

Water-Data Report 2013

06085800 SUN RIVER AT SIMMS, MT

Upper Missouri Basin
Sun Subbasin

LOCATION.--Lat 47°30'06", long 111°55'55" referenced to North American Datum of 1983, in NW ¼ NW ¼ SE ¼ sec.12, T.20 N., R.3 W., Cascade County, MT, Hydrologic Unit 10030104, on left bank on downstream side of Montana Secondary Highway 565 bridge, 0.7 mi downstream from Simms Creek, 0.7 mi north of Simms, and at river mile 45.0.

DRAINAGE AREA.--1,320 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May to June 1953 in Water Supply Paper (WSP) 1320-B, May to June 1964 in WSP 1840-B, April 1966 to September 1979, April 1997 to October 2004; April 2005 to current year (seasonal records April 2005 to October 2007).

REVISED RECORDS.--Water Data Report MT-75-1: 1964, maximum discharge.

GAGE.--Water-stage recorder. Elevation of gage is 3,570 ft, referenced to the North American Vertical Datum of 1988. May 1941 to October 1965, nonrecording gage at different elevation. April 1966 to September 1979, water-stage recorder at site about 500 ft downstream at different elevation.

REMARKS.--Records are good except for estimated daily discharges, which are poor. Flow is regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs. 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 Several unpublished observations of water temperature and specific conductance were made during the year.

06085800 SUN RIVER AT SIMMS, MT—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	259	227	219	e160	e180	174	129	105	1,460	99	96	72
2	243	227	219	e150	e220	174	129	76	1,160	81	177	73
3	251	227	218	e180	e250	164	126	74	1,530	76	146	67
4	303	228	217	e220	e250	133	106	108	2,270	71	114	60
5	268	226	219	e200	e230	e120	97	134	2,030	57	116	53
6	250	222	212	e250	e200	e130	102	126	1,720	79	134	74
7	240	223	202	e280	e180	e140	107	129	2,190	73	138	95
8	233	233	e150	e280	e160	142	119	110	2,580	67	118	114
9	241	e160	e120	e300	e150	141	121	113	2,750	119	94	116
10	233	e140	e180	e200	e140	139	120	182	2,370	82	103	110
11	230	e120	e200	e120	e140	136	122	1,120	1,450	65	94	114
12	227	e180	e180	e100	e150	132	120	1,340	946	54	99	112
13	222	e200	e160	e130	e180	145	117	1,290	951	42	91	106
14	220	e220	e160	e200	e170	145	114	753	1,170	37	100	103
15	220	e210	e160	e230	e180	141	114	632	715	46	92	101
16	227	e230	e180	e250	e200	138	128	614	423	46	102	97
17	230	251	e200	e240	e180	137	136	617	265	60	83	87
18	227	247	e160	e250	e160	132	172	422	175	59	100	82
19	235	234	e150	e200	e150	135	156	343	204	46	119	90
20	235	235	e180	e180	e140	137	156	243	1,260	48	98	82
21	234	237	e200	e180	e130	136	163	186	739	66	78	75
22	236	226	e150	e190	e150	131	131	173	478	63	78	70
23	244	214	e120	e200	e150	e115	107	211	366	57	74	66
24	240	231	e100	e220	e160	e125	99	360	336	68	69	65
25	236	220	e100	e250	e170	133	90	709	315	73	62	78
26	235	207	e100	e250	e180	133	92	814	273	87	75	175
27	237	222	e120	e230	e160	132	105	826	207	96	77	288
28	240	230	e140	e200	e170	131	108	603	179	86	78	221
29	238	226	e170	e120	---	131	100	884	106	81	79	210
30	231	219	e150	e130	---	130	89	978	109	80	69	205
31	226	---	e150	e150	---	129	---	1,590	---	74	68	---
Total	7,391	6,472	5,186	6,240	4,880	4,261	3,575	15,865	30,727	2,138	3,021	3,261
Mean	238	216	167	201	174	137	119	512	1,024	69.0	97.5	109
Max	303	251	219	300	250	174	172	1,590	2,750	119	177	288
Min	220	120	100	100	130	115	89	74	106	37	62	53
Ac-ft	14,660	12,840	10,290	12,380	9,680	8,450	7,090	31,470	60,950	4,240	5,990	6,470

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2013, BY WATER YEAR (WY)*

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	194	217	188	188	190	208	283	1,120	2,052	356	148	135
Max	519	596	456	314	291	473	1,125	4,123	8,558	2,165	383	422
(WY)	(1972)	(1976)	(1976)	(1976)	(1976)	(1969)	(1969)	(1976)	(1975)	(1975)	(1972)	(1972)
Min	89.0	120	99.8	100	96.3	104	77.6	72.1	109	44.3	48.8	49.3
(WY)	(1978)	(1978)	(2004)	(2008)	(1977)	(1977)	(2004)	(2001)	(1977)	(2003)	(2000)	(1977)

*During periods of operation [April 1966 to September 1979, April 1997 to October 2004; April 2005 to current year (seasonal records April 2005 to October 2007)].

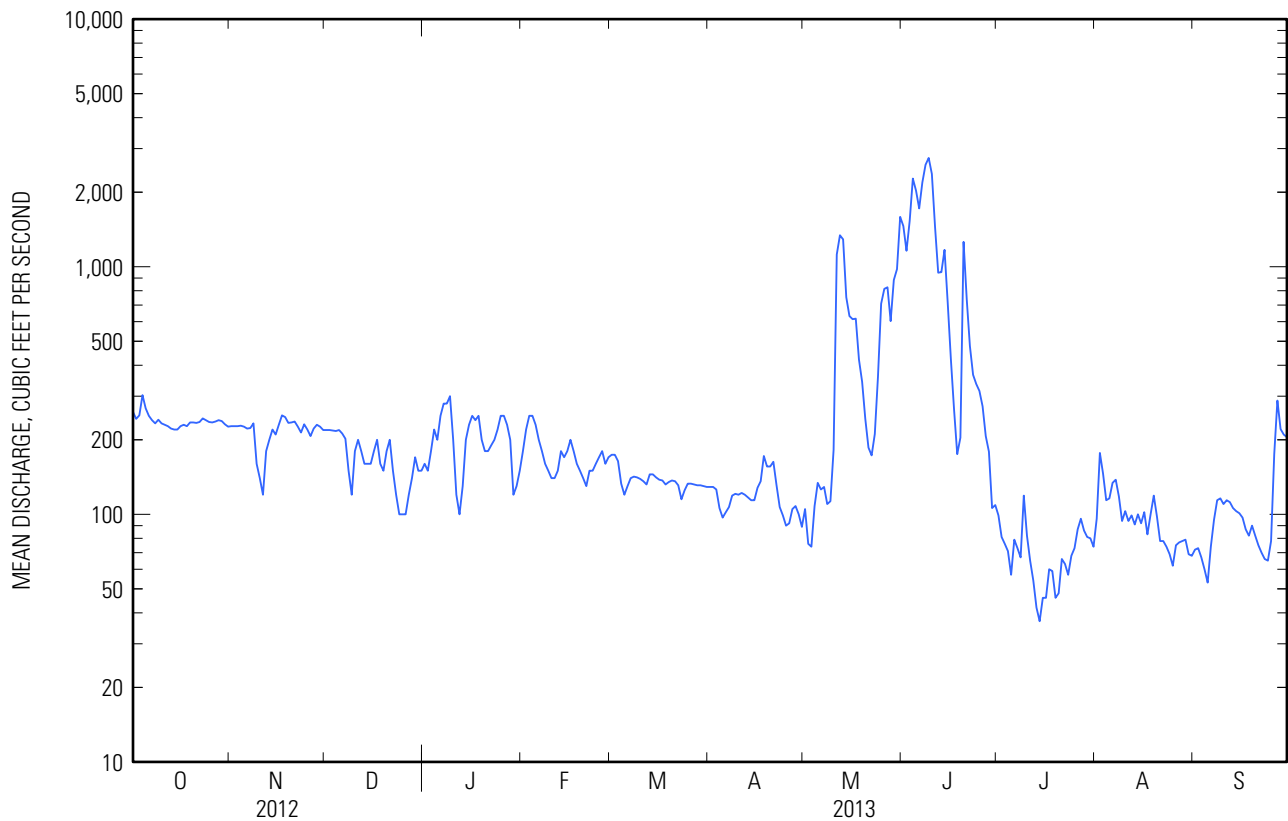
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SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1966 – 2013*	
Annual total	137,212		93,017			
Annual mean	375		255		450	
Highest annual mean					1,177	1975
Lowest annual mean					123	2001
Highest daily mean	5,480	Jun 7	2,750	Jun 9	35,000	Jun 20, 1975
Lowest daily mean	46	Sep 16	37	Jul 14	19	Sep 29, 1977
Annual seven-day minimum	51	Sep 14	48	Jul 13	26	Sep 19, 1977
Maximum peak flow			2,800	Jun 9	50,000	Jun 9, 1964
Maximum peak stage			4.98	Jun 9	^a 13.70	Jun 9, 1964
Annual runoff (ac-ft)	272,200		184,500		326,200	
10 percent exceeds	810		350		821	
50 percent exceeds	223		156		179	
90 percent exceeds	82		75		80	

*During periods of operation [April 1966 to September 1979, April 1997 to October 2004; April 2005 to current year (seasonal records April 2005 to October 2007)].

^aAbout, from floodmark.



06085800 SUN RIVER AT SIMMS, MT—Continued**WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 2007 to current year.

INSTRUMENTATION.--Water temperature probe installed July 6, 2006 (data not published for water year 2006).

REMARKS.--Annual water temperature records are complete and rated excellent. Water-temperature records represent water temperature at sensor within 0.2°C.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 28.5°C, July 19, 2007; minimum 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 28.0°C, July 2; minimum, 0.0°C, many days November to March.

**TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
October			November			December			January			
1	15.5	11.7	13.7	6.9	4.8	5.8	4.4	2.6	3.4	0.0	0.0	0.0
2	15.4	11.9	13.5	7.4	5.0	6.0	4.6	2.6	3.4	0.0	0.0	0.0
3	12.2	7.8	9.1	6.4	4.5	5.5	3.4	1.6	2.5	0.0	0.0	0.0
4	7.9	6.8	7.4	8.0	5.8	6.8	3.8	1.9	2.8	0.0	0.0	0.0
5	8.7	5.3	7.0	9.1	7.5	8.2	4.6	2.4	3.7	0.0	0.0	0.0
6	8.0	5.4	6.9	8.9	7.4	8.1	2.4	0.1	0.9	0.0	0.0	0.0
7	10.4	5.9	8.0	8.5	5.9	7.7	0.6	0.0	0.2	0.0	0.0	0.0
8	9.1	7.8	8.4	5.9	1.5	3.8	0.0	0.0	0.0	0.0	0.0	0.0
9	10.9	7.0	8.7	1.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
10	11.1	7.7	9.3	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
11	9.5	7.3	8.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	10.7	6.6	8.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	11.8	8.9	10.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
14	10.2	9.1	9.5	0.5	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0
15	11.8	9.3	10.2	1.4	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0
16	11.1	8.2	10.0	2.0	0.5	1.3	0.1	0.0	0.0	0.0	0.0	0.0
17	8.2	5.5	6.8	4.1	1.6	2.8	0.1	0.0	0.0	0.0	0.0	0.0
18	8.2	4.6	6.5	4.0	2.4	3.2	0.1	0.0	0.0	0.0	0.0	0.0
19	10.1	6.8	8.2	3.8	1.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0
20	9.8	7.2	8.5	5.5	3.6	4.6	0.1	0.0	0.0	0.0	0.0	0.0
21	7.7	4.7	6.2	5.6	3.5	5.1	0.0	0.0	0.0	0.0	0.0	0.0
22	6.2	2.7	4.3	3.5	0.7	2.0	0.0	0.0	0.0	0.0	0.0	0.0
23	3.5	2.1	2.7	2.6	0.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0
24	2.9	1.7	2.3	3.6	2.4	2.9	0.0	0.0	0.0	0.0	0.0	0.0
25	3.3	1.4	2.3	2.4	0.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0
26	3.0	1.1	2.1	0.8	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
27	4.1	2.0	3.0	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
28	6.2	3.7	4.8	2.1	0.3	1.3	0.0	0.0	0.0	0.1	0.0	0.0
29	9.0	5.7	7.0	3.5	1.7	2.7	0.0	0.0	0.0	0.0	0.0	0.0
30	9.4	6.3	7.8	4.2	2.7	3.3	0.0	0.0	0.0	0.0	0.0	0.0
31	8.5	5.9	7.1	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
Month	15.5	1.1	7.4	9.1	0.0	2.9	4.6	0.0	0.5	0.1	0.0	0.0

06085800 SUN RIVER AT SIMMS, MT—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	0.1	0.0	0.0	2.5	0.2	1.5	11.6	5.1	8.3	10.5	4.2	7.4
2	0.1	0.0	0.0	5.4	2.0	3.4	13.1	6.0	9.5	13.6	5.5	9.3
3	0.1	0.0	0.0	4.4	0.6	3.0	12.0	8.2	10.1	11.5	9.0	9.8
4	0.1	0.0	0.0	1.7	0.0	0.5	11.8	7.2	9.7	11.4	7.9	9.7
5	0.2	0.0	0.0	0.5	0.0	0.2	11.6	8.2	9.8	16.4	7.7	11.8
6	0.3	0.0	0.1	0.3	0.0	0.1	10.7	7.4	9.0	18.7	10.3	14.3
7	0.3	0.0	0.1	3.9	0.0	1.5	8.8	5.2	7.3	17.7	11.8	14.7
8	0.3	0.0	0.1	5.0	0.1	2.3	6.4	2.8	4.5	19.1	11.3	15.0
9	0.1	0.0	0.0	5.4	0.3	2.7	8.7	2.0	5.1	19.2	12.8	16.0
10	0.3	0.0	0.1	4.1	1.2	2.8	9.0	3.5	6.5	18.0	11.5	15.1
11	0.1	0.0	0.0	3.0	1.2	2.0	10.8	5.9	8.0	15.1	11.3	12.7
12	0.4	0.0	0.1	2.8	0.0	1.2	10.8	5.8	8.2	13.1	11.5	12.4
13	1.0	0.0	0.3	7.9	2.7	4.9	10.7	6.7	8.6	15.9	11.2	13.3
14	1.1	0.0	0.2	8.7	5.2	6.8	7.7	3.5	5.1	15.6	10.8	13.1
15	1.3	0.0	0.2	7.3	4.5	6.0	5.2	1.6	3.2	14.4	10.7	12.7
16	1.3	0.0	0.4	6.9	3.4	5.1	4.2	1.8	2.9	13.3	10.3	12.0
17	0.7	0.0	0.2	5.7	2.5	4.2	8.8	1.4	4.7	12.1	9.7	11.1
18	1.2	0.0	0.2	4.2	0.0	2.1	10.0	3.6	6.8	13.3	9.9	11.4
19	1.0	0.0	0.2	6.0	0.1	2.8	9.0	5.5	7.4	12.3	10.9	11.5
20	0.7	0.0	0.1	8.2	2.4	5.0	11.9	5.7	8.5	13.9	10.2	11.7
21	1.0	0.0	0.1	7.1	3.6	5.3	8.7	5.6	7.0	17.7	9.7	13.4
22	1.0	0.0	0.2	4.6	1.5	2.8	10.4	3.1	6.4	13.9	11.4	12.8
23	1.2	0.0	0.2	4.5	0.0	1.7	10.5	4.2	7.3	12.9	10.6	11.8
24	1.6	0.0	0.3	5.4	0.0	2.2	12.8	5.8	9.2	15.0	10.4	12.5
25	0.0	0.0	0.0	6.6	0.2	3.2	14.6	7.8	11.1	13.2	9.7	11.6
26	0.6	0.0	0.1	8.4	1.8	4.9	15.8	8.6	12.1	13.8	9.6	11.7
27	1.5	0.0	0.3	9.4	3.2	6.4	13.4	10.1	11.7	14.0	10.6	12.2
28	2.6	0.0	0.7	10.0	5.2	7.7	14.8	9.4	11.8	13.8	11.2	12.5
29	---	---	---	10.2	6.6	8.1	12.6	8.5	10.5	14.3	10.7	12.5
30	---	---	---	11.2	5.6	8.2	9.5	6.0	7.8	13.7	10.9	11.8
31	---	---	---	10.4	6.3	8.6	---	---	---	10.9	9.2	9.8
Month	2.6	0.0	0.1	11.2	0.0	3.8	15.8	1.4	7.9	19.2	4.2	12.2

06085800 SUN RIVER AT SIMMS, MT—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	13.1	8.1	10.6	27.7	20.5	24.0	21.0	17.3	18.4	21.5	15.9	18.6
2	12.5	10.4	11.6	28.0	20.2	24.2	19.3	16.3	17.8	20.1	17.1	18.7
3	10.4	9.0	9.5	27.8	21.4	24.7	20.2	15.1	17.5	20.8	16.8	18.7
4	12.3	8.2	10.0	27.9	21.4	24.5	23.3	16.2	19.6	23.1	17.8	20.0
5	14.2	9.4	11.7	25.7	19.3	22.6	23.3	17.5	20.5	21.6	18.3	20.1
6	15.4	11.5	13.4	24.5	17.8	21.0	24.1	17.6	20.8	22.2	17.6	19.9
7	14.2	11.5	12.6	25.4	17.8	21.5	23.5	17.9	20.8	20.2	18.1	19.1
8	15.0	11.2	12.9	22.7	18.5	20.5	24.1	17.6	20.6	19.0	17.1	18.2
9	14.7	10.8	13.0	24.8	16.8	20.6	23.4	18.0	20.6	18.5	15.4	16.8
10	15.0	11.1	13.1	25.6	17.8	21.8	24.7	18.7	21.5	20.6	15.2	17.8
11	14.0	12.0	13.0	23.5	19.3	21.4	22.0	18.4	20.3	20.5	16.2	18.5
12	15.1	11.4	13.4	22.8	16.8	19.7	23.2	17.3	20.3	20.5	16.0	18.4
13	14.1	12.5	13.3	23.7	16.7	20.0	22.9	17.6	20.2	20.5	16.3	18.6
14	14.6	10.7	12.5	24.7	17.0	20.7	23.7	17.4	20.5	19.4	16.3	18.0
15	17.7	10.3	13.7	24.1	17.5	20.9	24.0	18.2	21.1	19.6	15.3	17.5
16	19.5	13.3	16.4	24.0	16.8	20.3	24.1	18.0	21.0	20.1	16.7	18.4
17	21.7	14.7	18.2	24.5	18.5	21.3	22.9	18.3	20.7	18.5	15.7	16.7
18	21.8	16.5	19.1	25.9	18.5	22.1	24.1	17.9	20.9	15.8	13.6	14.8
19	18.4	15.7	16.9	25.9	18.8	22.3	23.5	17.6	20.5	16.5	12.1	14.2
20	15.7	10.7	12.6	26.3	18.7	22.4	23.4	16.9	20.1	16.7	12.2	14.4
21	17.3	11.6	14.4	25.8	18.9	22.3	22.6	16.2	19.5	16.5	13.2	14.7
22	18.4	13.4	16.0	25.0	18.7	21.8	21.5	16.3	19.1	15.5	14.0	14.7
23	21.2	14.5	17.9	25.4	18.1	21.6	21.0	18.2	19.5	14.0	11.9	12.9
24	21.5	17.4	19.2	26.0	18.6	22.1	23.4	17.1	20.0	12.2	11.1	11.8
25	21.7	16.5	19.0	25.6	18.9	22.1	23.0	17.5	20.0	11.8	10.6	11.4
26	20.9	15.9	18.3	25.7	18.8	22.2	22.6	17.7	20.0	10.8	9.1	10.1
27	23.3	15.7	19.2	24.7	18.8	21.8	21.7	17.2	19.6	11.0	7.5	9.2
28	25.3	17.7	21.4	24.1	18.8	21.3	21.5	17.6	19.7	10.4	8.9	9.7
29	24.0	18.5	21.6	21.7	17.3	19.5	23.1	17.4	20.0	10.7	9.5	9.9
30	26.2	19.0	22.6	22.1	17.2	19.5	22.2	17.5	19.8	11.3	8.8	9.7
31	---	---	---	23.6	16.7	20.1	21.7	16.2	18.9	---	---	---
Month	26.2	8.1	15.2	28.0	16.7	21.6	24.7	15.1	20.0	23.1	7.5	15.7