



Red River and Devils Lake Basins - 2023 Spring Flood Outlook

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

This outlook is based on observed conditions through Monday, March 6th and includes forecast precipitation through Monday, March 13th. Visit our website at weather.gov/fgf/currentfloodoutlook for associated exceedance graphics, probabilities, and related discussions. At this time, an additional spring flood outlook is expected to be issued on March 23rd.

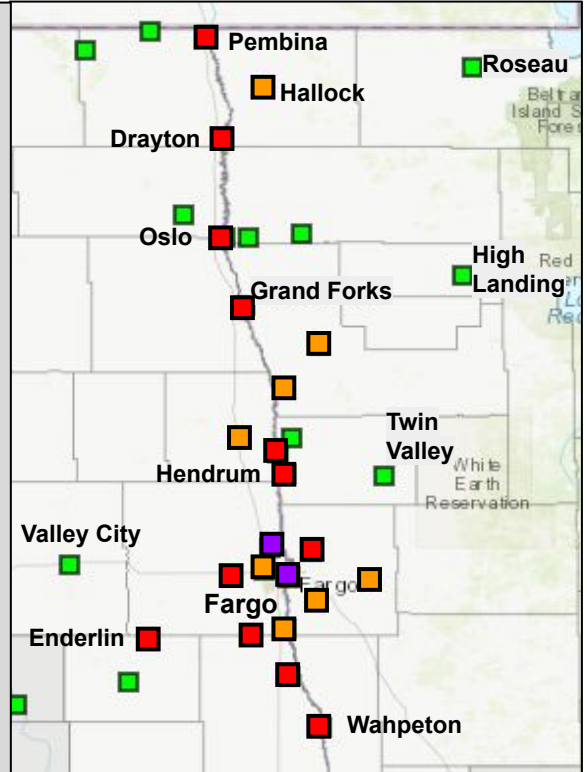
Key Message: The risk for significant (moderate or higher) spring flooding has increased with this outlook issuance and is now near or above long-term historical averages across the the Red River Basin (US portion).

Key Points:

- Moderate to isolated major spring flooding is depicted in this outlook (50% exceedance probability) for much of the mainstem Red River and southeastern North Dakota tributaries. Minor flooding (50% exceedance probability) is depicted for some of the Minnesota tributaries.
- Below normal soil moisture and near normal streamflows entering into freeze-up.
- Normal to above normal snowfall and precipitation thus far this winter (with the exception of the far northern basin).
- Below normal March temperatures will increase the likelihood of a delayed spring melt.
- Snowmelt timing/thaw cycle, along with any additional snow and/or rain, will be the most important factors contributing to the spring flood risk.

Flood Risk Indicated as > 50% of category:

- Major
- Moderate
- Minor
- < 50%



Valid March 13, 2023 - June 11, 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: Near normal to deeper than normal.** Frozen soils continue to deepen as the winter season continues, deepest across northeastern ND (30-35 inches) while slightly shallower and more variable across southeastern ND and much of the MN portion of the basin (20-30 inches).
- 4. Snowpack and Associated Water Content: Normal to above normal.** After a wet and snowy beginning to winter, January and early February brought less than normal snowfall/precipitation across to the basin. A more active pattern returned for the second half of February and first part of March. Total snowfall is running near normal for most areas while 20-25 inches above normal across the Devils Lake and Sheyenne basins in addition to the far southern Red River Basin. Associated water content ranges from 2.0 to 5.0+ inches (highest across southeastern ND).
- 5. Future Conditions:** Overall below normal temperatures are expected to continue through the remainder of March with near normal precipitation. Climate outlooks indicate below normal temperatures continuing this spring with no strong signal either way for above, below, or near normal precipitation.

DEVILS LAKE AND STUMP LAKE

Valid March 6, 2023 - September 30, 2023

DEVILS LAKE	95%	90%	75%	50%	25%	10%	5%
Creel Bay	1449.9	1449.9	1450.0	1450.3	1450.6	1451.1	1451.8
Eastern Stump Lake	1449.9	1449.9	1450.0	1450.3	1450.6	1451.1	1451.8

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

RED RIVER AND TRIBUTARIES

Valid March 13, 2023 - June 11, 2023

RED RIVER MAINSTEM	95%	90%	75%	50%	25%	10%	5%
Wahpeton	11.7	11.7	12.2	13.2	14.9	15.7	16.8
Hickson	25.8	26.0	27.4	30.0	33.3	35.1	36.1
Fargo	25.7	27.2	28.9	31.8	34.0	36.5	38.5
Halstad	28.0	29.9	32.3	35.3	38.3	39.5	40.0
Grand Forks	36.6	37.4	40.0	42.6	44.2	46.6	49.9
Oslo	33.9	34.1	34.7	35.6	36.3	37.3	38.6
Drayton	34.6	35.5	38.0	40.0	41.0	42.2	43.3
Pembina	41.6	43.0	45.7	47.8	49.9	51.8	52.5

MINNESOTA TRIBUTARIES	95%	90%	75%	50%	25%	10%	5%
South Fork Buffalo River							
Sabin	13.5	13.9	14.3	14.9	15.4	16.3	16.7
Buffalo River							
Hawley	6.8	7.3	7.8	8.6	9.5	10.3	10.6
Dilworth	16.8	18.1	18.9	20.3	21.6	22.8	23.3
Wild Rice River							
Twin Valley	6.2	6.5	7.3	8.3	9.2	10.8	11.6
Hendrum	24.1	25.9	27.1	28.7	30.5	31.8	32.5
Marsh River							
Shelly	10.3	11.0	11.5	13.0	14.7	17.3	19.1
Sand Hill River							
Climax	15.6	16.7	19.3	21.7	25.4	29.0	31.3
Red Lake River							
High Landing	6.1	6.7	7.3	8.2	9.4	10.6	11.9
Crookston	11.5	12.1	13.8	15.8	18.6	22.2	23.8
Snake River							
Above Warren	62.6	62.7	63.2	63.9	64.5	66.4	67.3
Alvarado	98.4	98.7	99.7	101.9	104.1	107.5	108.3
Two Rivers River							
Hallock	799.3	800.2	801.7	803.5	806.0	808.3	809.2
Roseau River							
Roseau	8.1	8.3	9.0	9.9	12.0	15.7	17.6

NORTH DAKOTA TRIBUTARIES	95%	90%	75%	50%	25%	10%	5%
Wild Rice River							
Abercrombie	13.0	13.8	15.2	17.4	20.0	22.6	24.1
Sheyenne River							
Valley City	10.4	11.7	12.4	13.3	14.2	16.3	18.7
Lisbon	11.3	12.0	13.4	14.1	15.1	18.9	19.7
Kindred	15.2	16.1	17.8	19.2	19.9	21.1	21.2
West Fargo Diversion	15.1	15.2	17.2	19.2	19.9	21.3	21.3
Harwood	87.5	88.9	89.5	91.0	91.5	92.0	92.1
Maple River							
Enderlin	11.3	11.4	11.9	12.6	13.0	14.0	14.4
Mapleton	21.0	21.2	21.7	22.0	22.4	23.1	23.5
Goose River							
Hillsboro	7.8	8.6	10.1	12.2	13.6	14.7	15.4
Forest River							
Minto	4.0	4.2	4.6	5.2	6.2	7.0	7.2
Pembina River							
Walhalla	5.1	5.4	6.0	6.7	8.2	10.4	12.2
Neche	8.3	9.5	10.5	12.2	15.5	19.6	20.9

Legend:
 Below Flood Stage
 Minor
 Moderate
 Major
 Flood of Record