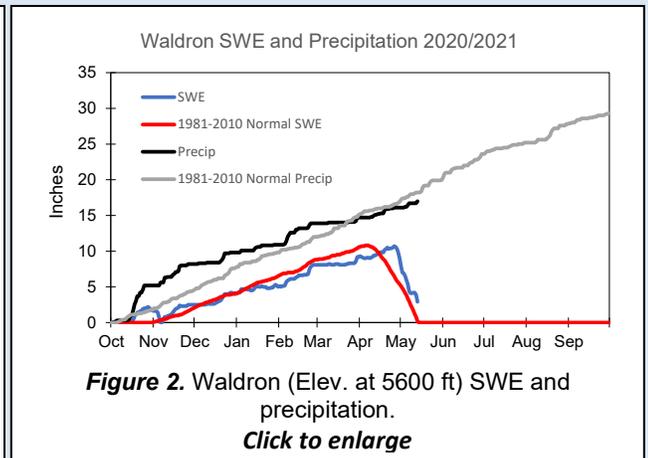
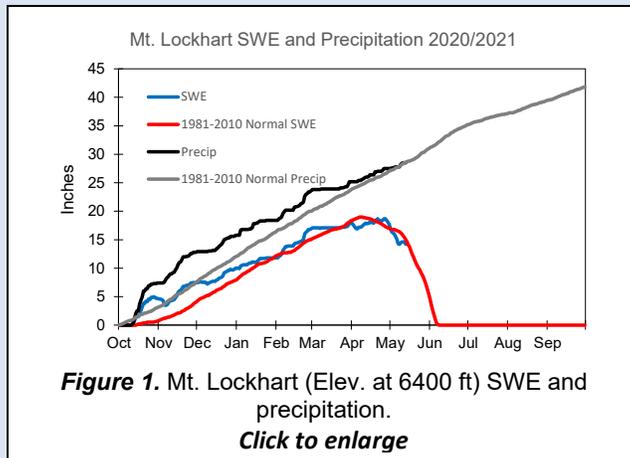


Teton River Runoff Forecast May 1, 2021



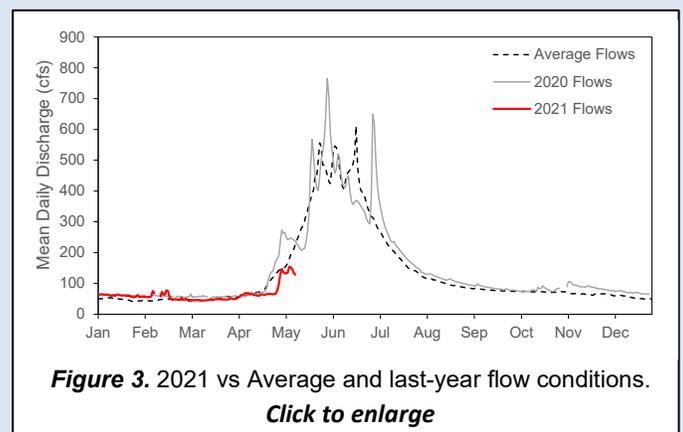
Snowpack Conditions



– Snowpack conditions (Snow Water Equivalent or SWE) at the Natural Resource Conservation Service (NRCS) [Mt. Lockhart and Waldron SNOTEL](#) sites as of May 1 are **95% of the median** and **no percentage calculated by NRCS**, respectively (Figure 1 and Figure 2). Waldron percent of normal was not calculated because the snow is mostly melted and, therefore, is no longer representative of water storage conditions. A few inches of SWE is still observed at Waldron but is melting quickly. A late April storm increased SWE to approximately normal for the beginning of May. The rate of snowmelt at higher elevations is normal for this time of year. At lower elevations, the snow stayed longer but is melting faster than normal. The trend of higher than normal precipitation has subsided, and cumulative water year precipitation is now normal at high elevations and below normal at lower elevations.

Streamflow Conditions

– The United States Geological Survey (USGS) gage [06102500](#) Teton River Below South Fork near Choteau (TRSF) came online March 10. The most recent reading at the issuance of this forecast was 145 cfs, which is below normal for this time of year. Although precipitation, SWE, and snowmelt rates are approximately normal for the year, that moisture has not translated into streamflow yet. Temperatures in the coming months will determine how fast snow storage is released and the magnitude of spring flooding.



Weather Outlook

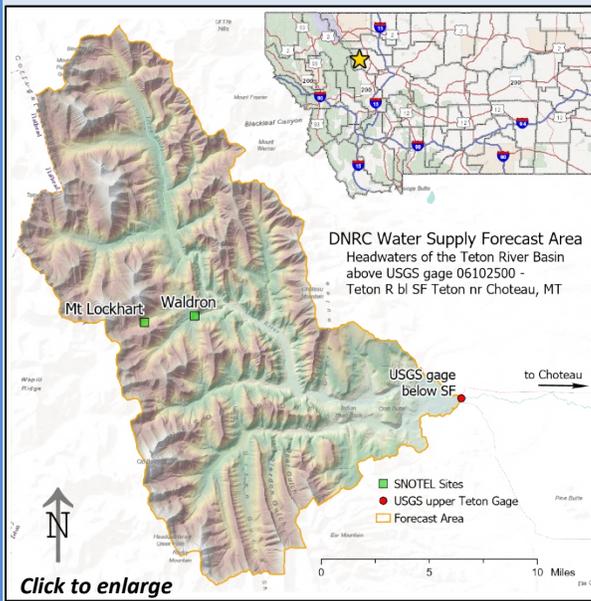
– The National Weather Service (NWS) **one-month outlook indicates a 30-40% chance of above normal precipitation and normal temperatures** for North-Central Montana. Normal temperatures will hopefully prolong snowmelt and reduce flooding. La Niña has contributed to the wet conditions in early 2021 but has since transitioned to neutral conditions, meaning **La Niña is not currently affecting Montana weather**.



Disclaimer: The DNRC snowmelt runoff forecast follows NRCS methodology using statistical best practices and professional judgment. Like any forecast it contains uncertainty. Please consider the stated error and documentation associated with each model when using the predicted flow in your decision-making process.

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Forecast Area



[Click to enlarge](#)

Runoff Forecast

– DNRC’s May 1 runoff forecast predicts an **above normal volume of 49,410 acre-feet** (Figure 4) of water from snowmelt. ****This is the estimated flow only from snowmelt****. Current information indicates that the 2021 runoff from accumulated snowpack is predicted to be like conditions observed in 2017 and 2020. The **error associated with the March forecast is +/- 38%**, meaning that even with uncertainty it is likely to be an above average year (Figure 4). The error range for May is the lowest because snow is melting and no longer accumulating.

If there is a normal amount (6.5 inches) of rain from May 1 – July 31, the total runoff is predicted to be 60,206 acre-feet. This is 18,008 acre-feet more than normal. Any excess rain (i.e. more than 6.5 inches) could increase the volume substantially (Figure 5). If it rains 11.5 or more inches from May 1 to July 31, 2021 could be a wetter year than 2019 or 2020. For reference, both 2019 and 2020 had more than 11 inches of rain from May 1 – July 31. The **effects of excess rain are visualized in Figure 5** as inches above normal.

Forecast Period is May 1 – July 31

All predicted and displayed values are calculated for this period.

On a normal year, **42,198 acre-feet** of water flows by the TRSF gage from May 1 – July 31 (based on the median of the total annual flow from 1999 to 2020). **Approximately 28,178 acre-feet (or 68%) of this flow is from snowmelt** built up at high elevations during the winter and spring. The remainder of flow is from rain events between May 1 and July 31. The median rainfall in the forecast area during this period is 6.5 inches but can vary considerably. **The median rainfall (6.5 in) produces about 10,796 acre-feet of runoff based on DNRC rainfall runoff model estimates.**

The median runoff for the month of April is 4,416 acre-feet. In April 2021, 3,975 acre-feet flowed past the TRSF gage, which is less than normal. There was an estimated **0.3 inches of rain in April (the remainder of precipitation was snow)** for the forecast area which is greater than the April average of 1.1 inches.

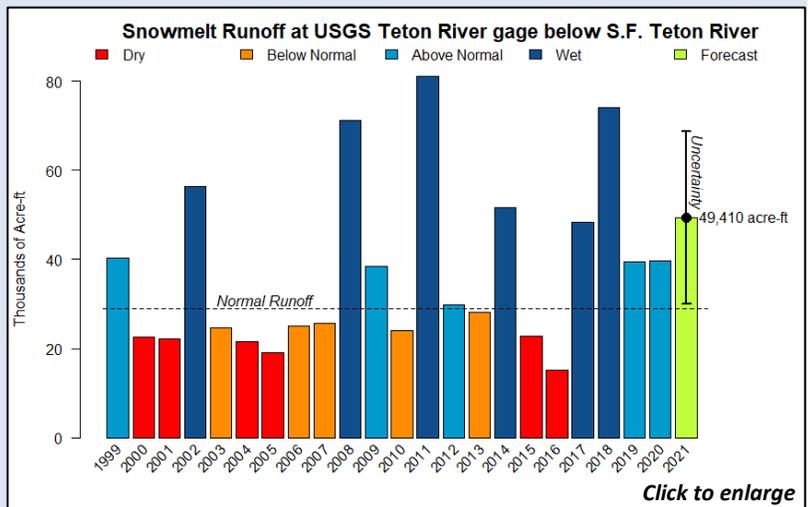


Figure 4. Historical snowmelt runoff and 2021 prediction.

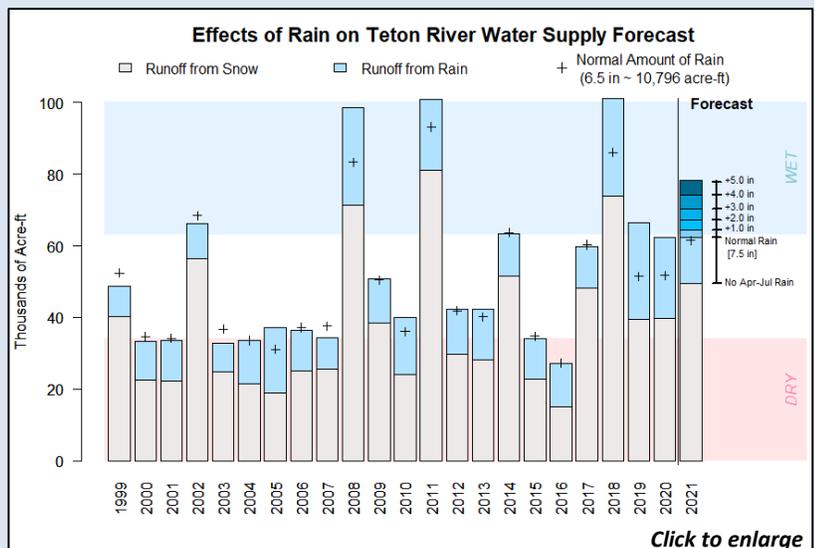


Figure 5. Proportion of flow from snowmelt vs. rain and the effects of May 1 – July 31 rain on predicted flow.



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