

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA

Lower Columbia Basin
Lewis Subbasin

LOCATION.--Lat 46°04'33", long 121°59'51" referenced to North American Datum of 1927, in NE ¼ SE ¼ sec.24, T.7 N., R.6 E., Skamania County, WA, Hydrologic Unit 17080002, Gifford Pinchot National Forest, on left bank 3.9 mi downstream from Clear Creek, approximately 14 mi northeast of Cougar, and 0.5 mi upstream from mouth.

DRAINAGE AREA.--135 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--August 1927 to September 1934, October 1954 to December 1973 (destroyed by flood of January 1974), October 1983 to current year. Monthly discharge only for October, December 1933 and January 1934 published in WSP 1318. Published as "near Cougar" 1927-34. Records for August to October 1909, published in WSP 272 and 492, have been found to be unreliable and should not be used.

REVISED RECORDS.--WDR WA-99-1: 1991 (m), 1996-97 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,032.90 ft above NGVD of 1929. August 1927 to September 1934, at same site at different datum; October 1954 to December 1973 at site 3.7 mi upstream at different datum.

REMARKS.-- Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--54 years (water years 1928-34, 1955-73, 1984-2011), 865 ft³/s, 87.01 in/yr, 626,700 acre-ft/yr, includes monthly data published in WSP 1318.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft³/s, Feb. 8, 1996, gage height, 33.26 ft from high-water marks, from rating curve extended above 8,000 ft³/s; minimum, 94 ft³/s Dec. 5-7, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood occurred about 0900 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 13	0045	5,890	22.18
Jan 16	1615	*7,900	*24.26

Minimum discharge, 153 ft³/s, Sept. 16, 17, 25, gage height, 15.39 ft.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	187	1,270	907	e789	1,150	527	2,550	1,170	1,560	984	376	189
2	183	1,830	839	e748	1,060	563	2,500	1,180	1,620	943	358	186
3	179	1,470	796	e701	996	566	2,200	1,160	1,620	978	346	183
4	174	1,180	764	e651	1,010	535	2,040	1,150	1,660	952	336	180
5	172	989	735	e625	979	567	1,880	1,200	1,800	918	328	177
6	169	950	709	e623	942	541	1,730	1,240	2,010	929	320	174
7	166	1,270	707	e629	1,010	508	1,520	1,400	2,120	950	310	172
8	165	1,010	978	e597	946	498	1,380	1,450	1,940	876	300	170
9	236	1,020	1,710	e554	896	1,140	1,280	1,470	1,690	772	290	169
10	556	968	2,140	e523	857	2,790	1,230	1,500	1,610	700	282	167
11	333	911	2,400	e487	819	2,450	1,430	1,610	1,610	661	274	165
12	268	878	4,260	e734	828	2,110	1,240	1,640	1,590	643	267	162
13	242	839	5,140	e2,050	917	2,040	1,190	1,590	1,500	629	260	160
14	227	904	4,800	e2,590	1,010	2,200	1,240	1,680	1,440	601	255	159
15	216	920	e3,580	e2,950	1,180	2,470	1,300	2,400	1,440	570	249	158
16	208	1,130	e2,770	e6,080	1,070	2,620	1,470	2,510	1,390	573	243	157
17	200	1,400	e2,260	e5,950	1,010	2,370	1,430	2,240	1,330	593	236	168
18	195	e1,860	e1,910	e3,870	936	2,040	1,360	1,940	1,350	575	231	232
19	190	e1,640	e1,620	e2,810	880	1,730	1,270	1,780	1,370	548	229	238
20	186	1,420	e1,430	2,300	815	1,510	1,190	1,740	1,330	524	226	184
21	183	1,230	e1,240	2,020	751	1,380	1,110	1,810	1,270	506	221	170
22	182	e1,120	e1,100	1,710	703	1,260	1,030	1,810	1,340	484	219	163
23	194	e990	e974	1,490	654	1,130	991	1,730	1,410	463	220	161
24	540	e900	e913	1,380	613	1,090	1,010	1,630	1,300	457	215	158
25	721	e850	e977	1,290	543	1,040	1,200	1,610	1,160	468	211	182
26	695	e810	e900	1,190	504	1,020	1,260	1,600	1,080	457	207	210
27	673	e760	e862	1,130	531	1,060	1,280	1,770	1,050	433	203	294
28	632	746	e1,190	1,140	569	1,030	1,350	1,770	1,090	416	200	210
29	629	698	e1,080	1,260	---	1,170	1,270	1,670	1,120	406	197	182
30	619	783	e955	1,260	---	1,910	1,220	1,560	1,080	400	195	171
31	832	---	e854	1,250	---	2,430	---	1,540	---	391	191	---
Total	10,352	32,746	51,500	51,381	24,179	44,295	43,151	50,550	43,880	19,800	7,995	5,451
Mean	334	1,092	1,661	1,657	864	1,429	1,438	1,631	1,463	639	258	182
Max	832	1,860	5,140	6,080	1,180	2,790	2,550	2,510	2,120	984	376	294
Min	165	698	707	487	504	498	991	1,150	1,050	391	191	157
Ac-ft	20,530	64,950	102,200	101,900	47,960	87,860	85,590	100,300	87,040	39,270	15,860	10,810
Cfsm	2.47	8.09	12.3	12.3	6.40	10.6	10.7	12.1	10.8	4.73	1.91	1.35
In.	2.85	9.02	14.19	14.16	6.66	12.21	11.89	13.93	12.09	5.46	2.20	1.50

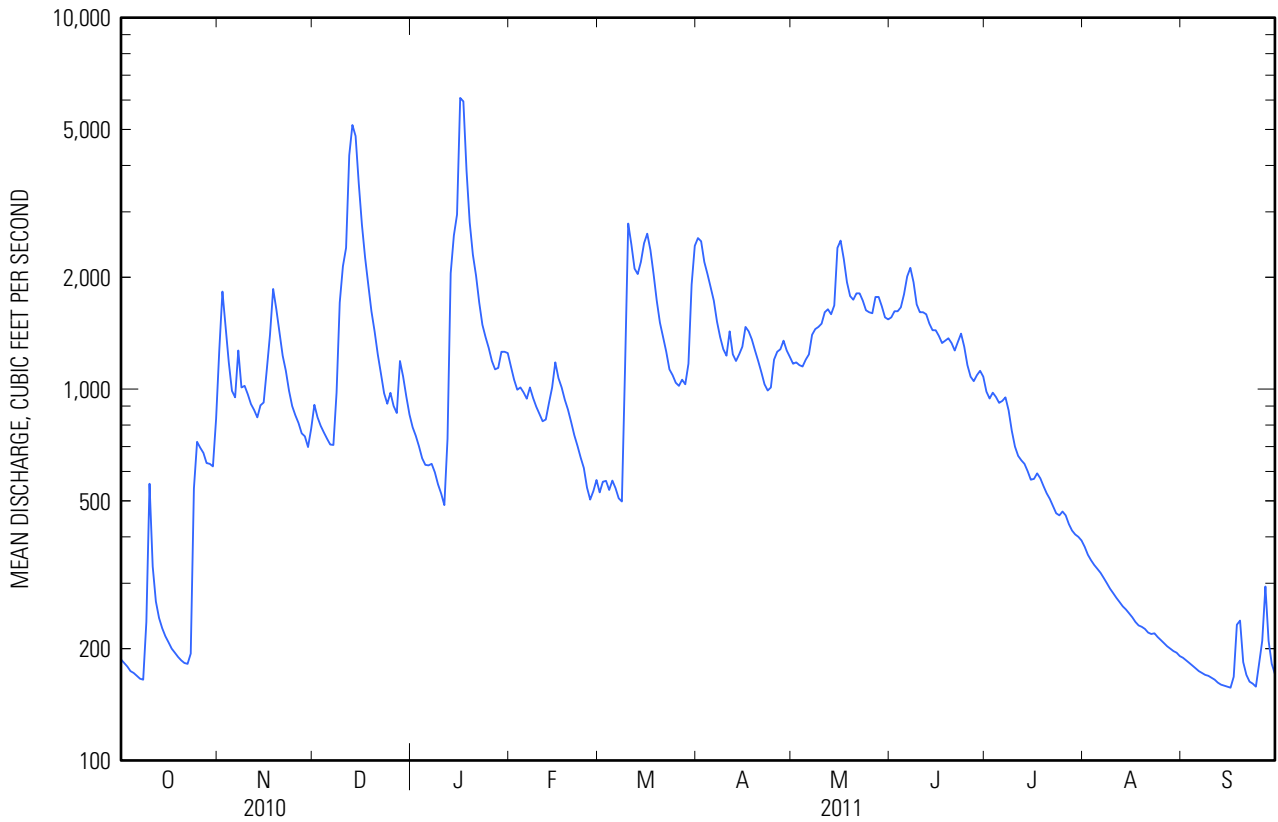
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2011, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	326	1,066	1,240	1,264	1,164	1,177	1,274	1,274	836	364	201	182
Max	1,567	2,609	2,828	2,616	3,222	2,841	2,318	2,467	2,341	1,163	438	385
(WY)	(1998)	(1984)	(1974)	(2006)	(1996)	(1972)	(1997)	(1956)	(1933)	(1971)	(1933)	(1968)
Min	107	102	313	365	254	386	620	425	194	143	116	120
(WY)	(1988)	(1930)	(1931)	(1985)	(1929)	(1955)	(1973)	(1934)	(1992)	(1992)	(1992)	(2005)

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SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1928 - 2011	
Annual total	341,979		385,280			
Annual mean	937		1,056		862	
Highest annual mean					1,297	1956
Lowest annual mean					465	2001
Highest daily mean	5,140	Dec 13	6,080	Jan 16	21,000	Feb 8, 1996
Lowest daily mean	162	Sep 14	157	Sep 16	94	Dec 5, 1929
Annual seven-day minimum	167	Sep 9	161	Sep 10	95	Dec 1, 1929
Annual runoff (ac-ft)	678,300		764,200		624,600	
Annual runoff (cfs)	6.94		7.82		6.39	
Annual runoff (inches)	94.23		106.17		86.78	
10 percent exceeds	1,720		1,970		1,810	
50 percent exceeds	880		952		633	
90 percent exceeds	195		190		155	



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1983 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: October 1983 to March 1995, October 1998 to September 2005. Water years 1995, 1996, 2006-2011 daily sediment discharge values for period October to March, monthly sediment discharge values only for the period April to September. Water years 1997 and 1998, annual sediment discharge estimates only (on file at the Cascades Volcano Observatory in Vancouver, WA). Records prior to October 1985 are published in U.S. Geological Survey Open-File Report 85-632; records for 1984-87 are published in U.S. Geological Survey Open-File Report 91-219.

INSTRUMENTATION.--Water-quality monitor May 1990 to September 1991. Automatic pumping sediment sampler August 1983 to September 1996, October 1998 to September 2005, and October 1 2006 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily, 39,800 mg/L, Nov. 6, 2006; minimum daily, 1 mg/L, on several days in water years 2001-03, 05.

SEDIMENT DISCHARGE: Maximum daily, 1,400,000 tons (estimated), Feb. 8, 1996; minimum daily, 0.34 tons, Oct. 11, 30, 2003.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily, 1,770 mg/L (estimated), Jan. 16; minimum daily, 4 mg/L (estimated), Jan. 10, 11.

SEDIMENT DISCHARGE: Maximum daily, 30,600 tons (estimated), Jan. 16; minimum daily, 3.2 tons, Oct. 22.

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SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

[e, estimated]

Day	Mean discharge (ft ³ /s)	Mean concentration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft ³ /s)	Mean concentration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft ³ /s)	Mean concentration (mg/L)	Sediment discharge (tons/day)
	October			November			December		
1	187	12	5.9	1,270	e551	e2,740	907	23	56
2	183	11	5.6	1,830	175	879	839	13	30
3	179	11	5.2	1,470	94	375	796	9	20
4	174	11	4.9	1,180	72	231	764	8	16
5	172	10	4.7	989	59	157	735	12	24
6	169	10	4.5	950	e71	e190	709	9	18
7	166	10	4.3	1,270	e272	e997	707	10	19
8	165	9	4.1	1,010	e89	e244	978	54	150
9	236	e22	e17	1,020	e89	e246	1,710	188	935
10	556	e411	e699	968	e90	e237	2,140	99	565
11	333	e76	e70	911	e88	e217	2,400	98	684
12	268	55	39	878	e88	e209	4,260	1,150	15,100
13	242	47	31	839	e84	e190	5,140	956	13,400
14	227	40	24	904	e98	e239	4,800	944	12,500
15	216	33	19	920	e101	e253	e3,580	e473	e4,660
16	208	27	15	1,130	e138	e421	e2,770	e201	e1,530
17	200	21	11	1,400	e212	e899	e2,260	e81	e498
18	195	16	8.4	e1,860	e113	e499	e1,910	e46	e239
19	190	11	5.9	e1,640	e62	e256	e1,620	e31	e134
20	186	9	4.7	1,420	49	189	e1,430	e19	e75
21	183	8	3.8	1,230	35	115	e1,240	e15	e49
22	182	6	3.2	e1,120	e26	e77	e1,100	e12	e35
23	194	9	5.1	e990	e25	e67	e974	e9	e25
24	540	e83	e126	e900	e22	e53	e913	e9	e23
25	721	56	111	e850	e21	e48	e977	e11	e29
26	695	29	55	e810	e20	e44	e900	e7	e17
27	673	19	35	e760	e14	e30	e862	e7	e17
28	632	10	17	746	14	29	e1,190	e23	e74
29	629	10	16	698	14	27	e1,080	e10	e29
30	619	11	18	783	18	39	e955	e7	e18
31	832	38	88	---	---	---	e854	e8	e18
Total	10,352	---	1,461.3	32,746	---	10,197	51,500	---	50,987

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SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

[e, estimated]

Day	Mean discharge (ft ³ /s)	Mean concentration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft ³ /s)	Mean concentration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft ³ /s)	Mean concentration (mg/L)	Sediment discharge (tons/day)
1	e789	e9	e19	1,150	14	44	527	8	11
2	e748	e8	e16	1,060	16	45	563	7	10
3	e701	e6	e12	996	13	35	566	7	10
4	e651	e6	e10	1,010	12	33	535	6	9.1
5	e625	e5	e9.3	979	11	29	567	7	10
6	e623	e5	e9.1	942	11	29	541	6	9.1
7	e629	e7	e11	1,010	13	34	508	6	8.2
8	e597	e6	e9.7	946	9	23	498	6	7.8
9	e554	e5	e7.1	896	8	20	1,140	e60	e228
10	e523	e4	e5.7	857	7	17	2,790	e288	e2,220
11	e487	e4	e5.3	819	8	17	2,450	e206	e1,370
12	e734	e30	e77	828	17	41	2,110	e175	e997
13	e2,050	e245	e1,430	917	24	65	2,040	e185	e1,030
14	e2,590	e276	e1,930	1,010	27	84	2,200	e192	e1,140
15	e2,950	e358	e3,000	1,180	30	100	2,470	e239	e1,610
16	e6,080	e1,770	e30,600	1,070	13	37	2,620	e195	e1,390
17	e5,950	e1,320	e21,700	1,010	10	27	2,370	e116	e742
18	e3,870	e657	e7,000	936	9	22	2,040	e82	e452
19	e2,810	e320	e2,460	880	8	18	1,730	e60	e279
20	2,300	150	946	815	7	15	1,510	e43	e176
21	2,020	84	456	751	7	14	1,380	32	120
22	1,710	58	268	703	7	13	1,260	22	75
23	1,490	38	152	654	6	11	1,130	15	46
24	1,380	30	112	613	6	10	1,090	11	31
25	1,290	25	86	543	6	8.3	1,040	8	23
26	1,190	21	68	504	5	7.2	1,020	5	13
27	1,130	17	52	531	6	8.1	1,060	7	20
28	1,140	17	53	569	8	12	1,030	5	14
29	1,260	20	69	---	---	---	1,170	16	53
30	1,260	17	56	---	---	---	1,910	73	393
31	1,250	16	53	---	---	---	2,430	186	1,230
Total	51,381	---	70,682.2	24,179	---	818.6	44,295	---	13,727.2

Month	Total Mean Discharge (ft ³ /s)	Total Sediment Discharge (tons/day)
April	43,151	3,920
May	50,550	4,640
June	43,880	3,120
July	19,800	699
August	7,995	60
September	5,451	56