



## Red River and Devils Lake Basin - 2020 Spring Flood Outlook

Discussion Points 2/13/2020

prepared by

NWS - Weather Forecast Office, Grand Forks ND  
NWS - North Central River Forecast Center, Chanhassen MN



This outlook is for the U.S. portion of the basin and is based on conditions through Monday, 2/10/2020. All graphics, probabilities, and related discussions are available at [weather.gov/fgf](https://weather.gov/fgf). The next update will be issued by 2/27/2020.

### Bottom Line up Front!

- **Good News: Little change since January 23<sup>rd</sup> outlook.**

-- **No storms since mid-January:** Precipitation has been a bit below normal since January 17-18 storm.

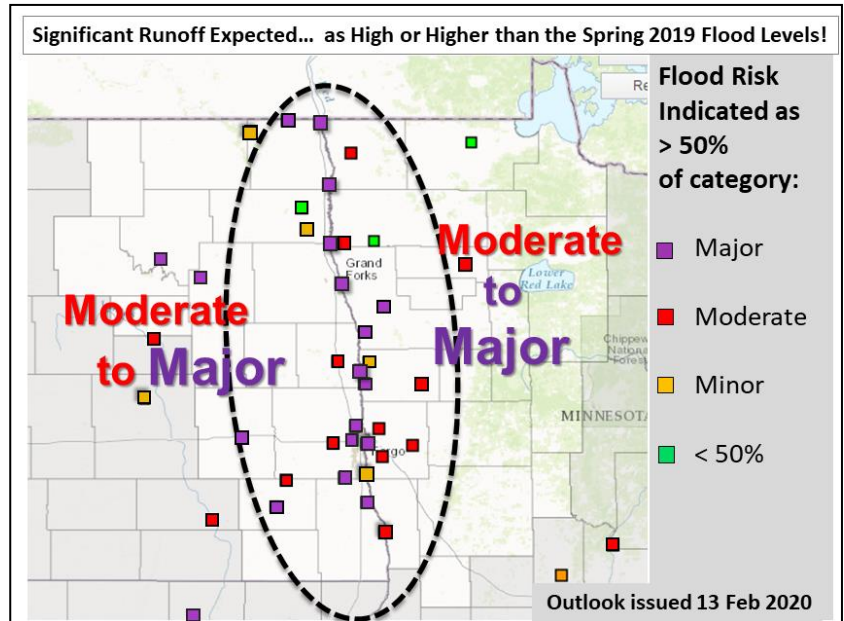
-- **Generally mild conditions:** Frost depths are still shallow and quite variable.

- **Bad News: Little change since January 23<sup>rd</sup> outlook.**

-- **Very wet soils and high base streamflows persist.**

-- **Snowpack/SWE still remains at or above normal leading to high runoff potential.**

- **Climate outlooks continue to indicate an increased risk for a cooler and wetter late winter and early spring period which increases the risk for rapid and/or rainfall enhanced runoff.**



**Long Story Short: The risk for significant snowmelt flooding continues to be substantial, running above long-term historical averages across the Red River and Devils Lake Basins (U.S. portions).**

Key Snowmelt Flood Components: (little to no change since January 23<sup>rd</sup> outlook)

**1. Base Streamflow: At or near record high levels for this time of year.** USGS analyses indicate that the Red River and most of its ND and MN tributaries (south of Grafton-Argyle) are moderate-thin ice covered and/or flowing at 95<sup>th</sup> percentiles or greater [link: <https://waterdata.usgs.gov/nwis/rt>]. Tributaries north of Grafton-Argyle are at 76% to 95%.

**2. Soil Moisture at Freeze-up: Much above normal throughout. Standing water frozen into some ditches.**

[Link: [https://www.cpc.ncep.noaa.gov/products/Soilmst\\_Monitoring/US/Soilmst/Soilmst.shtml](https://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml)]

**3. Frost Depth: Shallower than normal.** Heavy snowcover most of the season has kept frost depths somewhat shallow across the far southern RRV at 6-12 inches. Frost at most locations north of Fargo is 10 to 30 inches deep. Lake/river ice thicknesses are less than normal and quite variable. [Link: [https://www.weather.gov/ncrfc/LMI\\_FrostDepthMap](https://www.weather.gov/ncrfc/LMI_FrostDepthMap)]

**4. Winter Snowpack/SWE: Above normal.** Since December 1<sup>st</sup>, snowfall has been running 150-300 percent of normal with SWE ranging from 2.5 to 5.0 inches - least across far northeast ND and far northwest MN. [Link:

<https://www.nohrsc.noaa.gov/nsa/>]

**5. Precipitation: Sep 1<sup>st</sup> to Feb 9<sup>th</sup> sets record high.** Total precipitation (rain and snow-water) measured across the basin from Sep 1<sup>st</sup> through Feb 9<sup>th</sup> was 4-8 inches above the long-term normal for most of Red River Basin. [Links:

<https://www.ncdc.noaa.gov/sotc/national/201913>; [https://water.weather.gov/precip/index.php?location\\_type=wfo&location\\_name=FGF](https://water.weather.gov/precip/index.php?location_type=wfo&location_name=FGF)]

**New!** 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>

**DEVILS LAKE & STUMP LAKE...** Long-Range Probabilistic Outlook  
Valid February 10, 2020 - September 30, 2020

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1450.7	1450.8	1451.2	1451.6	1452.0	1452.8	1453.3
EAST STUMP LAKE	1450.7	1450.8	1451.2	1451.6	1452.0	1452.8	1453.3

The current heights of Devils Lake and Stump Lake are ~1449.00 ft MSL.

Color code: Below Minor Moderate Major Flood of Record

**RED RIVER AND TRIBUTARIES...** Long-Range Probabilistic Outlook  
Valid February 17, 2020 - May 17, 2020

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	12.2	12.5	13.0	14.6	15.7	17.1	17.4
HICKSON	27.9	29.3	31.1	33.4	34.5	36.0	36.8
FARGO	31.8	32.4	34.2	35.6	37.6	39.0	39.9
HALSTAD	35.8	37.1	38.2	39.0	39.8	40.2	40.6
GRAND FORKS	44.6	45.6	47.0	48.9	51.1	52.9	54.2
OSLO	37.0	37.3	37.4	37.8	37.9	38.0	38.1
DRAYTON	41.4	41.9	42.5	43.2	44.4	45.0	45.5
PEMBINA	51.0	51.7	52.3	53.0	54.0	54.5	54.8

**Minnesota Tributaries:**

South Fork Buffalo River.....							
SABIN	15.4	15.8	16.3	17.0	18.0	18.6	19.6
Buffalo River.....							
HAWLEY	8.8	9.0	9.6	10.1	10.7	11.1	11.8
DILWORTH	21.8	22.3	22.9	23.8	24.8	25.3	26.6
Wild Rice River.....							
TWIN VALLEY	9.5	10.1	11.0	12.0	13.4	14.5	15.5
HENDRUM	29.8	30.3	31.5	32.3	33.0	33.5	34.3
Marsh River.....							
SHELLY	15.4	16.2	17.5	19.3	20.7	22.1	23.5
Sand Hill River.....							
CLIMAX	24.6	25.6	27.7	30.5	33.1	35.2	36.5
Red Lake River.....							
HIGH LANDING	10.0	10.6	11.4	12.6	13.1	13.3	13.4
CROOKSTON	19.8	20.7	21.6	23.4	25.2	27.2	28.5
Snake River.....							
ABOVE WARREN	65.4	65.5	65.9	66.9	67.9	69.5	72.1
ALVARADO	106.0	106.3	107.2	108.8	109.6	110.0	110.8
Two Rivers River.....							
HALLOCK	805.3	806.1	806.9	807.8	808.9	809.8	810.5
Roseau River.....							
ROSEAU	14.0	14.3	15.3	15.8	18.0	18.5	18.9

**North Dakota Tributaries:**

Wild Rice River.....							
ABERCROMBIE	19.4	20.1	22.2	23.8	25.7	27.3	27.9
Sheyenne River.....							
VALLEY CITY	13.7	14.8	17.2	19.8	21.7	23.9	27.2
LISBON	15.4	15.9	17.6	19.8	22.7	26.1	30.2
KINDRED	20.1	20.4	20.8	21.2	21.2	21.2	21.2
WEST FARGO DVRSN	20.1	21.2	21.3	21.3	21.3	21.3	21.3
HARWOOD	91.2	91.4	91.7	91.9	92.1	92.2	92.3
Maple River.....							
ENDERLIN	11.8	12.2	12.5	13.0	13.6	14.3	14.8
MAPLETON	22.0	22.1	22.4	22.7	23.2	23.8	24.0
Goose River.....							
HILLSBORO	11.1	11.9	13.2	14.1	14.8	16.1	17.1
Forest River.....							
MINTO	5.1	5.2	5.9	6.6	7.3	8.7	9.2
Park River.....							
GRAFTON*	10.1	10.2	10.6	11.2	13.1	14.6	15.4
Pembina River.....							
WALHALLA	9.1	9.5	10.6	11.8	13.2	15.1	15.6
NECHE	16.8	17.4	19.3	20.6	21.3	21.5	21.6

**Notes:**

(no significant changes since January 23<sup>rd</sup> outlook)

**1. Devils Lake Basin runoff risk is quite high.** A rise of 2 to 3 ft is expected (75% to 25% risk range). A 0.5 to 1 ft rise on Devils Lake is considered about normal.

*Note: Devils Lake is currently about a foot higher than this time last year.*

**2. Red River Basin runoff risk is overall quite high.** All Red River mainstem points will see significantly high flows.

- heavily influenced by excess flow and soil moisture now.

- coupled with high winter snowpack and SWE.

- exacerbated by a potentially delayed thaw cycle.

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

The northern-most MN tribs have the wettest soils but a somewhat lesser snowpack.

**4. ND Wild Rice, Sheyenne, and Maple Rivers are at a much higher runoff risk.**

Mid and Upper Sheyenne is carrying substantial soil moisture and snowpack with potential for both early and later crest issues.

Lower Sheyenne through east-central ND tribs are also at an exceptionally elevated risk.

Northeast ND threat is mixed, with lesser runoff at the upper basins of the Pembina, Forest, and Park Rivers.

**Note:** Reduced risk expected for areas protected by new Grafton Bypass!