

Water-Data Report 2012

06088500 MUDDY CREEK AT VAUGHN, MT

Upper Missouri Basin
Sun Subbasin

LOCATION.--Lat 47°33'41", long 111°32'31" referenced to North American Datum of 1983, in SW ¼ SE ¼ NE ¼ sec.24, T.21 N., R.1 E., Cascade County, MT, Hydrologic Unit 10030104, on left bank at Vaughn, and at river mile 1.1.

DRAINAGE AREA.--314 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--June 1925 to January 1926, May 1934 to September 1968, July 1971 to current year.

REVISED RECORDS.--Water Supply Paper (WSP) 856: 1937. WSP 1509: 1934-35; 1941, maximum discharge. WSP 1559: 1956. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,330 ft, referenced to the National Geodetic Vertical Datum of 1929. May 21, 1925 to Feb. 8, 1926, nonrecording gage at site 500 ft downstream at different elevation. Apr. 19, 1934 to Sept. 30, 1955, at previous site at elevation. May 18, 1955 to Apr. 25, 1960 and Sept. 24, 1962 to Sept. 30, 1968, auxiliary crest-stage gage. Oct. 1, 1955 to Sept. 30, 1968, nonrecording gage at bridge 670 ft upstream at previous elevation. July 1, 1971 to May 9, 1996, 700 ft upstream at previous elevation.

REMARKS.--Records are good except for estimated daily discharges, which are poor. Natural flow is increased by wastage from the Sun River Canal and by return flow from irrigation. Diversions for irrigation of about 700 acres occur upstream from the station. U.S. Geological Survey satellite telemeter is located at the station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a stage of about 24 ft, previous elevation (discharge not determined); flood in June 1932 reached a stage of about 19 ft, previous elevation (discharge not determined); from information by local residents.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES
[e, estimated]

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|--------------|--------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| 1 | 263 | 86 | e45 | 33 | 44 | 35 | 32 | 29 | 244 | 286 | 268 | 217 |
| 2 | 272 | 82 | e50 | 53 | 44 | 38 | 30 | 26 | 221 | 367 | 257 | 231 |
| 3 | 298 | 79 | e45 | 64 | 38 | 35 | 30 | 26 | 217 | 277 | 267 | 262 |
| 4 | 348 | 80 | e40 | 55 | 36 | 50 | 30 | 26 | 224 | 269 | 273 | 271 |
| 5 | 314 | 82 | e40 | 56 | 37 | 53 | 29 | 27 | 226 | 274 | 245 | 250 |
| 6 | 335 | 82 | e50 | 41 | 40 | 48 | 30 | 26 | 294 | 246 | 232 | 236 |
| 7 | 310 | 82 | e40 | 37 | 38 | 34 | 33 | 94 | 261 | 208 | 223 | 263 |
| 8 | 255 | 89 | e40 | 48 | 33 | 40 | 30 | 114 | 241 | 223 | 234 | 238 |
| 9 | 204 | 85 | e45 | 64 | 40 | 47 | 29 | 100 | 268 | 235 | 241 | 230 |
| 10 | 170 | 81 | e50 | 55 | 40 | 42 | 29 | 87 | 204 | 204 | 255 | 258 |
| 11 | 144 | 79 | e45 | 33 | 35 | 48 | 29 | 102 | 356 | 203 | 254 | 246 |
| 12 | 144 | 79 | e40 | 37 | e40 | 36 | 32 | 142 | 276 | 218 | 246 | 256 |
| 13 | 131 | 77 | e35 | 50 | e50 | 37 | 37 | 88 | 234 | 210 | 261 | 258 |
| 14 | 125 | 77 | e40 | 54 | e40 | 33 | 31 | 178 | 244 | 233 | 297 | 208 |
| 15 | 130 | 70 | e50 | 48 | e40 | 34 | 29 | 182 | 234 | 326 | 308 | 182 |
| 16 | 124 | e70 | 59 | 34 | e45 | 35 | 31 | 261 | 231 | 380 | 330 | 172 |
| 17 | 119 | e80 | 61 | 26 | e45 | 34 | 29 | 261 | 226 | 377 | 312 | 147 |
| 18 | 115 | e60 | 66 | 27 | e45 | 34 | 29 | 276 | 250 | 394 | 282 | 124 |
| 19 | 114 | e50 | 57 | 40 | e45 | 36 | 29 | 246 | 222 | 385 | 271 | 104 |
| 20 | 113 | e40 | 58 | 45 | e40 | 31 | 29 | 239 | 205 | 358 | 279 | 98 |
| 21 | 111 | e60 | 59 | 44 | e40 | 39 | 28 | 295 | 204 | 392 | 266 | 91 |
| 22 | 109 | 86 | 39 | 48 | e45 | 38 | 28 | 325 | 213 | 358 | 284 | 96 |
| 23 | 110 | 91 | 38 | 52 | e40 | 38 | 27 | 269 | 283 | 323 | 293 | 104 |
| 24 | 107 | 85 | 46 | 56 | e35 | 37 | 27 | 277 | 281 | 293 | 298 | 114 |
| 25 | 108 | e70 | 61 | 65 | e35 | 35 | 25 | 267 | 352 | 315 | 246 | 120 |
| 26 | 106 | e60 | 55 | 61 | e30 | 38 | 26 | 278 | 332 | 307 | 231 | 115 |
| 27 | 107 | e70 | 48 | 54 | e30 | 39 | 39 | 334 | 317 | 331 | 241 | 117 |
| 28 | 105 | e60 | 56 | 44 | e30 | 36 | 43 | 351 | 326 | 339 | 247 | 115 |
| 29 | 100 | 68 | 64 | 48 | e35 | 34 | 35 | 313 | 286 | 324 | 261 | 132 |
| 30 | 97 | 68 | 57 | 60 | --- | 32 | 30 | 234 | 310 | 329 | 260 | 129 |
| 31 | 95 | --- | 46 | 51 | --- | 32 | --- | 239 | --- | 323 | 250 | --- |
| Total | 5,183 | 2,228 | 1,525 | 1,483 | 1,135 | 1,178 | 915 | 5,712 | 7,782 | 9,307 | 8,212 | 5,384 |
| Mean | 167 | 74.3 | 49.2 | 47.8 | 39.1 | 38.0 | 30.5 | 184 | 259 | 300 | 265 | 179 |
| Max | 348 | 91 | 66 | 65 | 50 | 53 | 43 | 351 | 356 | 394 | 330 | 271 |
| Min | 95 | 40 | 35 | 26 | 30 | 31 | 25 | 26 | 204 | 203 | 223 | 91 |
| Ac-ft | 10,280 | 4,420 | 3,020 | 2,940 | 2,250 | 2,340 | 1,810 | 11,330 | 15,440 | 18,460 | 16,290 | 10,680 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2012, BY WATER YEAR (WY)*

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Mean | 98.8 | 59.7 | 44.1 | 34.7 | 37.3 | 52.3 | 40.7 | 137 | 244 | 280 | 281 | 175 |
| Max | 200 | 113 | 131 | 68.5 | 96.9 | 283 | 182 | 305 | 480 | 416 | 488 | 281 |
| (WY) | (1963) | (1964) | (1957) | (1997) | (1952) | (1978) | (1975) | (1953) | (1953) | (1966) | (1975) | (2011) |
| Min | 26.3 | 30.7 | 16.8 | 17.3 | 10.0 | 22.4 | 18.3 | 52.6 | 86.0 | 52.1 | 44.0 | 40.2 |
| (WY) | (1926) | (1926) | (1926) | (1936) | (1936) | (1988) | (1968) | (1935) | (1936) | (1925) | (1925) | (1925) |

*During periods of operation (June 1925 to January 1926, April 1934 to September 1968, July 1971 to current year).

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SUMMARY STATISTICS

| | Calendar Year 2011 | | Water Year 2012 | | Water Years 1925 – 2012* | |
|---------------------------------|--------------------|--------|-----------------|--------|--------------------------|--------------|
| Annual total | 53,533 | | 50,044 | | | |
| Annual mean | 147 | | 137 | | 125 | |
| Highest annual mean | | | | | 185 | 1975 |
| Lowest annual mean | | | | | 61.2 | 1936 |
| Highest daily mean | 802 | Jun 9 | 394 | Jul 18 | 3,500 | Jun 4, 1953 |
| Lowest daily mean | 22 | Jan 31 | 25 | Apr 25 | 4.8 | Mar 29, 1977 |
| Annual seven-day minimum | 25 | Feb 24 | 27 | Apr 20 | 7.0 | Jan 24, 1936 |
| Maximum peak flow | | | 453 | Jun 11 | ^b 7,600 | Jun 4, 1953 |
| Maximum peak stage | | | 5.36 | Jun 11 | ^c 17.70 | Jun 4, 1953 |
| Instantaneous low flow | | | ^a 16 | Mar 8 | ^d 2.0 | Mar 16, 1972 |
| Annual runoff (ac-ft) | 106,200 | | 99,260 | | 90,540 | |
| 10 percent exceeds | 330 | | 297 | | 296 | |
| 50 percent exceeds | 70 | | 85 | | 70 | |
| 90 percent exceeds | 32 | | 32 | | 27 | |

*During periods of operation (June 1925 to January 1926, April 1934 to September 1968, July 1971 to current year).

^aGage height, 2.04 ft, result of freezeup.

^bFrom rating curve extended above 3,000 ft³/s on basis of a slope-area measurement of peak flow.

^cFrom floodmark, site and datum then in use. Prior to September 30, 1955, at datum 1.0 ft higher.

^dGage height, 1.20 ft, site and datum then in use, result of freezeup.

