

Teton River Runoff Forecast

May 1, 2023

Snowpack Conditions

Click figures to link to plots

Streamflow Conditions

Weather Outlook

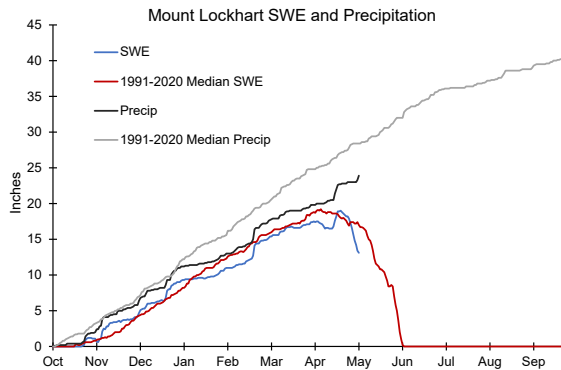


Figure 1. Mt. Lockhart (Elev. at 6400 ft) SWE and precipitation.

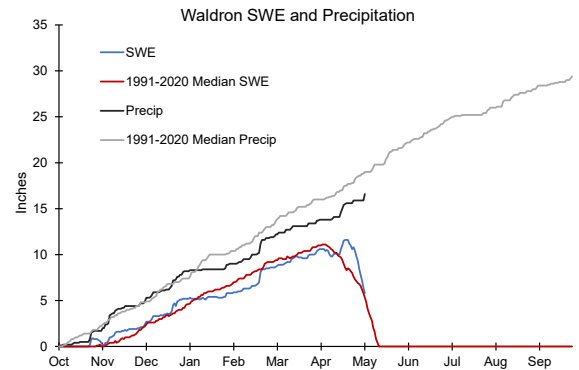


Figure 2. Waldron (Elev. at 5600 ft) SWE and precipitation.

– Snowpack conditions (Snow Water Equivalent or SWE) at the Natural Resource Conservation Service (NRCS) [Mt. Lockhart and Waldron SNOTEL](#) sites are **trending below normal at high elevations and above normal at low elevations**, as of May 1. **Mt. Lockhart is at 77% of the median** (Figure 1) and **Waldron is at 119% of the median** (Figure 2). These conditions have the potential to produce early peak flows (especially with rain) and less runoff in June, depending on temperatures above 6,000 ft, that is.

– The United States Geological Survey (USGS) gage [06102500 Teton River Below South Fork Choteau \(TRSF\)](#) was started on April 4, 2023. The gage is currently reading above average flow for this time of year at 435 cfs. Low elevation snowpack this year, coupled with the recent warm temperatures, is likely driving this early increase in flow.

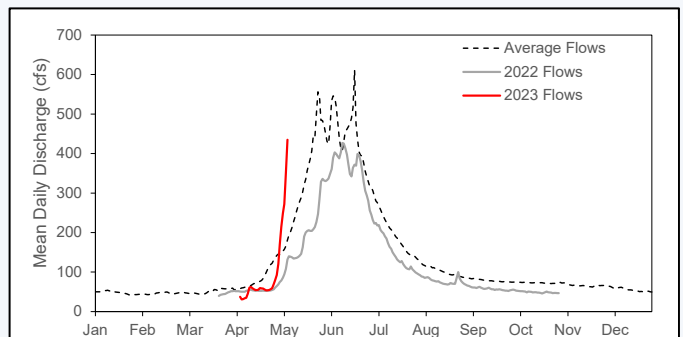


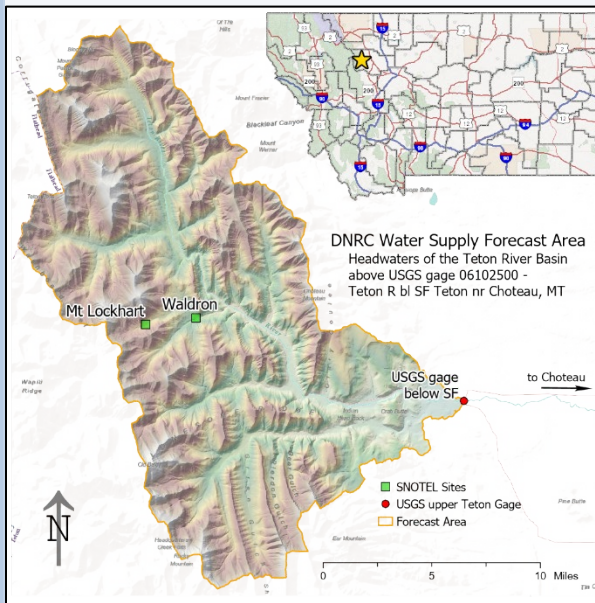
Figure 3. 2023 vs Average and last-year flow conditions.

– The National Weather Service (NWS) **one-month outlook indicates normal precipitation and higher than normal temperatures** for Central Montana. The long-range (3 month) outlook is showing approximately normal temperatures and below average precipitation. Current conditions in the area are wet, with the 7 day forecast having a chance of rain showers, particularly along the Rocky Mountain front.



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.

Forecast Area



Forecast Period is May 1 – July 31

All predicted and displayed values are calculated for this period.

On a normal year, 42,255 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 2022). **Approximately 30,213 acre-feet (or 72%) 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 normal rainfall in the forecast area during this period is 6.5 inches but can vary considerably. **The median rainfall (6.5 in) produces about 12,302 acre-feet of runoff based on DNRC rainfall runoff model estimates.**

Runoff Forecast

DNRC’s May 1 runoff forecast predicts an **above normal volume of 35,377 acre-feet** (Figure 4) of water from snowmelt, or 117% of normal. ****This is the estimated flow only from snowmelt****. Current information indicates that the 2023 runoff from accumulated snowpack is predicted to be like conditions observed in 2021. Based on the uncertainty of the prediction, there is a **90% chance snowmelt runoff will exceed 27,539 acre-feet (91% of normal)** and only a **10% chance snowmelt runoff will exceed 43,282 acre-feet (143% of normal)**.

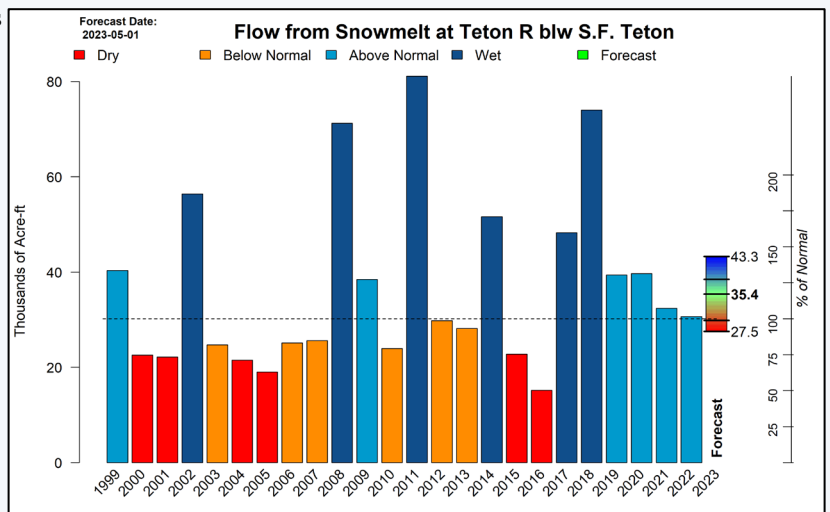


Figure 4. Historical snowmelt runoff and 2023 prediction.

If there is a normal amount (6.5 inches) of rain from May 1 – July 31, the total runoff is predicted to be 47,679 acre-feet. This is 5,424 acre-feet more than normal. Any excess rain (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, 2023 could be equivalent to 2019 or 2020. For reference, both 2019 and 2020 had more than 12 inches of rain from April 1 – July 31. The effects of excess rain are visualized in Figure 5 as inches above normal.

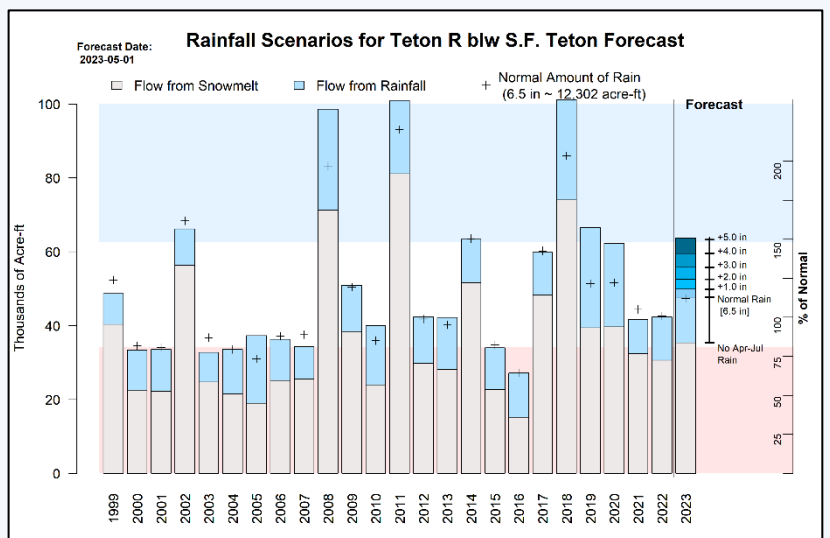


Figure 5. Proportion of flow from snowmelt vs. rain and the effects of May 1 – July 31 rain on predicted flow.



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