Red River and Devils Lake Basin - 2022 Spring Flood Outlook
Discussion Points 3/10/2022
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 Tuesday, 3/10/2022. All graphics, probabilities, and related discussions are available at weather.gov/fgf. Additional updates will be issued if needed.

Bottom Line up Front:
- Spring is almost in the Air... the risk of significant snowmelt flooding remains in the Moderate to Major categories:
  - Lingering 2021 drought conditions with some surface storage for snow melt infiltration - if thaw is gentle.
  - However, Snowfall/SWE through early March is somewhat above long term late-winter normal amounts.
  - Frost depths are running somewhat deeper than long term normals, due to bitter cold Jan-Feb 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 volatile next couple of weeks, cold-to mild-to cold, with a trend towards near normal temperatures/precipitation, mid-March through April, which helps to keep our overall risk in check.

Long Story Short: The risk for significant snowmelt flooding is moderately high, running somewhat 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 thickly 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].


3. Frost Depth: Somewhat Deeper than normal. A quite cold mid-winter period has allowed for deep frost penetration in most areas. Frost depths range from 20 to 60 inches in most locations, with deepest frost penetration across the northern reaches, and upland areas of the Red River Basin, where early snowpack was lighter. Lake/River ice thicknesses are running somewhat thicker than long term normal. [Link: https://www.weather.gov/ncrfc/LMI_FrostDepthMap ]

4. Winter Snowpack/SWE: Somewhat Above normal. Since Dec 1st, snowfall runs from 90-140 percent of normal, SWE ranges from 2.0 to 5.0 inches [70th to 90th percentiles]. Well distributed across the sub-basins, but quite splotchy due to relocation of snow during frequent 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
## DEVILS LAKE & STUMP LAKE...  
Long-Range Probabilistic Outlook  
Valid March 7, 2022 - September 30, 2022

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<th>LOCATION</th>
<th>95%</th>
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The current heights of Devils Lake and Stump Lake are ~1447.26 ft. MSL.

## Color code:  
Below Minor Moderate Major Flood of Record

## RED RIVER AND TRIBUTARIES...  
Long-Range Probabilistic Outlook  
Valid March 14, 2022 - June 12, 2022

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### Minnesota Tributaries:

- South Fork Buffalo River.....  
  SABIN  | 14.0 | 14.4 | 14.9 | 15.6 | 16.1 | 17.4 | 17.9 |
- Buffalo River.....  
  HAWLEY | 7.3  | 7.5  | 8.1  | 8.9  | 9.6  | 10.3 | 10.8 |
- DILWORTH | 17.8 | 19.3 | 20.2 | 21.3 | 22.3 | 23.8 | 24.2 |
- Wild Rice River.....  
  TWIN VALLEY | 6.1  | 6.4  | 7.1  | 8.2  | 9.3  | 10.7 | 11.8 |
- HENDRUM | 25.1 | 27.0 | 28.1 | 29.6 | 31.0 | 32.0 | 32.8 |
- Marsh River.....  
  SHELLY | 10.4 | 11.1 | 12.2 | 13.6 | 15.6 | 18.2 | 19.3 |
- Sand Hill River.....  
  CLIMAX | 19.0 | 20.7 | 21.9 | 24.3 | 27.2 | 30.8 | 33.4 |
- Red Lake River.....  
  HIGH LANDING | 7.3  | 7.5  | 8.3  | 9.2  | 10.8 | 11.6 | 12.0 |
- CROOKSTON | 15.8 | 16.1 | 17.8 | 20.1 | 22.5 | 25.3 | 27.0 |
- Snake River.....  
  ABOVE WARREN | 63.8 | 64.1 | 64.3 | 65.0 | 65.8 | 68.2 | 69.4 |
- ALVARADO | 101.8 | 102.4 | 103.5 | 105.3 | 107.8 | 109.2 | 109.9 |
- Two Rivers River.....  
  HALLOCK | 804.9 | 806.3 | 807.0 | 807.8 | 808.9 | 810.1 | 811.3 |
- Roseau River.....  
  ROSEAU | 11.9 | 12.7 | 13.6 | 14.9 | 16.0 | 18.1 | 18.9 |

### North Dakota Tributaries:

- Wild Rice River.....  
  ABERCROMBIE | 16.1 | 17.0 | 18.2 | 19.8 | 21.3 | 23.6 | 25.5 |
- Sheyenne River.....  
  VALLEY CITY | 12.6 | 13.1 | 13.5 | 14.7 | 18.0 | 20.2 | 23.2 |
  LISBON | 13.6 | 14.3 | 15.0 | 15.9 | 17.9 | 21.4 | 24.8 |
  KINRED | 17.5 | 18.7 | 19.5 | 20.2 | 20.8 | 21.2 | 21.2 |
  WEST FARGO DVRSN | 17.2 | 18.5 | 19.3 | 20.8 | 21.3 | 21.3 | 21.3 |
  HARWOOD | 88.9 | 89.4 | 90.3 | 91.1 | 91.7 | 92.1 | 92.2 |
- Maple River.....  
  ENDERLIN | 12.2 | 12.3 | 12.8 | 13.4 | 13.9 | 14.8 | 15.4 |
  MAPLETON | 21.0 | 21.3 | 21.6 | 22.1 | 22.7 | 23.4 | 23.8 |
- Goose River.....  
  HILLSBORO | 11.1 | 11.8 | 13.3 | 14.0 | 14.7 | 15.5 | 16.2 |
- Forest River.....  
  MINO | 5.5  | 6.0  | 6.4  | 6.8  | 7.3  | 7.9  | 8.1 |
- Park River.....  
  GRAFTON* | -  -  -  -  -  -  -  -  -  -  -  -  -  - |
- Pembina River.....  
  WALHALLA | 5.6  | 6.1  | 6.7  | 7.8  | 9.6  | 12.0 | 12.9 |
  NECHE | 11.0 | 11.6 | 13.3 | 15.6 | 18.0 | 20.9 | 21.3 |

### 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).  
   No significant changes  
   from early Feb.  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, deeper  
     than normal frost depths.

   - moderate to high winter  
     snowpack and SWE to date.

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

   Near normal soil moisture and  
   near (NW) to above (WC) normal snowpack in northwest  
   through west-central 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 tribus have near normal soil moisture and near  
     to above normal snowpack.

   **Note:** new Grafton Bypass!