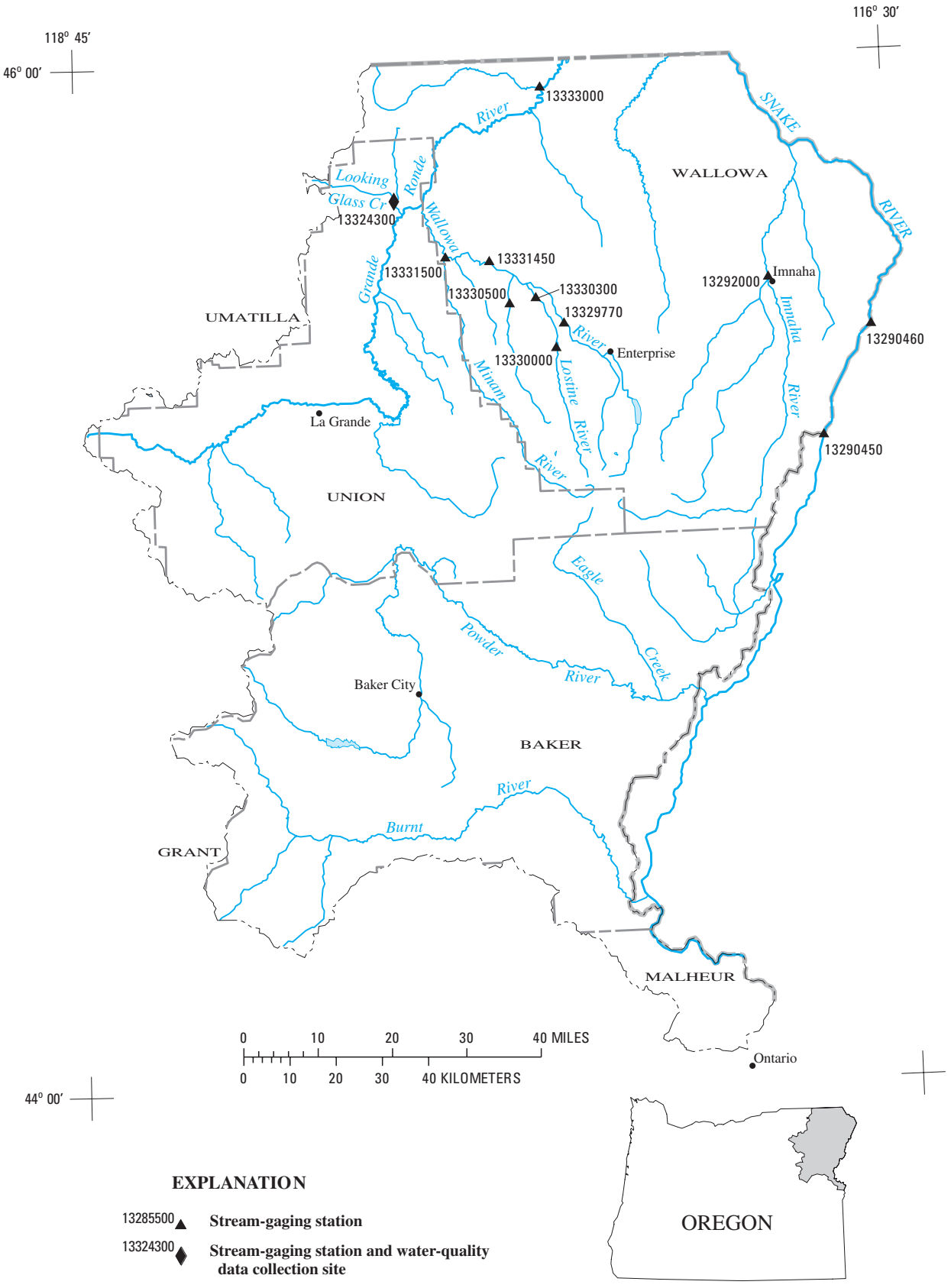



**Figure 9.** Location of surface-water and water-quality stations in the Powder River, Snake River Main Stem, Pine Creek, Imnaha River, and Grande Ronde River Basins.

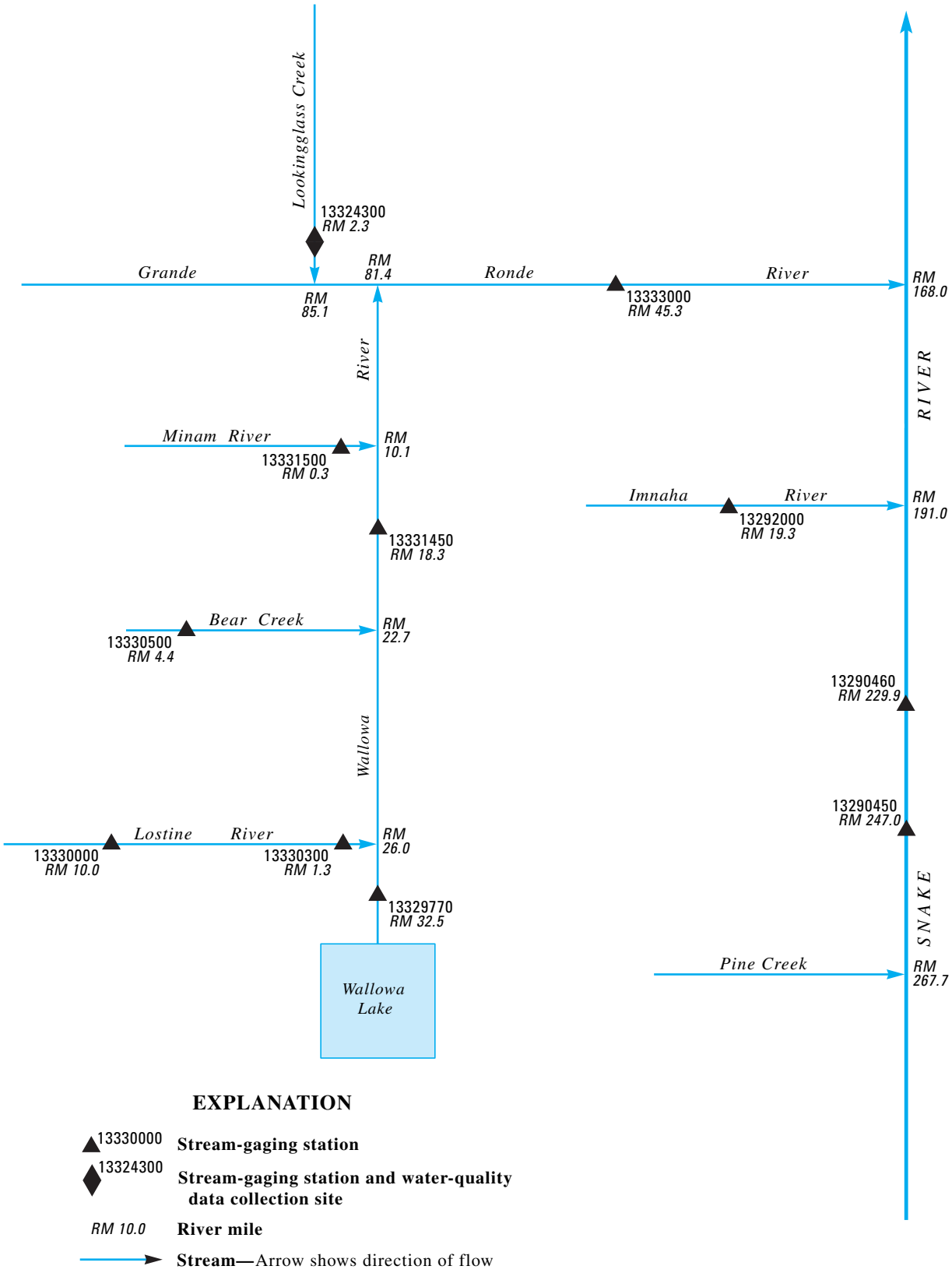



**Figure 10.** Schematic diagram showing gaging stations in the Imhaha and Grande Ronde River Basins, and Snake River Main Stem.

## 13290450 SNAKE RIVER AT HELLS CANYON DAM, IDAHO-OREGON STATE LINE

LOCATION.--Lat 45°15'05", long 116°41'50", in SE $^1/_4$ SE $^1/_4$ sec.33, T.3 S., R.49 E., unsurveyed (Willamette meridian), Wallowa County, Wallowa-Whitman National Forest, Hydrologic Unit 17050201, on left bank, 0.2 mi upstream from Hells Canyon Creek, 0.4 mi downstream from Deep Creek, 0.6 mi downstream from Hells Canyon Dam, 15.5 mi northeast of Homestead, Oregon, and at mile 247.0.

DRAINAGE AREA.--73,300 $mi^2$, approximately.

PERIOD OF RECORD.--July 1965 to current year.

REVISED RECORDS.--WDR ID-78-2: 1969-70, 1972-76, WDR ID-79-2: 1972-73(m).

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above NGVD of 1929 (levels by Idaho Power Company).

REMARKS.--Station equipment includes satellite telemetry. Flow regulated by many reservoirs upstream from station, with a total usable capacity of more than 10,000,000 acre-feet, the most effective of which is Brownlee Reservoir, 38 mi upstream. Diurnal fluctuations caused by Hells Canyon powerplant. Diversions upstream from station for irrigation of about 3,820,000 acres, of which 742,000 acres are irrigated by withdrawals from ground water (1966 determination).

AVERAGE DISCHARGE.--49 years (water years 1966-2004), 20,000 $ft^3/s$, 14,490,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103,000 $ft^3/s$ Jan. 2, 1997, gage height, 86.17 ft; minimum discharge, 1,580 $ft^3/s$ Mar. 19, 1967, gage height, 59.9 ft; minimum daily discharge, 4,360 $ft^3/s$ May 8, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 45,600 $ft^3/s$ May 31, gage height, 75.81 ft; minimum discharge, 6,520 $ft^3/s$ July 27.

COOPERATION.--Discharge records furnished by Idaho Power and reviewed by U.S. Geological Survey beginning April 2001.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13,400 | 8,490 | 8,480 | 8,920 | 12,000 | 18,400 | 16,800 | 8,830 | 21,900 | 7,610 | 9,540 | 13,400 |
| 2 | 12,200 | 8,480 | 8,510 | 9,500 | 14,900 | 17,700 | 11,900 | 10,600 | 23,300 | 14,300 | 11,000 | 12,000 |
| 3 | 12,000 | 8,510 | 8,470 | 11,200 | 16,300 | 21,500 | 17,300 | 12,500 | 25,400 | 8,970 | 8,070 | 13,600 |
| 4 | 10,400 | 8,490 | 8,400 | 9,680 | 13,600 | 19,500 | 10,800 | 14,900 | 20,500 | 7,900 | 11,900 | 9,210 |
| 5 | 10,100 | 8,520 | 8,440 | 18,900 | 16,400 | 21,100 | 20,000 | 15,000 | 14,100 | 8,990 | 10,900 | 9,910 |
| 6 | 12,500 | 8,600 | 8,440 | 21,000 | 18,300 | 15,600 | 10,200 | 12,600 | 13,700 | 9,820 | 8,690 | 9,510 |
| 7 | 8,900 | 8,540 | 8,460 | 15,800 | 13,300 | 12,900 | 9,190 | 10,300 | 19,900 | 12,900 | 8,470 | 9,640 |
| 8 | 8,630 | 8,510 | 8,440 | 14,800 | 10,500 | 19,400 | 10,900 | 9,070 | 19,100 | 11,800 | 9,080 | 14,400 |
| 9 | 11,100 | 8,470 | 8,400 | 13,500 | 17,600 | 17,200 | 8,920 | 9,070 | 18,400 | 9,960 | 10,700 | 18,500 |
| 10 | 9,370 | 8,480 | 8,420 | 13,100 | 16,000 | 22,700 | 8,950 | 12,000 | 16,100 | 11,500 | 11,400 | 11,600 |
| 11 | 9,050 | 8,460 | 8,480 | 13,300 | 17,300 | 19,500 | 8,860 | 10,500 | 15,200 | 12,400 | 13,000 | 10,800 |
| 12 | 8,970 | 8,450 | 8,520 | 19,000 | 17,700 | 16,500 | 16,000 | 11,900 | 15,500 | 17,600 | 8,680 | 11,000 |
| 13 | 8,590 | 8,460 | 8,610 | 18,500 | 20,200 | 16,000 | 14,500 | 13,000 | 17,700 | 17,300 | 8,690 | 18,000 |
| 14 | 8,570 | 8,470 | 8,890 | 14,000 | 16,400 | 8,740 | 19,600 | 15,800 | 20,500 | 15,600 | 8,580 | 18,800 |
| 15 | 8,450 | 8,500 | 10,700 | 16,700 | 15,200 | 17,400 | 12,700 | 16,700 | 17,300 | 16,600 | 8,580 | 21,800 |
| 16 | 8,490 | 8,450 | 9,430 | 15,000 | 21,600 | 20,200 | 8,900 | 17,600 | 12,600 | 13,300 | 10,100 | 22,900 |
| 17 | 8,510 | 8,450 | 8,550 | 15,800 | 15,900 | 21,300 | 8,880 | 18,700 | 13,000 | 14,800 | 8,440 | 10,400 |
| 18 | 8,500 | 8,440 | 8,590 | 16,500 | 14,800 | 23,300 | 8,850 | 14,600 | 9,100 | 10,600 | 8,720 | 9,200 |
| 19 | 8,490 | 8,420 | 8,740 | 14,200 | 15,900 | 19,900 | 8,900 | 13,200 | 7,030 | 13,700 | 8,790 | 8,730 |
| 20 | 8,470 | 8,420 | 8,720 | 11,800 | 17,300 | 20,300 | 8,900 | 14,500 | 6,850 | 8,840 | 11,100 | 8,780 |
| 21 | 8,470 | 8,480 | 8,670 | 12,700 | 18,000 | 18,300 | 8,840 | 16,800 | 11,400 | 12,000 | 9,750 | 8,950 |
| 22 | 8,470 | 8,450 | 8,570 | 15,300 | 12,800 | 22,400 | 8,930 | 14,900 | 11,000 | 13,700 | 8,640 | 9,820 |
| 23 | 8,500 | 8,470 | 8,600 | 11,800 | 16,100 | 21,600 | 8,910 | 17,000 | 14,100 | 11,200 | 8,650 | 12,600 |
| 24 | 8,500 | 8,500 | 9,130 | 11,500 | 14,300 | 22,200 | 8,840 | 19,600 | 17,200 | 9,380 | 9,010 | 11,300 |
| 25 | 8,490 | 8,470 | 9,110 | 10,800 | 17,800 | 22,300 | 8,840 | 19,400 | 9,680 | 10,600 | 9,170 | 8,880 |
| 26 | 8,500 | 8,480 | 8,960 | 11,100 | 17,200 | 23,300 | 10,500 | 18,900 | 8,430 | 10,400 | 8,680 | 8,860 |
| 27 | 8,490 | 8,480 | 8,800 | 13,400 | 17,500 | 18,700 | 10,200 | 18,600 | 8,610 | 8,050 | 11,900 | 11,100 |
| 28 | 8,490 | 8,500 | 12,800 | 12,600 | 13,400 | 16,600 | 8,950 | 15,800 | 8,100 | 9,910 | 8,630 | 9,720 |
| 29 | 8,520 | 8,530 | 15,500 | 14,800 | 11,200 | 22,800 | 8,910 | 18,000 | 7,690 | 11,400 | 8,760 | 11,700 |
| 30 | 8,500 | 8,480 | 12,900 | 12,300 | --- | 19,500 | 8,850 | 22,800 | 7,570 | 8,610 | 12,900 | 8,900 |
| 31 | 8,510 | --- | 9,700 | 12,800 | --- | 17,300 | --- | 23,300 | --- | 8,520 | 15,700 | --- |
| TOTAL | 288,130 | 254,450 | 286,430 | 430,300 | 459,500 | 594,140 | 332,820 | 466,470 | 430,960 | 358,260 | 306,220 | 364,010 |
| MEAN | 9,295 | 8,482 | 9,240 | 13,880 | 15,840 | 19,170 | 11,090 | 15,050 | 14,370 | 11,560 | 9,878 | 12,130 |
| MAX | 13,400 | 8,600 | 15,500 | 21,000 | 21,600 | 23,300 | 20,000 | 23,300 | 25,400 | 17,600 | 15,700 | 22,900 |
| MIN | 8,450 | 8,420 | 8,400 | 8,920 | 10,500 | 8,740 | 8,840 | 8,830 | 6,850 | 7,610 | 8,070 | 8,730 |
| AC-FT | 571,500 | 504,700 | 568,100 | 853,500 | 911,400 | 1,178,000 | 660,100 | 925,200 | 854,800 | 710,600 | 607,400 | 722,000 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 15,080 | 15,000 | 17,460 | 21,840 | 23,890 | 28,120 | 29,190 | 26,420 | 23,980 | 13,980 | 11,450 | 13,950 |
| MAX | 24,140 | 28,630 | 30,410 | 50,150 | 58,220 | 66,340 | 61,960 | 68,840 | 59,080 | 25,550 | 19,860 | 24,960 |
| (WY) | (1972) | (1985) | (1984) | (1997) | (1997) | (1986) | (1984) | (1984) | (1984) | (1983) | (1997) | (1997) |
| MIN | 8,941 | 8,482 | 8,696 | 11,860 | 11,300 | 10,600 | 7,371 | 6,401 | 5,868 | 6,901 | 6,583 | 6,887 |
| (WY) | (2002) | (2004) | (2003) | (2003) | (2001) | (1991) | (1988) | (1977) | (1992) | (1977) | (1992) | (1977) |

13290450 SNAKE RIVER AT HELLS CANYON DAM, IDAHO-OREGON STATE LINE—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1966 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 4,730,920 | | 4,571,690 | | | |
| ANNUAL MEAN | 12,960 | | 12,490 | | 20,000 | |
| HIGHEST ANNUAL MEAN | | | | | 36,560 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 9,746 | 1992 |
| HIGHEST DAILY MEAN | 41,900 | May 31 | 25,400 | Jun 3 | 98,100 | Jan 2, 1997 |
| LOWEST DAILY MEAN | 7,250 | Jul 14 | 6,850 | Jun 20 | 4,360 | May 8, 1977 |
| ANNUAL SEVEN-DAY MINIMUM | 8,310 | Jul 13 | 8,240 | Jun 25 | 5,330 | Jun 4, 1992 |
| ANNUAL RUNOFF (AC-FT) | 9,384,000 | | 9,068,000 | | 14,490,000 | |
| 10 PERCENT EXCEEDS | 19,300 | | 19,000 | | 37,700 | |
| 50 PERCENT EXCEEDS | 11,900 | | 11,000 | | 16,100 | |
| 90 PERCENT EXCEEDS | 8,470 | | 8,470 | | 8,900 | |

## 13290460 SNAKE RIVER AT JOHNSON BAR, ID

LOCATION.--Lat 45°27'50", long 116°33'16", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.22, T.1 S., R.50 E., (Willamette meridian), Wallowa County, Hydrologic Unit 17060101, Hells Canyon National Recreation Area, on left bank opposite lower end of Johnson Bar, 0.5 mi upstream from mouth of Sheep Creek, and at mile 229.9.

DRAINAGE AREA.--73,400 $mi^2$, approximately.

PERIOD OF RECORD.--July 1959 to September 1992 (gage heights only), October 1992 to September 1995 (discharge), October 1995 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,226.341 ft above NGVD of 1929 (levels by Corps of Engineers.)

REMARKS.--Station equipment includes satellite telemetry. Diurnal fluctuations in stage are caused by Hells Canyon Powerplant. Records for years prior to the 1991 water year were not published, but are available from the Boise, Idaho Field Office.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 14.61 ft May 31; minimum recorded gage height, 4.31 ft June 28.

COOPERATION.--Gage-height records furnished by Idaho Power and reviewed by U.S. Geological Survey beginning April 2001.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.42 | 5.05 | 5.06 | 5.14 | 6.03 | 7.45 | 7.44 | 5.26 | 8.90 | 4.86 | 5.42 | 6.59 |
| 2 | 6.35 | 5.05 | 5.07 | 5.32 | 6.64 | 7.57 | 6.29 | 5.68 | 9.00 | 6.67 | 5.79 | 6.21 |
| 3 | 6.09 | 5.05 | 5.05 | 5.74 | 7.18 | 8.32 | 7.15 | 6.32 | 9.60 | 5.29 | 5.08 | 6.54 |
| 4 | 5.63 | 5.05 | 5.03 | --- | 6.57 | 8.01 | 6.06 | 6.88 | 8.40 | 4.99 | 5.91 | 5.37 |
| 5 | 5.53 | 5.05 | 5.05 | --- | 7.07 | 8.49 | 8.14 | 7.01 | 6.94 | 5.22 | 5.96 | 5.51 |
| 6 | 6.20 | 5.08 | 5.05 | 8.40 | 7.73 | 6.98 | 5.74 | 6.48 | 6.71 | 5.48 | 5.18 | 5.43 |
| 7 | 5.28 | 5.07 | 5.06 | 7.13 | 6.41 | 6.34 | 5.34 | 5.77 | 8.23 | 6.33 | 5.11 | 5.49 |
| 8 | 5.11 | 5.07 | 5.05 | 6.73 | 5.59 | 7.79 | 5.80 | 5.39 | 8.07 | 6.08 | 5.28 | 6.68 |
| 9 | 5.74 | 5.05 | 5.04 | 6.44 | 7.39 | 7.55 | 5.34 | 5.36 | 7.86 | 5.63 | 5.69 | 7.87 |
| 10 | 5.43 | 5.06 | 5.04 | 6.23 | 7.08 | 8.55 | 5.25 | 6.13 | 7.37 | 5.94 | 5.91 | 6.14 |
| 11 | 5.25 | 5.06 | 5.05 | 6.31 | 7.35 | 8.15 | 5.28 | 5.85 | 7.05 | 6.17 | 6.47 | 5.80 |
| 12 | 5.24 | 5.04 | 5.08 | 7.84 | 7.48 | 7.39 | 7.07 | 6.19 | 7.10 | 7.57 | 5.25 | 5.85 |
| 13 | 5.10 | 5.05 | 5.09 | 7.51 | 8.06 | 7.00 | 6.92 | 6.44 | 7.60 | 7.57 | 5.19 | 7.71 |
| 14 | 5.09 | 5.05 | 5.13 | 6.76 | 7.43 | 5.34 | 8.04 | 7.11 | 8.37 | 7.07 | 5.15 | 7.91 |
| 15 | 5.05 | 5.07 | 5.73 | 7.11 | 6.85 | 7.28 | 6.51 | 7.49 | 7.75 | 7.46 | 5.15 | 8.61 |
| 16 | 5.06 | 5.05 | 5.39 | 6.95 | 8.18 | 8.21 | 5.27 | 7.58 | 6.37 | 6.50 | 5.57 | 9.01 |
| 17 | 5.07 | 5.05 | 5.09 | 7.04 | 7.06 | 8.25 | 5.26 | 8.03 | 6.44 | 6.85 | 5.14 | 5.80 |
| 18 | 5.07 | 5.05 | 5.08 | 7.19 | 6.54 | 8.92 | 5.24 | 6.98 | 5.46 | 5.92 | 5.19 | 5.36 |
| 19 | 5.06 | 5.04 | 5.12 | 6.73 | 6.91 | 8.26 | 5.26 | 6.53 | 4.66 | 6.57 | 5.22 | 5.17 |
| 20 | 5.06 | 5.04 | 5.11 | 6.03 | 7.24 | 8.33 | 5.27 | 6.85 | 4.58 | 5.26 | 5.87 | 5.19 |
| 21 | 5.06 | 5.05 | 5.10 | 6.06 | 7.29 | 7.86 | 5.25 | 7.53 | 5.78 | 6.01 | 5.51 | 5.25 |
| 22 | 5.06 | 5.04 | 5.06 | 6.89 | 6.22 | 8.70 | 5.28 | 7.04 | 5.90 | 6.66 | 5.18 | 5.47 |
| 23 | 5.06 | 5.06 | 5.05 | 6.11 | 7.07 | 8.72 | 5.28 | 7.54 | 6.53 | 6.01 | 5.19 | 6.31 |
| 24 | 5.06 | 5.07 | 5.17 | 5.78 | 6.56 | 8.75 | 5.26 | 8.21 | 7.70 | 5.29 | 5.29 | 5.96 |
| 25 | 5.05 | 5.07 | 5.19 | 5.58 | 7.55 | 8.78 | 5.25 | 8.19 | 5.63 | 5.76 | 5.35 | 5.24 |
| 26 | 5.06 | 5.06 | 5.16 | 5.72 | 7.51 | 9.04 | 5.72 | 8.11 | 5.11 | 5.77 | 5.19 | 5.22 |
| 27 | 5.06 | 5.07 | 5.15 | 6.47 | 7.39 | 8.02 | 5.67 | 7.97 | 5.20 | 4.99 | 6.10 | 5.83 |
| 28 | 5.06 | 5.07 | 5.98 | 6.08 | 6.50 | 7.36 | 5.34 | 7.43 | 5.07 | 5.43 | 5.20 | 5.53 |
| 29 | 5.06 | 5.09 | 7.07 | 6.67 | 5.89 | 8.74 | 5.28 | 7.69 | 4.87 | 5.92 | 5.21 | 6.04 |
| 30 | 5.05 | 5.06 | 6.43 | 6.22 | --- | 8.32 | 5.26 | 9.03 | 4.84 | 5.25 | 6.28 | 5.24 |
| 31 | 5.05 | --- | 5.42 | 6.15 | --- | 7.58 | --- | 9.09 | --- | 5.11 | 7.10 | --- |
| MEAN | 5.31 | 5.06 | 5.26 | --- | 6.99 | 7.94 | 5.88 | 7.01 | 6.77 | 5.99 | 5.52 | 6.14 |
| MAX | 6.42 | 5.09 | 7.07 | --- | 8.18 | 9.04 | 8.14 | 9.09 | 9.60 | 7.57 | 7.10 | 9.01 |
| MIN | 5.05 | 5.04 | 5.03 | --- | 5.59 | 5.34 | 5.24 | 5.26 | 4.58 | 4.86 | 5.08 | 5.17 |

## 13292000 IMNAHA RIVER AT IMNAHA, OR

LOCATION.--Lat 45°33'45", long 116°50'00", in NW ¼ SW ¼ sec.16, T.1 N., R.48 E., Wallowa County, Hydrologic Unit 17060102, on left bank at Imnaha, 0.3 mi downstream from Big Sheep Creek, and at mile 19.3.

DRAINAGE AREA.--622 $mi^2$.

PERIOD OF RECORD.--June 1928 to current year.

REVISED RECORDS.--WSP 833: 1938. WSP 1397: 1929, 1932(M), 1949. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,941.14 ft above NGVD of 1929. Prior to Aug. 6, 1934, nonrecording gage at site 0.25 mi upstream at different datum. Aug. 6-31, 1934, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Water is diverted from Big Sheep Creek and tributaries upstream from station for irrigation in Wallowa River basin. National Weather Service satellite telemeter at station. Continuous water-quality records for the period August 1965 to September 1968 and from May 1976 to September 1977 have been collected at this location.

AVERAGE DISCHARGE.--76 years (water years 1929-2004), 510 $ft^3/s$, 369,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 $ft^3/s$ Jan. 1, 1997, gage height, 11.44 ft, from floodmark,from rating curve extended above 7,900 $ft^3/s$, on basis of slope-area measurement of peak flow; minimum discharge observed, 16 $ft^3/s$ Nov. 22, 1931, result of freezeup; minimum daily, 25 $ft^3/s$ Nov. 22, 23, 1931.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 $ft^3/s$ and maximum (*):

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|
| May 28 | 2015 | *1,960 | *4.26 |

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|
| No other peak greater than base discharge. | | | |

Minimum daily discharge, 65 $ft^3/s$, Jan. 6.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 111 | 116 | 137 | e90 | 135 | 237 | 634 | 785 | 1,470 | 880 | 188 | 136 |
| 2 | 110 | e110 | 156 | e98 | 124 | 232 | 561 | 868 | 1,400 | 859 | 183 | 140 |
| 3 | 109 | e105 | 148 | e92 | 140 | 210 | 552 | 1,020 | 1,400 | 733 | 179 | 140 |
| 4 | 108 | e100 | 144 | e90 | 135 | 213 | 617 | 1,160 | 1,550 | 674 | 179 | 137 |
| 5 | 108 | e98 | 139 | e75 | 133 | 207 | 730 | 1,240 | 1,650 | 614 | 172 | 134 |
| 6 | 108 | 91 | 181 | e65 | 125 | 197 | 833 | 1,220 | 1,650 | 570 | 169 | 132 |
| 7 | 109 | 124 | 230 | e72 | 134 | 185 | 962 | 1,150 | 1,400 | 542 | 166 | 130 |
| 8 | 110 | 168 | 173 | e82 | 131 | 187 | 978 | 1,150 | 1,280 | 510 | 162 | 128 |
| 9 | 111 | 151 | 148 | e90 | 129 | 210 | 945 | 1,040 | 1,150 | 473 | 156 | 126 |
| 10 | 113 | 137 | 150 | e95 | 122 | 262 | 883 | 997 | 1,100 | 449 | 150 | 125 |
| 11 | 115 | 138 | 148 | e100 | 122 | 308 | 837 | 991 | 1,010 | 432 | 144 | 126 |
| 12 | 121 | 135 | 140 | e110 | 111 | 344 | 845 | 947 | 967 | 414 | 142 | 213 |
| 13 | 123 | 127 | 140 | 140 | 104 | 394 | 895 | 923 | 930 | 382 | 139 | 191 |
| 14 | 123 | 125 | 168 | 139 | 137 | 410 | 925 | 884 | 949 | 368 | 137 | 171 |
| 15 | 125 | 129 | 151 | 132 | 158 | 412 | 873 | 882 | 923 | 353 | 136 | 171 |
| 16 | 140 | 130 | 138 | 141 | 146 | 420 | 758 | 983 | 871 | 331 | 134 | 165 |
| 17 | 134 | 140 | 146 | 138 | 153 | 446 | 684 | 1,060 | 854 | 320 | 136 | 157 |
| 18 | 131 | 134 | 133 | 135 | 229 | 476 | 637 | 1,070 | 869 | 318 | 136 | 161 |
| 19 | 126 | 133 | 135 | 137 | 276 | 521 | 593 | 1,270 | 842 | 343 | 139 | 161 |
| 20 | 124 | 137 | 147 | 136 | 261 | 507 | 595 | 1,400 | 809 | 356 | 134 | 160 |
| 21 | 126 | 130 | 144 | 130 | 240 | 487 | 606 | 1,430 | 812 | 307 | 131 | 161 |
| 22 | 126 | 118 | 137 | 100 | 229 | 594 | 602 | 1,460 | 832 | 284 | 135 | 152 |
| 23 | 124 | 100 | 130 | 129 | 235 | 725 | 598 | 1,540 | 869 | 269 | 234 | 148 |
| 24 | 124 | 126 | 143 | 142 | 235 | 843 | 618 | 1,530 | 913 | 258 | 172 | 143 |
| 25 | 125 | 125 | 155 | 128 | 241 | 752 | 627 | 1,430 | 917 | 245 | 175 | 139 |
| 26 | 126 | 139 | 146 | 130 | 266 | 801 | 666 | 1,370 | 881 | 237 | 198 | 136 |
| 27 | 128 | 127 | 110 | 129 | 260 | 717 | 761 | 1,560 | 1,030 | 226 | 183 | 139 |
| 28 | 127 | 134 | 102 | 130 | 260 | 620 | 888 | 1,880 | 940 | 219 | 164 | 139 |
| 29 | 130 | 140 | 144 | 135 | 249 | 566 | 811 | 1,890 | 926 | 209 | 154 | 138 |
| 30 | 135 | 140 | e100 | 148 | --- | 586 | 757 | 1,740 | 885 | 200 | 148 | 137 |
| 31 | 129 | --- | e94 | 142 | --- | 694 | --- | 1,580 | --- | 193 | 140 | --- |
| TOTAL | 3,759 | 3,807 | 4,457 | 3,600 | 5,220 | 13,763 | 22,271 | 38,450 | 32,079 | 12,568 | 4,915 | 4,436 |
| MEAN | 121 | 127 | 144 | 116 | 180 | 444 | 742 | 1,240 | 1,069 | 405 | 159 | 148 |
| MAX | 140 | 168 | 230 | 148 | 276 | 843 | 978 | 1,890 | 1,650 | 880 | 234 | 213 |
| MIN | 108 | 91 | 94 | 65 | 104 | 185 | 552 | 785 | 809 | 193 | 131 | 125 |
| AC-FT | 7,460 | 7,550 | 8,840 | 7,140 | 10,350 | 27,300 | 44,170 | 76,270 | 63,630 | 24,930 | 9,750 | 8,800 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 156 | 183 | 211 | 211 | 242 | 415 | 939 | 1,550 | 1,315 | 556 | 195 | 145 |
| MAX | 501 | 625 | 806 | 1,343 | 570 | 1,026 | 1,760 | 2,804 | 2,612 | 1,348 | 380 | 256 |
| (WY) | (1963) | (1974) | (1942) | (1997) | (1996) | (1995) | (1956) | (1948) | (1974) | (1975) | (1982) | (1978) |
| MIN | 81.5 | 80.0 | 88.6 | 69.3 | 82.4 | 114 | 345 | 445 | 361 | 123 | 78.8 | 82.8 |
| (WY) | (1937) | (1937) | (1936) | (1937) | (1937) | (1977) | (1977) | (1977) | (1992) | (1977) | (1931) | (1931) |

13292000 IMNAHA RIVER AT IMNAHA, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1929 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 191,198 | | 149,325 | | | |
| ANNUAL MEAN | 524 | | 408 | | 510 | |
| HIGHEST ANNUAL MEAN | | | | | 897 | 1974 |
| LOWEST ANNUAL MEAN | | | | | 184 | 1977 |
| HIGHEST DAILY MEAN | 2,770 | May 30 | 1,890 | May 29 | 12,400 | Jan 1, 1997 |
| LOWEST DAILY MEAN | 91 | Nov 6 | 65 | Jan 6 | 25 | Nov 22, 1931 |
| ANNUAL SEVEN-DAY MINIMUM | 106 | Nov 1 | 81 | Jan 3 | 43 | Jan 8, 1993 |
| ANNUAL RUNOFF (AC-FT) | 379,200 | | 296,200 | | 369,700 | |
| 10 PERCENT EXCEEDS | 1,380 | | 985 | | 1,380 | |
| 50 PERCENT EXCEEDS | 237 | | 168 | | 228 | |
| 90 PERCENT EXCEEDS | 122 | | 116 | | 113 | |

e Estimated

2004 Water Year

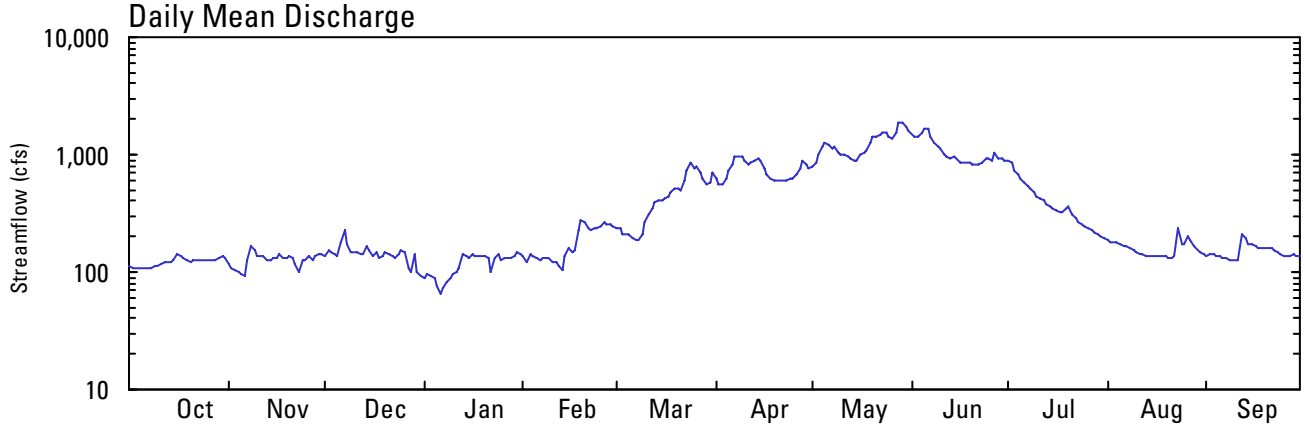
IMNAHA RIVER BASIN

# 13292000 IMNAHA RIVER AT IMNAHA, OR

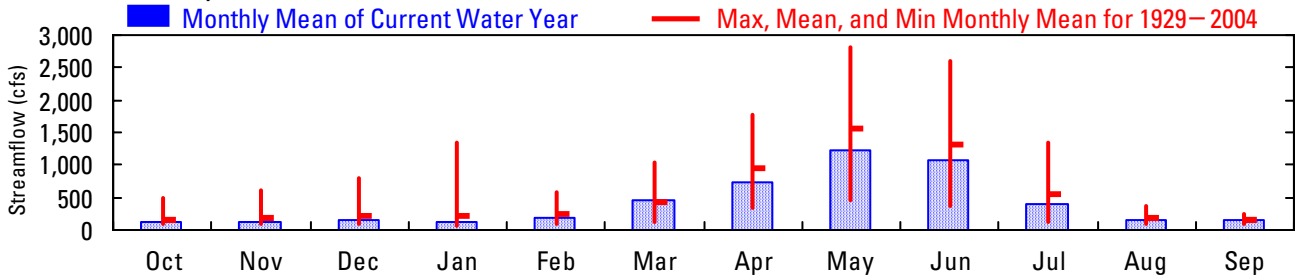
Latitude: 45°33'45" Longitude: 116°50'00" Hydrologic Unit Code: 17060102

Wallowa County Datum: 1,941.14 feet Drainage Area: 622 square miles

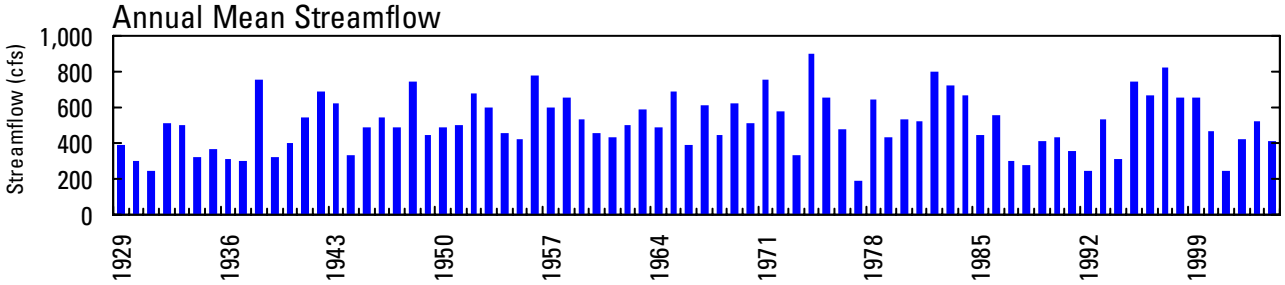
## Daily Mean Discharge



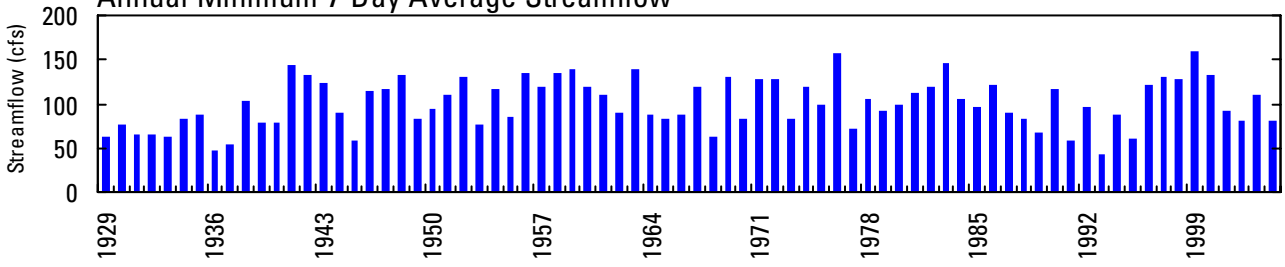

## Monthly Statistics



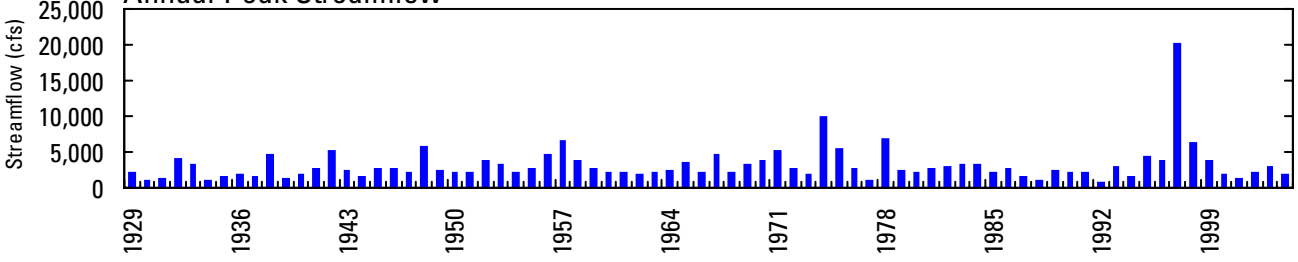

## Annual Mean Streamflow




## Annual Minimum 7-Day Average Streamflow




## Annual Peak Streamflow



## 13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

LOCATION.--Lat 45°43'55", long 117°51'50", in NW $^1/_4$ NW $^1/_4$ sec.19, T.3 N., R.40 E., Union County, Hydrologic Unit 17060104, on left bank at Oregon State Fish and Wildlife Service fish hatchery, 310 ft upstream from Jarboe Creek, 2.3 mi northwest of Looking Glass, and at mile 2.3.

DRAINAGE AREA.--78.3 $mi^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,530 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges and those greater than 250 $ft^3/s$, which are poor. Records include a diversion by the fish hatchery 0.3 mi upstream from station of up to 50 $ft^3/s$ that is returned through the fish ladder to the gage pool.

AVERAGE DISCHARGE.--22 years (water years 1983-2004), 139 $ft^3/s$, 100,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 $ft^3/s$ Feb. 9, 1996, gage height, 7.41 ft, from rating curve extended above 1,000 $ft^3/s$; minimum discharge, 25 $ft^3/s$ Oct. 11, 1983, result of regulation at fish hatchery upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 380 $ft^3/s$ and maximum (*):

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) | Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| Apr 13 | 0100 | 573 | 5.79 | May 3 | 2200 | *706 | *6.12 |

Minimum discharge, 33 $ft^3/s$, Jan. 13.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 55 | 51 | 79 | 59 | 96 | 86 | 330 | 497 | 392 | e83 | 50 | 53 |
| 2 | 55 | 52 | 80 | 58 | 84 | 83 | 295 | 565 | e340 | 77 | 51 | 54 |
| 3 | 55 | 52 | 74 | 57 | 78 | 79 | 300 | 604 | e320 | 75 | 55 | 54 |
| 4 | 55 | 52 | 69 | 54 | 73 | 82 | 339 | 626 | e340 | 73 | 52 | 53 |
| 5 | 55 | 52 | 71 | 54 | 68 | 79 | 395 | 596 | e350 | 70 | 51 | 52 |
| 6 | 55 | 52 | 93 | 57 | 66 | 76 | 411 | 556 | e340 | 69 | 51 | 52 |
| 7 | 55 | 52 | 82 | 55 | 65 | 75 | 446 | 529 | e250 | 68 | 52 | 52 |
| 8 | 54 | 52 | 71 | 55 | 63 | 79 | 463 | 519 | e190 | 68 | 50 | 52 |
| 9 | 54 | 52 | 65 | 57 | 62 | 94 | 464 | 492 | e170 | 67 | 50 | 51 |
| 10 | 53 | 58 | 64 | 55 | 60 | 121 | 475 | 488 | e160 | 65 | 50 | 52 |
| 11 | 50 | 92 | 62 | 55 | 60 | 136 | 478 | 474 | e140 | 63 | 50 | 56 |
| 12 | 54 | 57 | 63 | 54 | 59 | 143 | 511 | 475 | e135 | 61 | 50 | 58 |
| 13 | 51 | 51 | 86 | 53 | 59 | 158 | 514 | 446 | e120 | 60 | 50 | 62 |
| 14 | 51 | 50 | 98 | 54 | 59 | 158 | 503 | 410 | e125 | 60 | 49 | 62 |
| 15 | 54 | 49 | 82 | 54 | 59 | 170 | 490 | 383 | e118 | 60 | 49 | 61 |
| 16 | 55 | 61 | 73 | 55 | 62 | 176 | 444 | 404 | e115 | 60 | 49 | 60 |
| 17 | 54 | 65 | 67 | 54 | 70 | 206 | 420 | 354 | e110 | 59 | 52 | 55 |
| 18 | 52 | 59 | 63 | 54 | 81 | 241 | 403 | 414 | e110 | 59 | 51 | 55 |
| 19 | 52 | 59 | 63 | 54 | 91 | 251 | 378 | 432 | e105 | 60 | 51 | 54 |
| 20 | 50 | 55 | 62 | 54 | 90 | 217 | 381 | 430 | e100 | 60 | 50 | 54 |
| 21 | 50 | 53 | 62 | 53 | 86 | 209 | 373 | 430 | e96 | 59 | 50 | 55 |
| 22 | 49 | 50 | 61 | 53 | 83 | 247 | 366 | 416 | e96 | 57 | 57 | 54 |
| 23 | 48 | 50 | 60 | 55 | 80 | 311 | 383 | 427 | e98 | 56 | 65 | 53 |
| 24 | 48 | 52 | 69 | 56 | 83 | 336 | 401 | 412 | e98 | 55 | 57 | 52 |
| 25 | 49 | 52 | 71 | 55 | 85 | 314 | 384 | 381 | e96 | 53 | 80 | 51 |
| 26 | 48 | 53 | 69 | 55 | 87 | 339 | 427 | 435 | e94 | 53 | 69 | 51 |
| 27 | 49 | 51 | 65 | 54 | 91 | 337 | 482 | 504 | e96 | 53 | 65 | 51 |
| 28 | 50 | 52 | 63 | 65 | 93 | 312 | 514 | 536 | e89 | 52 | 58 | 50 |
| 29 | 53 | 85 | 62 | 82 | 92 | 310 | 477 | 507 | e87 | 51 | 55 | 50 |
| 30 | 50 | 82 | 60 | 127 | --- | 364 | 474 | 462 | e85 | 52 | 54 | 50 |
| 31 | 50 | --- | 60 | 112 | --- | 393 | --- | 423 | --- | 51 | 53 | --- |
| TOTAL | 1,613 | 1,703 | 2,169 | 1,869 | 2,185 | 6,182 | 12,721 | 14,627 | 4,965 | 1,909 | 1,676 | 1,619 |
| MEAN | 52.0 | 56.8 | 70.0 | 60.3 | 75.3 | 199 | 424 | 472 | 166 | 61.6 | 54.1 | 54.0 |
| MAX | 55 | 92 | 98 | 127 | 96 | 393 | 514 | 626 | 392 | 83 | 80 | 62 |
| MIN | 48 | 49 | 60 | 53 | 59 | 75 | 295 | 354 | 85 | 51 | 49 | 50 |
| AC-FT | 3,200 | 3,380 | 4,300 | 3,710 | 4,330 | 12,260 | 25,230 | 29,010 | 9,850 | 3,790 | 3,320 | 3,210 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 53.5 | 70.2 | 80.3 | 85.9 | 129 | 198 | 338 | 374 | 163 | 67.2 | 53.5 | 52.4 |
| MAX | 66.7 | 167 | 288 | 213 | 483 | 431 | 564 | 608 | 425 | 117 | 65.3 | 61.9 |
| (WY) | (1986) | (1996) | (1996) | (1997) | (1996) | (1997) | (1997) | (1997) | (1984) | (1984) | (1985) | (1984) |
| MIN | 45.2 | 46.8 | 53.2 | 51.0 | 54.4 | 83.3 | 183 | 114 | 57.4 | 47.0 | 37.1 | 40.1 |
| (WY) | (1995) | (1988) | (1988) | (2001) | (2001) | (1985) | (2001) | (1992) | (1992) | (1994) | (1994) | (1994) |

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1983 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 49,575 | | 53,238 | | | |
| ANNUAL MEAN | 136 | | 145 | | 139 | |
| HIGHEST ANNUAL MEAN | | | | | 227 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 93.0 | 2001 |
| HIGHEST DAILY MEAN | 520 | Mar 15 | 626 | May 4 | 1,740 | Feb 9, 1996 |
| LOWEST DAILY MEAN | 48 | Oct 23 | 48 | Oct 23 | 35 | Oct 11, 1983 |
| ANNUAL SEVEN-DAY MINIMUM | 49 | Oct 21 | 49 | Oct 21 | 35 | Aug 16, 1994 |
| ANNUAL RUNOFF (AC-FT) | 98,330 | | 105,600 | | 100,500 | |
| 10 PERCENT EXCEEDS | 361 | | 427 | | 344 | |
| 50 PERCENT EXCEEDS | 69 | | 64 | | 69 | |
| 90 PERCENT EXCEEDS | 51 | | 51 | | 50 | |

e Estimated

2004 Water Year

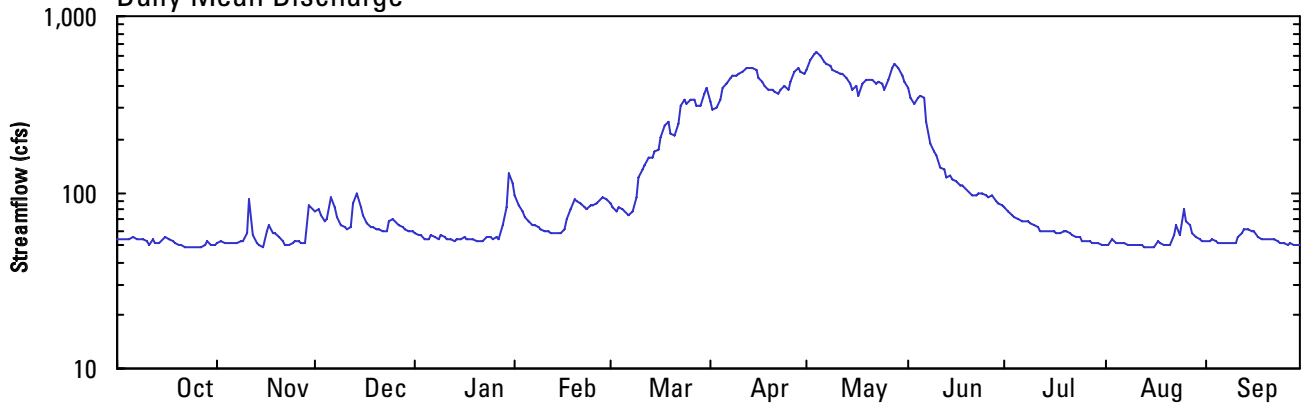
GRANDE RONDE RIVER BASIN

# 13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

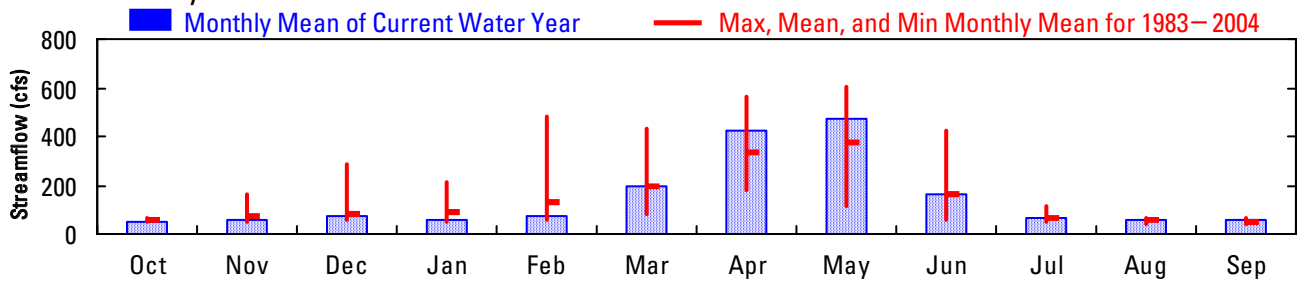
Latitude: 45°43'55" Longitude: 117°51'50" Hydrologic Unit Code: 17060104

Union County Datum: 25.30 feet Drainage Area: 78.3 square miles

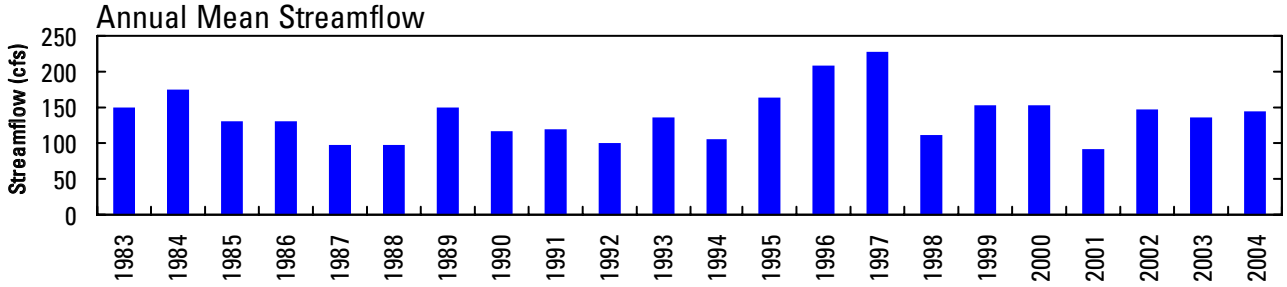
## Daily Mean Discharge



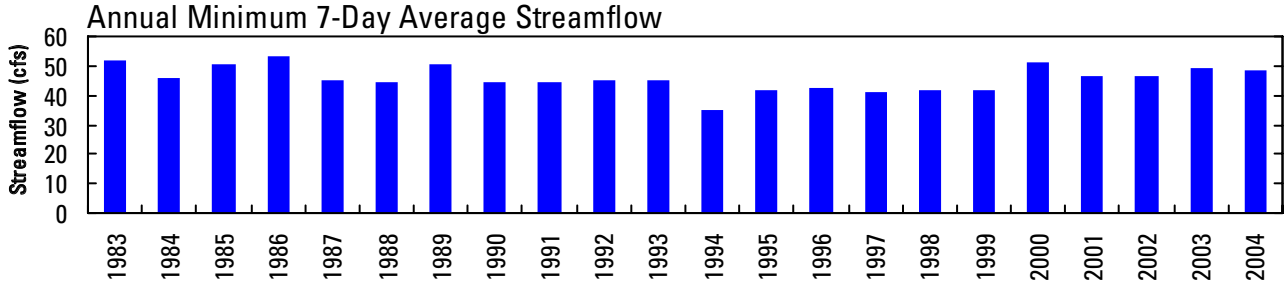

## Monthly Statistics



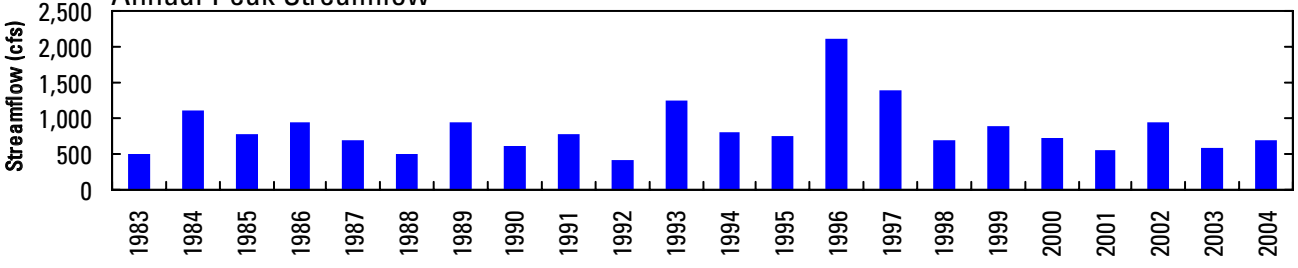

## Annual Mean Streamflow




## Annual Minimum 7-Day Average Streamflow




## Annual Peak Streamflow



13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.

PERIOD OF DAILY RECORD.--May 1999 to current year.

INSTRUMENTATION.--Temperature recorder since May 1999.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--Maximum recorded, 20.0°C Aug. 24, 1999; minimum recorded, 0.0°C on several days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 18.4°C July 24, 25; minimum, 0.0°C Dec. 30, Jan. 4-6.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 11.9 | 6.6 | 9.1 | 3.8 | 0.5 | 2.2 | 5.5 | 4.3 | 4.8 | 1.9 | 0.4 | 1.4 |
| 2 | 11.0 | 6.5 | 8.8 | 5.1 | 2.8 | 3.8 | 5.7 | 4.0 | 4.7 | 3.5 | 1.8 | 2.4 |
| 3 | 11.2 | 6.4 | 8.6 | 4.3 | 2.1 | 3.6 | 5.1 | 2.9 | 4.4 | 2.3 | 1.5 | 1.8 |
| 4 | 11.6 | 6.5 | 8.9 | 4.5 | 1.7 | 2.7 | 4.2 | 2.0 | 3.1 | 1.6 | 0.0 | 1.0 |
| 5 | 11.8 | 7.3 | 9.4 | 2.5 | 0.3 | 1.3 | 5.9 | 4.2 | 5.1 | 0.1 | 0.0 | 0.1 |
| 6 | 11.5 | 6.7 | 9.0 | 2.9 | 0.4 | 1.5 | 5.2 | 3.9 | 4.7 | 0.6 | 0.0 | 0.1 |
| 7 | 10.8 | 8.1 | 9.3 | 4.2 | 0.3 | 2.2 | 4.1 | 3.0 | 3.5 | 2.4 | 0.6 | 1.5 |
| 8 | 10.7 | 6.5 | 8.6 | 5.2 | 3.2 | 4.0 | 4.8 | 3.9 | 4.2 | 3.8 | 1.9 | 2.9 |
| 9 | 9.4 | 6.5 | 8.0 | 5.4 | 2.9 | 4.1 | 4.2 | 3.5 | 3.8 | 4.3 | 3.3 | 3.7 |
| 10 | 8.8 | 5.7 | 7.0 | 5.6 | 4.4 | 5.0 | 4.3 | 3.2 | 3.7 | 4.1 | 3.0 | 3.5 |
| 11 | 7.8 | 4.5 | 6.1 | 6.0 | 4.0 | 5.1 | 5.1 | 3.6 | 4.3 | 3.4 | 2.0 | 2.9 |
| 12 | 8.7 | 6.2 | 7.3 | 5.1 | 3.2 | 4.4 | 4.3 | 3.0 | 3.8 | 2.8 | 0.9 | 2.0 |
| 13 | 8.7 | 6.7 | 7.5 | 4.2 | 2.3 | 3.1 | 4.3 | 3.3 | 3.9 | 4.2 | 2.1 | 3.1 |
| 14 | 8.1 | 6.3 | 7.0 | 4.2 | 1.9 | 3.0 | 4.3 | 3.4 | 3.8 | 2.5 | 1.1 | 1.8 |
| 15 | 6.7 | 4.6 | 5.7 | 5.7 | 3.4 | 4.5 | 4.6 | 3.1 | 3.7 | 3.4 | 0.8 | 2.0 |
| 16 | 7.5 | 5.5 | 6.4 | 5.4 | 3.6 | 4.5 | 4.0 | 3.0 | 3.4 | 4.4 | 2.3 | 3.6 |
| 17 | 9.1 | 5.3 | 7.0 | 5.8 | 3.7 | 4.8 | 4.0 | 2.6 | 3.5 | 4.4 | 3.2 | 3.7 |
| 18 | 9.4 | 5.3 | 7.1 | 6.4 | 4.8 | 5.5 | 2.8 | 1.5 | 2.2 | 4.1 | 3.1 | 3.4 |
| 19 | 9.6 | 5.8 | 7.5 | 6.0 | 3.9 | 5.1 | 4.2 | 1.8 | 2.9 | 4.3 | 2.8 | 3.5 |
| 20 | 9.9 | 7.1 | 8.3 | 4.9 | 3.6 | 4.2 | 4.7 | 3.0 | 3.9 | 4.9 | 3.2 | 3.9 |
| 21 | 9.6 | 6.4 | 8.0 | 3.9 | 1.4 | 3.1 | 5.2 | 4.0 | 4.5 | 4.1 | 3.2 | 3.7 |
| 22 | 9.4 | 5.7 | 7.4 | 2.6 | 1.2 | 1.8 | 4.9 | 3.6 | 4.4 | 4.0 | 2.6 | 3.1 |
| 23 | 8.0 | 5.8 | 7.3 | 3.7 | 2.0 | 2.8 | 4.3 | 2.7 | 3.6 | 2.7 | 0.3 | 1.5 |
| 24 | 7.0 | 4.1 | 5.4 | 3.4 | 1.2 | 2.6 | 5.0 | 3.7 | 4.3 | 2.9 | 1.3 | 1.9 |
| 25 | 6.8 | 3.5 | 5.0 | 3.0 | 1.0 | 2.2 | 5.1 | 3.8 | 4.3 | 3.9 | 1.3 | 2.6 |
| 26 | 7.5 | 4.1 | 5.6 | 4.4 | 2.4 | 3.3 | 4.0 | 2.4 | 3.4 | 3.9 | 2.2 | 3.0 |
| 27 | 8.7 | 4.6 | 6.5 | 3.8 | 2.0 | 2.9 | 3.1 | 1.3 | 2.5 | 4.5 | 2.8 | 3.6 |
| 28 | 10.7 | 7.1 | 8.6 | 4.8 | 3.1 | 3.9 | 3.0 | 0.6 | 2.1 | 3.7 | 1.4 | 3.1 |
| 29 | 9.3 | 5.5 | 7.0 | 4.7 | 3.8 | 4.3 | 2.9 | 0.5 | 2.2 | 3.9 | 0.2 | 2.7 |
| 30 | 5.5 | 3.8 | 4.6 | 5.2 | 3.7 | 4.4 | 0.7 | 0.0 | 0.2 | 3.8 | 2.4 | 3.1 |
| 31 | 4.0 | 1.6 | 2.9 | --- | --- | --- | 1.9 | 0.2 | 0.9 | 4.0 | 2.0 | 2.9 |
| MONTH | 11.9 | 1.6 | 7.3 | 6.4 | 0.3 | 3.5 | 5.9 | 0.0 | 3.5 | 4.9 | 0.0 | 2.6 |

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 4.2 | 1.4 | 2.5 | 5.9 | 2.4 | 3.9 | 5.1 | 2.8 | 3.9 | 9.5 | 4.0 | 6.2 |
| 2 | 4.5 | 1.1 | 2.2 | 6.4 | 2.8 | 4.6 | 7.8 | 2.9 | 4.8 | 9.7 | 4.3 | 6.4 |
| 3 | 4.4 | 2.6 | 3.4 | 3.7 | 1.7 | 2.8 | 7.5 | 3.5 | 5.2 | 9.2 | 4.5 | 6.2 |
| 4 | 4.9 | 3.1 | 3.8 | 3.5 | 2.0 | 3.0 | 8.5 | 3.7 | 5.4 | 9.0 | 4.6 | 6.3 |
| 5 | 3.5 | 1.6 | 2.6 | 4.4 | 3.1 | 3.5 | 6.1 | 3.6 | 4.7 | 8.9 | 4.4 | 6.2 |
| 6 | 3.4 | 1.3 | 2.2 | 6.6 | 2.7 | 4.2 | 8.1 | 3.8 | 5.3 | 8.0 | 4.7 | 6.2 |
| 7 | 5.1 | 2.8 | 3.7 | 6.2 | 3.5 | 4.5 | 7.9 | 3.6 | 5.1 | 9.0 | 4.9 | 6.7 |
| 8 | 4.6 | 3.3 | 3.9 | 7.6 | 2.9 | 4.7 | 7.7 | 3.5 | 5.0 | 9.0 | 5.8 | 6.8 |
| 9 | 5.6 | 3.1 | 4.0 | 6.4 | 3.2 | 4.5 | 7.0 | 3.3 | 4.8 | 9.0 | 4.9 | 6.6 |
| 10 | 4.1 | 1.4 | 2.7 | 7.1 | 2.9 | 4.5 | 7.6 | 3.3 | 4.9 | 6.8 | 5.5 | 5.9 |
| 11 | 3.5 | 0.6 | 2.0 | 7.0 | 2.8 | 4.5 | 7.9 | 3.3 | 5.0 | 6.3 | 5.1 | 5.7 |
| 12 | 3.6 | 1.4 | 2.4 | 7.6 | 3.2 | 5.0 | 7.3 | 3.2 | 4.9 | 7.8 | 5.0 | 5.9 |
| 13 | 3.4 | 1.3 | 2.0 | 6.7 | 3.2 | 4.7 | 6.7 | 3.8 | 4.9 | 8.8 | 3.8 | 6.1 |
| 14 | 3.8 | 1.3 | 2.4 | 7.3 | 3.4 | 4.7 | 6.1 | 4.0 | 4.8 | 9.5 | 4.7 | 6.8 |
| 15 | 4.6 | 1.2 | 2.7 | 6.9 | 3.4 | 4.7 | 5.8 | 3.5 | 4.4 | 7.4 | 4.8 | 6.2 |
| 16 | 3.6 | 1.7 | 2.6 | 7.8 | 3.7 | 5.1 | 7.2 | 3.4 | 4.9 | 7.2 | 5.7 | 6.3 |
| 17 | 4.1 | 3.1 | 3.6 | 7.3 | 3.4 | 4.8 | 7.2 | 4.1 | 5.1 | 10.0 | 4.6 | 6.9 |
| 18 | 5.9 | 3.6 | 4.4 | 7.0 | 3.7 | 4.9 | 6.3 | 4.0 | 5.0 | 9.5 | 6.2 | 7.4 |
| 19 | 5.9 | 3.1 | 4.4 | 6.8 | 3.4 | 4.5 | 7.6 | 3.9 | 5.3 | 9.4 | 6.6 | 7.6 |
| 20 | 5.6 | 2.5 | 3.6 | 7.2 | 3.1 | 4.6 | 6.9 | 4.3 | 5.2 | 8.7 | 6.3 | 7.3 |
| 21 | 5.2 | 1.9 | 3.2 | 7.8 | 3.7 | 5.2 | 6.3 | 4.2 | 5.0 | 9.6 | 6.6 | 7.6 |
| 22 | 4.9 | 1.4 | 3.0 | 7.9 | 3.6 | 5.2 | 8.2 | 3.7 | 5.5 | 8.5 | 6.4 | 7.1 |
| 23 | 5.6 | 2.4 | 3.9 | 7.7 | 3.5 | 4.9 | 7.3 | 3.6 | 5.4 | 8.2 | 5.7 | 6.8 |
| 24 | 5.1 | 3.7 | 4.2 | 6.7 | 3.3 | 4.5 | 8.1 | 3.9 | 5.6 | 7.7 | 5.6 | 6.6 |
| 25 | 4.9 | 3.5 | 4.1 | 6.5 | 3.6 | 4.8 | 9.3 | 3.5 | 5.8 | 9.6 | 5.0 | 7.3 |
| 26 | 6.8 | 3.6 | 4.8 | 6.3 | 3.4 | 4.5 | 9.7 | 3.9 | 6.2 | 8.7 | 7.0 | 7.7 |
| 27 | 6.7 | 3.5 | 4.6 | 7.1 | 3.7 | 4.8 | 8.9 | 4.2 | 5.9 | 8.7 | 7.1 | 7.8 |
| 28 | 6.4 | 3.2 | 4.4 | 7.6 | 3.5 | 5.0 | 6.5 | 3.4 | 4.7 | 7.4 | 6.2 | 6.9 |
| 29 | 6.5 | 3.0 | 4.3 | 8.0 | 3.3 | 5.1 | 8.4 | 3.4 | 5.4 | 8.0 | 5.7 | 6.6 |
| 30 | --- | --- | --- | 8.0 | 3.8 | 5.2 | 9.2 | 3.6 | 5.9 | 8.8 | 6.1 | 7.2 |
| 31 | --- | --- | --- | 6.0 | 3.2 | 4.3 | --- | --- | --- | 9.4 | 6.5 | 7.7 |
| MONTH | 6.8 | 0.6 | 3.4 | 8.0 | 1.7 | 4.6 | 9.7 | 2.8 | 5.1 | 10.0 | 3.8 | 6.7 |
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 10.9 | 5.9 | 8.3 | --- | --- | --- | 17.6 | 9.3 | 13.3 | 13.0 | 10.0 | 11.5 |
| 2 | --- | --- | --- | 17.3 | 9.3 | 13.1 | 16.7 | 10.4 | 13.2 | 11.4 | 9.3 | 10.3 |
| 3 | --- | --- | --- | 17.4 | 10.3 | 13.2 | 16.9 | 10.4 | 13.2 | 10.9 | 8.1 | 9.5 |
| 4 | --- | --- | --- | 17.1 | 9.2 | 12.8 | 15.4 | 9.8 | 12.3 | 11.9 | 8.1 | 9.9 |
| 5 | --- | --- | --- | 17.1 | 9.0 | 12.7 | 15.6 | 9.9 | 12.5 | 11.9 | 8.9 | 10.3 |
| 6 | --- | --- | --- | 16.2 | 9.8 | 12.8 | 15.0 | 10.1 | 12.3 | 11.8 | 7.8 | 9.8 |
| 7 | --- | --- | --- | 16.0 | 10.2 | 12.6 | 15.8 | 9.6 | 12.3 | 12.1 | 8.0 | 10 |
| 8 | --- | --- | --- | 15.9 | 8.3 | 11.8 | 16.2 | 8.6 | 12.2 | 11.8 | 8.4 | 10.1 |
| 9 | --- | --- | --- | 16.5 | 8.5 | 12.3 | 16.6 | 8.7 | 12.5 | 11.0 | 9.2 | 10.2 |
| 10 | --- | --- | --- | 16.0 | 9.6 | 12.5 | 16.8 | 9.2 | 12.8 | 12.1 | 8.8 | 10.4 |
| 11 | --- | --- | --- | 16.6 | 8.8 | 12.3 | 16.9 | 9.2 | 12.9 | 11.3 | 9.4 | 10.3 |
| 12 | --- | --- | --- | 17.2 | 8.6 | 12.6 | 16.8 | 9.2 | 12.9 | 10.8 | 9.4 | 10.2 |
| 13 | --- | --- | --- | 17.5 | 9.5 | 13.2 | 16.7 | 9.4 | 13.0 | 9.9 | 8.0 | 8.8 |
| 14 | --- | --- | --- | 17.4 | 9.4 | 13.2 | 15.7 | 9.8 | 12.6 | 11.1 | 8.4 | 9.5 |
| 15 | --- | --- | --- | 18.0 | 10.6 | 14.0 | 16.0 | 10.5 | 12.9 | 10.3 | 8.7 | 9.4 |
| 16 | --- | --- | --- | 18.2 | 10.7 | 14.2 | 13.4 | 10.1 | 12.0 | 11.5 | 8.5 | 9.8 |
| 17 | --- | --- | --- | 15.5 | 11.4 | 13.2 | 13.5 | 10.4 | 11.8 | 9.9 | 8.5 | 9.1 |
| 18 | --- | --- | --- | 14.5 | 11.2 | 12.7 | 16.5 | 9.8 | 12.8 | 9.7 | 8.5 | 9.1 |
| 19 | --- | --- | --- | 16.0 | 10.5 | 12.7 | 15.0 | 10.0 | 12.3 | 9.4 | 6.5 | 8.1 |
| 20 | --- | --- | --- | 16.9 | 9.9 | 13.1 | 15.8 | 9.6 | 12.5 | 9.8 | 6.9 | 8.1 |
| 21 | --- | --- | --- | 17.2 | 9.1 | 13.0 | 14.9 | 9.8 | 12.4 | 10.4 | 6.5 | 8.2 |
| 22 | --- | --- | --- | 17.6 | 9.1 | 13.2 | 12.6 | 10.5 | 11.1 | 11.0 | 5.8 | 8.2 |
| 23 | --- | --- | --- | 17.9 | 9.2 | 13.4 | 12.3 | 9.9 | 10.9 | 11.7 | 7.1 | 9.1 |
| 24 | --- | --- | --- | 18.4 | 9.9 | 13.8 | 11.1 | 9.9 | 10.5 | 12.2 | 6.6 | 9.1 |
| 25 | --- | --- | --- | 18.4 | 10.3 | 14.0 | 11.6 | 9.4 | 10.4 | 12.2 | 6.7 | 9.2 |
| 26 | --- | --- | --- | 17.0 | 9.2 | 13.0 | 11.9 | 9.6 | 10.5 | 11.4 | 7.1 | 9.1 |
| 27 | --- | --- | --- | 17.1 | 8.9 | 12.8 | 12.2 | 9.5 | 10.8 | 12.2 | 7.0 | 9.4 |
| 28 | --- | --- | --- | 17.2 | 9.0 | 12.9 | 13.4 | 8.9 | 11.1 | 12.1 | 6.9 | 9.3 |
| 29 | --- | --- | --- | 17.1 | 9.3 | 13.1 | 13.8 | 8.9 | 11.3 | 12.0 | 6.9 | 9.2 |
| 30 | --- | --- | --- | 17.3 | 9.6 | 13.3 | 14.2 | 8.7 | 11.5 | 11.9 | 6.6 | 9.1 |
| 31 | --- | --- | --- | 17.3 | 9.2 | 13.1 | 14.1 | 9.7 | 11.7 | --- | --- | --- |
| MONTH | 10.9 | 5.9 | 8.3 | 18.4 | 8.3 | 13.0 | 17.6 | 8.6 | 12.1 | 13.0 | 5.8 | 9.5 |
| YEAR | 18.4 | 0.0 | 6.5 | | | | | | | | | |

## 13329770 WALLOWA RIVER ABOVE CROSS COUNTRY CANAL, NEAR ENTERPRISE, OR

LOCATION.--Lat 45°29'18", long 117°24'10", in SW ¼ SE ¼ sec.11, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank 300 ft upstream from Cross Country canal, 6 mi northwest of Enterprise, and at mile 32.5.

DRAINAGE AREA.--272 $mi^2$.

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,330 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for the period June 4-30 and estimated daily discharges, which are poor. Regulation by Wallowa Lake. Many diversions for irrigation upstream from gage. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Gage height record was collected and discharge measurements made by the Wallowa County Soil and Water Conservation District. Records were provided by the State of Oregon Water Resources Department. Discharge measurements and records were reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--9 years (water years 1996-2004), 256 $ft^3/s$, 185,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,590 $ft^3/s$ July 9, 1997, gage height, 4.17 ft; maximum gage height, 4.27 ft May 16, 1997; minimum discharge, 92 $ft^3/s$ Sept. 5, 2001.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 $ft^3/s$ and maximum (*):

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) | Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| July 19 | 2345 | *657 | *2.90 | | | | |

Minimum discharge, 123 $ft^3/s$, Jan. 15.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 190 | 173 | 156 | e140 | 147 | 183 | 141 | 149 | 320 | 568 | 164 | 217 |
| 2 | 189 | 176 | 157 | 140 | 139 | 182 | 138 | 162 | 326 | 522 | 181 | 225 |
| 3 | 183 | 182 | 164 | 139 | 143 | 173 | 135 | 206 | 352 | 496 | 188 | 225 |
| 4 | 187 | 177 | 161 | e135 | 145 | 175 | 133 | 243 | e390 | 489 | 194 | 224 |
| 5 | 192 | 167 | 172 | e130 | 145 | 168 | 143 | 250 | e415 | 457 | 209 | 217 |
| 6 | 201 | e158 | 183 | e125 | 141 | 173 | 160 | 253 | e390 | 406 | 202 | 220 |
| 7 | 190 | 157 | 185 | e128 | 144 | 172 | 154 | 243 | 359 | 379 | 217 | 218 |
| 8 | 187 | 160 | 178 | e130 | 143 | 181 | 157 | 241 | 364 | 353 | 219 | 218 |
| 9 | 182 | 161 | 160 | e140 | 143 | 186 | 160 | 212 | 348 | 340 | 209 | 221 |
| 10 | 184 | 164 | 162 | 143 | 139 | 183 | 159 | 213 | 346 | 347 | 188 | 225 |
| 11 | 189 | 172 | 165 | 140 | 137 | 176 | 159 | 200 | 372 | 323 | 179 | 228 |
| 12 | 194 | 168 | 163 | 138 | 134 | 174 | 165 | 193 | 354 | 293 | 177 | 272 |
| 13 | 194 | 163 | 172 | 138 | 135 | 171 | 173 | 179 | 375 | 282 | 188 | 263 |
| 14 | 198 | 161 | 185 | 136 | 135 | 162 | 177 | 163 | 356 | 268 | 198 | 271 |
| 15 | 199 | 161 | 167 | 134 | 136 | 156 | 170 | 173 | 351 | 249 | 189 | 269 |
| 16 | 202 | 167 | 159 | 139 | 137 | 153 | 161 | 191 | 352 | 225 | 198 | 289 |
| 17 | 199 | 171 | 159 | 140 | 148 | 153 | 160 | 177 | 360 | 212 | 199 | 281 |
| 18 | 190 | 171 | 153 | 140 | 183 | 154 | 169 | 186 | 354 | 225 | 196 | 288 |
| 19 | 183 | 168 | 153 | 139 | 203 | 153 | 155 | 243 | 352 | 273 | 200 | 290 |
| 20 | 181 | 162 | 160 | 140 | 181 | 149 | 157 | 268 | 349 | 410 | 202 | 296 |
| 21 | 181 | 156 | 160 | 137 | 171 | 148 | 164 | 269 | 357 | 315 | 206 | 288 |
| 22 | 178 | 151 | 156 | 137 | 164 | 149 | 168 | 278 | 372 | 271 | 235 | 280 |
| 23 | 179 | 148 | 156 | 139 | 166 | 151 | 151 | 270 | 372 | 247 | 272 | 250 |
| 24 | 177 | 153 | 161 | 144 | 168 | 156 | 144 | 267 | 381 | 241 | 247 | 237 |
| 25 | 176 | 150 | 162 | 140 | 165 | 156 | 138 | 251 | 410 | 226 | 277 | 230 |
| 26 | 177 | 151 | 158 | 135 | 195 | 155 | 137 | 270 | 433 | 207 | 320 | 223 |
| 27 | 176 | 146 | 143 | 135 | 199 | 150 | 145 | 406 | 419 | 186 | 291 | 218 |
| 28 | 178 | 148 | 151 | 140 | 189 | 144 | 167 | 344 | 421 | 177 | 258 | 212 |
| 29 | 185 | 158 | 154 | 153 | 187 | 140 | 161 | 350 | 476 | 171 | 246 | 215 |
| 30 | 180 | 158 | e140 | 171 | --- | 137 | 154 | 364 | 538 | 166 | 213 | 214 |
| 31 | 174 | --- | 141 | 153 | --- | 143 | --- | 338 | --- | 162 | 210 | --- |
| TOTAL | 5,775 | 4,858 | 4,996 | 4,318 | 4,562 | 5,006 | 4,655 | 7,552 | 11,364 | 9,486 | 6,672 | 7,324 |
| MEAN | 186 | 162 | 161 | 139 | 157 | 161 | 155 | 244 | 379 | 306 | 215 | 244 |
| MAX | 202 | 182 | 185 | 171 | 203 | 186 | 177 | 406 | 538 | 568 | 320 | 296 |
| MIN | 174 | 146 | 140 | 125 | 134 | 137 | 133 | 149 | 320 | 162 | 164 | 212 |
| AC-FT | 11,450 | 9,640 | 9,910 | 8,560 | 9,050 | 9,930 | 9,230 | 14,980 | 22,540 | 18,820 | 13,230 | 14,530 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 212 | 204 | 199 | 188 | 196 | 211 | 230 | 364 | 487 | 327 | 222 | 236 |
| MAX | 294 | 272 | 356 | 233 | 297 | 323 | 339 | 598 | 843 | 630 | 340 | 369 |
| (WY) | (1998) | (1996) | (1996) | (1997) | (1996) | (1996) | (1997) | (1997) | (1998) | (1997) | (1996) | (1996) |
| MIN | 145 | 155 | 138 | 139 | 139 | 160 | 155 | 199 | 179 | 174 | 124 | 107 |
| (WY) | (2002) | (2002) | (2002) | (2004) | (2002) | (2002) | (2004) | (2002) | (2001) | (2001) | (2001) | (2001) |

13329770 WALLOWA RIVER ABOVE CROSS COUNTRY CANAL, NEAR ENTERPRISE, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1996 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 78,892 | | 76,568 | | | |
| ANNUAL MEAN | 216 | | 209 | | 256 | |
| HIGHEST ANNUAL MEAN | | | | | 358 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 179 | 2001 |
| HIGHEST DAILY MEAN | 628 | Jun 2 | 568 | Jul 1 | 1,140 | May 16, 1997 |
| LOWEST DAILY MEAN | 140 | Dec 30 | 125 | Jan 6 | 98 | Sep 5, 2001 |
| ANNUAL SEVEN-DAY MINIMUM | 147 | Feb 24 | 132 | Jan 2 | 103 | Sep 3, 2001 |
| ANNUAL RUNOFF (AC-FT) | 156,500 | | 151,900 | | 185,700 | |
| 10 PERCENT EXCEEDS | 329 | | 350 | | 410 | |
| 50 PERCENT EXCEEDS | 184 | | 178 | | 208 | |
| 90 PERCENT EXCEEDS | 155 | | 140 | | 152 | |

e Estimated

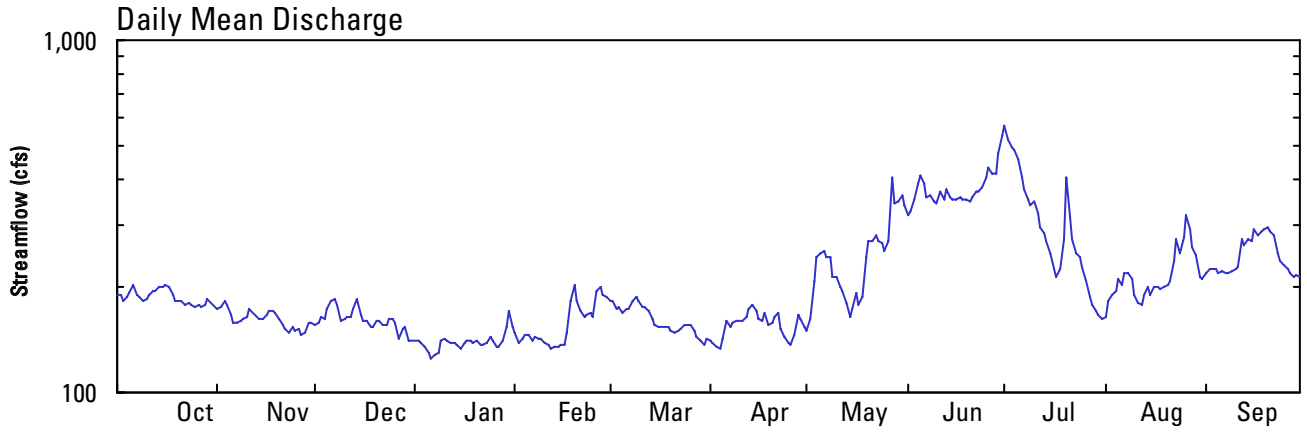
2004 Water Year

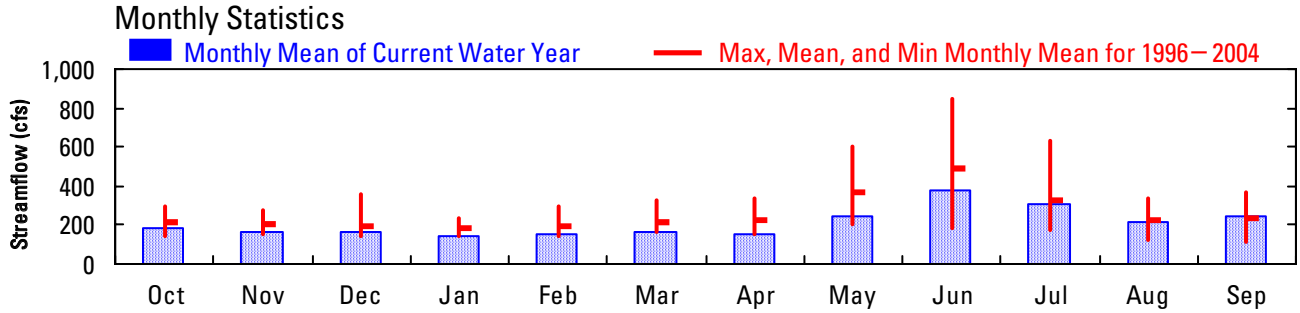
GRANDE RONDE RIVER BASIN

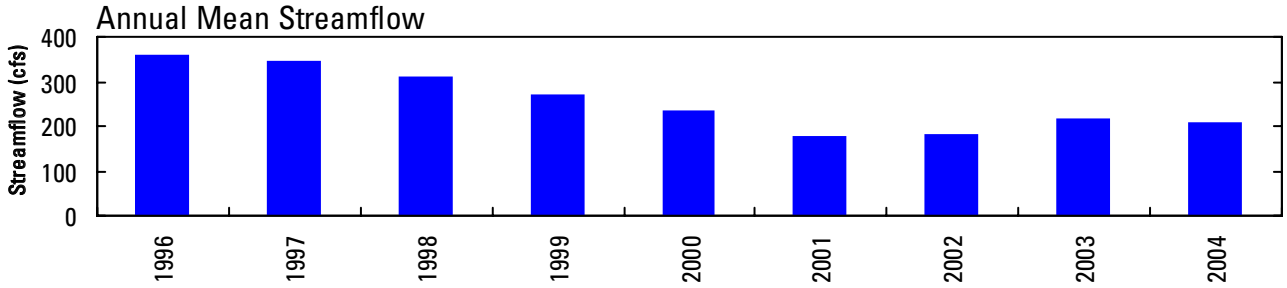
## 13329770 WALLOWA RIVER ABV CROSS COUNTRY CANAL, NR ENTERPRISE, OR

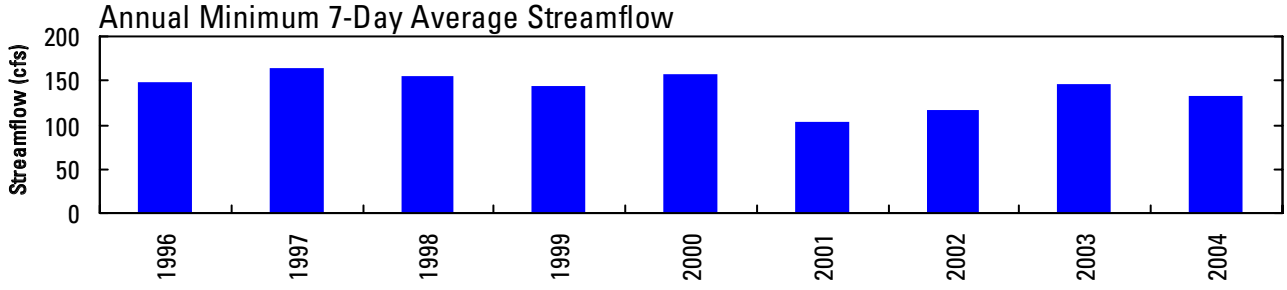
Latitude: 45°29'18" Longitude: 117°24'10" Hydrologic Unit Code: 17060105

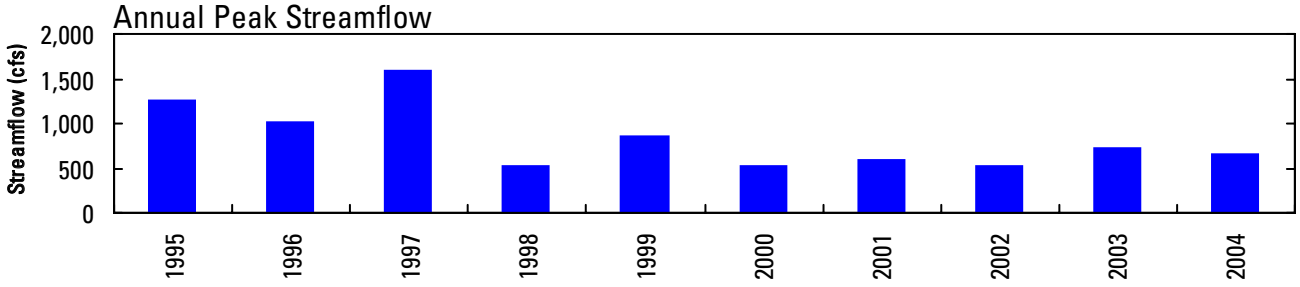
Wallowa County Datum: 3,330 feet Drainage Area: 272 square miles



## 13330000 LOSTINE RIVER NEAR LOSTINE, OR

LOCATION.--Lat 45°26'20", long 117°25'35", in NW $^1/_4$ sec.34, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 3.5 mi south of Lostine, and at mile 10.0.

DRAINAGE AREA.--70.9 mi$^2$.

PERIOD OF RECORD.--August 1912 to March 1914, April to September 1915, July 1925 to September 1991, April 1995 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1913, 1942. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,650 ft above NGVD of 1929, by barometer. See WSP 1317 or 1737 for history of changes prior to Dec. 16, 1953. Dec. 16, 1953 to Aug. 23 1977, at datum 1.04 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Diversions for irrigation upstream from station. Continuous water-quality records for the period October 1957 to September 1958 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Gage height record was collected and discharge measurements made by the Wallowa County Soil and Water Conservation District. Records were provided by the State of Oregon Water Resources Department. Discharge measurements and records were reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--75 years (water years 1913,1926-91, 1996-2004), 192 ft$^3$/s, 139,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,550 ft$^3$/s June 16, 1974, gage height, 8.59 ft, present datum; minimum discharge, 7.5 ft$^3$/s Mar. 2, 1966, result of freezeup; minimum daily, 10 ft$^3$/s Nov. 28-30, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft$^3$/s and maximum (*):

| Date | Time | Discharge (ft$^3$/s) | Gage height (ft) | Date | Time | Discharge (ft$^3$/s) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| May 27 | 0600 | 1,140 | 6.51 | June 27 | 0400 | 1,120 | 6.44 |
| June 6 | 0215 | *1,400 | *6.89 | | | | |

Minimum discharge, 12 ft$^3$/s, Nov. 5, Dec. 27.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 18 | 31 | e19 | 36 | 30 | 113 | 266 | 503 | 901 | 114 | 88 |
| 2 | 20 | e19 | 31 | e18 | 31 | 31 | 107 | 353 | 538 | 745 | 112 | 89 |
| 3 | 19 | e19 | 30 | e17 | 34 | 28 | 107 | 490 | 688 | 682 | 109 | 86 |
| 4 | 19 | e18 | 27 | e16 | 32 | 31 | 123 | 580 | 1,010 | 620 | 104 | 81 |
| 5 | 19 | 16 | 29 | e15 | 31 | 31 | 157 | 635 | 1,210 | 558 | 101 | 77 |
| 6 | 19 | 18 | 35 | e14 | 29 | 32 | 197 | 621 | 1,230 | 522 | 95 | 73 |
| 7 | 19 | 19 | 36 | e18 | 31 | 31 | 213 | 617 | 901 | 511 | 91 | 70 |
| 8 | 19 | 23 | 32 | 22 | 30 | 34 | 223 | 614 | 742 | 453 | 86 | 67 |
| 9 | 19 | 23 | 26 | 23 | 29 | 39 | 219 | 521 | 677 | 405 | 81 | 64 |
| 10 | 19 | 24 | 30 | 23 | 27 | 45 | 214 | 482 | 647 | 398 | 77 | 62 |
| 11 | 20 | 30 | 28 | 23 | 29 | 45 | 214 | 410 | 612 | 375 | 74 | 61 |
| 12 | 23 | 26 | 27 | 23 | 23 | 47 | 235 | 366 | 623 | 349 | 71 | 87 |
| 13 | 23 | 25 | 33 | 24 | 27 | 53 | 270 | 323 | 647 | 339 | 68 | 79 |
| 14 | 23 | 24 | 39 | 25 | 30 | 55 | 276 | 297 | 711 | 336 | 66 | 112 |
| 15 | 24 | 24 | 32 | 25 | 27 | 57 | 244 | 285 | 716 | 322 | 65 | 119 |
| 16 | 26 | 25 | 28 | 26 | 27 | 59 | 216 | 283 | 690 | 308 | 64 | 166 |
| 17 | 31 | 26 | 30 | 24 | 28 | 64 | 199 | 281 | 711 | 303 | 64 | 143 |
| 18 | 29 | 28 | 25 | 23 | 39 | 69 | 191 | 297 | 726 | 301 | 64 | 139 |
| 19 | 27 | 28 | 27 | 25 | 36 | 77 | 173 | 377 | 713 | 320 | 72 | 142 |
| 20 | 26 | 26 | 27 | 24 | 33 | 74 | 166 | 422 | 737 | 355 | 63 | 138 |
| 21 | 25 | 24 | 27 | 21 | 31 | 75 | 158 | 459 | 796 | 265 | 59 | 132 |
| 22 | 24 | 21 | 25 | 23 | 31 | 91 | 151 | 464 | 878 | 227 | 84 | 125 |
| 23 | 23 | 20 | 25 | 29 | 33 | 118 | 149 | 414 | 959 | 203 | 140 | 120 |
| 24 | 23 | 24 | 27 | 35 | 32 | 137 | 152 | 384 | 999 | 188 | 101 | 115 |
| 25 | 23 | 22 | 26 | 29 | 31 | 127 | 151 | 364 | 968 | 181 | 131 | 109 |
| 26 | 23 | 24 | 23 | 29 | 32 | 122 | 169 | 499 | 998 | 169 | 201 | 104 |
| 27 | 22 | 24 | 15 | 27 | 31 | 111 | 224 | 1,140 | 1,120 | 154 | 155 | 99 |
| 28 | 23 | 24 | 21 | 29 | 31 | 101 | 284 | 1,020 | 1,020 | 142 | 126 | 95 |
| 29 | 34 | 37 | 23 | 39 | 31 | 97 | 245 | 741 | 941 | 134 | 110 | 92 |
| 30 | 29 | 36 | 21 | 46 | --- | 103 | 228 | 587 | 905 | 125 | 99 | 89 |
| 31 | 24 | --- | 19 | 38 | --- | 119 | --- | 516 | --- | 120 | 90 | --- |
| TOTAL | 717 | 715 | 855 | 772 | 892 | 2,133 | 5,768 | 15,108 | 24,616 | 11,011 | 2,937 | 3,023 |
| MEAN | 23.1 | 23.8 | 27.6 | 24.9 | 30.8 | 68.8 | 192 | 487 | 821 | 355 | 94.7 | 101 |
| MAX | 34 | 37 | 39 | 46 | 39 | 137 | 284 | 1,140 | 1,230 | 901 | 201 | 166 |
| MIN | 19 | 16 | 15 | 14 | 23 | 28 | 107 | 266 | 503 | 120 | 59 | 61 |
| AC-FT | 1,420 | 1,420 | 1,700 | 1,530 | 1,770 | 4,230 | 11,440 | 29,970 | 48,830 | 21,840 | 5,830 | 6,000 |

13330000 LOSTINE RIVER NEAR LOSTINE, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2004, BY WATER YEAR (WY) | | | | | | | | | | | | |
| MEAN | 55.6 | 63.5 | 58.4 | 49.7 | 48.0 | 55.9 | 160 | 510 | 785 | 382 | 85.8 | 50.1 |
| MAX | 291 | 226 | 212 | 158 | 191 | 169 | 393 | 909 | 1,374 | 913 | 180 | 104 |
| (WY) | (1960) | (1928) | (1959) | (1974) | (1996) | (1986) | (1934) | (1928) | (1974) | (1975) | (1943) | (1978) |
| MIN | 18.0 | 14.7 | 15.3 | 15.0 | 14.8 | 16.3 | 35.7 | 203 | 332 | 59.7 | 30.6 | 23.0 |
| (WY) | (1937) | (1937) | (1937) | (1937) | (1937) | (1955) | (1975) | (1977) | (1926) | (1977) | (1931) | (1931) |

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1926 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 63,344 | | 68,547 | | | |
| ANNUAL MEAN | 174 | | 187 | | 192 | |
| HIGHEST ANNUAL MEAN | | | | | 288 | 1974 |
| LOWEST ANNUAL MEAN | | | | | 90.9 | 1977 |
| HIGHEST DAILY MEAN | 1,900 | May 30 | 1,230 | Jun 6 | 2,290 | Jun 17, 1974 |
| LOWEST DAILY MEAN | 15 | Dec 27 | 14 | Jan 6 | 10 | Nov 28, 1936 |
| ANNUAL SEVEN-DAY MINIMUM | 18 | Nov 1 | 17 | Jan 1 | 11 | Nov 26, 1936 |
| ANNUAL RUNOFF (AC-FT) | 125,600 | | 136,000 | | 139,100 | |
| 10 PERCENT EXCEEDS | 513 | | 618 | | 596 | |
| 50 PERCENT EXCEEDS | 52 | | 70 | | 63 | |
| 90 PERCENT EXCEEDS | 23 | | 23 | | 28 | |

e Estimated

2004 Water Year

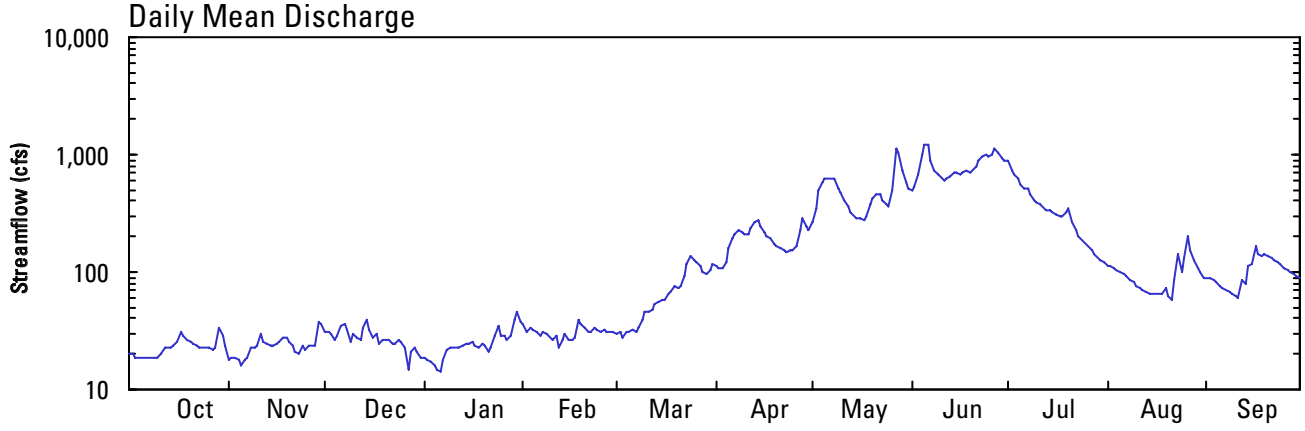
GRANDE RONDE RIVER BASIN

# 13330000 LOSTINE RIVER NEAR LOSTINE, OR

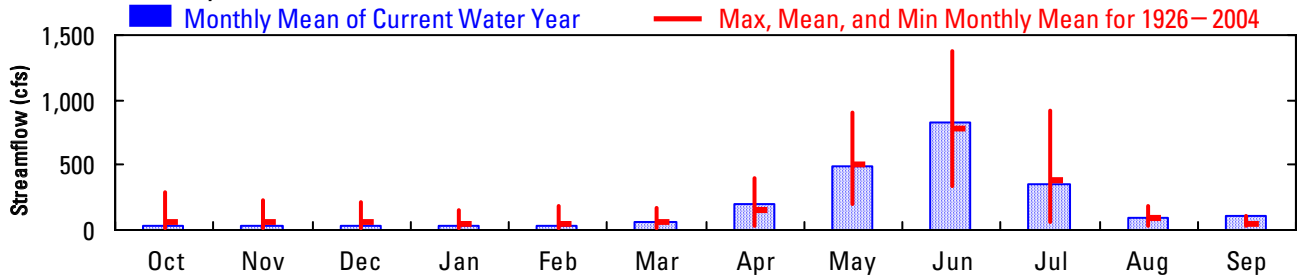
Latitude: 45°26'20" Longitude: 117°25'35" Hydrologic Unit Code: 17060105

Wallowa County Datum: 3,650.00 feet Drainage Area: 70.9 square miles

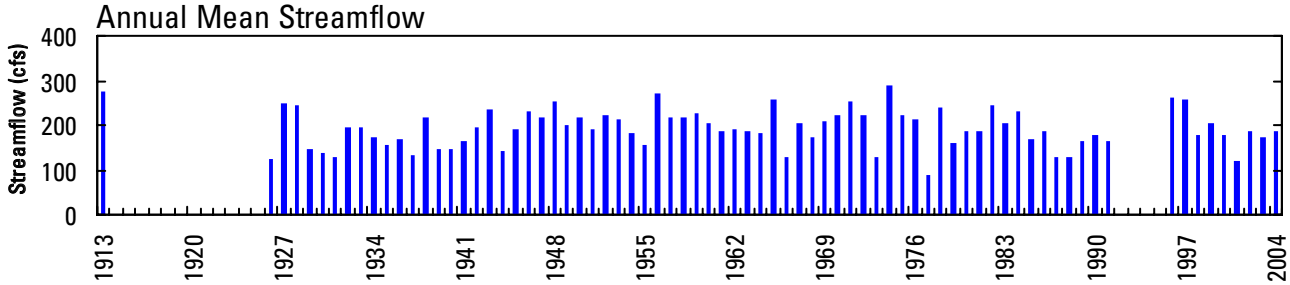
## Daily Mean Discharge



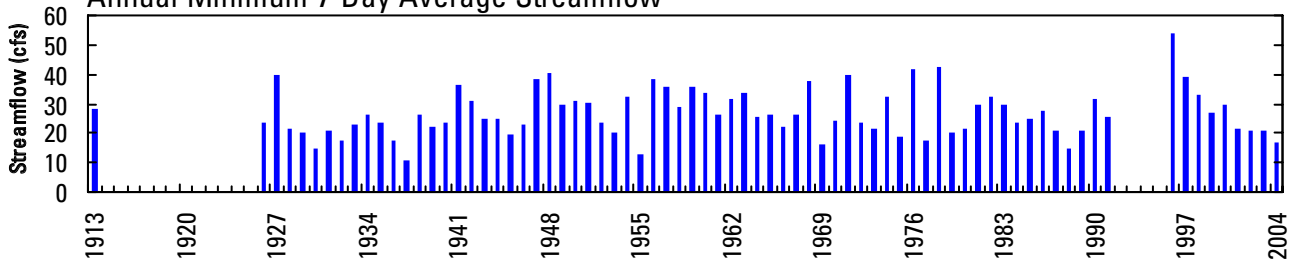

## Monthly Statistics



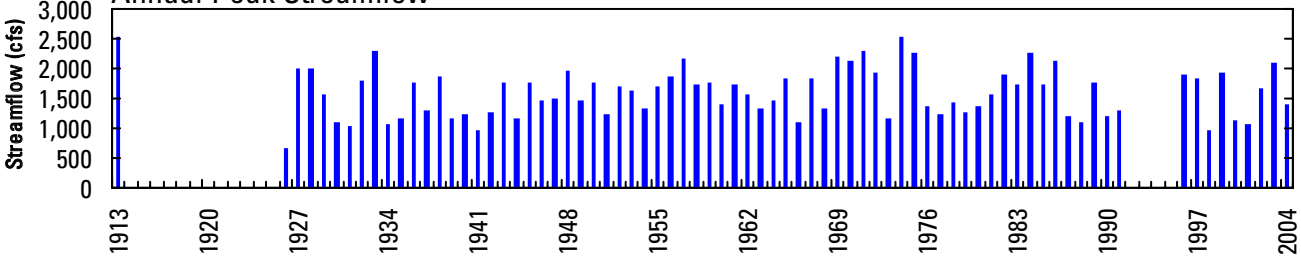

## Annual Mean Streamflow




## Annual Minimum 7-Day Average Streamflow




## Annual Peak Streamflow



## 13330300 LOSTINE RIVER AT BAKER ROAD, NEAR LOSTINE, OR

LOCATION.--Lat 45°32'14", long 117°28'43", in NW $^1/_4$ SW $^1/_4$ sec.29, T.1 N., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 300 ft upstream from bridge at Baker road, 4 mi northwest of Lostine, and at mile 1.3.

DRAINAGE AREA.--90.9 mi$^2$.

PERIOD OF RECORD.--June 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,050 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except those for the period July 8 to Sept. 30, which are fair; those for the period Oct. 1 to Nov. 8, and estimated daily discharges, which are poor. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from gage. U.S. Geological Survey satellite telemetry at station.

COOPERATION.--Gage height record was collected and discharge measurements made by the Wallowa County Soil and Water Conservation District. Records were provided by the State of Oregon Water Resources Department. Discharge measurements and records were reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--9 years (water years 1996-2004), 177 ft$^3$/s, 128,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,330 ft$^3$/s May 30, 2003, from rating curve extended above 1,500 ft$^3$/s, gage height, 6.73 ft; maximum gage height, 6.88 ft June 9, 1996; minimum discharge, 6.3 ft$^3$/s Aug. 22, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft$^3$/s and maximum (*):

| Date | Time | Discharge (ft$^3$/s) | Gage height (ft) |
|---|---|---|---|
| June 6 | 0745 | *1,310 | *5.76 |

No other peak greater than base discharge.

Minimum daily discharge, 15 ft$^3$/s, Jan. 6.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 31 | e28 | 37 | e20 | 44 | 41 | 124 | 221 | 426 | 785 | 77 | 159 |
| 2 | 31 | e28 | 37 | e19 | 38 | 43 | 119 | 256 | 447 | 640 | 79 | 157 |
| 3 | 30 | e28 | e36 | e18 | 40 | 40 | 118 | 363 | 551 | 582 | 101 | 152 |
| 4 | 31 | e26 | e34 | e17 | 36 | 43 | 128 | 445 | 842 | 533 | 95 | 145 |
| 5 | 31 | e25 | 40 | e16 | 35 | 42 | 158 | 469 | 1,040 | 473 | 91 | 131 |
| 6 | 31 | e27 | 43 | e15 | 33 | 47 | 201 | 450 | 1,070 | 427 | 88 | 124 |
| 7 | 31 | e29 | 47 | e18 | 36 | 45 | 218 | 444 | 750 | 421 | 106 | 125 |
| 8 | 32 | 33 | 44 | 21 | 32 | 47 | 226 | 450 | 607 | 363 | 109 | 125 |
| 9 | 35 | 33 | 38 | 23 | 31 | 51 | 227 | 363 | 527 | 313 | 97 | 125 |
| 10 | 36 | 36 | 38 | 24 | 30 | 56 | 222 | 335 | 492 | 305 | 77 | 121 |
| 11 | 38 | 45 | 36 | 23 | 32 | 57 | 220 | 301 | 461 | 298 | 82 | 118 |
| 12 | 41 | 44 | 33 | 23 | 28 | 59 | 236 | 274 | 473 | 255 | 76 | 139 |
| 13 | 39 | 42 | 35 | 25 | 27 | 64 | 269 | 241 | 493 | 232 | 71 | 131 |
| 14 | 38 | 41 | 45 | 26 | 30 | 64 | 283 | 221 | 567 | 226 | 67 | 156 |
| 15 | 38 | 39 | e36 | e26 | 30 | 67 | 254 | 211 | 554 | 197 | 71 | 157 |
| 16 | 41 | 39 | e34 | 26 | 27 | 68 | 228 | 226 | 515 | 187 | 86 | 204 |
| 17 | 42 | 43 | e32 | 24 | 30 | 72 | 215 | 244 | 539 | 176 | 105 | 186 |
| 18 | 41 | 42 | 33 | 23 | 41 | 78 | 211 | 247 | 527 | 190 | 102 | 181 |
| 19 | 39 | 41 | 32 | 25 | 50 | 87 | 192 | 325 | 504 | 195 | 89 | 182 |
| 20 | 37 | 41 | 31 | 23 | 45 | 86 | 185 | 375 | 542 | 294 | 83 | 178 |
| 21 | 36 | 39 | 31 | 24 | 43 | 86 | 178 | 405 | 569 | 212 | 90 | 171 |
| 22 | 35 | 35 | 29 | 24 | 42 | 97 | 171 | 427 | 631 | 199 | 127 | 162 |
| 23 | 35 | 30 | 31 | 27 | 45 | 120 | 166 | 392 | 705 | 196 | 181 | 155 |
| 24 | 36 | 32 | 32 | 32 | 44 | 144 | 168 | 368 | 776 | 184 | 156 | 148 |
| 25 | 36 | 31 | 31 | 29 | 43 | 139 | 164 | 345 | 736 | 170 | 183 | 126 |
| 26 | 36 | 31 | 27 | 28 | 45 | 134 | 178 | 438 | 755 | 144 | 271 | 102 |
| 27 | 36 | 30 | 22 | 27 | 43 | 125 | 226 | 990 | 892 | 100 | 243 | 103 |
| 28 | 35 | 30 | 24 | 27 | 43 | 115 | 290 | 905 | 835 | 81 | 206 | 83 |
| 29 | 35 | 38 | 27 | 35 | 42 | 110 | 257 | 665 | 800 | 76 | 187 | 81 |
| 30 | 33 | 42 | e22 | 54 | --- | 112 | 240 | 527 | 790 | 70 | 170 | 82 |
| 31 | 31 | --- | e20 | 48 | --- | 127 | --- | 455 | --- | 73 | 166 | --- |
| TOTAL | 1,097 | 1,048 | 1,037 | 790 | 1,085 | 2,466 | 6,072 | 12,378 | 19,416 | 8,597 | 3,732 | 4,209 |
| MEAN | 35.4 | 34.9 | 33.5 | 25.5 | 37.4 | 79.5 | 202 | 399 | 647 | 277 | 120 | 140 |
| MAX | 42 | 45 | 47 | 54 | 50 | 144 | 290 | 990 | 1,070 | 785 | 271 | 204 |
| MIN | 30 | 25 | 20 | 15 | 27 | 40 | 118 | 211 | 426 | 70 | 67 | 81 |
| AC-FT | 2,180 | 2,080 | 2,060 | 1,570 | 2,150 | 4,890 | 12,040 | 24,550 | 38,510 | 17,050 | 7,400 | 8,350 |
| CFSM | 0.39 | 0.39 | 0.37 | 0.28 | 0.42 | 0.88 | 2.25 | 4.44 | 7.19 | 3.08 | 1.34 | 1.56 |
| IN. | 0.45 | 0.43 | 0.43 | 0.33 | 0.45 | 1.02 | 2.51 | 5.12 | 8.03 | 3.55 | 1.54 | 1.74 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 69.4 | 84.0 | 71.0 | 58.8 | 67.5 | 67.4 | 169 | 446 | 675 | 284 | 68.7 | 62.5 |
| MAX | 103 | 243 | 218 | 148 | 198 | 96.1 | 254 | 586 | 887 | 479 | 120 | 140 |
| (WY) | (2001) | (1996) | (1996) | (1997) | (1996) | (1996) | (2000) | (1997) | (1997) | (1996) | (2004) | (2004) |
| MIN | 35.4 | 34.9 | 30.1 | 25.5 | 24.6 | 41.9 | 104 | 308 | 252 | 71.3 | 25.9 | 22.4 |
| (WY) | (2004) | (2004) | (2003) | (2004) | (2001) | (2002) | (2001) | (1999) | (2001) | (2001) | (2001) | (2001) |

13330300 LOSTINE RIVER AT BAKER ROAD, NEAR LOSTINE, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1996 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 54,974 | | 61,927 | | | |
| ANNUAL MEAN | 151 | | 169 | | 177 | |
| HIGHEST ANNUAL MEAN | | | | | 251 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 107 | 2001 |
| HIGHEST DAILY MEAN | 1,910 | May 30 | 1,070 | Jun 6 | 1,910 | May 30, 2003 |
| LOWEST DAILY MEAN | 20 | Dec 31 | 15 | Jan 6 | 8.7 | Sep 2, 1998 |
| ANNUAL SEVEN-DAY MINIMUM | 25 | Dec 25 | 18 | Jan 1 | 11 | Aug 31, 1998 |
| ANNUAL RUNOFF (AC-FT) | 109,000 | | 122,800 | | 128,300 | |
| ANNUAL RUNOFF (CFSM) | 1.67 | | 1.88 | | 1.97 | |
| ANNUAL RUNOFF (INCHES) | 22.72 | | 25.60 | | 26.73 | |
| 10 PERCENT EXCEEDS | 381 | | 470 | | 503 | |
| 50 PERCENT EXCEEDS | 49 | | 82 | | 75 | |
| 90 PERCENT EXCEEDS | 30 | | 28 | | 32 | |

e Estimated

2004 Water Year

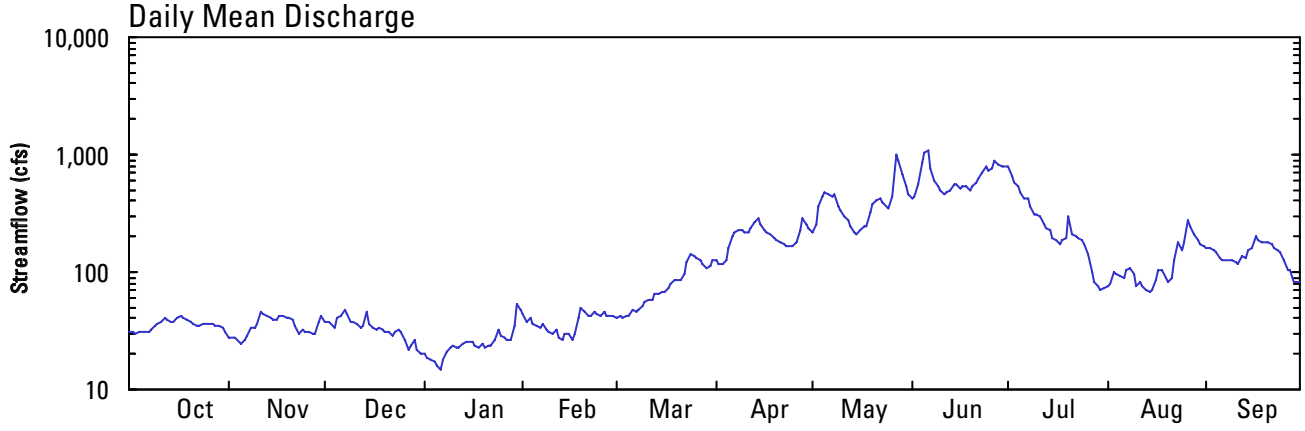
GRANDE RONDE RIVER BASIN

# 13330300 LOSTINE RIVER AT BAKER ROAD, NEAR LOSTINE, OR

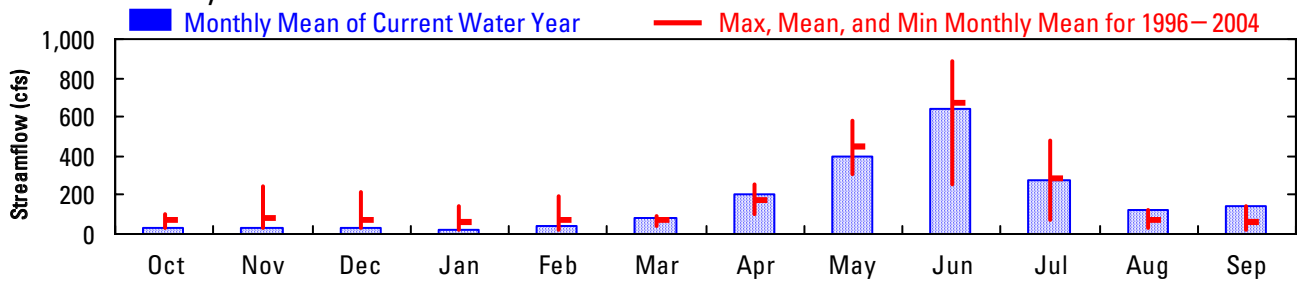
Latitude: 45°32'14" Longitude: 117°28'43" Hydrologic Unit Code: 17060105

Wallowa County Datum: 3,050 feet Drainage Area: 90.9 square miles

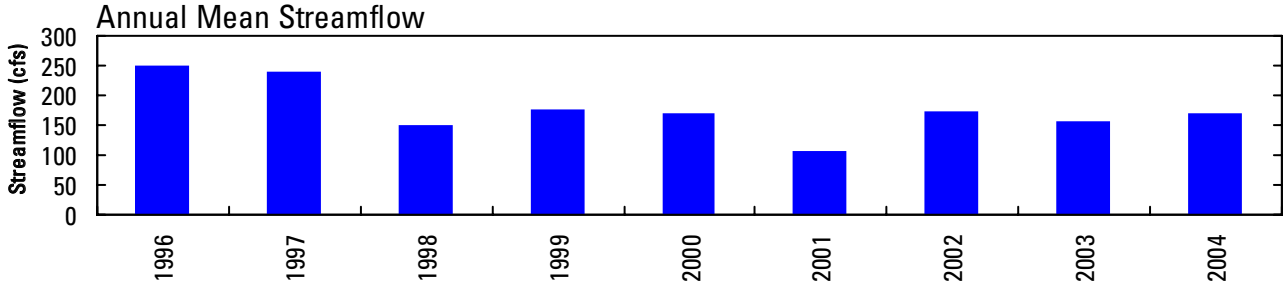
## Daily Mean Discharge



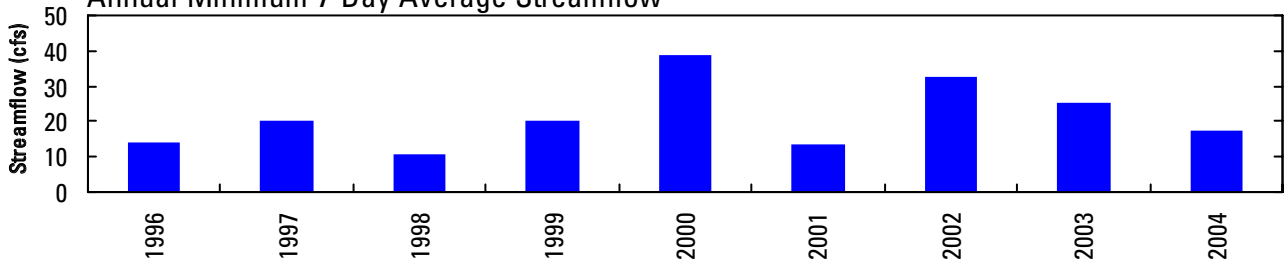

## Monthly Statistics



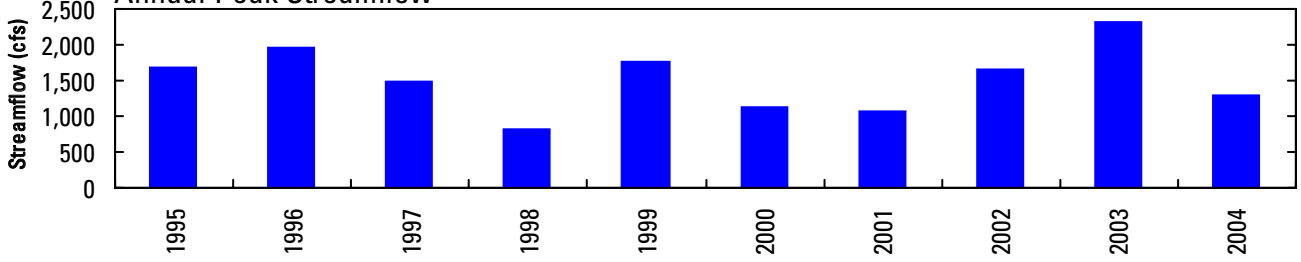

## Annual Mean Streamflow




## Annual Minimum 7-Day Average Streamflow




## Annual Peak Streamflow



## 13330500 BEAR CREEK NEAR WALLOWA, OR

LOCATION.--Lat 45°31'37", long 117°33'05", in NW $^1/_4$ NE $^1/_4$ sec.34, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, at private road bridge, 3.0 mi southwest of Wallowa, and at mile 4.4.

DRAINAGE AREA.--68 $mi^2$, approximately.

PERIOD OF RECORD.--April to September 1915, April 1924 to September 1985, April 1995 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1915, 1927, 1929-30, 1932, 1936-40, 1945, 1949.

GAGE.--Water-stage recorder. Elevation of gage is 3,250 ft above NGVD of 1929, by barometer. Apr. 13 to Sept. 16, 1915, nonrecording gage at site 1.0 mi upstream at different datum. Apr. 22, 1924 to Nov. 2, 1931, water-stage recorder at site 1.5 mi upstream at different datum.

REMARKS.--Records good except those for the periods May 1-26, May 31 to June 3, which are fair, and those for the periods May 27-30, June 4-6 and estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Water for irrigation in Lostine River basin diverted from Little Bear Creek,a tributary upstream from station, in sec.32, T.1 S., R.43 E. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Gage height record was collected and discharge measurements made by the Wallowa County Soil and Water Conservation District. Records were provided by the State of Oregon Water Resources Department. Discharge measurements and records were reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--70 years (water years 1925-85, 1996-2004), 114 $ft^3/s$, 82,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,150 $ft^3/s$ May 30, 2003, gage height, 4.37 ft, from rating curve extended above 800 $ft^3/s$; maximum gage height, 5.38 ft Jan. 24, 1984 (result of ice jam); minimum daily discharge, 3 $ft^3/s$ Jan. 20, Feb. 1, 1937.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 $ft^3/s$ and maximum (*):

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) | Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| May 28 | 0000 | *962 | *3.62 | June 4 | 1945 | 767 | 3.43 |

Minimum discharge, 9.7 $ft^3/s$, Oct. 23.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | e12 | 17 | e16 | 42 | 36 | 126 | 226 | 423 | 288 | 25 | 32 |
| 2 | 10 | e13 | 19 | e15 | 39 | 36 | 114 | 281 | 416 | 246 | 25 | 34 |
| 3 | 10 | e13 | 20 | e14 | 36 | 34 | 109 | 370 | 490 | 222 | 27 | 33 |
| 4 | 10 | e12 | 19 | e13 | 33 | 33 | 128 | 450 | 610 | 195 | 25 | 31 |
| 5 | 10 | e11 | 20 | e12 | 32 | 33 | 165 | 479 | 595 | 169 | 26 | 29 |
| 6 | 10 | e11 | 25 | e11 | 31 | 33 | 219 | 427 | 605 | 153 | 24 | 27 |
| 7 | 10 | e12 | 26 | e14 | 29 | 32 | 244 | 404 | 440 | 145 | 24 | 26 |
| 8 | 10 | e13 | 25 | e17 | 28 | 33 | 242 | 398 | 366 | 126 | 22 | 25 |
| 9 | 10 | e13 | 22 | e19 | 27 | 39 | 229 | 347 | 334 | 111 | 21 | 24 |
| 10 | 10 | 14 | 22 | e19 | 26 | 59 | 208 | 312 | 327 | 109 | 20 | 23 |
| 11 | 11 | 17 | 21 | e19 | 27 | 74 | 199 | 268 | 317 | 97 | 19 | 23 |
| 12 | 13 | 13 | 21 | e18 | e22 | 80 | 210 | 232 | 313 | 86 | 19 | 28 |
| 13 | 12 | 13 | 24 | e18 | 25 | 90 | 239 | 199 | 314 | 79 | 18 | 29 |
| 14 | 12 | e12 | 28 | e16 | e27 | 94 | 246 | 184 | 329 | 75 | 18 | 50 |
| 15 | 13 | 12 | 25 | e17 | e24 | 95 | 215 | 181 | 321 | 68 | 17 | 56 |
| 16 | 13 | 13 | 25 | e18 | e23 | 94 | 180 | 200 | 301 | 62 | 17 | 93 |
| 17 | 12 | 13 | 23 | e19 | 26 | 100 | 157 | 203 | 297 | 57 | 18 | 76 |
| 18 | 12 | 13 | e22 | e18 | 30 | 110 | 142 | 216 | 298 | 73 | 19 | 70 |
| 19 | 11 | 13 | e21 | 19 | 33 | 122 | 127 | 308 | 291 | 67 | 18 | 63 |
| 20 | 12 | 13 | e20 | 19 | 37 | 118 | 122 | 361 | 294 | 73 | 17 | 59 |
| 21 | 11 | 12 | 21 | 19 | 40 | 114 | 114 | 395 | 302 | 57 | 17 | 54 |
| 22 | 10 | e11 | 20 | 18 | 40 | 131 | 109 | 394 | 329 | 49 | 23 | 51 |
| 23 | 10 | e11 | 22 | 19 | 40 | 166 | 114 | 346 | 355 | 44 | 40 | 48 |
| 24 | 11 | e13 | 26 | 20 | 41 | 190 | 122 | 307 | 361 | 41 | 30 | 44 |
| 25 | 11 | e13 | 22 | 20 | 40 | 171 | 126 | 281 | 341 | 37 | 46 | 40 |
| 26 | 11 | e15 | e17 | 20 | 40 | 157 | 144 | 373 | 344 | 34 | 87 | 38 |
| 27 | 12 | 15 | e16 | 21 | 39 | 136 | 200 | 806 | 342 | 32 | 68 | 35 |
| 28 | 12 | 15 | e19 | 23 | 38 | 117 | 266 | 734 | 329 | 30 | 52 | 33 |
| 29 | 16 | 20 | e20 | 34 | 37 | 106 | 229 | 657 | 303 | 29 | 44 | 31 |
| 30 | 14 | 18 | e18 | 47 | --- | 111 | 207 | 527 | 275 | 27 | 38 | 30 |
| 31 | 13 | --- | e16 | 45 | --- | 132 | --- | 463 | --- | 26 | 34 | --- |
| TOTAL | 352 | 399 | 662 | 617 | 952 | 2,876 | 5,252 | 11,329 | 10,962 | 2,907 | 898 | 1,235 |
| MEAN | 11.4 | 13.3 | 21.4 | 19.9 | 32.8 | 92.8 | 175 | 365 | 365 | 93.8 | 29.0 | 41.2 |
| MAX | 16 | 20 | 28 | 47 | 42 | 190 | 266 | 806 | 610 | 288 | 87 | 93 |
| MIN | 10 | 11 | 16 | 11 | 22 | 32 | 109 | 181 | 275 | 26 | 17 | 23 |
| AC-FT | 698 | 791 | 1,310 | 1,220 | 1,890 | 5,700 | 10,420 | 22,470 | 21,740 | 5,770 | 1,780 | 2,450 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 24.8 | 40.1 | 49.3 | 44.4 | 48.5 | 67.6 | 171 | 372 | 397 | 118 | 20.2 | 16.0 |
| MAX | 160 | 220 | 195 | 141 | 192 | 186 | 422 | 682 | 869 | 388 | 37.5 | 44.2 |
| (WY) | (1928) | (1928) | (1996) | (1984) | (1996) | (1972) | (1936) | (1928) | (1974) | (1943) | (1975) | (1941) |
| MIN | 7.58 | 8.20 | 7.29 | 5.16 | 4.46 | 11.1 | 49.6 | 138 | 112 | 18.6 | 8.10 | 6.33 |
| (WY) | (1936) | (1953) | (1937) | (1937) | (1937) | (1977) | (1975) | (1977) | (1926) | (1977) | (1940) | (1935) |

13330500 BEAR CREEK NEAR WALLOWA, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1925 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 39,280 | | 38,441 | | | |
| ANNUAL MEAN | 108 | | 105 | | 114 | |
| HIGHEST ANNUAL MEAN | | | | | 178 | 1974 |
| LOWEST ANNUAL MEAN | | | | | 46.2 | 1977 |
| HIGHEST DAILY MEAN | 1,390 | May 30 | 806 | May 27 | 1,480 | Jun 17, 1974 |
| LOWEST DAILY MEAN | 10 | Sep 28 | 10 | Oct 1 | 3.0 | Jan 20, 1937 |
| ANNUAL SEVEN-DAY MINIMUM | 10 | Sep 30 | 10 | Oct 1 | 3.9 | Jan 19, 1937 |
| ANNUAL RUNOFF (AC-FT) | 77,910 | | 76,250 | | 82,710 | |
| 10 PERCENT EXCEEDS | 254 | | 318 | | 347 | |
| 50 PERCENT EXCEEDS | 29 | | 33 | | 42 | |
| 90 PERCENT EXCEEDS | 12 | | 12 | | 11 | |

e Estimated

2004 Water Year

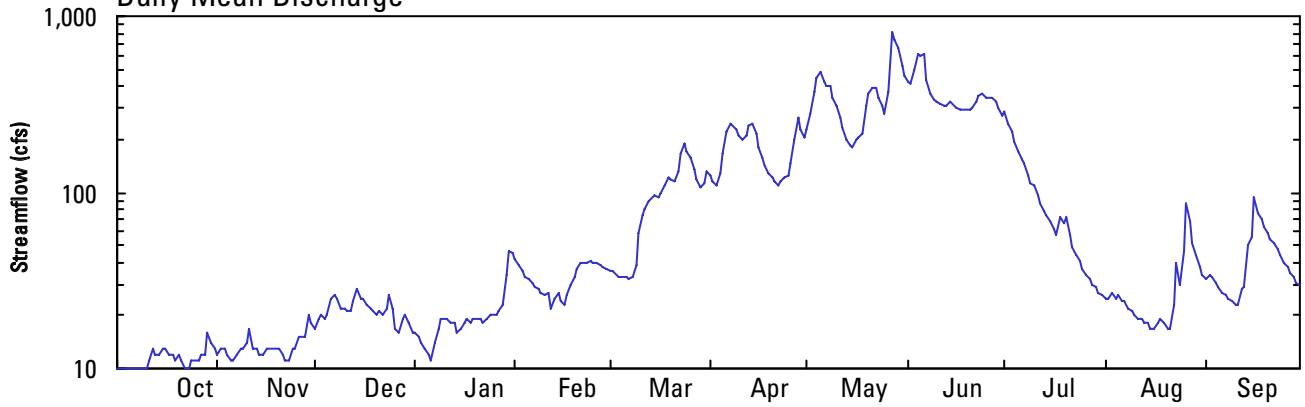
GRANDE RONDE RIVER BASIN

## 13330500 BEAR CREEK NEAR WALLOWA, OR

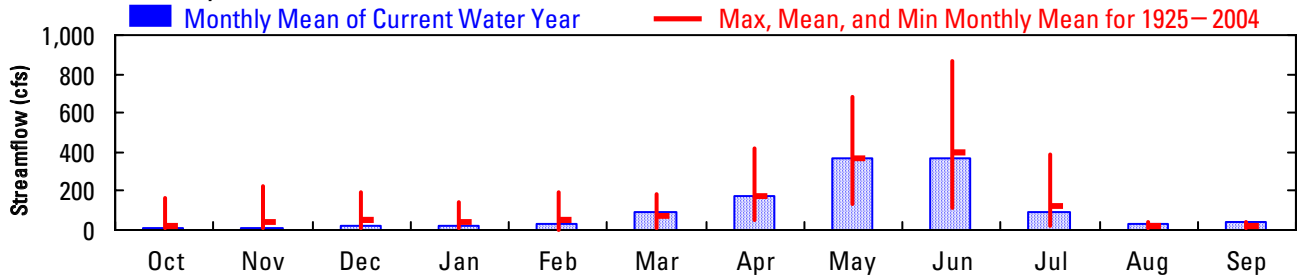
Latitude: 45°31'37" Longitude: 117°33'05" Hydrologic Unit Code: 17060105

Wallowa County Datum: 3,250.00 feet Drainage Area: 68 square miles

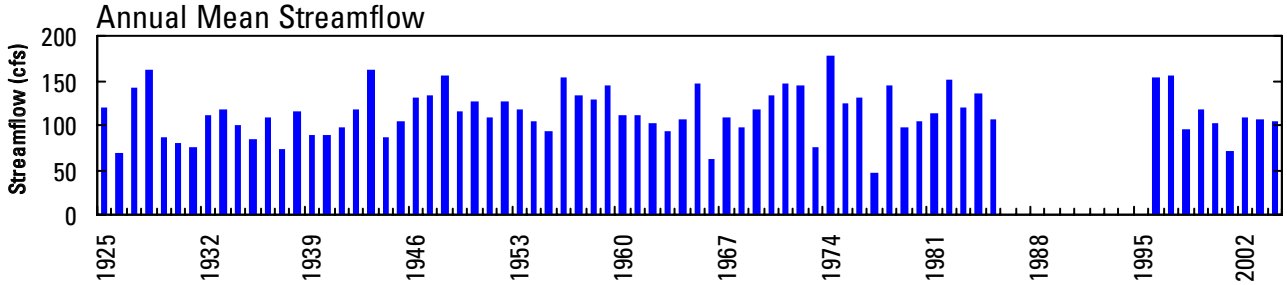
Daily Mean Discharge



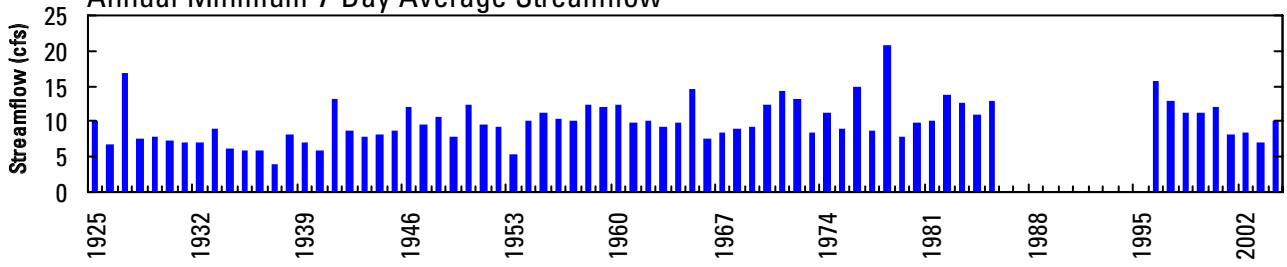

Monthly Statistics



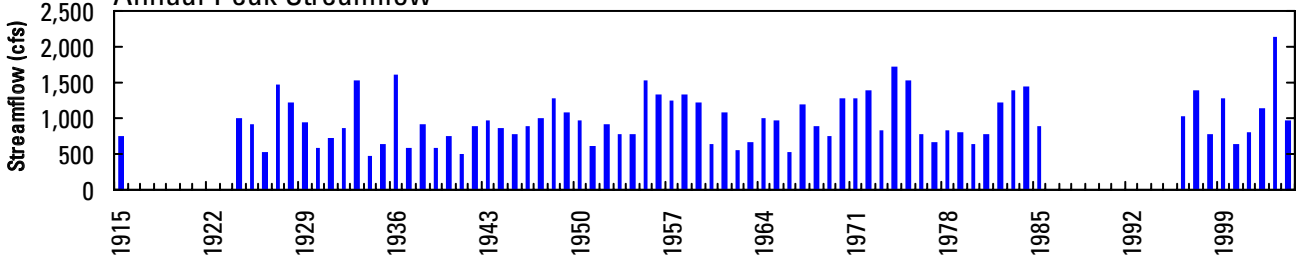

Annual Mean Streamflow




Annual Minimum 7-Day Average Streamflow




Annual Peak Streamflow



## 13331450 WALLOWA RIVER BELOW WATER CANYON, NEAR WALLOWA, OR

LOCATION.--Lat 45°36'30", long 117°36'55", in NW ¼ SW ¼ sec.31, T.2 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 160 ft upstream from bridge, approximately 6 mi east of Wallowa, and at mile 18.3.

DRAINAGE AREA.--628 $mi^2$.

PERIOD OF RECORD.--August 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,760 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except those for the period Sept. 16-28 and those above 1,000 $ft^3/s$, which are fair, and estimated daily discharges, which are poor. Flow regulated by Wallowa Lake. Many diversions for irrigation upstream from station.

COOPERATION.--Gage height record was collected and discharge measurements made by the Wallowa County Soil and Water Conservation District. Records were provided by the State of Oregon Water Resources Department. Discharge measurements and records were reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--9 years (water years 1996-2004), 638 $ft^3/s$, 462,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,640 $ft^3/s$ Feb 9, 1996, gage height, 4.76 ft; minimum discharge, 102 $ft^3/s$ July 29, 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 $ft^3/s$ and maximum (*):

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) | Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| May 28 | 0230 | 2,650 | 3.38 | June 6 | 0245 | *2,800 | *3.50 |

Minimum discharge, 216 $ft^3/s$, Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 222 | 254 | 267 | e234 | 348 | 422 | 513 | 569 | 1,320 | 1,630 | 265 | 429 |
| 2 | 233 | 257 | 264 | e232 | 327 | 419 | 487 | 609 | 1,320 | 1,430 | 281 | 439 |
| 3 | 231 | 263 | 265 | e229 | 323 | 410 | 476 | 833 | 1,500 | 1,380 | 325 | 437 |
| 4 | 260 | 261 | 263 | e224 | 315 | 410 | 495 | 1,040 | 2,020 | 1,300 | 301 | 427 |
| 5 | 275 | 252 | 269 | e224 | 307 | 412 | 548 | 1,110 | 2,400 | 1,190 | 289 | 408 |
| 6 | 275 | 247 | 288 | e218 | 301 | 455 | 645 | 1,080 | 2,470 | 1,090 | 291 | 404 |
| 7 | 273 | 250 | 294 | e220 | 302 | 439 | 681 | 1,060 | 1,830 | 1,050 | 314 | 393 |
| 8 | 271 | 257 | 285 | e222 | 294 | 452 | 687 | 1,090 | 1,620 | 920 | 316 | 388 |
| 9 | 266 | 260 | 272 | e224 | 291 | 501 | 674 | 905 | 1,470 | 792 | 309 | 390 |
| 10 | 267 | 263 | 273 | e224 | 286 | 540 | 641 | 822 | 1,460 | 775 | 268 | 393 |
| 11 | 273 | 278 | 274 | e226 | 282 | 558 | 619 | 730 | 1,400 | 730 | 250 | 394 |
| 12 | 285 | 268 | 270 | e229 | 278 | 591 | 648 | 663 | 1,410 | 623 | 249 | 442 |
| 13 | 280 | 261 | 285 | e232 | 276 | 621 | 717 | 587 | 1,410 | 561 | 253 | 441 |
| 14 | 282 | 259 | 324 | e231 | 276 | 601 | 742 | 548 | 1,490 | 521 | 255 | 482 |
| 15 | 284 | 259 | 293 | e231 | 278 | 602 | 694 | 539 | 1,470 | 477 | 257 | 495 |
| 16 | 289 | 265 | 278 | e230 | 277 | 606 | 616 | 594 | 1,370 | 454 | 274 | 593 |
| 17 | 286 | 269 | 275 | 230 | 289 | 651 | 577 | 590 | 1,380 | 446 | 304 | 545 |
| 18 | 282 | 264 | 266 | 230 | 327 | 679 | 563 | 599 | 1,400 | 478 | 320 | 536 |
| 19 | 275 | 263 | 263 | 232 | 382 | 673 | 530 | 884 | 1,350 | 494 | 328 | 529 |
| 20 | 273 | 262 | 266 | 230 | 376 | 588 | 526 | 1,050 | 1,380 | 806 | 324 | 518 |
| 21 | 270 | 256 | 268 | 228 | 368 | 566 | 518 | 1,120 | 1,400 | 589 | 323 | 504 |
| 22 | 268 | 247 | 262 | 227 | 356 | 595 | 517 | 1,150 | 1,450 | 531 | 387 | 484 |
| 23 | 266 | 244 | 260 | 233 | 354 | 657 | 495 | 1,040 | 1,540 | 491 | 501 | 451 |
| 24 | 257 | 251 | 267 | 242 | 361 | 691 | 494 | 983 | 1,620 | 462 | 464 | 424 |
| 25 | 255 | 248 | 271 | 236 | 361 | 634 | 487 | 898 | 1,530 | 438 | 528 | 399 |
| 26 | 257 | 249 | 265 | 233 | 371 | 626 | 504 | 1,050 | 1,540 | 403 | 703 | 377 |
| 27 | 266 | 246 | 247 | 232 | 400 | 569 | 582 | 2,380 | 1,720 | 356 | 621 | 376 |
| 28 | 266 | 247 | 251 | 242 | 406 | 528 | 746 | 2,510 | 1,620 | 317 | 534 | 360 |
| 29 | 273 | 266 | 259 | 332 | 416 | 505 | 677 | 2,020 | 1,590 | 307 | 495 | 358 |
| 30 | 271 | 271 | 237 | 421 | --- | 504 | 612 | 1,640 | 1,600 | 292 | 452 | 355 |
| 31 | 260 | --- | e236 | 375 | --- | 534 | --- | 1,440 | --- | 277 | 437 | --- |
| TOTAL | 8,291 | 7,737 | 8,357 | 7,553 | 9,528 | 17,039 | 17,711 | 32,133 | 47,080 | 21,610 | 11,218 | 13,171 |
| MEAN | 267 | 258 | 270 | 244 | 329 | 550 | 590 | 1,037 | 1,569 | 697 | 362 | 439 |
| MAX | 289 | 278 | 324 | 421 | 416 | 691 | 746 | 2,510 | 2,470 | 1,630 | 703 | 593 |
| MIN | 222 | 244 | 236 | 218 | 276 | 410 | 476 | 539 | 1,320 | 277 | 249 | 355 |
| AC-FT | 16,450 | 15,350 | 16,580 | 14,980 | 18,900 | 33,800 | 35,130 | 63,740 | 93,380 | 42,860 | 22,250 | 26,120 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 339 | 393 | 407 | 392 | 480 | 600 | 749 | 1,268 | 1,624 | 765 | 309 | 333 |
| MAX | 436 | 743 | 864 | 747 | 1,124 | 830 | 1,122 | 1,955 | 2,508 | 1,472 | 463 | 454 |
| (WY) | (1998) | (1996) | (1996) | (1997) | (1996) | (1997) | (1997) | (1997) | (1997) | (1997) | (1996) | (1997) |
| MIN | 261 | 258 | 263 | 239 | 227 | 409 | 552 | 836 | 526 | 285 | 157 | 166 |
| (WY) | (2002) | (2004) | (2003) | (2001) | (2001) | (2001) | (2001) | (2002) | (2001) | (2001) | (2001) | (2001) |

13331450 WALLOWA RIVER BELOW WATER CANYON, NEAR WALLOWA, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1996 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 199,480 | | 201,428 | | | |
| ANNUAL MEAN | 547 | | 550 | | 638 | |
| HIGHEST ANNUAL MEAN | | | | | 952 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 395 | 2001 |
| HIGHEST DAILY MEAN | 3,520 | May 30 | 2,510 | May 28 | 3,900 | Feb 9, 1996 |
| LOWEST DAILY MEAN | 150 | Aug 20 | 218 | Jan 6 | 109 | Jul 29, 1998 |
| ANNUAL SEVEN-DAY MINIMUM | 162 | Aug 15 | 222 | Jan 4 | 123 | Aug 21, 2001 |
| ANNUAL RUNOFF (AC-FT) | 395,700 | | 399,500 | | 462,100 | |
| 10 PERCENT EXCEEDS | 1,080 | | 1,330 | | 1,470 | |
| 50 PERCENT EXCEEDS | 290 | | 393 | | 423 | |
| 90 PERCENT EXCEEDS | 233 | | 247 | | 246 | |

e Estimated

2004 Water Year

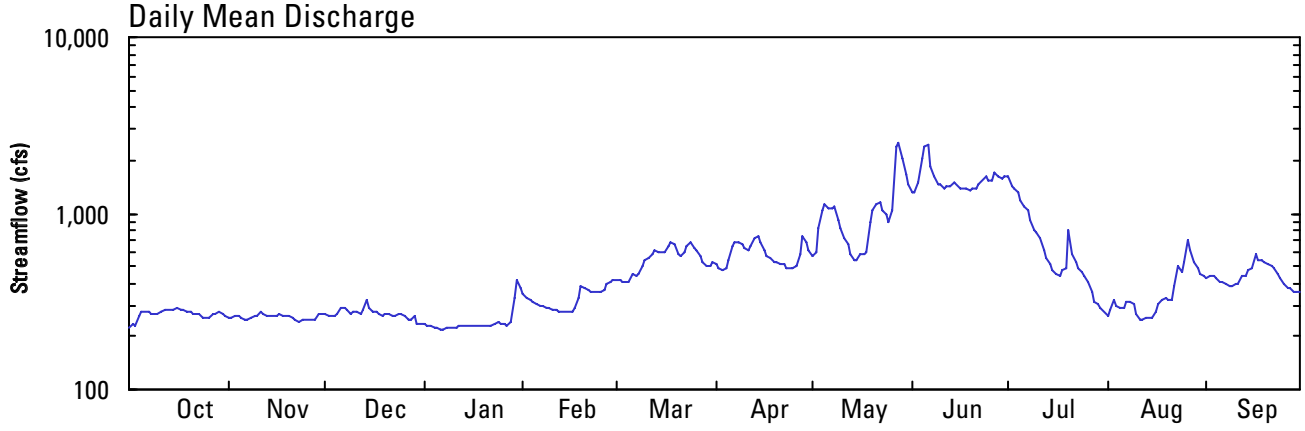
GRANDE RONDE RIVER BASIN

# 13331450 WALLOWA RIVER BELOW WATER CANYON, NR WALLOWA, OR

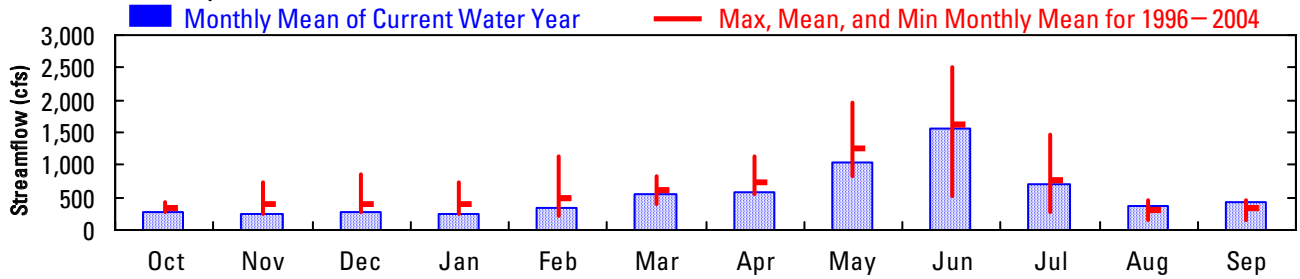
Latitude: 45°36'30" Longitude: 117°36'55" Hydrologic Unit Code: 17060105

Wallowa County Datum: 2,760 feet Drainage Area: 628 square miles

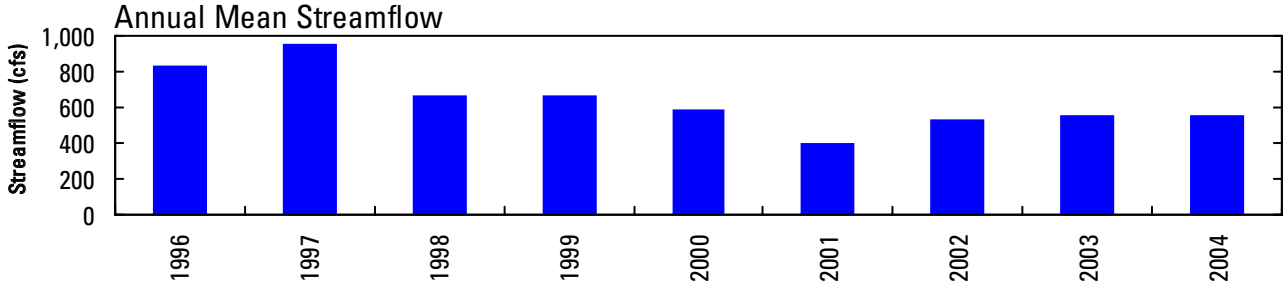
## Daily Mean Discharge



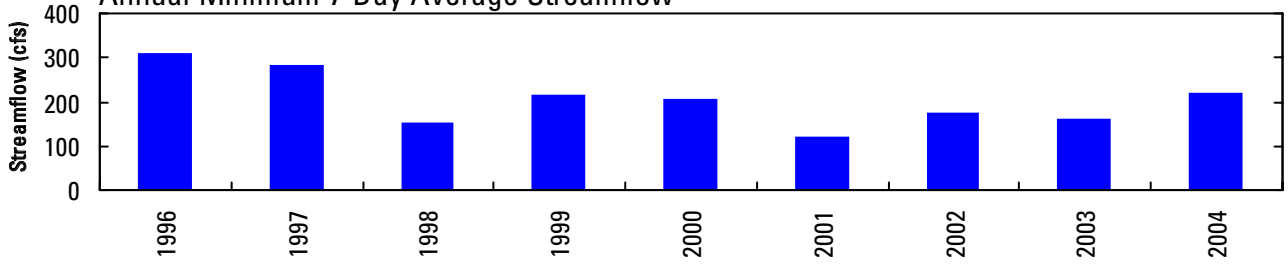

## Monthly Statistics



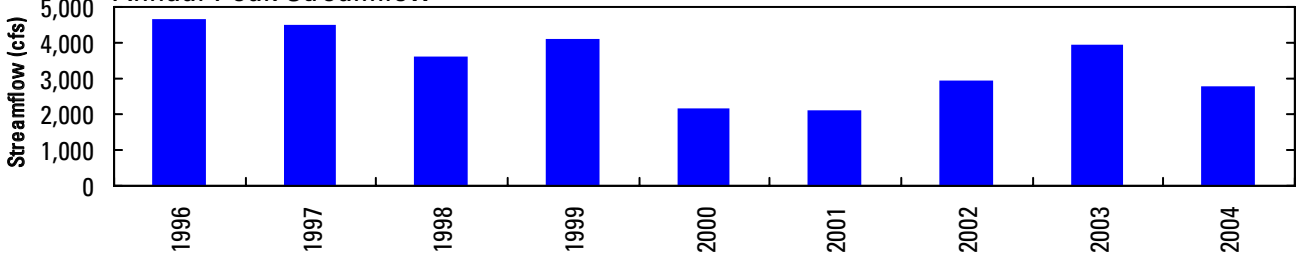

## Annual Mean Streamflow




## Annual Minimum 7-Day Average Streamflow




## Annual Peak Streamflow



## 13331500 MINAM RIVER AT MINAM, OR
(Hydrologic bench-mark station)

LOCATION.--Lat 45°37'12", long 117°43'32", in SW ¼ SW ¼ sec.29, T.2 N., R.41 E., Wallowa County, Hydrologic Unit 17060105, on left bank 2.3 mi downstream from Squaw Creek, 0.3 mi west of Minam, and at mile 0.3.

DRAINAGE AREA.--240 $mi^2$, approximately.

PERIOD OF RECORD.--June 1912 to March 1914, September 1965 to current year. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 2,540.48 ft above NGVD of 1929. June 1912 to March 1914, nonrecording gage at approximately same site at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Continuous water temperature October 1965 to September 1985. Chemical analysis water years 1966 to 1995.

AVERAGE DISCHARGE.--40 years (water years 1913, 1966-2004), 455 $ft^3/s$, 25.74 in/yr, 329,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,260 $ft^3/s$ June 16, 1974, gage height, 6.89 ft; maximum gage height, 7.3 ft May 28, 1913, datum then in use; minimum discharge, 10 $ft^3/s$ Dec. 6, 1972, Jan. 10, 1973, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,450 $ft^3/s$ and maximum (*):

| Date | Time | Discharge ($ft^3/s$) | Gage height (ft) | Date | Time | Discharge ($ft^3/s$) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| May 6 | 0300 | 1,710 | 3.20 | May 28 | 0515 | 2,760 | 4.21 |
| May 22 | 0245 | 1,530 | 3.00 | Jun 6 | 0315 | *2,810 | *4.25 |

Minimum daily discharge, 34 $ft^3/s$, Jan. 5.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 52 | 50 | 91 | e58 | 247 | 165 | 472 | 826 | 1,580 | 1,320 | 158 | 137 |
| 2 | 50 | 61 | 98 | e60 | 192 | 161 | 418 | 967 | 1,550 | 1,130 | 159 | 139 |
| 3 | 50 | 61 | 98 | e50 | 178 | 150 | 405 | 1,230 | 1,730 | 1,030 | 156 | 138 |
| 4 | 50 | 50 | 91 | e40 | 155 | 157 | 472 | 1,460 | 2,210 | 945 | 147 | 131 |
| 5 | 50 | e44 | 89 | e34 | 143 | 153 | 601 | 1,600 | 2,580 | 846 | 147 | 125 |
| 6 | 50 | e40 | 109 | e50 | 133 | 163 | 712 | 1,600 | 2,590 | 778 | 141 | 120 |
| 7 | 50 | e46 | 127 | e58 | 131 | 159 | 805 | 1,560 | 2,070 | 744 | 137 | 116 |
| 8 | 49 | e58 | 112 | 88 | 122 | 170 | 808 | 1,580 | 1,720 | 682 | 129 | 111 |
| 9 | 48 | e52 | 96 | 97 | 117 | 236 | 783 | 1,420 | 1,500 | 601 | 125 | 108 |
| 10 | 48 | 75 | 95 | 95 | 110 | 374 | 746 | 1,340 | 1,390 | 561 | 119 | 105 |
| 11 | 50 | 100 | 92 | 92 | 104 | 389 | 727 | 1,200 | 1,310 | 531 | 116 | 105 |
| 12 | 58 | 78 | 87 | e95 | 94 | 381 | 761 | 1,100 | 1,290 | 490 | 114 | 128 |
| 13 | 61 | 64 | 98 | e98 | 94 | 411 | 851 | 975 | 1,260 | 461 | 111 | 132 |
| 14 | 60 | 57 | 127 | e90 | 111 | e420 | 868 | 907 | 1,330 | 450 | 107 | 182 |
| 15 | 63 | 65 | 125 | e86 | 113 | e440 | 796 | 887 | 1,350 | 432 | 107 | 185 |
| 16 | 73 | 66 | 113 | e84 | 110 | e420 | 692 | 923 | 1,290 | 410 | 111 | 214 |
| 17 | 71 | 69 | 115 | e90 | 120 | e460 | 621 | 922 | 1,300 | 392 | 115 | 183 |
| 18 | 71 | 65 | 104 | e96 | 142 | e520 | 566 | 920 | 1,340 | 410 | 111 | 174 |
| 19 | 65 | 67 | 97 | 99 | 220 | e600 | 517 | 1,120 | 1,300 | 392 | 142 | 168 |
| 20 | 62 | 69 | 121 | 100 | 231 | e520 | 511 | 1,310 | 1,310 | 473 | 118 | 161 |
| 21 | 59 | e60 | 103 | 90 | 211 | e440 | 487 | 1,430 | 1,340 | 361 | 107 | 158 |
| 22 | 56 | e50 | 94 | 84 | 193 | e460 | 473 | 1,470 | 1,400 | 308 | 123 | 148 |
| 23 | 55 | e56 | 89 | 94 | 189 | 630 | 501 | 1,350 | 1,520 | 272 | 262 | 144 |
| 24 | 52 | e58 | 96 | 119 | 186 | 697 | 526 | 1,250 | 1,590 | 250 | 177 | 139 |
| 25 | 52 | e60 | 96 | 110 | 181 | 587 | 524 | 1,170 | 1,530 | 232 | 187 | 135 |
| 26 | 52 | 62 | 93 | 99 | 178 | 548 | 572 | 1,290 | 1,530 | 217 | 271 | 128 |
| 27 | 52 | 69 | 73 | 99 | 177 | 490 | 735 | 2,300 | 1,690 | 202 | 244 | 125 |
| 28 | 52 | 76 | 87 | 105 | 176 | 424 | 895 | 2,720 | 1,510 | 193 | 191 | 123 |
| 29 | 62 | 91 | 93 | 245 | 172 | 399 | 801 | 2,460 | 1,420 | 184 | 168 | 120 |
| 30 | 67 | 115 | e50 | 495 | --- | 423 | 754 | 2,020 | 1,320 | 174 | 153 | 116 |
| 31 | 56 | --- | e58 | 347 | --- | 517 | --- | 1,720 | --- | 165 | 144 | --- |
| TOTAL | 1,746 | 1,934 | 3,017 | 3,447 | 4,530 | 12,064 | 19,400 | 43,027 | 46,850 | 15,636 | 4,597 | 4,198 |
| MEAN | 56.3 | 64.5 | 97.3 | 111 | 156 | 389 | 647 | 1,388 | 1,562 | 504 | 148 | 140 |
| MAX | 73 | 115 | 127 | 495 | 247 | 697 | 895 | 2,720 | 2,590 | 1,320 | 271 | 214 |
| MIN | 48 | 40 | 50 | 34 | 94 | 150 | 405 | 826 | 1,260 | 165 | 107 | 105 |
| AC-FT | 3,460 | 3,840 | 5,980 | 6,840 | 8,990 | 23,930 | 38,480 | 85,340 | 92,930 | 31,010 | 9,120 | 8,330 |
| CFSM | 0.23 | 0.27 | 0.41 | 0.46 | 0.65 | 1.62 | 2.69 | 5.78 | 6.51 | 2.10 | 0.62 | 0.58 |
| IN. | 0.27 | 0.30 | 0.47 | 0.53 | 0.70 | 1.87 | 3.01 | 6.67 | 7.26 | 2.42 | 0.71 | 0.65 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 93.3 | 147 | 185 | 199 | 253 | 323 | 549 | 1,307 | 1,557 | 605 | 151 | 96.2 |
| MAX | 173 | 508 | 765 | 470 | 977 | 697 | 888 | 2,016 | 3,125 | 1,392 | 257 | 180 |
| (WY) | (1969) | (1996) | (1996) | (1997) | (1996) | (1986) | (1913) | (1971) | (1974) | (1975) | (1974) | (1978) |
| MIN | 38.1 | 56.1 | 62.4 | 59.6 | 56.9 | 66.7 | 235 | 484 | 494 | 125 | 72.6 | 45.9 |
| (WY) | (1988) | (1994) | (1979) | (1977) | (1977) | (1977) | (1967) | (1977) | (1992) | (1977) | (1966) | (1987) |

13331500 MINAM RIVER AT MINAM, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1913 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 152,884 | | 160,446 | | | |
| ANNUAL MEAN | 419 | | 438 | | 455 | |
| HIGHEST ANNUAL MEAN | | | | | 713 | 1974 |
| LOWEST ANNUAL MEAN | | | | | 189 | 1977 |
| HIGHEST DAILY MEAN | 4,220 | May 30 | 2,720 | May 28 | 5,160 | Jun 15, 1974 |
| LOWEST DAILY MEAN | 40 | Nov 6 | 34 | Jan 5 | 11 | Dec 6, 1972 |
| ANNUAL SEVEN-DAY MINIMUM | 49 | Oct 4 | 49 | Oct 4 | 15 | Dec 6, 1972 |
| ANNUAL RUNOFF (AC-FT) | 303,200 | | 318,200 | | 329,400 | |
| ANNUAL RUNOFF (CFSM) | 1.75 | | 1.83 | | 1.89 | |
| ANNUAL RUNOFF (INCHES) | 23.70 | | 24.87 | | 25.74 | |
| 10 PERCENT EXCEEDS | 901 | | 1,330 | | 1,290 | |
| 50 PERCENT EXCEEDS | 143 | | 158 | | 195 | |
| 90 PERCENT EXCEEDS | 58 | | 58 | | 71 | |

e Estimated

2004 Water Year

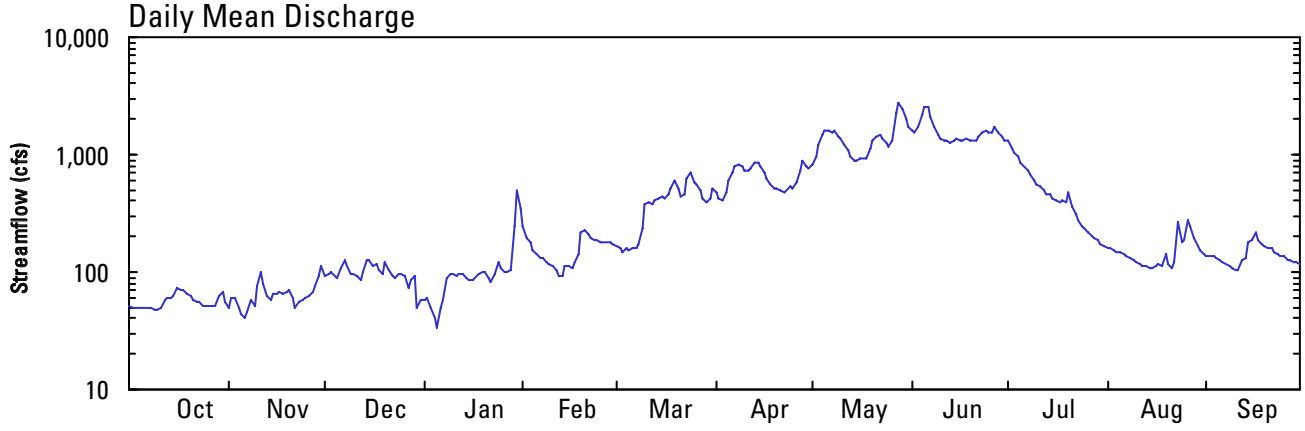
GRANDE RONDE RIVER BASIN

# 13331500 MINAM RIVER AT MINAM, OR

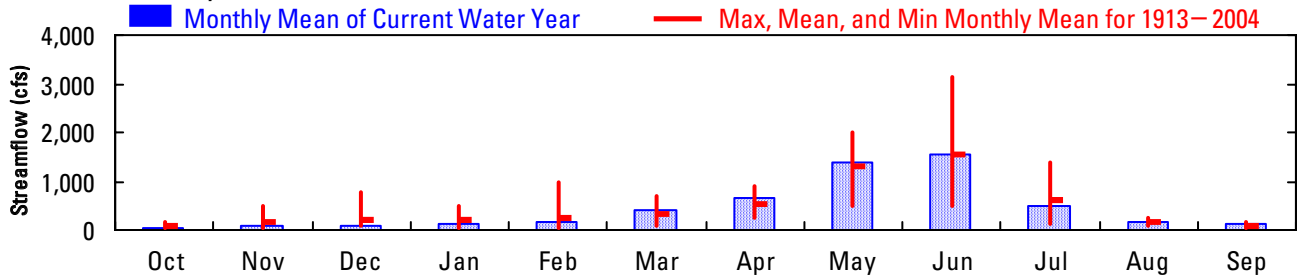
Latitude: 45°37'12" Longitude: 117°43'32" Hydrologic Unit Code: 17060105

Wallowa County Datum: 2,540.48 feet Drainage Area: 240 square miles

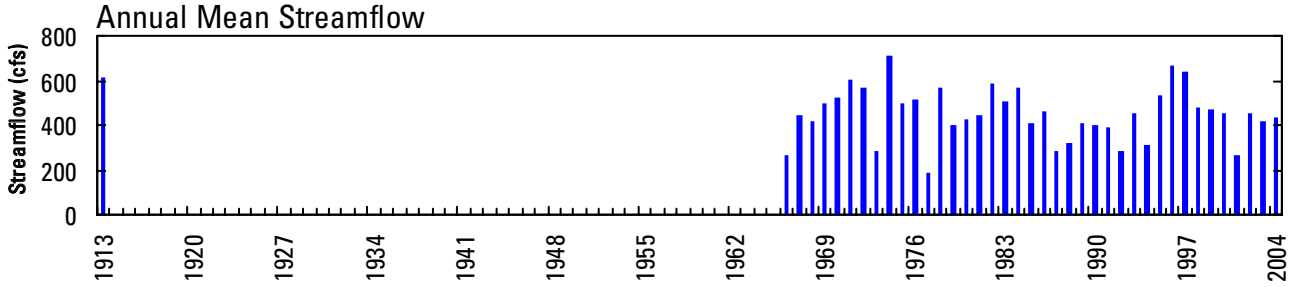
## Daily Mean Discharge



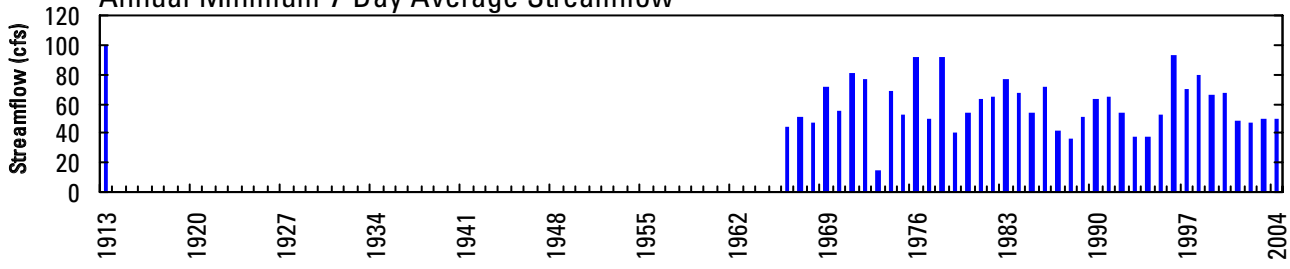

## Monthly Statistics



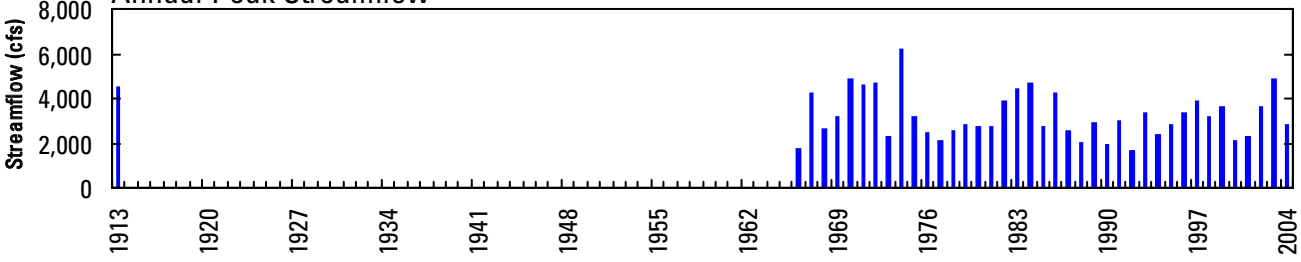

## Annual Mean Streamflow




## Annual Minimum 7-Day Average Streamflow




## Annual Peak Streamflow



## 13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'45", long 117°27'00", in NE $^1/_4$ NW $^1/_4$ sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank, on upstream side of bridge at Troy, 100 ft downstream from Wenaha River, and at mile 45.3.

DRAINAGE AREA.--3,275 mi$^2$.

PERIOD OF RECORD.--August 1944 to current year. Monthly discharge only August 1944, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1946(M), 1948-50.

GAGE.--Water-stage recorder. Datum of gage is 1,585.98 ft above NGVD of 1929. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at datum 1.15 ft higher. Sept. 6, 1963 to Oct. 19, 1994, water-stage recorder at site 500 ft downstream, at present datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow slightly regulated by Wallowa Lake and small reservoirs. Diversions for irrigation upstream from station, chiefly in vicinity of LaGrande, Enterprise, and Wallowa; transbasin diversions for irrigation from Big Sheep Creek and tributaries in Imnaha River Basin to Wallowa River Basin, and from South Fork Catherine Creek to the Powder River Basin. U.S. Geological Survey satellite telemeter and National Weather Service telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1945-2004), 3,053 ft$^3$/s, 2,212,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft$^3$/s Feb. 9, 1996, gage height, 13.76 ft, from rating curve extended above 20,000 ft$^3$/s; minimum discharge, 321 ft$^3$/s Nov. 25, 1993; result of freezeup, but may have been less during period of ice effect that day.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft$^3$/s and maximum (*):

| Date | Time | Discharge (ft$^3$/s) | Gage height (ft) | Date | Time | Discharge (ft$^3$/s) | Gage height (ft) |
|---|---|---|---|---|---|---|---|
| May 29 | 0030 | *11,900 | *8.20 | No other peak greater than base discharge. | | | |

Minimum discharge, 498 ft$^3$/s, Oct. 1, 2, Nov. 9.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 517 | 594 | 1,020 | e740 | 4,030 | 2,980 | 5,970 | 5,230 | 8,760 | 3,910 | 663 | 867 |
| 2 | 507 | 582 | 1,050 | e780 | 3,190 | 2,780 | 5,360 | 5,400 | 8,050 | 3,560 | 661 | 865 |
| 3 | 519 | 599 | 1,040 | e740 | 2,630 | 2,630 | 5,050 | 6,100 | 7,730 | 3,260 | 712 | 868 |
| 4 | 516 | 608 | 1,010 | e680 | 2,280 | 2,540 | 5,120 | 6,720 | 8,180 | 3,050 | 736 | 853 |
| 5 | 550 | 587 | 954 | e580 | 2,030 | 2,660 | 5,620 | 7,030 | 8,700 | 2,810 | 702 | 810 |
| 6 | 559 | 566 | 1,060 | e520 | 1,820 | 2,760 | 5,980 | 6,860 | 8,810 | 2,560 | 688 | 784 |
| 7 | 560 | 580 | 1,180 | e600 | 1,700 | 2,780 | 6,380 | 6,550 | 7,580 | 2,410 | 691 | 775 |
| 8 | 559 | 612 | 1,110 | e660 | 1,600 | 2,910 | 6,540 | 6,510 | 7,360 | 2,250 | 689 | 753 |
| 9 | 558 | 637 | 1,030 | e680 | 1,510 | 3,610 | 6,420 | 6,060 | 6,750 | 2,020 | 676 | 728 |
| 10 | 554 | 650 | 963 | e740 | 1,440 | 4,780 | 6,200 | 5,650 | 6,280 | 1,860 | 653 | 723 |
| 11 | 557 | 848 | 940 | e840 | 1,350 | 5,280 | 6,030 | 5,300 | 6,050 | 1,810 | 604 | 716 |
| 12 | 597 | 772 | 927 | e780 | 1,310 | 5,320 | 6,020 | 5,040 | 5,760 | 1,680 | 582 | 756 |
| 13 | 608 | 700 | 1,050 | e780 | 1,230 | 5,890 | 6,260 | 4,780 | 5,470 | 1,530 | 572 | 845 |
| 14 | 600 | 668 | 1,640 | e800 | 1,150 | 5,840 | 6,430 | 4,500 | 5,380 | 1,430 | 567 | 921 |
| 15 | 619 | 654 | 1,510 | e900 | 1,240 | 6,090 | 6,220 | 4,280 | 5,240 | 1,340 | 560 | 1,040 |
| 16 | 663 | 700 | 1,290 | 1,030 | 1,280 | 6,100 | 5,700 | 4,360 | 4,870 | 1,240 | 562 | 1,120 |
| 17 | 663 | 805 | 1,150 | 1,000 | 1,430 | 6,620 | 5,280 | 4,430 | 4,620 | 1,180 | 593 | 1,150 |
| 18 | 641 | 756 | 1,060 | 1,000 | 1,820 | 7,210 | 4,900 | 4,480 | 4,530 | 1,200 | 632 | 1,100 |
| 19 | 626 | 736 | 991 | 1,010 | 2,680 | 7,690 | 4,570 | 5,120 | 4,410 | 1,250 | 645 | 1,090 |
| 20 | 609 | 751 | 971 | 1,010 | 3,120 | 6,930 | 4,470 | 6,050 | 4,280 | 1,540 | 686 | 1,080 |
| 21 | 606 | 747 | 960 | 1,000 | 3,080 | 6,400 | 4,460 | 6,460 | 4,240 | 1,500 | 636 | 1,060 |
| 22 | 598 | 705 | 975 | 976 | 2,830 | 6,630 | 4,440 | 6,740 | 4,220 | 1,320 | 668 | 1,020 |
| 23 | 591 | 660 | 953 | 971 | 2,650 | 7,390 | 4,400 | 6,670 | 4,340 | 1,180 | 971 | 988 |
| 24 | 588 | 659 | 971 | 928 | 2,660 | 7,860 | 4,460 | 6,530 | 4,490 | 1,080 | 1,080 | 928 |
| 25 | 600 | 676 | 1,020 | 943 | 2,790 | 7,330 | 4,420 | 6,490 | 4,360 | 1,010 | 1,070 | 895 |
| 26 | 603 | 672 | 1,040 | 976 | 2,760 | 7,280 | 4,520 | 6,590 | 4,190 | 943 | 1,320 | 849 |
| 27 | 601 | 657 | 1,000 | 995 | 3,050 | 6,910 | 4,980 | 9,160 | 4,450 | 866 | 1,370 | 836 |
| 28 | 612 | 673 | 938 | 1,080 | 3,090 | 6,320 | 5,700 | 11,200 | 4,330 | 797 | 1,170 | 810 |
| 29 | 649 | 849 | 927 | 1,920 | 3,060 | 5,880 | 5,520 | 11,300 | 4,200 | 745 | 1,050 | 793 |
| 30 | 643 | 1,050 | e800 | 4,450 | --- | 5,910 | 5,250 | 10,500 | 3,980 | 713 | 975 | 781 |
| 31 | 619 | --- | e700 | 4,590 | --- | 6,420 | --- | 9,700 | --- | 687 | 902 | --- |
| TOTAL | 18,292 | 20,753 | 32,230 | 34,699 | 64,810 | 167,730 | 162,670 | 201,790 | 171,610 | 52,731 | 24,086 | 26,804 |
| MEAN | 590 | 692 | 1,040 | 1,119 | 2,235 | 5,411 | 5,422 | 6,509 | 5,720 | 1,701 | 777 | 893 |
| MAX | 663 | 1,050 | 1,640 | 4,590 | 4,030 | 7,860 | 6,540 | 11,300 | 8,810 | 3,910 | 1,370 | 1,150 |
| MIN | 507 | 566 | 700 | 520 | 1,150 | 2,540 | 4,400 | 4,280 | 3,980 | 687 | 560 | 716 |
| AC-FT | 36,280 | 41,160 | 63,930 | 68,830 | 128,600 | 332,700 | 322,700 | 400,300 | 340,400 | 104,600 | 47,770 | 53,170 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 869 | 1,220 | 1,946 | 2,159 | 3,172 | 4,356 | 6,307 | 7,313 | 5,636 | 2,128 | 836 | 762 |
| MAX | 2,559 | 3,766 | 7,212 | 6,280 | 14,390 | 11,520 | 11,390 | 13,820 | 11,610 | 4,951 | 1,385 | 1,291 |
| (WY) | (1960) | (1996) | (1996) | (1974) | (1996) | (1972) | (1997) | (1948) | (1974) | (1975) | (1984) | (1984) |
| MIN | 528 | 618 | 673 | 702 | 769 | 888 | 2,257 | 2,368 | 1,501 | 520 | 438 | 409 |
| (WY) | (1988) | (1988) | (2003) | (1979) | (1977) | (1977) | (1968) | (1977) | (1992) | (1977) | (1992) | (2001) |

13333000 GRANDE RONDE RIVER AT TROY, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1945 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 962,979 | | 978,205 | | | |
| ANNUAL MEAN | 2,638 | | 2,673 | | 3,053 | |
| HIGHEST ANNUAL MEAN | | | | | 5,253 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 1,136 | 1977 |
| HIGHEST DAILY MEAN | 12,100 | May 31 | 11,300 | May 29 | 42,200 | Feb 9, 1996 |
| LOWEST DAILY MEAN | 450 | Aug 21 | 507 | Oct 2 | 344 | Aug 20, 1977 |
| ANNUAL SEVEN-DAY MINIMUM | 465 | Aug 16 | 533 | Oct 1 | 361 | Aug 18, 1977 |
| ANNUAL RUNOFF (AC-FT) | 1,910,000 | | 1,940,000 | | 2,212,000 | |
| 10 PERCENT EXCEEDS | 6,360 | | 6,440 | | 7,390 | |
| 50 PERCENT EXCEEDS | 1,040 | | 1,160 | | 1,610 | |
| 90 PERCENT EXCEEDS | 543 | | 607 | | 684 | |

e Estimated

2004 Water Year

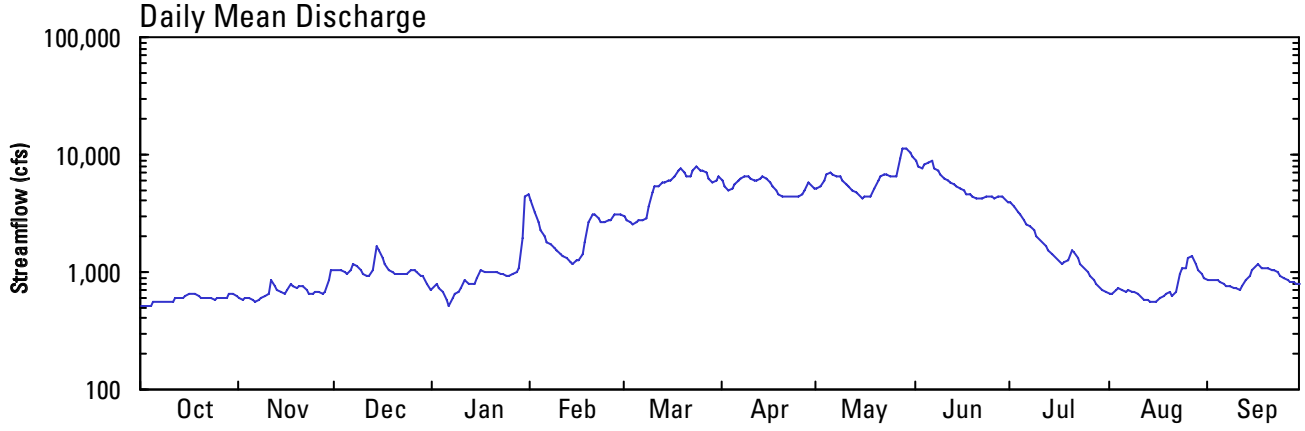
GRANDE RONDE RIVER BASIN

## 13333000 GRANDE RONDE RIVER AT TROY, OR

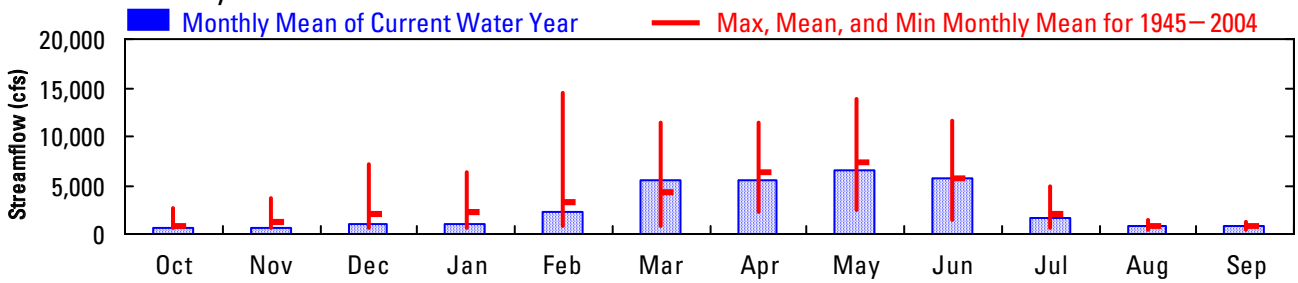
Latitude: 45°56'45" Longitude: 117°27'00" Hydrologic Unit Code: 17060106

Wallowa County Datum: 1,585.98 feet Drainage Area: 3,275 square miles

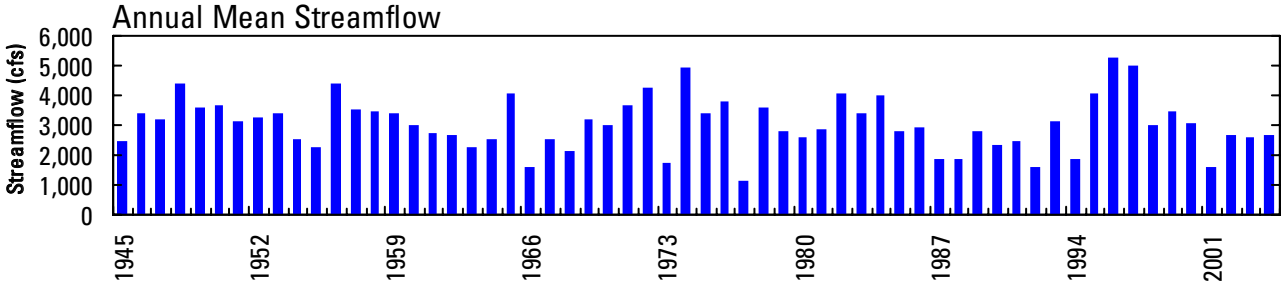
Daily Mean Discharge



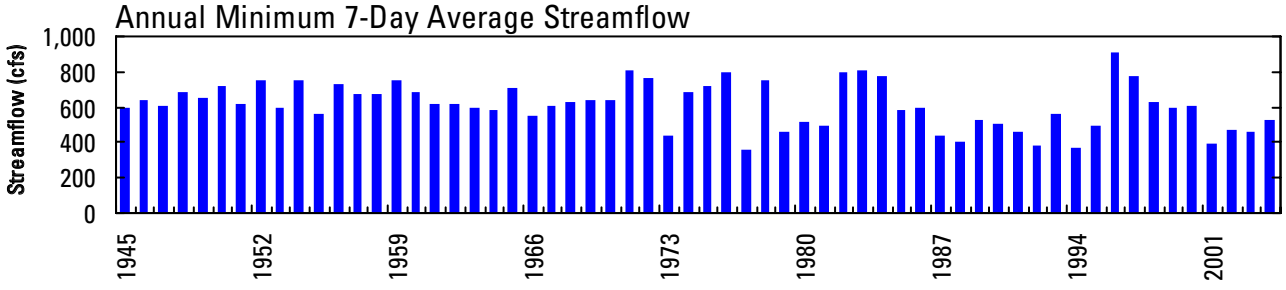

Monthly Statistics




Annual Mean Streamflow




Annual Minimum 7-Day Average Streamflow




Annual Peak Streamflow