

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA

LOCATION.--Lat 49°00'05", long 114°28'34" (NAD 27), Hydrologic Unit 17010206, on left bank 200 ft north of international boundary at Flathead, British Columbia, 1.6 mi upstream from Sage Creek, 6.5 mi northwest of Trail Creek, MT, and at river mile 216.6.

DRAINAGE AREA.--427 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to June 1995 (no winter records prior to 1952). Prior to 1934, published as Flathead River near Trail Creek, MT. October 1970 to September 1972, published as North Fork Flathead River at Flathead British Columbia. October 1999 to current year gage re-established and operated by USGS at site on left bank in British Columbia.

GAGE.--Water-stage recorder. Elevation of gage is 3,964.95 ft (NGVD 29). Prior to Sept. 1, 1949, nonrecording gage and Sept. 1, 1949 to Oct. 4, 1964, water-stage recorder at site 1,200 ft upstream at elevation 11.01 ft higher. Oct. 5, 1964, to Aug. 1, 1973, water-stage recorder at site on left bank 155 ft upstream at elevation 1.79 ft higher. Aug. 2, 1973 to June 28, 1995 operated by Water Survey Canada at site on right bank at elevation 3.21 ft. higher. October 1999 to current year at site 200 ft upstream from International Border in British Columbia on left bank.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station.

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	135	323	e220	e140	e150	127	493	e2,110	2,000	1,190	368	549
2	134	297	e220	e150	e140	125	496	e2,600	1,880	1,130	362	537
3	132	282	e210	e140	e130	125	515	e3,630	1,950	1,010	359	519
4	132	e250	197	e120	e140	132	589	3,760	2,180	1,040	365	500
5	131	e220	230	e100	e140	127	699	e3,700	2,490	1,110	347	476
6	130	e200	234	e90	e140	128	824	e3,100	2,790	982	337	453
7	129	e180	207	e110	e140	125	1,030	e2,800	2,850	972	368	442
8	129	e190	e190	e130	e140	140	1,220	e2,940	2,530	1,010	375	437
9	128	e200	e180	e160	e140	158	1,240	2,980	2,090	928	351	433
10	129	e210	e170	e170	e140	166	1,180	2,670	1,850	834	330	452
11	131	217	e150	e180	e130	170	1,270	2,400	1,760	794	317	481
12	132	204	e170	e170	e120	169	1,500	2,050	1,680	774	304	580
13	136	201	e180	e165	e115	172	1,760	1,840	1,570	721	294	575
14	135	201	e200	e160	e110	175	2,320	1,650	1,690	677	285	579
15	133	192	210	e155	e120	173	2,170	1,570	1,670	636	277	623
16	140	192	205	e150	e130	171	1,790	1,570	1,480	602	274	687
17	171	195	199	e145	e130	172	1,480	1,740	1,350	567	269	770
18	260	218	e180	e140	e140	189	1,300	1,980	1,300	550	285	1,090
19	241	360	e160	e140	e150	211	1,240	2,330	1,220	531	293	1,380
20	242	387	e150	e135	e140	191	1,150	2,520	1,180	518	337	1,150
21	806	313	e170	e130	e140	185	1,080	2,540	1,150	518	419	995
22	723	e200	e180	e125	e130	188	1,050	2,320	1,160	486	385	881
23	545	e210	e170	e120	e120	217	1,150	1,990	1,180	462	548	787
24	469	e220	e160	e125	e125	251	1,330	1,710	1,190	446	783	719
25	399	e230	e170	e130	e130	268	1,370	1,540	1,250	436	962	654
26	352	e230	e180	e125	132	275	1,520	1,870	1,290	426	1,010	611
27	319	e220	e160	e120	131	275	2,150	2,290	1,160	413	958	570
28	340	e210	e150	e120	129	266	e2,870	2,460	1,030	409	816	540
29	621	e240	e140	e140	127	273	e2,370	2,590	955	399	763	519
30	448	e230	e120	e160	---	313	e2,070	2,410	1,130	387	675	516
31	340	---	e130	e160	---	415	---	2,140	---	375	599	---
TOTAL	8,392	7,022	5,592	4,305	3,849	6,072	41,226	73,800	49,005	21,333	14,415	19,505
MEAN	271	234	180	139	133	196	1,374	2,381	1,634	688	465	650
MAX	806	387	234	180	150	415	2,870	3,760	2,850	1,190	1,010	1,380
MIN	128	180	120	90	110	125	493	1,540	955	375	269	433
AC-FT	16,650	13,930	11,090	8,540	7,630	12,040	81,770	146,400	97,200	42,310	28,590	38,690
CFSM	0.63	0.55	0.42	0.33	0.31	0.46	3.22	5.58	3.83	1.61	1.09	1.52
IN.	0.73	0.61	0.49	0.38	0.34	0.53	3.59	6.43	4.27	1.86	1.26	1.70

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

MEAN	324	343	236	185	171	199	920	3,477	3,066	977	383	294
MAX	1,285	1,261	881	458	345	685	2,957	5,584	6,691	2,418	937	785
(WY)	(1948)	(2000)	(1976)	(1981)	(1971)	(1986)	(1934)	(1948)	(1974)	(1954)	(1976)	(1951)
MIN	127	124	97.0	87.3	83.3	97.7	189	1,540	824	279	188	132
(WY)	(2002)	(1937)	(2001)	(2001)	(2001)	(2001)	(1970)	(1977)	(1977)	(1977)	(1931)	(2001)

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004*	
ANNUAL TOTAL	229,550		254,516			
ANNUAL MEAN	629		695		898	
HIGHEST ANNUAL MEAN					1,376	1974
LOWEST ANNUAL MEAN					377	2001
HIGHEST DAILY MEAN	6,000	May 30	3,760	May 4	b16,800	Jun 7, 1995
LOWEST DAILY MEAN	80	Feb 23	90	Jan 6	62	Jan 2, 1977
ANNUAL SEVEN-DAY MINIMUM	109	Feb 19	120	Jan 2	71	Dec 31, 1976
MAXIMUM PEAK FLOW			a4,070	May 3	c16,300	Jun 8, 1964
MAXIMUM PEAK STAGE			a7.66	May 3	d10.00	May 31, 2002
INSTANTANEOUS LOW FLOW					f59	Feb 23, 2003
ANNUAL RUNOFF (AC-FT)	455,300		504,800		650,500	
ANNUAL RUNOFF (CFSM)	1.47		1.63		2.10	
ANNUAL RUNOFF (INCHES)	20.00		22.17		28.57	
10 PERCENT EXCEEDS	1,790		1,960		2,680	
50 PERCENT EXCEEDS	210		340		295	
90 PERCENT EXCEEDS	131		130		135	

\*--During period of operation (no winter records prior to 1952).

a--May have been higher on May 5 during a period of no gage-height record.

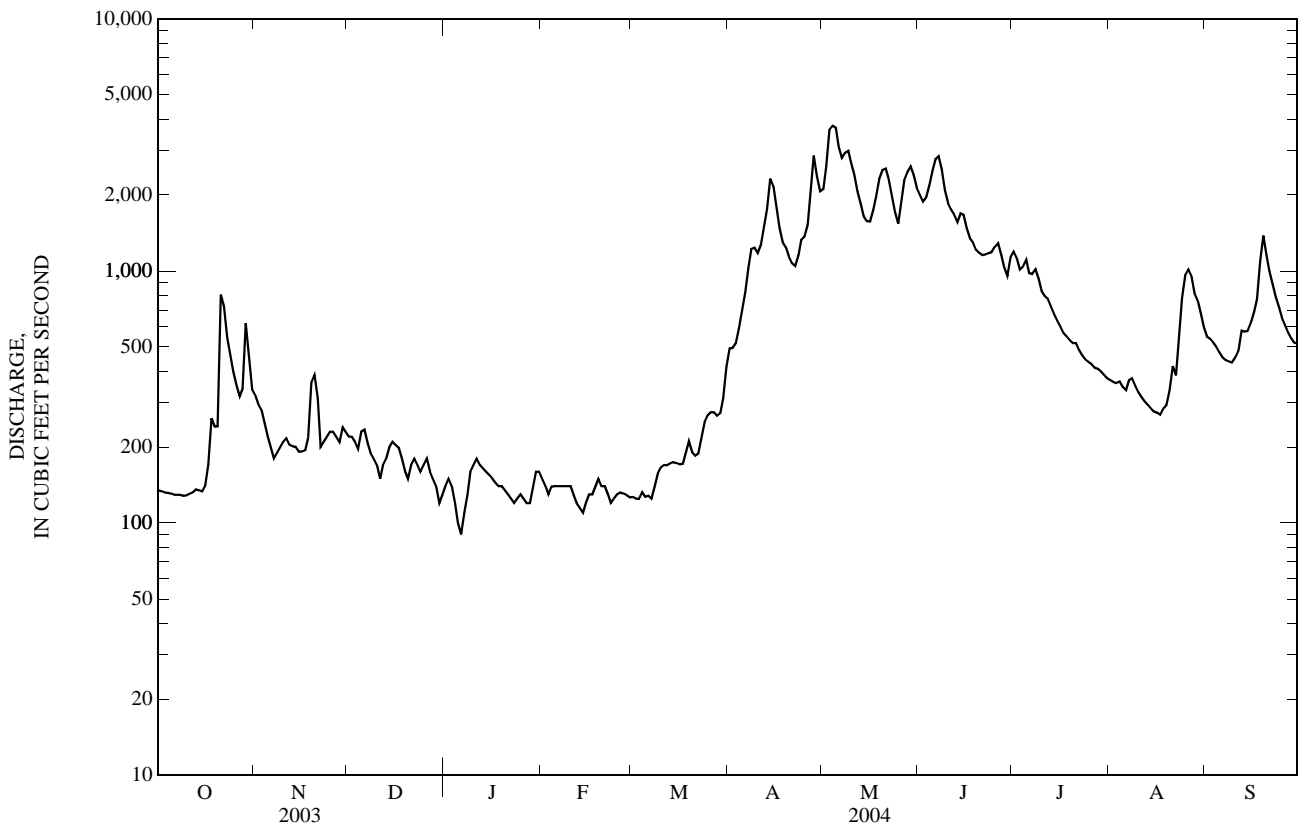
b--Instantaneous peak flow not determined.

c--Gage height, 8.00 ft, site and datum then in use.

d--At present site and datum. Flood of June 7, 1995 reached a stage of 9.66 ft (site and datum then in use), which is 12.86 ft at present site and datum.

e--Estimated.

f--Gage height, 3.95 ft.



12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1965, 1970, 1975-93 and August 1999 to current year.

REMARKS.--Missing metals data for June 17 due to sample loss in transit to lab.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1974 to September 1981.

WATER TEMPERATURE: November 1974 to September 1991.

SUSPENDED-SEDIMENT DISCHARGE: April 1975 to October 1978, August 1985 to June 1991.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 309 microsiemens per centimeter (µS/cm) at 25.0°C, Jan. 12, 28, 1975, Jan. 20, 1980; minimum daily, 130 µS/cm at 25.0°C, May 20, 1976.

WATER TEMPERATURE: Maximum 19.5°C, Aug 2, 1977; minimum 0.0°C on many days during winters.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,310 mg/L, June 20,1975; minimum daily mean, 1 mg/L on many days most years.

SEDIMENT LOAD: Maximum daily, 36,100 tons, June 20, 1975; minimum daily, 0.24 ton, Feb. 1, 23, 1988.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unfltrd lab, Hach 2100AN NTU (99872)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Total nitrogen, wat unfltrd by analysis, mg/L (62855)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)
MAY 04...	1030	3,840	42	8.1	175	14.5	4.0	E.002	E.050	E.002	.22	E.005	.129
JUN 03...	0900	2,110	4.8	8.1	186	10.5	6.0	<.010	<.016	E.001	.05	<.006	.022
JUL 12...	0945	784	<2.0	8.2	222	14.0	8.5	<.010	<.016	<.002	.04	<.006	.007
SEP 28...	0900	540	<2.0	8.1	244	4.0	7.0	<.010	<.016	<.002	.06	<.006	.004

Date	Organic carbon, water, unfltrd mg/L (00680)	Arsenic water unfltrd ug/L (01002)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recover-able, ug/L (01034)	Copper, water, unfltrd recover-able, ug/L (01042)	Lead, water, unfltrd recover-able, ug/L (01051)	Nickel, water, unfltrd recover-able, ug/L (01067)	Zinc, water, unfltrd recover-able, ug/L (01092)	Suspended sediment, percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
MAY 04...	--	--	--	--	--	--	--	--	62	152	1,580
JUN 03...	2.0	E1	E.03	E.4	.9	.41	1.05	E1	75	21	120
JUL 12...	--	--	--	--	--	--	--	--	53	11	23
SEP 28...	2.2	<2	<.04	<.8	E.3	E.06	.48	<2	75	3	4.4

E--Estimated.

## 12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°29'44", long 114°07'36" (NAD 27), in NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec.35, T.32 N., R.20 W., Flathead County, Hydrologic Unit 17010206, on right bank 1.5 mi downstream from Canyon Creek, 3.8 mi upstream from Middle Fork, 8.8 mi northeast of Columbia Falls, and at river mile 162.1.

DRAINAGE AREA.--1,548 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to September 1917 (no winter records in water years 1913, 1916, 1917), April 1929 to February 1935 (incomplete), June 1935 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as Flathead River near Columbia Falls 1915-17, 1929-70.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1246: 1911, 1912(M), 1915-17(M), 1929 (M), 1938-39(M), 1946(M).

GAGE.--Water-stage recorder. Elevation of gage is 3,145.59 ft (NGVD 29). September 1910 to September 1917 and April to August 1929, nonrecording gages, and May 1, 1930, to Sept. 30, 1962, water-stage recorder, all at site 2.7 mi downstream at different elevations.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. A few small diversions from tributaries for irrigation of hay meadows upstream from station. Bureau of Reclamation satellite telemeter at station.

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	593	1,220	918	e550	e590	515	3,020	6,370	6,440	5,580	1,550	2,670
2	589	1,200	920	e570	e570	518	2,950	6,800	6,160	5,540	1,500	2,530
3	579	1,140	902	e530	e550	469	2,990	8,600	6,180	5,190	1,490	2,400
4	573	1,020	814	e430	e540	516	3,230	10,200	6,750	4,930	1,480	2,260
5	569	e970	807	e380	e560	525	3,660	10,500	7,830	4,970	1,430	2,150
6	563	e900	883	e370	e560	515	4,130	9,660	8,870	4,580	1,390	2,040
7	557	e870	863	e400	e550	508	4,640	8,570	9,190	4,340	1,460	1,950
8	556	e850	776	e450	e550	529	5,180	8,520	8,710	4,330	1,550	1,890
9	553	e850	760	e630	548	623	5,380	8,760	7,560	4,110	1,490	1,790
10	547	e870	e730	e660	540	696	4,990	8,330	6,810	3,780	1,410	1,740
11	544	e900	e650	e670	529	732	4,850	7,580	6,390	3,560	1,350	1,710
12	560	867	e700	e660	483	767	5,060	6,860	6,350	3,350	1,300	1,810
13	574	822	e750	e640	e470	799	5,750	6,120	6,160	3,130	1,260	1,960
14	573	801	e800	e630	e450	803	7,180	5,550	6,070	2,970	1,220	2,110
15	566	786	e770	e620	e500	801	7,860	5,150	6,000	2,820	1,180	2,420
16	608	773	e750	e600	e530	797	7,060	4,970	5,570	2,740	1,160	2,750
17	652	787	e730	e580	536	813	6,230	4,990	5,180	2,680	1,160	2,970
18	671	828	e700	e560	567	938	5,580	5,340	4,970	2,600	1,180	3,210
19	731	1,050	e650	e550	575	1,250	5,160	5,950	4,770	2,570	1,170	3,970
20	737	1,210	e600	e540	555	1,190	4,850	6,720	4,600	2,660	1,250	3,910
21	1,070	1,100	e670	e530	543	1,130	4,560	7,270	4,570	2,610	1,340	3,620
22	1,740	824	e730	e510	508	1,190	4,320	7,280	4,640	2,500	1,440	3,290
23	1,590	e870	e670	e490	488	1,430	4,260	6,620	5,000	2,340	1,710	3,010
24	1,430	e900	e600	e500	512	1,660	4,520	5,900	5,240	2,190	2,130	2,800
25	1,330	e930	e650	509	526	1,830	4,710	5,350	5,500	2,060	3,180	2,610
26	1,230	e930	e700	497	537	2,010	4,820	5,470	6,000	1,960	4,100	2,450
27	1,150	907	e670	491	539	2,040	5,540	6,350	5,850	1,880	4,090	2,310
28	1,160	878	e650	478	531	1,900	7,410	6,970	5,330	1,790	3,720	2,170
29	1,580	1,040	e630	e500	523	1,960	7,530	7,620	5,040	1,720	3,430	2,060
30	1,640	983	e570	e570	---	2,230	6,740	7,470	5,070	1,660	3,220	2,010
31	1,330	---	e530	e600	---	2,800	---	6,940	---	1,590	2,910	---
TOTAL	27,145	28,076	22,543	16,695	15,460	34,484	154,160	218,780	182,800	98,730	58,250	74,570
MEAN	876	936	727	539	533	1,112	5,139	7,057	6,093	3,185	1,879	2,486
MAX	1,740	1,220	920	670	590	2,800	7,860	10,500	9,190	5,580	4,100	3,970
MIN	544	773	530	370	450	469	2,950	4,970	4,570	1,590	1,160	1,710
AC-FT	53,840	55,690	44,710	33,110	30,660	68,400	305,800	434,000	362,600	195,800	115,500	147,900
CFSM	0.57	0.60	0.47	0.35	0.34	0.72	3.32	4.56	3.94	2.06	1.21	1.61
IN.	0.65	0.67	0.54	0.40	0.37	0.83	3.70	5.26	4.39	2.37	1.40	1.79

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2004, BY WATER YEAR (WY)

MEAN	1,170	1,189	935	758	735	886	3,307	9,836	10,010	4,068	1,644	1,179
MAX	3,650	3,733	3,388	2,131	2,017	2,597	6,877	15,160	20,780	9,262	3,232	2,653
(WY)	(1952)	(1990)	(1996)	(1974)	(1996)	(1986)	(1943)	(1954)	(1974)	(1954)	(1976)	(1959)
MIN	517	486	433	398	342	406	833	4,986	3,353	1,436	747	552
(WY)	(2002)	(1988)	(2001)	(1988)	(2001)	(1944)	(1975)	(1944)	(1941)	(1977)	(1941)	(2001)

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1940 - 2004	
ANNUAL TOTAL	859,236		931,693			
ANNUAL MEAN	2,354		2,546		2,983	
HIGHEST ANNUAL MEAN					4,721	1974
LOWEST ANNUAL MEAN					1,383	1944
HIGHEST DAILY MEAN	16,400	May 30	10,500	May 5	58,000	Jun 9, 1964
LOWEST DAILY MEAN	330	Feb 24	370	Jan 6	200	Nov 24, 1993
ANNUAL SEVEN-DAY MINIMUM	481	Feb 22	447	Jan 2	289	Nov 22, 1993
MAXIMUM PEAK FLOW			10,700	May 5	a69,100	Jun 9, 1964
MAXIMUM PEAK STAGE			6.94	May 5	b18.60	Jun 9, 1964
INSTANTANEOUS LOW FLOW					c187	Feb 8, 2001
INSTANTANEOUS LOW STAGE					d0.86	Jan 8, 1953
ANNUAL RUNOFF (AC-FT)	1,704,000		1,848,000		2,161,000	
ANNUAL RUNOFF (CFSM)	1.52		1.64		1.93	
ANNUAL RUNOFF (INCHES)	20.65		22.39		26.18	
10 PERCENT EXCEEDS	6,000		6,350		8,490	
50 PERCENT EXCEEDS	930		1,430		1,200	
90 PERCENT EXCEEDS	581		534		555	

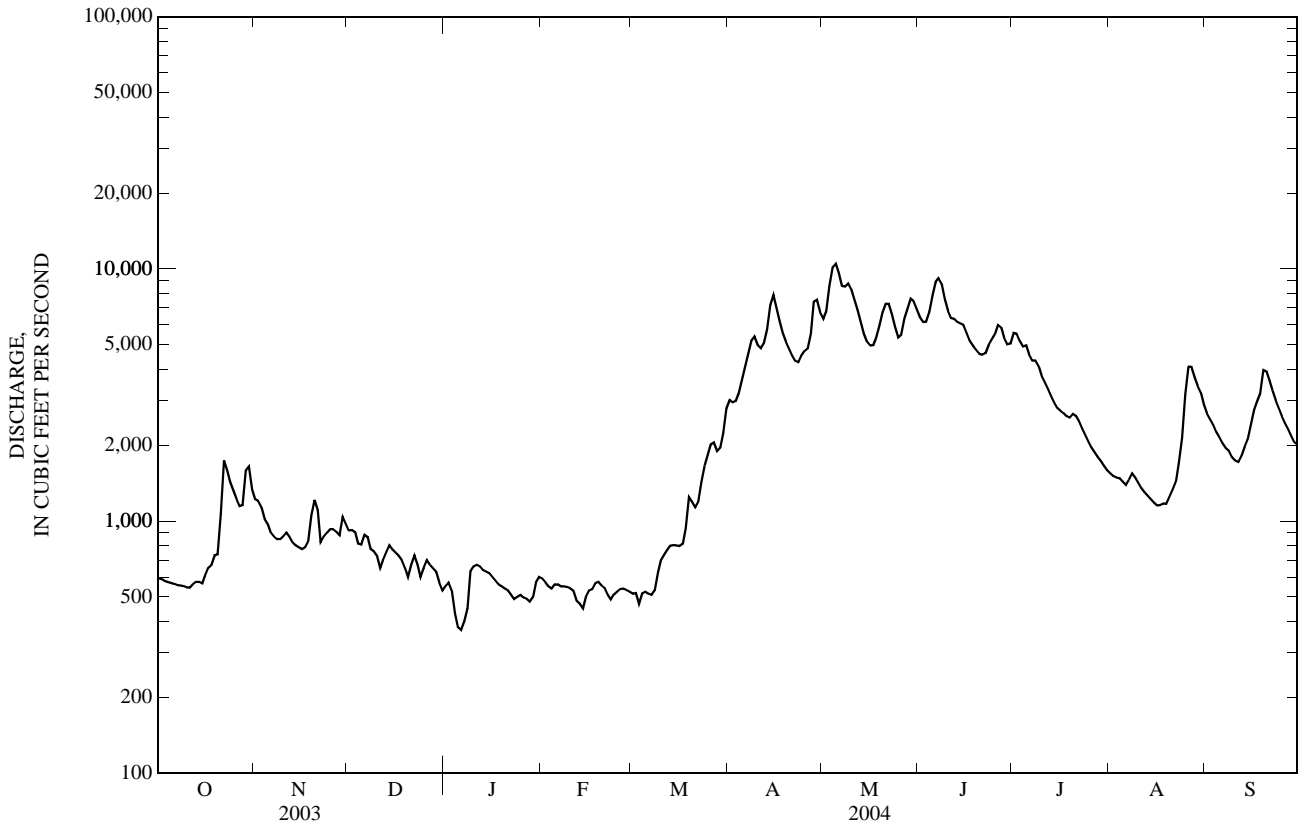
a--From rating curve extended above 30,000 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow.

b--From floodmark.

c--Gage height, 0.87 ft, result of freezeup.

d--Discharge, 198 ft<sup>3</sup>/s, site and datum then in use.

e--Estimated.



12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1970, 1976 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to October 1978.

WATER TEMPERATURE: October 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1975 to November 1978.

INSTRUMENTATION.--Temperature recorder since Oct. 1, 1975.

REMARKS.--Daily water temperatures record rated good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 246 microsiemens per centimeter (mS/cm) at 25.0°C, Dec. 31, 1976; minimum daily, 128 mS/cm at 25.0°C, June 30, July 1, 1976.

WATER TEMPERATURE: Maximum, 23.0°C, Aug. 12, 1997; minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily mean, 931 mg/L, May 11, 1976; minimum daily mean, 1 mg/L on many days each year.

SEDIMENT LOAD: Maximum daily, 56,800 tons, May 11, 1976; minimum daily, 1.1 tons, Mar. 3, 1978.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 19.5°C, Aug. 16-18; minimum, 0.0°C on many days from October through March.

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

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	10.0	8.0	9.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	10.5	8.0	9.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
3	10.5	8.5	9.5	1.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
4	10.5	8.0	9.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10.5	8.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	11.0	8.5	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	11.0	9.5	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	10.0	8.5	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	10.5	8.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	8.5	7.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	8.0	6.5	7.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
12	7.0	6.5	7.0	1.5	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
13	8.5	7.0	7.0	1.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
14	8.0	6.5	7.0	1.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
15	7.0	6.0	6.5	2.0	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
16	6.0	6.0	6.0	2.5	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
17	9.0	6.0	7.5	3.0	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
18	9.0	7.0	8.0	3.5	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
19	8.0	7.0	7.5	3.5	3.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
20	8.5	7.5	8.0	3.0	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
21	10.5	8.5	9.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	10.0	9.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	9.0	7.5	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	7.5	6.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	6.0	4.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	6.0	4.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	6.5	5.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	7.0	6.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	7.0	3.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	3.5	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	1.0	0.0	0.0	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	11.0	0.0	7.5	3.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT—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	0.0	0.0	0.0	3.0	2.0	2.0	4.5	3.5	4.0	9.5	6.0	7.5
2	0.0	0.0	0.0	2.0	0.5	1.5	5.5	2.5	4.0	9.5	7.5	8.5
3	0.0	0.0	0.0	1.0	0.0	0.5	6.0	3.5	4.5	9.0	7.5	8.0
4	0.0	0.0	0.0	1.5	0.0	0.5	6.5	4.5	5.5	8.0	6.0	7.0
5	0.0	0.0	0.0	2.0	0.0	1.0	6.0	4.0	5.0	8.0	6.5	7.0
6	0.0	0.0	0.0	1.5	0.0	1.0	7.0	4.5	5.5	8.5	5.0	6.5
7	0.0	0.0	0.0	1.5	1.0	1.5	6.5	4.0	5.5	9.5	7.0	8.0
8	0.0	0.0	0.0	4.0	1.5	2.5	6.0	4.0	4.5	9.0	6.5	7.5
9	0.5	0.0	0.0	3.5	2.5	3.0	5.5	3.5	4.5	8.0	6.5	7.0
10	0.5	0.5	0.5	3.5	2.0	2.5	7.0	4.0	5.5	7.5	5.5	6.5
11	0.5	0.0	0.5	3.0	2.0	2.5	7.0	4.5	6.0	7.5	6.5	6.5
12	0.5	0.0	0.0	3.0	2.0	2.5	7.5	5.0	6.5	6.5	5.0	5.5
13	0.0	0.0	0.0	4.0	2.5	3.5	7.5	5.5	6.5	6.5	4.5	5.5
14	0.0	0.0	0.0	3.5	2.5	3.0	7.0	5.5	6.0	7.5	5.5	6.5
15	0.0	0.0	0.0	3.5	2.0	3.0	6.0	4.0	5.0	8.5	6.5	7.5
16	0.0	0.0	0.0	3.0	2.5	3.0	6.0	4.0	5.0	10.0	7.0	8.0
17	1.0	0.0	0.5	4.0	3.0	3.5	6.0	4.0	5.0	10.0	7.0	8.5
18	1.5	1.0	1.0	4.0	3.5	4.0	6.5	4.5	5.5	10.5	7.0	9.0
19	2.0	1.5	1.5	4.0	2.5	3.0	7.0	5.0	6.0	10.0	8.5	9.5
20	2.0	1.5	1.5	3.5	1.5	2.5	6.5	5.0	5.5	10.0	8.0	8.5
21	2.5	1.5	1.5	4.5	2.5	3.5	7.0	4.5	5.5	8.5	7.0	7.5
22	2.0	0.5	1.0	5.5	3.0	4.5	8.5	5.0	6.5	7.5	6.5	7.0
23	1.5	0.0	0.5	5.5	3.5	4.0	8.5	5.5	7.0	8.0	6.0	7.0
24	1.5	0.5	1.0	4.0	2.5	3.5	8.0	6.0	7.5	9.0	6.5	7.5
25	2.5	1.5	2.0	5.0	2.5	3.5	8.5	5.5	7.0	9.5	7.0	8.5
26	3.0	2.0	2.5	4.5	3.5	4.0	9.5	6.0	7.5	9.0	8.0	8.5
27	3.5	2.0	2.5	4.0	2.5	3.5	9.0	7.0	8.0	9.0	8.0	8.5
28	2.5	1.5	2.0	5.0	2.0	3.5	8.0	5.5	6.5	9.0	7.5	8.0
29	3.0	1.5	2.0	6.0	3.0	4.5	7.5	4.5	6.0	8.5	7.0	8.0
30	---	---	---	6.0	3.5	5.0	8.5	5.5	7.0	9.0	7.0	8.0
31	---	---	---	6.0	4.0	4.5	---	---	---	9.0	7.5	8.0
MONTH	3.5	0.0	0.5	6.0	0.0	3.0	9.5	2.5	6.0	10.5	4.5	7.5
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.0	7.5	8.5	14.5	13.0	13.5	18.5	16.0	17.5	15.0	13.5	14.5
2	11.0	7.0	9.0	15.0	12.0	13.5	18.0	15.5	17.0	14.5	12.0	12.5
3	11.5	8.5	10.0	14.5	12.0	13.5	17.5	16.0	16.5	12.0	11.0	11.5
4	12.5	9.5	11.0	13.5	11.5	12.0	17.5	14.5	16.0	12.5	11.5	12.0
5	12.0	9.5	10.5	13.5	11.0	12.0	17.5	15.0	16.5	13.0	11.0	12.0
6	10.0	8.5	9.0	14.5	12.0	13.0	17.0	14.5	15.5	13.0	11.0	12.0
7	9.0	7.5	8.0	14.0	12.0	13.0	16.0	13.5	14.5	12.5	11.5	11.5
8	9.0	7.0	8.0	13.0	10.5	11.5	16.5	13.0	14.5	13.0	10.5	12.0
9	9.0	7.5	8.5	14.5	10.0	12.0	17.0	14.5	16.0	13.0	11.5	12.5
10	10.5	8.0	9.0	15.0	12.0	13.5	17.5	15.0	16.5	12.5	11.0	12.0
11	10.0	8.5	9.0	14.5	12.5	13.5	18.0	15.0	17.0	12.5	11.5	11.5
12	9.0	8.0	8.5	15.0	11.5	13.0	18.0	15.5	17.0	12.0	11.5	11.5
13	10.0	7.5	8.5	15.5	13.0	14.0	18.5	16.0	17.5	12.0	11.0	11.5
14	10.0	8.5	9.0	17.0	13.5	15.0	18.5	16.0	17.5	11.5	10.5	11.0
15	10.0	7.5	8.5	18.5	15.5	17.0	18.5	16.0	17.5	11.0	10.0	10.5
16	11.0	8.0	9.5	19.0	16.0	17.5	19.5	17.5	18.5	11.0	10.0	10.5
17	11.0	9.5	10.0	18.5	16.0	17.0	19.5	17.5	19.0	11.0	10.0	10.5
18	11.5	8.0	9.5	17.5	15.5	16.5	19.5	17.0	18.0	10.5	10.0	10.0
19	11.0	9.0	10.0	17.5	15.5	17.0	17.5	15.5	16.5	10.0	8.5	9.0
20	11.0	9.0	9.5	17.5	15.5	16.5	18.0	15.5	17.0	9.5	9.0	9.0
21	13.5	9.0	11.0	17.0	14.5	16.0	18.0	16.0	17.0	9.5	8.0	9.0
22	13.5	11.0	12.5	17.0	14.0	15.5	17.5	15.5	16.5	11.0	9.0	10.0
23	14.0	11.5	12.5	17.5	14.5	16.0	15.5	13.5	14.5	11.5	9.5	10.5
24	14.5	11.5	13.0	17.5	15.0	16.5	13.5	12.5	13.0	11.5	10.0	11.0
25	14.0	12.0	13.0	18.0	15.5	17.0	13.0	12.5	13.0	11.5	10.0	11.0
26	13.0	11.0	11.5	18.0	16.0	17.5	14.0	12.0	13.0	11.5	10.0	11.0
27	13.5	10.0	11.5	18.0	16.0	17.0	13.5	12.5	13.0	11.5	10.0	11.0
28	15.0	11.5	13.0	18.0	15.5	16.5	14.0	12.5	13.0	11.5	10.0	10.5
29	15.5	12.0	14.0	18.0	15.0	16.5	14.5	13.0	13.5	11.5	10.0	11.0
30	15.5	13.0	14.0	18.0	16.0	17.0	15.5	12.5	14.0	11.5	10.0	11.0
31	---	---	---	18.0	15.5	17.0	15.5	13.5	14.5	---	---	---
MONTH	15.5	7.0	10.5	19.0	10.0	15.0	19.5	12.0	16.0	15.0	8.0	11.0

## 12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT

LOCATION.--Lat 48°29'43", long 114°00'33" (NAD 27), in S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.34, T.32 N., R.19 W., Flathead County, Hydrologic Unit 17010207, on left bank 0.8 mi downstream from McDonald Creek, 1.3 mi west of West Glacier, and at river mile 3.8.

DRAINAGE AREA.--1,128 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1947, published as "near Belton."

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,128.72 ft (NGVD 29). Prior to Nov. 22, 1950, nonrecording gage at present site and elevation.

REMARKS.--Records good. Bureau of Reclamation satellite at station. Several observations of water temperature and specific conductance were made during the year.

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	451	964	675	420	474	412	3,250	6,280	6,280	5,290	1,470	2,250
2	446	915	658	431	454	415	3,110	6,790	6,050	5,090	1,420	2,140
3	440	881	654	393	428	410	3,020	8,780	6,410	4,840	1,370	1,990
4	436	820	657	e330	423	402	3,160	10,500	7,480	4,610	1,320	1,850
5	430	755	629	e310	438	408	3,770	10,900	8,990	4,590	1,250	1,750
6	429	716	638	e300	439	420	4,550	9,850	10,100	4,150	1,200	1,670
7	422	663	682	e320	433	402	5,370	8,860	9,250	4,240	1,280	1,570
8	417	640	671	e350	434	414	5,900	9,290	7,900	4,550	1,400	1,500
9	420	631	642	484	430	494	5,760	9,380	6,790	4,020	1,260	1,400
10	429	643	610	499	426	654	5,220	8,450	6,280	3,640	1,150	1,320
11	425	669	519	509	415	777	4,930	7,600	6,390	3,500	1,080	1,270
12	421	656	550	501	388	809	5,050	6,700	6,800	3,290	1,040	1,360
13	425	624	606	475	372	866	5,750	5,940	6,450	3,070	1,000	1,480
14	436	600	642	467	357	864	7,210	5,370	6,270	2,930	968	1,650
15	428	580	632	463	387	846	7,880	4,940	6,110	2,920	943	2,200
16	438	583	603	453	401	846	7,020	4,640	5,600	2,890	928	2,690
17	455	597	593	441	401	881	6,100	4,700	5,320	2,780	952	3,050
18	453	611	566	424	428	1,040	5,440	5,010	5,160	2,680	1,110	2,920
19	480	720	494	419	465	1,550	4,990	5,390	4,930	2,600	1,060	2,800
20	497	801	453	415	457	1,640	4,660	5,920	4,690	2,710	1,010	2,640
21	645	751	530	413	442	1,530	4,400	6,840	4,600	2,650	962	2,480
22	693	665	570	403	426	1,520	4,210	7,190	5,120	2,400	924	2,320
23	680	652	524	394	411	1,690	4,230	6,510	5,590	2,220	1,020	2,180
24	669	674	456	400	410	1,940	4,700	5,780	6,070	2,080	2,030	2,090
25	647	676	491	408	417	2,250	4,980	5,250	6,150	1,970	3,240	2,010
26	621	670	526	360	427	2,380	5,050	5,230	6,160	1,880	4,660	1,920
27	598	657	504	324	424	2,370	5,910	6,200	5,790	1,820	3,730	1,820
28	595	639	486	228	422	2,250	8,210	7,180	5,310	1,720	3,230	1,720
29	1,130	703	463	310	415	2,170	7,860	7,630	5,280	1,630	2,950	1,630
30	1,330	709	434	420	---	2,260	6,800	7,220	5,250	1,570	2,710	1,570
31	1,110	---	411	487	---	2,810	---	6,690	---	1,510	2,450	---
TOTAL	17,496	20,865	17,569	12,551	12,244	37,720	158,490	217,010	188,570	95,840	51,117	59,240
MEAN	564	696	567	405	422	1,217	5,283	7,000	6,286	3,092	1,649	1,975
MAX	1,330	964	682	509	474	2,810	8,210	10,900	10,100	5,290	4,660	3,050
MIN	417	580	411	228	357	402	3,020	4,640	4,600	1,510	924	1,270
MED	451	667	570	415	426	866	5,050	6,700	6,130	2,890	1,250	1,890
AC-FT	34,700	41,390	34,850	24,890	24,290	74,820	314,400	430,400	374,000	190,100	101,400	117,500
CFSM	0.50	0.62	0.50	0.36	0.37	1.08	4.68	6.21	5.57	2.74	1.46	1.75
IN.	0.58	0.69	0.58	0.41	0.40	1.24	5.23	7.16	6.22	3.16	1.69	1.95

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2004, BY WATER YEAR (WY)

MEAN	1,035	1,154	902	697	705	861	3,231	9,520	9,998	3,935	1,357	956
MAX	3,004	5,598	3,750	2,420	2,686	2,779	7,093	14,670	19,870	8,162	2,364	2,510
(WY)	(1960)	(1990)	(1996)	(1974)	(1971)	(1986)	(1943)	(1957)	(1964)	(1954)	(1976)	(1968)
MIN	367	279	262	282	244	307	664	5,259	3,576	1,249	576	420
(WY)	(1940)	(1953)	(1953)	(2001)	(2001)	(1944)	(1975)	(1941)	(1941)	(1944)	(1941)	(1988)



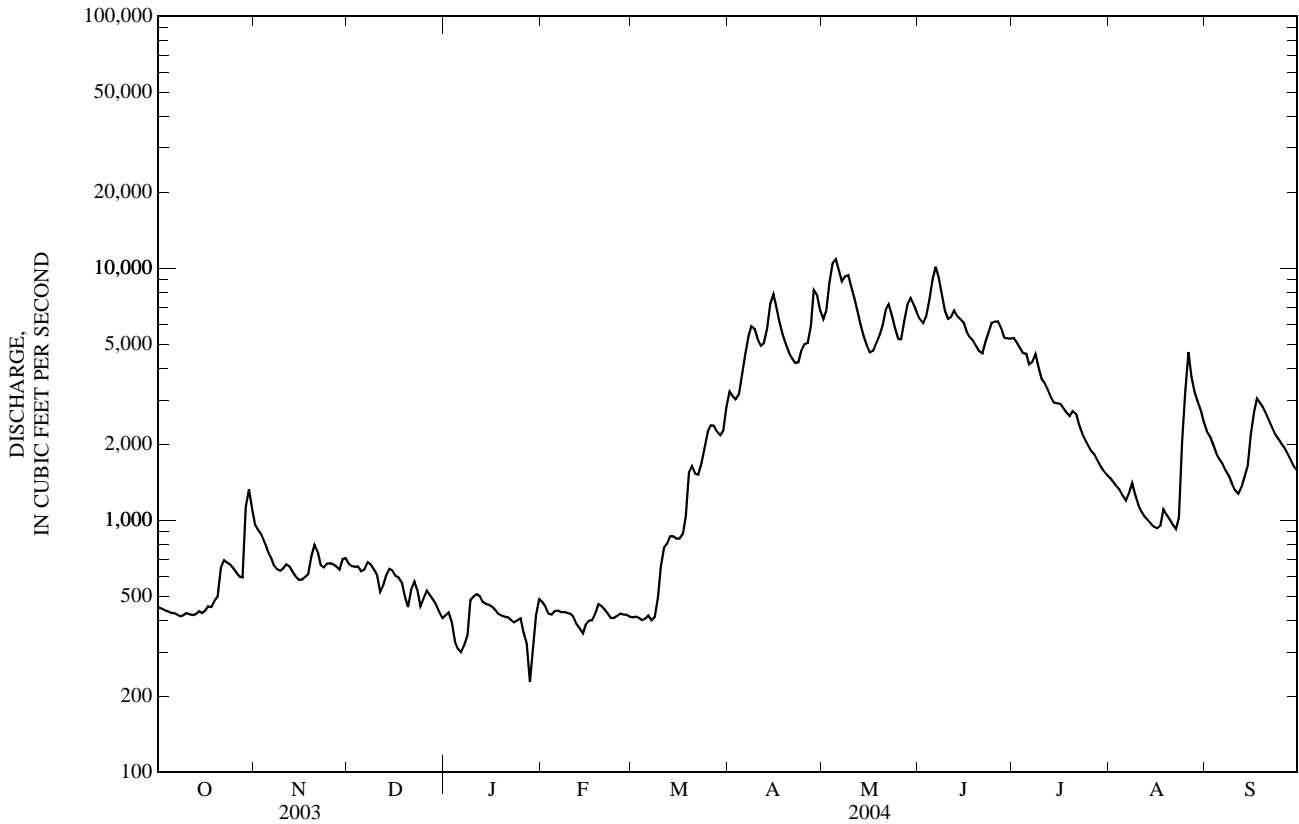
12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1940 - 2004	
ANNUAL TOTAL	835,422		888,712			
ANNUAL MEAN	2,289		2,428		2,868	
HIGHEST ANNUAL MEAN					4,071	1974
LOWEST ANNUAL MEAN					1,437	1941
HIGHEST DAILY MEAN	18,200	May 26	10,900	May 5	92,700	Jun 9, 1964
LOWEST DAILY MEAN	299	Jan 11	228	Jan 28	189	Nov 27, 1952
ANNUAL SEVEN-DAY MINIMUM	372	Jan 18	346	Jan 23	205	Nov 26, 1952
MAXIMUM PEAK FLOW			11,100	May 5	a140,000	Jun 9, 1964
MAXIMUM PEAK STAGE			6.02	May 5	36.46	Jun 9, 1964
INSTANTANEOUS LOW FLOW			211	Jan 28	b173	Nov 27, 1952
INSTANTANEOUS LOW STAGE			1.24	Jan 28	b0.72	Nov 27, 1952
ANNUAL RUNOFF (AC-FT)	1,657,000		1,763,000		2,078,000	
ANNUAL RUNOFF (CFSM)	2.03		2.15		2.54	
ANNUAL RUNOFF (INCHES)	27.55		29.31		34.55	
10 PERCENT EXCEEDS	6,530		6,280		8,390	
50 PERCENT EXCEEDS	712		1,180		1,100	
90 PERCENT EXCEEDS	440		418		434	

a--About 140,000 ft<sup>3</sup>/s, from rating curve extended above 31,000 ft<sup>3</sup>/s, on basis of a contracted opening measurement at gage height, 19.42 ft, and flood volume-hydrographic comparison.

b--Stage below intakes.

e--Estimated.



## 12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT

LOCATION.--Lat 47°58'45", long 113°33'36" (NAD 27), in NE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.36, T.26 N., R.16 W., Flathead County, Hydrologic Unit 17010209, Flathead National Forest, on left bank 0.1 mi downstream from Tin Creek, 0.4 mi upstream from Twin Creek, 36.3 mi southeast of Hungry Horse, and at river mile 42.2.

DRAINAGE AREA.--1,160 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1964 to September 1982, October 1984 to current year (no winter records).

GAGE.--Water-stage recorder. Elevation of gage is 3,575 ft (NGVD 29), from river-profile map.

REMARKS.--Seasonal records excellent. No known regulation or diversions upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1964, reached a stage of 20.87 ft, from high-water profile; discharge, 50,900 ft<sup>3</sup>/s, by slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2004  
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				2,560	4,980	5,520	3,920	793	740	888	890	
2				2,380	5,940	5,310	3,620	764	761	841	865	
3				2,250	7,970	5,760	3,370	751	757	798	972	
4				2,500	9,430	6,860	3,110	736	718	763	933	
5				3,210	10,400	8,650	2,960	711	707	729	891	
6				3,940	9,720	10,300	2,650	687	692	701	868	
7				4,770	8,970	8,730	2,580	720	661	696	852	
8				5,160	9,490	6,770	2,680	702	635	676	837	
9				4,900	9,030	5,590	2,350	662	609	650	825	
10				4,350	7,920	5,990	2,110	634	587	630	808	
11				3,930	6,870	6,260	2,050	610	576	608	795	
12				3,910	5,720	6,190	1,960	589	626	591	774	
13				4,510	4,870	5,610	1,820	572	677	574	739	
14				5,670	4,250	5,360	1,710	554	724	561	714	
15				5,980	3,810	5,020	1,660	539	819	581	711	
16				5,220	3,580	4,560	1,610	528	990	751	707	
17				4,510	3,560	4,340	1,540	552	1,200	1,510	695	
18				3,970	3,900	4,120	1,470	599	1,420	1,600	677	
19				3,550	4,240	3,920	1,490	598	1,670	1,510	675	
20				3,260	4,810	3,700	1,480	576	1,680	1,410	659	
21				3,020	5,770	3,660	1,410	556	1,640	1,400	614	
22				2,840	6,690	4,200	1,300	534	1,520	1,410	603	
23				2,860	6,550	4,770	1,200	562	1,410	1,350	614	
24				3,320	5,690	5,140	1,120	699	1,340	1,260	621	
25				3,450	4,940	5,160	1,070	797	1,260	1,180	747	
26				3,670	4,820	5,210	1,020	956	1,180	1,110	756	
27				4,800	5,830	4,740	983	983	1,110	1,060	674	
28				6,650	6,820	4,280	944	937	1,050	1,020	595	
29				5,990	6,980	4,140	904	891	995	975	608	
30				5,190	6,260	4,090	863	850	941	943	564	
31				---	5,900	---	827	788	---	928	---	
TOTAL				122,320	195,710	163,950	57,781	21,430	29,695	29,704	22,283	
MEAN				4,077	6,313	5,465	1,864	691	990	958	743	
MAX				6,650	10,400	10,300	3,920	983	1,680	1,600	972	
MIN				2,250	3,560	3,660	827	528	576	561	564	
AC-FT				242,600	388,200	325,200	114,600	42,510	58,900	58,920	44,200	
CFSM				3.51	5.44	4.71	1.61	0.60	0.85	0.83	0.64	
IN.				3.92	6.28	5.26	1.85	0.69	0.95	0.95	0.71	

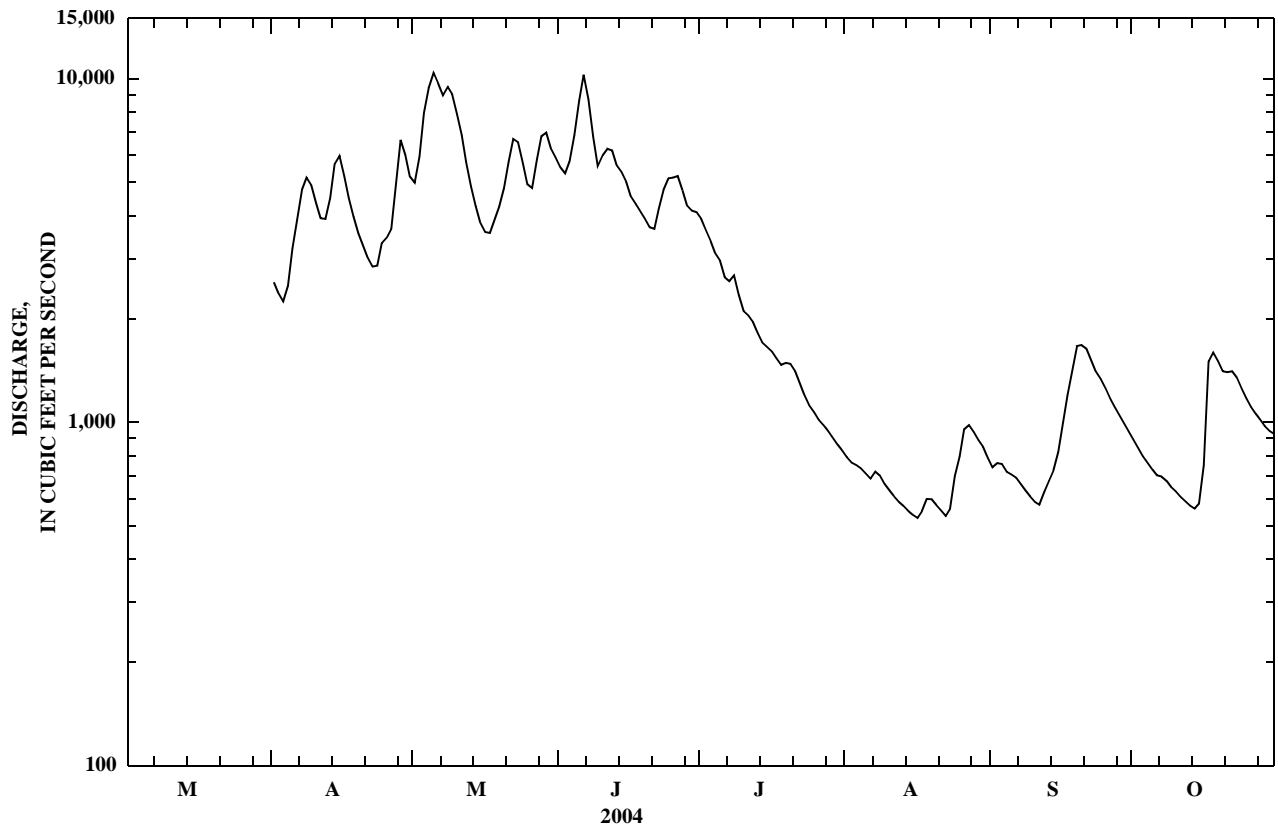
## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2004, BY WATER YEAR (WY)\*

MEAN	479	520	588	2,511	7,677	8,348	2,699	779	582	576	702	514
MAX	1,197	2,285	1,342	4,490	12,580	15,910	5,904	1,331	1,853	1,878	3,098	1,323
(WY)	(1974)	(1971)	(1972)	(1990)	(1997)	(1974)	(1975)	(1972)	(1985)	(1986)	(1990)	(1976)
MIN	207	201	252	464	4,738	2,522	844	339	245	225	204	249
(WY)	(1980)	(1980)	(1980)	(1975)	(1977)	(1987)	(1977)	(1988)	(1988)	(1988)	(1988)	(1972)

12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT—Continued

SUMMARY STATISTICS	FOR 2004 SEASON		FOR 1985 - 2004 SEASONS		WATER YEARS 1965 - 2004*	
ANNUAL MEAN					2,310	
HIGHEST ANNUAL MEAN					2,988	1971
LOWEST ANNUAL MEAN					1,175	1977
HIGHEST DAILY MEAN	10,400	May 5	28,500	May 17, 1997	29,500	Jun 16, 1974
LOWEST DAILY MEAN	528	Aug 16	176	Nov 30, 1987	135	Jan 29, 1980
ANNUAL SEVEN-DAY MINIMUM					155	Jan 26, 1980
MAXIMUM PEAK FLOW	10,800	May 5	29,100	May 17, 1997	30,200	Jun 16, 1974
MAXIMUM PEAK STAGE	10.68	May 5	15.01	May 17, 1997	15.20	Jun 16, 1974
INSTANTANEOUS LOW FLOW					a127	Nov 30, 1979
ANNUAL RUNOFF (AC-FT)					1,673,000	
ANNUAL RUNOFF (CFSM)					1.99	
ANNUAL RUNOFF (INCHES)					27.06	
10 PERCENT EXCEEDS					7,420	
50 PERCENT EXCEEDS					646	
90 PERCENT EXCEEDS					290	

\*--During periods of operation. Seasonal records only from October 1984 to current year.  
 a--Gage height, 4.13 ft.



12362000 HUNGRY HORSE RESERVOIR NEAR HUNGRY HORSE, MT

LOCATION.--Lat 48°20'28", long 114°00'48" (NAD 27), in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.27, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, in block 14 of Hungry Horse Dam on South Fork Flathead River, 3.8 mi southeast of Hungry Horse, and at river mile 5.3.

DRAINAGE AREA.--1,654 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder equipped with remote indicator in power house. Elevation of gage is 3,196 ft (NGVD 29) (levels by U.S. Bureau of Reclamation). During construction and prior to May 1, 1953, various types of nonrecording gages were used.

REMARKS.--Reservoir and flow completely controlled by concrete arch-gravity dam; construction began in 1948; completed in 1952. Storage began Sept. 21, 1951. Usable capacity, 3,451,000 acre-ft, top of 1.0 ft flash-boards; 3,427,000 acre-ft between elevations 3,196 ft, lowest outlet, and 3,560 ft, controlled spillway elevation. Dead storage, 39,730 acre-ft below elevation 3,196 ft. Minimum operating level, 445,400 acre-ft, elevation, 3,336 ft for on-site power generation. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Water is used for power production, flood control, irrigation and recreation. Controlled spillway is an adjustable ring gate with 1.0 ft flashboards. Figures given herein represent usable contents. Capacity table in use is dated August 1969.

COOPERATION.--Capacity table and daily elevations provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 3,461,000 acre-ft, July 3, 4, 1955, Aug. 6, 1956; maximum elevation observed, 3,561.40 ft, July 3, 4, 1955; minimum contents observed since normal low operating level reached in May 1952, 607,700 acre-ft, Jan. 13, 1953, elevation, 3,362.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,422,000 acre-ft, June 27, 29, elevation, 3,559.75 ft; minimum, 2,401,000 acre-ft, Mar. 18, elevation, 3,511.79 ft.

CAPACITY TABLE (ELEVATION, IN FEET, AND CONTENTS, IN ACRE-FT)

Elevation	Contents
3,500	2,185,000
3,530	2,761,000
3,560	3,427,000

ELEVATION ABOVE NGVD 1929, FEET, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004  
DAILY OBSERVATION AT 2359 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3,535.33	3,532.12	3,529.87	3,525.23	3,519.39	3,513.72	3,515.08	3,533.90	3,550.45	3,559.72	3,552.63	3,541.91
2	3,535.15	3,532.14	3,529.81	3,525.00	3,519.20	3,513.54	3,515.43	3,534.72	3,550.80	3,559.65	3,552.29	3,541.55
3	3,534.97	3,532.13	3,529.66	3,524.83	3,518.99	3,513.36	3,515.77	3,535.70	3,551.18	3,559.56	3,551.94	3,541.23
4	3,534.79	3,532.11	3,529.46	3,524.57	3,518.78	3,513.17	3,516.17	3,536.53	3,551.73	3,559.45	3,551.57	3,541.04
5	3,534.61	3,532.05	3,529.23	3,524.36	3,518.57	3,513.04	3,516.68	3,537.63	3,552.69	3,559.35	3,551.13	3,540.83
6	3,534.42	3,531.96	3,529.02	3,524.06	3,518.39	3,512.81	3,517.32	3,538.56	3,553.81	3,559.22	3,550.70	3,540.68
7	3,534.21	3,531.85	3,528.90	3,523.87	3,518.21	3,512.62	3,518.09	3,539.35	3,554.59	3,559.20	3,550.36	3,540.56
8	3,534.05	3,531.75	3,528.77	3,523.64	3,518.00	3,512.41	3,518.94	3,540.42	3,555.03	3,559.07	3,549.93	3,540.44
9	3,533.87	3,531.64	3,528.68	3,523.47	3,517.83	3,512.24	3,519.73	3,541.45	3,555.36	3,558.93	3,549.52	3,540.30
10	3,533.73	3,531.64	3,528.54	3,523.26	3,517.61	3,512.14	3,520.40	3,542.13	3,555.69	3,558.76	3,549.10	3,540.17
11	3,533.49	3,531.57	3,528.36	3,523.09	3,517.40	3,512.06	3,520.99	3,542.64	3,556.06	3,558.57	3,548.68	3,540.12
12	3,533.33	3,531.50	3,528.21	3,522.91	3,517.18	3,512.06	3,521.61	3,542.96	3,556.65	3,558.39	3,548.30	3,540.04
13	3,533.19	3,531.39	3,528.11	3,522.72	3,516.95	3,511.96	3,522.36	3,543.19	3,557.22	3,558.18	3,547.92	3,540.05
14	3,533.02	3,531.25	3,528.04	3,522.55	3,516.73	3,511.88	3,523.44	3,543.37	3,557.55	3,557.93	3,547.53	3,540.08
15	3,532.85	3,531.15	3,527.94	3,522.37	3,516.51	3,511.88	3,524.43	3,543.67	3,557.77	3,557.72	3,547.15	3,540.19
16	3,532.73	3,531.08	3,527.78	3,522.20	3,516.29	3,511.85	3,525.22	3,543.96	3,557.83	3,557.50	3,546.76	3,540.30
17	3,532.57	3,530.99	3,527.70	3,522.01	3,516.13	3,511.81	3,525.87	3,544.15	3,557.89	3,557.25	3,546.35	3,540.33
18	3,532.44	3,530.92	3,527.54	3,521.82	3,515.97	3,511.79	3,526.44	3,544.31	3,557.93	3,557.00	3,546.05	3,540.31
19	3,532.27	3,530.82	3,527.37	3,521.63	3,515.81	3,511.94	3,526.94	3,544.51	3,558.22	3,556.78	3,545.64	3,540.31
20	3,532.13	3,530.80	3,527.17	3,521.43	3,515.63	3,512.06	3,527.37	3,544.81	3,558.50	3,556.53	3,545.29	3,540.32
21	3,532.05	3,530.68	3,527.02	3,521.19	3,515.44	3,512.20	3,527.81	3,545.25	3,558.65	3,556.21	3,544.89	3,540.27
22	3,531.99	3,530.57	3,526.93	3,521.05	3,515.25	3,512.35	3,528.20	3,545.75	3,558.78	3,555.86	3,544.48	3,540.23
23	3,532.02	3,530.43	3,526.73	3,520.84	3,515.06	3,512.55	3,528.62	3,546.18	3,558.97	3,555.53	3,544.18	3,540.15
24	3,531.88	3,530.43	3,526.60	3,520.68	3,514.87	3,512.81	3,529.06	3,546.44	3,559.17	3,555.23	3,543.90	3,540.07
25	3,531.80	3,530.29	3,526.43	3,520.47	3,514.68	3,513.06	3,529.57	3,546.56	3,559.40	3,554.96	3,543.75	3,540.01
26	3,531.70	3,530.21	3,526.29	3,520.33	3,514.49	3,513.37	3,530.09	3,546.76	3,559.62	3,554.62	3,543.59	3,539.98
27	3,531.63	3,530.08	3,526.15	3,520.17	3,514.29	3,513.66	3,530.78	3,547.11	3,559.75	3,554.29	3,543.35	3,539.97
28	3,531.82	3,530.05	3,525.97	3,520.01	3,514.12	3,513.85	3,531.74	3,547.72	3,559.74	3,553.98	3,543.11	3,539.95
29	3,531.86	3,530.03	3,525.80	3,519.87	3,513.91	3,514.06	3,532.54	3,548.60	3,559.75	3,553.65	3,542.82	3,539.96
30	3,532.01	3,529.97	3,525.63	3,519.71	---	3,514.32	3,533.23	3,549.31	3,559.74	3,553.31	3,542.51	3,539.95
31	3,532.06	---	3,525.38	3,519.57	---	3,514.68	---	3,550.00	---	3,552.98	3,542.16	---
MAX	3,535.33	3,532.14	3,529.87	3,525.23	3,519.39	3,514.68	3,533.23	3,550.00	3,559.75	3,559.72	3,552.63	3,541.91
MIN	3,531.63	3,529.97	3,525.38	3,519.57	3,513.91	3,511.79	3,515.08	3,533.90	3,550.45	3,552.98	3,542.16	3,539.95
CONTENTS, IN THOUSANDS OF ACRE-FEET, AT END OF MONTH												
	2,804	2,760	2,666	2,551	2,441	2,456	2,828	3,195	3,421	3,263	3,020	2,972
CHANGE IN CONTENTS, IN ACRE-FEET												
	-72,000	-44,000	-94,000	-115,000	-110,000	+15,000	+372,000	+367,000	+226,000	-158,000	-243,000	-48,000
CALENDAR YEAR 2003 . . . . . +115,000												
WATER YEAR 2004 . . . . . -96,000												

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'24", long 114°02'12" (NAD 27), in SW¼SE¼SW¼ sec.16, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, on right bank 1.7 mi downstream from Hungry Horse Dam, 6.8 mi east of Columbia Falls, and at river mile 3.5.

DRAINAGE AREA.--1,663 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to January 1911 (discharge measurements only), February 1911 to September 1913 (no winter records), October 1913 to August 1916 (scattered daily discharge only), water years 1917-22 (annual maximum), April 1923 to November 1924 (no winter records), July to October 1925, May to November 1927, May 1928 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1923-24(M), 1926-27(M), 1932(M), 1935-36(M). WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Elevation of gage is 3,040 ft (NGVD 29) (levels by the U.S. Bureau of Reclamation). September 1910 to September 1916, nonrecording gage, Apr. 23, 1923, to Sept. 30, 1928, water-stage recorder at site 3 mi downstream at different elevation. Oct. 1, 1928, to Sept. 30, 1952, water-stage recorder at site 1.5 mi downstream at different elevation.

REMARKS.--Water-discharge records excellent. Flow regulated by Hungry Horse Reservoir since Sept. 21, 1951 (see preceding page). U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--76 years (water years, 1929-2004), 3,497 ft<sup>3</sup>/s, 28.56 in/yr, 2,534,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,200 ft<sup>3</sup>/s, June 19, 1916, gage height, 16.6 ft, site and elevation then in use, from rating curve extended above 20,000 ft<sup>3</sup>/s; minimum observed, 7.3 ft<sup>3</sup>/s, Sept. 24, 1951, gage height, 0.52 ft, dam closure, site and elevation then in use; minimum daily, 7.3 ft<sup>3</sup>/s, Sept. 24, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,440 ft<sup>3</sup>/s, June 27, gage height, 9.05 ft; minimum daily, 937 ft<sup>3</sup>/s, Apr. 21.

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	2,370	965	1,730	2,540	2,300	2,560	975	972	3,800	5,750	5,120	5,170
2	2,350	1,230	1,900	2,480	2,380	2,560	975	955	e4,480	5,730	5,130	5,140
3	2,350	1,310	1,840	2,580	2,510	2,530	971	2,550	e4,540	5,720	5,160	4,590
4	2,360	1,440	2,860	e2,610	2,580	2,580	979	4,980	4,520	5,730	5,540	3,930
5	2,310	1,640	3,570	e2,640	2,520	2,600	966	4,980	2,300	5,720	5,820	3,390
6	2,320	1,740	3,100	e2,650	2,440	2,600	966	4,440	2,220	5,210	5,820	2,750
7	2,300	1,800	2,610	e2,710	2,440	2,600	973	4,830	3,690	5,200	5,810	2,470
8	2,350	1,910	2,020	2,750	2,450	2,600	974	2,350	4,530	5,210	5,810	2,450
9	2,390	1,880	1,740	2,580	2,500	2,540	968	2,280	4,550	5,200	5,840	2,440
10	2,370	1,770	2,010	2,400	2,540	2,330	967	3,860	4,540	5,210	5,850	2,480
11	2,370	1,700	2,340	2,370	2,530	2,140	967	4,690	4,530	5,210	5,580	1,920
12	2,360	1,760	2,400	2,390	2,610	1,940	963	4,640	2,220	5,210	5,150	1,920
13	2,360	1,870	2,280	2,370	2,660	1,890	970	4,640	2,160	5,210	5,150	1,960
14	2,340	1,940	2,100	2,340	2,660	1,850	970	4,630	3,560	5,230	5,160	1,950
15	2,360	2,050	1,900	2,340	2,710	1,810	966	2,320	5,250	5,150	5,150	1,940
16	2,260	2,010	1,890	2,330	2,630	1,810	969	2,220	5,710	5,110	5,180	2,490
17	2,190	1,940	2,040	2,330	2,550	1,800	961	3,770	5,700	5,100	5,180	3,420
18	2,180	1,950	2,030	2,380	2,520	1,800	962	4,670	5,630	5,090	5,190	3,400
19	2,190	1,800	2,160	2,430	2,490	1,570	975	4,640	2,410	5,070	5,190	3,390
20	2,200	1,510	2,350	2,430	2,460	1,190	964	4,640	2,340	5,400	5,180	3,400
21	1,980	1,430	2,280	2,420	2,450	1,010	937	4,620	3,780	5,740	5,220	3,390
22	1,470	1,740	2,130	2,510	2,460	977	969	4,640	4,580	5,740	5,240	3,380
23	1,050	2,050	2,130	2,510	2,580	982	963	4,650	4,700	5,690	5,220	3,370
24	1,250	1,910	2,170	2,520	2,590	974	968	5,340	4,620	5,110	5,160	3,360
25	1,490	1,900	2,230	2,570	2,560	975	966	5,940	4,550	5,110	5,160	2,690
26	1,470	1,810	2,240	2,730	2,560	973	969	6,140	4,570	5,120	5,150	2,380
27	1,570	1,700	2,230	2,740	2,490	955	973	6,180	5,330	5,110	5,110	1,930
28	1,590	1,830	2,240	2,860	2,470	979	993	4,700	5,710	5,130	5,100	1,900
29	1,270	1,870	2,270	2,690	2,510	973	957	2,360	5,710	5,140	5,120	1,660
30	989	1,730	2,400	2,490	---	976	972	2,240	5,730	5,100	5,140	1,640
31	938	---	2,550	2,320	---	976	---	2,220	---	5,110	5,170	---
TOTAL	61,347	52,185	69,740	78,010	73,150	54,050	29,048	122,087	127,960	164,560	164,800	86,300
MEAN	1,979	1,740	2,250	2,516	2,522	1,744	968	3,938	4,265	5,308	5,316	2,877
MAX	2,390	2,050	3,570	2,860	2,710	2,600	993	6,180	5,730	5,750	5,850	5,170
MIN	938	965	1,730	2,320	2,300	955	937	955	2,160	5,070	5,100	1,640
MED	2,260	1,800	2,230	2,510	2,520	1,810	968	4,640	4,540	5,210	5,180	2,590
AC-FT	121,700	103,500	138,300	154,700	145,100	107,200	57,620	242,200	253,800	326,400	326,900	171,200
CFSM	1.19	1.05	1.35	1.51	1.52	1.05	0.58	2.37	2.56	3.19	3.20	1.73
IN.	1.37	1.17	1.56	1.75	1.64	1.21	0.65	2.73	2.86	3.68	3.69	1.93

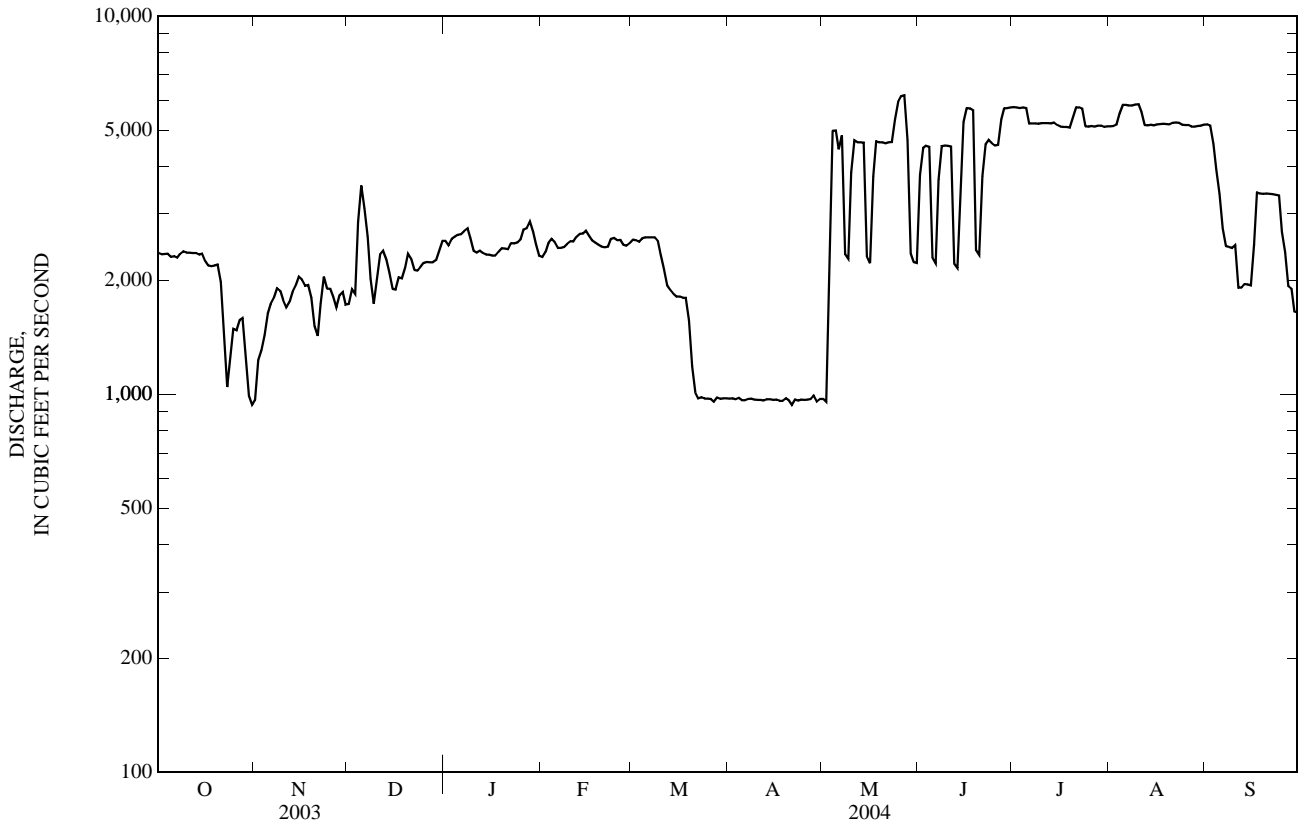
12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT—Continued

ADJUSTED FOR CHANGE IN CONTENTS IN HUNGRY HORSE RESERVOIR

MEAN	808	1,000	720	646	610	1,987	7,220	9,908	8,063	2,739	1,364	2,070
CFSM	0.49	0.60	0.43	0.39	0.37	1.19	4.34	5.96	4.85	1.65	0.82	1.24
IN.	0.56	0.67	0.50	0.45	0.40	1.38	4.84	6.87	5.41	1.90	0.95	1.39
AC-FT	49,700	59,500	44,300	39,700	35,100	122,200	429,620	609,200	479,800	168,400	83,900	123,200

CALENDAR YEAR 2003		TOTAL	953,985	MEAN	2,732	MAX	6,620	MIN	691	AC-FT	1,892,000
WATER YEAR 2004		TOTAL	1,083,237	MEAN	2,960	MAX	6,180	MIN	937	AC-FT	2,149,000
CALENDAR YEAR 2003		TOTAL	1,011,963	MEAN	2,773	CFSM	1.67	IN	22.63	AC-FT	2,007,000
WATER YEAR 2004		TOTAL	1,131,646	MEAN	3,092	CFSM	1.86	IN	25.31	AC-FT	2,245,000

e--Estimated.



12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1964 to September 1968, March 1979 to current year.

INSTRUMENTATION.--Temperature recorder since Mar. 30, 1979.

REMARKS.--Prior to March 1979, thermograph records furnished by Montana Department of Fish, Wildlife, and Parks. Daily temperature record good.

Missing data for June 2-3 due to equipment problems.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.0°C Aug. 9-11, 1966, Aug. 2-6, 1968, Aug. 6, 2003; minimum (water years 1965-68, 1979-81, 1983-88), 2.0°C on many days during winter most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 17.0°C, Aug. 21, 22; minimum, 3.5°C, many days December through June.

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

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	12.5	12.0	12.0	5.0	4.5	4.5	4.5	4.5	4.5	4.0	3.5	3.5
2	12.5	12.0	12.5	4.5	4.0	4.5	4.5	4.5	4.5	3.5	3.5	3.5
3	12.5	12.0	12.0	4.5	4.0	4.0	4.5	4.0	4.5	3.5	3.5	3.5
4	12.5	12.0	12.5	4.5	4.0	4.5	4.5	4.0	4.5	3.5	3.5	3.5
5	12.5	12.0	12.5	4.5	4.0	4.5	4.5	4.0	4.5	3.5	3.5	3.5
6	12.0	10.5	11.5	4.5	4.5	4.5	4.5	4.0	4.5	4.0	3.5	3.5
7	11.0	10.5	11.0	4.5	4.5	4.5	4.5	4.0	4.5	4.0	3.5	3.5
8	11.0	10.5	11.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	3.5	4.0
9	11.0	9.0	10.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	3.5	3.5
10	10.5	8.5	9.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	3.5	3.5
11	10.5	10.0	10.5	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	4.0
12	10.5	10.0	10.5	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	4.0
13	10.5	10.0	10.0	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	4.0
14	10.5	10.0	10.0	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	4.0
15	10.0	9.5	10.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	3.5	4.0
16	10.0	9.5	10.0	5.0	4.5	4.5	4.0	3.5	4.0	4.0	3.5	4.0
17	10.0	9.5	10.0	4.5	4.5	4.5	4.0	3.5	4.0	4.0	3.5	4.0
18	10.0	9.0	9.5	5.0	4.5	4.5	4.0	3.5	3.5	4.0	3.5	4.0
19	10.0	9.0	9.5	5.0	4.5	4.5	4.0	3.5	4.0	4.0	3.5	4.0
20	9.5	6.5	8.5	4.5	4.0	4.5	4.0	3.5	4.0	4.0	3.5	4.0
21	7.0	4.5	5.0	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	4.0
22	4.5	4.5	4.5	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	4.0
23	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	3.5	4.0
24	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	3.5	3.5
25	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	3.5	3.5
26	5.0	4.5	4.5	4.5	4.0	4.5	4.0	4.0	4.0	4.0	3.5	3.5
27	4.5	4.5	4.5	4.5	4.0	4.5	4.0	3.5	4.0	4.0	3.5	3.5
28	4.5	4.5	4.5	4.5	4.0	4.5	4.0	3.5	3.5	4.0	3.5	3.5
29	4.5	4.0	4.5	4.5	4.5	4.5	4.0	3.5	3.5	4.0	3.5	4.0
30	4.5	4.0	4.0	4.5	4.5	4.5	3.5	3.5	3.5	4.0	3.5	4.0
31	4.5	4.0	4.0	---	---	---	3.5	3.5	3.5	4.0	3.5	4.0
MONTH	12.5	4.0	8.5	5.0	4.0	4.5	4.5	3.5	4.0	4.0	3.5	4.0

## 12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT—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	4.0	3.5	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.5	3.5	4.0
2	4.0	3.5	3.5	4.0	3.5	3.5	4.5	4.0	4.0	4.5	3.5	4.0
3	4.0	3.5	3.5	4.0	3.5	3.5	4.5	4.0	4.0	4.0	3.5	4.0
4	4.0	3.5	3.5	4.0	3.5	3.5	4.5	4.0	4.0	4.0	3.5	4.0
5	4.0	3.5	4.0	4.0	3.5	3.5	4.5	4.0	4.0	4.0	3.5	4.0
6	4.0	3.5	3.5	4.0	3.5	3.5	4.5	4.0	4.0	4.5	3.5	4.0
7	4.0	3.5	4.0	4.0	3.5	3.5	4.5	4.0	4.0	4.0	3.5	4.0
8	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.0
9	4.0	3.5	4.0	4.0	3.5	4.0	4.5	4.0	4.0	4.0	4.0	4.0
10	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0
11	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.0	3.5	3.5	3.5
12	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.0	4.0	3.5	4.0
13	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.0	4.5	4.0	4.0
14	4.0	3.5	3.5	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5
15	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5
16	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5
17	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5
18	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.5	4.0
19	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	3.5	4.0
20	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
21	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	3.5	4.0
22	4.0	3.5	3.5	4.5	4.0	4.0	4.5	4.0	4.0	4.0	3.5	4.0
23	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.0	4.0	3.5	4.0
24	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.0	4.0	3.5	4.0
25	4.0	3.5	3.5	4.5	4.0	4.0	4.5	3.5	4.0	4.5	4.0	4.0
26	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0
27	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	4.0	4.0
28	4.0	3.5	3.5	4.5	4.0	4.0	4.0	3.5	4.0	4.0	4.0	4.0
29	4.0	3.5	3.5	4.5	4.0	4.0	4.5	3.5	4.0	4.0	4.0	4.0
30	---	---	---	4.5	4.0	4.0	4.0	3.5	4.0	4.0	4.0	4.0
31	---	---	---	4.0	4.0	4.0	---	---	---	4.0	4.0	4.0
MONTH	4.0	3.5	4.0	4.5	3.5	4.0	4.5	3.5	4.0	4.5	3.5	4.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	4.0	4.0	4.0	12.5	11.5	11.5	16.0	14.5	15.0	15.0	12.5	13.5
2	---	---	---	12.5	11.5	12.0	15.5	14.0	15.0	14.0	12.0	13.0
3	---	---	---	13.0	11.5	12.5	16.0	14.5	15.0	14.0	12.5	13.5
4	4.0	4.0	4.0	13.0	12.0	12.5	16.0	14.0	15.0	14.5	13.0	14.0
5	4.5	4.0	4.0	13.0	12.0	12.5	15.5	14.5	15.0	14.0	12.0	13.0
6	4.5	4.0	4.0	14.5	13.0	13.5	15.0	13.0	14.0	14.0	12.5	13.5
7	4.0	4.0	4.0	14.5	12.5	14.0	15.0	11.0	13.0	14.0	12.5	13.0
8	4.5	4.0	4.0	13.5	10.0	12.5	15.5	13.5	14.5	13.5	12.5	13.0
9	4.5	4.0	4.0	13.0	11.5	12.5	15.5	15.0	15.0	13.5	12.0	13.0
10	4.5	4.0	4.0	13.0	12.0	12.5	15.5	14.5	15.0	13.5	12.5	13.0
11	4.0	4.0	4.0	13.5	11.0	13.0	15.0	14.0	14.5	14.0	13.5	14.0
12	4.0	4.0	4.0	13.5	12.5	13.0	15.5	13.5	14.5	14.0	13.5	14.0
13	4.5	4.0	4.0	13.5	13.0	13.0	15.5	14.0	15.0	14.0	14.0	14.0
14	4.5	4.0	4.0	13.5	13.0	13.5	15.5	14.0	15.0	14.0	13.5	13.5
15	4.0	3.5	4.0	14.0	13.0	13.5	15.5	14.5	15.0	13.5	13.5	13.5
16	4.0	3.5	4.0	14.5	13.5	14.0	16.0	14.0	15.0	13.5	12.5	13.0
17	4.5	4.0	4.0	14.5	13.5	14.0	16.5	15.0	16.0	13.5	13.0	13.0
18	4.5	4.0	4.5	15.5	13.5	14.0	16.5	13.5	14.5	13.0	13.0	13.0
19	4.5	4.0	4.5	16.0	15.0	15.5	15.5	14.0	15.0	13.0	11.0	12.0
20	4.5	4.0	4.0	15.5	14.5	15.0	16.0	13.5	14.5	12.5	12.0	12.5
21	4.0	4.0	4.0	14.5	13.5	14.0	17.0	15.0	16.0	12.5	12.0	12.0
22	8.0	4.0	6.5	15.5	14.0	14.5	17.0	13.5	15.5	12.0	11.0	11.5
23	11.0	8.0	10.0	16.0	15.0	15.5	16.5	13.5	15.5	12.0	11.5	11.5
24	12.0	10.0	11.0	16.0	15.5	16.0	16.0	13.5	15.0	12.0	11.5	11.5
25	12.0	11.0	11.5	16.0	15.0	15.5	16.0	15.0	15.5	12.5	11.5	12.0
26	11.0	10.5	11.0	16.0	15.0	15.5	15.0	13.5	14.5	12.5	11.5	12.0
27	12.0	11.0	11.5	15.5	13.5	14.5	15.0	13.5	14.0	12.0	11.5	12.0
28	13.0	11.5	12.0	16.5	14.0	15.0	14.5	12.5	13.5	12.0	12.0	12.0
29	12.5	12.0	12.0	16.0	14.5	15.0	15.5	13.0	14.0	12.0	11.5	12.0
30	13.5	12.0	12.5	15.5	14.5	15.0	15.5	13.5	14.5	12.0	11.0	11.5
31	---	---	---	16.5	14.0	15.0	15.0	13.0	14.0	---	---	---
MONTH	13.5	3.5	6.0	16.5	10.0	14.0	17.0	11.0	15.0	15.0	11.0	13.0



12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'43", long 114°11'02" (NAD 27), in NW¼NW¼SE¼ sec.17, T.30 N., R.20 W., Flathead County, Hydrologic Unit 17010208, on right bank 200 ft downstream from county road bridge at Columbia Falls, 5.7 mi downstream from South Fork, and at river mile 143.0.  
DRAINAGE AREA.--4,464 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1922 to September 1923 (fragmentary), June 1928 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1092: 1923. WSP 1216: Drainage area. WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Elevation of gage is 2,977.67 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Nov. 12, 1928, nonrecording gage on bridge 200 ft upstream at elevation 0.19 ft higher.

REMARKS.--Water-discharge records excellent. South Fork Flathead River, which contributes about one-third of flow, is completely regulated by Hungry Horse Reservoir 10.9 mi upstream since Sept. 21, 1951 (see station number 12362000). Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--76 years, 9,589 ft<sup>3</sup>/s, 29.17 in/yr, 6,947,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 176,000 ft<sup>3</sup>/s, June 9, 1964, gage height, 25.58 ft, from floodmarks, from rating curve extended above 95,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 798 ft<sup>3</sup>/s, Dec. 8, 1929, gage height, -0.08 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 22.7 ft, from floodmarks, discharge, 142,000 ft<sup>3</sup>/s, from rating curve extended above 95,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow in 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,400 ft<sup>3</sup>/s, May 5, gage height, 10.01 ft; minimum daily, 3,290 ft<sup>3</sup>/s, Dec. 19.

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	3,460	3,530	3,450	3,440	3,550	3,540	6,810	13,500	16,700	17,100	8,260	10,400
2	3,500	3,410	3,360	3,450	3,500	3,560	7,020	14,000	17,200	17,200	8,170	10,100
3	3,490	3,490	3,430	3,400	3,500	3,530	6,900	18,200	17,400	16,800	8,140	9,380
4	3,500	3,430	4,100	3,330	3,570	3,520	6,960	24,800	18,700	16,200	8,180	8,430
5	3,470	3,440	4,790	3,380	3,700	3,560	7,670	26,000	19,400	16,200	8,650	7,650
6	3,460	3,440	4,960	e3,350	3,600	3,600	8,840	24,200	21,200	15,100	8,580	6,830
7	3,440	3,460	4,660	e3,500	3,540	3,590	10,200	22,300	22,400	14,500	8,600	6,290
8	3,430	3,460	4,130	3,580	3,530	3,590	11,500	20,100	21,900	14,900	8,820	6,090
9	3,470	3,490	3,540	3,680	3,530	3,670	12,000	20,500	19,700	14,300	8,760	5,930
10	3,470	3,480	3,380	3,610	3,580	3,730	11,200	20,600	18,300	13,600	8,600	5,810
11	3,470	3,450	3,350	3,610	3,580	3,760	10,800	20,000	17,800	13,100	8,360	5,310
12	3,470	3,410	3,540	3,630	3,550	3,720	10,700	18,500	16,300	12,600	7,700	5,260
13	3,470	3,410	3,570	3,610	3,550	3,660	11,800	16,900	15,600	12,100	7,590	5,560
14	3,480	3,400	3,620	3,560	3,530	3,650	14,300	15,700	16,200	11,800	7,530	5,820
15	3,480	3,470	3,540	3,550	3,640	3,610	16,600	12,900	17,900	11,600	7,450	6,500
16	3,470	3,500	3,370	3,540	3,690	3,590	15,300	12,000	17,900	11,300	7,420	7,650
17	3,470	3,470	3,390	3,510	3,640	3,570	13,500	13,000	17,200	11,100	7,430	9,590
18	3,450	3,450	3,400	3,490	3,600	3,680	12,100	14,800	16,800	10,900	7,550	9,700
19	3,470	3,560	3,290	3,540	3,640	4,130	11,200	15,700	13,100	10,500	7,590	10,300
20	3,520	3,630	3,330	3,540	3,610	4,270	10,700	17,000	12,100	10,700	7,570	10,300
21	3,600	3,560	3,470	3,520	3,560	3,880	10,100	18,500	13,100	11,300	7,640	9,810
22	3,950	3,380	3,530	3,540	3,510	3,740	9,560	19,400	14,700	11,000	7,770	9,330
23	3,810	3,530	3,470	3,570	3,490	3,930	9,300	18,300	15,800	10,600	7,980	8,870
24	3,520	3,570	3,360	3,590	3,550	4,330	9,610	17,300	16,500	9,760	9,000	8,540
25	3,620	3,610	3,370	3,530	3,570	4,790	10,400	16,800	16,800	9,350	10,900	7,700
26	3,540	3,590	3,470	3,600	3,580	5,180	10,600	16,900	17,500	9,160	13,800	7,090
27	3,470	3,440	3,470	3,570	3,580	5,380	11,600	18,500	17,700	8,970	13,300	6,420
28	3,460	3,340	3,430	3,510	3,530	5,300	15,400	19,200	17,200	8,820	12,400	6,080
29	3,700	3,550	3,390	3,600	3,500	5,140	16,500	18,300	16,600	8,660	11,700	5,680
30	4,070	3,580	3,330	3,730	---	5,190	14,600	17,600	16,600	8,480	11,300	5,480
31	3,880	---	3,380	3,610	---	5,830	---	16,500	---	8,360	10,800	---
TOTAL	110,060	104,530	111,870	109,670	103,500	126,220	333,770	558,000	516,300	376,060	277,540	227,900
MEAN	3,550	3,484	3,609	3,538	3,569	4,072	11,130	18,000	17,210	12,130	8,953	7,597
MAX	4,070	3,630	4,960	3,730	3,700	5,830	16,600	26,000	22,400	17,200	13,800	10,400
MIN	3,430	3,340	3,290	3,330	3,490	3,520	6,810	12,000	12,100	8,360	7,420	5,260
AC-FT	218,300	207,300	221,900	217,500	205,300	250,400	662,000	1,107,000	1,024,000	745,900	550,500	452,000
CFSM	0.80	0.78	0.81	0.79	0.80	0.91	2.49	4.03	3.86	2.72	2.01	1.70
IN.	0.92	0.87	0.93	0.91	0.86	1.05	2.78	4.65	4.30	3.13	2.31	1.90

ADJUSTED FOR CHANGE IN CONTENTS IN HUNGRY HORSE RESERVOIR

MEAN	2,379	2,744	2,080	1,667	1,657	4,316	17,380	23,970	21,010	9,561	5,001	6,789
CFSM	0.53	0.61	0.47	0.37	0.37	0.97	3.89	5.37	4.71	2.14	1.12	1.52
IN.	0.61	0.69	0.54	0.43	0.40	1.11	4.34	6.19	5.25	2.47	1.29	1.70
AC-FT	146,300	163,300	127,900	102,500	95,300	265,400	1,034,000	1,474,000	1,250,000	587,900	307,500	404,000

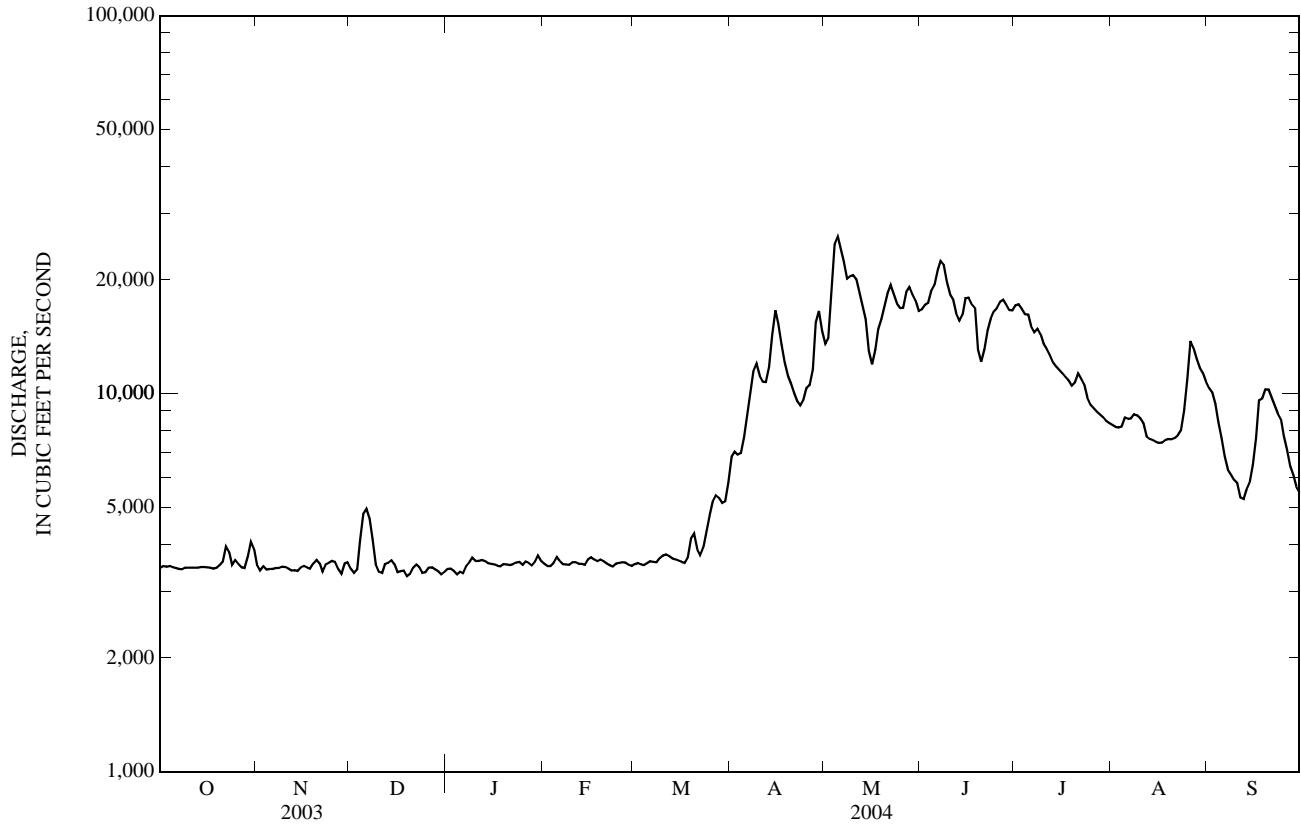
OBSERVED

CALENDAR YEAR 2003	TOTAL	2,701,600	MEAN	7,402	MAX	38,700	MIN	3,290	AC-FT	5,359,000
WATER YEAR 2004	TOTAL	2,955,420	MEAN	8,075	MAX	26,000	MIN	3,290	AC-FT	5,862,000

ADJUSTED

CALENDAR YEAR 2003	TOTAL	2,759,567	MEAN	7,560	CFSM	1.69	IN	22.99	AC-FT	5,474,000
WATER YEAR 2004	TOTAL	3,003,832	MEAN	8,207	CFSM	1.84	IN	25.03	AC-FT	5,958,000

e--Estimated.



WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1963-67, 1970, 1979 to September 1994. March 2002 to current year. Water years 1968-69 published as Flathead River near Kalispell (station 12363500) 15 mi downstream. No appreciable inflow or outflow occurs between the two points.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1964 to September 1967, March 1979 to September 1981.

WATER TEMPERATURE: January 1949 to September 1950, August 1963 to September 1969, March 1979 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1965 to September 1969.

INSTRUMENTATION.--Temperature recorder since Mar. 27, 1979.

REMARKS.--Daily water temperature record rated good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 290 microsiemens per centimeter ( $\mu\text{S}/\text{cm}$ ) at 25.0°C, April 6, 1980; minimum daily, 121  $\mu\text{S}/\text{cm}$  at 25.0°C, May 28, 1979.

WATER TEMPERATURE: Maximum, 21.0°C, Aug. 23, 1963, Aug. 8, 1968; minimum, 0.0°C on several days during winter periods most years.

SEDIMENT CONCENTRATION: Maximum daily, 980 mg/L, May 21, 1967; Minimum daily, 1 mg/L on several days most years.

SEDIMENT LOAD: Maximum daily, 140,000 tons, May 23, 1967; minimum daily, 4 tons, Mar. 4-6, 1967.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 18.5°C, Aug. 17; minimum, 0.5°C, Nov. 22 and Jan. 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, water, unfltrd $\mu\text{S}/\text{cm}$ 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)
APR									
06...	0845	8,670	8.0	163	7.0	5.5	<.010	.172	E.001
JUN									
03...	1415	17,500	8.1	147	24.5	10.0	<.010	.077	E.001
JUL									
12...	1430	12,600	8.2	148	26.0	14.0	<.010	.037	<.002
SEP									
28...	1215	6,090	8.3	162	14.0	12.0	<.010	.044	E.001

E--Estimated.

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water unfltrd mg/L (62855)	Suspended sediment, percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
APR 06...	<.006	.023	.31	91	30	702
JUN 03...	<.006	.004	.12	73	5	236
JUL 12...	<.006	<.004	.10	83	1	34
SEP 28...	<.006	<.004	.14	67	4	66

E--Estimated.

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

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.0	10.5	11.5	2.5	1.0	1.5	2.5	1.5	2.0	2.5	1.0	2.0
2	13.0	10.5	12.0	2.5	1.5	2.0	3.0	2.5	2.5	2.0	1.0	1.5
3	13.0	11.0	12.0	2.5	1.5	2.0	3.5	2.5	3.0	2.0	0.5	1.0
4	13.0	11.0	11.5	2.5	1.0	1.5	3.0	2.0	2.5	2.0	1.0	1.5
5	13.5	11.0	12.0	2.5	1.5	2.0	3.5	2.5	3.0	2.0	1.0	1.5
6	13.0	11.0	11.5	3.5	1.5	2.5	3.5	3.0	3.5	2.0	1.0	1.5
7	12.5	10.5	11.0	3.0	1.5	2.0	3.5	2.5	3.0	2.5	2.0	2.0
8	11.5	10.0	11.0	3.5	2.0	2.5	2.5	2.0	2.5	3.0	2.5	2.5
9	11.0	9.5	10.5	3.0	2.0	2.5	3.0	2.0	2.5	3.0	2.5	2.5
10	10.5	8.5	9.0	3.0	2.5	3.0	2.5	1.5	2.0	3.0	2.5	2.5
11	10.0	8.5	9.5	4.0	3.0	3.5	2.5	1.5	2.0	3.5	2.5	2.5
12	10.0	9.5	9.5	4.0	2.5	3.0	2.5	2.5	2.5	3.0	2.5	2.5
13	9.5	9.0	9.5	4.0	2.5	3.0	2.5	2.0	2.5	3.0	2.5	2.5
14	10.0	8.5	9.0	3.5	2.5	3.0	2.5	2.0	2.0	3.0	2.5	2.5
15	10.0	8.5	9.0	4.0	3.0	3.5	3.0	2.0	2.5	2.5	2.5	2.5
16	9.0	8.5	9.0	4.0	3.5	4.0	2.5	2.0	2.5	3.0	2.5	2.5
17	11.0	9.0	9.5	4.0	3.5	4.0	3.5	2.0	2.5	3.0	2.5	2.5
18	11.0	9.0	9.5	4.5	3.5	4.0	2.5	1.5	2.0	3.0	2.5	2.5
19	10.0	8.5	9.5	5.0	4.0	4.5	2.5	1.5	2.0	3.0	2.5	2.5
20	9.5	8.0	9.0	4.0	3.0	3.5	2.5	2.0	2.5	3.0	2.5	2.5
21	9.5	7.5	8.5	3.0	1.0	1.5	3.0	2.5	2.5	3.0	2.5	2.5
22	9.5	7.5	8.5	2.0	0.5	1.5	3.0	2.5	2.5	3.0	2.5	2.5
23	8.0	7.0	7.5	2.5	1.5	2.0	2.5	2.0	2.0	3.0	2.5	3.0
24	7.5	5.5	6.5	2.5	1.5	2.0	2.5	2.0	2.5	3.0	1.5	2.5
25	6.5	4.5	5.5	2.5	1.5	2.0	3.0	2.5	2.5	2.0	1.0	1.5
26	6.5	4.5	5.5	3.0	2.0	2.5	3.0	2.5	3.0	3.0	2.0	2.5
27	6.5	5.0	5.5	2.5	2.0	2.5	3.0	2.5	2.5	3.0	1.0	2.0
28	6.5	5.5	6.0	2.5	2.0	2.0	2.5	2.0	2.0	3.5	1.5	2.5
29	6.5	4.5	5.5	3.5	2.5	3.0	2.5	1.5	2.0	3.5	3.0	3.0
30	4.5	1.5	3.0	3.0	2.0	2.5	2.5	1.5	2.0	4.0	2.5	3.0
31	2.5	1.0	1.5	---	---	---	2.5	2.0	2.0	3.0	2.0	2.5
MONTH	13.5	1.0	8.5	5.0	0.5	2.5	3.5	1.5	2.5	4.0	0.5	2.0

## PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT—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	3.5	2.0	2.5	4.5	3.0	3.5	5.0	4.0	4.5	8.5	6.5	7.5
2	3.5	2.0	2.5	4.5	2.5	3.5	5.5	3.5	4.5	9.0	7.5	8.5
3	3.5	1.5	2.0	3.5	2.5	3.0	6.5	4.5	5.5	9.0	7.5	8.0
4	3.5	2.0	2.5	4.0	2.5	3.0	7.0	5.5	6.0	7.5	6.5	7.0
5	3.0	2.5	2.5	3.5	2.5	3.0	6.0	5.0	5.5	7.0	6.0	6.5
6	3.0	2.0	2.5	4.5	2.5	3.0	6.5	5.5	6.0	7.5	5.5	6.5
7	3.5	2.0	2.5	3.5	2.5	3.0	6.5	5.0	6.0	8.0	7.0	7.5
8	3.5	2.5	2.5	5.0	3.5	4.0	6.0	4.5	5.0	8.0	7.0	7.5
9	4.0	2.5	3.0	4.5	3.5	4.0	5.5	4.0	5.0	7.0	6.5	7.0
10	3.5	2.5	3.0	5.5	3.0	4.0	6.5	4.5	5.5	7.0	6.0	6.5
11	4.0	2.0	3.0	5.5	3.0	4.0	6.5	5.0	6.0	6.5	6.0	6.0
12	4.0	2.0	2.5	4.5	3.0	3.5	7.0	5.5	6.5	6.0	5.0	5.5
13	4.0	2.0	2.5	6.0	3.0	4.0	7.0	6.0	6.5	6.0	5.0	5.5
14	3.0	2.5	2.5	4.5	3.5	4.0	7.0	6.0	6.5	6.5	5.5	6.0
15	3.5	2.5	3.0	4.5	3.0	3.5	6.0	4.5	5.0	8.5	6.0	7.0
16	4.0	2.5	3.0	4.0	3.5	3.5	5.5	4.5	5.0	8.5	7.0	8.0
17	4.0	3.0	3.5	4.5	4.0	4.0	6.0	4.5	5.5	8.5	7.5	8.0
18	4.0	3.0	3.5	5.5	4.0	4.5	6.0	5.0	5.5	8.5	7.0	8.0
19	4.0	3.0	3.5	4.5	3.0	4.0	6.5	5.5	6.0	9.0	8.0	8.5
20	4.0	3.0	3.5	5.0	2.5	3.5	6.5	5.5	6.0	8.5	8.0	8.0
21	4.5	3.0	3.5	5.5	3.0	4.0	7.5	5.0	6.0	8.0	7.0	7.5
22	4.5	2.5	3.0	7.0	4.0	5.0	7.5	5.5	6.5	7.0	6.5	6.5
23	4.5	2.0	3.0	5.5	4.5	5.0	8.0	6.5	7.5	7.5	6.0	6.5
24	4.0	2.5	3.0	5.0	4.0	4.5	8.0	6.5	7.5	8.0	6.0	7.0
25	5.0	3.0	4.0	5.5	3.5	4.5	7.5	6.0	7.0	8.5	7.0	7.5
26	5.0	3.5	4.0	5.0	4.0	4.5	8.5	6.5	7.5	8.0	7.0	7.5
27	5.0	3.5	4.0	4.5	4.0	4.0	8.5	7.5	8.0	8.0	7.0	7.5
28	4.5	3.0	3.5	6.0	3.5	4.5	8.0	6.5	7.0	8.0	7.5	7.5
29	5.5	3.0	4.0	6.5	4.0	5.5	7.0	5.0	6.0	7.5	7.0	7.5
30	---	---	---	7.0	4.5	5.5	8.0	6.0	7.0	8.0	7.0	7.5
31	---	---	---	6.0	5.0	5.5	---	---	---	8.0	7.5	7.5
MONTH	5.5	1.5	3.0	7.0	2.5	4.0	8.5	3.5	6.0	9.0	5.0	7.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.5	7.5	8.0	14.0	13.0	13.5	17.5	15.5	16.5	14.5	13.5	14.0
2	9.0	7.5	8.0	14.0	12.5	13.0	16.5	15.5	16.0	13.5	12.5	13.0
3	9.5	8.5	9.0	14.0	13.0	13.5	17.0	15.5	16.0	13.5	12.0	12.5
4	11.0	9.0	10.0	13.0	12.0	12.5	17.0	15.0	16.0	13.5	12.5	13.0
5	10.5	9.5	10.0	13.5	12.0	12.5	17.0	15.0	16.0	13.5	12.5	13.0
6	9.5	8.0	9.0	14.5	12.5	13.5	16.0	15.0	15.5	14.0	12.0	13.0
7	8.0	7.0	7.5	14.0	12.5	13.5	15.0	13.0	14.0	13.5	12.5	13.0
8	8.0	7.0	7.5	12.5	11.0	12.0	16.5	13.5	15.0	14.0	11.5	13.0
9	8.0	7.5	7.5	13.0	11.0	12.0	17.0	15.0	16.0	14.0	12.5	13.0
10	9.0	7.5	8.0	14.5	13.0	13.5	17.0	15.0	16.0	14.0	12.0	13.0
11	9.0	7.5	8.0	14.5	13.0	13.5	17.0	14.5	15.5	13.5	12.5	12.5
12	8.0	7.5	7.5	14.0	12.5	13.5	17.0	15.0	16.0	13.0	12.0	12.5
13	8.5	7.5	8.0	15.0	13.5	14.0	17.0	15.0	16.0	13.0	12.5	12.5
14	9.0	8.0	8.5	16.0	14.0	15.0	17.5	15.0	16.0	12.5	11.5	12.0
15	8.0	7.5	8.0	17.0	15.0	16.0	17.5	15.5	16.0	11.5	11.0	11.5
16	9.5	7.5	8.5	17.5	16.0	16.5	17.5	15.5	16.5	11.5	11.0	11.5
17	9.5	8.5	9.0	17.0	15.5	16.0	18.5	16.0	17.0	12.0	11.0	11.5
18	9.0	7.5	8.5	16.5	15.0	15.5	17.0	15.5	16.0	11.5	11.0	11.0
19	10.0	8.5	9.0	18.0	16.0	16.5	16.5	15.0	16.0	11.0	10.0	10.5
20	9.5	8.5	9.0	17.0	15.5	16.5	16.5	14.5	15.5	11.0	10.0	10.5
21	10.5	8.5	9.5	16.0	14.5	15.5	18.0	15.5	16.5	10.5	10.0	10.0
22	12.0	10.0	11.0	16.5	14.5	15.5	17.0	15.0	16.0	11.0	10.0	10.5
23	13.0	11.0	12.0	17.5	15.5	16.5	16.0	14.0	15.0	11.0	10.5	11.0
24	13.5	12.0	12.5	18.0	15.5	16.5	14.5	13.5	14.0	12.5	11.0	11.5
25	13.0	12.5	12.5	18.0	16.0	17.0	14.0	13.5	14.0	12.5	11.0	11.5
26	12.5	11.0	11.5	18.0	16.0	17.0	13.5	12.5	13.0	12.5	11.0	12.0
27	12.5	11.0	11.5	17.0	15.5	16.0	14.0	13.0	13.5	12.5	11.0	11.5
28	14.0	12.0	13.0	17.0	15.5	16.5	13.5	13.0	13.0	12.5	11.0	11.5
29	14.0	13.0	13.5	17.5	15.5	16.5	14.5	13.0	13.5	12.5	11.0	11.5
30	14.5	13.5	14.0	17.5	15.5	16.5	15.0	13.5	14.0	12.5	11.0	11.5
31	---	---	---	17.0	15.5	16.5	15.0	14.0	14.5	---	---	---
MONTH	14.5	7.0	9.5	18.0	11.0	15.0	18.5	12.5	15.5	14.5	10.0	12.0

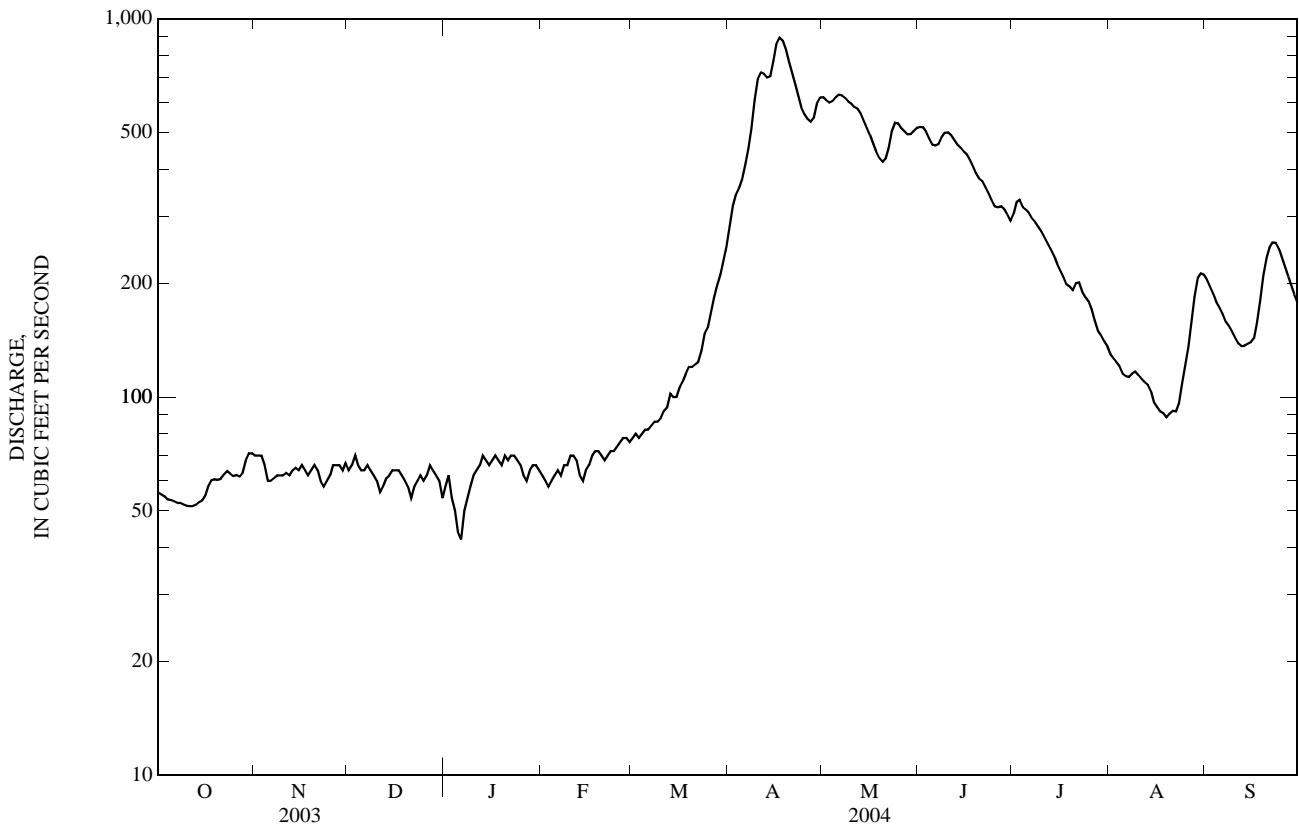


12365000 STILLWATER RIVER NEAR WHITEFISH, MT—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1931 - 2004*	
ANNUAL TOTAL	69,350		77,218			
ANNUAL MEAN	190		211		336	
HIGHEST ANNUAL MEAN					747	1996
LOWEST ANNUAL MEAN					124	1944
HIGHEST DAILY MEAN	706	Apr 28	892	Apr 17	4,560	May 18, 1997
LOWEST DAILY MEAN	48	Sep 3	42	Jan 6	17	Aug 17, 1992
ANNUAL SEVEN-DAY MINIMUM	50	Sep 2	50	Jan 3	37	Sep 6, 1988
MAXIMUM PEAK FLOW			896	Apr 17	a4,570	May 18, 1997
MAXIMUM PEAK STAGE			7.45	Apr 17	b20.90	May 26, 1948
INSTANTANEOUS LOW FLOW					c2.9	Aug 18, 1992
ANNUAL RUNOFF (AC-FT)	137,600		153,200		243,800	
ANNUAL RUNOFF (CFSM)	0.363		0.403		0.642	
ANNUAL RUNOFF (INCHES)	4.92		5.48		8.73	
10 PERCENT EXCEEDS	538		532		935	
50 PERCENT EXCEEDS	105		112		140	
90 PERCENT EXCEEDS	58		60		70	

\*--During periods of operation [October and November 1930 (monthly discharge only, published in WSP 1316), December 1930 to September 1950, October 1972 to September 1985, April 1986 to September 1999 (seasonal record only), October 1999 to current year].

- a--Gage height, 20.20 ft.
- b--From floodmark.
- c--Result of upstream mud slide.
- e--Estimated.



12366000 WHITEFISH RIVER NEAR KALISPELL, MT

LOCATION.--Lat 48°19'13", long 114°16'39" (NAD 27), in SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.34, T.30 N., R.21 W., Flathead County, Hydrologic Unit 17010210, on right bank 160 ft upstream from road bridge, 8.0 mi north of Kalispell, and at river mile 12.8.

DRAINAGE AREA.--170 mi<sup>2</sup>.

PERIOD OF RECORD.--July to November 1928, April 1929 to September 1950, annual maximum 1964, October 1972 to September 1985, April 1986 to September 1995, October 1995 to September 1999 (seasonal record only), October 1999 to current year. Prior to 1964, published as Whitefish Creek near Kalispell.

GAGE.--Water-stage recorder. Elevation of gage is 2,969.83 ft (NGVD 29). Prior to Oct. 16, 1930, nonrecording gage at site 200 ft downstream at elevation 10.00 ft lower. Oct. 16, 1930, to Sept. 30, 1950, water-stage recorder on left bank at same elevation.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by Whitefish Lake. Diversion for irrigation of about 650 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

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	45	49	53	e42	e49	53	114	397	472	300	123	132
2	44	48	52	e44	e48	52	115	400	469	298	118	135
3	45	47	52	e42	e46	51	118	408	462	288	112	132
4	45	46	52	e42	e43	52	125	422	457	279	110	131
5	45	45	51	e40	e42	53	139	440	457	274	108	131
6	44	44	51	e36	e44	54	150	450	465	263	106	130
7	44	e43	51	e32	e46	54	165	456	472	259	105	129
8	43	42	52	e35	e44	54	183	461	472	252	103	127
9	45	e42	53	e40	e46	55	218	475	463	241	100	127
10	42	41	e52	e42	e47	56	219	479	460	235	98	125
11	41	42	e50	e44	e48	56	225	482	458	226	95	125
12	41	42	e46	e46	e48	57	239	481	454	220	95	125
13	41	42	e48	e48	e47	57	255	475	448	213	94	128
14	41	42	e49	e49	e45	58	290	467	439	203	90	133
15	41	43	e52	e48	e44	58	323	459	435	195	87	136
16	48	44	e51	e46	e46	58	335	448	423	189	84	144
17	45	45	e49	e47	e48	58	355	434	411	181	82	148
18	45	46	e47	e46	e50	62	358	421	399	173	85	152
19	45	47	e46	e46	e52	69	361	415	388	171	83	164
20	45	48	e44	e46	e56	72	363	414	378	182	85	169
21	45	50	e42	e45	e54	72	395	422	370	181	83	178
22	44	51	e44	e46	e53	72	390	435	361	173	83	184
23	45	e53	e46	e45	e52	75	381	442	350	165	90	187
24	44	53	e45	e46	e50	77	378	433	339	159	94	188
25	42	e53	e42	e47	e48	78	369	424	330	154	109	188
26	42	51	e44	e48	e49	81	364	422	326	148	136	188
27	43	e51	e46	e48	e50	85	362	431	321	141	138	187
28	45	50	e45	e46	e52	86	381	440	312	135	137	186
29	59	52	e44	e44	e52	87	393	456	302	133	132	185
30	54	54	e42	e42	---	93	395	471	295	130	133	181
31	50	---	e40	e46	---	106	---	474	---	126	132	---
TOTAL	1,388	1,406	1,481	1,364	1,399	2,051	8,458	13,734	12,188	6,287	3,230	4,575
MEAN	44.8	46.9	47.8	44.0	48.2	66.2	282	443	406	203	104	152
MAX	59	54	53	49	56	106	395	482	472	300	138	188
MIN	41	41	40	32	42	51	114	397	295	126	82	125
AC-FT	2,750	2,790	2,940	2,710	2,770	4,070	16,780	27,240	24,170	12,470	6,410	9,070
CFSM	0.26	0.28	0.28	0.26	0.28	0.39	1.66	2.61	2.39	1.19	0.61	0.90
IN.	0.30	0.31	0.32	0.30	0.31	0.45	1.85	3.01	2.67	1.38	0.71	1.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2004, BY WATER YEAR (WY)\*

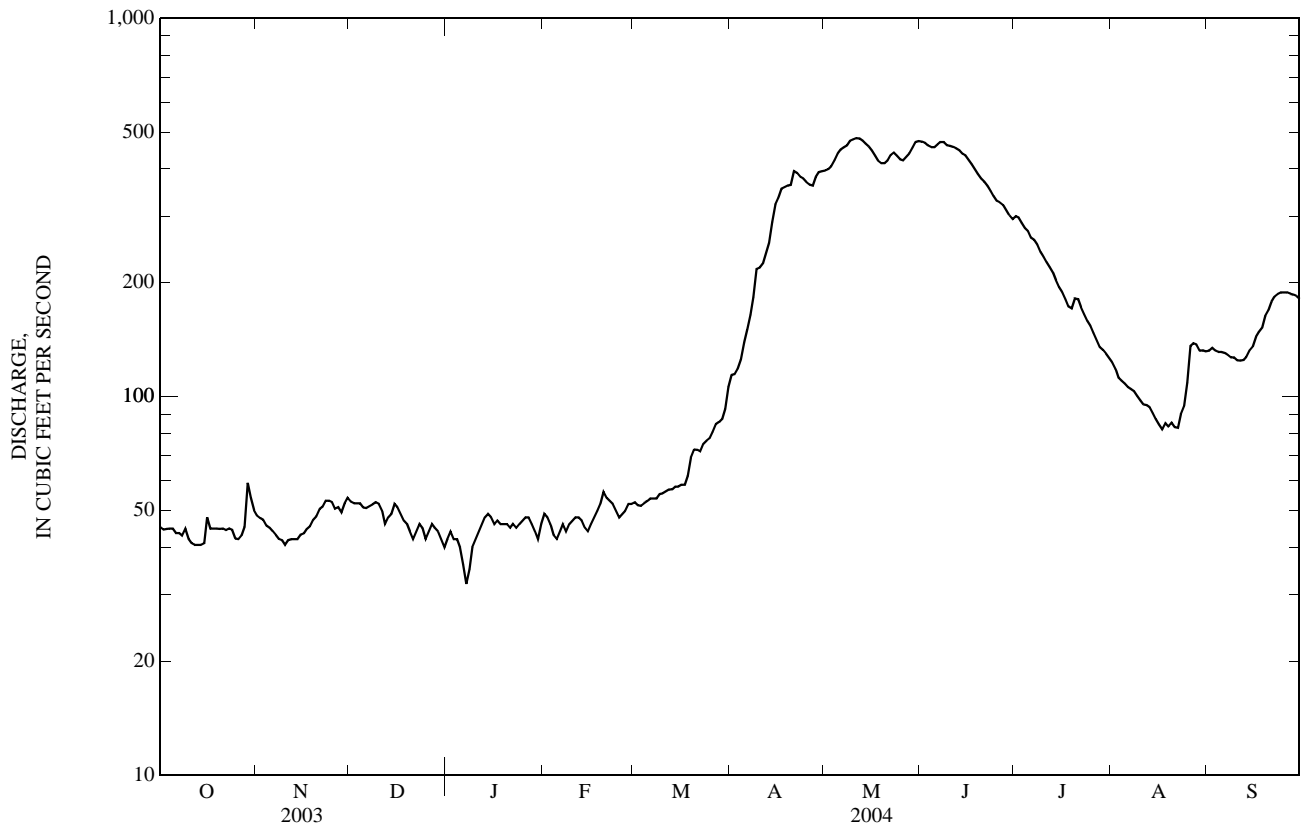
MEAN	67.9	70.6	70.7	66.6	64.8	94.5	227	529	604	273	111	81.9
MAX	150	177	231	209	157	212	549	895	1,194	695	238	152
(WY)	(1948)	(1934)	(1934)	(1934)	(1934)	(1936)	(1934)	(1997)	(1974)	(1974)	(1993)	(2004)
MIN	9.98	20.1	23.0	13.9	15.5	48.2	83.4	214	211	88.5	29.5	23.9
(WY)	(1931)	(1937)	(1936)	(1938)	(1938)	(2001)	(2001)	(1944)	(1977)	(1941)	(1931)	(1931)

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 2004*	
ANNUAL TOTAL	50,599		57,561			
ANNUAL MEAN	139		157		186	
HIGHEST ANNUAL MEAN					320	1974
LOWEST ANNUAL MEAN					88.9	2001
HIGHEST DAILY MEAN	581	Jun 11	482	May 11	1,580	Jun 23, 1974
LOWEST DAILY MEAN	37	Feb 25	32	Jan 7	5.0	Oct 17, 1934
ANNUAL SEVEN-DAY MINIMUM	42	Oct 9	38	Jan 3	5.3	Oct 15, 1934
MAXIMUM PEAK FLOW			484	May 11	1,580	Jun 24, 1974
MAXIMUM PEAK STAGE			2.85	May 11	4.91	Jun 24, 1974
INSTANTANEOUS LOW FLOW					4.5	Oct 18, 1934
ANNUAL RUNOFF (AC-FT)	100,400		114,200		134,400	
ANNUAL RUNOFF (CFSM)	0.815		0.925		1.09	
ANNUAL RUNOFF (INCHES)	11.07		12.60		14.83	
10 PERCENT EXCEEDS	362		426		503	
50 PERCENT EXCEEDS	56		84		91	
90 PERCENT EXCEEDS	44		44		43	

\*--During periods of operation (July to November 1928, April 1929 to September 1950, annual maximum 1964, October 1972 to September 1985, April 1986 to September 1995, October 1995 to September 1999 (seasonal record only), October 1999 to current year.  
 e--Estimated.





12370000 SWAN RIVER NEAR BIGFORK, MT

LOCATION.--Lat 48°01'28", long 113°58'44" (NAD 27), near center of S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub> sec.11, T.26 N., R.19 W., Lake County, Hydrologic Unit 17010211, on left bank 0.2 mi downstream from Johnson Creek, 0.4 mi downstream from Swan Lake, 5.1 mi southeast of Bigfork, and at river mile 14.0.

DRAINAGE AREA.--671 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1910 to May 1911 (gage heights only), April 1922 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1246: 1923-24(M), 1930. WSP 1316: 1923.

GAGE.--Water-stage recorder. Elevation of gage is 3,062.6 ft (NGVD 29) (from river-profile survey). Oct. 10, 1910, to May 22, 1911, nonrecording gage at site 10 mi upstream at different elevation. Apr. 28, 1922, to Oct. 14, 1930, nonrecording gage at site 800 ft upstream at elevation 1.9 ft higher.

REMARKS.--Records good. Diversions for irrigation of about 360 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

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	312	629	431	317	362	364	1,130	1,470	2,630	1,880	645	875
2	309	624	439	312	358	372	1,170	1,480	2,540	1,850	625	824
3	312	610	441	313	351	375	1,160	1,580	2,400	1,800	594	786
4	304	595	444	306	343	380	1,140	1,840	2,300	1,730	583	754
5	300	569	428	295	339	386	1,140	2,150	2,340	1,680	570	720
6	300	538	435	281	343	383	1,190	2,440	2,570	1,620	544	696
7	297	497	440	272	337	373	1,290	2,590	2,890	1,540	566	659
8	294	474	452	276	334	370	1,400	2,620	3,030	1,490	563	635
9	307	452	449	285	330	383	1,550	2,660	2,820	1,430	552	607
10	306	451	433	298	324	401	1,650	2,630	2,590	1,340	532	581
11	307	460	418	312	318	437	1,640	2,510	2,460	1,290	520	569
12	307	472	418	321	313	469	1,590	2,360	2,480	1,230	501	563
13	314	471	417	326	299	501	1,540	2,160	2,550	1,160	482	571
14	318	456	431	328	294	547	1,600	1,960	2,520	1,110	468	592
15	328	445	432	329	290	571	1,790	1,760	2,460	1,070	451	619
16	337	440	429	325	297	593	1,920	1,580	2,360	1,030	441	682
17	340	427	411	324	305	631	1,890	1,470	2,200	995	441	768
18	342	422	406	322	319	685	1,790	1,400	2,050	971	450	879
19	340	414	377	322	332	814	1,670	1,380	1,930	952	452	985
20	338	426	362	318	344	1,010	1,540	1,390	1,830	956	449	1,100
21	341	436	351	317	353	1,070	1,430	1,470	1,750	946	455	1,150
22	347	430	358	315	357	1,080	1,330	1,640	1,700	936	443	1,150
23	342	429	357	314	355	1,090	1,240	1,820	1,700	909	466	1,110
24	341	416	344	330	354	1,120	1,150	1,920	1,740	878	511	1,060
25	345	410	346	336	358	1,160	1,130	1,920	1,840	832	571	1,010
26	343	404	351	339	364	1,200	1,120	1,860	1,960	800	650	944
27	342	402	355	333	361	1,220	1,130	1,900	2,030	763	769	906
28	363	404	361	339	362	1,200	1,210	2,130	2,030	744	888	858
29	436	412	341	343	365	1,170	1,360	2,420	1,980	714	964	810
30	538	423	331	358	---	1,130	1,450	2,600	1,920	689	965	775
31	596	---	321	362	---	1,100	---	2,640	---	665	928	---
TOTAL	10,646	14,038	12,309	9,868	9,761	22,585	42,340	61,750	67,600	36,000	18,039	24,238
MEAN	343	468	397	318	337	729	1,411	1,992	2,253	1,161	582	808
MAX	596	629	452	362	365	1,220	1,920	2,660	3,030	1,880	965	1,150
MIN	294	402	321	272	290	364	1,120	1,380	1,700	665	441	563
AC-FT	21,120	27,840	24,410	19,570	19,360	44,800	83,980	122,500	134,100	71,410	35,780	48,080
CFSM	0.51	0.70	0.59	0.47	0.50	1.09	2.10	2.97	3.36	1.73	0.87	1.20
IN.	0.59	0.78	0.68	0.55	0.54	1.25	2.35	3.42	3.75	2.00	1.00	1.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2004, BY WATER YEAR (WY)

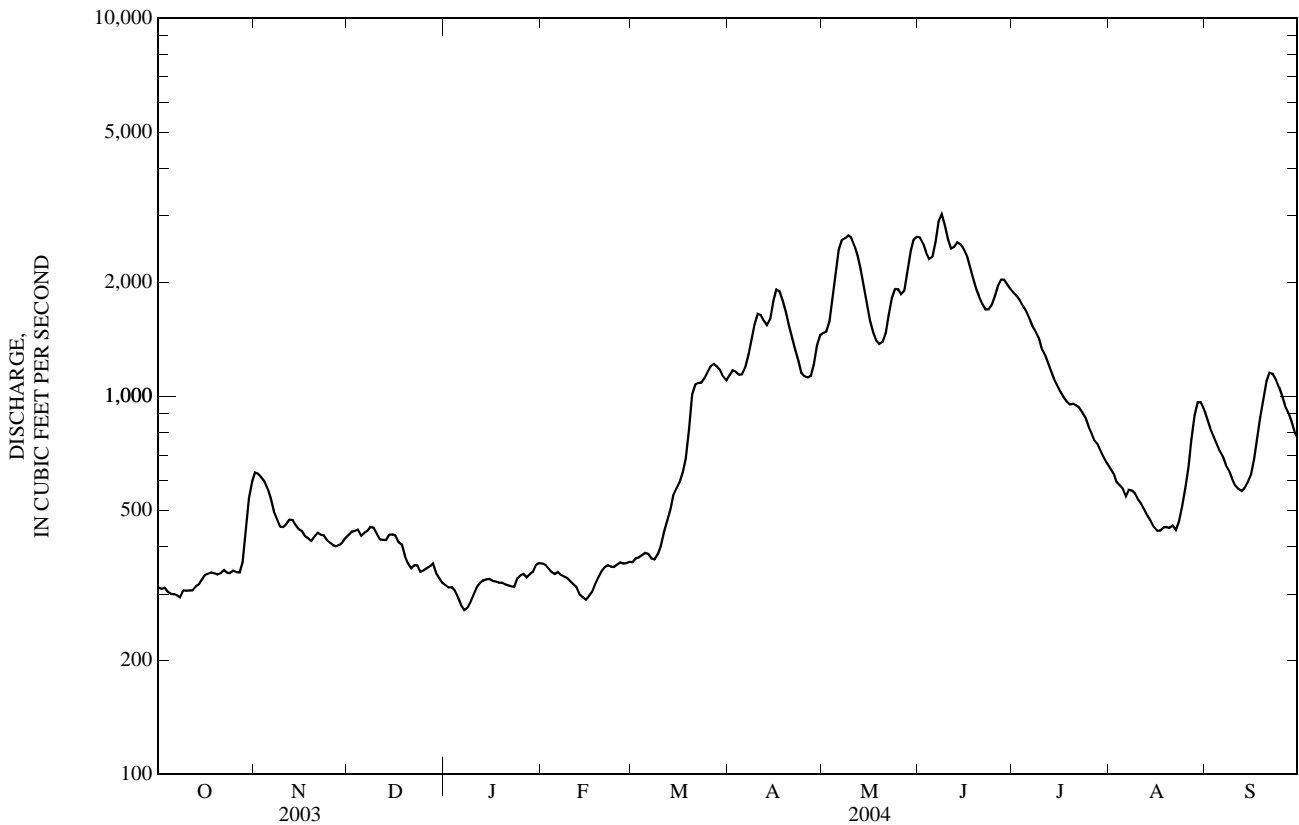
MEAN	546	590	565	494	496	627	1,515	2,815	3,281	1,625	693	537
MAX	1,682	1,514	1,796	1,298	1,627	1,813	3,228	5,469	5,803	3,310	1,225	1,096
(WY)	(1960)	(1928)	(1934)	(1934)	(1971)	(1986)	(1925)	(1928)	(1974)	(1950)	(1950)	(1965)
MIN	308	290	307	271	236	244	675	1,670	1,433	609	322	285
(WY)	(1938)	(1937)	(1937)	(1930)	(1930)	(1930)	(1937)	(1941)	(1941)	(1941)	(1941)	(1988)

PEND OREILLE RIVER BASIN

12370000 SWAN RIVER NEAR BIGFORK, MT—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1922 - 2004	
ANNUAL TOTAL	313,754		329,174			
ANNUAL MEAN	860		899		1,150	
HIGHEST ANNUAL MEAN					1,860	1928
LOWEST ANNUAL MEAN					607	1941
HIGHEST DAILY MEAN	5,220	Jun 2	3,030	Jun 8	8,800	Jun 21, 1974
LOWEST DAILY MEAN	287	Sep 8	272	Jan 7	193	Jan 26, 1930
ANNUAL SEVEN-DAY MINIMUM	297	Sep 2	288	Jan 4	195	Jan 26, 1930
MAXIMUM PEAK FLOW			3,150	Jun 8	8,890	Jun 20, 1974
MAXIMUM PEAK STAGE			4.58	Jun 8	7.34	Jun 20, 1974
INSTANTANEOUS LOW FLOW			258	Jan 8	a193	Jan 26, 1930
ANNUAL RUNOFF (AC-FT)	622,300		652,900		833,000	
ANNUAL RUNOFF (CFSM)	1.28		1.34		1.71	
ANNUAL RUNOFF (INCHES)	17.39		18.25		23.28	
10 PERCENT EXCEEDS	1,780		1,940		2,830	
50 PERCENT EXCEEDS	440		570		630	
90 PERCENT EXCEEDS	314		319		362	

a--Jan. 26-29, 1930, site and datum then in use.



12371550 FLATHEAD LAKE AT POLSON, MT

LOCATION.--Lat 47°41'50", long 114°09'37" (NAD 27), in SW¼SE¼NE¼ sec.4, T.22 N., R.20 W., Lake County, Hydrologic Unit 17010208, at Polson.

DRAINAGE AREA.--7,086 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1, 1998 to current year. April to August 1900, daily lake elevations only, at site near Holt, 6 mi east of Somers (elevation unknown). August 1908 to November 1909 (fragmentary). January 1910 to Sept.30, 1998 published as "at Somers". Monthend contents only for some periods, published in WSP 1316. Prior to April 1923, published as "at Polson." Oct. 1, 1941 to Sept. 30, 1998, unpublished daily lake elevations at Polson are available in files of Helena district office.

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft above local (Somers) datum of 2,799 ft (NGVD 29). July 1 to Dec. 12, 1923, nonrecording gage at Somers site.

REMARKS--Natural storage in Flathead Lake increased by construction of Kerr Dam 4 mi downstream from natural lake outlet; storage began Apr. 11, 1938. Usable capacity, 1,791,000 acre-ft at controlled spillway elevation 2,893.00 ft. Dead storage unknown below 2,878 ft, elevation of natural outlet. Minimum operating level, 572,300 acre-ft, elevation 2,883.00 ft for on-site power generation. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Water is used for power production, flood control, recreation, and irrigation. Figures given herein represent usable contents. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,208,000 acre-ft, June 19, 1933, elevation, 2,896.26 ft; minimum, 347,000 acre-ft, Dec. 5, 1936, elevation, 2,881.07 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,791,000 acre-ft, Aug. 27, elevation, 2,893.00 ft; minimum, 640,000 acre-ft, Mar. 27, elevation, 2,883.57 ft.

CAPACITY TABLE (ELEVATION, IN FEET AND CONTENTS, IN ACRE-FT)

Elevation	Contents
2,883	572,300
2,886	930,300
2,888	1,172,000
2,890	1,417,000
2,892	1,665,000
2,894	1,917,000

ELEVATION OF RESERVOIR WATER SURFACE ABOVE DATUM, 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	2,892.50	2,892.41	2,890.00	2,887.49	2,886.21	2,884.69	2,883.71	2,888.57	2,891.39	2,892.86	2,892.72	2,892.87
2	2,892.48	2,892.38	2,889.90	2,887.46	2,886.20	2,884.64	2,883.80	2,888.72	2,891.40	2,892.86	2,892.73	2,892.80
3	2,892.48	2,892.35	2,889.79	2,887.47	2,886.16	2,884.55	2,883.85	2,888.90	2,891.44	2,892.85	2,892.73	2,892.84
4	2,892.48	2,892.21	2,889.75	2,887.28	2,886.12	2,884.49	2,883.90	2,889.16	2,891.53	2,892.87	2,892.73	2,892.84
5	2,892.47	2,892.11	2,889.68	e2,887.17	2,886.09	2,884.40	2,883.98	2,889.47	2,891.63	2,892.88	2,892.74	2,892.84
6	2,892.47	2,892.02	2,889.61	e2,887.09	2,886.07	2,884.28	2,884.07	2,889.84	2,891.70	2,892.86	2,892.76	2,892.85
7	2,892.44	2,891.93	2,889.57	e2,887.00	2,886.03	2,884.27	2,884.20	2,890.14	2,891.93	2,892.83	2,892.74	2,892.83
8	2,892.45	2,891.85	2,889.49	2,886.91	2,886.00	2,884.24	2,884.39	2,890.40	2,892.12	2,892.81	2,892.76	2,892.80
9	2,892.42	2,891.77	2,889.41	2,886.83	2,885.97	2,884.17	2,884.57	2,890.60	2,892.27	2,892.82	2,892.81	2,892.75
10	2,892.41	2,891.68	2,889.36	2,886.76	2,885.94	2,884.14	2,884.74	2,890.86	2,892.36	2,892.80	2,892.82	2,892.76
11	2,892.42	2,891.59	2,889.25	2,886.70	2,885.90	2,884.08	2,884.92	2,891.14	2,892.43	2,892.73	2,892.80	2,892.74
12	2,892.38	2,891.54	2,889.12	2,886.65	2,885.83	2,884.01	2,885.08	2,891.19	2,892.54	2,892.73	2,892.80	2,892.71
13	2,892.36	2,891.46	2,889.06	2,886.62	2,885.76	2,883.97	2,885.25	2,891.24	2,892.58	2,892.72	2,892.80	2,892.73
14	2,892.41	2,891.37	2,889.00	2,886.60	2,885.68	2,883.91	2,885.44	2,891.26	2,892.63	2,892.70	2,892.79	2,892.69
15	2,892.41	2,891.29	2,888.91	2,886.58	2,885.62	2,883.83	2,885.71	2,891.24	2,892.75	2,892.68	2,892.79	2,892.71
16	2,892.41	2,891.19	2,888.83	2,886.57	2,885.56	2,883.76	2,886.01	2,891.17	2,892.80	2,892.66	2,892.79	2,892.74
17	2,892.41	2,891.08	2,888.73	2,886.55	2,885.50	2,883.73	2,886.27	2,891.14	2,892.85	2,892.66	2,892.76	2,892.78
18	2,892.44	2,890.94	2,888.68	2,886.52	2,885.45	2,883.65	2,886.48	2,891.15	2,892.81	2,892.65	2,892.78	2,892.82
19	2,892.43	2,890.85	2,888.57	2,886.53	2,885.38	2,883.65	2,886.66	2,891.19	2,892.79	2,892.66	2,892.79	2,892.89
20	2,892.45	2,890.85	2,888.48	2,886.51	2,885.32	2,883.71	2,886.83	2,891.26	2,892.76	2,892.64	2,892.81	2,892.88
21	2,892.45	2,890.87	2,888.40	2,886.48	2,885.26	2,883.69	2,887.01	2,891.36	2,892.74	2,892.71	2,892.76	2,892.86
22	2,892.48	2,890.71	2,888.31	2,886.45	2,885.20	2,883.66	2,887.13	2,891.48	2,892.76	2,892.78	2,892.76	2,892.86
23	2,892.42	2,890.62	2,888.23	2,886.42	2,885.13	2,883.62	2,887.22	2,891.54	2,892.79	2,892.78	2,892.75	2,892.89
24	2,892.46	2,890.51	2,888.15	2,886.42	2,885.07	2,883.58	2,887.34	2,891.49	2,892.86	2,892.76	2,892.77	2,892.89
25	2,892.46	2,890.40	2,888.06	2,886.43	2,885.01	2,883.61	2,887.49	2,891.42	2,892.90	2,892.75	2,892.80	2,892.88
26	2,892.48	2,890.35	2,887.99	2,886.36	2,884.94	2,883.58	2,887.63	2,891.38	2,892.95	2,892.72	2,892.90	2,892.85
27	2,892.47	2,890.28	2,887.89	2,886.31	2,884.87	2,883.57	2,887.71	2,891.39	2,892.91	2,892.76	2,893.00	2,892.80
28	2,892.45	2,890.20	2,887.82	2,886.28	2,884.81	2,883.62	2,887.97	2,891.39	2,892.89	2,892.75	2,892.95	2,892.74
29	2,892.57	2,890.08	2,887.80	2,886.27	2,884.74	2,883.65	2,888.16	2,891.38	2,892.87	2,892.73	2,892.93	2,892.67
30	2,892.58	2,890.07	2,887.65	2,886.23	---	2,883.65	2,888.38	2,891.40	2,892.87	2,892.72	2,892.89	2,892.65
31	2,892.47	---	2,887.56	2,886.21	---	2,883.65	---	2,891.42	---	2,892.72	2,892.89	---
MAX	2,892.58	2,892.41	2,890.00	2,887.49	2,886.21	2,884.69	2,888.38	2,891.54	2,892.95	2,892.88	2,893.00	2,892.89
MIN	2,892.36	2,890.07	2,887.56	2,886.21	2,884.74	2,883.57	2,883.71	2,888.57	2,891.39	2,892.64	2,892.72	2,892.65

CONTENTS, IN THOUSANDS OF ACRE-FEET, AT THE END OF MONTH

1,724	1,426	1,119	956	779	649	1,218	1,593	1,775	1,756	1,777	1,747
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CHANGE IN CONTENTS, IN ACRE-FEET

-5,000	-298,000	-307,000	-163,000	-177,000	-130,000	569,000	375,000	182,000	-19,000	-21,000	-30,000
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CALENDAR YEAR 2003 . . . . . -73,000

WATER YEAR 2004 . . . . . +18,000

e--Estimated.

## PEND OREILLE RIVER BASIN

## 12372000 FLATHEAD RIVER NEAR POLSON, MT

LOCATION.--Lat 47°40'49", long 114°14'45" (NAD 27), in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec. 11, T.22 N., R.21 W., Lake County, Hydrologic Unit 17010212, on left bank 0.5 mi downstream from Kerr Dam, 4.0 mi west of Polson, 5.0 mi downstream from Flathead Lake, and at river mile 71.5.

DRAINAGE AREA.--7,096 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1907 to current year.

REVISED RECORDS.--WSP 652: 1926. WSP 752: 1932. WSP 1182: 1948. WSP 1216: Drainage area. WSP 1246: 1928(M). WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Elevation of gage is 2,692.70 ft (NGVD 29) (levels by The Montana Power Co.). Prior to Oct. 1, 1941, nonrecording gages or water-stage recorder at several sites near highway bridge at old site of Michell's ferry 6 mi downstream from present site, all at elevation 2,629.20 ft (from river-profile survey).

REMARKS.--Records excellent. Flow regulated by Flathead Lake (Kerr Dam) since April 1938 (station number 12371500) and Hungry Horse Reservoir (station number 12362000) since September 1951. Diversions upstream from station for irrigation of about 10,000 acres. Flathead project pumps can divert up to 12,000 acre-ft per month when required for irrigation of lands downstream from station. U.S.Geological Survey satellite telemeter at station. Two observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--97 years, 11,490 ft<sup>3</sup>/s, 21.99 in/yr, 8,325,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir and Flathead Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft<sup>3</sup>/s, May 29, 1928, gage height, 17.2 ft, site and elevation then in use; minimum probably less than 5.0 ft<sup>3</sup>/s, Apr. 13, 1938; minimum daily, 32 ft<sup>3</sup>/s, Apr. 12, 1938.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of about 21 ft, present elevation; discharge, about 110,000 ft<sup>3</sup>/s, from lake elevation-discharge study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,300 ft<sup>3</sup>/s, May 31, gage height, 10.70 ft; minimum daily, 3,320 ft<sup>3</sup>/s, Apr. 10, 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	3,540	6,360	9,130	9,110	5,940	8,170	5,080	5,330	21,100	18,700	8,980	12,000
2	3,500	7,410	9,120	9,090	5,980	8,170	4,630	5,800	18,500	18,400	8,980	11,500
3	3,530	8,060	9,010	9,070	6,000	8,170	4,630	6,500	16,400	18,300	8,980	10,400
4	3,470	8,580	9,000	8,400	6,040	8,170	4,650	7,110	15,300	18,100	8,770	9,480
5	3,450	8,970	9,040	8,720	6,060	8,130	4,580	7,580	15,200	18,000	8,000	9,340
6	3,430	8,950	9,100	9,080	6,060	8,120	4,420	8,140	15,200	17,400	8,040	9,320
7	3,430	8,950	9,090	9,060	6,070	8,090	3,700	8,590	15,100	16,800	8,080	8,770
8	3,430	8,910	9,120	9,080	6,060	8,080	3,370	9,350	15,100	16,700	8,060	8,230
9	3,460	8,910	9,130	8,990	6,030	8,110	3,330	10,300	15,100	16,700	8,180	7,680
10	3,490	8,990	9,160	8,290	6,530	8,080	3,320	11,300	15,200	16,400	8,220	7,140
11	3,510	8,990	9,180	7,580	7,500	8,080	3,340	12,700	15,200	15,900	8,240	7,090
12	3,460	8,990	9,170	6,660	8,060	7,890	3,360	15,700	15,200	15,400	8,190	7,090
13	3,470	9,020	9,100	5,610	8,130	7,540	3,340	17,900	15,200	14,800	8,050	7,140
14	3,480	9,030	9,100	5,170	8,110	7,540	3,330	18,700	15,200	14,500	8,010	7,130
15	3,500	9,060	9,140	5,190	8,080	7,570	3,320	18,700	16,500	13,900	8,140	7,130
16	3,460	8,960	9,110	5,220	8,050	6,940	3,340	17,500	18,200	12,900	8,450	7,140
17	3,430	9,020	9,160	5,230	8,070	6,720	3,420	15,600	19,300	12,400	8,080	7,660
18	3,400	9,120	9,200	5,230	8,100	6,680	3,570	14,800	19,000	12,400	8,040	8,790
19	3,410	9,070	9,190	5,230	8,100	6,450	3,640	14,800	17,200	11,900	7,980	11,100
20	3,410	9,070	9,190	5,620	8,090	6,600	3,760	14,800	15,600	11,500	7,980	12,500
21	3,440	9,080	9,180	6,000	8,090	6,790	3,900	15,700	15,300	10,800	8,020	12,500
22	3,460	9,120	9,110	5,990	8,070	6,710	4,020	18,200	15,300	10,400	8,040	10,900
23	3,460	9,110	9,030	5,980	7,880	6,580	4,150	20,200	15,300	10,500	8,030	9,970
24	3,480	9,150	9,040	5,960	8,140	6,470	4,250	21,000	15,300	10,300	8,120	11,400
25	3,500	9,090	9,030	5,930	8,290	6,410	4,380	21,000	16,500	10,300	8,120	11,800
26	3,500	9,010	9,070	5,940	8,230	6,410	4,500	20,900	18,900	10,200	8,540	11,800
27	3,490	9,010	9,040	6,060	8,210	6,520	4,650	20,900	20,000	10,100	13,300	11,800
28	3,640	9,010	9,030	6,020	8,220	6,660	4,770	20,900	19,700	9,550	16,000	11,700
29	4,180	9,030	9,010	6,020	8,210	6,750	4,820	20,900	19,400	9,210	16,000	11,800
30	4,620	9,120	9,010	5,960	---	6,690	4,990	20,900	19,300	9,130	14,500	11,900
31	5,300	---	9,100	5,960	---	6,090	---	22,100	---	9,030	12,900	---
TOTAL	111,330	265,150	282,090	211,450	214,400	225,380	120,560	463,900	503,800	420,620	287,020	292,200
MEAN	3,591	8,838	9,100	6,821	7,393	7,270	4,019	14,960	16,790	13,570	9,259	9,740
MAX	5,300	9,150	9,200	9,110	8,290	8,170	5,080	22,100	21,100	18,700	16,000	12,500
MIN	3,400	6,360	9,000	5,170	5,940	6,090	3,320	5,330	15,100	9,030	7,980	7,090
AC-FT	220,800	525,900	559,500	419,400	425,300	447,000	239,100	920,100	999,300	834,300	569,300	579,600
CFSM	0.51	1.25	1.28	0.96	1.04	1.02	0.57	2.11	2.37	1.91	1.30	1.37
IN.	0.58	1.39	1.48	1.11	1.12	1.18	0.63	2.43	2.64	2.21	1.50	1.53
AC-FT†	-77,000	-342,000	-401,000	-278,000	-287,000	-115,000	+941,000	+742,000	+408,000	-177,000	-222,000	-78,000

12372000 FLATHEAD RIVER NEAR POLSON, MT—Continued

ADJUSTED FOR CHANGE IN CONTENTS IN HUNGRY HORSE RESERVOIR AND FLATHEAD LAKE

MEAN	2,339	3,090	2,578	2,300	2,404	5,399	19,830	27,030	23,650	10,690	5,648	8,430
CFSM	0.33	0.44	0.36	0.33	0.34	0.76	2.81	3.82	3.35	1.51	0.80	1.19
IN.	0.38	0.49	0.42	0.38	0.37	0.88	3.13	4.41	3.73	1.74	0.92	1.33
AC-FT	143,800	183,900	158,500	141,400	138,300	332,000	1,180,000	1,662,000	1,470,000	657,300	347,300	501,600

						OBSERVED							
CAL YR 2003	TOTAL	3,053,270	MEAN	8,365	MAX	26,900	MIN	3,400	AC-FT	6,056,000	†	+42,000	
WTR YR 2004	TOTAL	3,396,700	MEAN	9,281	MAX	22,100	MIN	3,320	AC-FT	6,740,000	†	+114,000	
						ADJUSTED							
CAL YR 2003	TOTAL	3,074,212	MEAN	8,422	CFSM	1.19	IN	16.17	AC-FT	6,098,000			
WTR YR 2004	TOTAL	3,455,306	MEAN	9,441	CFSM	1.34	IN	18.18	AC-FT	6,854,000			

† Change in contents in acre-feet, in Hungry Horse Reservoir and Flathead Lake.

