



Red River and Devils Lake Basin - 2022 Spring Flood Outlook

Discussion Points 2/10/2022

prepared by

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This outlook is for the U.S. portion of the basin and is based on conditions through Tuesday, 2/08/2022. All graphics, probabilities, and related discussions are available at [weather.gov/fgf](https://www.weather.gov/fgf). The next update will be issued by 2/24/2022.

Bottom Line up Front!

- Its mid-winter... and there's a moderate to somewhat high threat for significant snowmelt flooding:

- Lingering 2021 drought conditions mean that surface storage has room for snowmelt infiltration - if thaw is gentle.
- Snowfall/SWE through early January is near to above long term mid-winter normal amounts.
- Frost depths are running near to somewhat deeper than long term normal, due to cold January and early February conditions.

- A turnaround from record driest year in 2021. *But*, not near as wet as the recent wet years of 2019 to early 2020. Soil moisture is back to within an inch plus-or-minus of normal soil moisture.

- Climate outlooks currently indicate a trend change in February, from cooler and snowier than normal towards near normal temperatures and precipitation through early spring, which helps to keep our overall risk in check.

Long Story Short: The risk for significant snowmelt flooding is moderately high, running near to slightly above long-term historical averages across the Red River and Devils Lake Basins (U.S. portions).

Key Snowmelt Flood Components:

1. Base Streamflow: Near normal for this time of year. USGS analyses indicate that the Red River and most of its ND and MN tributaries are moderate ice covered and/or flowing at 25% -75% of normal ranges. Somewhat higher in the far southern basin and somewhat lower near the CanAm border [link: <https://waterdata.usgs.gov/nwis/rt>].

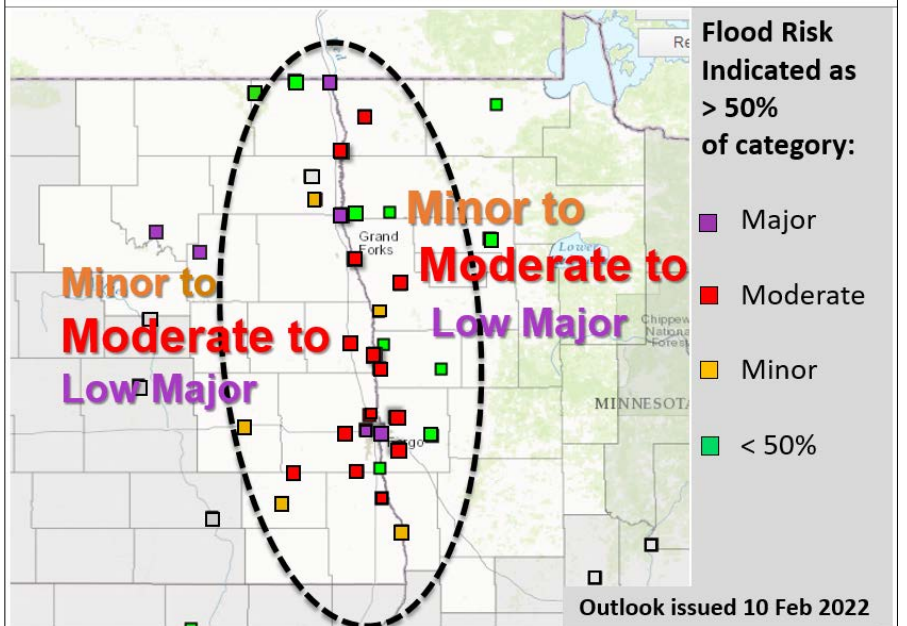
2. Soil Moisture at Freeze-up: Near normal. From slightly above in the far south to slightly below in the far north basins. [Link: https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml]

3. Frost Depth: Near to slightly Deeper than normal. A quite cold mid-winter period has allowed for deep frost penetration in most areas. Frost depths range from 12 to 40 inches in most locations, with deepest frost penetration across the northern reaches, and in upland areas of northwest MN, where early snowpack was lighter. Lake/River ice thicknesses are running near long term normal and is quite variable. [Link: https://www.weather.gov/ncrfc/LMI_FrostDepthMap]

4. Winter Snowpack/SWE: Near to Above normal. Since Dec 1st, snowfall runs from 90-130 percent of normal, SWE ranges from 2.0 to 4.0 inches. Fairly well distributed across the area, though quite splotchy due to relocation of snow during blowing snow and blizzard episodes. [Link: <https://www.nohrsc.noaa.gov/nsa/>]

5. Along with our flood partners, we've developed a display graphic which relates the current flood outlook to our historical flood levels, now available for all our forecast locations! **Check it out at:** <https://www.weather.gov/fgf/PFOS>

Near to Above Normal Runoff Expected... depending on Feb-Mar-Apr precipitation!



DEVILS LAKE & STUMP LAKE... Long-Range Probabilistic Outlook
Valid February 07, 2022 - September 30, 2022

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1449.8	1450.0	1450.3	1450.6	1451.1	1451.9	1452.4
EAST STUMP LAKE	1449.8	1450.0	1450.3	1450.6	1451.1	1451.9	1452.4

The current heights of Devils Lake and Stump Lake are ~1447.28 ft. MSL.

Color code: Below Minor Moderate Major Flood of Record

RED RIVER AND TRIBUTARIES... Long-Range Probabilistic Outlook
Valid February 14, 2022 - May 15, 2022

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	11.6	11.7	12.0	13.0	14.3	15.9	16.2
HICKSON	24.8	25.6	27.2	29.4	32.4	34.6	35.7
FARGO	24.0	25.2	27.2	30.9	33.9	35.9	38.3
HALSTAD	23.6	24.7	28.7	32.9	36.6	38.7	39.1
GRAND FORKS	36.8	38.7	41.8	44.4	46.1	49.2	50.6
OSLO	34.0	34.4	35.3	36.3	37.1	38.4	39.0
DRAYTON	36.8	38.0	39.8	41.1	42.2	42.9	43.6
PEMBINA	45.4	45.9	48.0	50.3	52.0	52.7	53.0

Minnesota Tributaries:

South Fork Buffalo River.....							
SABIN	13.4	13.9	14.5	15.0	15.7	16.5	17.6
Buffalo River.....							
HAWLEY	6.0	6.5	7.3	8.0	9.3	10.1	10.5
DILWORTH	15.4	16.4	18.5	20.1	21.6	22.8	23.8
Wild Rice River.....							
TWIN VALLEY	5.7	6.0	6.6	7.6	9.2	10.2	11.2
HENDRUM	19.9	21.9	24.4	28.1	30.3	31.6	32.0
Marsh River.....							
SHELLY	9.1	9.6	10.7	12.3	15.6	17.2	18.6
Sand Hill River.....							
CLIMAX	14.8	15.8	18.5	22.8	26.1	30.1	31.2
Red Lake River.....							
HIGH LANDING	6.8	7.1	8.3	9.4	10.9	11.8	12.1
CROOKSTON	15.5	16.6	18.3	20.4	22.5	26.6	31.0
Snake River.....							
ABOVE WARREN	63.7	63.9	64.2	65.1	65.9	67.0	68.5
ALVARADO	101.3	101.9	103.0	105.3	107.4	108.6	109.3
Two Rivers River.....							
HALLOCK	804.1	804.6	805.8	807.5	808.6	809.4	810.4
Roseau River.....							
ROSEAU	11.7	12.1	13.3	14.6	15.6	17.4	18.1

North Dakota Tributaries:

Wild Rice River.....							
ABERCROMBIE	10.1	11.9	14.1	16.9	19.8	23.2	24.6
Sheyenne River.....							
VALLEY CITY	12.2	12.6	13.4	15.8	19.2	22.1	23.0
LISBON	12.6	13.1	14.6	16.0	19.4	22.5	24.1
KINDRED	15.9	16.8	18.5	20.3	21.2	21.2	21.2
WEST FARGO DVRSN	15.7	17.2	18.0	21.1	21.3	21.3	21.3
HARWOOD	83.7	83.8	87.9	90.7	91.5	92.1	92.2
Maple River.....							
ENDERLIN	11.3	11.6	12.2	12.7	13.7	14.5	15.2
MAPLETON	19.2	19.5	20.5	21.7	22.4	23.3	23.9
Goose River.....							
HILLSBORO	10.4	11.4	13.1	13.8	14.9	15.8	16.4
Forest River.....							
MINTO	5.1	5.4	5.8	6.8	7.2	7.8	7.9
Park River.....							
GRAFTON*	--	--	--	--	--	--	--
Pembina River.....							
WALHALLA	5.3	5.5	6.6	8.0	10.1	13.0	13.8
NECHE	9.7	10.3	11.8	15.3	18.6	21.3	21.4

Notes

1. Devils Lake Basin Runoff Risk is moderately high. An additional rise of 3 to 4 feet is expected (75% to 25% risk range). A slight increase from the Jan 27th Outlook. A ½ to 1 ft. rise on Devils Lake is considered about normal.

Note: Devils Lake is currently about 1.25 feet lower than this time last year.

2. Red River Basin Flood Risk is moderately high. All Red River main-stem points may see near to somewhat above normal spring runoff/flows.

- near to above normal soil moistures in the south, near normal frost depths.

- coupled with moderate to high winter snowpack and SWE to date.

3. Near normal snowpack and runoff potential is evident in most all MN tributaries.

Near to slightly below normal soil moisture and near normal snowpack throughout west-central and northwest MN.

4. ND tributaries have a slightly higher runoff potential across southeast ND that decreases as one moves north into northeast ND.

Mid and Upper Sheyenne basin soils are near normal moisture, while snowpack is somewhat above normal.

Lower Sheyenne through east-central ND tribs have near normal soil moisture and near to above normal snowpack.

Northeast ND has slightly drier soils with near normal snowpack. All values up slightly since Jan 27th Outlook.

Note: new Grafton Bypass!