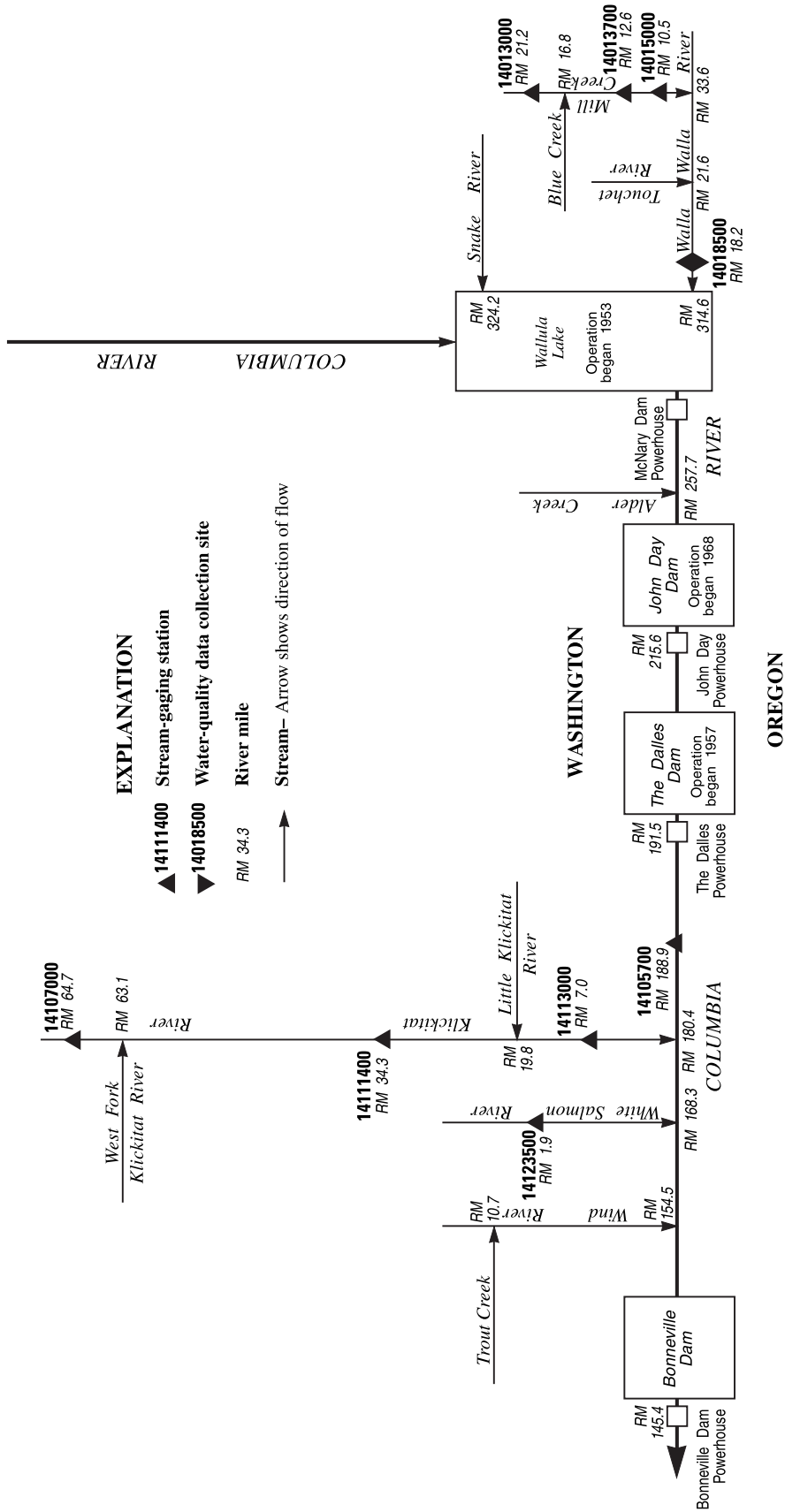


**Figure 50.** Location of surface-water stations in the Columbia River Basin between Wallula Lake and Stevenson including Walla Walla, Klickitat, and White Salmon River Basins.



**Figure 51.** Schematic diagram showing surface-water stations in the Columbia River Basin between Wallula Lake and Stevenson including Walla Walla, Klickitat, and White Salmon River Basins.

WALLA WALLA RIVER BASIN

14013000 MILL CREEK NEAR WALLA WALLA, WA

LOCATION.--Lat 46°00'29", long 118°07'03", in SW 1/4 SW 1/4 sec.7, T.6 N., R.38 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.1 mi downstream from Railroad Canyon, 4.0 mi downstream from City of Walla Walla diversion dam, 4.4 mi upstream from Blue Creek, 11.5 mi southeast of Walla Walla, and at mile 21.2.

DRAINAGE AREA.--59.6 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1913 to September 1917, April to September 1938, October 1939 to September 1976, October 1979 to current year. Maximum discharge and occasional discharge measurements 1977-79.

REVISED RECORDS.--WSP 1398: 1946-48(M), 1950 (M). WSP 1935: 1959, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,995.85 ft above NGVD of 1929 (levels by U.S. Corps of Engineers). Prior to Oct. 1, 1938, nonrecording gages at about same site at different datums.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation. City of Walla Walla diverts about 28 ft<sup>3</sup>/s 4.0 mi upstream from station for municipal use. Water temperatures March 1962 to July 1965. Sediment records March 1962 to July 1965. U.S. Geological Survey telephone telemeter at station.

AVERAGE DISCHARGE.--65 years (water years 1914-17, 1940-76, 1980-2003), 96.2 ft<sup>3</sup>/s, 69,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,350 ft<sup>3</sup>/s Feb. 9, 1996, gage height, 20.43 ft, from rating curve extended above 1,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily discharge, 9.5 ft<sup>3</sup>/s Dec. 9, 10, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 31 or Apr. 1, 1931, reached a discharge of about 11,000 ft<sup>3</sup>/s, based on slope-area measurement about 900 ft upstream at old City of Walla Walla diversion dam.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 27	0215	949	16.55	Feb 1	0345	*1,950	*17.61

Minimum discharge, 27 ft<sup>3</sup>/s, part or all of each day Oct. 7-14, 16-24.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	33	36	92	1,480	98	249	136	65	e34	e34	e31
2	31	33	36	86	703	92	247	131	60	e33	e30	e32
3	30	35	36	182	415	90	234	128	58	e34	e32	e32
4	31	36	36	154	282	86	206	134	53	e34	e35	e32
5	29	35	36	144	217	86	182	183	51	e34	e31	e33
6	28	35	36	107	176	88	174	191	49	e35	e33	e32
7	28	36	36	79	149	164	163	177	48	e35	e34	35
8	27	44	35	63	130	267	177	155	47	e35	e33	48
9	28	51	36	55	114	305	199	136	46	e32	e30	41
10	28	49	37	50	102	349	201	121	43	e32	e31	39
11	27	41	37	48	92	356	195	122	41	e32	e31	36
12	27	40	42	48	85	393	186	153	40	e32	e32	35
13	27	41	44	58	84	523	181	183	39	e32	e31	35
14	27	42	74	57	83	493	165	181	38	e32	e30	35
15	29	40	60	57	82	518	144	165	38	e34	e30	36
16	28	38	67	56	115	576	131	142	38	e35	e31	37
17	27	38	54	53	144	380	128	126	38	e35	e30	37
18	27	38	52	51	194	271	127	112	39	e35	e29	37
19	27	38	46	49	202	216	116	97	39	e33	e28	37
20	28	38	43	48	195	189	114	87	38	e33	e29	36
21	27	38	42	47	196	178	118	85	40	e33	e30	36
22	27	38	39	49	249	237	128	83	41	e34	e32	36
23	27	39	39	63	237	315	124	84	39	e34	e34	36
24	28	40	39	67	191	270	132	88	38	e33	e32	36
25	28	38	37	79	156	245	132	103	37	e33	e30	36
26	31	37	37	349	134	291	144	94	38	e33	e29	36
27	31	36	44	759	119	284	157	89	37	e33	e28	36
28	34	36	48	406	107	237	162	85	37	e33	e30	35
29	37	36	55	290	---	194	156	80	37	e33	e31	36
30	35	36	64	897	---	169	145	81	36	e35	e30	36
31	35	---	102	1,130	---	197	---	79	---	e33	e30	---
TOTAL	906	1,155	1,425	5,673	6,433	8,157	4,917	3,811	1,288	1,038	960	1,075
MEAN	29.2	38.5	46.0	183	230	263	164	123	42.9	33.5	31.0	35.8
MAX	37	51	102	1,130	1,480	576	249	191	65	35	35	48
MIN	27	33	35	47	82	86	114	79	36	32	28	31
AC-FT	1,800	2,290	2,830	11,250	12,760	16,180	9,750	7,560	2,550	2,060	1,900	2,130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2003, BY WATER YEAR (WY)

	36.7	72.6	112	131	157	161	174	138	74.7	37.7	30.9	31.5
MEAN	36.7	72.6	112	131	157	161	174	138	74.7	37.7	30.9	31.5
MAX	105	263	376	362	548	410	420	495	260	69.8	48.7	47.5
(WY)	(1952)	(1996)	(1965)	(1965)	(1996)	(1997)	(1917)	(1917)	(1974)	(1974)	(1975)	(1959)
MIN	19.4	24.1	32.9	33.7	44.3	45.4	46.5	40.1	27.7	23.0	20.4	20.7
(WY)	(1940)	(1940)	(1966)	(1944)	(1994)	(1941)	(1941)	(1992)	(1992)	(1994)	(1987)	(1983)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1914 - 2003

ANNUAL TOTAL	35,471		36,838		
ANNUAL MEAN	97.2		101		96.2
HIGHEST ANNUAL MEAN					180
LOWEST ANNUAL MEAN					54.1
HIGHEST DAILY MEAN	1,080	Apr 14	1,480	Feb 1	3,240
LOWEST DAILY MEAN	25	Aug 14	27	Oct 8	9.5
ANNUAL SEVEN-DAY MINIMUM	25	Aug 14	27	Oct 17	10
ANNUAL RUNOFF (AC-FT)	70,360		73,070		69,660
10 PERCENT EXCEEDS	226		204		204
50 PERCENT EXCEEDS	48		41		58
90 PERCENT EXCEEDS	27		30		28

e Estimated

## 14013700 MILL CREEK AT FIVE MILE ROAD BRIDGE, NEAR WALLA WALLA, WA

LOCATION.--Lat 46°05'09", long 118°13'38", in SW ¼ NE ¼ sec.18, T.7 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, on right bank 4.2 mi downstream from Blue Creek, 3.0 mi upstream from diversion to Bennington Lake, 6 mi east of Walla Walla, and at mile 12.6.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--November 1997 to current year (seasonal records).

GAGE.--Water-stage recorder. Elevation of gage is 1,348 ft above NGVD of 1929 (levels by Walla Walla County).

REMARKS.--Records poor. No regulation. City of Walla Walla diverts water for municipal supply about 13 miles upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, unknown, Feb. 1, 2003, gage height, unknown; maximum gage height, 9.91 ft Feb. 24, 2002; minimum discharge, 29 ft<sup>3</sup>/s, Nov. 1, 2, 2002.

EXTREMES FOR PERIOD NOVEMBER TO APRIL.--Maximum discharge, unknown Feb. 1, gage height, unknown; minimum discharge, 29 ft<sup>3</sup>/s Nov. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR NOVEMBER 2002 TO APRIL 2003  
DAILY MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR
1	31	e35	139	e1,800	158	289
2	30	e35	118	798	150	310
3	32	e35	209	482	149	310
4	33	e35	167	370	144	287
5	32	e35	153	297	143	265
6	32	e35	120	249	145	261
7	34	38	96	215	210	251
8	45	38	82	192	381	261
9	52	39	72	175	449	281
10	50	40	65	160	522	279
11	42	41	61	147	530	269
12	41	46	60	138	551	255
13	44	51	72	135	628	244
14	e43	78	72	139	496	226
15	e42	77	75	132	562	201
16	e37	85	73	180	737	183
17	e37	75	70	220	520	177
18	e37	68	67	277	386	174
19	e37	65	65	284	310	158
20	e37	58	62	273	258	152
21	e37	56	61	267	231	156
22	e37	55	64	303	274	167
23	e40	55	87	291	326	159
24	e41	54	98	257	306	169
25	e37	53	107	227	287	173
26	e35	53	e280	203	323	195
27	e35	63	e1,000	184	326	211
28	e35	70	e700	170	290	221
29	e35	86	e480	252	214	---
30	e35	111	e1,100	224	199	---
31	155	e1,400	241	---	---	---
TOTAL	1,135	1,820	7,275	8,565	10,509	6,697
MEAN	37.8	58.7	235	306	339	223
MAX	52	155	1,400	1,800	737	310
MIN	30	35	60	132	143	152
AC-FT	2,250	3,610	14,430	16,990	20,840	13,280

e Estimated

14015000 MILL CREEK AT WALLA WALLA, WA

LOCATION.--Lat 46°04'35", long 118°16'21", in NE ¼ NW ¼ sec.23, T.7 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 200 ft downstream from diversion dam, 1.5 mi east of Walla Walla, and at mile 10.5.

DRAINAGE AREA.--95.7 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1941 to current year.

REVISED RECORDS.--WSP 1288: Drainage area. WSP 1348: 1943, 1945-46.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,165.49 ft above NGVD of 1929 (levels by U.S. Corps of Engineers). April 1941 to June 11, 1941, nonrecording gage, and June 11, 1941, to Jan. 22, 1957, water-stage recorder, at sites 0.8 mi downstream at different datum. U.S. Geological Survey telephone telemeter at station.

AVERAGE DISCHARGE.--62 years (water years 1942-2003), 80.0 ft<sup>3</sup>/s, 57,960 acre-ft/yr.

REMARKS.--No estimated daily discharges. Records fair except for those below 10 ft<sup>3</sup>/s, which are poor. Some regulation at diversion dam 200 ft upstream from station where water is diverted into Yellowhawk and Garrison Creeks for stock and irrigation. Since Nov. 19, 1941, water has been diverted 1.0 mi upstream into Mill Creek Reservoir for flood control with release of stored water after flood into Russell Creek, and is also diverted as required to replenish losses from seepage and evaporation from small recreation pool maintained in the reservoir. City of Walla Walla diverts water for municipal supply about 11 mi upstream. Other small diversions upstream from station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,190 ft<sup>3</sup>/s Feb. 9, 1996, gage height, 6.89 ft (inside high-water mark), from rating curve extended above 1,500 ft<sup>3</sup>/s; no flow many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 31 or Apr. 1, 1931, discharge not determined, was greatest since at least 1913. A discharge of about 11,000 ft<sup>3</sup>/s, based on a slope-area measurement, was determined for the 1931 peak at old City of Walla Walla diversion dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,570 ft<sup>3</sup>/s Jan. 31, gage height, 4.73 ft; no flow part or all of each day Oct. 1-24, Nov. 5, Jun. 10-12, 16-30, July 1.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	15	7.9	92	1,340	96	265	116	32	0.63	1.1	2.2
2	0.00	5.7	7.9	81	872	87	302	108	25	1.1	1.1	2.3
3	0.00	8.1	7.9	175	508	88	299	102	18	1.3	1.2	2.2
4	0.00	14	7.1	169	364	83	265	106	11	1.3	1.2	2.3
5	0.00	16	13	157	261	81	228	147	8.8	1.6	0.73	2.2
6	0.00	12	13	123	199	83	220	164	7.6	1.6	0.78	2.3
7	0.00	9.0	13	89	161	155	208	154	6.9	1.7	1.1	2.5
8	0.00	20	13	71	135	337	216	132	7.0	1.6	1.3	3.6
9	0.00	27	13	61	117	404	237	107	6.6	1.9	1.1	3.1
10	0.00	28	14	51	99	456	233	90	2.5	1.6	1.5	2.9
11	0.00	18	15	46	85	452	218	90	0.15	0.99	1.5	3.2
12	0.00	14	15	43	79	461	199	126	4.2	0.66	1.6	3.0
13	0.00	13	15	58	73	550	186	168	4.5	0.60	1.5	2.5
14	0.00	12	40	57	76	545	169	161	2.8	0.70	1.7	2.4
15	0.00	11	39	59	71	553	145	137	2.4	0.65	1.0	2.5
16	0.00	9.1	47	57	112	655	126	114	2.4	0.84	1.1	2.6
17	0.00	9.1	41	53	151	467	115	98	1.5	1.1	1.1	2.9
18	0.00	11	36	49	226	344	111	87	0.22	1.1	1.5	2.8
19	0.00	8.3	29	46	246	248	97	74	0.00	0.97	1.5	2.3
20	0.00	7.9	22	43	231	211	91	63	0.52	0.86	1.3	2.2
21	0.00	8.0	20	41	221	191	91	57	1.4	0.77	1.6	2.6
22	0.31	7.9	17	41	283	241	100	50	0.72	0.90	1.5	2.3
23	0.00	8.1	20	58	276	332	91	50	0.58	1.1	1.4	2.5
24	1.4	8.0	22	69	224	298	98	51	0.00	1.1	1.2	2.3
25	10	8.0	20	76	180	262	104	63	0.00	1.1	1.3	2.2
26	13	8.0	21	179	154	314	122	56	0.00	1.1	1.9	2.2
27	14	8.3	30	673	132	323	137	50	0.00	1.1	2.3	2.2
28	17	7.9	37	398	111	277	146	48	0.00	0.94	2.2	2.2
29	21	8.1	52	276	---	219	141	42	0.00	1.1	2.2	2.2
30	20	7.9	68	791	---	184	128	41	0.00	0.63	2.2	18
31	19	---	99	1,100	---	197	---	41	---	0.92	2.4	---
TOTAL	115.71	348.4	814.8	5,282	6,987	9,194	5,088	2,893	146.79	33.56	45.11	90.7
MEAN	3.73	11.6	26.3	170	250	297	170	93.3	4.89	1.08	1.46	3.02
MAX	21	28	99	1,100	1,340	655	302	168	32	1.9	2.4	18
MIN	0.00	5.7	7.1	41	71	81	91	41	0.00	0.60	0.73	2.2
AC-FT	230	691	1,620	10,480	13,860	18,240	10,090	5,740	291	67	89	180

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2003, BY WATER YEAR (WY)

MEAN	6.10	45.0	110	149	177	173	163	98.6	35.3	3.41	1.96	2.32
MAX	96.0	233	433	372	627	393	381	344	179	18.4	7.64	11.5
(WY)	(1952)	(1996)	(1965)	(1974)	(1996)	(1997)	(1974)	(1948)	(1974)	(1981)	(1989)	(1971)
MIN	0.000	0.14	4.81	15.8	12.0	3.21	9.70	1.10	0.000	0.000	0.000	0.000
(WY)	(1989)	(1988)	(1953)	(1944)	(1977)	(1947)	(1947)	(1968)	(1973)	(1973)	(1973)	(1985)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1941 - 2003

ANNUAL TOTAL	25,934.70	31,039.07	80.0
ANNUAL MEAN	71.1	85.0	
HIGHEST ANNUAL MEAN			182
LOWEST ANNUAL MEAN			18.1
HIGHEST DAILY MEAN	1,070	Feb 24	3,070
LOWEST DAILY MEAN	0.00	Jul 13	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 17	0.00
ANNUAL RUNOFF (AC-FT)	51,440	61,570	57,960
10 PERCENT EXCEEDS	166	239	219
50 PERCENT EXCEEDS	27	15	29
90 PERCENT EXCEEDS	0.00	0.62	0.06

14018500 WALLA WALLA RIVER NEAR TOUCHET, WA

LOCATION.--Lat 46°01'40", long 118°43'43", in NW 1/4 SE 1/4 sec.6, T.6 N., R.33 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.8 mi upstream from Gardena Creek, 2.8 mi southwest of Touchet, 3.4 mi downstream from Touchet River, and at mile 18.2.

DRAINAGE AREA.--1,657 mi<sup>2</sup>.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 1935: Drainage area. WDR WA-96-1: 1992(M), 1993(M), 1995 (M,P).

GAGE.--Water-stage recorder. Elevation of gage is 405 ft above NGVD of 1929, from topographic map. Prior to Nov. 27, 1951, nonrecording gage at same site and datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Records fair. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--52 years (water years 1952-2003), 573 ft<sup>3</sup>/s, 415,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft<sup>3</sup>/s Dec. 22, 1964, gage height, 18.90 ft, from rating curve extended above 15,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; maximum gage height, 20.58 ft Feb. 10, 1996, from high-water mark; no flow July 30 to Aug. 8, Aug. 12, 13, 1968, Oct. 5-7, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 27	1830	3,030	9.00	Mar 16	1400	4,300	10.30
Feb 1	1900	*11,100	*15.92				

Minimum daily discharge, 5.2 ft<sup>3</sup>/s, Aug. 23.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	93	176	601	8,640	961	1,540	900	316	41	11	18
2	46	129	177	529	7,050	906	1,670	904	266	39	12	18
3	50	159	181	578	3,540	889	1,730	878	211	43	12	16
4	55	172	174	824	2,530	880	1,600	868	183	40	e16	17
5	63	182	175	774	1,970	855	1,470	905	158	37	e16	19
6	52	176	194	724	1,630	851	1,400	910	146	34	e30	20
7	44	168	185	618	1,390	871	1,390	866	128	30	e28	24
8	43	134	188	555	1,240	1,540	1,360	804	118	26	e26	31
9	37	172	194	492	1,140	1,960	1,380	751	102	22	25	198
10	38	212	208	448	1,050	2,540	1,410	679	88	21	21	195
11	34	209	195	417	970	2,860	1,350	622	91	16	15	138
12	30	162	176	399	914	2,760	1,320	693	86	14	12	106
13	34	155	168	420	875	3,190	1,300	905	66	14	17	93
14	42	158	203	458	908	3,430	1,230	871	57	18	13	66
15	41	165	318	476	909	3,210	1,130	847	69	21	14	54
16	46	158	308	475	973	4,000	1,000	801	69	17	11	45
17	34	147	321	457	1,250	3,300	938	701	59	13	7.3	47
18	31	144	282	438	1,410	2,460	902	650	51	12	9.0	52
19	27	155	261	422	1,610	1,950	827	592	46	11	8.2	52
20	28	158	251	408	1,560	1,670	760	499	66	13	9.2	42
21	31	150	240	397	1,500	1,490	731	459	77	9.7	8.7	39
22	29	150	239	407	1,570	1,570	760	411	82	10	e6.0	36
23	29	161	227	462	1,650	2,330	791	384	85	8.2	e5.2	38
24	30	170	219	538	1,500	2,190	751	388	74	6.3	10	39
25	38	173	217	551	1,330	1,880	869	476	62	6.4	17	42
26	36	160	214	641	1,210	1,880	930	492	49	7.8	12	40
27	42	163	249	2,090	1,110	1,880	1,020	448	44	14	16	38
28	57	167	280	2,150	1,020	1,700	991	395	41	14	10	39
29	62	169	382	1,470	---	1,500	980	381	43	15	16	41
30	86	172	407	2,240	---	1,330	951	372	45	13	21	47
31	94	---	506	4,720	---	1,270	---	367	---	15	20	---
TOTAL	1,354	4,843	7,515	26,179	52,449	60,103	34,481	20,219	2,978	601.4	454.6	1,650
MEAN	43.7	161	242	844	1,873	1,939	1,149	652	99.3	19.4	14.7	55.0
MAX	94	212	506	4,720	8,640	4,000	1,730	910	316	43	30	198
MIN	27	93	168	397	875	851	731	367	41	6.3	5.2	16
AC-FT	2,690	9,610	14,910	51,930	104,000	119,200	68,390	40,100	5,910	1,190	902	3,270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2003, BY WATER YEAR (WY)

MEAN	80.4	295	791	1,085	1,301	1,213	1,077	720	256	42.2	19.0	40.2
MAX	392	1,056	2,890	2,698	3,700	3,105	2,437	1,544	1,130	139	82.7	181
(WY)	(1952)	(1996)	(1965)	(1965)	(1996)	(1972)	(1974)	(1993)	(1974)	(1974)	(1976)	(1959)
MIN	9.20	55.3	190	306	286	339	242	60.6	21.2	5.85	3.07	3.07
(WY)	(1989)	(1988)	(1988)	(1979)	(1977)	(1977)	(1973)	(1968)	(1968)	(1968)	(1973)	(1994)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1952 - 2003

ANNUAL TOTAL	193,965.3	212,827.0	
ANNUAL MEAN	531	583	573
HIGHEST ANNUAL MEAN			1,212
LOWEST ANNUAL MEAN			166
HIGHEST DAILY MEAN	4,250	Feb 24	8,640
LOWEST DAILY MEAN	5.6	Aug 17	5.2
ANNUAL SEVEN-DAY MINIMUM	7.0	Aug 15	7.7
ANNUAL RUNOFF (AC-FT)	384,700		422,100
10 PERCENT EXCEEDS	1,240		1,550
50 PERCENT EXCEEDS	251		183
90 PERCENT EXCEEDS	22		16
			20,300
			0.00
			0.00
			14.7
			3.07
			16
			14

e Estimated

## WALLA WALLA RIVER BASIN

14018500 WALLA WALLA RIVER NEAR TOUCHET, WA—Continued  
WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 2002 to current year.

INSTRUMENTATION.--Water-temperature sensor interfaced with a data-collection platform for satellite telemetry.

REMARKS.--Records good, except for Apr. 15 and Aug. 8, which are fair, and Apr. 16-May 19, which are poor.

## EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 28.8°C Aug. 15, 2002; minimum, 0.3°C Nov. 4, 2002.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum 28.2°C Aug. 18, but may have been higher during periods of missing record; minimum, 0.3°C Nov. 4.

TEMPERATURE, WATER, DEGREES CELSIUS  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	14.1	11.0	12.5	2.6	0.9	1.7	3.5	2.9	3.2	6.0	5.0	5.4
2	14.1	10.7	12.4	2.0	0.4	1.3	3.9	3.1	3.3	7.6	5.4	6.5
3	13.2	11.8	12.7	1.9	0.4	1.1	3.7	3.0	3.2	8.4	7.2	7.7
4	14.6	12.9	13.7	2.0	0.3	1.2	3.7	3.0	3.4	8.3	7.2	7.7
5	15.8	13.3	14.4	2.2	0.7	1.5	4.2	3.3	3.7	7.4	6.4	6.8
6	17.1	13.7	15.3	2.3	0.9	1.7	4.6	3.7	4.2	6.4	5.0	5.7
7	17.3	14.1	15.7	3.6	1.7	2.5	4.9	3.9	4.5	5.4	4.5	5.0
8	16.8	13.7	15.2	5.5	3.4	4.7	5.0	4.4	4.7	5.1	4.1	4.6
9	16.1	13.1	14.6	7.1	5.0	6.0	5.3	4.5	4.9	4.7	3.8	4.2
10	14.2	12.4	13.3	8.3	6.7	7.5	5.2	4.4	4.9	4.3	3.6	4.0
11	13.4	10.8	12.1	8.9	7.7	8.2	5.2	4.3	4.7	4.7	3.6	4.1
12	12.4	9.8	11.1	9.1	8.2	8.6	7.1	5.1	5.9	5.1	4.1	4.6
13	11.5	8.8	10.2	9.6	8.3	8.9	8.2	7.0	7.6	5.8	4.5	5.2
14	10.7	7.9	9.4	9.9	8.7	9.2	9.5	8.1	8.9	6.5	5.5	5.9
15	10.4	7.7	9.2	9.0	7.4	8.1	9.9	9.0	9.5	6.7	6.0	6.3
16	10.7	7.9	9.3	7.6	6.6	7.1	9.6	7.9	8.7	6.6	5.6	6.0
17	10.9	7.9	9.4	8.1	6.6	7.2	8.0	6.0	6.8	6.1	5.4	5.7
18	11.1	8.0	9.6	8.0	7.0	7.4	6.2	4.4	5.5	5.6	5.0	5.3
19	11.8	8.9	10.3	9.1	7.6	8.4	5.3	3.4	4.3	5.4	4.6	5.1
20	12.4	10.2	11.2	9.9	8.4	9.1	4.2	3.2	3.8	5.3	4.6	5.0
21	12.9	10.3	11.6	9.4	8.7	9.0	4.5	3.4	4.0	5.2	4.3	4.7
22	12.2	10.0	11.2	9.4	8.7	9.1	4.9	3.6	4.3	4.8	4.0	4.4
23	11.2	9.3	10.2	9.8	8.9	9.3	5.2	4.1	4.8	5.5	3.9	4.6
24	9.6	7.5	8.6	9.0	6.6	7.8	4.9	4.0	4.5	6.6	4.9	5.6
25	8.1	6.1	7.2	6.6	4.4	5.3	4.4	3.2	3.8	7.8	6.3	6.9
26	7.2	5.0	6.2	4.5	3.3	3.8	5.0	3.4	4.2	10.3	7.5	8.7
27	6.0	4.2	5.2	3.7	3.0	3.4	6.2	4.5	5.4	10.3	7.8	8.9
28	7.6	5.3	6.5	3.4	2.7	3.1	6.8	5.8	6.4	7.9	6.9	7.4
29	7.1	5.7	6.6	3.3	2.8	3.0	6.6	4.9	5.7	7.4	5.7	6.3
30	5.9	3.7	5.0	3.3	2.8	3.1	5.9	4.6	5.1	8.1	6.1	7.2
31	3.7	1.9	3.1	---	---	---	6.3	5.2	5.8	8.6	7.8	8.3
MONTH	17.3	1.9	10.4	9.9	0.3	5.6	9.9	2.9	5.2	10.3	3.6	5.9
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	8.8	7.6	8.4	6.1	4.0	4.9	---	---	---	9.1	6.3	7.9
2	8.0	6.6	7.1	6.3	4.8	5.5	---	---	---	8.7	5.7	7.2
3	7.1	6.0	6.6	8.0	5.7	6.7	---	---	---	8.5	5.8	7.8
4	6.9	5.2	5.8	8.3	6.1	7.3	---	---	---	10.1	8.3	9.1
5	5.8	4.8	5.2	8.1	6.5	7.1	---	---	---	11.8	8.4	10.1
6	5.3	3.5	4.5	7.5	6.0	6.8	---	---	---	11.8	9.2	10.4
7	5.0	3.6	4.2	7.2	5.7	6.4	---	---	---	12.2	9.4	10.9
8	5.3	3.5	4.5	7.4	6.4	6.8	---	---	---	11.6	8.0	9.9
9	5.6	3.7	4.6	7.3	5.0	6.3	---	---	---	10.6	6.7	8.7
10	6.1	4.3	5.2	5.3	3.6	4.5	---	---	---	8.9	5.5	7.2
11	5.7	4.4	5.0	5.0	3.5	4.4	---	---	---	8.3	5.9	7.0
12	5.4	3.8	4.7	4.9	3.7	4.4	---	---	---	8.5	6.4	7.3
13	5.5	4.1	4.7	4.2	3.3	3.6	---	---	---	9.2	5.4	7.4
14	7.0	5.1	5.8	4.4	3.2	3.7	---	---	---	7.4	5.4	6.3
15	7.3	6.5	6.8	4.7	3.5	4.2	12.5	10.5	11.4	8.0	5.7	7.2
16	7.7	6.4	7.0	5.8	4.0	4.9	12.0	9.6	11.0	11.0	7.8	9.4
17	7.6	6.6	7.1	6.0	4.1	5.0	10.9	9.7	10.3	10.8	8.0	9.4
18	8.0	6.9	7.4	6.3	4.2	5.2	12.7	9.5	11.1	11.2	7.8	9.6
19	7.1	5.6	6.4	5.7	3.4	4.5	12.5	9.5	10.9	10.5	6.8	8.8
20	7.5	6.2	6.9	4.1	2.1	3.2	11.9	8.4	10.3	---	---	---
21	8.2	6.4	7.4	4.0	2.7	3.5	9.8	7.2	8.6	---	---	---
22	8.2	6.7	7.5	3.7	3.0	3.4	9.4	7.4	8.6	---	---	---
23	7.4	5.9	6.6	5.9	3.7	4.8	10.8	8.1	9.6	---	---	---
24	6.1	3.5	4.3	5.9	4.0	4.8	10.7	8.3	9.7	---	---	---
25	4.2	2.4	3.4	5.1	4.0	4.6	12.9	9.5	11.3	---	---	---
26	4.3	2.3	3.4	5.1	3.4	4.4	11.4	9.5	10.5	---	---	---
27	5.6	3.1	4.2	6.0	4.3	5.1	12.0	9.1	10.7	---	---	---
28	5.4	4.0	4.8	6.2	3.5	5.0	11.2	7.9	9.7	---	---	---
29	---	---	---	---	---	---	9.6	7.1	8.4	---	---	---
30	---	---	---	---	---	---	9.5	7.4	8.4	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	8.8	2.3	5.7	8.3	2.1	5.0	12.9	7.1	10.0	12.2	5.4	8.5





COLUMBIA RIVER MAIN STEM

14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW 1/4 SW 1/4 sec.34, T.2 N., R.13 E., Wasco County, Hydrologic Unit 17070105, Corps of Engineers land, on left bank 0.3 mi downstream from Mill Creek, 2.6 mi downstream from The Dalles Dam, and at mile 188.9.

DRAINAGE AREA.--237,000 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1857 to September 1877 (annual maximum only, at Lower Cascades Landing, published in WSP 1318), June 1878 to current year. Published as "near The Dalles" 1936-56.

REVISED RECORDS.--WSP 534: 1920(m). SP 1094: 1894. WSP 1248: 1866, 1888, 1899, 1909. WSP 1518: 1876(M).

GAGE.--Ultrasonic velocity meter (UVM) with water-stage and velocity-index recorder. Datum of gage is NGVD of 1929. See WSP 1738 for history of changes prior to Mar. 16, 1957. Mar. 16, 1957, to Sept 30, 1968, water-stage recorder at site 0.4 mi upstream at same datum.

REMARKS.--Records good. Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant and gates at The Dalles Dam. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1957 to February 1985 have been collected at this location.

AVERAGE DISCHARGE.--125 years (water years 1879-2003), 190,900 ft<sup>3</sup>/s, 138,300,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (since 1858), 1,240,000 ft<sup>3</sup>/s June 6, 1894, elevation, 106.5 ft; minimum discharge (since 1878), 12,100 ft<sup>3</sup>/s Apr. 16, 1968 (due to closure of John Day dam, recorded by UVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 355,000 ft<sup>3</sup>/s May 31; maximum elevation, 82.52 ft May 31; minimum daily discharge, 68,300 ft<sup>3</sup>/s Sept. 11.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

Table with columns: DAY, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP. Rows 1-31 showing daily mean discharge values. Includes summary rows for TOTAL, MEAN, MAX, MIN, AC-FT.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 2003, BY WATER YEAR (WY)

Table with columns: MEAN, MAX (WY), MIN (WY). Rows for 1879, 1884, 1894, 1937 showing monthly mean discharge statistics.

SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1879 - 2003

Table with columns: ANNUAL TOTAL, ANNUAL MEAN, HIGHEST ANNUAL MEAN, LOWEST ANNUAL MEAN, HIGHEST DAILY MEAN, LOWEST DAILY MEAN, ANNUAL SEVEN-DAY MINIMUM, ANNUAL RUNOFF (AC-FT), 10 PERCENT EXCEEDS, 50 PERCENT EXCEEDS, 90 PERCENT EXCEEDS.

14107000 KLICKITAT RIVER ABOVE WEST FORK NEAR GLENWOOD, WA

LOCATION.--Lat 46°15'54", long 121°14'38", in NW ¼ SW ¼ sec.18, T.9 N., R.13 E., Yakima County, Hydrologic Unit 17070106, Yakama Nation Reservation, on right bank 0.8 mi upstream from Swamp Creek, 1.9 mi upstream from West Fork, 17.0 mi north of Glenwood, and at mile 64.7.

DRAINAGE AREA.--151 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1944 to September 1977, July 1991 to current year. Monthly discharge only for October 1944, published in WSP 1318.

GAGE.--Water-stage recorder. Elevation of gage is 2,720 ft above NGVD of 1929, from river-profile map.

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

AVERAGE DISCHARGE.--45 years (water years 1945-77, 1992-2003), 326 ft<sup>3</sup>/s, 29.32 in/yr, 236,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,500 ft<sup>3</sup>/s Feb. 8, 1996, gage height, 5.70 ft, from high-water mark, from rating curve extended above 2,600 ft<sup>3</sup>/s; minimum discharge, 4.4 ft<sup>3</sup>/s Feb. 1, 1957 (result of freezeup, discharge measurement).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 4,850 ft<sup>3</sup>/s Dec. 2, 1977, from high-water mark.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 31	2045	*3,660	*4.59	May 30	2145	1,140	2.51

Minimum discharge, 52 ft<sup>3</sup>/s, Oct. 25, but may have been less during ice effect Oct. 31.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	e60	78	95	2,160	196	621	594	960	270	123	90
2	78	e65	77	105	1,150	192	569	613	876	251	122	89
3	78	e70	75	175	815	189	518	649	804	240	123	88
4	81	e75	76	186	640	187	472	632	757	234	122	88
5	78	e80	77	214	531	189	433	605	753	232	118	88
6	78	e81	75	181	457	187	409	552	781	232	121	86
7	78	84	72	168	403	185	380	522	813	220	124	86
8	75	113	70	156	373	181	375	495	819	213	119	88
9	74	89	72	176	347	190	393	476	766	207	118	91
10	74	83	77	167	319	209	405	473	707	200	112	92
11	74	80	76	169	297	226	435	473	620	197	110	99
12	74	93	88	154	282	307	495	499	571	195	107	101
13	74	126	109	126	274	604	572	544	543	189	107	93
14	74	99	192	129	263	683	577	606	492	186	106	92
15	73	89	230	123	256	783	545	647	448	182	103	91
16	72	87	209	119	255	720	526	605	418	178	103	91
17	71	96	157	116	250	618	501	544	415	173	103	92
18	71	91	133	112	235	535	476	501	452	166	103	92
19	71	102	123	111	226	487	460	481	451	160	99	91
20	71	102	117	112	223	464	464	475	384	157	99	88
21	71	95	112	110	247	441	498	488	352	155	98	88
22	71	95	103	123	259	565	545	545	321	151	94	88
23	71	92	e95	165	234	552	598	671	301	147	94	86
24	69	89	89	162	218	503	637	895	289	145	92	86
25	65	82	98	170	239	472	585	1,040	287	143	92	85
26	69	84	104	445	230	450	583	933	291	142	92	85
27	70	83	113	744	209	404	532	867	307	138	93	85
28	70	82	99	520	203	377	508	949	309	136	93	85
29	68	81	94	405	---	367	549	1,000	296	133	92	85
30	e62	79	100	447	---	408	581	1,070	291	126	92	84
31	e55	---	98	2,330	---	577	---	1,080	---	126	91	---
TOTAL	2,238	2,627	3,288	8,515	11,595	12,448	15,242	20,524	15,874	5,624	3,265	2,673
MEAN	72.2	87.6	106	275	414	402	508	662	529	181	105	89.1
MAX	81	126	230	2,330	2,160	783	637	1,080	960	270	124	101
MIN	55	60	70	95	203	181	375	473	287	126	91	84
AC-FT	4,440	5,210	6,520	16,890	23,000	24,690	30,230	40,710	31,490	11,160	6,480	5,300
CFSM	0.48	0.58	0.70	1.82	2.74	2.66	3.36	4.38	3.50	1.20	0.70	0.59
IN.	0.55	0.65	0.81	2.10	2.86	3.07	3.75	5.06	3.91	1.39	0.80	0.66

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003, BY WATER YEAR (WY)

	126	189	236	220	263	240	461	915	726	291	138	104
MEAN	126	189	236	220	263	240	461	915	726	291	138	104
MAX	291	464	983	615	1,470	713	990	1,714	1,730	637	257	174
(WY)	(1998)	(1996)	(1996)	(1974)	(1996)	(1972)	(1997)	(1956)	(1974)	(1974)	(1974)	(1997)
MIN	58.1	61.3	71.1	69.3	78.3	98.1	170	224	170	89.8	61.7	56.8
(WY)	(1994)	(1994)	(1993)	(1993)	(1994)	(1977)	(1955)	(1977)	(1992)	(1977)	(1994)	(2001)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1945 - 2003

ANNUAL TOTAL	107,466	103,913	
ANNUAL MEAN	294	285	326
HIGHEST ANNUAL MEAN			539
LOWEST ANNUAL MEAN			126
HIGHEST DAILY MEAN	1,940	2,330	5,000
LOWEST DAILY MEAN	55	55	4.5
ANNUAL SEVEN-DAY MINIMUM	64	64	5.6
ANNUAL RUNOFF (AC-FT)	213,200	206,100	236,100
ANNUAL RUNOFF (CFSM)	1.95	1.89	2.16
ANNUAL RUNOFF (INCHES)	26.48	25.60	29.32
10 PERCENT EXCEEDS	804	609	768
50 PERCENT EXCEEDS	136	169	188
90 PERCENT EXCEEDS	77	77	90

e Estimated





WHITE SALMON RIVER BASIN

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW 1/4 NW 1/4 sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft downstream from bridge, 1,000 ft downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi north of Underwood, and at mile 1.9.

DRAINAGE AREA.--386 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1912 to February 1913 (published as "at Condit Dam, near Underwood"), March 1915 to September 1930, September 1935 to current year.

REVISED RECORDS.--WSP 484: 1915-17. WSP: 1348 1936-41(M). WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 112.96 ft above NGVD of 1929. Prior to March 1913, reference point at dam 1 mi upstream at different datum. March 1915, to July 16, 1918, water-stage recorder at site 200 ft upstream at datum 3.24 ft higher, and July 17, 1918, to Sept. 30, 1930, at datum 2.24 ft higher than present datum.

REMARKS.--No estimated daily discharges. Records good. Diversions for irrigation of about 4,000 acres in Trout Lake area. Low and medium flows regulated by powerplant of Pacific Power & Light Co. Chemical analyses August 1960 to August 1961, water years 1964-1968 (miscellaneous), October 1967 to September 1970 (monthly), November 1975 to June 1980. Water temperatures July 1968 to August 1970. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--83 years (water years 1916-30, 1936-2003), 1,122 ft<sup>3</sup>/s, 813,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,200 ft<sup>3</sup>/s Feb. 8, 1996, result of flashboard failure on Condit Dam, gage height, 19.16 ft, from rating curve extended above 8,030 ft<sup>3</sup>/s, on basis of theoretical weir computation of peak flow; minimum discharge, practically no flow at times when powerplant is shut down; minimum daily discharge, 158 ft<sup>3</sup>/s Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,900 ft<sup>3</sup>/s Jan. 31, gage height, 10.72 ft; minimum discharge, 239 ft<sup>3</sup>/s Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

Table with 12 columns (DAY, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP) and 31 rows of daily mean discharge values in cubic feet per second, plus summary statistics for total, mean, max, min, and AC-FT.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 2003, BY WATER YEAR (WY)

Table with 12 columns representing months from OCT to SEP and 5 rows of statistical data: MEAN, MAX, (WY), MIN, (WY).

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1916 - 2003

Summary statistics table with 4 columns: 2002 Calendar Year, 2003 Water Year, and two columns for 1916-2003 historical data. Rows include ANNUAL TOTAL, ANNUAL MEAN, HIGHEST ANNUAL MEAN, LOWEST ANNUAL MEAN, HIGHEST DAILY MEAN, LOWEST DAILY MEAN, ANNUAL SEVEN-DAY MINIMUM, ANNUAL RUNOFF (AC-FT), 10 PERCENT EXCEEDS, 50 PERCENT EXCEEDS, 90 PERCENT EXCEEDS.

THIS PAGE IS INTENTIONALLY BLANK