

HIGHLIGHTS FOR MARCH 2019

MONTANA AREA OFFICE

Precipitation during March was varied in the Upper Missouri River basin, ranging from 35 percent of average at Lake Elwell Reservoir to 129 percent of average at Clark Canyon Reservoir. Inflows were varied ranging from 62 percent of average at Gibson Reservoir to 140 percent of average at Lake Elwell. Reservoir storage is above average, and ranges from 101 percent of average at Canyon Ferry Reservoir to 131 percent of average at Clark Canyon Reservoir.

For the Milk River Basin, the precipitation was below average, ranging from 28 percent of average at Fresno Reservoir to 85 percent of average at Sherburne Reservoir. The inflows were varied, ranging from 41 percent of average at Sherburne Reservoir to 101 percent of average at Fresno Reservoir. End-of-month storage ranges from 69 percent of average at Sherburne Reservoir to 133 percent of average at Nelson Reservoir.

March precipitation was 80 percent of average at Yellowtail Dam. Inflows were 114 percent of average. Storage was normal at 104 percent of average.

WYOMING AREA OFFICE

March precipitation was below average in the Bighorn River Basin. March precipitation ranged from 58 percent of average at Buffalo Bill Reservoir to 96 percent of average at Boysen Reservoir. Reservoir inflow in the Bighorn basin was varied, ranging from 79 percent of average at Bull Lake Reservoir to 114 percent of average at Boysen Reservoirs. Storage in the Bighorn Basin is above average, ranging from 105 percent of average at Buffalo Bill Reservoir to 106 percent of average at Boysen and Bull Lake Reservoirs.

Precipitation during March was above average in the North Platte River Basin, ranging from 120 percent of average at Guernsey Reservoir to 198 percent of average at Seminoe Reservoir. Inflows were below average, ranging from 69 percent of average at Seminoe Reservoir to 100 percent of average at Guernsey Reservoir. Reservoir storage is about average, and ranges from 91 percent of average at Guernsey Reservoir to 123 percent of average at Seminoe Reservoir.

DAKOTAS AREA OFFICE

For all of North Dakota, March had way below average temperatures and below average precipitation. North Dakota now has 100 percent of the state with no drought or abnormally dry conditions. There was one record broken for the month of March as reported by the National Weather Service in Bismarck. On March 8 a record low temperature of -43 degrees was recorded at Williston. March end-of-month elevation at Keyhole and Shadehill Reservoirs was the highest on record.

March precipitation was below average in the Heart River Basin with zero and 57 percent of average precipitation at Dickinson and Heart Butte Dams, respectively. Within the Cheyenne, Grand and James River basins precipitation was varied, ranging from 4 percent of average at Jamestown Reservoir to 184 percent of average at Shadehill Reservoir.

March inflows in the Heart River basin were above average, with 356 percent of average inflow at Dickinson and 378 percent of average inflow at Lake Tschida. For the Cheyenne River basin,

inflows were above average, ranging from 103 percent of average at Belle Fourche Reservoirs to 1,389 percent of average at Angostura Reservoir. The James and Grand River basins exhibited varied inflows, with 74 percent of average at Jamestown Reservoir and 607 percent of average at Shadehill Reservoir.

Reservoir storage in the Heart River basin finished the month above average; 131 percent of average for Dickinson Reservoir, and 151 percent of average at Heart Butte Reservoir. Storage in the Cheyenne River basin was above average at the end of March, ranging from 110 percent of average at Deerfield Reservoir to 299 percent of average at Keyhole Reservoir, the highest on record. Storage at Shadehill and Jamestown Reservoirs was above average for the end of March, displaying 181 percent and 106 percent of average, respectively.

EASTERN COLORADO AREA OFFICE

Precipitation was above average over the Colorado-Big Thompson Project (CBT) during March. The Green Mountain Reservoir weather station reported the highest precipitation at 307 percent of average, while Willow Creek and Granby Reservoirs had the lowest at 168 percent of average.

Inflows were near average over the CBT during March. The inflow to Willow Creek Reservoir was the lowest at 79 percent of average. The inflow to Lake Estes Reservoir was the highest at 145 percent of average.

The Lake Granby storage of 344,300 AF on March 31 was 11,400 AF above average and 87,500 AF lower than one year ago on this date. Terminal reservoir storage in Carter Lake and Horsetooth Reservoir was 82 and 103 percent of average, respectively. The March end-of-month CBT storage water in Green Mountain, Lake Granby, Carter Lake, and Horsetooth Reservoirs was 605,400 AF; 23,900 AF below average.

Precipitation was above average over the Fryingpan-Arkansas Project (Fry-Ark) during March. The Pueblo Reservoir weather station reported the lowest precipitation at 110 percent of average, while Turquoise Reservoir had the highest at 408 percent of average.

Native inflows were varied over the Fry-Ark during March. The inflow to Twin Lakes Reservoir was the lowest at zero, actually a negative calculated inflow, while Turquoise had the highest with 305 percent of average.

Reservoir storage is varied for the Fry-Ark. Turquoise Reservoir is the lowest at 67 percent of average. Pueblo Reservoir is the highest at 115 percent of average. The total March end-of-month storage in the four reservoirs is 438,700 AF, 99 percent of average.

NEBRASKA-KANSAS AREA OFFICE

A blizzard in March turned into a rain-on-snow event that caused widespread flooding and enormous damage in eastern Nebraska, including breaching Spencer Dam on the Niobrara River and damaging bridges, farms, houses, and towns, to name a few.

March precipitation was above average in the Republican River Basin, ranging from 132 percent of average at Harman County Reservoir to 289 percent of average at Harry Strunk Reservoir. Inflows were varied and ranged from 20 percent of average at Enders Reservoir to

425 percent of average at Lovewell Reservoir. Ignoring Bonny Reservoir, which has been drained for Compact compliance, storage ranges from 34 percent of average at Enders Reservoir to 139 percent of average at Keith Sebelius Reservoir.

For the Solomon Basin, the precipitation was varied, ranging from 72 percent of average at Glen Elder Reservoir to 105 percent of average at Kirwin Reservoir. The inflows were well above average, ranging from 326 percent of average at Kirwin Reservoir to 538 percent of average at Glen Elder Reservoir. End-of-month storage ranges from 113 percent of average at Glen Elder Reservoir to 201 percent of average at Webster Reservoir.

For the Smokey Hill, Niobrara, and Lower Platte Basins, precipitation was mostly way above average but for one site, ranging from 66 percent of average at Cedar Bluff Reservoir to 618 percent of average at Box Butte Reservoir. The inflows were above average, ranging from 140 percent of average at Merritt Reservoir to 817 percent of average at Davis Creek Reservoir. End-of-month storage ranges from 73 percent of average at Cedar Bluff Reservoir to 124 percent of average at Box Butte Reservoir.

OKLAHOMA-TEXAS AREA OFFICE

March precipitation was above average over the Arkansas River Basin, ranging from 92 percent of average at Cheney Reservoir to 145 percent of average at Sanford Reservoir. Inflows were above average, ranging from 91 percent of average at Sanford Reservoir to 175 percent of average at Norman Reservoir. Storage in the Arkansas River basin is above average and ranges from 105 percent of average at Norman Reservoir to 119 percent of average at Cheney Reservoir.

For the Red River Basin, the March precipitation was varied, ranging from 64 percent of average at Arbuckle Creek Reservoir to 121 percent of average at Mountain Park Reservoir. The inflows ranged from 59 percent of average at Mountain Park Reservoir to 85 percent of average at McGee Creek Reservoir. Storage in the Red River basin ranges from 105 percent of average at Altus and McGee Creek Reservoirs to 147 percent of average at Mountain Park Reservoir.

For the Nueces, Colorado and Washita Basins, the precipitation was mostly above average, ranging from 39 percent of average at Choke Canyon Reservoir to 198 percent of average at Fort Cobb Reservoir. The inflows were varied, ranging from 21 percent of average at Nasworthy Reservoir to 203 percent of average at Fort Cobb Reservoir. Storage in these basins ranges from 86 percent of average at Choke Canyon Reservoir to 185 percent of average at Twin Buttes Reservoir, which is at its highest storage content since the early 1990s.

CORPS OF ENGINEERS REPORT

March runoff in the upper Missouri River Basin above Sioux City, Iowa, was a record 11.0 million acre feet (MAF), surpassing the previous record of 7.3 MAF set in 1952. The average March upper basin runoff is 2.9 MAF.

The record March runoff significantly altered the Corps' 2019 upper basin runoff forecast. Their runoff forecast increased to 38.2 MAF, which is 151 percent of normal. The March runoff was nearly 4 times the average. Runoff in the Fort Randall Dam to Gavins Point Dam reach was nearly twice the record highest March runoff. March runoff in the Gavins Point to Sioux City reach was more than that reach typically sees during a year.

The record high runoff in March was caused by 2-4 inches of rain falling on heavy plains snowpack causing the snowpack to rapidly melt on frozen, saturated soils. Pool levels in the four System projects that have significant flood control storage – Fort Peck, Garrison, Oahe and Fort Randall – have all increased significantly to capture much of the runoff. The Corps plans to increase Gavins Point releases to 55,000 cubic feet per second by early next week. Gavins Point releases will be above average for the next several months, and possibly as late as November. The Corps will need to reduce pool levels in Oahe and Fort Randall over the next several weeks so that those reservoirs are in position to reduce flood risk during the spring and summer.

Much of the plains snowpack in central North Dakota and eastern South Dakota has melted. The heaviest snowpack remains in isolated areas of north central South Dakota and south-central North Dakota where the snow water equivalent (SWE), ranges from 1 to 5 inches. Frost depth is still deep in much of the upper basin, including the areas with the remaining snowpack. The Corps is cooperating with other agencies to acquire plains snow measurements in the upper basin.

Reservoir Forecasts

Gavins Point Dam

- Average releases past month – 30,600 cfs
- Current release rate – 39,000 cfs
- Forecast release rate – 55,000 cfs early next week
- End-of-March reservoir level – 1,205.4 feet
- Forecast end-of-April reservoir level – 1,206.0 feet

Fort Randall Dam

- Average releases past month – 11,600 cfs
- End-of-March reservoir level – 1,366.9 feet (up 16.2 feet from February)
- Forecast end-of-April reservoir level – 1,360.5 feet
- Notes: Releases will be adjusted as necessary to maintain the desired reservoir elevation at Gavins Point.

Big Bend Dam

- Average releases past month – 15,100 cfs
- Forecast average release rate – 32,100 cfs
- Forecast reservoir level – 1,420.0 feet

Oahe Dam

- Average releases past month – 9,500 cfs
- Forecast average release rate – 31,400 cfs
- End-of-March reservoir level – 1,614.7 feet (rising 7.9 feet during March)
- Forecast end-of-April reservoir level – 1,616.0 feet

Garrison Dam

- Average releases past month – 13,100 cfs
- Current release rate – 13,000 cfs
- Forecast average release rate – 13,000 cfs
- End-of-March reservoir level – 1,842.6 feet (rising 5.3 feet during March)
- Forecast end-of-April reservoir level – 1,845.0 feet

Fort Peck Dam

- Average releases past month – 6,500 cfs
- Current release rate – 6,500 cfs

- Forecast average release rate – 6,500 cfs
- End-of-March reservoir level – 2,238.1 feet (up 3.7 feet from February)
- Forecast end-of-April reservoir level – 2,240.1 feet

The six mainstem power plants generated 473 million kWh of electricity in March. Typical energy generation for March is 639 million kWh. The power plants are projected to generate 11.9 billion kWh of electricity this year, 127 percent of the long-term average of 9.4 billion kWh.