14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA

Lower Columbia Basin
Lower Cowlitz Subbasin

LOCATION.--Lat 46°19′20″, long 122°41′45″ referenced to North American Datum of 1927, in SE ¼ NW ¼ sec.29, T.10 N., R.1 E., Cowlitz County, WA, Hydrologic Unit 17080005, on right bank at upstream side of bridge on South Toutle Road, 3.1 mi downstream from Johnson Creek, 0.8 mi upstream from Studebaker Creek, 1.3 mi southeast of Toutle, and approximately 1.0 mi upstream from mouth.

DRAINAGE AREA.--120 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1939 to December 1957, February 1996 to September 2013 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 419.44 ft above NGVD of 1929. To convert to NAVD of 1988, add 3.47 feet (USGS Level 1 GNSS survey as per USGS T&M 11-D1). Prior to Feb. 9, 1996, water-stage recorder at site 0.6 mi upstream, at elevation at NGVD of 1929 (river-profile survey).

REMARKS.--Records fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--35 years (water years 1940-57, 1997-2013), 632 ft^3/s, 71.61 in/yr, 458,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined Feb. 8, 1996, gage height, 28.81 ft from high-water mark; maximum gage height, 28.90 ft Nov. 7, 2006; maximum daily discharge, 17,400 ft^3/s Feb. 8, 1996; minimum discharge, 61 ft^3/s Sept. 3-6, 2003.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 9, 1990, produced discharge of 19,200 ft^3/s as recorded at station 14241490, 2.2 mi upstream. A flood believed to be in excess of 100,000 ft^3/s (from Ph.d. thesis by Fairchild, U. Wash., 1985) occurred at about 1000 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 4,200 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	a1700	*8,480	b*25.69
Sep 30	0130	4,670	23.80

Minimum discharge, 71 ft^3/s, Oct. 7-9, gage height, 19.60 ft.

a Estimated.
b From outside high-water mark.

Suggested citation: U.S. Geological Survey, 2014, Water-resources data for the United States, Water Year 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 14241500, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/14241500.2013.pdf

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—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	76	1,850	1,990	479	1,850	1,030	796	585	938	208	121	104
2	76	1,210	2,090	443	1,470	1,070	774	518	791	201	121	102
3	76	896	2,020	413	1,270	1,010	730	507	692	196	115	133
4	75	740	2,440	408	1,090	878	760	544	583	188	111	114
5	75	635	2,290	400	996	787	1,430	603	509	185	108	120
6	74	533	1,720	390	997	744	1,920	642	466	181	105	945
7	73	487	1,650	586	1,020	733	1,920	683	425	173	103	364
8	73	423	1,480	867	855	620	1,740	670	390	169	102	221
9	73	375	1,230	1,450	729	543	1,360	636	357	164	102	179
10	74	335	1,110	1,230	635	499	1,260	619	332	e159	108	158
11	75	335	1,040	950	563	476	1,240	616	313	e153	105	143
12	80	832	1,010	784	555	498	1,080	607	306	e148	105	133
13	113	607	873	637	635	528	1,040	608	346	e145	101	129
14	107	506	808	556	613	592	936	568	313	e141	100	127
15	218	439	737	502	587	704	873	455	275	e138	101	127
16	372	391	831	460	609	801	784	417	257	e134	103	147
17	176	488	1,920	438	607	809	679	441	246	e131	99	150
18	133	799	1,390	425	556	689	616	405	235	e129	97	153
19	216	e5,800	1,250	412	514	606	1,000	406	231	e127	95	134
20	253	3,940	2,540	416	470	1,430	1,250	373	245	125	94	128
21	225	2,490	1,810	434	459	1,500	1,090	435	254	122	94	134
22	197	1,750	1,480	441	677	1,170	967	713	229	e120	94	198
23	251	1,690	1,380	452	844	927	856	929	218	e119	95	406
24	253	2,030	1,270	456	701	816	789	1,060	330	117	97	343
25	234	1,510	1,170	589	723	699	740	852	276	115	98	346
26	199	1,170	1,050	584	641	625	727	757	295	113	99	293
27	238	926	917	577	571	578	733	994	279	111	112	316
28	764	779	777	737	721	568	720	1,150	252	114	107	1,580
29	2,030	742	671	1,590	---	557	785	1,360	231	120	123	3,250
30	1,650	900	590	2,260	---	586	706	1,480	219	119	130	3,470
31	1,920	---	528	2,600	---	692	---	1,210	---	119	113	---
Total	10,449	35,608	42,062	22,966	21,958	23,765	30,301	21,843	10,833	4,484	3,258	14,147
Mean	337	1,187	1,357	741	784	767	1,010	705	361	145	105	472
Max	2,030	5,800	2,540	2,600	1,850	1,500	1,920	1,480	938	208	130	3,470
Min	73	335	528	390	459	476	616	373	218	111	94	102
Ac-ft	20,730	70,630	83,430	45,550	43,550	47,140	60,100	43,330	21,490	8,890	6,460	28,060
Cfsm	2.81	9.89	11.3	6.17	6.54	6.39	8.42	5.87	3.01	1.21	0.88	3.93
In.	3.24	11.04	13.04	7.12	6.81	7.37	9.39	6.77	3.36	1.39	1.01	4.39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	337	905	1,124	1,105	991	865	787	671	429	187	117	141
Max	1,222	2,207	2,031	2,488	2,451	1,647	1,357	1,097	889	414	231	472
(WY)	(1998)	(2007)	(1997)	(1953)	(1996)	(1950)	(2012)	(1948)	(2010)	(1955)	(2004)	(2013)
Min	75.3	106	389	318	272	297	257	211	132	97.2	77.5	74.4
(WY)	(1953)	(1953)	(1945)	(2001)	(2005)	(1941)	(1941)	(1947)	(1940)	(1940)	(2003)	(2006)

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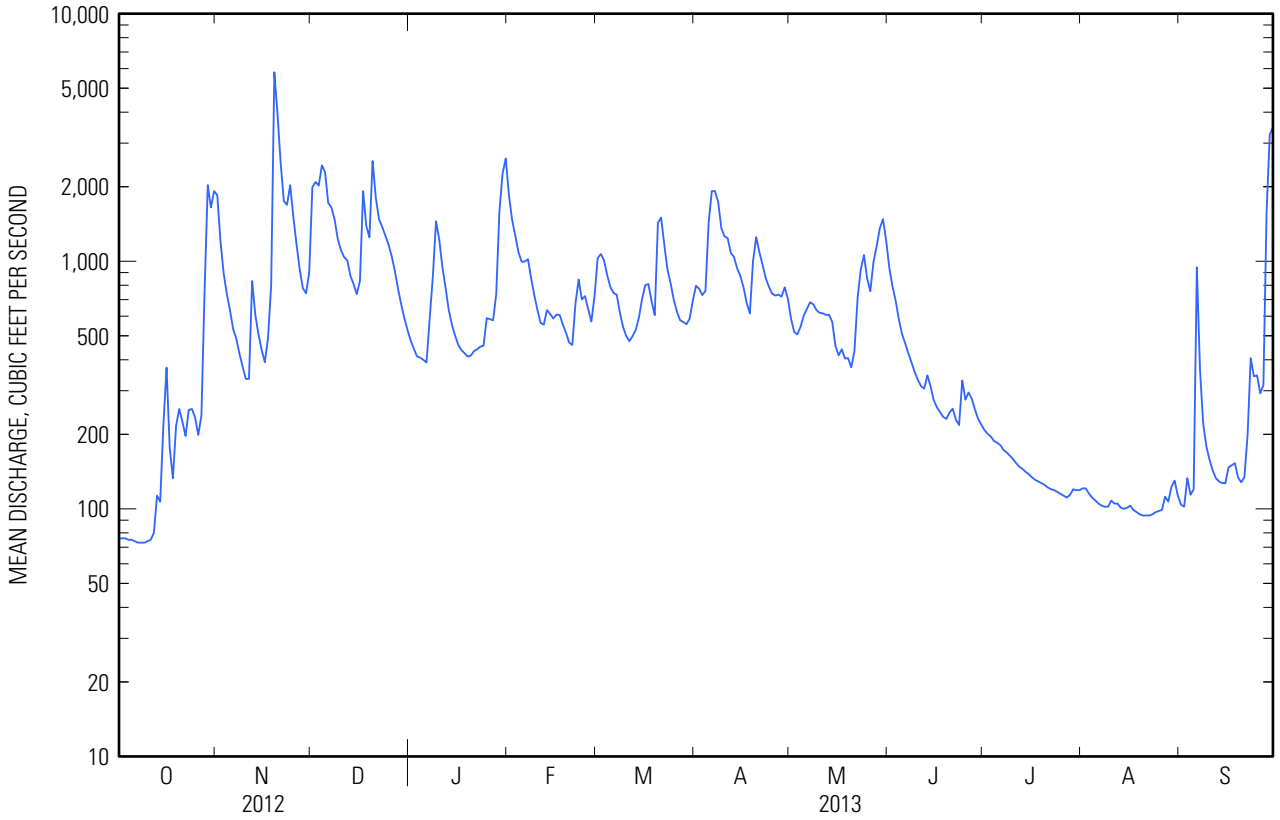
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1940 - 2013	
Annual total	320,855		241,674			
Annual mean	877		662		632	
Highest annual mean					928	1997
Lowest annual mean					317	2001
Highest daily mean	5,800	Nov 19	5,800	Nov 19	17,400	Feb 8, 1996
Lowest daily mean	73	Oct 7	73	Oct 7	61	Oct 13, 2009
Annual seven-day minimum	74	Oct 4	74	Oct 4	64	Aug 31, 2003
Annual runoff (ac-ft)	636,400		479,400		458,200	
Annual runoff (cfsm)	7.31		5.52		5.27	
Annual runoff (inches)	99.47		74.92		71.61	
10 percent exceeds	1,860		1,460		1,350	
50 percent exceeds	762		528		437	
90 percent exceeds	90		108		98	



14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1996 to September 2013. (discontinued).

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: February 1996 to March 1999, October 1999 to September 2005. Water years 1999, 2006-2013, daily sediment discharge values for period October to March, monthly sediment discharge values only for the period April to September.

INSTRUMENTATION.--Samples obtained by observer, February 1996 to September 1999. Automatic pumping sampler October 1999 to current year.

REMARKS.--Station was placed in operation after the station at South Fork Toutle River at Camp 12, near Toutle, WA (14241490) was destroyed by flood of February 1996. Current site is 2.2 miles downstream from destroyed station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily, 42,900 mg/L, Nov. 7, 2006; minimum daily, 1 mg/L, on many days 1996, 1998-2007, 2009, 2011, 2012.
SEDIMENT DISCHARGE: Maximum daily, 1,050,000 tons, Nov. 7, 2006; minimum daily, 0.23 tons, Sept. 25-29, 2005, Oct. 27, 28, 2006.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: Maximum daily, 1,530 mg/L Nov. 20; minimum daily, 2 mg/L, Oct. 1-11.
SEDIMENT DISCHARGE: Maximum daily, 24,500 tons (estimated), Nov. 19; minimum daily, .39 tons, Oct. 7, 8.

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
[e, estimated]

Day	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
		October			November			December	
1	76	2	0.41	1,850	117	590	1,990	e370	e2,050
2	76	2	0.41	1,210	62	208	2,090	e281	e1,590
3	76	2	0.41	896	32	78	2,020	e222	e1,210
4	75	2	0.41	740	18	36	2,440	263	1,760
5	75	2	0.40	635	14	25	2,290	197	1,250
6	74	2	0.40	533	9	12	1,720	106	495
7	73	2	0.39	487	6	7.3	1,650	70	312
8	73	2	0.39	423	4	4.6	1,480	50	201
9	73	2	0.40	375	4	3.9	1,230	38	125
10	74	2	0.40	335	3	2.9	1,110	25	76
11	75	2	0.40	335	7	7.3	1,040	21	62
12	80	5	1.1	832	42	94	1,010	17	47
13	113	e16	e5.1	607	27	45	873	14	33
14	107	e15	e4.4	506	18	25	808	13	28
15	218	e30	e19	439	11	13	737	12	24
16	372	e76	e87	391	5	5.3	831	e24	e69
17	176	22	11	488	13	21	1,920	e119	634
18	133	11	3.8	799	52	155	1,390	e36	e139
19	216	9	5.9	e5,800	1,510	e24,500	1,250	27	98
20	253	11	7.5	3,940	1,530	16,900	2,540	e172	e1,220
21	225	7	4.0	2,490	773	5,240	1,810	81	406
22	197	5	2.8	1,750	335	1,640	1,480	31	124
23	251	5	3.1	1,690	e207	e1,080	1,380	22	84
24	253	7	4.7	2,030	e295	e1,650	1,270	19	65
25	234	8	4.8	1,510	e201	e825	1,170	16	50
26	199	7	3.5	1,170	e169	e536	1,050	14	40
27	238	10	8.3	926	e145	e364	917	13	32
28	764	49	111	779	e131	e277	777	12	24
29	2,030	471	2,900	742	e134	e270	671	11	20
30	1,650	160	779	900	e159	e394	590	10	16
31	1,920	197	1,050	---	---	---	528	9	13
Total	10,449	---	5,020.42	35,608	---	55,009.3	42,062	---	12,297

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA—Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
[e, estimated]

Day	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)	Mean discharge (ft³/s)	Mean concen-tration (mg/L)	Sediment discharge (tons/day)
		January			February			March	
1	479	8	11	1,850	84	424	1,030	21	58
2	443	7	8.9	1,470	39	158	1,070	15	43
3	413	7	7.4	1,270	19	64	1,010	12	34
4	408	6	6.4	1,090	15	45	878	8	18
5	400	5	5.3	996	12	33	787	6	13
6	390	4	4.4	997	11	31	744	6	12
7	586	12	21	1,020	12	33	733	7	13
8	867	26	70	855	8	18	620	4	7.4
9	1,450	63	247	729	6	11	543	3	4.7
10	1,230	26	88	635	5	7.8	499	3	4.2
11	950	13	34	563	4	6.5	476	3	3.9
12	784	8	16	555	4	6.5	498	3	4.5
13	637	6	10	635	6	9.9	528	4	5.6
14	556	6	8.6	613	7	11	592	5	7.5
15	502	5	7.3	587	6	9.9	704	7	13
16	460	5	6.3	609	6	9.7	801	12	26
17	438	5	5.6	607	5	9.0	809	14	30
18	425	4	5.1	556	5	7.5	689	10	18
19	412	4	4.6	514	5	6.3	606	7	11
20	416	4	4.7	470	4	5.2	1,430	146	688
21	434	4	5.2	459	4	5.0	1,500	63	260
22	441	5	5.6	677	e21	e51	1,170	27	86
23	452	5	6.6	844	14	31	927	13	33
24	456	7	8.5	701	8	16	816	11	24
25	589	9	15	723	7	14	699	10	19
26	584	8	13	641	5	8.9	625	7	13
27	577	8	13	571	5	7.3	578	7	12
28	737	25	61	721	11	24	568	8	12
29	1,590	e164	e722	---	---	---	557	8	12
30	2,260	e222	e1,490	---	---	---	586	8	13
31	2,600	e226	e1,660	---	---	---	692	10	18
Total	22,966	---	4,571.5	21,958	---	1,063.5	23,765	---	1,516.8

Month	Total Mean Discharge (ft³/s)	Total Sediment Discharge (tons/day)
April	30,301	4,260
May	21,843	1,850
June	10,833	681
July	4,484	67
August	3,258	58
September	14,147	115,000