Managing the Mighty Missouri River

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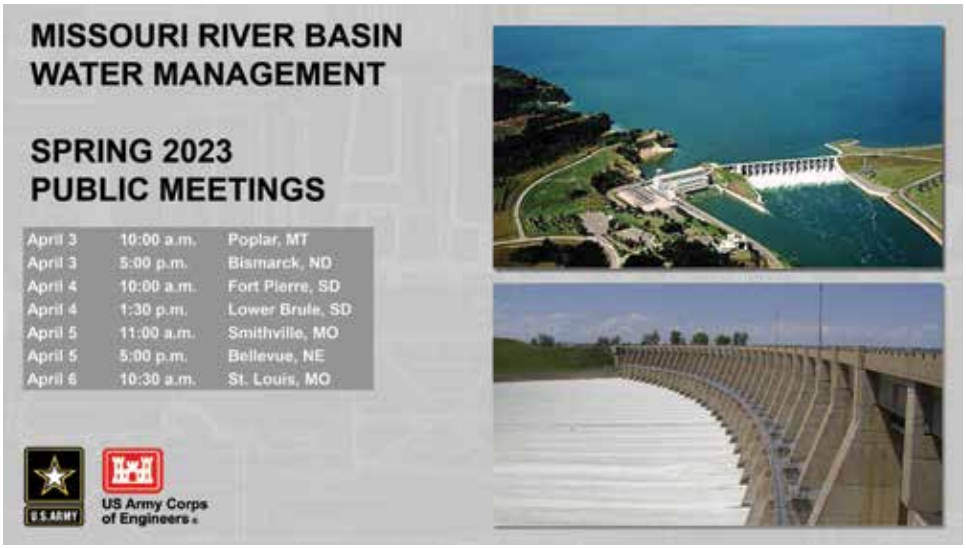
In April, the U.S. Army Corps of Engineers (Corps) presented to North Dakota its annual spring plan for the management of the Missouri River system for the coming year.

This Annual Operating Plan (AOP) meeting is held each spring with projections for the upcoming summer and every fall with system management projections for the pending winter. Typically, seven meetings are held throughout the basin, from Montana down to Missouri. The public is invited, comments are taken and recorded and a question-and-answer session about Corps programs and activities is held.



While the Corps manages the river system, it does not do so arbitrarily. It adheres to many federal requirements, directives and laws dating back to an 1824 congressional mandate to clear the river of snags to aid navigation. Since that time, many federal rules affecting river management have been enacted, including various versions of the Rivers and Harbors Acts (starting in 1912), Flood Control Acts (starting in 1936), Flood Protection Acts, Water Supply Acts, and various environmental protection acts. The most recognizable legislation for North Dakota is the 1944 Flood Control Act that authorized construction of the Garrison Dam and four other mainstem dams on the river system.

In North Dakota, river community leadership and the state have always encouraged a large, involved and engaged interaction with the Corps. Approximately 40 people attended the recent North Dakota AOP meeting, many representing agencies cooperating or interacting with the Corps. Representatives of North Dakota's Department of Water Resources provided official comments and concerns from the state's perspective. That participation is important as downstream meetings generate a high level of involvement from local water managers with vested interests in how the system is managed. Downstream interests do not always align with upstream interests, especially in years of very low or very high water flows.

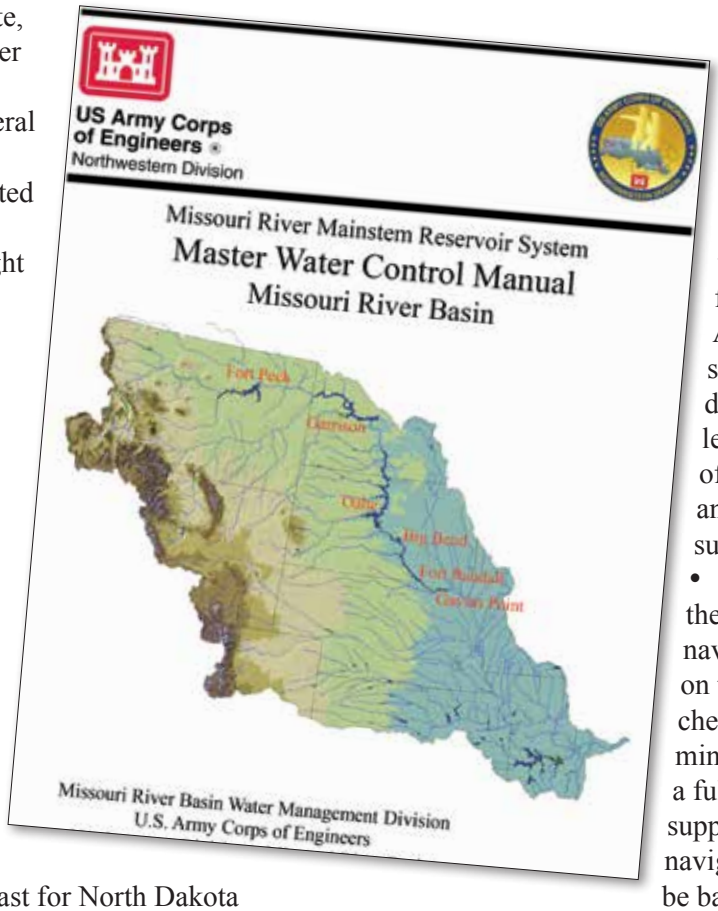
The Corps manages the Missouri River system according to a Master Water Control Manual, which most recently was rewritten in 2018. The Master Manual provides specific criteria developed over time from earlier versions and manuals dating back to the early 1960s for system management.

Per the Master Manual, the Corps' operating plan is almost exclusively based on several key factors:

1) Operation of the system to provide for the authorized purposes of the river system as identified in the Flood Control Act of 1944 (such as water supply, irrigation, power supply, recreation, fish and wildlife enhancement, water quality, flood control, and navigation);

2) Collaboration with federal, state, local and other entities (all other federal agencies and tribes inclusive) with authorized federal laws and programs; and
3) Reliance on current and projected weather forecasts, including snowpack, rain patterns, drought and climate conditions. The Master Manual requires the Corps to plan for a … "full spectrum of anticipated runoff conditions that could be expected to occur."

Based on the above, the message for the coming year can be summarized as follows:



- North Dakota and the Upper Plains can expect to be generally colder than usual over the next few months resulting in snow being held in the mountains longer and increasing basin flood risks.
- No significant Missouri River system flooding is forecast for North Dakota as the spring runoff begins. However, as we saw in 2011, some flooding events could occur with prolonged thunderstorm activity.
- No significant ice jamming is expected on either the Missouri or Heart rivers this spring, but that is predicated on melting patterns and other considerations. This projection relative to spring runoff was made in early April and proved to be accurate.
- The total system (basin wide) is expected to see approximately 26.4 million acre-feet of runoff, or near the long-term system average of 25.7 million acre-feet per year.
- As of March 31, six system reservoirs were storing approximately 46.5 million acre-feet of water. The historic low storage was 33.9 million acre-feet in 2007; conversely, the historic high was 72.5 million acre-feet in 2011. As a note, the system is only designed to store a maximum of 72.4 million acre-feet.
- Based on river flow and reservoir storage information as of the Corps' March 15 check point, system releases to support barge traffic on the lower Missouri River (below Sioux City, Iowa) will be at minimum level, or 29,000 cubic feet per second (cfs) between March 15 and July 1. The forecast for after July 1, calls for slightly above minimum service with a full eight-month flow support season. A July 1 total system storage check will determine the actual length of the second part of the navigation season and the level of flow support.
- The forecast for the second part of the navigation season (based on the July 1 storage check) is slightly above minimum service with a full eight-month flow support season. The actual navigation support level will be based on the total system storage on July 1.
- Water conservation measures will continue, which means water will be held in the reservoirs to offset potential drought conditions.
- Reservoir releases and elevations will likely be lower than average.

All of the above tells us that this will be a good year for the Missouri River system in North Dakota.

Our forecast predicts below-normal temperatures until mid-summer, with an equal chance of either more or less precipitation. In the fall, we will see generally normal temperatures and precipitation levels. The system with have enough water to accommodate all authorized purposes. Drought conditions are expected to be normal in most of the state, the exceptions being northern and far western North Dakota where dry conditions may occur.

No significant reservoir drawdowns negatively impacting recreation, power supply or access to water supplies for irrigation, municipal or rural water needs are envisioned. No flooding is forecast. The state should enter fall with good reservoir space for annual flood control and exclusive flood control needs.

Relative to our Missouri River system in North Dakota, we can look forward to a good year.