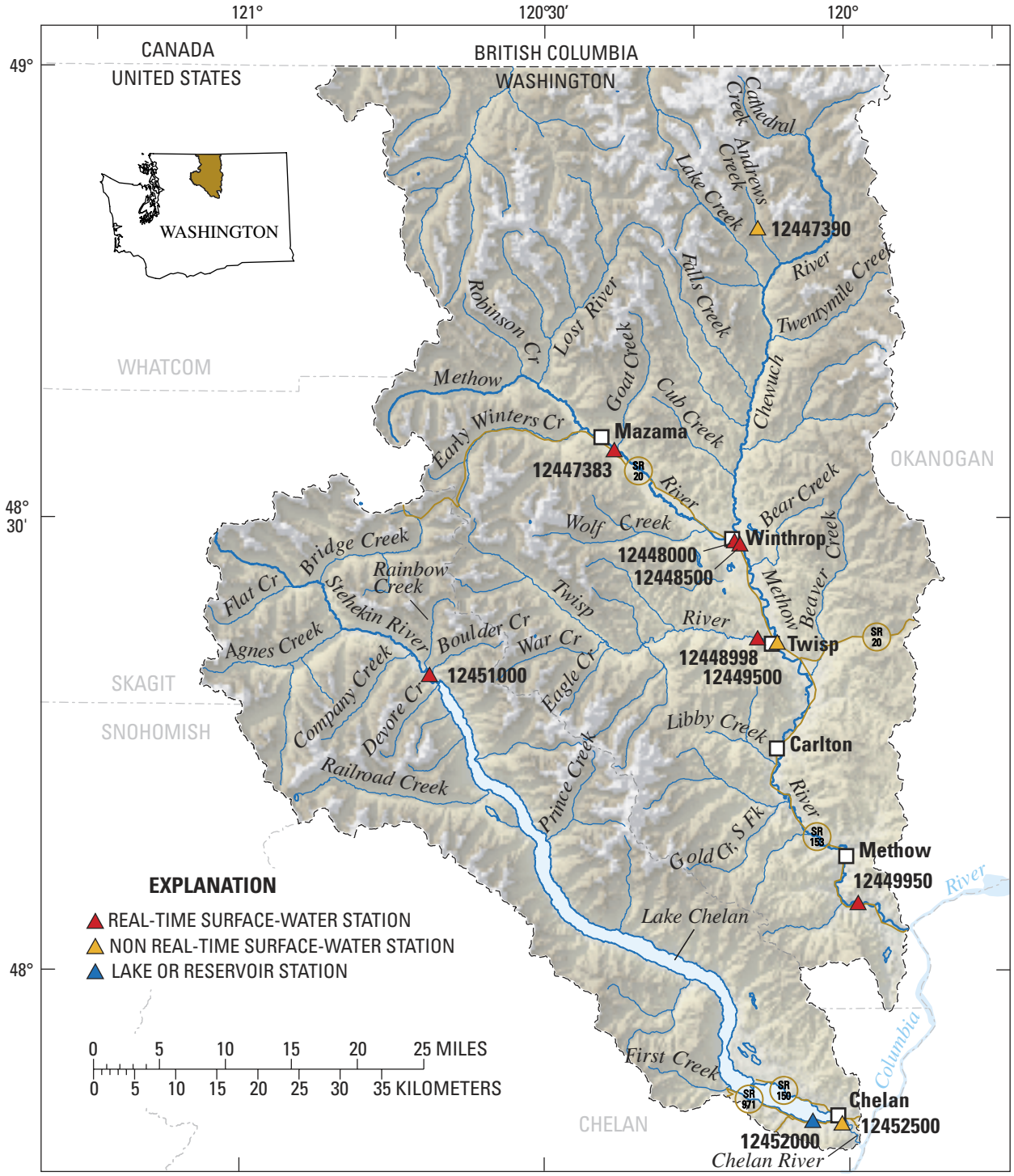

Figure 31. Location of surface-water stations in the Methow and Chelan River Basins.

12447383 METHOW RIVER ABOVE GOAT CREEK, NEAR MAZAMA, WA

LOCATION.--Lat 48°34'32", long 120°23'05", in NE¼SE¼, sec.31, T.36 N., R.20 E., Okanogan County, Hydrologic Unit 17020008, on left bank, 0.6 mi upstream from Goat Creek, and 1.5 mi southeast of Mazama, and at mile 63.8.

DRAINAGE AREA.--373 mi^2.

PERIOD OF RECORD.--April 1991 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,040 ft above NGVD of 1929, from topographic map. Crest-stage gage since September 1992.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No known regulation. Several diversions for irrigation upstream from station. U. S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--13 years (water years 1992-2004), 498 ft^3/s, 360,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,440 ft^3/s, June 17, 1999, gage height, 20.56 ft; minimum discharge, no flow for all or part of many days during most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 21	0130	*6,190	*18.59	May 3	0530	2,650	16.64

Minimum discharge, no flow all or part of each day Oct. 1-17.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	509	168	44	22	e8.0	461	1,800	1,170	757	87	60
2	0.00	476	158	43	22	e9.0	457	2,330	1,140	675	81	63
3	0.00	444	156	e42	21	e15	480	2,480	1,250	608	79	60
4	0.00	378	156	e36	e16	e25	536	2,430	1,580	559	100	56
5	0.00	340	157	e32	e7.0	26	644	2,220	2,060	512	102	53
6	0.00	305	152	e37	e11	25	736	1,930	1,870	490	104	50
7	0.00	295	140	e38	e9.0	25	874	1,780	1,580	465	97	48
8	0.00	309	131	e39	e8.0	28	958	1,820	1,390	418	85	47
9	0.00	278	125	e41	e9.0	39	963	1,760	1,420	367	75	45
10	0.00	256	121	42	e8.0	113	997	1,650	2,200	329	69	44
11	0.00	264	116	40	e8.0	161	1,120	1,510	1,930	302	64	72
12	0.00	238	115	43	e7.0	204	1,340	1,380	1,520	280	60	70
13	0.00	222	117	42	e6.0	245	1,640	1,280	1,320	268	57	63
14	0.00	211	109	40	e7.0	266	1,580	1,220	1,220	252	55	60
15	0.00	197	101	39	e7.0	284	1,390	1,230	1,080	238	53	61
16	0.00	198	101	e36	e8.0	306	1,220	1,250	990	239	51	70
17	e38	198	97	e35	e7.0	351	1,090	1,460	1,010	230	168	79
18	89	235	92	e34	e9.0	379	988	1,670	1,060	227	127	e90
19	55	461	88	33	e8.0	372	915	1,950	1,050	223	121	102
20	1,150	345	87	32	e7.0	344	872	2,120	1,010	207	103	100
21	4,310	284	82	31	e6.0	326	821	2,140	1,080	187	90	96
22	2,230	246	79	30	e7.0	330	782	2,100	1,190	161	91	95
23	1,620	246	79	30	e7.0	430	798	1,860	1,220	154	84	103
24	1,350	240	81	30	e8.0	498	779	1,650	1,240	146	77	101
25	1,120	230	76	28	e8.0	510	787	1,490	1,190	138	94	95
26	963	201	72	e27	e8.0	510	907	1,520	1,140	133	106	88
27	878	178	e54	25	e7.0	476	1,240	1,680	1,140	120	89	82
28	832	186	e58	24	e8.0	445	1,360	1,620	959	111	80	76
29	779	188	e53	24	e8.0	439	1,340	1,450	860	104	74	70
30	684	174	e38	27	---	463	1,450	1,320	838	98	68	66
31	556	---	e40	23	---	468	---	1,240	---	94	63	---
TOTAL	16,654	8,332	3,199	1,067	274.0	8,120.0	29,525	53,340	38,707	9,092	2,654	2,165
MEAN	537	278	103	34.4	9.45	262	984	1,721	1,290	293	85.6	72.2
MAX	4,310	509	168	44	22	510	1,640	2,480	2,200	757	168	103
MIN	0.00	174	38	23	6.0	8.0	457	1,220	838	94	51	44
AC-FT	33,030	16,530	6,350	2,120	543	16,110	58,560	105,800	76,780	18,030	5,260	4,290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2004, BY WATER YEAR (WY)

MEAN	65.0	104	68.8	21.6	13.0	107	601	1,965	2,121	866	182	39.6
MAX	537	452	523	124	93.3	405	1,080	3,297	3,907	2,527	610	102
(WY)	(2004)	(2000)	(1996)	(1996)	(1996)	(1992)	(1996)	(1998)	(1999)	(1999)	(1999)	(1999)
MIN	0.00	0.00	0.00	0.00	0.00	0.00	10.0	937	642	191	29.0	0.65
(WY)	(1995)	(1993)	(1993)	(1992)	(1993)	(1993)	(2001)	(2001)	(2001)	(2001)	(2001)	(1994)

12447383 METHOW RIVER ABOVE GOAT CREEK, NEAR MAZAMA, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1991 - 2004	
ANNUAL TOTAL	163,583.60		173,129.00			
ANNUAL MEAN	448		473		498	
HIGHEST ANNUAL MEAN					798	1999
LOWEST ANNUAL MEAN					153	2001
HIGHEST DAILY MEAN	4,310	Oct 21	4,310	Oct 21	8,460	Jun 16, 1999
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Dec 15, 1991
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Dec 15, 1991
ANNUAL RUNOFF (AC-FT)	324,500		343,400		360,700	
10 PERCENT EXCEEDS	1,130		1,450		1,640	
50 PERCENT EXCEEDS	98		153		65	
90 PERCENT EXCEEDS	0.00		8.0		0.00	

e Estimated

12447390 ANDREWS CREEK NEAR MAZAMA, WA
(Hydrologic benchmark station)

LOCATION.--Lat 48°49'23", long 120°08'41", in NE$^1/_4$ sec.1, T.38 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, Okanogan National Forest, on left bank 50 ft upstream from Blizzard Creek, 3.5 mi upstream from mouth, and 20 mi northeast of Mazama.

DRAINAGE AREA.--22.1 mi^2.

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WDR WA-76-2: 1975. WDR WA-77-2: 1976.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 4,300 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. No regulation or diversion. Chemical analyses water years 1972-96.

AVERAGE DISCHARGE.--36 years (water years 1969-2004), 31.3 ft^3/s, 19.23 in/yr, 22,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft^3/s, June 10, 1972, gage height, 4.00 ft, from rating curve extended above 440 ft^3/s; minimum discharge 0.97 ft^3/s, Oct. 30, 2002.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 20	2300	*338	2.80	May 1	1930	338	*2.83
Apr 12	2330	255	2.54				

Minimum discharge, 4.6 ft^3/s, Oct. 5, 6, 7, Mar. 3, 5.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	30	14	8.7	6.6	5.8	32	211	53	68	14	21
2	5.0	27	13	8.6	6.6	5.8	36	220	52	55	14	21
3	4.8	24	13	8.4	6.6	5.8	44	198	56	50	e30	23
4	4.8	21	13	8.3	6.5	5.8	57	174	62	44	e50	21
5	4.8	20	13	8.3	6.4	5.8	72	138	69	41	e45	20
6	4.7	20	13	8.1	6.5	5.7	88	126	64	39	e54	20
7	4.9	21	12	8.1	6.4	5.9	110	127	59	38	e51	19
8	5.4	21	12	7.9	6.3	8.1	116	144	55	36	e42	18
9	5.4	20	12	7.8	6.3	9.4	113	119	52	36	e37	18
10	5.3	19	12	7.8	6.3	9.1	126	104	87	36	e32	17
11	5.2	19	11	7.6	6.2	9.1	140	95	75	39	e28	21
12	5.7	18	11	7.6	6.1	10	170	87	62	33	e25	19
13	6.0	17	11	7.6	6.2	10	173	86	57	29	e23	18
14	5.6	17	11	7.5	6.2	11	151	84	52	27	e20	18
15	5.7	16	11	7.5	6.2	11	123	86	46	26	e19	19
16	6.1	16	11	7.3	6.1	12	108	88	42	24	e18	20
17	14	16	11	7.3	6.1	13	98	91	40	23	e29	26
18	18	16	10	7.3	6.0	14	89	94	43	23	e42	27
19	15	21	10	7.2	6.0	13	80	98	38	27	e34	27
20	100	17	10	7.1	6.0	13	75	98	36	23	e29	24
21	204	14	10	7.1	5.9	14	68	98	35	21	e25	23
22	112	16	9.8	7.0	6.0	18	67	95	34	20	e27	23
23	81	16	9.9	7.0	5.9	25	72	88	33	19	e30	23
24	63	16	9.9	7.0	6.0	27	66	77	35	19	e27	22
25	53	16	9.6	6.9	5.9	25	75	70	41	18	e30	21
26	46	15	9.0	6.9	5.9	24	107	71	66	17	e33	21
27	41	14	9.3	6.9	5.9	23	135	71	108	17	e30	20
28	39	14	9.4	6.8	5.8	24	132	78	77	16	e28	20
29	37	14	9.0	6.9	5.8	28	142	66	64	16	e26	20
30	33	13	8.9	6.9	---	32	179	60	65	15	e24	19
31	28	---	8.8	6.7	---	31	---	56	---	15	e22	---
TOTAL	968.4	544	337.6	232.1	178.7	454.3	3,044	3,298	1,658	910	938	629
MEAN	31.2	18.1	10.9	7.49	6.16	14.7	101	106	55.3	29.4	30.3	21.0
MAX	204	30	14	8.7	6.6	32	179	220	108	68	54	27
MIN	4.7	13	8.8	6.7	5.8	5.7	32	56	33	15	14	17
AC-FT	1,920	1,080	670	460	354	901	6,040	6,540	3,290	1,800	1,860	1,250
CFSM	1.41	0.82	0.49	0.34	0.28	0.66	4.59	4.81	2.50	1.33	1.37	0.95
IN.	1.63	0.92	0.57	0.39	0.30	0.76	5.12	5.55	2.79	1.53	1.58	1.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2004, BY WATER YEAR (WY)

MEAN	7.21	6.71	5.08	4.14	3.65	4.09	17.2	109	150	45.3	14.1	8.65
MAX	31.2	22.1	13.4	10.3	6.53	14.7	101	205	419	125	34.7	40.8
(WY)	(2004)	(2000)	(2000)	(1984)	(1982)	(2004)	(2004)	(1998)	(1974)	(1999)	(1976)	(1978)
MIN	2.58	2.72	2.17	1.69	1.71	1.81	2.95	36.4	34.9	13.6	5.36	3.28
(WY)	(1971)	(1971)	(1971)	(1971)	(2001)	(2001)	(1975)	(1984)	(2001)	(2001)	(1973)	(1970)

12447390 ANDREWS CREEK NEAR MAZAMA, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1968 - 2004	
ANNUAL TOTAL	10,604.2		13,192.1			
ANNUAL MEAN	29.1		36.0		31.3	
HIGHEST ANNUAL MEAN					59.1	1972
LOWEST ANNUAL MEAN					10.7	2001
HIGHEST DAILY MEAN	287	Jun 8	220	May 2	874	Jun 16, 1974
LOWEST DAILY MEAN	1.9	Feb 24	4.7	Oct 6	1.2	Dec 30, 1968
ANNUAL SEVEN-DAY MINIMUM	1.9	Feb 24	4.9	Oct 1	1.4	Apr 4, 1975
ANNUAL RUNOFF (AC-FT)	21,030		26,170		22,660	
ANNUAL RUNOFF (CFSM)	1.31		1.63		1.42	
ANNUAL RUNOFF (INCHES)	17.85		22.21		19.23	
10 PERCENT EXCEEDS	80		92		97	
50 PERCENT EXCEEDS	9.8		20		6.5	
90 PERCENT EXCEEDS	2.2		6.1		2.9	

e Estimated

12448000 CHEWUCH RIVER AT WINTHROP, WA

LOCATION.--Lat 48°28'38", long 120°11'07", SW¼NW¼, sec.2, T.34 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on right bank, 80 ft downstream from State Road 20 bridge crossing, at northwest end of Winthrop, and at mile 0.18.

DRAINAGE AREA.--525 mi^2.

PERIOD OF RECORD.--1912 to 1913, seasonal records only. October 1991 to current year. Prior to October 1991 published as "Chewack River at Winthrop, WA."

GAGE.--Water-stage recorder. Datum of gage is 1,736.26 ft above NGVD of 1929 (Okanogan County Public Works benchmark). Prior to November 1991, nonrecording gage 10 ft upstream from bridge, and at datum 8.74 ft higher.

REMARKS.--Records fair. No known regulation. Several diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Water temperature records April to September 2002.

AVERAGE DISCHARGE.--13 years (water years 1992-2004), 379 ft^3/s, 274,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,480 ft^3/s, June 16, 1999, gage height, 8.92 ft; maximum gage height, 9.79 ft, June 16, 1999, from outside high-water mark; minimum discharge, 20 ft^3/s, Sept. 18 and 19, 2001, gage height, 2.24 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 3	0530	2,110	6.18	Jun 27	----	----	(a) *6.52
Jun 27	1000	*2,170	6.21				

Minimum discharge, 39 ft^3/s, Oct. 1, gage height, 2.38 ft.

(a) from crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	e186	e143	e110	79	84	383	1,530	741	1,100	124	154
2	63	e180	e147	e115	79	84	382	1,840	691	815	115	153
3	62	e170	143	e110	79	83	416	1,890	698	696	116	156
4	60	160	e125	e100	78	83	472	1,850	716	630	341	153
5	61	154	e147	e90	75	85	569	1,680	783	580	300	148
6	62	e145	145	e100	79	82	657	1,420	793	540	369	142
7	63	e140	e136	e101	e75	84	802	1,350	769	507	354	135
8	64	170	e132	e102	e72	87	931	1,400	739	481	288	129
9	65	174	e127	e103	e73	102	950	1,360	665	470	250	124
10	64	163	e130	e104	e70	120	1,020	1,220	865	459	223	120
11	65	165	130	e104	e70	130	1,150	1,100	1,120	546	200	127
12	67	158	128	e103	e68	140	1,310	1,000	847	483	182	133
13	70	154	130	e102	e64	157	1,520	924	770	416	159	126
14	69	151	e110	e101	e80	163	1,530	876	679	383	147	124
15	70	152	e100	e100	78	175	1,290	865	616	352	142	118
16	83	155	e110	95	77	186	1,110	887	566	325	133	125
17	95	158	e105	92	78	209	975	962	520	302	179	133
18	142	e178	e100	90	77	222	891	989	508	285	282	150
19	136	224	e95	87	76	224	804	1,040	483	303	231	169
20	202	200	e110	85	75	216	738	1,120	452	293	201	173
21	1,240	169	e105	82	74	217	676	1,200	429	259	179	162
22	741	e152	e100	82	74	227	635	1,220	420	241	191	158
23	506	e160	115	82	77	282	670	1,190	407	222	211	159
24	e395	e160	117	83	82	338	635	1,090	386	207	195	156
25	e338	e155	112	82	82	343	628	953	424	194	209	150
26	e300	e152	107	e79	84	351	766	930	503	181	230	145
27	e271	e148	e100	e81	85	337	1,050	922	1,650	169	211	140
28	e252	164	e115	e80	84	327	1,130	980	1,120	158	196	135
29	e244	153	e110	81	83	332	1,100	898	882	150	186	133
30	e222	e148	e95	83	---	364	1,250	823	798	144	173	130
31	e198	---	e110	80	---	384	---	794	---	135	162	---
TOTAL	6,321	4,898	3,679	2,889	2,227	6,218	26,440	36,303	21,040	12,026	6,479	4,260
MEAN	204	163	119	93.2	76.8	201	881	1,171	701	388	209	142
MAX	1,240	224	147	115	85	384	1,530	1,890	1,650	1,100	369	173
MIN	51	140	95	79	64	82	382	794	386	135	115	118
AC-FT	12,540	9,720	7,300	5,730	4,420	12,330	52,440	72,010	41,730	23,850	12,850	8,450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2004, BY WATER YEAR (WY)

MEAN	98.3	99.6	82.7	70.6	70.8	109	416	1,389	1,482	493	153	75.8
MAX	204	210	148	111	102	201	881	2,671	3,348	1,414	349	142
(WY)	(2004)	(2000)	(2000)	(2000)	(2000)	(2004)	(2004)	(1998)	(1999)	(1999)	(1999)	(2004)
MIN	52.6	50.5	44.1	40.2	48.9	48.5	59.9	348	278	115	40.2	26.2
(WY)	(2002)	(2003)	(1993)	(1993)	(2002)	(1993)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)

12448000 CHEWUCH RIVER AT WINTHROP, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1992 - 2004	
ANNUAL TOTAL	103,203		132,780			
ANNUAL MEAN	283		363		379	
HIGHEST ANNUAL MEAN					630	1999
LOWEST ANNUAL MEAN					101	2001
HIGHEST DAILY MEAN	2,460	Jun 8	1,890	May 3	6,010	Jun 17, 1999
LOWEST DAILY MEAN	35	Sep 7	51	Oct 1	20	Sep 18, 2001
ANNUAL SEVEN-DAY MINIMUM	38	Sep 2	60	Oct 1	22	Sep 13, 2001
ANNUAL RUNOFF (AC-FT)	204,700		263,400		274,600	
10 PERCENT EXCEEDS	619		976		1,030	
50 PERCENT EXCEEDS	108		164		104	
90 PERCENT EXCEEDS	43		79		50	

e Estimated

12448500 METHOW RIVER AT WINTHROP, WA

LOCATION.--Lat 48°28'25", long 120°10'34", in NE¼SW¼, sec.2, T.34 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on left bank at Winthrop, 0.3 mi downstream from Chewuch River, and at mile 49.8.

DRAINAGE AREA.--1,007 mi^2.

PERIOD OF RECORD.--January to October 1912, August 1971 to June 1972 (destroyed by flood of May 31, 1972), November 1989 to current year. Published as "near Winthrop" January to October 1912.

GAGE.--Water-stage recorder. Datum of gage is 1,718.09 ft above NGVD of 1929. January to August 1912, nonrecording gage at site 0.6 mi downstream at different datum. August 1971 to June 1972, water-stage recorder at same site at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No known regulation. Diversions for irrigation of about 1,170 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Water temperatures records April to September 2002.

AVERAGE DISCHARGE.--14 years (water years 1991-2004), 1,163 ft^3/s, 842,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,400 ft^3/s, May 31, 1972, gage height, 20.90 ft, from outside high-water mark; minimum discharge, 115 ft^3/s, Nov. 28, 2000, gage height, 9.44 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 21	0530	*7,470	15.43	May 21	0615	4,090	13.75
Oct 21	----	----	(a) *15.89	Jun 10	2315	4,090	13.73
May 3	0330	5,440	14.46				

Minimum discharge, 155 ft^3/s, Oct. 1, gage height, 9.66 ft.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	861	493	293	280	275	1,170	3,730	2,280	2,050	415	354
2	189	829	499	295	280	276	1,160	4,770	2,200	1,720	397	355
3	186	771	490	290	279	277	1,220	5,030	2,270	1,530	390	354
4	185	688	458	e245	277	279	1,330	4,980	2,600	1,420	617	347
5	186	635	489	e220	271	283	1,550	4,560	3,230	1,320	595	336
6	188	599	483	e245	276	277	1,730	3,910	3,140	1,250	672	326
7	188	583	452	282	272	278	2,000	3,670	2,790	1,200	643	314
8	189	622	443	297	266	285	2,230	3,730	2,540	1,130	560	307
9	188	606	428	311	266	323	2,260	3,630	2,460	1,070	505	299
10	188	571	441	319	265	440	2,340	3,360	3,350	1,030	463	292
11	190	571	430	320	265	531	2,580	3,080	3,520	1,070	430	313
12	195	538	427	318	262	604	2,960	2,830	2,820	993	404	343
13	199	519	419	318	253	689	3,500	2,630	2,490	917	383	326
14	196	506	399	313	274	727	3,540	2,510	2,280	868	366	324
15	202	495	374	311	266	769	3,110	2,480	2,070	816	355	324
16	231	495	408	305	266	808	2,770	2,510	1,910	789	344	339
17	250	505	393	300	267	899	2,520	2,790	1,870	760	492	357
18	345	571	380	297	266	952	2,330	3,060	1,910	742	597	390
19	330	895	371	294	264	949	2,180	3,400	1,890	768	536	425
20	804	824	399	290	263	903	2,100	3,720	1,800	738	483	432
21	5,930	694	390	284	262	877	1,980	3,870	1,820	686	440	418
22	3,210	586	376	282	260	882	1,870	3,890	1,930	642	453	410
23	2,280	600	376	284	261	1,040	1,920	3,630	1,980	606	468	423
24	1,810	600	389	289	270	1,190	1,860	3,240	1,980	579	441	420
25	1,530	590	375	284	270	1,210	1,850	2,920	2,000	554	462	407
26	1,350	554	355	272	275	1,230	2,090	2,860	2,000	535	504	393
27	1,210	535	299	281	276	1,170	2,700	3,040	3,000	509	462	379
28	1,130	551	315	283	277	1,110	2,960	3,060	2,330	488	435	367
29	1,090	544	277	281	275	1,100	2,900	2,800	1,990	468	414	354
30	1,000	504	258	287	---	1,160	3,110	2,570	1,870	451	390	340
31	903	---	283	281	---	1,180	---	2,420	---	435	370	---
TOTAL	26,244	18,442	12,369	8,971	7,804	22,973	67,820	104,680	70,320	28,134	14,486	10,768
MEAN	847	615	399	289	269	741	2,261	3,377	2,344	908	467	359
MAX	5,930	895	499	320	280	1,230	3,540	5,030	3,520	2,050	672	432
MIN	172	495	258	220	253	275	1,160	2,420	1,800	435	344	292
AC-FT	52,050	36,580	24,530	17,790	15,480	45,570	134,500	207,600	139,500	55,800	28,730	21,360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2004, BY WATER YEAR (WY)

MEAN	311	408	329	252	248	429	1,408	4,105	4,402	1,557	519	273
MAX	847	915	957	459	452	878	2,475	7,125	10,110	3,832	1,208	418
(WY)	(2004)	(1991)	(1996)	(1996)	(1996)	(1992)	(1996)	(1998)	(1972)	(1999)	(1999)	(1999)
MIN	181	187	189	179	173	177	194	1,629	1,257	501	204	150
(WY)	(1995)	(2003)	(2003)	(2003)	(1912)	(1912)	(2001)	(2001)	(2001)	(2001)	(2001)	(1994)

12448500 METHOW RIVER AT WINTHROP, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1912 - 2004	
ANNUAL TOTAL	346,743		393,011			
ANNUAL MEAN	950		1,074		1,163	
HIGHEST ANNUAL MEAN					1,729	1999
LOWEST ANNUAL MEAN					430	2001
HIGHEST DAILY MEAN	7,510	Jun 8	5,930	Oct 21	21,400	Jun 9, 1972
LOWEST DAILY MEAN	155	Feb 24	172	Oct 1	134	Sep 21, 1994
ANNUAL SEVEN-DAY MINIMUM	158	Sep 24	185	Oct 1	136	Sep 24, 1994
ANNUAL RUNOFF (AC-FT)	687,800		779,500		842,300	
10 PERCENT EXCEEDS	2,120		2,840		3,200	
50 PERCENT EXCEEDS	376		508		358	
90 PERCENT EXCEEDS	169		269		187	

e Estimated

12448998 TWISP RIVER NEAR TWISP, WA

LOCATION.--Lat 48°22'12", long 120°08'51", in SE¼SE¼, sec.12, T.33 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on left bank, 20 ft downstream from county road bridge, 0.8 mi west of the Twisp city limits, and at mile 1.6.

DRAINAGE AREA.--245 mi^2.

PERIOD OF RECORD.--May 1975 to September 1979, October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,640 ft above NGVD of 1929, from topographic map, May 1975 to September 1979, water-stage recorder at same site. Crest-stage gage since September 1992.

REMARKS.--Records good except for estimated daily discharges which are fair. No known regulation. Several diversions upstream from station for irrigation. U.S. Geological Survey satellite telemeter at station. Water temperature records October 2001 to September 2002.

AVERAGE DISCHARGE.--19 years (water years 1976-79, 1990-2004), 256 ft^3/s, 185,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,540 ft^3/s, June 17, 1999, gage height, 11.83 ft; maximum gage height, 12.42 ft, June 17, 1999, from crest-stage gage; minimum daily discharge, 15 ft^3/s, Oct. 2-4, 1989, Sept. 28-30, Oct. 1-3, 1994, Sept. 19-20, 22-24, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 29, 1948, had a discharge of 9,440 ft^3/s, by slope-area measurement made about 1,000 ft upstream from mouth.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 21	0400	*1,910	10.55	Oct 21	----	----	(a) *10.68

Minimum discharge, 24 ft^3/s, Oct. 1, gage height, 6.94 ft.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	149	e115	e80	67	70	274	749	523	349	59	32
2	30	144	121	e80	66	71	270	965	520	301	52	33
3	33	132	e117	e77	65	70	275	1,050	573	269	47	33
4	32	110	e110	e70	65	71	288	1,030	741	248	48	33
5	32	e104	123	e65	e62	72	318	915	994	226	53	32
6	32	e101	115	e71	65	72	355	787	857	213	60	32
7	32	e98	e103	e75	e62	74	418	724	715	203	61	32
8	33	e116	e99	e80	e58	81	474	761	624	180	55	32
9	34	113	e94	e83	e60	100	488	727	637	164	50	29
10	35	107	e100	e85	e57	129	503	680	800	150	47	30
11	36	112	e95	e87	e57	143	542	624	741	136	45	35
12	38	105	e90	e87	e55	157	615	581	614	126	42	38
13	41	100	e87	e85	e48	170	722	538	550	124	40	34
14	40	97	e83	e83	e67	180	711	520	512	116	41	44
15	42	96	e77	e81	65	190	626	524	445	113	39	55
16	51	96	e95	e80	65	202	559	511	413	109	33	59
17	62	103	e89	e75	65	222	501	599	426	106	34	56
18	110	126	e84	72	65	233	464	709	478	104	35	41
19	95	258	e80	71	65	232	430	837	489	114	35	43
20	246	204	e100	69	65	223	410	912	465	105	66	41
21	1,270	e164	93	68	65	221	394	937	482	98	52	40
22	561	e139	86	67	65	225	369	922	531	89	48	38
23	364	e145	87	68	65	253	370	849	549	83	43	39
24	281	144	89	68	67	282	360	737	552	78	39	38
25	235	137	86	68	68	293	357	660	545	77	43	37
26	211	129	81	e65	70	300	405	679	540	73	49	35
27	188	122	69	e70	70	286	546	768	504	69	46	34
28	178	126	80	e75	70	273	590	742	409	65	42	33
29	191	e124	69	78	69	271	572	643	365	63	41	32
30	173	e118	62	69	---	279	610	592	363	61	36	31
31	152	---	e69	68	---	279	---	558	---	61	34	---
TOTAL	4,884	3,819	2,848	2,320	1,853	5,724	13,816	22,830	16,957	4,273	1,415	1,121
MEAN	158	127	91.9	74.8	63.9	185	461	736	565	138	45.6	37.4
MAX	1,270	258	123	87	70	300	722	1,050	994	349	66	59
MIN	26	96	62	65	48	70	270	511	363	61	33	29
AC-FT	9,690	7,570	5,650	4,600	3,680	11,350	27,400	45,280	33,630	8,480	2,810	2,220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2004, BY WATER YEAR (WY)

MEAN	66.5	105	93.6	66.1	69.3	116	339	821	912	386	97.1	46.0
MAX	158	350	323	152	168	270	723	1,455	1,517	859	302	110
(WY)	(2004)	(1991)	(1996)	(1976)	(1996)	(1996)	(1996)	(1997)	(1999)	(1991)	(1976)	(1978)
MIN	34.2	33.9	34.0	31.6	29.2	39.6	80.1	201	282	56.9	23.7	16.4
(WY)	(1990)	(2003)	(2003)	(1993)	(1994)	(1977)	(2001)	(1977)	(1977)	(1977)	(1977)	(1994)

12448998 TWISP RIVER NEAR TWISP, WA—Continued

SUMMARY STATISTICS	FOR 2004 WATER YEAR		WATER YEARS 1975 - 2004	
ANNUAL TOTAL	81,860			
ANNUAL MEAN	224		256	
HIGHEST ANNUAL MEAN			413	1991
LOWEST ANNUAL MEAN			82.9	1977
HIGHEST DAILY MEAN	1,270	Oct 21	3,200	May 19, 1991
LOWEST DAILY MEAN	26	Oct 1	15	Sep 28, 1994
ANNUAL SEVEN-DAY MINIMUM	31	Oct 1	15	Sep 26, 1994
ANNUAL RUNOFF (AC-FT)	162,400		185,300	
10 PERCENT EXCEEDS	614		752	
50 PERCENT EXCEEDS	98		85	
90 PERCENT EXCEEDS	38		34	

e Estimated

12449500 METHOW RIVER AT TWISP, WA

LOCATION.--Lat 48°21'55", long 120°06'54", in NE¼NW¼, sec.17, T.33 N., R.22 E., Okanogan County, Hydrologic Unit 17020008, on left bank, 0.25 mi downstream from Twisp River, 0.3 mi east of center of Twisp, and at mile 40.

DRAINAGE AREA.--1,301 mi^2.

PERIOD OF RECORD.--June 1919 to September 1962, April 1991 to current year. Monthly discharge only for some periods, published in WSP 1316. Miscellaneous measurements in 1967, 1970, 1976, 1978-90. For 1976, 1978-80 published as "at site 2.7 mi downstream", in error.

GAGE.--Water-stage recorder. Elevation of gage is 1,580 ft above NGVD of 1929, from topographic map. Prior to Oct. 3, 1919, several staff gages in the immediate vicinity at different datum. Oct. 3, 1919, to Sept. 30, 1929, and Oct. 31 to Nov. 6, 1933, chain gage on road bridge 40 ft upstream at same datum as staff gages. Nov. 7 to Dec. 18, 1933, staff gage at present site at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No known regulation. Numerous diversions for irrigation upstream from station. Water temperature records April to September 2002.

AVERAGE DISCHARGE.--56 years (water years 1920-62, 1992-2004), 1,333 ft^3/s, 965,800 acre-ft/yr. Includes discharge for water years 1930-34, which were estimated for WSP 1316.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,800 ft^3/s, May 29, 1948, gage height, 12.94 ft, in gage well, from rating curve extended above 18,000 ft^3/s on basis of slope-area measurement of peak flow; minimum observed, 134 ft^3/s, Sept. 4, 5, 1926, Sept. 9, 10, 1929, but may have been less during period of ice effect Jan. 6 to Mar. 4, 1937.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 21	0700	*8,070	*4.68	May 3	0600	6,050	3.85

Minimum discharge, 207 ft^3/s, Oct. 1, gage height, -0.17 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	1,020	617	358	330	341	1,390	4,360	2,750	2,330	461	394
2	243	984	621	361	329	342	1,370	5,430	2,650	1,980	440	413
3	243	915	615	362	328	342	1,420	5,810	2,750	1,760	422	400
4	242	816	580	e310	327	345	1,520	5,770	3,190	1,610	594	389
5	241	751	611	e275	319	351	1,750	5,300	4,040	1,490	601	379
6	245	708	606	e300	324	346	1,970	4,610	3,910	1,410	688	370
7	247	685	572	e350	318	348	2,330	4,290	3,430	1,340	672	359
8	248	738	557	e365	317	359	2,650	4,360	3,100	1,260	601	353
9	248	727	536	e380	318	407	2,720	4,270	3,000	1,190	542	341
10	248	685	543	e395	316	520	2,810	3,980	3,870	1,130	500	336
11	248	685	535	e390	316	619	3,070	3,690	4,180	1,140	470	347
12	256	649	529	e390	311	695	3,510	3,380	3,380	1,070	448	389
13	264	625	528	e385	299	792	4,150	3,150	2,980	992	424	374
14	262	612	505	e380	326	841	4,200	2,990	2,740	934	405	377
15	268	601	480	379	320	896	3,760	2,960	2,470	879	392	386
16	303	599	496	375	320	945	3,350	2,960	2,270	848	375	403
17	327	614	484	364	322	1,040	3,050	3,290	2,230	815	467	418
18	447	683	466	362	321	1,120	2,830	3,650	2,310	800	586	430
19	448	1,080	458	356	319	1,120	2,640	4,090	2,310	828	554	461
20	713	1,040	484	349	315	1,070	2,540	4,490	2,200	798	539	467
21	6,630	864	483	343	315	1,040	2,400	4,670	2,220	742	489	461
22	3,870	724	467	340	317	1,050	2,260	4,660	2,370	709	483	451
23	2,710	733	465	342	319	1,210	2,290	4,390	2,440	666	502	461
24	2,130	738	474	342	330	1,390	2,240	3,930	2,440	621	473	459
25	1,790	723	460	337	330	1,440	2,220	3,530	2,470	600	489	448
26	1,570	684	443	324	336	1,470	2,470	3,460	2,450	577	534	434
27	1,420	655	e375	329	336	1,400	3,190	3,710	3,340	552	503	418
28	1,310	672	e385	337	341	1,330	3,570	3,720	2,720	531	475	404
29	1,280	683	e350	335	339	1,320	3,480	3,400	2,310	508	460	394
30	1,190	641	e320	340	---	1,370	3,680	3,100	2,150	491	434	381
31	1,070	---	e355	337	---	1,400	---	2,930	---	475	408	---
TOTAL	30,928	22,334	15,400	10,892	9,358	27,259	80,830	124,330	84,670	31,076	15,431	12,097
MEAN	998	744	497	351	323	879	2,694	4,011	2,822	1,002	498	403
MAX	6,630	1,080	621	395	341	1,470	4,200	5,810	4,180	2,330	688	467
MIN	217	599	320	275	299	341	1,370	2,930	2,150	475	375	336
AC-FT	61,350	44,300	30,550	21,600	18,560	54,070	160,300	246,600	167,900	61,640	30,610	23,990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2004, BY WATER YEAR (WY)

MEAN	424	472	401	313	316	440	1,604	4,903	4,903	1,736	498	308
MAX	1,383	1,183	1,205	578	958	1,773	7,692	9,515	11,030	4,392	1,280	727
(WY)	(1960)	(1934)	(1996)	(1935)	(1935)	(1934)	(1934)	(1957)	(1950)	(1954)	(1999)	(1959)
MIN	189	234	222	178	183	204	180	1,546	846	289	162	148
(WY)	(1937)	(1940)	(1926)	(1937)	(1929)	(1936)	(1929)	(1920)	(1926)	(1926)	(1926)	(1929)

12449500 METHOW RIVER AT TWISP, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1919 - 2004	
ANNUAL TOTAL	418,312		464,605			
ANNUAL MEAN	1,146		1,269		1,352	
HIGHEST ANNUAL MEAN					2,231	1951
LOWEST ANNUAL MEAN					467	1926
HIGHEST DAILY MEAN	8,680	Jun 8	6,630	Oct 21	32,500	May 29, 1948
LOWEST DAILY MEAN	188	Jan 10	217	Oct 1	134	Sep 4, 1926
ANNUAL SEVEN-DAY MINIMUM	200	Sep 23	240	Oct 1	141	Sep 2, 1926
ANNUAL RUNOFF (AC-FT)	829,700		921,500		979,400	
10 PERCENT EXCEEDS	2,620		3,410		3,890	
50 PERCENT EXCEEDS	467		604		420	
90 PERCENT EXCEEDS	208		322		224	

e Estimated

12449950 METHOW RIVER NEAR PATEROS, WA

LOCATION.--Lat 48°04'39", long 119°59'02", in SE$^1/_4$SW$^1/_4$, sec.20, T.30 N., R.23 E., Okanogan County, Hydrologic Unit 17020008, on right bank 1.4 mi downstream from Black Canyon Creek, 4.3 mi northwest of Pateros, and at mile 6.7.

DRAINAGE AREA.--1,772 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1959 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 900 ft above NGVD of 1929, from topographic map. Prior to Dec. 17, 1964, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diversions for irrigation of about 11,000 acres upstream from station (1959 Bureau of Reclamation land classification). U.S. Geological Survey satellite telemeter at station. Water temperature October 1968 to October 1970.

AVERAGE DISCHARGE.--45 years (water years 1960-2004), 1,536 ft^3/s, 1,113,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,800 ft^3/s, May 31, 1972, gage height, 12.25 ft; minimum daily discharge, 150 ft^3/s, Jan. 8-10, 1974, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1894, 46,700 ft^3/s, May 29, 1948, determined by slope-area measurement of peak flow at site 1 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 21	1230	*7,390	*6.78	No other peak greater than base discharge.			

Minimum discharge, 248 ft^3/s, Oct. 1, gage height, 1.35 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	253	1,100	690	e410	397	409	1,480	4,280	2,990	2,410	512	436
2	272	1,080	699	e415	394	412	1,460	5,310	2,870	2,180	493	440
3	288	1,030	690	e410	395	414	1,480	5,880	2,900	1,930	469	446
4	290	936	654	e360	392	414	1,560	5,940	3,240	1,770	511	438
5	289	849	684	e330	387	416	1,750	5,620	4,040	1,630	653	425
6	289	799	687	e365	388	419	1,980	4,950	4,200	1,530	714	417
7	293	769	652	e400	384	416	2,290	4,560	3,740	1,460	736	411
8	292	793	634	e430	380	423	2,660	4,530	3,390	1,380	690	397
9	294	812	606	e450	383	448	2,800	4,500	3,200	1,290	621	392
10	294	777	620	e475	379	511	2,870	4,230	3,660	1,230	571	384
11	294	759	612	e480	378	632	3,080	3,950	4,490	1,210	532	381
12	298	743	603	e480	374	713	3,490	3,650	3,720	1,190	502	410
13	303	709	603	e475	365	804	4,100	3,390	3,250	1,090	477	420
14	309	690	587	e470	375	877	4,350	3,200	2,980	1,030	458	416
15	312	678	545	e460	390	929	4,020	3,130	2,720	971	446	429
16	341	672	565	453	385	986	3,600	3,110	2,480	926	431	435
17	363	676	e545	439	392	1,060	3,280	3,330	2,390	894	420	450
18	405	710	539	433	389	1,160	3,040	3,720	2,430	866	577	464
19	495	927	524	428	383	1,190	2,840	4,100	2,470	881	609	487
20	502	1,190	556	421	380	1,160	2,720	4,550	2,370	882	587	513
21	5,050	993	558	414	378	1,130	2,600	4,790	2,330	825	551	516
22	4,330	836	540	408	378	1,120	2,450	4,830	2,450	778	519	504
23	2,960	794	531	408	379	1,200	2,420	4,710	2,550	742	538	503
24	2,340	814	549	408	393	1,400	2,400	4,250	2,560	694	530	509
25	1,970	804	535	404	401	1,500	2,350	3,840	2,620	662	524	503
26	1,730	777	516	391	411	1,570	2,500	3,670	2,560	635	557	489
27	1,560	744	e440	385	409	1,510	3,080	3,880	3,200	613	565	474
28	1,430	742	e445	400	410	1,440	3,630	3,960	3,040	589	530	462
29	1,380	757	e400	400	410	1,410	3,610	3,700	2,520	568	504	451
30	1,310	740	e370	403	---	1,440	3,730	3,370	2,310	545	483	438
31	1,200	---	e405	403	---	1,480	---	3,180	---	528	456	---
TOTAL	31,736	24,700	17,584	13,008	11,259	28,993	83,620	130,110	89,670	33,929	16,766	13,440
MEAN	1,024	823	567	420	388	935	2,787	4,197	2,989	1,094	541	448
MAX	5,050	1,190	699	480	411	1,570	4,350	5,940	4,490	2,410	736	516
MIN	253	672	370	330	365	409	1,460	3,110	2,310	528	420	381
AC-FT	62,950	48,990	34,880	25,800	22,330	57,510	165,900	258,100	177,900	67,300	33,260	26,660

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2004, BY WATER YEAR (WY)

MEAN	486	538	479	419	416	602	1,603	4,883	5,832	2,119	691	440
MAX	1,458	1,327	1,361	938	803	1,407	3,364	9,768	13,150	4,960	1,860	1,196
(WY)	(1960)	(1991)	(1996)	(1981)	(1968)	(1968)	(1996)	(1972)	(1972)	(1999)	(1976)	(1978)
MIN	293	273	270	248	262	237	309	1,415	1,583	471	284	238
(WY)	(2003)	(2003)	(1995)	(1995)	(2001)	(1977)	(2001)	(1977)	(2001)	(1977)	(1977)	(2001)

12449950 METHOW RIVER NEAR PATEROS, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1959 - 2004	
ANNUAL TOTAL	447,049		494,815			
ANNUAL MEAN	1,225		1,352		1,536	
HIGHEST ANNUAL MEAN					2,963	1972
LOWEST ANNUAL MEAN					565	1977
HIGHEST DAILY MEAN	8,900	Jun 8	5,940	May 4	27,200	May 31, 1972
LOWEST DAILY MEAN	238	Sep 3	253	Oct 1	150	Jan 8, 1974
ANNUAL SEVEN-DAY MINIMUM	239	Sep 2	282	Oct 1	154	Jan 5, 1974
ANNUAL RUNOFF (AC-FT)	886,700		981,500		1,113,000	
10 PERCENT EXCEEDS	2,800		3,640		4,260	
50 PERCENT EXCEEDS	535		674		539	
90 PERCENT EXCEEDS	257		385		300	

e Estimated

12449950 METHOW RIVER NEAR PATEROS, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1959 to September 1970, 1972, September 2001, and September 2003 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: November 1969 to December 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 23.5°C, Aug. 5, 11, 23, 24, 1970; minimum, 0.0°C, on many days during winter months.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 degrees NTU (63675)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	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)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)
SEP													
03...	1530	1.35	231	.3	738	8.9	101	8.5	194	32.2	20.0	88	104
03...	1530	--	--	--	--	--	--	--	--	--	--	--	--
03...	1550	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Biomass periphyton, ashfree drymass g/m2 (49954)
SEP													
03...	1	E.07	<.04	.25	<.008	<.02	<.02	.004	.1	<.1	.1	.7	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	32.0
03...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Biomass periphyton, ashfree dry wt, DTH, g/m2 (63766)	Biomass periphyton, ash weight, DTH, g/m2 (63765)	Periphyton biomass ash weight, g/m2 (00572)	Biomass periphyton, dry weight, DTH, g/m2 (63767)	Periphyton biomass dry weight, g/m2 (00573)	Chlorophyll a periphyton, DTH, CF meth mg/m2 (63763)	Pheophytn a periphyton, DTH, CF meth mg/m2 (63764)	Pheophytin a, periphyton, mg/m2 (62359)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a periphyton, chromofluoro, mg/m2 (70957)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
SEP													
03...	--	--	--	--	--	--	--	--	.2	--	.2	2	1.2
03...	--	--	380	--	409.2	--	--	18	--	29.6	--	--	--
03...	85.0	1,160	--	1,240	--	44.7	28.9	--	--	--	--	--	--

12450700 COLUMBIA RIVER BELOW WELLS DAM, WA

LOCATION.--Lat 47°56'48", long 119°51'56", in SW¼SE¼, sec.6, T.28 N., R.24 E., Chelan County, Hydrologic Unit 17020005, at powerhouse of Wells Dam, 0.7 mi northeast of Azwell, and at mile 515.9.

DRAINAGE AREA.--86,100 mi^2, approximately.

PERIOD OF RECORD.--October 1967 to current year. October 1953 to September 1967 (monthly discharge only) in the files of the U.S. Geological Survey.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929 (levels by Bechtel Corporation). Prior to Oct. 1, 1970, at site 0.8 mi downstream at same datum. Oct. 1, 1970, to July 20, 1988, water-stage recorder at present site and datum with auxiliary water-stage recorder 6.8 mi downstream from base gage at same datum.

REMARKS.--Flow regulated by numerous reservoirs. Feeder Canal diversion (station 12435500) for Columbia Basin project is used to irrigate approximately 600,000 acres in the United States. An additional 66,500 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge records provided by Public Utility District No. 1 of Douglas County at Wells Dam through the Corps of Engineers, North Pacific Division, Reservoir Control Center. The U.S. Geological Survey made 6 discharge measurements at this site during the year.

AVERAGE DISCHARGE.--51 years (water years 1954-2004), 114,400 ft^3/s, 82,880,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 402,000 ft^3/s, June 15, 1972; maximum elevation, 731.92 ft, June 16, 1972; minimum discharge, 17,900 ft^3/s, Oct. 5, 1970 (from powerplant records); minimum elevation, 703.55 ft, Sept. 28, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 169,000 ft^3/s June 29; minimum daily discharge, 33,100 ft^3/s Apr. 11.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79,800	87,000	107,000	79,800	57,300	83,700	75,800	95,300	113,000	110,000	81,800	100,000
2	66,000	55,800	102,000	103,000	101,000	79,100	80,400	91,900	129,000	113,000	85,300	88,600
3	68,700	91,400	108,000	98,400	102,000	99,400	54,700	124,000	143,000	100,000	90,600	61,300
4	47,800	110,000	113,000	106,000	75,600	101,000	37,200	112,000	147,000	84,200	95,700	53,900
5	47,400	113,000	108,000	144,000	112,000	77,600	75,300	93,900	108,000	118,000	76,000	58,700
6	79,900	102,000	87,800	141,000	98,100	53,800	75,100	103,000	95,400	126,000	62,300	70,900
7	65,400	101,000	60,100	121,000	72,100	41,100	65,500	118,000	106,000	131,000	56,000	94,800
8	66,600	71,600	104,000	111,000	45,100	70,900	64,500	99,000	112,000	130,000	65,100	88,600
9	86,300	61,900	117,000	113,000	101,000	79,400	68,600	99,600	114,000	111,000	101,000	94,200
10	69,000	88,200	116,000	86,500	102,000	84,100	62,000	142,000	153,000	95,200	110,000	83,200
11	59,100	95,600	110,000	71,900	94,100	69,900	33,100	121,000	145,000	108,000	109,000	71,400
12	52,800	104,000	113,000	117,000	103,000	66,900	78,900	120,000	142,000	130,000	104,000	50,400
13	80,700	99,300	109,000	104,000	107,000	52,600	90,400	130,000	135,000	126,000	105,000	66,000
14	80,000	100,000	98,300	98,100	58,300	39,400	87,800	138,000	165,000	114,000	86,400	58,800
15	73,300	84,900	131,000	91,400	48,900	64,400	92,900	121,000	154,000	93,200	86,900	58,900
16	66,200	74,500	123,000	86,600	96,100	73,500	104,000	108,000	128,000	94,200	106,000	68,300
17	66,700	101,000	110,000	72,300	89,500	82,400	89,100	132,000	142,000	81,800	107,000	71,000
18	50,700	94,800	110,000	66,800	74,700	80,300	82,400	133,000	141,000	90,900	112,000	56,500
19	50,400	106,000	118,000	89,000	73,700	80,300	126,000	130,000	130,000	91,600	110,000	42,100
20	77,900	106,000	101,000	84,000	76,800	58,300	131,000	108,000	135,000	72,800	114,000	69,500
21	84,800	108,000	64,600	101,000	51,000	40,200	116,000	112,000	157,000	85,600	74,200	93,500
22	80,000	86,100	123,000	117,000	43,000	69,800	99,100	104,000	150,000	82,900	42,900	95,800
23	88,800	67,100	127,000	90,800	70,600	71,500	102,000	85,400	104,000	89,800	86,400	103,000
24	87,000	109,000	103,000	74,600	74,600	81,600	99,400	116,000	109,000	79,400	83,600	93,000
25	71,500	100,000	48,700	76,900	96,400	79,700	92,900	122,000	122,000	61,400	105,000	67,600
26	54,900	91,700	98,100	107,000	105,000	72,900	119,000	126,000	122,000	98,900	111,000	58,500
27	105,000	43,100	107,000	97,400	77,100	52,800	115,000	133,000	101,000	95,700	115,000	91,600
28	95,700	62,500	97,300	94,200	65,300	46,700	101,000	111,000	150,000	113,000	104,000	89,800
29	92,500	56,100	129,000	91,100	61,200	74,400	98,900	101,000	169,000	111,000	97,500	78,500
30	101,000	58,100	127,000	76,000	---	74,000	97,900	112,000	148,000	106,000	128,000	94,100
31	117,000	---	101,000	72,400	---	69,200	---	97,900	---	101,000	156,000	---
TOTAL	2,312,900	2,629,700	3,271,900	2,983,200	2,332,500	2,170,900	2,615,900	3,540,000	3,969,400	3,145,600	2,967,700	2,272,500
MEAN	74,610	87,660	105,500	96,230	80,430	70,030	87,200	114,200	132,300	101,500	95,730	75,750
MAX	117,000	113,000	131,000	144,000	112,000	101,000	131,000	142,000	169,000	131,000	156,000	103,000
MIN	47,400	43,100	48,700	66,800	43,000	39,400	33,100	85,400	95,400	61,400	42,900	42,100
AC-FT	4,588,000	5,216,000	6,490,000	5,917,000	4,627,000	4,306,000	5,189,000	7,022,000	7,873,000	6,239,000	5,886,000	4,508,000

CAL YR	2003	TOTAL	34,649,900	MEAN	94,930	MAX	166,000	MIN	31,100	AC-FT 68,730,000
WTR YR	2004	TOTAL	34,212,200	MEAN	93,480	MAX	169,000	MIN	33,100	AC-FT 67,860,000

12451000 STEHEKIN RIVER AT STEHEKIN, WA

LOCATION.--Lat 48°19'47", long 120°41'26", in NE¼SE¼, sec.26, T.33 N., R.17 E., Chelan County, Hydrologic Unit 17020009, Lake Chelan National Recreation Area, on left bank 1,100 ft upstream from Boulder Creek, 1.4 mi upstream from Lake Chelan, and 2.1 mi northwest of Stehekin.

DRAINAGE AREA.--321 mi^2.

PERIOD OF RECORD.--October 1910 to October 1915, January 1927 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 412: 1914. WSP 1316: 1911(M), 1914-15(M). WSP 1446: 1912(M). WSP 1933: Drainage area. WDR-80-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,098.5 ft above NGVD of 1912. To convert to NGVD of 1929, subtract 1.73 ft. Prior to Aug. 17, 1911, nonrecording gage 0.4 mi upstream from mouth at Lake Chelan at different datum (datum change made June 13, 1911). Aug. 17, 1911, to Oct. 31, 1915, nonrecording gage 0.2 mi downstream from Boulder Creek at different datum.

REMARKS.--Records fair. No known regulation or diversion. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--83 years (water years 1911-15, 1927-2004), 1,410 ft^3/s, 59.65 in/yr, 1,022,000 acre-ft/yr, includes monthly discharge values published in WSP 1316.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft^3/s, Oct. 20, 2003, gage height, 31.12 ft, from rating curve extended on basis of slope-area measurement at 18,800 ft^3/s; minimum discharge, 56 ft^3/s, Jan. 12, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 17	1500	7,360	23.84	Oct 20	2230	*26,000	*31.12

Minimum discharge, 326 ft^3/s, Oct. 11, gage height, 19.32 ft; minimum gage-height, 19.11 ft, Jan. 4, 8.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	438	1,320	957	495	457	417	889	3,730	e3,050	2,500	1,030	843
2	421	1,230	916	497	451	417	871	4,520	e2,980	2,250	994	884
3	405	1,140	880	485	446	417	897	4,570	e3,100	2,060	997	791
4	395	1,050	833	e420	441	421	985	4,380	e3,400	1,890	970	740
5	409	995	826	e370	436	423	1,120	4,030	e3,900	1,870	976	725
6	412	950	807	e380	435	420	1,290	3,460	e3,800	1,950	903	659
7	488	926	775	e400	431	433	1,610	3,160	e3,400	1,900	921	631
8	442	913	749	e420	429	520	1,800	3,390	e3,100	1,510	848	621
9	433	885	724	e440	423	670	1,870	3,270	e3,000	1,340	849	667
10	372	878	711	459	423	777	1,980	3,040	e4,000	1,250	878	615
11	342	939	687	447	420	764	2,270	2,740	e4,200	1,210	897	1,330
12	383	888	682	441	417	779	2,760	2,620	e3,700	1,230	960	843
13	478	850	675	434	414	784	3,610	2,500	e3,300	1,280	1,010	727
14	384	827	660	435	416	782	3,410	2,540	e3,130	1,340	1,020	916
15	371	808	646	453	411	783	2,840	2,730	e3,000	1,450	1,010	1,060
16	643	813	639	444	416	788	2,630	2,800	e2,800	1,520	1,030	1,370
17	5,480	866	625	432	413	842	2,340	3,590	e2,700	1,480	1,070	1,250
18	3,230	1,100	610	427	412	897	1,970	4,080	2,790	1,500	1,020	1,050
19	2,160	2,800	596	419	411	886	1,850	4,470	2,750	1,460	1,020	943
20	9,530	1,680	594	416	410	839	1,900	4,600	2,700	1,340	990	786
21	12,100	1,410	578	413	406	811	1,750	4,860	3,240	1,180	922	719
22	4,800	1,270	568	411	405	834	1,660	4,400	3,820	1,150	1,140	708
23	3,800	1,190	563	411	406	995	1,730	4,040	4,130	1,170	859	757
24	2,660	1,110	563	405	410	1,050	1,720	3,930	4,310	1,210	925	696
25	1,960	1,040	552	400	411	1,030	1,740	3,740	4,250	1,240	1,840	661
26	1,750	983	537	397	411	1,010	2,030	e3,700	4,050	1,160	1,730	630
27	1,600	934	524	394	411	973	2,950	e3,900	3,360	1,100	1,080	607
28	2,960	946	526	394	412	930	2,910	e4,000	2,790	1,100	980	590
29	2,270	1,110	503	416	415	896	2,660	e3,600	2,660	1,140	1,150	566
30	1,670	1,020	e480	499	---	921	2,860	e3,400	2,750	1,160	947	542
31	1,440	---	503	471	---	920	---	e3,250	---	1,100	866	---
TOTAL	64,226	32,871	20,489	13,325	12,199	23,429	60,902	113,040	100,160	45,040	31,832	23,927
MEAN	2,072	1,096	661	430	421	756	2,030	3,646	3,339	1,453	1,027	798
MAX	12,100	2,800	957	499	457	1,050	3,610	4,860	4,310	2,500	1,840	1,370
MIN	342	808	480	370	405	417	871	2,500	2,660	1,100	848	542
AC-FT	127,400	65,200	40,640	26,430	24,200	46,470	120,800	224,200	198,700	89,340	63,140	47,460
CFSM	6.45	3.41	2.06	1.34	1.31	2.35	6.32	11.4	10.4	4.53	3.20	2.48
IN.	7.44	3.81	2.37	1.54	1.41	2.72	7.06	13.10	11.61	5.22	3.69	2.77

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2004, BY WATER YEAR (WY)

MEAN	620	696	523	403	398	529	1,449	3,533	4,154	2,616	1,249	695
MAX	2,072	3,192	1,896	1,577	1,209	1,546	4,644	5,810	7,738	5,479	2,716	1,399
(WY)	(2004)	(1991)	(1976)	(1984)	(1971)	(1934)	(1934)	(1958)	(1950)	(1950)	(1974)	(1959)
MIN	230	148	125	86.0	115	194	549	1,475	1,680	1,157	681	409
(WY)	(1988)	(1930)	(1930)	(1930)	(1937)	(1937)	(1955)	(1977)	(1915)	(1977)	(1944)	(1942)

12451000 STEHEKIN RIVER AT STEHEKIN, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1911 - 2004	
ANNUAL TOTAL	488,058		541,440			
ANNUAL MEAN	1,337		1,479		1,406	
HIGHEST ANNUAL MEAN					2,008	1950
LOWEST ANNUAL MEAN					864	2001
HIGHEST DAILY MEAN	12,100	Oct 21	12,100	Oct 21	18,000	Nov 29, 1995
LOWEST DAILY MEAN	125	Jan 2	342	Oct 11	58	Jan 12, 1930
ANNUAL SEVEN-DAY MINIMUM	155	Jan 17	395	Oct 9	67	Jan 9, 1930
ANNUAL RUNOFF (AC-FT)	968,100		1,074,000		1,019,000	
ANNUAL RUNOFF (CFSM)	4.17		4.61		4.38	
ANNUAL RUNOFF (INCHES)	56.56		62.75		59.52	
10 PERCENT EXCEEDS	3,200		3,400		3,600	
50 PERCENT EXCEEDS	833		946		740	
90 PERCENT EXCEEDS	330		416		246	

e Estimated

12452000 LAKE CHELAN AT CHELAN, WA

LOCATION.--Lat 47°50'11", long 120°03'37", near center of sec.15, T.27 N., R.22 E., Chelan County, Hydrologic Unit 17020009, on south shore of Lake Chelan at Lakeside, 2.1 mi west of Chelan.

DRAINAGE AREA.--924 mi^2.

PERIOD OF RECORD.--September 1897 to December 1899, January to June 1905 and December 1910 to September 1911 (fragmentary gage heights only), October 1911 to current year. Records of change in contents prior to October 1911, published in WSP 482 and 492 in conjuction with records for Chelan River near Chelan, have been found to be unreliable and should not be used. Monthend contents October 1911 to September 1950 published in WSP 1316.

REVISED RECORDS.--WSP 1246: 1951. WSP 1286: 1952. WSP 1933: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1912. To convert to NGVD of 1929, subtract 1.73 ft. Prior to Jan. 1, 1900, nonrecording gage at Lakeside about 1 mi west of Chelan at datum 1,070.18 ft above NGVD of 1912. Jan. 1 to June 30, 1905, nonrecording gage at upper highway bridge at Chelan at different datum. Dec. 5, 1910, to Nov. 13, 1927, nonrecording gage at Forest Service boat landing at Chelan at datum 1,076.07 ft above NGVD of 1912.

REMARKS.--Reservoir is formed by low concrete dam at lake outlet completed Sept. 3, 1927. Usable capacity between elevations 1,079 ft and 1,100 ft, 677,400 acre-ft. Regulation between these elevations is allowed by stipulation of the Federal Power Commission. Water is used for power development. Elevation of lake maintained between 1,092 ft and 1,100 ft during period Aug. 16 to Sept. 15 for scenic effect and recreational purposes. Diversions for irrigation of about 6,280 acres with an annual depletion of about 11,000 acre-ft, 1946 estimate. Chemical analyses June 1971 to August 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,100.16 ft, June 30, 1981 (affected by seiche action); maximum contents, 679,300 acre-ft, June 30, 1981, elevation, 1,100.06 ft, mean of seiche; minimum elevation since completion of dam in 1927, 1,079.68 ft, Apr. 3, 4, 1937, Apr. 3, 1970, contents, 21,350 acre-ft; minimum elevation, 1,076.78 ft, Jan. 27, 28, Dec. 2-5, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 677,000 acre-ft, Sept. 1, elevation, 1,099.99 ft; minimum contents, 280,300 acre-ft, Apr. 4, 5, 6, elevation, 1,087.81.

CAPACITY TABLE
(Based on data by the Pacific Northwest Coordination Agreement)

Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)
1,080	31,540	1,090	350,900	1,100	677,400
1,085	190,200	1,095	513,300		

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,098.07	1,098.02	1,096.73	1,094.45	1,091.57	1,088.97	1,087.92	1,089.64	1,094.61	1,099.31	1,099.73	1,099.86
2	1,097.95	1,097.96	1,096.67	1,094.34	1,091.48	1,088.87	1,087.87	1,089.86	1,094.66	1,099.39	1,099.72	1,099.84
3	1,097.85	1,097.92	1,096.64	1,094.22	1,091.40	1,088.77	1,087.83	1,090.15	1,094.74	1,099.45	1,099.73	1,099.79
4	1,097.75	1,097.85	1,096.55	1,094.12	1,091.32	1,088.68	1,087.82	1,090.47	1,094.86	1,099.46	1,099.68	1,099.74
5	1,097.64	1,097.76	1,096.52	1,094.01	1,091.22	1,088.62	1,087.81	1,090.68	1,095.11	1,099.44	1,099.67	1,099.64
6	1,097.54	1,097.69	1,096.49	1,093.91	1,091.13	1,088.55	1,087.82	1,090.86	1,095.34	1,099.48	1,099.65	1,099.53
7	1,097.45	1,097.62	1,096.43	1,093.85	1,091.05	1,088.46	1,087.87	1,091.03	1,095.50	1,099.54	1,099.63	1,099.43
8	1,097.33	1,097.54	1,096.35	1,093.77	1,090.96	1,088.37	1,087.97	1,091.20	1,095.58	1,099.49	1,099.62	1,099.42
9	1,097.23	1,097.46	1,096.28	1,093.70	1,090.86	1,088.32	1,087.99	1,091.31	1,095.71	1,099.45	1,099.62	1,099.40
10	1,097.11	1,097.39	1,096.21	1,093.61	1,090.76	1,088.30	1,088.04	1,091.47	1,096.00	1,099.43	1,099.63	1,099.36
11	1,096.96	1,097.36	1,096.13	1,093.51	1,090.67	1,088.24	1,088.11	1,091.56	1,096.29	1,099.38	1,099.62	1,099.38
12	1,096.86	1,097.26	1,096.08	1,093.42	1,090.57	1,088.22	1,088.22	1,091.61	1,096.43	1,099.32	1,099.60	1,099.43
13	1,096.78	1,097.17	1,096.02	1,093.32	1,090.47	1,088.19	1,088.39	1,091.69	1,096.57	1,099.31	1,099.58	1,099.38
14	1,096.65	1,097.08	1,095.96	1,093.23	1,090.37	1,088.16	1,088.54	1,091.79	1,096.73	1,099.31	1,099.56	1,099.38
15	1,096.53	1,097.01	1,095.87	1,093.14	1,090.27	1,088.13	1,088.67	1,091.88	1,096.82	1,099.33	1,099.57	1,099.40
16	1,096.51	1,096.94	1,095.80	1,093.05	1,090.18	1,088.09	1,088.78	1,091.98	1,096.84	1,099.38	1,099.61	1,099.44
17	1,096.60	1,096.93	1,095.72	1,092.96	1,090.11	1,088.05	1,088.86	1,092.09	1,096.93	1,099.43	1,099.67	1,099.46
18	1,096.77	1,096.97	1,095.65	1,092.86	1,090.04	1,088.05	1,088.92	1,092.26	1,097.05	1,099.54	1,099.70	1,099.50
19	1,096.78	1,097.10	1,095.56	1,092.77	1,089.93	1,088.03	1,088.95	1,092.45	1,097.20	1,099.62	1,099.71	1,099.51
20	1,096.94	1,097.13	1,095.48	1,092.68	1,089.84	1,087.98	1,088.99	1,092.66	1,097.37	1,099.68	1,099.75	1,099.53
21	1,097.94	1,097.11	1,095.40	1,092.58	1,089.75	1,087.94	1,089.03	1,092.91	1,097.57	1,099.70	1,099.76	1,099.55
22	1,098.17	1,097.08	1,095.31	1,092.48	1,089.66	1,087.91	1,089.06	1,093.13	1,097.77	1,099.68	1,099.75	1,099.49
23	1,098.13	1,097.04	1,095.22	1,092.39	1,089.56	1,087.90	1,089.09	1,093.34	1,098.01	1,099.69	1,099.77	1,099.44
24	1,098.02	1,097.03	1,095.16	1,092.30	1,089.48	1,087.91	1,089.12	1,093.50	1,098.28	1,099.71	1,099.74	1,099.39
25	1,097.99	1,096.98	1,095.09	1,092.19	1,089.40	1,087.92	1,089.12	1,093.64	1,098.52	1,099.75	1,099.79	1,099.31
26	1,098.01	1,096.94	1,095.01	1,092.09	1,089.34	1,087.94	1,089.14	1,093.78	1,098.79	1,099.78	1,099.89	1,099.23
27	1,098.00	1,096.86	1,094.91	1,091.98	1,089.25	1,087.97	1,089.25	1,093.99	1,098.99	1,099.72	1,099.91	1,099.15
28	1,098.06	1,096.84	1,094.82	1,091.88	1,089.15	1,087.95	1,089.38	1,094.18	1,099.09	1,099.70	1,099.91	1,099.07
29	1,098.12	1,096.82	1,094.73	1,091.79	1,089.06	1,087.92	1,089.42	1,094.34	1,099.16	1,099.71	1,099.91	1,098.98
30	1,098.10	1,096.79	1,094.62	1,091.75	---	1,087.91	1,089.50	1,094.44	1,099.24	1,099.72	1,099.88	1,098.88
31	1,098.05	---	1,094.53	1,091.66	---	1,087.93	---	1,094.53	---	1,099.72	1,099.85	---
MEAN	1,097.48	1,097.26	1,095.74	1,093.03	1,090.31	1,088.20	1,088.58	1,092.21	1,096.86	1,099.54	1,099.72	1,099.43
MAX	1,098.17	1,098.02	1,096.73	1,094.45	1,091.57	1,088.97	1,089.50	1,094.53	1,099.24	1,099.78	1,099.91	1,099.86
MIN	1,096.51	1,096.79	1,094.53	1,091.66	1,089.06	1,087.90	1,087.81	1,089.64	1,094.61	1,099.31	1,099.56	1,099.88
†	614,100	571,300	499,000	401,400	318,900	283,800	336,700	499,700	654,000	669,100	672,100	640,500
‡	-1,400	-42,800	-72,300	-97,600	-82,500	-35,100	+52,900	+163,000	+154,300	+15,100	+3,000	-31,600

CAL YR 2003 MEAN 1,094.07 MAX 1,099.92 MIN 1,087.10 ‡ +148,400
WTR YR 2004 MEAN 1,094.88 MAX 1,099.91 MIN 1,087.81 ‡ +25,000

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

12452500 CHELAN RIVER AT CHELAN, WA

LOCATION.--Lat 47°50'05", long 120°00'43", in SE¼NE¼, sec.30, T.27 N., R.23 E., Chelan County, Hydrologic Unit 17020009, at Chelan River powerplant tailrace, 4.3 mi downstream from control dam at outlet of Lake Chelan, and 3.0 mi southeast of Chelan.

DRAINAGE AREA.--924 mi^2.

PERIOD OF RECORD.--November 1903 to current year. Published as "below Chelan Lake" 1904-05. Adjusted records for October 1903 to September 1911, published in WSP 482, 492, and 870 are unreliable and should not be used.

REVISED RECORDS.--WSP 482: 1904-13. WSP 612: 1924. WSP 1246: 1951. WSP 1286: 1952. WSP 1933: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and watt-hour meters on each turbine. Datum of gage is 1,074.66 ft above NGVD of 1912. To convert to NGVD of 1929, subtract 1.62 ft. See WSP 1933 for history of changes prior to Mar. 20, 1939. Mar. 20, 1939, to Sept. 30, 1981, gage at site 1.7 mi downstream from the Lake Chelan gage, at same datum, and published as the gage of record, used to determine head and spill discharge.

REMARKS.--Daily discharge determined from flow through turbines computed from relation between loading and head, plus flow through two irrigation pipes which divert water from the penstock just above the turbines, plus spill discharge. Unmeasured water that is diverted for irrigation upstream from station is a small percentage of total runoff. Public Utility District No. 1 of Chelan County diverts water at Chelan to develop about 40,000 kW and to irrigate 900 acres near Chelan. This quantity is included in records of daily discharge. Diversions for irrigation of about 6,280 acres with an annual depletion of about 11,000 acre-ft, 1946 estimate. Flow regulated by Lake Chelan (station 12452000).

COOPERATION.--Records partially furnished by Public Utility District No. 1 of Chelan County.

AVERAGE DISCHARGE.--100 years (water years 1905-2004), 2,047 ft^3/s, 30.08 in/yr, 1,483,000 acre-ft/yr, adjusted for storage since October 1911.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18,400 ft^3/s, June 3, 1968; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at other times owing to artificial regulation.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6,840 ft^3/s, Oct. 22; minimum daily discharge, 17 ft^3/s, June 20.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,360	1,290
2	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,350	910
3	2,210	2,210	2,210	2,210	2,210	2,210	2,210	1,970	2,220	2,220	1,380	1,440
4	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,370	2,220
5	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,370	2,220
6	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,400	2,220
7	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,380	1,410
8	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	820	1,020
9	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,930	2,220	670	800
10	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,180	2,220	1,180	1,020
11	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,190	2,220	1,300	1,020
12	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,270	2,110	1,300	1,020
13	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,020	1,220	1,900	1,530	1,020
14	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,210	1,240	1,410	1,020
15	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,630	1,170	749	1,070
16	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,050	899	716	1,020
17	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,230	912	762	1,020
18	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,210	20	353	1,020
19	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,200	958	720	1,020
20	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,220	17	1,120	1,020	628
21	4,190	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,360	1,100	1,020	969
22	6,840	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,010	1,200	1,020	1,770
23	6,200	2,210	2,210	2,210	2,210	2,210	2,210	2,220	971	1,140	1,020	1,900
24	3,550	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,170	1,280	1,020	2,210
25	2,260	2,210	2,210	2,210	2,210	2,210	2,210	2,220	1,220	962	1,020	2,210
26	2,210	2,210	2,210	2,210	2,210	2,200	2,210	2,220	1,200	1,440	1,030	2,210
27	2,210	2,210	2,210	2,210	2,210	2,200	2,210	2,220	1,570	1,640	1,020	2,210
28	2,210	2,210	2,210	2,210	2,210	2,200	2,210	2,220	2,220	1,570	1,060	2,210
29	2,210	2,210	2,210	2,210	e2,210	2,200	2,210	2,220	2,220	1,410	1,550	2,210
30	2,210	2,210	2,210	2,210	---	2,200	2,210	2,220	2,220	1,460	1,500	2,210
31	2,210	---	2,210	2,210	---	2,200	---	2,220	---	854	1,290	---
TOTAL	80,500	66,300	68,510	68,510	64,090	68,450	66,300	68,370	48,258	48,805	34,690	44,517
MEAN	2,597	2,210	2,210	2,210	2,210	2,208	2,210	2,205	1,609	1,574	1,119	1,484
MAX	6,840	2,210	2,210	2,210	2,210	2,210	2,210	2,220	2,220	2,220	1,550	2,220
MIN	2,210	2,210	2,210	2,210	2,210	2,200	2,210	1,970	17	20	353	628
AC-FT	159,700	131,500	135,900	135,900	127,100	135,800	131,500	135,600	95,720	96,800	68,810	88,300
MEAN†	2,574	1,491	1,034	623	775	1,637	3,100	4,855	4,203	1,819	1,168	953
CFSM†	2.79	1.61	1.12	0.67	0.84	1.77	3.35	5.25	4.55	1.97	1.26	1.03
IN.†	3.21	1.80	1.29	0.78	0.90	2.04	3.74	6.06	5.07	2.27	1.46	1.15
AC-FT†	158,300	88,700	63,600	38,300	44,600	100,700	184,400	298,600	250,020	111,900	71,810	56,700

CAL YR 2003 TOTAL 661,664 MEAN 1,813 MAX 6,840 MIN 25 AC-FT 1,312,000 MEAN† 2,017 CFSM† 2.18 IN.† 29.63 AC-FT† 1,460,400
WTR YR 2004 TOTAL 727,300 MEAN 1,987 MAX 6,840 MIN 17 AC-FT 1,443,000 MEAN† 2,023 CFSM† 2.19 IN.† 29.79 AC-FT† 1,468,000

† Adjusted for change in contents in Lake Chelan.
e Estimated