: Below normal.** Fall precipitation (Sep-Nov 2022) was below normal across the basin. Conditions were driest across the lower Sheyenne basin and southern Red River Valley (3-4 inches below normal); elsewhere was 1-2 inches below normal. Soil moisture heading into freeze-up was lower than normal with moderate drought conditions persisting across southern central portions of the basin and abnormally dry conditions across the north.
- 2. Base Streamflow: Near normal.** USGS analyses indicate that the Red River mainstem and its tributaries were flowing at normal ranges heading into freeze-up.
- 3. Frost Depth: Below to near normal but variable.** Early season snow cover has led to a relatively shallow frost layer for some of the basin. However, depths are quite variable: deepest across northeastern ND (20-30 inches) while shallower elsewhere (10-20 inches). Lake/river observations indicate ice cover is thinner and less consistent than normal, likely due to the early snow cover.
- 4. Snowpack and Associated Water Content: Above normal.** Snowfall since Dec. 1<sup>st</sup> is running 5-20 inches above normal for this time of year, highest across the Devils Lake and Sheyenne basins. Associated water content ranges from 1.0 to 5.0 inches (greater than 90<sup>th</sup> percentile for this time of year across the Devils Lake and Sheyenne basins).
- 5. Future Conditions:** Above normal temperatures and dry conditions will continue into early next week before a cooler and more active pattern returns through the end of February. Climate outlooks indicate equal chances for above, below, or normal temperatures and precipitation to end winter and head into spring.

**DEVILS LAKE AND STUMP LAKE**

Valid February 6, 2023 - September 30, 2023

DEVILS LAKE	95%	90%	75%	50%	25%	10%	5%
Creel Bay	1449.9	1449.9	1450.1	1450.4	1450.8	1451.2	1451.7
Eastern Stump Lake	1449.9	1449.9	1450.1	1450.4	1450.8	1451.2	1451.7

Devils Lake and Stump Lake are currently at ~1449.4 ft (zero datum 1400.00 NGVD29).

**RED RIVER AND TRIBUTARIES**

Valid February 13, 2023 - May 14, 2023

RED RIVER MAINSTEM	95%	90%	75%	50%	25%	10%	5%
Wahpeton	9.7	10.1	10.8	11.7	12.8	14.3	15.0
Hickson	17.7	18.7	20.1	24.1	28.4	32.2	34.2
Fargo	19.2	20.0	21.3	24.8	28.8	33.2	35.1
Halstad	16.3	18.0	21.2	24.8	29.3	35.3	37.7
Grand Forks	24.5	25.4	29.6	34.9	40.5	43.4	46.1
Oslo	24.2	25.4	30.2	33.5	34.9	35.9	37.1
Drayton	24.1	25.5	29.3	33.9	39.2	40.3	41.5
Pembina	32.3	33.5	38.4	43.4	47.5	49.3	50.7

MINNESOTA TRIBUTARIES	95%	90%	75%	50%	25%	10%	5%
South Fork Buffalo River							
Sabin	12.1	12.9	13.4	13.8	14.4	15.0	15.9
Buffalo River							
Hawley	5.0	5.2	5.9	6.7	8.0	9.2	9.7
Dilworth	11.7	13.0	15.0	17.1	18.8	21.3	21.7
Wild Rice River							
Twin Valley	5.1	5.2	5.9	6.9	8.3	9.7	10.5
Hendrum	16.4	17.8	19.4	22.3	25.6	28.4	30.3
Marsh River							
Shelly	8.1	8.6	9.5	11.0	12.7	14.7	16.1
Sand Hill River							
Climax	10.6	11.3	11.8	15.1	17.7	22.1	25.2
Red Lake River							
High Landing	5.6	6.0	6.9	8.2	9.4	10.8	11.9
Crookston	10.0	10.7	12.3	14.8	17.9	21.0	22.1
Snake River							
Above Warren	62.3	62.5	62.8	63.5	64.4	65.1	66.4
Alvarado	98.0	98.5	99.0	101.1	103.0	104.8	106.5
Two Rivers River							
Hallock	799.1	799.6	800.6	803.8	806.4	808.0	808.7
Roseau River							
Roseau	7.6	7.9	8.7	10.1	12.0	14.8	15.6

**Legend:**  
 Below Flood Stage  
Minor  
Moderate  
Major  
*\*Flood of Record\**

NORTH DAKOTA TRIBUTARIES	95%	90%	75%	50%	25%	10%	5%
Wild Rice River							
Abercrombie	6.0	6.7	8.2	11.3	15.3	17.7	20.7
Sheyenne River							
Valley City	7.4	8.1	9.2	11.3	12.4	13.4	13.8
Lisbon	7.2	8.1	9.1	11.4	13.0	14.4	17.2
Kindred	10.4	11.0	12.6	14.9	17.1	19.5	20.7
West Fargo Diversion	11.2	12.1	13.0	15.1	17.1	19.3	21.3
Harwood	77.3	78.0	79.0	82.0	88.3	91.0	91.5
Maple River							
Enderlin	8.2	8.7	9.4	10.4	11.4	12.6	13.5
Mapleton	14.7	15.5	16.7	19.0	21.0	22.1	22.6
Goose River							
Hillsboro	4.5	5.1	6.2	8.3	11.5	13.6	14.3
Forest River							
Minto	3.4	3.6	3.9	4.7	5.4	6.2	6.7
Pembina River							
Walhalla	4.8	5.0	5.6	6.3	8.2	11.6	12.6
Neché	7.6	8.2	9.5	11.6	16.1	20.6	21.0