12351200 BITTERROOT RIVER NEAR FLORENCE, MT

Pend Oreille Basin
Bitterroot Subbasin

LOCATION.--Lat 46°38′00″, long 114°03′00″ referenced to North American Datum of 1927, in SW ¼ SE ¼ SE ¼ sec.12, T.10 N., R.20 W., Ravalli County, MT, Hydrologic Unit 17010205, on right bank 85 ft upstream from bridge on State secondary Highway 203, 1.3 mi east of Florence, 240 ft upstream from Eightmile Creek, and at river mile 22.7.

DRAINAGE AREA.--2,354 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--September 1957 to December 1965, October 2002 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1966, nonrecording gage at different datum.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Some regulation occurs by Painted Rocks Lake (station number 12342000). Diversions for irrigation of about 105,000 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

12351200 BITTERROOT RIVER NEAR FLORENCE, MT—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	661	651	682	1,040	809	790	979	6,510	5,430	2,420	487	512
2	704	719	692	989	791	781	1,020	5,810	5,810	2,140	492	498
3	754	785	718	934	777	756	1,010	5,260	7,890	1,930	496	494
4	792	776	710	891	768	755	1,070	4,960	8,570	1,810	493	486
5	747	753	680	855	769	742	1,300	4,480	8,340	1,700	486	476
6	734	759	e600	820	741	727	2,060	4,560	7,880	1,710	484	468
7	718	772	e450	810	707	732	2,700	4,920	7,850	1,830	501	480
8	701	804	e270	809	723	732	2,530	4,960	8,180	1,670	503	485
9	701	781	e300	786	731	722	2,430	4,450	8,770	1,430	509	462
10	694	729	e350	786	705	701	2,410	3,930	8,190	1,270	516	457
11	682	735	e450	944	613	678	2,390	3,640	8,530	1,170	513	443
12	671	790	e550	1,030	584	669	2,300	3,750	7,580	1,060	523	435
13	670	803	e600	938	663	660	2,420	4,340	7,360	952	523	424
14	661	793	682	925	729	665	3,090	5,120	7,890	874	516	432
15	650	791	e630	942	675	673	3,530	6,360	6,950	807	524	464
16	640	741	e570	907	e550	670	3,930	8,460	5,740	751	551	531
17	630	769	e470	871	e400	660	3,770	11,300	5,320	704	592	562
18	620	767	e370	904	e350	669	3,280	13,400	5,150	658	618	580
19	612	747	e400	889	e400	672	2,890	14,500	4,520	613	612	597
20	615	735	e500	856	e470	669	2,590	15,600	4,180	560	591	627
21	625	718	656	833	e570	666	2,570	15,400	3,840	525	572	661
22	627	720	679	816	682	668	3,020	13,400	3,420	508	546	678
23	626	718	812	796	709	668	3,670	12,500	3,100	483	530	684
24	619	703	946	794	724	671	3,870	12,200	2,940	469	524	653
25	610	686	905	764	679	698	3,570	10,500	2,820	452	552	625
26	603	741	869	750	677	756	3,240	9,980	2,790	455	591	608
27	617	773	872	762	685	806	3,120	9,460	2,780	441	608	588
28	630	728	901	754	727	806	3,370	8,760	2,620	430	593	579
29	631	656	1,100	758	---	850	3,930	7,640	2,430	461	539	565
30	627	642	1,140	775	---	924	5,210	6,420	2,460	459	511	557
31	627	---	1,050	817	---	952	---	5,680	---	476	517	---
Total	20,499	22,285	20,604	26,545	18,408	22,588	83,269	248,250	169,330	31,218	16,613	16,111
Mean	661	743	665	856	657	729	2,776	8,008	5,644	1,007	536	537
Max	792	804	1,140	1,040	809	952	5,210	15,600	8,770	2,420	618	684
Min	603	642	270	750	350	660	979	3,640	2,430	430	484	424
Ac-ft	40,660	44,200	40,870	52,650	36,510	44,800	165,200	492,400	335,900	61,920	32,950	31,960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2006, BY WATER YEAR (WY)*

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	1,128	1,030	929	809	918	978	2,304	6,124	7,974	1,945	709	948
Max	3,025	2,019	1,604	1,365	1,795	1,450	3,599	9,886	13,180	4,060	1,288	2,012
(WY)	(1960)	(1960)	(1959)	(1965)	(1963)	(2003)	(1965)	(1958)	(1964)	(1964)	(1965)	(1965)
Min	566	585	561	561	607	644	1,157	4,321	4,091	935	399	537
(WY)	(1961)	(2003)	(2003)	(2004)	(2004)	(1964)	(2005)	(1960)	(2005)	(1961)	(1961)	(2006)

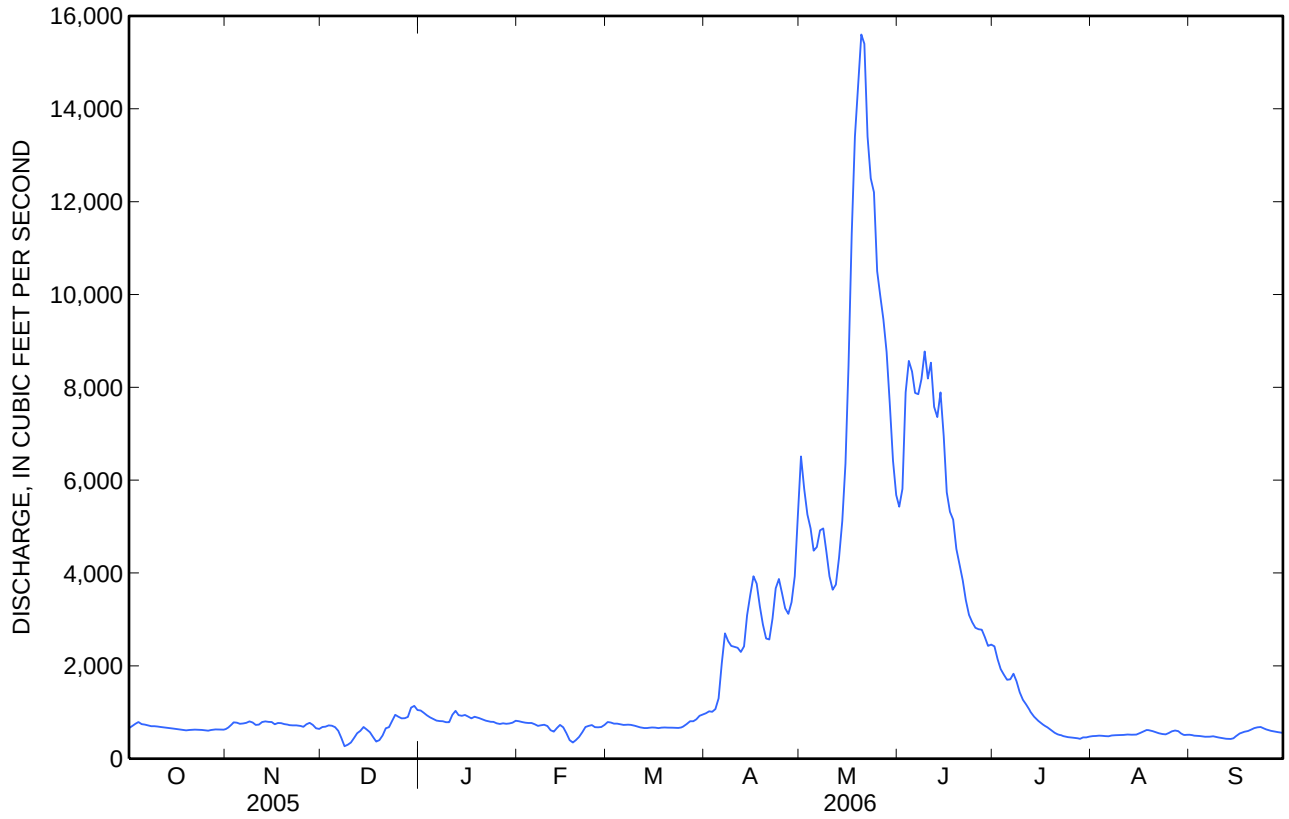
* During period of operation (September 1957 to December 1965, October 2002 to current year).

12351200 BITTERROOT RIVER NEAR FLORENCE, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2005		Water Year 2006		Water Years 1957 – 2006*	
Annual total	500,891		695,720			
Annual mean	1,372		1,906		2,142	
Highest annual mean					3,070	1965
Lowest annual mean					1,420	2005
Highest daily mean	8,180	May 20	15,600	May 20	19,600	Jun 9, 1964
Lowest daily mean	270	Dec 8	270	Dec 8	270	Dec 8, 2005
Annual seven-day minimum	424	Dec 6	424	Dec 6	372	Aug 17, 1961
Maximum peak flow			16,100	May 20	[a]20,300	Jun 9, 1964
Maximum peak stage			12.56	May 20	13.43	Jun 1, 2003
Instantaneous low flow					[b]365	Aug 20, 1961
Annual runoff (ac-ft)	993,500		1,380,000		1,552,000	
10 percent exceeds	3,820		5,280		5,660	
50 percent exceeds	735		741		960	
90 percent exceeds	515		490		568	

* During period of operation (September 1957 to December 1965, October 2002 to current year).
[a] Gage height, 10.82 ft, from graph based on gage readings, datum then in use.
[b] Observed.



WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1997 to September 1997, March 2004 to current year.

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

WATER-QUALITY DATA
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
Part 1 of 5
[Remark codes: E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Total nitrogen, wat unf by analysis, mg/L (62855)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total carbon, suspnd sedimnt total, mg/L (00694)
Feb													
22...	1600	686	7.7	121	4.5	1.5	.102	E.001	.09	.25	E.005	.027	.8
Apr													
19...	1745	2,820	7.7	80	8.5	9.0	E.014	E.001	.06	.24	E.003	.031	.9
May													
25...	0815	10,600	7.3	43	19.5	10.0	.033	E.001	.24	.27	.007	.086	2.9
Jun													
15...	0800	7,080	7.4	45	18.0	11.0	.019	<.002	.07	.17	.008	.021	.6

WATER-QUALITY DATA
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
Part 2 of 5
[Remark codes: <, less than.]

Date	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Feb						
22...	<.1	.8	1.4	75	4	7.4
Apr						
19...	<.1	.9	3.5	69	13	99
May						
25...	<.1	2.8	3.9	46	84	2,400
Jun						
15...	<.1	.6	3.1	48	25	478

12351200 BITTERROOT RIVER NEAR FLORENCE, MT—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
Part 3 of 5
[Remark codes: E, estimated.]

Date	Time	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)	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)	Residue water, fltrd, sum of constituents mg/L (70301)
Apr													
19...	1745	29	8.91	1.69	1.01	.3	3.22	35	1.24	.17	12.6	3.13	53
Jun													
15...	0800	18	5.36	1.02	.62	.2	1.77	22	.54	E.06	7.6	1.30	32

WATER-QUALITY DATA
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
Part 4 of 5
[Remark codes: <, less than; E, estimated.]

Date	Residue water, fltrd, tons/acre-ft (70303)	Residue water, dissolved, tons/d (70302)	Arsenic water, fltrd, ug/L (01000)	Arsenic water unfltrd ug/L (01002)	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, fltrd, ug/L (01030)	Chromium, water, unfltrd recoverable, ug/L (01034)	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recoverable, ug/L (01042)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recoverable, ug/L (01051)
Apr												
19...	.07	403	.28	.36	.04	<.04	.06	.23	.8	1.4	E.07	.34
Jun												
15...	.04	605	.26	.35	.04	<.04	.07	.30	.6	.9	E.04	.28

WATER-QUALITY DATA
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
Part 5 of 5
[Remark codes: E, estimated.]

Date	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recoverable, ug/L (01067)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recoverable, ug/L (01092)
Apr				
19...	.16	.24	1.7	E2
Jun				
15...	.13	.32	E.6	E2