Water-Data Report 2008

# 02019500 JAMES RIVER AT BUCHANAN, VA

James Basin
Upper James Subbasin

LOCATION.--Lat 37°31′50″, long 79°40′45″ referenced to North American Datum of 1927, Botetourt County, VA, Hydrologic Unit 02080201, on left bank 300 ft upstream from bridge on U.S. Highway 11 at Buchanan, 1,000 ft upstream from Purgatory Creek, 1.5 mi downstream from Looney Creek, and at mile 306.4.

DRAINAGE AREA.--2,073 $mi^2$.

## SURFACE-WATER RECORDS

PERIOD OF RECORD.--February 1898 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for August 1895 to Feb. 11, 1898, published in WSP 11, 15, and 27 are in error and should not be used. Gage-height records collected at this site since 1893 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 602: 1917-24. WSP 972: 1935-36. WSP 1303: 1898-1916, 1917-20(M), 1922(M), 1924(M). WSP 1383: 1927. WDR VA-72-1: 1913(M). OFR 2006-1308: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 802.90 ft NGVD of 1929. Prior to July 1, 1927, nonrecording gage, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 79.6 mi upstream; since October 1984 by Back Creek Lake 107.6 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 110.7 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1898 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 179,000 $ft^3/s$, from rating curve extended above 105,000 $ft^3/s$. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of 34.9 ft, from floodmark, discharge, about 142,000 $ft^3/s$.

**02019500 JAMES RIVER AT BUCHANAN, VA—Continued**

**DISCHARGE, CUBIC FEET PER SECOND**
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**
**DAILY MEAN VALUES**

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 543 | 824 | 460 | 1,820 | 1,230 | 1,230 | 1,360 | 6,410 | 1,040 | 650 | 632 | 718 |
| 2 | 528 | 737 | 455 | 1,540 | 5,220 | 1,180 | 1,320 | 5,080 | 997 | 645 | 606 | 679 |
| 3 | 475 | 652 | 460 | 1,310 | 4,440 | 1,180 | 1,290 | 4,260 | 958 | 619 | 601 | 629 |
| 4 | 460 | 604 | 470 | 1,090 | 2,940 | 1,170 | 3,130 | 3,710 | 995 | 601 | 584 | 589 |
| 5 | 455 | 577 | 467 | 975 | 2,540 | 3,600 | 6,050 | 2,720 | 1,050 | 646 | 570 | 561 |
| 6 | 455 | 570 | 490 | 983 | 2,510 | 9,750 | 4,980 | 2,160 | 1,010 | 762 | 565 | 595 |
| 7 | 448 | 559 | 491 | 965 | 2,310 | 6,750 | 7,040 | 1,920 | 921 | 813 | 556 | 629 |
| 8 | 448 | 541 | 481 | 938 | 2,360 | 4,640 | 5,820 | 1,750 | 842 | 750 | 551 | 572 |
| 9 | 441 | 519 | 481 | 909 | 2,230 | 4,770 | 4,880 | 1,850 | 792 | 748 | 533 | 559 |
| 10 | 439 | 511 | 493 | 893 | 2,160 | 3,980 | 4,180 | 3,840 | 753 | 772 | 529 | 568 |
| 11 | 420 | 505 | 527 | 902 | 1,950 | 3,230 | 3,130 | 4,050 | 885 | 746 | 525 | 584 |
| 12 | 418 | 497 | 605 | 1,790 | 1,770 | 2,730 | 2,640 | 5,250 | 928 | 704 | 525 | 581 |
| 13 | 419 | 499 | 663 | 2,470 | 1,770 | 2,390 | 2,780 | 7,480 | 819 | 672 | 524 | 574 |
| 14 | 421 | 497 | 644 | 1,920 | 2,060 | 2,190 | 2,440 | 6,210 | 779 | 747 | 527 | 558 |
| 15 | 423 | 505 | 625 | 1,620 | 2,290 | 2,070 | 2,160 | 4,460 | 787 | 888 | 575 | 543 |
| 16 | 430 | 504 | 904 | 1,400 | 2,000 | 1,990 | 1,950 | 3,650 | 783 | 846 | 618 | 525 |
| 17 | 434 | 700 | 3,160 | 1,250 | 1,770 | 2,540 | 1,760 | 3,340 | 752 | 731 | 565 | 518 |
| 18 | 434 | 670 | 2,380 | 1,170 | 1,690 | 2,660 | 1,600 | 2,920 | 707 | 662 | 542 | 511 |
| 19 | 446 | 589 | 1,580 | 1,110 | 1,690 | 2,460 | 1,460 | 2,690 | 672 | 622 | 533 | 506 |
| 20 | 462 | 544 | 1,230 | 1,100 | 1,760 | 3,460 | 1,550 | 2,550 | 650 | 600 | 518 | 503 |
| 21 | 464 | 517 | 1,060 | 976 | 1,660 | 5,110 | 2,010 | 2,550 | 631 | 584 | 516 | 503 |
| 22 | 457 | 494 | 942 | 823 | 1,580 | 4,260 | 3,370 | 2,710 | 692 | 587 | 505 | 505 |
| 23 | 458 | 481 | 877 | 878 | 1,510 | 3,710 | 3,480 | 2,610 | 693 | 1,460 | 504 | 501 |
| 24 | 488 | 465 | 1,130 | 886 | 1,480 | 2,840 | 2,870 | 2,120 | 671 | 1,010 | 501 | 491 |
| 25 | 759 | 459 | 1,790 | 817 | 1,440 | 2,230 | 2,450 | 1,790 | 669 | 863 | 501 | 485 |
| 26 | 2,160 | 459 | 1,660 | 774 | 1,350 | 2,020 | 2,450 | 1,670 | 637 | 774 | 540 | 508 |
| 27 | 4,590 | 467 | 1,380 | 793 | 1,330 | 1,900 | 3,700 | 1,530 | 616 | 700 | 693 | 561 |
| 28 | 2,940 | 465 | 1,200 | 763 | 1,390 | 1,710 | 8,170 | 1,310 | 620 | 653 | 1,800 | 675 |
| 29 | 1,690 | 463 | 1,390 | 736 | 1,290 | 1,580 | 17,600 | 1,250 | 613 | 628 | 1,390 | 649 |
| 30 | 1,210 | 467 | 2,530 | 733 | --- | 1,470 | 9,410 | 1,170 | 654 | 619 | 1,040 | 618 |
| 31 | 962 | --- | 2,190 | 781 | --- | 1,400 | --- | 1,100 | --- | 637 | 832 | --- |
| Total | 25,177 | 16,341 | 33,215 | 35,115 | 59,720 | 92,200 | 117,030 | 96,110 | 23,616 | 22,739 | 20,001 | 16,998 |
| Mean | 812 | 545 | 1,071 | 1,133 | 2,059 | 2,974 | 3,901 | 3,100 | 787 | 734 | 645 | 567 |
| Max | 4,590 | 824 | 3,160 | 2,470 | 5,220 | 9,750 | 17,600 | 7,480 | 1,050 | 1,460 | 1,800 | 718 |
| Min | 418 | 459 | 455 | 733 | 1,230 | 1,170 | 1,290 | 1,100 | 613 | 584 | 501 | 485 |
| Cfsm | 0.39 | 0.26 | 0.52 | 0.55 | 0.99 | 1.43 | 1.88 | 1.50 | 0.38 | 0.35 | 0.31 | 0.27 |
| In. | 0.45 | 0.29 | 0.60 | 0.63 | 1.07 | 1.65 | 2.10 | 1.72 | 0.42 | 0.41 | 0.36 | 0.31 |

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2008, BY WATER YEAR (WY)**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 1,193 | 2,075 | 2,302 | 3,170 | 3,726 | 4,771 | 4,444 | 3,133 | 2,231 | 1,103 | 995 | 1,258 |
| Max | 5,679 | 10,190 | 6,450 | 10,310 | 11,270 | 12,790 | 16,170 | 8,908 | 8,649 | 2,905 | 3,834 | 5,200 |
| (WY) | (1990) | (1986) | (1997) | (1996) | (1998) | (1993) | (1987) | (1989) | (2003) | (2003) | (1984) | (2004) |
| Min | 419 | 452 | 453 | 396 | 604 | 922 | 1,081 | 1,088 | 626 | 553 | 338 | 361 |
| (WY) | (1981) | (2002) | (1981) | (1981) | (2002) | (1981) | (1995) | (2006) | (1999) | (1999) | (1981) | (1981) |

**02019500 JAMES RIVER AT BUCHANAN, VA—Continued**

**SUMMARY STATISTICS**

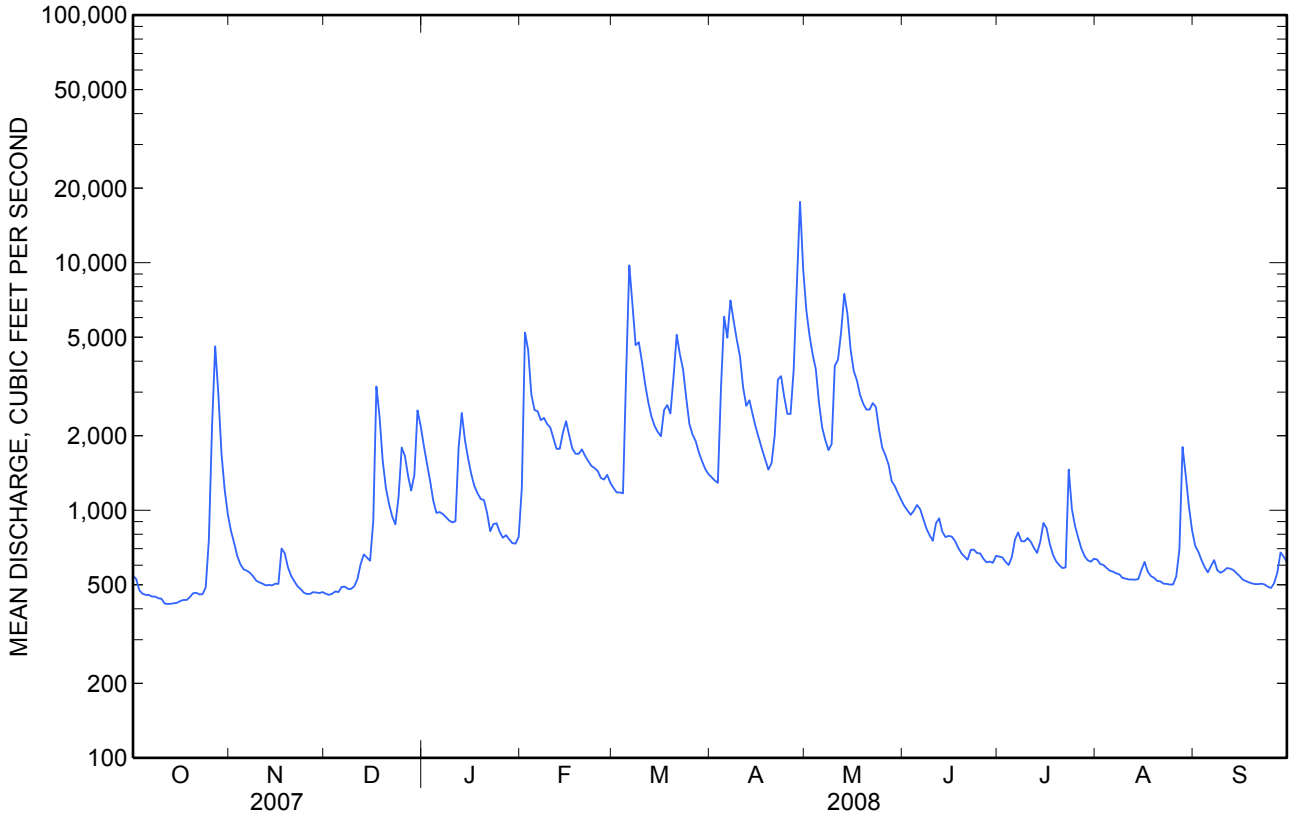
| | Calendar Year 2007 | | Water Year 2008 | | Water Years 1980 - 2008 | |
|---|---|---|---|---|---|---|
| **Annual total** | 762,222 | | 558,262 | | | |
| **Annual mean** | 2,088 | | 1,525 | | 2,525 | |
| **Highest annual mean** | | | | | 4,432 | 2003 |
| **Lowest annual mean** | | | | | 1,092 | 1981 |
| **Highest daily mean** | 29,700 | Apr 16 | 17,600 | Apr 29 | 102,000 | Nov 5, 1985 |
| **Lowest daily mean** | 418 | Oct 12 | 418 | Oct 12 | 257 | Oct 1, 1981 |
| **Annual seven-day minimum** | 424 | Oct 11 | 424 | Oct 11 | 268 | Sep 29, 1981 |
| **Maximum peak flow** | | | 20,600 | Apr 29 | [a]179,000 | Nov 5, 1985 |
| **Maximum peak stage** | | | 12.67 | Apr 29 | [a,b]38.84 | Nov 5, 1985 |
| **Instantaneous low flow** | | | 416 | Oct 11[c] | [d,e]230 | Jan 11, 1981[f] |
| **Annual runoff (cfsm)** | 1.01 | | 0.736 | | 1.22 | |
| **Annual runoff (inches)** | 13.68 | | 10.02 | | 16.55 | |
| **10 percent exceeds** | 4,510 | | 3,350 | | 5,360 | |
| **50 percent exceeds** | 962 | | 844 | | 1,280 | |
| **90 percent exceeds** | 485 | | 484 | | 547 | |

[a] Prior to regulation, 1898-1979, maximum peak flow, 115,000 ft³/s, Mar. 27, 1913, gage height, 31.00 ft, from floodmarks.

[b] From floodmarks.

[c] Also Oct. 12, 13, 2007.

[d] Prior to regulation, 1898-1979, instantaneous low flow, 202 ft³/s, Sept. 8, 1966.

[e] Result of freezeup.

[f] Also Jan. 12, 1981.