

Water-Data Report 2006

**06309000 YELLOWSTONE RIVER AT MILES CITY, MT**

Lower Yellowstone Basin  
Lower Yellowstone-Sunday Subbasin

LOCATION.--Lat 46°25'18", long 105°51'38" referenced to North American Datum of 1927, in NE ¼ SW ¼ NW ¼ sec.28, T.8 N., R.47 E., Custer County, MT, Hydrologic Unit 10100001, on left bank at upstream side of bridge on State Highway 22 at Miles City, 0.8 mi downstream from Tongue River, and at river mile 184.2.

DRAINAGE AREA.--48,253 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--September 1922 to September 1923, August 1928 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS. --WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,333.3 ft, referenced to the National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 6, 1929, nonrecording gages 1.2 mi downstream at different elevations. May 6, 1929, to Sept. 30, 1931, nonrecording gage, and Oct. 1, 1931, to Nov. 10, 1937, water-stage recorder 300 ft upstream from present site at same elevation. Nov. 11, 1937, to Sept. 30, 1946, water-stage recorder 1.2 mi downstream at different elevation. Oct. 1, 1946, to Mar. 15, 1979, water-stage recorder at site 300 ft upstream at present elevation. Mar. 16, 1979, to Sept. 21, 1979, nonrecording gage at present site and elevation. Sept. 22, 1979, recording gage established at same site and elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Some regulation occurs by reservoirs on tributary streams. Diversions for irrigation include about 1,100,000 acres upstream from station (does not include flood irrigation). Several unpublished observations of water temperature and specific conductance were obtained during the year. U.S. Army Corps of Engineers satellite telemeter is located at the station.

## 06309000 YELLOWSTONE RIVER AT MILES CITY, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006**  
**DAILY MEAN VALUES**

[e, estimated]

| Day          | Oct     | Nov     | Dec     | Jan     | Feb     | Mar     | Apr     | May       | Jun       | Jul     | Aug     | Sep     |
|--------------|---------|---------|---------|---------|---------|---------|---------|-----------|-----------|---------|---------|---------|
| 1            | 6,390   | 6,630   | e6,800  | e6,500  | 5,470   | e6,000  | 6,930   | 8,330     | 20,600    | 12,600  | 4,430   | 2,800   |
| 2            | 6,410   | 6,720   | e6,700  | e6,400  | 5,600   | e6,400  | 7,430   | 8,640     | 18,100    | 12,300  | 4,260   | 2,890   |
| 3            | 6,330   | 6,690   | 6,290   | e6,400  | 5,520   | e6,900  | 7,320   | 10,000    | 16,600    | 12,300  | 4,040   | 2,840   |
| 4            | 6,370   | 6,690   | e6,100  | e6,400  | 5,520   | 7,010   | 6,730   | 11,100    | e16,000   | 12,400  | 3,980   | 2,820   |
| 5            | 7,230   | 6,730   | e6,100  | e6,400  | 5,580   | 5,970   | 5,990   | 11,500    | e20,000   | 12,300  | 3,830   | 2,870   |
| 6            | 8,130   | 7,100   | e5,900  | e6,400  | 5,540   | 5,740   | 6,100   | 10,900    | 22,600    | 12,100  | 3,740   | 2,820   |
| 7            | 8,730   | 7,230   | e5,000  | e6,200  | 5,500   | 5,690   | 7,640   | 10,600    | 26,400    | 11,700  | 3,730   | 2,770   |
| 8            | 8,460   | 7,340   | e5,700  | e6,100  | 5,500   | 5,560   | 8,650   | 10,500    | 28,500    | 11,700  | 3,790   | 2,710   |
| 9            | 8,240   | 7,380   | e6,000  | e6,300  | 5,460   | 5,490   | 8,330   | 11,000    | 28,700    | 12,300  | 3,640   | 2,670   |
| 10           | 8,490   | 7,470   | e5,900  | e6,300  | 5,290   | 5,330   | 8,350   | 12,000    | 30,400    | 11,800  | 3,440   | 2,640   |
| 11           | 7,860   | 7,020   | e6,000  | 6,270   | 5,300   | 5,340   | 7,780   | 12,000    | 33,200    | 11,000  | 3,410   | 2,730   |
| 12           | 7,570   | 7,070   | e6,000  | 6,040   | 5,170   | 5,300   | 7,010   | 11,500    | 34,200    | 10,200  | 3,330   | 2,670   |
| 13           | 7,430   | 6,930   | e6,000  | 5,860   | 4,980   | 5,180   | 6,850   | 10,400    | 32,600    | 9,480   | 3,370   | 2,610   |
| 14           | 7,320   | 7,250   | e6,200  | 6,070   | 5,100   | 5,130   | 6,820   | 9,600     | 27,700    | 8,980   | 3,540   | 2,620   |
| 15           | 7,080   | 7,210   | e6,400  | 5,940   | 5,130   | 5,020   | 6,660   | 9,570     | 26,900    | 8,850   | 3,690   | 2,920   |
| 16           | 7,050   | 7,090   | e6,400  | 5,910   | e5,500  | 5,000   | 6,550   | 11,000    | 27,600    | 8,680   | 3,650   | 3,360   |
| 17           | 6,990   | 6,970   | e6,100  | 5,950   | e5,000  | 5,140   | 7,040   | 14,000    | 25,800    | 8,230   | 3,490   | 3,790   |
| 18           | 6,900   | 6,870   | e5,700  | 5,860   | e4,900  | 5,270   | 7,860   | 16,700    | 22,500    | 7,750   | 3,540   | 4,670   |
| 19           | 6,750   | 6,720   | e5,600  | 5,650   | e4,300  | 5,270   | 9,030   | 19,600    | 20,100    | 7,270   | 4,180   | 5,620   |
| 20           | 6,700   | 6,600   | e5,500  | 5,660   | e4,600  | 5,290   | 10,300  | 22,900    | 18,900    | 6,890   | 4,260   | 5,580   |
| 21           | 6,700   | 6,700   | e5,600  | 5,620   | e4,800  | 5,380   | 9,380   | 27,000    | 18,200    | 6,690   | 4,090   | 5,630   |
| 22           | 6,690   | 6,680   | e5,500  | 5,600   | e5,100  | 5,340   | 8,340   | 30,600    | 17,600    | 6,460   | 3,860   | 5,410   |
| 23           | 6,630   | 6,690   | e5,600  | 5,530   | e5,100  | 5,210   | 7,720   | 32,500    | 16,900    | 6,210   | 3,610   | 5,620   |
| 24           | 6,650   | 6,650   | e6,500  | 5,410   | e5,100  | 5,140   | 7,510   | 34,200    | 16,000    | 5,820   | 3,400   | 5,720   |
| 25           | 6,670   | 6,640   | e6,800  | 5,500   | e5,300  | 5,050   | 7,750   | 32,400    | 15,000    | 5,600   | 3,290   | 5,800   |
| 26           | 6,640   | 6,640   | e7,300  | 5,530   | e5,600  | 5,160   | 8,790   | 29,900    | 14,400    | 5,350   | 3,170   | 5,900   |
| 27           | 6,660   | 6,820   | e7,100  | 5,780   | e5,400  | 5,290   | 9,230   | 28,100    | 14,000    | 5,120   | 3,120   | 5,570   |
| 28           | 6,640   | 6,920   | e6,900  | 5,710   | e5,500  | 5,300   | 8,590   | 28,900    | 13,600    | 4,980   | 3,170   | 5,270   |
| 29           | 6,490   | 6,760   | e6,800  | 5,660   | ---     | 5,290   | 8,120   | 30,500    | 13,300    | 4,820   | 3,050   | 5,140   |
| 30           | 6,480   | 6,780   | e6,700  | 5,560   | ---     | 5,570   | 7,910   | 28,800    | 13,000    | 4,700   | 2,950   | 5,200   |
| 31           | 6,540   | ---     | e6,700  | 5,470   | ---     | 5,970   | ---     | 24,500    | ---       | 4,560   | 2,820   | ---     |
| <b>Total</b> | 219,220 | 206,990 | 191,890 | 183,980 | 146,860 | 170,730 | 232,710 | 569,240   | 649,400   | 269,140 | 111,870 | 119,660 |
| <b>Mean</b>  | 7,072   | 6,900   | 6,190   | 5,935   | 5,245   | 5,507   | 7,757   | 18,360    | 21,650    | 8,682   | 3,609   | 3,989   |
| <b>Max</b>   | 8,730   | 7,470   | 7,300   | 6,500   | 5,600   | 7,010   | 10,300  | 34,200    | 34,200    | 12,600  | 4,430   | 5,900   |
| <b>Min</b>   | 6,330   | 6,600   | 5,000   | 5,410   | 4,300   | 5,000   | 5,990   | 8,330     | 13,000    | 4,560   | 2,820   | 2,610   |
| <b>Ac-ft</b> | 434,800 | 410,600 | 380,600 | 364,900 | 291,300 | 338,600 | 461,600 | 1,129,000 | 1,288,000 | 533,800 | 221,900 | 237,300 |

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2006, BY WATER YEAR (WY)\*

|             | Oct    | Nov    | Dec    | Jan    | Feb    | Mar    | Apr    | May    | Jun    | Jul    | Aug    | Sep    |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Mean</b> | 7,622  | 7,041  | 5,708  | 5,270  | 6,101  | 8,138  | 8,144  | 17,150 | 34,180 | 19,760 | 7,977  | 7,066  |
| <b>Max</b>  | 12,970 | 10,850 | 9,342  | 8,897  | 16,160 | 18,560 | 15,210 | 29,100 | 61,860 | 46,310 | 16,540 | 13,710 |
| <b>(WY)</b> | (1972) | (1973) | (1983) | (1968) | (1971) | (1929) | (1943) | (1978) | (1997) | (1967) | (1997) | (1941) |
| <b>Min</b>  | 3,857  | 3,976  | 2,921  | 2,034  | 2,344  | 3,027  | 2,729  | 7,334  | 13,030 | 3,988  | 2,615  | 2,964  |
| <b>(WY)</b> | (2004) | (1932) | (1933) | (1937) | (1932) | (2002) | (1961) | (1961) | (1934) | (1934) | (1961) | (1934) |

\* During period of operation (1922-23, 1928 to current year).

## 06309000 YELLOWSTONE RIVER AT MILES CITY, MT—Continued

## SUMMARY STATISTICS

|                                 | Calendar Year 2005 |        | Water Year 2006    |        | Water Years 1922 - 2006* |              |
|---------------------------------|--------------------|--------|--------------------|--------|--------------------------|--------------|
| <b>Annual total</b>             | 3,211,330          |        | 3,071,690          |        |                          |              |
| <b>Annual mean</b>              | 8,798              |        | 8,416              |        | 11,190                   |              |
| <b>Highest annual mean</b>      |                    |        |                    |        | 17,470                   | 1997         |
| <b>Lowest annual mean</b>       |                    |        |                    |        | 6,141                    | 1934         |
| <b>Highest daily mean</b>       | 40,000             | Jun 26 | 34,200             | May 24 | 92,400                   | May 30, 1923 |
| <b>Lowest daily mean</b>        | 3,500              | Jan 7  | 2,610              | Sep 13 | 996                      | Dec 14, 1932 |
| <b>Annual seven-day minimum</b> | 3,610              | Apr 1  | 2,660              | Sep 8  | 1,220                    | Dec 12, 1932 |
| <b>Maximum peak flow</b>        |                    |        | 35,600             | May 24 | <sup>b</sup> 102,000     | May 22, 1978 |
| <b>Maximum peak stage</b>       |                    |        | 8.89               | May 24 | <sup>c</sup> 21.70       | Mar 20, 1944 |
| <b>Instantaneous low flow</b>   |                    |        | <sup>a</sup> 2,520 | Sep 14 | 1,800                    | Mar 7, 1995  |
| <b>Annual runoff (ac-ft)</b>    | 6,370,000          |        | 6,093,000          |        | 8,104,000                |              |
| <b>10 percent exceeds</b>       | 21,100             |        | 16,200             |        | 25,000                   |              |
| <b>50 percent exceeds</b>       | 6,000              |        | 6,400              |        | 7,400                    |              |
| <b>90 percent exceeds</b>       | 3,810              |        | 3,740              |        | 4,000                    |              |

|                                 | Water Years 1922 - 1961** |               | Water Years 1967 - 2006*** |              |
|---------------------------------|---------------------------|---------------|----------------------------|--------------|
| <b>Annual mean</b>              | 10,710                    |               | 11,480                     |              |
| <b>Highest annual mean</b>      | 16,660                    |               | 17,470                     | 1997         |
| <b>Lowest annual mean</b>       | 6,141                     |               | 6,176                      | 2001         |
| <b>Highest daily mean</b>       | 92,400                    | May 30, 1923  | 82,300                     | Jun 15, 1997 |
| <b>Lowest daily mean</b>        | 996                       | Dec 14, 1932  | 1,640                      | Nov 25, 1977 |
| <b>Annual seven-day minimum</b> | 1,220                     | Dec 12, 1932  | 2,030                      | Jan 3, 2004  |
| <b>Maximum peak flow</b>        | 96,300                    | June 19, 1944 | <sup>b</sup> 102,000       | May 22, 1978 |
| <b>Maximum peak stage</b>       | <sup>c</sup> 21.70        | Mar 20, 1944  | <sup>c</sup> 20.78         | Mar 15, 1979 |
| <b>Annual runoff (ac-ft)</b>    | 7,756,000                 |               | 8,315,000                  |              |
| <b>10 percent exceeds</b>       | 25,200                    |               | 24,600                     |              |
| <b>50 percent exceeds</b>       | 6,620                     |               | 8,000                      |              |
| <b>90 percent exceeds</b>       | 3,500                     |               | 4,520                      |              |

\* During period of operation (1922-23, 1928 to current year).

\*\* Prior to construction of Yellowtail Dam, during period of operation (1999-23, 1928-61).

\*\*\* After completion of Yellowtail Dam.

<sup>a</sup> Gage height, 2.00 ft.

<sup>b</sup> Gage height, 16.50 ft.

<sup>c</sup> Backwater from ice jam.

**06309000 YELLOWSTONE RIVER AT MILES CITY, MT—Continued**

