12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA

Pend Oreille Basin
North Fork Flathead Subbasin

LOCATION.--Lat 49°00′06″, long 114°28′27″ referenced to North American Datum of 1927, 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^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1929 to June 1995 (no winter records prior to 1952), October 1999 to current year. 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. Gage was reestablished in 1999 and is operated by the U.S. Geological Survey at site on left bank in British Columbia.

GAGE.--Water-stage recorder. Elevation of gage is 3,964.95 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1949, nonrecording gage and Sept. 1, 1949 to Oct. 4, 1964, water-stage recorder was located at a site 1,200 ft upstream at an elevation 11.01 ft higher. Oct. 5, 1964, to Aug. 1, 1973, water-stage recorder was located at a site on left bank 155 ft upstream at an 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, located at site 200 ft upstream from International Border in British Columbia on left bank.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter is located at the station.

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	170	e120	e400	e230	e130	e170	1,030	2,730	3,670	974	323	202
2	169	e130	e380	e260	e130	e140	945	3,130	4,020	911	316	192
3	169	e140	e360	e270	e140	e160	860	3,590	4,200	868	307	186
4	167	169	e340	e250	e170	e160	802	3,090	4,370	830	298	182
5	167	276	e320	e220	e200	e170	768	2,530	4,480	802	292	178
6	166	734	e300	e230	e230	177	734	2,160	4,310	771	288	175
7	165	4,610	e280	e200	e220	179	725	2,080	3,670	745	281	174
8	164	5,940	e270	e200	e190	185	764	2,550	2,950	716	278	175
9	163	2,660	e260	e220	e160	179	886	4,490	2,480	688	275	174
10	163	1,670	e250	e240	e180	173	976	5,320	2,590	654	269	171
11	162	1,290	e240	e130	e170	188	929	4,630	2,630	625	270	168
12	160	1,020	e240	e80	e120	340	877	4,550	2,290	596	261	165
13	159	891	e250	e65	e110	539	852	5,360	1,980	575	253	167
14	158	775	e250	e75	e120	504	839	5,130	1,840	558	246	164
15	158	698	e270	e85	e150	476	910	4,270	1,800	534	241	161
16	175	712	e240	e90	e140	467	944	4,070	1,700	514	236	158
17	167	636	e180	e120	e130	456	1,020	4,490	1,810	512	235	156
18	163	553	e170	e150	e150	620	1,070	5,170	1,880	542	229	159
19	163	523	e200	e200	e140	776	1,040	5,090	1,850	512	225	e163
20	178	655	e200	e220	e160	841	989	5,200	1,780	498	229	166
21	175	707	e210	e190	e180	807	944	3,910	1,710	466	230	e175
22	167	646	e230	e220	e160	742	936	3,110	1,670	445	227	e173
23	163	615	e240	e230	e170	688	970	2,630	1,600	424	223	e172
24	159	567	e250	e210	e170	793	1,150	2,630	1,470	407	227	e170
25	159	520	e260	e210	e180	1,740	1,330	2,390	1,330	398	215	167
26	155	467	e280	e160	e180	2,120	1,520	2,240	1,230	387	208	163
27	153	e360	e280	e110	e160	1,790	1,600	2,340	1,120	373	210	e165
28	152	e320	e270	e85	e170	1,420	1,810	3,160	1,050	360	209	163
29	e145	e340	e210	e77	---	1,220	2,360	3,370	1,060	349	203	167
30	e135	e380	e200	e70	---	1,130	2,690	3,170	1,030	340	197	167
31	e140	---	e210	e100	---	1,080	---	3,330	---	331	195	---
Total	5,009	29,124	8,040	5,197	4,510	20,430	33,270	111,910	69,570	17,705	7,696	5,118
Mean	162	971	259	168	161	659	1,109	3,610	2,319	571	248	171
Max	178	5,940	400	270	230	2,120	2,690	5,360	4,480	974	323	202
Min	135	120	170	65	110	140	725	2,080	1,030	331	195	156
Ac-ft	9,940	57,770	15,950	10,310	8,950	40,520	65,990	222,000	138,000	35,120	15,270	10,150
Cfsm	0.38	2.27	0.61	0.39	0.38	1.54	2.60	8.45	5.43	1.34	0.58	0.40
In.	0.44	2.54	0.70	0.45	0.39	1.78	2.90	9.75	6.06	1.54	0.67	0.45

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2007, BY WATER YEAR (WY) *

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	332	354	241	196	177	212	922	3,476	3,045	963	379	292
Max	1,285	1,261	881	672	485	685	2,957	5,584	6,691	2,418	937	785
(WY)	(1948)	(2000)	(1976)	(2005)	(2005)	(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)

* During periods of operation (no winter records prior to 1952).

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1929 - 2007*	
Annual total	330,592		317,579			
Annual mean	906		870		897	
Highest annual mean					1,376	1974
Lowest annual mean					377	2001
Highest daily mean	7,880	May 19	5,940	Nov 8	[a]16,800	Jun 7, 1995
Lowest daily mean	120	Feb 17	65	Jan 13	62	Jan 2, 1977
Annual seven-day minimum	137	Oct 28	92	Jan 11	71	Dec 31, 1976
Maximum peak flow			7,300	Nov 7	[b]16,300	Jun 8, 1964
Maximum peak stage			9.29	Nov 7	[c]10.00	May 31, 2002
Instantaneous low flow					[d]59	Feb 23, 2003
Annual runoff (ac-ft)	655,700		629,900		650,000	
Annual runoff (cfsm)	2.12		2.04		2.10	
Annual runoff (inches)	28.80		27.67		28.55	
10 percent exceeds	2,790		2,630		2,670	
50 percent exceeds	287		280		300	
90 percent exceeds	169		158		137	

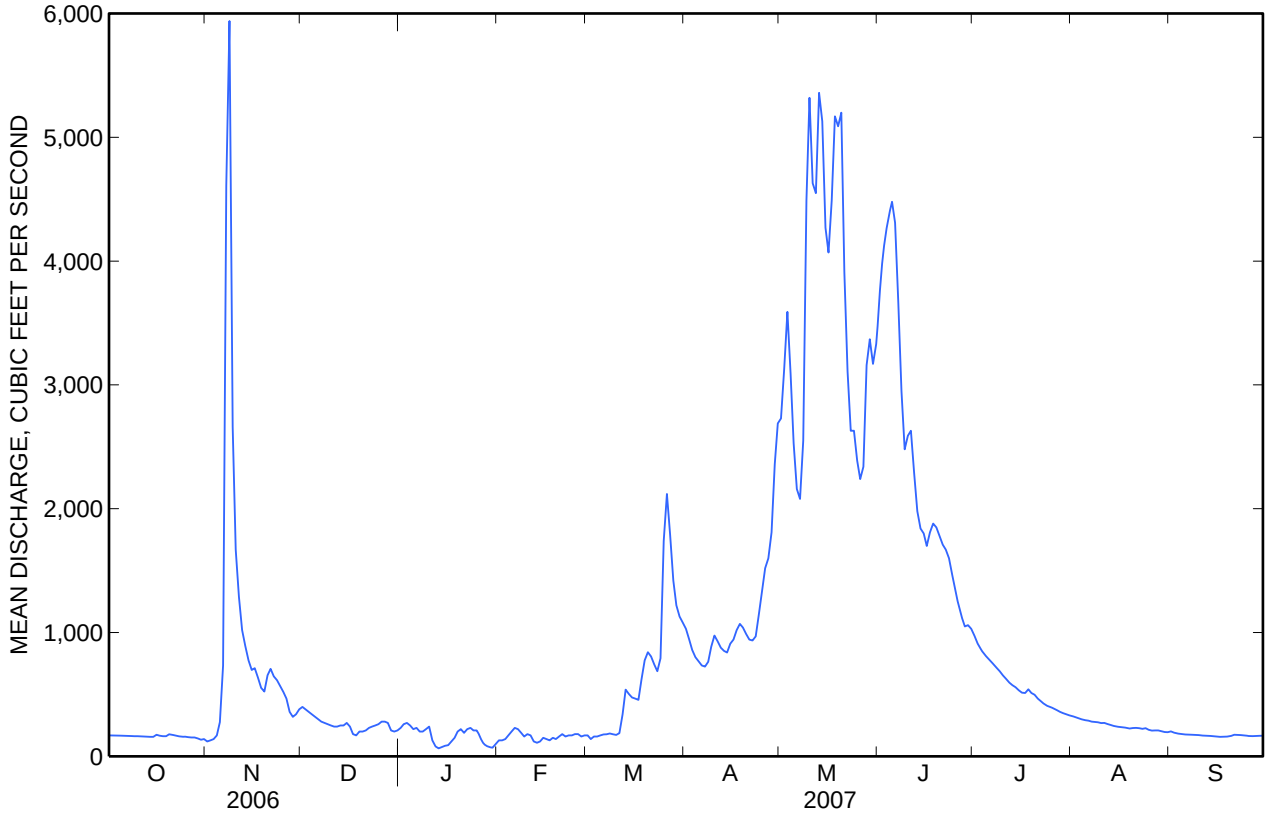
* During periods of operation (no winter records prior to 1952).

[a] Instantaneous peak flow not determined.

[b] Gage height, 8.00 ft, site and datum then in use. Peak flow was known to be higher in 1995.

[c] 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.

[d] Gage height, 3.95 ft.



WATER-QUALITY RECORDS

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

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.

REMARKS.--Several unpublished observations of specific conductance and water temperature were made during the year.

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 2006 TO SEPTEMBER 2007

Part 1 of 4

[Remark codes: <, less than; E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
Mar													
27...	1200	1,800	654	11.9	102	7.8	199	5.5	2.5	110	32.9	6.75	.31
Apr													
17...	1100	1,030	662	11.8	104	8.0	232	7.0	4.0	130	37.1	8.02	.31
May													
01...	1300	2,680	655	10.1	95	8.2	199	19.5	6.0	110	31.5	6.81	.30
15...	0900	4,380	665	11.2	98	8.0	178	8.5	4.0	94	27.9	5.96	.27
Jun													
05...	1000	4,600	650	10.1	100	8.1	159	17.0	8.0	83	24.8	5.15	.27
19...	0930	1,870	663	10.8	102	8.1	186	14.0	7.0	100	30.2	6.49	.29
Jul													
17...	1230	498	660	10.4	116	8.3	244	29.0	13.5	130	39.7	8.07	.32
Aug													
07...	1200	289	656	10.6	119	8.4	259	24.5	13.5	140	42.2	9.16	.33
Sep													
18...	1245	163	661	11.6	115	8.2	274	12.0	8.5	150	44.1	9.68	.35

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4
[Remark codes: <, less than; E, estimated.]

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt fxd end lab, mg/L as CaCO3 (29801)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)	Dissolved solids, tons/acre-ft (70303)	Dissolved solids, tons/d (70302)	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)
Mar													
27...	.0	.77	104	.14	E.07	4.47	4.06	112	.15	544	<.020	.025	<.002
Apr													
17...	.0	.93	124	E.12	E.09	4.69	4.04	E129	E.18	E361	<.020	<.016	<.002
May													
01...	.0	.79	105	E.07	E.08	4.57	3.50	E111	E.15	E800	<.020	.019	<.002
15...	.0	.65	94	<.12	E.07	4.42	2.76	E99	E.13	E1,165	E.012	.026	<.002
Jun													
05...	.0	.55	85	E.07	.11	3.79	2.41	E88	E.12	E1,094	<.020	.017	<.002
19...	.0	.65	99	<.12	E.08	4.22	3.04	E104	E.14	E528	<.020	<.016	<.002
Jul													
17...	.0	.74	131	E.09	.10	4.95	4.05	E137	E.19	E184	<.020	<.016	E.001
Aug													
07...	.0	.76	141	E.07	E.09	4.83	4.28	E146	E.20	E114	<.020	<.016	<.002
Sep													
18...	.0	.77	149	E.12	E.10	4.68	4.45	E154	E.21	E66	<.020	<.016	<.002

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 3 of 4
[Remark codes: <, less than; E, estimated.]

Date	Total nitrogen, water, unfltrd, mg/L (62855)	Orthophosphate, water, fltrd, mg/L as P (00671)	Total phosphorus, water, unfltrd mg/L (00665)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Mar						
27...	.12	E.005	.042	78	47	228
Apr						
17...	E.04	E.004	.011	77	13	36
May						
01...	.14	E.004	.075	66	79	572
15...	.15	.006	.059	64	68	804
Jun						
05...	.13	E.005	.092	62	101	1,250
19...	E.05	E.005	.015	75	13	66
Jul						
17...	<.06	E.004	<.008	77	1	1.3
Aug						
07...	.07	<.006	<.008	82	7	5.5
Sep						
18...	<.06	E.003	<.008	92	6	2.6

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 4 of 4
[Remark codes: <, less than; E, estimated.]

Date	Time	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Organic carbon, water, unfltrd mg/L (00680)	Chlorophyll a phytoplankton, fluoro, µg/L (70953)	Pheophytin a, phytoplankton, µg/L (62360)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, unfltrd µg/L (01027)	Chromium, water, unfltrd recoverable, µg/L (01034)	Copper, water, unfltrd recoverable, µg/L (01042)	Lead, water, unfltrd recoverable, µg/L (01051)	Nickel, water, unfltrd recoverable, µg/L (01067)	Zinc, water, unfltrd recoverable, µg/L (01092)
Apr												
17...	1100	2.9	--	--	--	.30	E.01	<.60	E.87	.14	.26	E1.0
May												
15...	0900	26	3.6	.3	.3	.73	.05	.83	1.4	.77	1.1	4.5
Jun												
19...	0930	2.6	--	--	--	.37	E.01	E.32	<1.2	.15	.35	E1.1
Aug												
07...	1200	<2.0	.9	.1	.2	.34	E.01	E.31	<1.2	<.06	<.16	<2.0