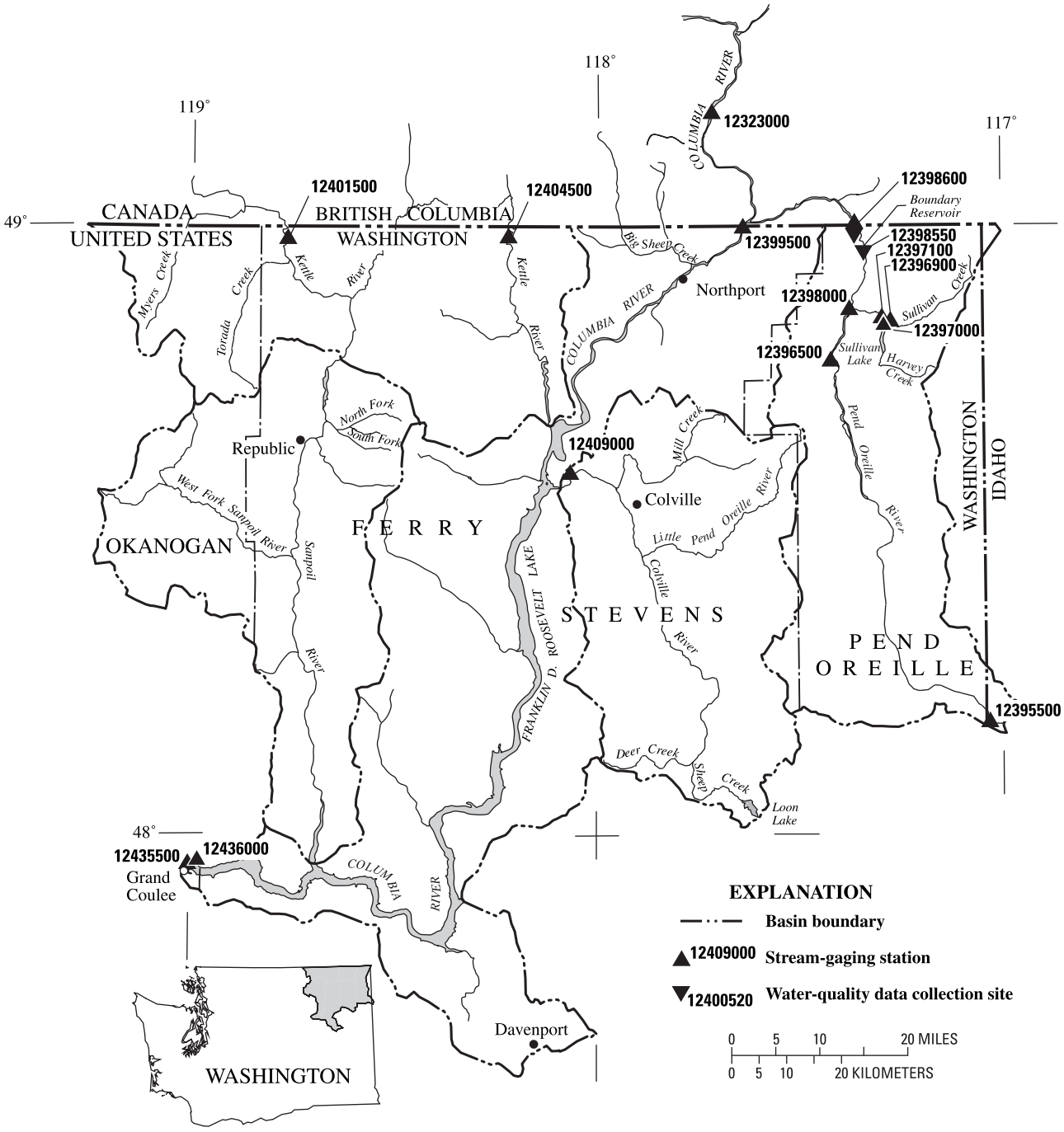

Figure 38. Location of surface-water and water-quality stations in the Columbia River Basin above Franklin D. Roosevelt Lake and including Colville, Kettle, and Pend Oreille River Basins.

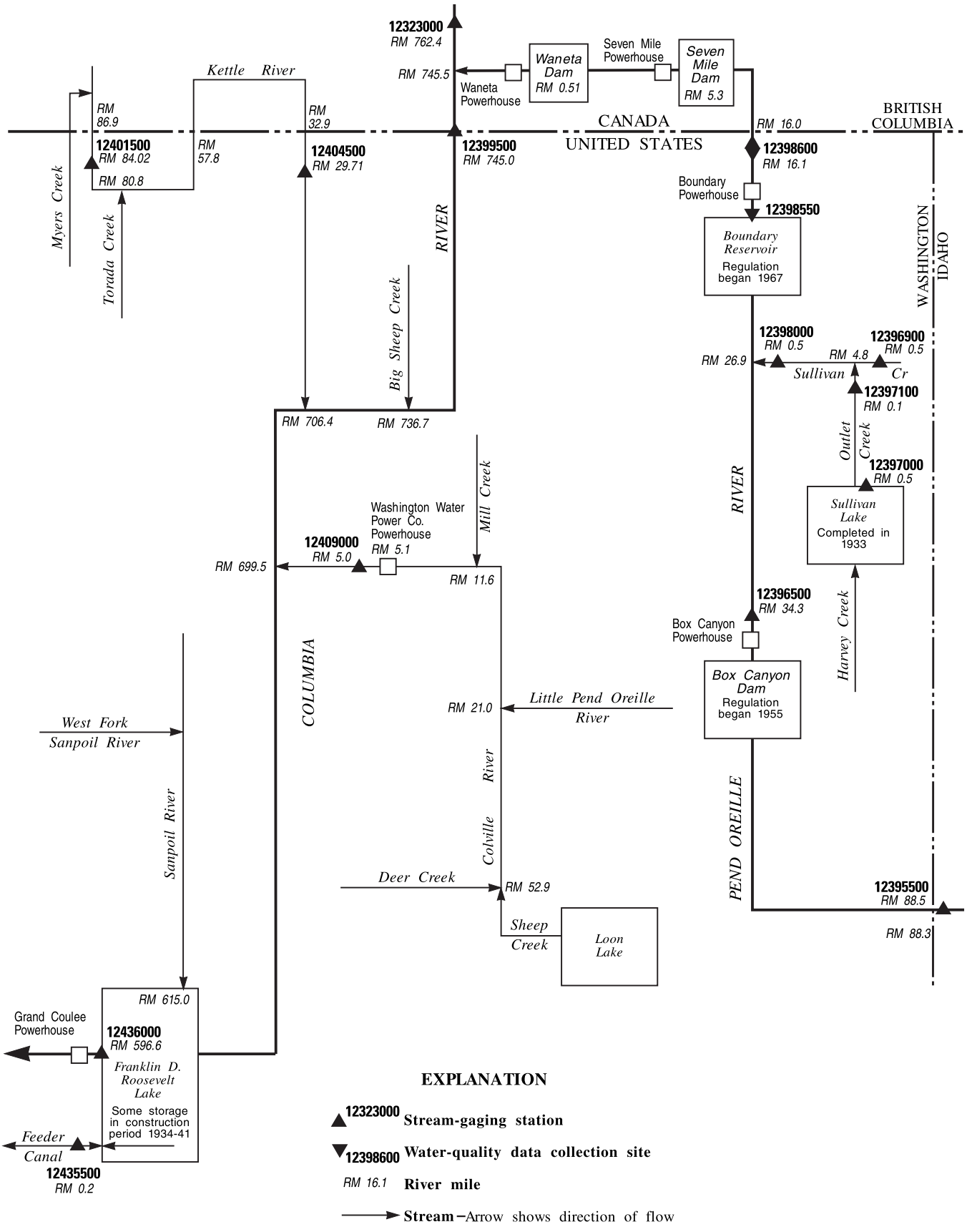

Figure 39. Schematic diagram showing surface-water and water-quality stations in the Columbia River Basin above Franklin D. Roosevelt Lake and including Colville, Kettle, and Pend Oreille River Basins.

12323000 COLUMBIA RIVER AT BIRCHBANK, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°10'40", long 117°42'59", on right bank at Birchbank, British Columbia, 0.7 mi downstream from Sullivan Creek, 7 mi upstream from Trail, 11.7 mi downstream from Kootenay River, 17.4 mi upstream from international boundary, and at mile 762.4.

DRAINAGE AREA.--34,000 mi^2, approximately.

PERIOD OF RECORD.--April 1913 to current year in reports of Geological Survey and Water Survey of Canada. Published as "at Trail, British Columbia" 1913-37.

REVISED RECORDS.--WSP 982: 1942. WSP 1216: 1949.

GAGE.--Water-stage recorder. Datum of gage is 1,329.90 ft above NGVD of 1929, 1947 international joint adjustment, published as 1,338.00 ft prior to October 1948. Prior to Oct. 1, 1937, nonrecording gage on highway bridge at site 6.8 mi downstream at datum 16.27 ft lower.

REMARKS.--Flow regulated by six major reservoirs, and by numerous small reservoirs and powerplants. Diversions upstream from station for irrigation of about 25,000 acres.

COOPERATION.--Discharge records furnished by Environment Canada, Monitoring and Systems Branch, Water Survey Division. This station is maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--90 years (water years 1914-2003), 71,160 ft^3/s, 51,560,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 377,000 ft^3/s June 9, 1961, gage height, 50.05 ft; maximum gage height, 50.62 ft June 11, 1948; minimum discharge observed, 8,940 ft^3/s Feb. 3, 1937, gage height, 6.27 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 102,000 ft^3/s June 20 and July 23; minimum daily discharge, 33,400 ft^3/s Feb. 15.

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	66,400	68,900	82,600	65,000	40,300	38,500	39,600	45,200	73,100	87,900	89,000	70,600
2	65,300	68,900	83,000	63,600	37,800	41,700	37,800	45,600	76,300	83,700	89,700	68,200
3	65,700	79,500	83,300	61,800	37,800	41,700	38,100	46,600	78,400	81,900	88,300	67,500
4	62,200	81,200	82,300	60,700	37,800	41,300	37,400	47,000	79,100	81,900	88,300	67,500
5	59,300	73,500	81,600	60,700	36,700	42,000	37,400	46,600	76,600	82,600	87,900	67,500
6	54,700	75,200	81,600	60,700	35,200	42,400	37,400	47,300	76,300	83,000	89,000	65,700
7	53,300	71,000	82,300	60,400	35,300	41,700	37,100	46,600	78,800	85,800	87,600	65,700
8	52,300	71,700	81,900	61,100	35,300	42,700	36,700	47,000	79,800	92,900	87,900	65,700
9	51,900	72,400	80,500	62,500	35,300	42,700	36,000	47,000	80,500	93,900	88,300	65,000
10	52,600	72,000	83,700	64,600	35,300	41,700	36,700	45,900	81,900	90,100	88,600	64,300
11	55,100	71,700	86,200	62,900	35,000	42,000	36,700	46,600	82,600	86,900	87,900	63,900
12	55,400	75,900	88,300	62,200	34,800	42,700	37,800	45,900	84,800	84,400	87,600	63,200
13	55,400	72,700	89,000	63,200	34,000	43,400	36,400	46,300	87,200	80,200	89,000	65,000
14	55,400	73,500	86,200	61,400	33,800	42,400	38,500	46,600	90,400	80,500	88,300	68,500
15	55,100	75,200	83,700	61,100	33,400	39,900	39,200	47,000	89,700	78,000	89,000	70,600
16	55,100	74,500	81,900	61,100	33,500	38,500	38,800	47,000	88,600	76,600	87,900	70,600
17	55,100	74,900	78,000	61,100	33,700	38,500	39,600	47,000	91,800	74,900	87,900	71,300
18	55,100	77,700	72,700	61,800	34,500	38,500	39,600	46,300	96,100	74,900	91,800	71,700
19	56,200	77,700	68,200	61,100	37,100	38,100	38,800	45,900	99,200	80,900	90,100	71,700
20	62,900	75,600	68,200	61,100	38,100	37,800	39,600	45,600	102,000	91,100	92,500	71,300
21	63,900	74,900	67,800	60,400	35,300	38,500	39,600	45,900	101,000	98,900	93,900	71,000
22	65,300	74,900	67,800	59,000	35,700	41,000	39,900	44,800	99,600	98,900	93,200	71,000
23	65,300	76,300	67,800	59,300	35,700	41,000	41,300	45,600	95,300	102,000	90,400	70,600
24	66,400	77,700	66,000	59,000	37,100	42,000	42,000	47,700	88,600	96,800	90,100	70,300
25	66,000	85,800	63,600	59,000	38,800	41,000	43,800	55,400	90,400	88,300	88,300	69,600
26	65,700	83,300	63,600	58,600	39,600	38,800	44,100	61,800	87,200	83,700	87,900	69,600
27	65,700	81,900	63,600	57,900	39,200	38,500	44,100	62,200	83,000	82,300	85,500	72,000
28	64,600	84,000	63,900	57,200	37,400	39,600	44,800	63,600	84,400	83,700	87,900	74,900
29	67,100	84,000	63,600	54,700	---	40,600	44,800	67,500	85,500	80,900	82,300	74,900
30	78,000	83,000	64,600	50,900	---	39,900	45,600	71,700	86,200	80,500	78,800	74,500
31	77,000	---	65,000	45,900	---	41,000	---	74,500	---	81,600	74,200	---
TOTAL	1,889,500	2,289,500	2,342,500	1,860,000	1,013,500	1,260,100	1,189,200	1,569,700	2,594,400	2,649,700	2,729,100	2,073,900
MEAN	60,950	76,320	75,560	60,000	36,200	40,650	39,640	50,640	86,480	85,470	88,040	69,130
MAX	78,000	85,800	89,000	65,000	40,300	43,400	45,600	74,500	102,000	102,000	93,900	74,900
MIN	51,900	68,900	63,600	45,900	33,400	37,800	36,000	44,800	73,100	74,900	74,200	63,200
AC-FT	3,748,000	4,541,000	4,646,000	3,689,000	2,010,000	2,499,000	2,359,000	3,114,000	5,146,000	5,256,000	5,413,000	4,114,000

CAL YR 2002 TOTAL 25,903,200 MEAN 70,970 MAX 143,000 MIN 26,900 AC-FT 51,380,000
WTR YR 2003 TOTAL 23,461,100 MEAN 64,280 MAX 102,000 MIN 33,400 AC-FT 46,540,000

PEND OREILLE RIVER BASIN

12395500 PEND OREILLE RIVER AT NEWPORT, WA

LOCATION.--Lat 48°10'56", long 117°02'00", in SE¼SE¼SW¼ sec.24, T.56 N., R.6 W. (Boise Meridian), Bonner County, Newport quad., Hydrologic Unit 17010216, on left bank, at Newport, 0.2 mi upstream from bridge on U.S. Highway 2, 0.2 mi east of Idaho-Washington State line, 1.6 mi downstream from Albeni Falls Dam, and at mile 88.5.

DRAINAGE AREA.--24,200 mi^2, approximately.

PERIOD OF RECORD.--June 1903 to September 1941, October 1952 to current year. Prior to October 1921, published as "Clark Fork at Newport, Wash.," October 1921 to September 1937, as "Clark Fork at Priest River, Idaho," and October 1937 to September 1941, as "Pend Oreille River at Priest River, Idaho."

REVISED RECORDS.--WSP 532: 1903-11.

GAGE.--Water-stage recorder. Datum of gage is 1,999.7 ft above NGVD of 1929. Prior to Sept. 22, 1928, nonrecording gages at Priest River, Newport, or Metaline Falls at various datums (see description, WSP 532, p. 92). Sept. 22, 1928, to Sept. 30, 1935, at datum 40.44 ft higher, and Oct. 1, 1935, to Sept. 30, 1941, water-stage recorder at datum 0.30 ft higher. Since December 1952, auxiliary water-stage recorder 2.74 mi downstream from base gage.

REMARKS.--No estimated daily discharges. Records good. Flow regulated at Albeni Falls Dam and affected by storage in Pend Oreille Lake (see sta 12392500), Flathead Lake, Hungry Horse Reservoir, and several smaller reservoirs. Diversions above station for irrigation of about 354,000 acres. Stage-discharge relation affected by backwater from Box Canyon dam 54 mi downstream. Discharge computed from slope and conveyance of reach between base and auxiliary gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 136,000 ft^3/s June 15, 1933, June 21, 1933, June 12, 1972; minimum, 1,280 ft^3/s Sept. 1, 1961,

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1894 reached a stage of about 64.0 ft, present site and datum, (from water surface profiles) discharge, about 200,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70,000 ft^3/s June 5, gage height, 43.66 ft; minimum, 4,720 ft^3/s Nov. 18; minimum gage height, 30.97 ft, Sept. 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	12600	16300	11800	13700	15800	13800	21100	36000	58600	24300	12600	5100
2	14100	16300	12000	13200	21000	12000	24400	32000	62600	25700	12300	5210
3	13900	16200	12100	12700	24200	11700	29300	31400	67300	25700	11700	6590
4	14200	15400	11900	12900	23500	11600	31100	32100	68500	23400	11500	8780
5	14200	14200	12100	12000	20500	10600	30900	34900	66200	21600	11500	7490
6	14000	14300	13000	11300	16500	10300	29300	38800	63600	20800	11200	6590
7	13800	14100	14300	10300	13500	10400	27500	42200	61700	19600	10700	6640
8	14000	14000	14500	9610	12900	10400	26300	42400	54800	17600	9450	6630
9	14100	14200	15200	9070	13100	10500	24800	42300	48900	16600	8700	6980
10	13900	14000	15400	8580	13700	12000	24600	42200	47500	16600	8800	7080
11	13900	13700	15300	8390	14700	13900	26300	42000	45100	15800	8660	7390
12	13800	13900	15600	8360	14900	14900	28300	42200	41400	15300	8740	9080
13	13900	14800	14900	7700	14200	20500	28500	42100	39700	15300	8660	9610
14	14100	17500	16800	7250	13400	25200	31400	42000	39800	16400	7740	9590
15	15300	16000	17400	7230	13600	25800	36100	41400	39900	16000	6430	9590
16	16800	13500	18200	7260	13600	25700	37700	41000	39600	15400	6290	9640
17	17000	12000	19900	7310	13500	24000	38300	40900	37100	15700	6810	9800
18	17000	13000	20400	7320	14400	20200	37600	40800	37100	18700	7090	9830
19	17400	14300	21000	7430	15900	17700	37100	39800	36000	18000	8840	9860
20	17100	13500	17900	7450	16200	17600	35100	38600	36100	16900	9730	9860
21	17100	13200	14200	7430	16000	17700	35000	37200	36200	13600	9790	9910
22	17200	13000	14000	7270	16000	21600	32500	34200	36200	13500	9650	10100
23	17400	13500	13900	7370	15900	24800	31000	32900	37400	14500	9500	11000
24	16800	14200	13900	8340	15900	28900	31100	32600	39400	14400	9560	11500
25	16800	16900	13800	9000	15900	31300	34100	33700	37200	12000	9410	11900
26	17100	16600	14500	9470	16000	31300	40900	37600	33200	10700	8920	12000
27	17400	12800	17600	12400	16000	30600	44700	45400	28800	11500	8570	11900
28	17300	12000	18400	14100	15500	29800	43900	53300	27200	11800	7690	11800
29	17100	11500	17400	15100	---	26300	44200	55100	27100	11700	6800	11800
30	16300	11900	16100	15900	---	23000	41800	57400	25300	12400	5650	11900
31	16200	---	14300	14700	---	21100	---	58100	---	12800	5150	---
TOTAL	481800	426800	477800	310140	446300	605200	984900	1262600	1319500	514300	278130	275150
MEAN	15540	14230	15410	10000	15940	19520	32830	40730	43980	16590	8972	9172
MAX	17400	17500	21000	15900	24200	31300	44700	58100	68500	25700	12600	12000
MIN	12600	11500	11800	7230	12900	10300	21100	31400	25300	10700	5150	5100
AC-FT	955700	846600	947700	615200	885200	1200000	1954000	2504000	2617000	1020000	551700	545800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

MEAN	17620	18340	16290	15510	16400	19080	27430	49500	61780	32020	14110	13420
MAX	31330	32280	36790	40010	41290	42260	56940	97850	114900	73730	45210	21990
(WY)	1960	1960	1996	1934	1996	1996	1956	1997	1933	1907	1907	1907
MIN	6208	6049	5987	4271	4380	6622	5507	15320	15220	7295	5875	6353
(WY)	1932	1937	1937	1937	1936	1937	1977	1977	1977	1977	1988	1931

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	9528800		7382620			
ANNUAL MEAN	26110		20230		25070	
HIGHEST ANNUAL MEAN					38600	1997
LOWEST ANNUAL MEAN					12920	1941
HIGHEST DAILY MEAN	95400	Jun 9	68500	Jun 4	135000	Jun 19 1933
LOWEST DAILY MEAN	9150	Sep 1	5100	Sep 1	2420	Sep 19 1962
ANNUAL SEVEN-DAY MINIMUM	10400	Aug 31	6030	Aug 28	3280	Aug 28 1962
ANNUAL RUNOFF (AC-FT)	18900000		14640000		18160000	
10 PERCENT EXCEEDS	66900		39800		52400	
50 PERCENT EXCEEDS	16800		15300		18800	
90 PERCENT EXCEEDS	12600		8660		8610	

12396500 PEND OREILLE RIVER BELOW BOX CANYON, NEAR IONE, WA

LOCATION.--Lat 48°46'52", long 117°24'55", in SE ¼ NE ¼ sec.19 T.38 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left bank 1,000 ft downstream from Box Canyon Dam, 2.8 mi north of Ione, and at mile 34.3.

DRAINAGE AREA.--24,900 mi^2, approximately.

PERIOD OF RECORD.--October 1952 to current year.

REVISED RECORDS.--WSP 1933: Drainage area. WDR WA-81-2: 1976.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Mar. 29, 1954, nonrecording gage at site 300 ft upstream at same datum. Mar. 29 to Aug. 25, 1954, nonrecording gage at present site and datum. Since Aug. 20, 1967, auxiliary water-stage recorder 1.2 mi downstream at same datum.

REMARKS.--No estimated daily discharges. Records fair except those below 10,000 ft^3/s, which are poor. Flow regulated by Box Canyon Reservoir, 1,000 ft upstream, since June 1955 and by Pend Oreille Lake, Flathead Lake, Hungry Horse Reservoir, and by several smaller reservoirs and powerplants. Numerous diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--51 years (water years 1953-2003), 26,480 ft^3/s, 19,185,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 136,000 ft^3/s June 13, 14, 1972; maximum daily elevation, 2,015.44 ft June 5, 7, 1997 (mean of surge), (backwater from Boundary Dam); minimum daily discharge, 82 ft^3/s Oct. 5, 1985 (result of regulation).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1948 reached an elevation of 2,018.00 ft, from floodmarks, discharge, 167,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 80,500 ft^3/s June 5; maximum elevation, 2,003.11 ft June 5, (backwater from Boundary Dam); minimum discharge, 5,230 ft^3/s Sept. 1 (result of regulation).

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	11,500	16,500	12,900	14,700	16,000	16,300	23,600	41,000	58,400	25,600	13,300	6,200
2	14,200	16,600	12,600	14,500	18,800	14,300	24,500	35,400	59,100	25,400	13,200	6,780
3	15,000	16,300	12,400	13,600	23,500	13,100	28,500	34,300	63,300	26,400	13,000	6,930
4	14,900	16,300	12,600	13,300	25,100	12,100	31,700	33,000	69,200	25,800	12,800	7,840
5	14,700	15,000	12,700	13,200	23,900	11,700	32,600	33,800	69,200	23,800	12,500	9,450
6	14,800	14,600	13,000	12,200	20,500	11,600	32,000	36,300	64,900	22,200	12,300	8,180
7	14,400	14,600	14,400	11,600	16,900	11,300	30,600	40,300	63,300	21,600	11,500	8,000
8	14,700	14,500	15,200	11,600	14,600	11,300	29,300	42,200	60,100	20,100	10,900	7,970
9	14,700	14,400	15,600	9,560	13,800	11,100	27,800	42,400	53,300	17,900	10,700	8,170
10	14,700	14,000	15,800	9,260	14,200	12,300	26,200	43,000	49,600	17,500	9,860	7,530
11	13,700	14,200	15,900	9,070	14,800	14,200	27,100	42,400	47,600	17,100	9,750	8,910
12	14,200	14,300	16,000	9,170	15,600	15,500	29,000	42,500	43,600	16,500	9,420	8,050
13	14,200	14,600	16,200	9,990	15,900	17,800	29,900	42,700	40,700	16,000	8,930	9,920
14	14,600	16,900	16,400	9,770	14,800	24,700	30,900	42,500	39,500	16,000	9,490	10,900
15	14,500	17,300	18,500	8,350	14,600	26,900	34,500	42,100	39,600	17,200	9,270	10,400
16	16,800	14,800	18,800	8,110	14,700	28,100	37,700	41,300	39,800	16,700	7,390	11,100
17	17,300	13,500	19,800	7,650	14,900	27,900	38,500	41,100	38,300	16,200	6,640	10,600
18	17,400	12,900	20,800	7,860	14,800	25,500	39,100	40,800	37,200	16,700	8,930	10,900
19	17,500	14,200	20,900	8,760	16,200	22,100	39,200	40,700	36,900	20,000	9,120	10,700
20	17,500	14,500	20,900	9,580	17,300	19,600	37,200	39,600	35,600	18,300	10,100	10,900
21	17,600	14,500	16,800	9,640	17,300	20,000	36,500	38,200	35,900	16,600	10,300	10,600
22	17,400	14,000	14,800	9,710	17,100	21,600	35,700	36,600	35,900	14,700	10,600	11,100
23	17,600	14,100	14,700	9,230	17,300	25,900	33,900	34,500	35,800	14,300	10,200	11,000
24	17,400	14,200	14,300	9,230	17,100	28,100	32,700	32,000	38,300	15,800	10,300	11,400
25	17,100	16,300	14,200	10,400	16,900	31,800	33,200	34,600	38,000	14,700	10,000	11,800
26	17,000	18,500	14,900	10,700	16,900	32,900	37,400	35,500	35,900	12,300	10,200	11,900
27	17,600	15,000	16,300	12,000	17,100	32,700	43,000	39,700	32,500	11,200	9,920	12,900
28	17,800	13,000	18,300	13,900	16,900	32,100	44,800	48,000	29,000	12,700	9,400	12,600
29	17,500	12,200	18,600	15,500	---	31,200	45,100	54,400	27,800	12,600	9,160	12,600
30	17,000	12,800	17,600	16,600	---	27,600	44,700	57,300	27,500	12,400	7,630	12,600
31	16,700	---	16,300	17,300	---	24,700	---	58,000	---	13,500	7,220	---
TOTAL	492,000	444,600	498,200	346,040	477,500	656,000	1,016,900	1,266,200	1,345,800	547,800	314,030	297,930
MEAN	15,870	14,820	16,070	11,160	17,050	21,160	33,900	40,850	44,860	17,670	10,130	9,931
MAX	17,800	18,500	20,900	17,300	25,100	32,900	45,100	58,000	69,200	26,400	13,300	12,900
MIN	11,500	12,200	12,400	7,650	13,800	11,100	23,600	32,000	27,500	11,200	6,640	6,200
AC-FT	975,900	881,900	988,200	686,400	947,100	1,301,000	2,017,000	2,512,000	2,669,000	1,087,000	622,900	590,900

CAL YR 2002 TOTAL 9,564,680 MEAN 26,200 MAX 93,700 MIN 9,210 AC-FT 18,970,000
WTR YR 2003 TOTAL 7,703,000 MEAN 21,100 MAX 69,200 MIN 6,200 AC-FT 15,280,000

12396900 SULLIVAN CREEK ABOVE OUTLET CREEK, NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'44", long 117°17'08", in SW ¼ SE ¼ sec.30, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, on left bank, at upstream side of road bridge, 0.1 mi upstream from Outlet Creek, 4 mi southeast of Metaline Falls, and at mile 5.0.

DRAINAGE AREA.--70.2 mi^2.

PERIOD OF RECORD.--January 1959 to September 1972, April 1994 to current year.

REVISED RECORD.--WDR-95-1: 1994(M).

GAGE.--Water-stage recorder. Datum of gage is 2,550.2 ft above NGVD of 1929. Dec. 20, 1968, to September 1972, water-stage recorder 50 ft downstream at datum of 2,540.09 ft (revised to 2,556.75 ft Oct. 1, 1969) NGVD of 1929. Jan. 6, 1966, to Dec. 20, 1968, water-stage recorder 200 ft downstream at datum of 2,541.20 ft NGVD of 1929. Prior to Jan. 6, 1966, water-stage recorder 50 ft downstream at datum 2,540.09 ft NGVD of 1929.

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

AVERAGE DISCHARGE.--22 years (water years 1960-72, 1995-2003), 123 ft^3/s, 23.73 in/yr, 88,830 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft^3/s June 1, 1997, May 25, 1999, maximum gage height, 5.57 ft June 1, 1997; minimum discharge, 6.5 ft^3/s Feb. 23, 24, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 31	2330	*1,030	*4.63	No other peak greater than base discharge.			

Minimum discharge, 16 ft^3/s, Jan. 10, gage height, 1.86 ft.

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	33	e25	24	24	34	33	81	243	888	122	49	26
2	32	e25	24	25	33	32	81	254	780	115	48	27
3	31	e25	24	29	32	31	80	263	686	110	48	25
4	28	e25	24	27	31	30	79	268	595	105	48	26
5	28	e26	23	29	28	30	77	265	559	101	44	25
6	28	e27	22	26	27	30	75	255	560	96	45	25
7	28	e28	22	24	32	30	72	237	553	92	46	25
8	28	e28	22	23	32	29	71	225	549	88	47	30
9	29	e28	21	22	30	30	78	218	520	84	43	35
10	29	e28	22	18	30	30	85	216	490	82	42	29
11	30	e28	22	24	28	30	103	221	447	78	41	28
12	27	e29	22	27	28	33	123	230	399	76	39	30
13	27	e29	25	27	29	71	133	251	357	72	38	28
14	27	28	34	26	30	75	152	288	315	70	39	28
15	e27	27	69	25	29	66	160	325	279	68	37	27
16	e27	26	47	24	31	77	160	313	257	66	37	26
17	e27	26	39	22	31	74	163	286	245	64	37	28
18	e27	26	34	23	30	70	163	264	237	62	37	27
19	e27	30	31	24	30	67	160	243	226	60	35	27
20	e27	32	28	25	31	66	162	230	209	58	34	26
21	e27	31	26	24	31	65	176	221	207	58	31	26
22	e26	31	28	24	30	89	206	224	203	57	31	25
23	e25	31	27	24	25	95	240	261	207	57	34	25
24	e24	28	26	24	22	88	268	371	183	56	34	25
25	e25	25	25	24	27	83	310	742	171	55	35	24
26	e25	26	25	35	e32	80	299	786	162	54	28	24
27	e25	24	25	43	33	75	280	740	154	53	27	24
28	e26	24	25	39	33	71	260	776	144	52	27	24
29	e25	25	25	34	---	69	250	856	137	51	27	24
30	e24	25	24	33	---	68	239	804	128	51	27	24
31	e25	---	25	33	---	75	---	865	---	50	26	---
TOTAL	844	816	860	831	839	1,792	4,786	11,741	10,847	2,263	1,161	793
MEAN	27.2	27.2	27.7	26.8	30.0	57.8	160	379	362	73.0	37.5	26.4
MAX	33	32	69	43	34	95	310	865	888	122	49	35
MIN	24	24	21	18	22	29	71	216	128	50	26	24
AC-FT	1,670	1,620	1,710	1,650	1,660	3,550	9,490	23,290	21,520	4,490	2,300	1,570
CFSM	0.39	0.39	0.40	0.38	0.43	0.82	2.27	5.40	5.15	1.04	0.53	0.38
IN.	0.45	0.43	0.46	0.44	0.44	0.95	2.54	6.22	5.75	1.20	0.62	0.42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2003, BY WATER YEAR (WY)

MEAN	38.0	42.1	37.7	32.0	33.3	47.5	132	479	420	108	48.0	38.1
MAX	95.7	79.3	100	57.8	68.4	95.3	243	785	663	235	68.8	84.7
(WY)	(1960)	(1998)	(1996)	(1960)	(1996)	(1972)	(1969)	(1997)	(1967)	(1999)	(1999)	(1997)
MIN	21.5	21.7	20.3	17.4	16.4	16.5	41.4	211	133	59.2	34.2	24.1
(WY)	(2002)	(1995)	(1995)	(1962)	(1962)	(1962)	(2001)	(2001)	(2001)	(2001)	(1994)	(2001)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1959 - 2003	
ANNUAL TOTAL	43,985		37,573			
ANNUAL MEAN	121		103		123	
HIGHEST ANNUAL MEAN					179	1997
LOWEST ANNUAL MEAN					54.5	2001
HIGHEST DAILY MEAN	1,130	May 29	888	Jun 1	1,450	May 25, 1999
LOWEST DAILY MEAN	18	Jan 1	18	Jan 10	10	Feb 23, 1962
ANNUAL SEVEN-DAY MINIMUM	22	Dec 6	22	Dec 6	13	Jan 18, 1962
ANNUAL RUNOFF (AC-FT)	87,240		74,530		88,830	
ANNUAL RUNOFF (CFSM)	1.72		1.47		1.75	
ANNUAL RUNOFF (INCHES)	23.31		19.91		23.73	
10 PERCENT EXCEEDS	319		260		349	
50 PERCENT EXCEEDS	38		33		44	
90 PERCENT EXCEEDS	25		24		25	

e Estimated

12397000 SULLIVAN LAKE NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'21", long 117°17'15", in SW ¼ NE ¼ sec.31, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, 200 ft south of dam at outlet, and 4.0 mi southeast of Metaline Falls.

DRAINAGE AREA.--51.2 mi^2.

PERIOD OF RECORD.--May 1912 to September 1923, January 1959 to current year (fragmentary).

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is NGVD of 1929 (levels by Pend Oreille County Public Utility District). Prior to Sept. 30, 1923, nonrecording gage on dam at outlet of lake at different datum.

REMARKS.--Lake elevation is controlled by concrete dam. Top of gates is at 2,588.7 ft, bottom of gates is at 2,584.7 ft. Bottom of sluiceway is at 2,564 ft. Some small diversions for domestic use.

COOPERATION.--Elevation record furnished by Public Utility District No. 1 of Pend Oreille County, supplemented by U.S. Geological Survey readings during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 2,589.94 ft July 15, 1975; minimum elevation observed, 2,564.00 ft on many days during period Jan. 6 to Mar. 25, 1970, and Feb. 11, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2,588.25 ft June 12; minimum elevation observed, 2,564.78 ft Dec. 11.

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	2,572.40	---	---	---	---	2,565.68	---	---	2,587.52	---	---
2	2,586.00	---	---	2,564.98	2,564.95	---	---	2,573.74	2,586.23	2,587.53	---	---
3	2,585.53	---	---	---	---	2,564.87	---	---	2,586.23	2,587.53	---	2,586.57
4	2,585.02	2,571.10	2,564.90	---	---	---	2,567.05	---	2,586.65	---	---	---
5	---	2,570.73	---	---	---	---	---	2,574.80	2,587.02	---	2,587.30	---
6	---	2,570.24	---	---	---	---	---	---	2,587.20	---	---	---
7	2,583.78	2,569.90	---	---	---	---	2,567.35	2,575.40	---	2,587.65	---	---
8	2,583.38	2,569.56	---	2,564.87	---	---	---	---	---	---	---	2,586.45
9	2,582.90	---	---	---	---	---	---	2,575.88	2,587.80	---	---	---
10	2,582.40	---	2,564.80	---	---	---	---	---	2,588.15	---	---	---
11	2,581.95	---	2,564.78	---	2,564.93	2,564.85	2,567.85	---	---	2,587.67	---	2,586.33
12	---	2,568.10	---	---	---	---	---	---	2,588.25	---	---	---
13	---	---	---	---	---	---	---	2,576.96	2,588.22	---	2,587.13	---
14	2,580.57	2,567.32	---	---	---	---	---	2,577.40	---	2,587.65	---	---
15	2,580.11	---	---	2,564.87	---	---	2,568.80	2,577.75	---	---	---	---
16	2,579.65	---	---	---	---	---	---	---	---	---	---	---
17	2,579.18	---	---	---	---	---	2,569.41	---	2,588.07	---	---	---
18	2,578.80	2,565.15	2,565.05	---	---	---	---	---	2,588.02	2,587.63	2,587.05	---
19	---	---	---	---	2,564.93	---	---	2,578.75	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	2,577.35	---	---	---	---	2,564.84	---	---	---	2,587.59	---	---
22	2,576.83	2,565.38	---	2,564.82	---	---	2,570.61	2,579.45	---	---	---	---
23	2,576.45	---	---	---	---	---	---	---	2,587.96	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	2,586.18
25	---	2,565.15	---	---	---	2,566.17	2,571.52	---	2,587.87	2,587.51	2,586.85	---
26	---	---	---	---	2,564.89	---	---	---	2,587.79	---	---	---
27	---	---	2,564.95	---	---	---	---	2,581.95	---	---	---	---
28	---	---	---	---	---	---	2,572.57	---	---	2,587.46	---	---
29	---	---	---	---	---	---	---	2,583.25	---	---	---	2,586.10
30	---	---	---	---	---	---	2,573.54	2,583.87	2,587.65	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

12397100 OUTLET CREEK NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'42", long 117°17'12", in SW ¼ SE ¼ sec.30, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, on right bank 0.1 mi upstream from mouth, 0.4 mi downstream from Sullivan Lake Dam, and 4 mi east of Metaline Falls.

DRAINAGE AREA.--51.5 mi^2.

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

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,540.2 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Sullivan Lake 0.4 mi upstream (station 12397000). No diversions upstream from station.

AVERAGE DISCHARGE.--44 years (water years 1960-2003), 74.4 ft^3/s, 53,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 924 ft^3/s May 31, 1969, gage height, 12.26 ft; minimum discharge, 1.5 ft^3/s part or all of each day Mar. 4-10, 1990; minimum gage height, 8.76 ft part of each day Apr. 9-12, 1973, and Mar. 4-10, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 341 ft^3/s Oct. 8, gage height, 10.64 ft, result of regulation; maximum gage height 10.65 ft Oct. 18, 19; minimum discharge, 10 ft^3/s Apr. 27, 28, result of regulation.

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	144	293	34	29	33	26	53	12	20	61	19	17
2	291	287	32	31	34	25	22	14	22	38	19	17
3	315	276	30	32	34	25	22	15	22	25	19	17
4	325	268	29	32	34	25	20	14	15	19	19	17
5	324	268	27	32	33	24	18	14	36	19	19	17
6	321	269	25	31	33	22	18	14	76	19	18	17
7	316	263	25	30	32	22	17	15	87	19	18	17
8	328	251	23	29	32	21	16	16	92	19	18	17
9	335	242	22	27	31	22	16	16	109	19	18	17
10	332	231	21	27	31	22	16	17	134	19	18	16
11	327	221	21	26	30	22	13	16	142	19	18	16
12	326	217	21	26	30	22	12	16	149	19	18	16
13	322	208	23	26	30	31	12	16	156	19	18	16
14	319	196	25	26	30	43	11	17	160	19	18	16
15	323	183	33	25	29	53	12	16	159	19	18	16
16	331	169	41	25	30	71	12	15	150	19	18	16
17	326	148	43	24	31	82	13	15	144	19	18	16
18	331	127	43	24	31	86	13	15	137	19	18	16
19	334	116	42	23	30	88	13	15	134	19	18	16
20	326	99	40	23	31	88	13	14	132	19	18	16
21	321	85	39	23	31	90	14	14	127	19	18	16
22	314	75	38	23	31	103	13	15	123	19	18	16
23	315	67	36	23	30	126	12	15	122	19	17	16
24	314	61	35	23	29	133	12	16	126	19	17	16
25	307	55	34	23	28	132	12	16	124	19	17	15
26	301	50	32	24	27	130	11	17	112	19	17	15
27	292	46	31	26	27	125	11	17	103	19	17	15
28	298	43	29	28	26	117	11	18	103	19	17	15
29	294	40	29	29	---	109	12	18	101	19	17	15
30	287	36	29	31	---	102	12	18	88	19	17	15
31	287	---	30	33	---	99	---	19	---	19	17	---
TOTAL	9,626	4,890	962	834	858	2,086	462	485	3,205	656	554	483
MEAN	311	163	31.0	26.9	30.6	67.3	15.4	15.6	107	21.2	17.9	16.1
MAX	335	293	43	33	34	133	53	19	160	61	19	17
MIN	144	36	21	23	26	21	11	12	15	19	17	15
AC-FT	19,090	9,700	1,910	1,650	1,700	4,140	916	962	6,360	1,300	1,100	958

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2003, BY WATER YEAR (WY)

MEAN	207	203	82.7	42.9	30.8	32.1	23.8	38.1	145	45.1	23.9	26.7
MAX	395	343	382	201	130	323	132	239	437	133	63.1	157
(WY)	(1991)	(1985)	(1960)	(1984)	(1984)	(1959)	(1974)	(1961)	(1974)	(1999)	(1999)	(1965)
MIN	15.7	18.0	16.2	13.4	8.15	2.07	1.93	3.60	5.51	6.58	6.93	6.99
(WY)	(1974)	(1962)	(1976)	(1979)	(1981)	(1990)	(1973)	(1977)	(1977)	(1977)	(1977)	(1977)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1959 - 2003	
ANNUAL TOTAL	29,412		25,101			
ANNUAL MEAN	80.6		68.8		74.4	
HIGHEST ANNUAL MEAN					132	1974
LOWEST ANNUAL MEAN					42.7	1993
HIGHEST DAILY MEAN	335	Oct 9	335	Oct 9	842	Jun 2, 1997
LOWEST DAILY MEAN	12	Apr 29	11	Apr 14	1.5	Mar 5, 1990
ANNUAL SEVEN-DAY MINIMUM	13	Apr 27	12	Apr 23	1.5	Mar 4, 1990
ANNUAL RUNOFF (AC-FT)	58,340		49,790		53,880	
10 PERCENT EXCEEDS	279		265		244	
50 PERCENT EXCEEDS	29		25		25	
90 PERCENT EXCEEDS	19		15		6.0	

12398000 SULLIVAN CREEK AT METALINE FALLS, WA

LOCATION.--Lat 48°51'37", long 117°21'47", in SW ¼ SW ¼ sec.22, T.39 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left pier of State highway bridge, 0.5 mi upstream from mouth, 0.5 mi east of Metaline Falls and at mile 0.5.

DRAINAGE AREA.--142 mi^2.

PERIOD OF RECORD.--October 1953 to November 1968, April 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,050 ft above NGVD of 1929, from topographic map. Aug. 24, 1956, to November 1968, water-stage recorder 100 ft downstream, at different datum. Prior to Aug. 24, 1956, staff gage at site 20 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair except for those above 1,000 ft^3/s, which are poor. Some regulation by storage in Sullivan Lake. Small diversions upstream from station for municipal water supply.

AVERAGE DISCHARGE.--24 years (water years 1954-68, 1995-2003), 239 ft^3/s, 172,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 4,350 ft^3/s June 1, 1997, gage height, 4.38 ft; minimum discharge, 7.3 ft^3/s Jan. 1, 1958, result of freezeup; minimum daily discharge, 27 ft^3/s Jan. 1, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,250 ft^3/s May 31, gage height, 2.23 ft, minimum discharge, 50 ft^3/s Dec. 9, Jan. 10, and Sept. 30.

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	125	333	61	63	82	66	223	329	1,030	199	72	56
2	309	326	59	67	81	66	160	346	873	157	71	55
3	348	316	59	75	80	64	157	364	746	139	71	55
4	368	303	57	71	77	62	153	376	636	128	71	54
5	363	304	56	72	72	63	148	374	626	124	70	54
6	358	312	55	68	68	61	142	360	670	120	69	54
7	352	314	54	63	76	59	137	333	680	117	71	54
8	364	314	53	61	76	58	134	310	673	115	73	61
9	378	301	52	59	73	60	139	301	676	112	69	72
10	372	280	53	53	72	60	147	294	664	109	67	61
11	367	263	54	58	69	60	163	296	628	106	66	58
12	363	262	54	65	68	65	197	315	590	104	65	59
13	357	255	60	64	69	120	214	335	567	102	64	57
14	351	235	74	63	71	149	243	389	542	100	63	56
15	357	212	135	60	70	149	257	446	512	97	63	55
16	376	191	120	58	75	191	254	431	484	95	63	56
17	369	165	110	56	75	208	254	398	462	92	64	59
18	374	143	97	56	73	204	252	366	443	90	62	57
19	380	138	87	56	71	202	240	330	425	88	61	56
20	375	125	81	57	73	200	232	306	400	86	60	55
21	368	116	76	55	74	203	242	290	394	84	59	55
22	360	108	76	56	72	266	279	291	386	83	59	54
23	359	100	73	57	64	326	321	334	387	82	60	54
24	363	88	70	57	58	324	359	456	358	80	59	53
25	356	79	68	57	63	307	421	874	342	79	58	53
26	345	76	68	72	67	300	420	1,040	315	78	57	52
27	337	71	67	92	68	287	394	911	295	77	57	52
28	344	67	65	84	67	270	363	912	280	76	57	52
29	343	66	65	77	---	253	348	1,010	269	75	57	52
30	324	63	62	77	---	243	329	938	245	74	56	51
31	323	---	65	80	---	247	---	983	---	73	56	---
TOTAL	10,828	5,926	2,186	2,009	2,004	5,193	7,322	15,038	15,598	3,141	1,970	1,672
MEAN	349	198	70.5	64.8	71.6	168	244	485	520	101	63.5	55.7
MAX	380	333	135	92	82	326	421	1,040	1,030	199	73	72
MIN	125	63	52	53	58	58	134	290	245	73	56	51
AC-FT	21,480	11,750	4,340	3,980	3,970	10,300	14,520	29,830	30,940	6,230	3,910	3,320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2003, BY WATER YEAR (WY)

MEAN	228	213	144	93.1	79.5	115	218	663	714	193	85.7	86.1
MAX	370	460	465	230	147	360	463	1,398	1,590	630	183	262
(WY)	(1967)	(1996)	(1960)	(1957)	(1959)	(1959)	(1956)	(1997)	(1999)	(1999)	(1999)	(1957)
MIN	55.4	52.7	44.6	40.8	35.6	42.2	65.9	266	189	92.5	54.3	43.0
(WY)	(1959)	(1957)	(1958)	(1958)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1954 - 2003	
ANNUAL TOTAL	85,497		72,887			
ANNUAL MEAN	234		200		239	
HIGHEST ANNUAL MEAN					386	1997
LOWEST ANNUAL MEAN					121	2001
HIGHEST DAILY MEAN	1,410	May 29	1,040	May 26	4,020	Jun 1, 1997
LOWEST DAILY MEAN	52	Jan 1	51	Sep 30	27	Jan 1, 1958
ANNUAL SEVEN-DAY MINIMUM	54	Dec 6	52	Sep 24	30	Dec 31, 1957
ANNUAL RUNOFF (AC-FT)	169,600		144,600		172,800	
10 PERCENT EXCEEDS	534		388		549	
50 PERCENT EXCEEDS	102		97		114	
90 PERCENT EXCEEDS	61		56		56	

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA

LOCATION.--Lat 48°59'20", long 117°20'55", in NE ¼ NE ¼ sec.10, T.40 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, at Boundary Dam 1.0 mi upstream from international boundary, 8.8 mi north of Metaline Falls and at mile 17.

DRAINAGE AREA.--25,200 mi^2, approximately.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1999 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 1999 to current year.
TOTAL DISSOLVED GAS: April 1999 to current year.

INSTRUMENTATION.--Water-quality monitor since April 1999.

REMARKS.--Temperature record rated excellent, except July 13-22 which is rated good. Total dissolved gas record rated good.

EXTREMES FOR PERIOD OF RECORD.--
WATER TEMPERATURE: Maximum recorded, 25.2°C Aug. 5, 2003, but may have been higher during periods of missing record; minimum recorded, 0.0°C Dec. 21-29, 2001, but may have occurred during periods of missing winter record.
TOTAL DISSOLVED GAS: Maximum recorded, 137 percent June 22, 2002; minimum 90 percent, Sept. 2, 2003, but may have been lower during periods of missing record.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 25.2°C on Aug. 5; minimum, 1.2°C Jan. 29.
TOTAL DISSOLVED GAS: Maximum, 132 percent, June 8; minimum, 90 percent, Sept. 2.

REVISIONS.--Revised figures of maximum, minimum, and mean of total partial pressure for the 1999 and 2000 water years, superseding those published in the report for the 1999 and 2000 water years are given below.

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	---	---	---	---	---	---	114	113	114
2	---	---	---	---	---	---	---	---	---	116	115	116
3	---	---	---	---	---	---	---	---	---	116	117	117
4	---	---	---	---	---	---	---	---	---	115	116	116
5	---	---	---	---	---	---	---	---	---	114	115	114
6	---	---	---	---	---	---	---	---	---	116	116	116
7	---	---	---	---	---	---	---	---	---	116	117	116
8	---	---	---	---	---	---	---	---	---	116	113	115
9	---	---	---	---	---	---	---	---	---	112	112	112
10	---	---	---	---	---	---	---	---	---	114	112	113
11	---	---	---	---	---	---	---	---	---	120	114	117
12	---	---	---	---	---	---	---	---	---	117	115	116
13	---	---	---	---	---	---	---	---	---	115	113	114
14	---	---	---	---	---	---	---	---	---	113	112	113
15	---	---	---	---	---	---	---	---	---	113	111	112
16	---	---	---	---	---	---	---	---	---	111	108	109
17	---	---	---	---	---	---	106	104	105	111	109	110
18	---	---	---	---	---	---	106	105	105	110	109	110
19	---	---	---	---	---	---	106	106	106	110	105	107
20	---	---	---	---	---	---	106	106	106	107	104	105
21	---	---	---	---	---	---	106	105	106	108	106	107
22	---	---	---	---	---	---	106	105	105	109	107	108
23	---	---	---	---	---	---	113	107	110	110	106	108
24	---	---	---	---	---	---	116	115	116	116	112	114
25	---	---	---	---	---	---	121	117	119	121	116	119
26	---	---	---	---	---	---	125	119	122	124	121	123
27	---	---	---	---	---	---	118	113	116	128	125	126
28	---	---	---	---	---	---	112	112	112	129	128	128
29	---	---	---	---	---	---	112	111	112	128	128	128
30	---	---	---	---	---	---	112	112	112	127	127	127
31	---	---	---	---	---	---	---	---	---	127	125	125
MONTH	---	---	---	---	---	---	125	104	111	129	104	115

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA—Continued

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION—CONTINUED
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	125	124	125	130	129	130	---	---	---	102	100	101
2	124	122	123	128	127	128	---	---	---	102	100	101
3	127	124	125	125	123	124	---	---	---	102	100	101
4	131	128	129	122	121	122	---	---	---	102	100	101
5	131	131	131	123	120	121	---	---	---	101	101	101
6	130	130	130	124	125	125	---	---	---	100	100	100
7	130	128	128	125	124	124	---	---	---	100	99	99
8	129	127	129	121	118	120	---	---	---	100	99	99
9	130	129	129	117	113	116	---	---	---	101	100	100
10	130	130	130	115	113	114	---	---	---	101	99	101
11	130	129	130	114	113	114	---	---	---	101	98	100
12	131	130	130	114	113	114	---	---	---	99	98	99
13	131	130	131	115	115	115	104	103	104	100	97	99
14	131	131	131	115	114	115	104	103	103	102	97	100
15	132	130	131	113	112	113	102	102	103	103	100	102
16	130	130	130	112	112	112	101	100	101	103	101	103
17	129	129	129	112	112	112	101	99	100	102	100	102
18	129	128	128	111	110	110	101	100	100	104	100	102
19	131	128	129	110	110	110	101	99	100	105	104	104
20	128	128	128	113	100	111	102	99	101	104	104	104
21	130	129	129	---	---	---	103	101	103	103	103	103
22	129	124	128	---	---	---	103	102	103	105	104	105
23	126	122	124	---	---	---	104	102	103	105	105	105
24	130	128	130	---	---	---	104	102	103	104	104	104
25	130	128	129	---	---	---	104	103	103	103	104	104
26	128	128	128	---	---	---	103	101	102	102	102	102
27	127	127	127	---	---	---	103	101	102	101	101	101
28	128	127	128	---	---	---	104	101	102	100	100	100
29	129	128	129	---	---	---	104	101	103	100	100	100
30	130	130	130	---	---	---	104	102	103	100	99	100
31	---	---	---	---	---	---	102	101	102	---	---	---
MONTH	132	122	129	130	100	118	104	99	102	105	97	101
YEAR	132	97	113									

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION
WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	99	99	99	---	---	---	97	97	97	98	98	98
2	100	99	100	---	---	---	97	98	98	97	98	97
3	100	99	99	---	---	---	96	97	96	96	96	96
4	101	100	100	---	---	---	96	97	96	96	96	96
5	101	100	100	---	---	---	97	97	98	95	96	95
6	100	100	100	---	---	---	98	99	99	95	95	95
7	100	99	100	---	---	---	97	98	97	95	95	95
8	100	100	100	---	---	---	96	96	96	96	96	96
9	100	99	99	---	---	---	96	95	96	97	98	97
10	98	98	98	---	---	---	97	96	97	98	97	97
11	99	98	99	---	---	---	97	96	96	98	98	98
12	98	98	98	---	---	---	97	98	98	97	97	97
13	99	98	99	---	---	---	98	97	97	---	---	---
14	99	98	99	---	---	---	98	97	97	---	---	---
15	98	97	98	98	98	98	97	97	97	---	---	---
16	97	96	97	99	99	99	97	95	96	---	---	---
17	97	97	97	99	99	99	95	97	96	---	---	---
18	98	97	97	97	97	97	96	97	96	---	---	---
19	97	97	97	97	98	97	95	95	95	---	---	---
20	98	96	97	97	98	97	95	95	95	---	---	---
21	98	97	97	97	97	97	94	94	94	---	---	---
22	97	97	97	96	96	96	94	94	94	96	95	95
23	98	98	98	96	96	96	94	94	94	96	95	95
24	98	98	98	96	97	97	95	94	94	96	95	96
25	98	98	98	100	98	98	95	94	95	96	96	96
26	98	98	98	100	98	99	95	95	95	96	96	96
27	98	99	98	97	97	97	95	95	95	96	96	96
28	---	---	---	97	96	96	96	96	96	96	96	96
29	---	---	---	96	97	96	97	97	97	97	97	97
30	---	---	---	97	97	97	99	98	98	98	98	98
31	---	---	---	---	---	---	98	98	98	98	98	98
MONTH	101	96	98	100	96	97	99	94	96	98	95	96

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA—Continued

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION—CONTINUED
WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	98	98	98	100	101	100	103	103	103	122	122	122
2	97	97	97	100	101	100	104	103	103	123	123	123
3	96	97	96	100	101	101	104	105	104	124	123	124
4	97	97	97	101	102	102	105	106	106	123	123	123
5	97	97	97	102	102	102	105	106	105	122	122	123
6	96	97	97	102	102	102	104	105	105	123	122	122
7	97	97	97	101	102	101	103	103	103	123	123	122
8	98	98	99	101	101	101	102	100	102	123	123	123
9	99	99	99	101	101	101	104	103	103	124	124	124
10	99	99	99	100	101	100	104	103	104	124	124	124
11	100	100	100	101	101	101	104	102	104	122	118	120
12	100	100	100	101	101	101	106	105	105	118	117	118
13	100	100	100	102	103	102	---	---	---	117	117	117
14	100	101	100	103	103	103	109	104	107	118	116	118
15	98	99	99	102	102	102	108	105	106	117	116	116
16	98	98	98	102	103	103	109	106	108	119	117	118
17	99	99	99	102	102	102	109	108	108	118	117	118
18	98	98	98	102	103	102	111	107	109	117	116	116
19	98	99	98	103	103	103	118	110	113	118	116	117
20	99	100	99	103	100	101	121	118	120	119	116	117
21	100	100	100	100	100	100	118	116	117	117	117	117
22	100	99	100	101	102	101	115	115	115	119	118	118
23	100	100	100	101	102	101	113	113	113	120	118	119
24	100	100	100	101	101	101	114	113	113	123	122	123
25	100	100	100	101	101	101	116	115	115	124	124	124
26	101	101	101	102	101	101	115	115	115	124	123	124
27	103	102	102	102	103	103	119	117	118	123	121	122
28	101	101	102	103	103	103	123	121	122	119	119	119
29	101	101	101	102	102	102	121	120	121	---	---	---
30	---	---	---	102	102	102	121	120	121	---	---	---
31	---	---	---	102	102	102	---	---	---	---	---	---
MONTH	103	97	99	103	100	102	123	100	110	124	116	120
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	116	114	115	---	---	---	100	98	99
2	---	---	---	114	112	113	---	---	---	99	98	99
3	117	116	117	111	107	109	---	---	---	98	97	98
4	119	118	118	106	103	105	---	---	---	98	97	98
5	119	118	119	103	103	103	---	---	---	98	98	98
6	117	116	116	102	102	102	---	---	---	99	97	98
7	116	113	115	102	102	102	---	---	---	98	99	98
8	113	110	111	103	102	103	104	104	104	99	99	99
9	109	108	108	103	103	103	104	103	103	99	99	99
10	107	107	107	103	103	103	104	102	103	99	98	99
11	106	105	105	103	103	103	102	102	102	98	97	97
12	107	105	106	104	103	103	102	101	102	98	97	98
13	109	102	107	104	103	104	103	101	101	98	97	97
14	114	110	112	104	103	104	102	99	101	98	97	98
15	115	113	114	104	104	104	100	98	99	99	96	98
16	115	113	114	104	104	104	102	98	100	100	97	98
17	115	114	114	104	104	104	101	99	100	100	98	99
18	120	116	119	104	102	103	100	100	100	101	98	100
19	121	120	121	104	102	103	99	99	99	101	98	100
20	121	121	121	104	102	104	99	98	99	101	99	101
21	122	120	121	105	103	104	100	98	99	101	101	101
22	120	119	120	---	---	---	100	98	99	99	99	99
23	119	115	118	---	---	---	100	98	99	99	99	99
24	117	115	116	---	---	---	100	97	99	98	98	98
25	116	114	115	---	---	---	101	98	100	98	98	98
26	116	115	115	---	---	---	101	98	99	98	98	98
27	117	115	116	---	---	---	100	97	99	98	98	98
28	115	115	115	---	---	---	99	97	98	99	98	98
29	115	114	115	---	---	---	99	97	99	100	99	100
30	115	114	115	---	---	---	100	97	99	100	101	101
31	---	---	---	---	---	---	100	98	100	---	---	---
MONTH	122	102	115	116	102	105	104	97	100	101	96	99
YEAR	124	94	103									

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA—Continued

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	98	98	98	95	95	95	97	97	97	96	96	96
2	98	97	98	96	96	96	97	97	97	96	96	96
3	99	97	98	96	96	96	97	97	97	96	96	96
4	98	97	98	96	96	96	96	96	96	95	96	95
5	98	97	98	96	96	96	96	96	96	94	95	95
6	98	97	97	96	97	96	97	96	97	94	95	94
7	98	97	98	97	98	98	96	96	96	95	95	95
8	99	98	98	99	99	99	96	96	96	96	96	96
9	99	99	99	98	98	98	97	97	97	97	96	97
10	99	99	99	97	97	97	98	98	98	97	97	97
11	97	98	98	97	97	96	98	98	98	98	98	98
12	96	97	97	97	97	97	97	98	98	98	98	98
13	97	97	97	97	97	97	98	99	98	97	98	97
14	97	97	97	97	97	97	99	99	99	97	97	97
15	97	97	97	97	97	97	99	99	99	97	97	96
16	98	97	97	98	99	98	100	101	100	96	96	96
17	92	98	97	98	99	98	99	99	99	96	96	96
18	98	98	98	97	97	97	97	97	98	97	97	97
19	99	98	99	97	97	97	97	97	97	98	98	98
20	99	99	99	97	97	97	98	97	98	98	98	98
21	99	99	99	97	98	98	97	97	97	99	98	98
22	98	98	98	98	98	98	95	95	96	98	98	98
23	98	98	98	98	98	98	95	95	95	98	99	99
24	98	98	98	97	98	98	96	95	96	99	98	98
25	98	98	98	97	97	97	96	96	96	99	98	98
26	98	98	98	97	97	97	97	97	97	99	100	99
27	97	97	97	97	97	97	97	97	98	99	99	99
28	97	97	97	97	97	97	97	97	97	99	99	99
29	96	96	96	97	97	97	97	98	98	100	100	100
30	96	96	96	97	97	97	97	97	97	100	101	100
31	95	95	95	---	---	---	96	97	97	101	101	101
MONTH	99	95	98	99	95	97	100	95	97	101	95	97
		FEBRUARY			MARCH			APRIL			MAY	
1	101	101	101	99	98	98	105	105	105	120	116	119
2	100	100	100	99	99	99	106	105	105	118	118	118
3	100	100	100	100	99	100	107	105	106	118	112	114
4	99	99	99	100	100	100	107	104	105	111	111	111
5	99	99	99	101	101	102	109	105	107	110	108	108
6	99	98	99	101	101	101	108	107	108	112	107	109
7	99	99	99	101	101	101	107	105	106	114	110	112
8	99	99	99	100	100	100	107	105	105	116	112	114
9	99	99	99	100	100	100	108	105	106	116	114	115
10	99	99	99	100	101	101	105	104	105	117	115	116
11	100	99	100	101	102	101	105	105	105	118	116	117
12	99	99	99	101	101	101	105	105	105	117	114	116
13	100	100	100	101	101	101	107	106	106	120	116	118
14	99	100	100	101	101	101	106	106	106	118	117	117
15	99	100	100	102	102	102	106	105	106	119	117	118
16	101	101	101	102	102	102	111	107	109	117	115	116
17	100	100	100	101	101	101	114	112	113	115	113	114
18	100	100	100	101	100	100	116	114	116	113	113	113
19	101	100	100	101	102	102	116	115	116	113	112	113
20	101	101	101	102	102	102	118	116	117	116	113	114
21	102	101	101	102	102	102	117	116	117	117	114	115
22	100	101	101	103	103	103	116	115	116	117	113	115
23	100	100	100	102	102	102	116	115	115	117	113	115
24	100	99	100	102	102	102	115	114	114	114	114	114
25	99	99	99	102	102	102	114	113	113	115	112	114
26	100	99	100	105	103	104	113	113	114	113	112	113
27	99	99	99	105	105	105	115	113	114	113	111	112
28	99	99	99	105	104	105	116	116	116	117	114	116
29	---	---	---	104	104	104	118	117	118	123	119	121
30	---	---	---	105	106	105	120	117	119	126	124	125
31	---	---	---	107	105	106	---	---	---	126	125	126
MONTH	102	98	100	107	98	102	120	104	110	126	107	115

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA—Continued

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	124	124	124	106	106	106	104	101	103	98	91	96
2	124	124	124	106	105	105	103	101	103	99	90	96
3	126	125	125	104	104	104	102	101	102	101	91	98
4	129	127	128	104	103	104	102	101	101	100	92	98
5	131	130	131	104	103	103	102	100	101	101	98	99
6	131	131	131	104	102	103	102	99	101	102	99	100
7	130	131	131	105	103	104	100	98	100	101	100	100
8	132	132	132	104	104	104	100	98	99	100	99	100
9	131	128	130	104	101	103	101	96	99	98	98	99
10	129	125	127	105	102	103	100	96	99	98	97	97
11	124	123	124	105	103	104	101	97	99	98	98	98
12	123	120	122	106	103	104	102	97	99	97	98	98
13	119	118	119	105	102	104	101	98	99	97	97	97
14	117	116	117	105	103	104	101	97	99	97	98	97
15	115	115	115	105	103	104	100	98	99	98	98	98
16	115	115	115	105	104	104	100	97	99	98	98	98
17	119	117	118	104	103	103	101	98	99	97	97	97
18	119	118	119	104	102	103	101	97	99	97	97	97
19	118	117	117	104	103	103	100	97	99	98	97	98
20	117	115	116	105	103	104	99	94	97	99	97	98
21	114	113	113	106	103	104	100	96	98	98	96	97
22	112	111	112	105	103	104	100	97	99	99	97	98
23	111	110	111	105	104	105	99	97	99	98	96	98
24	111	110	110	106	104	105	99	96	98	98	97	98
25	114	111	113	105	104	105	99	96	98	99	98	98
26	116	115	115	105	103	104	100	96	99	99	97	98
27	117	114	116	105	102	104	99	95	98	99	98	99
28	114	110	112	104	102	103	100	95	98	100	99	99
29	109	108	109	104	101	103	99	92	97	100	99	100
30	108	107	107	104	101	103	100	93	98	100	99	---
31	---	---	---	104	101	103	100	94	98	---	---	---
MONTH	132	107	119	106	101	104	104	92	99	102	90	98
YEAR	132	90	103									

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	16.1	15.8	16.0	8.1	7.6	7.9	5.3	5.1	5.2	2.1	1.9	2.0
2	16.2	15.3	15.8	7.7	7.0	7.4	5.1	4.9	5.0	1.9	1.7	1.8
3	15.7	14.9	15.5	7.1	6.4	6.8	4.9	4.7	4.8	1.9	1.7	1.8
4	15.0	14.8	14.9	6.6	6.0	6.3	4.7	4.5	4.6	1.8	1.7	1.8
5	14.9	14.4	14.7	6.1	5.6	5.8	4.5	4.3	4.4	1.9	1.8	1.9
6	15.0	14.3	14.6	5.6	5.3	5.5	4.3	4.1	4.2	2.1	1.9	2.0
7	14.4	14.2	14.2	5.3	5.2	5.2	4.1	4.0	4.0	2.3	2.0	2.1
8	14.5	14.2	14.3	5.2	5.1	5.1	4.0	3.9	4.0	2.5	2.1	2.4
9	14.5	14.3	14.3	5.1	4.9	5.0	4.0	3.9	4.0	2.6	2.4	2.6
10	14.4	14.2	14.3	4.9	4.8	4.8	4.1	4.0	4.0	2.7	2.4	2.6
11	14.3	14.1	14.2	4.9	4.8	4.8	4.1	3.9	4.0	2.6	2.5	2.6
12	14.1	13.7	14.0	5.1	4.9	5.0	3.9	3.7	3.8	2.6	2.2	2.5
13	13.8	13.4	13.6	5.4	5.1	5.2	3.7	3.5	3.6	2.4	2.3	2.4
14	13.6	12.9	13.2	5.6	5.3	5.5	3.5	3.5	3.5	2.4	2.2	2.3
15	12.9	12.3	12.8	5.9	5.6	5.7	3.7	3.5	3.6	2.2	1.9	2.1
16	12.8	11.9	12.3	6.0	5.9	6.0	4.0	3.6	3.8	2.1	1.8	2.0
17	11.9	11.4	11.7	6.2	6.0	6.1	4.4	3.9	4.2	2.0	1.7	1.8
18	11.5	11.3	11.4	6.2	6.1	6.2	4.5	4.4	4.5	1.8	1.6	1.7
19	11.5	11.3	11.4	6.3	6.2	6.2	4.6	4.4	4.5	1.8	1.6	1.7
20	11.8	11.4	11.5	6.3	6.3	6.3	4.4	4.2	4.3	1.7	1.6	1.7
21	11.7	11.5	11.5	6.3	6.2	6.3	4.2	4.1	4.2	1.7	1.5	1.6
22	11.6	11.4	11.5	6.3	6.2	6.2	4.2	4.1	4.2	1.7	1.6	1.7
23	11.4	11.3	11.4	6.2	6.2	6.2	4.1	4.0	4.1	1.7	1.6	1.6
24	11.3	11.0	11.2	6.4	6.2	6.3	4.0	3.9	4.0	1.6	1.6	1.6
25	11.0	10.8	10.9	6.5	6.3	6.4	3.9	3.7	3.8	1.6	1.4	1.5
26	10.8	10.4	10.6	6.4	6.3	6.4	3.7	3.5	3.6	1.5	1.4	1.4
27	10.4	9.9	10.2	6.3	6.1	6.3	3.5	3.3	3.4	1.4	1.3	1.4
28	9.9	9.3	9.7	6.2	5.8	6.0	3.3	3.0	3.2	1.4	1.3	1.4
29	9.4	9.0	9.2	5.8	5.6	5.7	3.1	2.9	3.0	1.3	1.2	1.2
30	9.0	8.5	8.8	5.6	5.3	5.4	3.0	2.5	2.7	1.5	1.3	1.4
31	8.5	8.1	8.3	---	---	---	2.6	2.1	2.3	1.9	1.5	1.7
MONTH	16.2	8.1	12.5	8.1	4.8	5.9	5.3	2.1	4.0	2.7	1.2	1.9

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA—Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.2	1.9	2.1	2.7	2.2	2.6	5.7	5.2	5.4	10.2	9.5	9.9
2	2.3	2.2	2.2	2.7	2.5	2.6	6.1	5.6	5.8	10.5	10.0	10.3
3	2.4	2.2	2.3	2.8	2.6	2.6	6.3	6.0	6.1	10.7	10.2	10.5
4	2.6	2.3	2.4	2.8	2.6	2.7	6.4	6.0	6.2	10.7	10.5	10.6
5	2.8	2.5	2.6	2.8	2.7	2.8	6.2	6.0	6.1	10.6	10.4	10.5
6	2.8	2.6	2.8	2.8	2.6	2.7	6.3	6.0	6.1	10.4	9.9	10.2
7	2.8	2.7	2.8	2.8	2.6	2.7	6.2	5.9	6.1	10.0	9.7	9.8
8	2.8	2.7	2.8	2.6	2.0	2.5	6.3	5.8	5.9	9.8	9.6	9.8
9	2.8	2.5	2.7	2.6	2.4	2.5	6.2	5.8	6.0	10.0	9.7	9.9
10	2.8	2.7	2.8	2.7	2.5	2.6	6.7	6.0	6.4	10.2	9.7	9.8
11	2.8	2.6	2.7	2.8	2.6	2.7	7.3	6.6	7.0	10.4	9.8	10.2
12	2.7	2.6	2.6	3.0	2.7	2.8	7.6	7.3	7.5	11.0	10.3	10.7
13	2.6	2.5	2.6	3.1	3.0	3.0	7.9	7.5	7.6	11.6	11.0	11.3
14	2.5	2.4	2.5	3.3	3.1	3.2	7.6	7.5	7.6	12.0	11.4	11.8
15	2.6	2.4	2.5	3.8	3.3	3.6	7.7	7.5	7.6	12.1	11.8	12.0
16	2.7	2.5	2.6	4.0	3.8	3.9	7.7	7.3	7.6	11.9	11.5	11.8
17	2.8	2.6	2.7	4.2	3.9	4.0	7.5	7.2	7.4	11.5	11.0	11.3
18	3.0	2.8	2.9	4.2	4.0	4.1	8.2	7.4	7.9	11.1	10.7	10.9
19	3.2	3.0	3.1	4.6	4.2	4.4	8.2	7.4	7.9	10.9	10.4	10.7
20	3.4	3.2	3.3	4.8	4.6	4.7	7.9	7.3	7.5	10.7	10.2	10.4
21	3.5	3.4	3.5	4.9	4.8	4.8	8.2	7.3	7.8	10.3	10.2	10.2
22	3.7	3.5	3.6	5.1	4.8	5.0	8.7	8.0	8.4	10.7	10.2	10.5
23	3.8	3.4	3.7	5.2	5.0	5.1	9.1	8.6	8.8	11.4	10.7	11.1
24	3.7	3.4	3.6	5.5	5.2	5.3	9.3	9.0	9.1	12.1	11.3	11.8
25	3.5	3.2	3.4	5.5	5.2	5.4	9.3	9.0	9.2	12.7	12.0	12.4
26	3.4	2.7	3.1	5.4	5.3	5.3	9.8	9.3	9.5	13.0	12.7	12.9
27	3.1	2.8	3.0	5.6	5.0	5.2	10.2	9.4	9.8	13.6	12.9	13.1
28	2.9	2.5	2.7	5.2	5.0	5.1	9.8	9.0	9.4	13.9	13.1	13.5
29	---	---	---	5.2	5.1	5.2	9.8	9.0	9.5	14.5	13.7	14.2
30	---	---	---	5.2	5.1	5.1	9.6	9.4	9.5	14.4	14.0	14.2
31	---	---	---	5.4	5.2	5.3	---	---	---	14.8	14.3	14.7
MONTH	3.8	1.9	2.8	5.6	2.0	3.9	10.2	5.2	7.6	14.8	9.5	11.3
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.7	14.2	14.5	20.1	19.7	19.9	24.6	24.2	24.4	21.9	21.6	21.7
2	14.2	14.0	14.1	20.3	19.9	20.1	24.7	24.4	24.5	22.2	21.6	21.7
3	14.3	13.9	14.1	20.3	19.9	20.0	24.5	24.4	24.4	22.3	21.5	21.8
4	14.3	13.9	14.0	20.5	20.0	20.2	24.8	24.4	24.5	21.9	21.5	21.6
5	14.6	14.3	14.4	20.4	20.1	20.3	25.2	24.3	24.5	22.5	21.4	21.7
6	15.2	14.6	14.9	20.7	20.2	20.5	24.6	24.2	24.3	23.0	21.3	21.6
7	15.8	15.2	15.6	21.4	20.6	20.8	24.3	24.1	24.2	21.4	21.3	21.3
8	16.0	15.8	15.9	20.9	20.7	20.8	24.7	24.0	24.2	21.3	21.2	21.2
9	16.5	16.0	16.3	21.4	20.6	20.8	24.8	23.9	24.2	21.2	21.1	21.2
10	16.9	16.5	16.7	21.6	20.5	20.7	24.3	23.6	23.8	21.2	21.0	21.1
11	16.7	16.3	16.5	21.5	20.7	20.9	24.1	23.6	23.7	21.0	20.9	21.0
12	17.0	16.3	16.7	21.5	21.0	21.2	24.2	23.6	23.7	20.9	20.6	20.8
13	17.4	16.9	17.2	21.6	21.2	21.4	24.1	23.6	23.7	20.7	20.4	20.5
14	17.7	17.3	17.6	22.2	21.6	21.8	24.4	23.6	23.8	20.4	19.9	20.2
15	17.5	16.7	17.3	22.6	21.8	22.0	24.0	23.6	23.7	19.9	19.4	19.8
16	16.7	16.0	16.5	22.7	22.2	22.4	23.7	23.6	23.6	19.4	18.8	19.1
17	16.6	16.0	16.4	22.9	22.3	22.4	24.4	23.5	23.8	18.8	18.4	18.6
18	17.2	16.5	16.9	23.1	22.3	22.5	24.4	23.6	23.8	18.4	17.9	18.1
19	17.7	17.1	17.5	23.1	22.4	22.7	23.9	23.5	23.7	17.9	17.4	17.8
20	18.0	17.7	17.9	23.5	22.9	23.1	23.8	23.4	23.5	18.1	17.1	17.4
21	17.9	17.8	17.9	24.0	23.1	23.4	24.2	23.3	23.6	17.3	17.0	17.1
22	17.8	17.2	17.6	24.0	23.1	23.4	23.5	23.1	23.2	17.6	16.9	17.1
23	17.2	16.9	17.1	24.0	23.1	23.3	23.1	22.9	23.0	16.9	16.7	16.8
24	17.2	16.8	17.0	24.1	23.3	23.5	23.2	22.8	22.9	17.0	16.6	16.8
25	17.0	16.4	16.7	23.9	23.4	23.5	23.0	22.6	22.7	17.1	16.7	16.8
26	17.1	16.4	16.8	24.2	23.5	23.7	22.8	22.4	22.6	16.8	16.6	16.7
27	17.9	16.9	17.4	24.6	23.6	23.9	22.5	22.2	22.3	17.1	16.6	16.8
28	18.8	17.7	18.3	24.5	23.8	24.0	22.8	22.1	22.3	17.4	16.8	16.9
29	19.5	18.6	19.0	24.9	23.9	24.1	22.7	22.0	22.2	17.0	16.8	16.9
30	19.9	19.2	19.6	24.6	23.9	24.1	22.6	21.9	22.1	17.4	16.8	16.9
31	---	---	---	24.7	24.1	24.3	22.7	21.7	22.0	---	---	---
MONTH	19.9	13.9	16.6	24.9	19.7	22.1	25.2	21.7	23.5	23.0	16.6	19.2
YEAR	25.2	1.2	11.0									

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY

LOCATION.--Lat 48°59'56", long 117°21'09", in SW ¼ NE ¼ sec.3, T.40 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left bank 0.1 mi upstream from international boundary, 0.9 mi downstream from Boundary Dam, 6.0 mi downstream from Slate Creek, 9.7 mi north of Metaline Falls, and at mile 16.1.

DRAINAGE AREA.--25,200 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1908 to September 1910 (gage heights only), December 1912 to October 1995, October 1996 to current year. Prior to October 1928, published as "Clark Fork at Metaline Falls," October 1928 to September 1937 as "Clark Fork below Z Canyon, near Metaline Falls," and October 1938 to September 1964 as "below Z Canyon, near Metaline Falls." Concurrent records published for present site December 1962 to September 1964.

REVISED RECORDS.--WSP 442: 1913. WSP 1716: 1919.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is 1,700.00 ft above NGVD of 1929 (City of Seattle Boundary Dam datum). Prior to Dec. 20, 1928, nonrecording gage at Metaline Falls at datum approximately 1,983.4 ft above NGVD of 1929. Dec. 20, 1928, to Sept. 30, 1964, water-stage recorder at site 1.3 mi upstream at datum 1,721.18 ft NGVD of 1929 (levels by Corps of Engineers).

REMARKS.--Flow regulated by Boundary Reservoir 0.9 mi upstream beginning April 1967, Box Canyon Reservoir beginning June 1955, Pend Oreille Lake beginning June 1952, Flathead Lake beginning April 1938, Hungry Horse Reservoir beginning September 1951, and by several smaller reservoirs and powerplants. In 1980 there were diversions for irrigation of 429,700 acres upstream from the station and there probably has not been any appreciable change since that time. Chemical analyses October 1973 to September 1986. Specific conductance records January 1974 to September 1981. Water temperature records April 1974 to September 1981.

COOPERATION.--Discharge records at Boundary Dam provided by Seattle City Light's Power Resources Branch. The U.S. Geological Survey made 6 discharge measurements at this site during the year.

AVERAGE DISCHARGE.--90 years (water years 1913-95, 1997-2003), 26,560 ft^3/s, 19,240,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 171,300 ft^3/s June 13, 1948, gage height, 60.25 ft, site and datum then in use; minimum daily discharge, no flow Aug. 14, 21, 28, Sept. 4, 1988, Aug. 7, 1994, result of regulation.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1894 reached a stage of 69.0 ft, from floodmarks, at site and datum 1.3 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 66,600 ft^3/s June 5; minimum daily discharge, 3,440 ft^3/s Sept. 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	11,000	16,100	11,700	13,100	16,200	13,800	26,100	43,100	57,200	23,800	11,700	3,440
2	13,600	19,100	13,700	15,700	16,600	14,900	25,500	31,800	56,100	26,400	12,500	6,980
3	13,900	13,700	11,900	15,300	25,300	13,800	27,700	36,700	61,700	25,800	12,000	9,040
4	15,600	16,100	12,600	12,500	26,100	11,300	32,300	32,100	65,800	24,700	11,400	6,390
5	16,500	14,500	11,500	11,700	24,100	12,200	30,600	38,400	66,600	26,900	12,300	11,500
6	12,400	15,200	14,100	14,100	18,700	11,600	31,000	36,000	64,200	21,600	12,200	9,940
7	14,200	14,400	13,500	11,000	19,300	14,100	33,900	40,000	62,900	19,500	12,200	7,960
8	14,400	14,700	15,300	11,600	16,300	9,650	24,600	41,500	59,500	19,600	10,400	6,130
9	14,500	16,200	15,700	11,100	8,880	7,370	26,500	44,500	52,200	18,700	10,400	3,780
10	14,800	12,600	15,600	9,400	15,100	12,000	26,800	43,300	51,400	17,000	7,710	3,840
11	14,900	14,100	17,100	7,770	14,500	13,600	28,200	40,100	48,200	16,700	9,070	9,330
12	14,000	14,300	16,000	5,010	14,000	17,300	31,300	45,500	46,000	18,200	8,360	9,020
13	12,800	14,900	18,900	8,340	16,100	20,100	29,900	39,400	42,500	14,300	8,040	7,960
14	15,800	18,400	15,100	9,000	15,100	22,600	32,300	45,000	39,200	15,700	8,330	12,000
15	14,100	16,900	17,600	9,750	16,900	28,200	34,400	40,600	39,300	16,400	10,200	14,000
16	16,100	15,400	18,200	7,890	11,600	26,400	39,300	41,200	42,600	16,700	7,360	9,840
17	17,800	12,300	21,100	6,870	14,600	29,100	41,200	40,200	38,100	16,400	4,380	8,380
18	17,300	14,400	21,000	7,790	15,700	24,200	39,300	40,800	37,200	15,500	8,430	9,200
19	18,200	13,400	19,600	6,000	15,100	22,400	40,500	42,900	38,000	20,800	8,900	12,300
20	17,200	13,900	21,400	7,950	17,900	19,600	33,700	41,100	36,700	17,400	9,290	9,180
21	17,200	15,000	18,100	8,090	19,600	21,300	37,400	38,300	36,200	15,700	8,210	5,810
22	17,700	14,800	13,300	9,220	16,300	21,400	36,900	37,000	37,200	14,700	11,800	11,600
23	18,100	15,400	16,200	7,210	15,800	26,900	36,700	33,500	37,100	13,600	9,280	12,000
24	17,900	12,200	15,900	9,390	16,500	27,400	33,900	31,900	39,000	14,300	9,770	10,900
25	18,000	18,300	9,700	10,700	17,200	32,700	35,300	33,400	37,100	15,000	9,450	11,800
26	17,500	16,600	15,800	8,400	17,600	34,000	36,400	37,300	37,700	13,300	8,790	11,900
27	16,300	14,700	17,000	15,000	16,700	33,600	41,800	40,100	32,600	8,240	9,780	14,800
28	18,900	13,600	18,000	10,200	18,400	33,000	45,500	42,900	30,900	12,700	8,210	8,860
29	18,600	10,700	18,100	17,600	---	31,200	47,100	52,400	25,900	13,000	9,060	12,500
30	18,600	12,800	16,300	14,600	---	28,100	44,300	58,100	29,300	12,000	8,720	12,500
31	16,000	---	17,000	19,700	---	24,600	---	56,300	---	13,200	6,850	---
TOTAL	493,900	444,700	497,000	331,980	476,180	658,420	1,030,400	1,265,400	1,348,400	537,840	295,090	282,880
MEAN	15,930	14,820	16,030	10,710	17,010	21,240	34,350	40,820	44,950	17,350	9,519	9,429
MAX	18,900	19,100	21,400	19,700	26,100	34,000	47,100	58,100	66,600	26,900	12,500	14,800
MIN	11,000	10,700	9,700	5,010	8,880	7,370	24,600	31,800	25,900	8,240	4,380	3,440
AC-FT	979,700	882,100	985,800	658,500	944,500	1,306,000	2,044,000	2,510,000	2,675,000	1,067,000	585,300	561,100

CAL YR	2002	TOTAL	9,824,890	MEAN	26,920	MAX	96,900	MIN	7,000	AC-FT 19,490,000
WTR YR	2003	TOTAL	7,662,190	MEAN	20,990	MAX	66,600	MIN	3,440	AC-FT 15,200,000

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to 1981 (National Stream-quality Accounting Network Station), Water-quality monitor April 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1974 to September 1981.
WATER TEMPERATURE: April 1974 to September 1981; April 1999 to current year.
TOTAL DISSOLVED GAS: May 1999 to current year.

INSTRUMENTATION.--Water-quality monitor April 1974 to September 1981; April 1999 to current year.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Temperature record excellent except the following days that contain partial record: Oct. 28; May 22; June 5, 6; July 1, 2, 13 are considered good and Oct. 22-27, 29-31; Nov. 1-8, 10, 12, 30; Jan. 10, 12-14, 17, 18; Mar. 7, 8, 19; May 4, 6, 7, 25; June 7, 8, 10; July 5-7, 9-12, 15-20 are considered fair. Total dissolved gas record good except Oct. 25, 26, 28; Nov. 13, 30; Jan. 9; Mar. 7; Apr. 6; May 2, 6, 7, 13, 22; June 5, 6; July 1, 2, 5-8, 11, 13, 15-18, 20, 21, which are fair and Oct. 22, 24, 30, 31; Mar. 8; May 23; June 7, 10; July 9, 10, 12, which are poor. In addition to the water-quality monitor record, samples were collected approximately once a month from 1974 to 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 242 micromhos July 17, 1974; minimum, 62 micromhos April 25, 1975.
WATER TEMPERATURE: Maximum, 24.5°C (rounded) July 28-30, 1975, (unrounded) Aug. 2, 4, 2003; minimum, 0.0°C (rounded) at times during winter periods.
TOTAL DISSOLVED GAS: Maximum, 142 percent saturation Aug. 7, 15, 2000 and July 15, 2001, but may have been higher during periods of missing record; minimum, 92 percent saturation Dec. 18, 20, 28, 2000, but may have been lower during periods of missing record.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 24.5°C Aug. 2, 4; minimum, 1.3°C on Jan. 29, 30, but may have been lower during periods of missing record.
TOTAL DISSOLVED GAS: Maximum, 133 percent saturation June 4, but may have been higher during periods of missing record; minimum, 94 percent saturation Oct. 31 and Jan. 5-7, but may have been lower during periods of missing record.

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	102	99	100	---	---	---	102	97	99	104	95	98
2	108	99	102	99	95	96	105	96	100	100	96	97
3	103	99	101	100	96	97	106	97	101	101	96	97
4	106	100	103	---	---	---	101	96	98	98	95	97
5	110	99	101	---	---	---	105	96	101	100	94	95
6	106	98	102	---	---	---	108	96	100	97	94	94
7	105	99	102	---	---	---	105	97	100	99	94	97
8	105	100	101	---	---	---	105	96	100	102	95	98
9	102	100	101	---	---	---	110	97	99	106	96	99
10	103	100	101	---	---	---	99	97	98	---	---	---
11	100	97	98	---	---	---	100	97	98	---	---	---
12	100	96	98	---	---	---	105	97	98	---	---	---
13	101	96	97	103	97	99	101	98	99	---	---	---
14	101	96	97	104	97	99	100	99	99	---	---	---
15	104	96	99	102	98	100	100	99	99	---	---	---
16	106	96	100	109	99	101	103	100	101	---	---	---
17	101	97	98	100	98	99	99	99	99	---	---	---
18	106	97	98	105	97	99	98	97	97	---	---	---
19	99	97	98	105	97	100	101	96	97	---	---	---
20	103	97	98	106	97	101	102	96	97	---	---	---
21	101	97	98	105	97	100	98	96	96	---	---	---
22	99	109	98	108	97	101	103	96	98	102	98	98
23	---	---	---	109	98	101	102	95	97	106	98	100
24	100	98	98	99	97	98	99	95	97	104	99	101
25	103	98	99	98	96	97	104	96	98	101	98	99
26	107	97	100	102	97	98	102	96	98	101	99	100
27	---	---	---	106	97	100	100	97	98	101	99	100
28	103	96	97	107	98	103	105	97	98	106	99	101
29	100	95	96	102	97	100	99	97	98	103	99	101
30	100	95	95	107	97	101	103	97	98	108	100	102
31	102	94	99	---	---	---	100	97	97	107	101	102
MONTH	110	94	99	109	95	100	110	95	98	108	94	99

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA—Continued

TOTAL PARTIAL PRESSURE OF DISSOLVED GASES, WATER, UNFILTERED, PERCENT OF SATURATION—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	102	101	101	108	100	102	109	104	105	119	116	118
2	103	100	100	104	100	101	106	104	105	119	117	118
3	105	99	100	106	101	103	110	104	105	117	112	114
4	100	99	99	112	102	106	108	103	105	---	---	---
5	104	99	99	108	103	106	109	103	106	109	107	108
6	103	98	99	110	102	106	108	105	106	111	107	109
7	102	98	100	108	102	105	111	104	105	113	110	112
8	101	99	100	110	101	104	109	103	105	115	112	114
9	103	99	101	108	101	103	110	103	105	115	113	115
10	106	99	101	114	101	103	108	103	104	118	114	116
11	101	100	100	---	---	---	107	103	104	117	115	116
12	105	100	101	---	---	---	106	104	104	116	115	116
13	112	101	103	---	---	---	106	104	105	118	115	117
14	105	100	101	---	---	---	107	104	105	117	116	116
15	103	100	101	---	---	---	106	104	104	119	115	117
16	103	101	102	---	---	---	109	105	107	116	114	115
17	104	101	101	---	---	---	112	110	111	114	112	113
18	103	100	101	---	---	---	113	112	113	112	112	112
19	106	101	102	---	---	---	114	113	113	112	111	111
20	111	102	104	118	101	103	115	114	115	114	112	114
21	110	102	104	104	101	101	115	113	114	120	113	115
22	106	101	103	108	102	103	115	113	113	116	113	115
23	105	101	102	103	101	101	114	112	113	116	112	114
24	105	100	101	105	101	101	113	111	112	---	---	---
25	105	100	102	103	101	101	115	110	111	113	111	112
26	110	101	102	104	102	103	113	109	111	114	111	112
27	106	100	102	105	103	104	115	111	112	111	110	111
28	107	100	102	104	103	103	119	115	116	115	113	115
29	---	---	---	109	103	104	118	115	117	121	117	119
30	---	---	---	116	104	107	119	117	118	124	122	124
31	---	---	---	111	103	106	---	---	---	124	123	124
MONTH	112	98	101	118	100	103	119	103	109	124	107	115
		JUNE			JULY			AUGUST			SEPTEMBER	
1	123	122	122	111	105	106	119	103	108	102	98	99
2	123	123	122	110	104	106	120	102	108	111	99	103
3	133	123	125	107	103	104	114	101	106	113	99	103
4	133	127	130	107	103	104	113	100	103	109	99	102
5	132	128	131	104	102	103	113	101	105	110	98	104
6	132	126	130	107	102	103	110	100	104	106	99	101
7	132	127	129	108	104	104	110	101	104	110	99	101
8	---	---	---	123	103	105	120	99	102	109	98	102
9	---	---	---	103	101	111	110	99	101	105	98	100
10	127	124	137	107	103	104	110	97	100	98	97	98
11	123	122	123	107	104	105	108	98	101	103	97	100
12	124	119	121	110	103	105	108	99	104	107	98	101
13	119	117	118	110	104	105	111	98	103	110	97	99
14	122	115	116	109	103	104	114	99	104	99	97	97
15	115	114	115	112	104	111	115	99	105	99	97	98
16	116	114	115	114	102	105	111	100	104	102	98	100
17	117	116	117	110	102	104	107	100	103	101	97	99
18	119	117	118	112	102	104	104	100	101	102	96	98
19	120	116	117	---	---	---	109	98	103	104	99	101
20	116	114	116	113	103	105	108	96	99	102	97	99
21	115	112	113	107	103	104	112	99	106	111	97	99
22	113	110	111	112	103	105	110	99	102	110	98	99
23	115	110	111	107	104	104	112	99	106	100	98	98
24	111	109	110	110	104	106	110	98	103	98	97	97
25	114	110	113	109	105	106	102	98	100	104	98	99
26	118	114	115	111	104	106	106	100	102	109	98	100
27	120	114	116	111	104	107	109	98	103	100	98	99
28	118	109	112	114	103	107	109	98	102	100	99	99
29	112	108	109	114	103	107	107	99	103	101	99	100
30	111	106	107	127	103	109	118	98	103	103	99	100
31	---	---	---	118	102	105	105	98	100	---	---	---
MONTH	133	106	119	127	101	105	120	96	103	113	96	100
YEAR	133	94	105									

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA—Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	16.0	15.4	15.9	8.0	7.5	7.8	5.4	5.2	5.3	2.3	2.0	2.1
2	15.8	15.1	15.6	7.5	7.0	7.3	5.2	4.9	5.0	2.0	1.9	1.9
3	15.4	14.9	15.2	7.0	6.4	6.7	4.9	4.8	4.9	2.0	1.9	2.0
4	14.9	14.6	14.9	6.4	5.9	6.2	4.8	4.6	4.7	2.0	1.9	1.9
5	14.8	14.2	14.6	5.9	5.6	5.8	4.7	4.4	4.5	2.0	2.0	2.0
6	14.5	14.2	14.4	5.6	5.3	5.5	4.5	4.2	4.3	2.2	2.0	2.1
7	14.3	14.0	14.2	5.3	5.1	5.3	4.2	4.0	4.1	2.4	2.1	2.3
8	14.4	13.9	14.2	5.3	---	---	4.0	4.0	4.0	2.6	2.3	2.5
9	14.4	14.1	14.3	---	---	---	4.1	3.9	4.0	2.7	2.5	2.6
10	14.4	14.2	14.3	4.8	4.8	4.8	4.1	4.0	4.1	2.8	---	---
11	14.2	13.9	14.1	---	---	---	4.2	4.0	4.1	---	---	---
12	14.0	13.6	13.9	5.1	4.8	4.9	4.0	3.7	3.9	---	2.6	---
13	13.6	13.2	13.5	5.4	5.1	5.2	3.8	3.5	3.6	---	2.5	---
14	13.2	12.8	13.1	5.6	5.4	5.5	3.6	3.5	3.5	2.5	---	---
15	12.8	12.2	12.5	5.9	5.6	5.8	3.7	3.6	3.6	---	---	---
16	12.2	11.7	12.0	6.1	5.9	6.0	4.0	3.7	3.8	---	---	---
17	11.7	11.4	11.6	6.2	6.0	6.1	4.4	4.0	4.2	---	1.9	---
18	11.4	11.2	11.3	6.3	6.1	6.2	4.6	4.4	4.5	---	1.8	---
19	11.4	11.3	11.3	6.3	6.2	6.3	4.6	4.4	4.5	1.9	1.6	1.8
20	11.5	11.3	11.4	6.4	6.3	6.3	4.4	4.3	4.3	1.9	1.8	1.8
21	11.5	11.2	11.4	6.4	6.3	6.3	4.3	4.2	4.2	1.8	1.7	1.7
22	11.5	11.3	11.4	6.3	6.3	6.3	4.2	4.2	4.2	1.8	1.7	1.7
23	11.4	11.0	11.2	6.3	6.2	6.3	4.2	4.1	4.1	1.8	1.7	1.7
24	11.2	10.8	11.1	6.4	6.1	6.3	4.1	3.9	4.0	1.8	1.6	1.7
25	11.0	10.6	10.8	6.5	6.3	6.4	3.9	3.8	3.9	1.7	1.5	1.6
26	10.7	10.3	10.6	6.4	6.4	6.4	3.8	3.5	3.7	1.6	1.5	1.5
27	10.3	9.9	10.0	6.4	6.2	6.3	3.5	3.4	3.5	1.5	1.4	1.5
28	9.9	9.3	9.6	6.2	5.8	6.0	3.4	3.1	3.3	1.5	1.4	1.4
29	9.3	8.9	9.2	5.8	5.6	5.7	3.1	3.0	3.1	1.4	1.3	1.3
30	8.9	8.4	8.7	5.6	5.4	5.5	3.0	2.7	2.9	1.4	1.3	1.4
31	8.4	8.0	8.2	---	---	---	2.7	2.2	2.5	1.9	1.4	1.6
MONTH	16.0	8.0	12.4	8.0	4.8	6.0	5.4	2.2	4.0	2.8	1.3	1.8
		FEBRUARY			MARCH			APRIL			MAY	
1	2.2	1.9	2.1	2.8	2.6	2.7	5.7	5.3	5.4	10.0	9.5	9.8
2	2.3	2.2	2.3	3.0	2.6	2.7	6.1	5.6	5.8	10.3	9.9	10.2
3	2.4	2.3	2.4	3.0	2.6	2.7	6.3	6.1	6.2	10.6	10.2	10.4
4	2.6	2.4	2.4	2.9	2.7	2.8	6.3	6.1	6.2	10.6	10.5	10.6
5	2.8	2.6	2.7	3.0	2.8	2.8	6.2	6.0	6.1	10.6	10.3	10.5
6	2.8	2.8	2.8	3.0	2.7	2.8	6.2	6.1	6.1	10.3	9.9	10.1
7	2.8	2.7	2.8	2.9	2.7	2.8	6.2	6.0	6.1	9.9	9.6	9.8
8	2.8	2.7	2.8	2.8	2.7	2.7	6.0	5.8	5.9	9.8	9.6	9.7
9	2.8	2.7	2.8	2.8	2.6	2.6	6.1	5.9	6.0	10.0	9.7	9.8
10	2.8	2.7	2.8	2.9	2.7	2.8	6.7	6.1	6.3	9.9	9.7	9.8
11	2.8	2.7	2.7	---	---	---	7.3	6.7	7.0	10.3	9.8	10.2
12	2.7	2.6	2.7	---	---	---	7.6	7.3	7.5	10.8	10.3	10.6
13	2.6	2.5	2.6	---	---	---	7.7	7.5	7.6	11.3	10.8	11.2
14	2.5	2.5	2.5	---	---	---	7.6	7.6	7.6	11.8	11.3	11.7
15	2.6	2.5	2.5	---	---	---	7.7	7.6	7.6	12.0	11.7	11.9
16	2.7	2.6	2.6	---	---	---	7.6	7.3	7.5	11.9	11.4	11.8
17	2.8	2.7	2.8	---	---	---	7.5	7.3	7.4	11.4	11.0	11.3
18	3.0	2.8	2.9	---	---	---	8.0	7.5	7.8	11.1	10.7	10.9
19	3.2	3.0	3.1	4.6	---	---	8.1	7.5	7.9	10.8	10.4	10.7
20	3.5	3.2	3.3	4.8	4.6	4.7	7.5	7.4	7.5	10.6	10.2	10.4
21	3.5	3.5	3.5	4.9	4.8	4.9	8.0	7.4	7.7	10.3	10.1	10.2
22	3.7	3.5	3.6	5.0	4.9	5.0	8.7	8.0	8.4	10.7	10.2	10.5
23	3.8	3.6	3.7	5.3	5.0	5.1	9.0	8.7	8.9	11.3	10.3	11.0
24	3.7	3.5	3.6	5.3	5.2	5.3	9.2	9.0	9.1	---	---	---
25	3.5	3.3	3.5	5.5	5.3	5.4	9.3	9.1	9.2	12.6	---	---
26	3.4	3.1	3.3	5.5	5.3	5.4	9.6	9.3	9.5	12.9	12.6	12.8
27	3.3	2.9	3.1	5.3	5.1	5.2	10.0	9.5	9.8	13.2	12.8	13.0
28	3.1	2.7	2.9	5.2	5.1	5.2	9.8	9.1	9.5	13.7	13.1	13.5
29	---	---	---	5.3	5.2	5.2	9.6	9.1	9.4	14.4	13.7	14.2
30	---	---	---	5.2	5.1	5.2	9.5	9.4	9.5	14.4	14.1	14.3
31	---	---	---	5.3	5.2	5.3	---	---	---	14.8	14.3	14.7
MONTH	3.8	1.9	2.9	5.5	2.6	4.1	10.0	5.3	7.5	14.8	9.5	11.2

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA—Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.7	14.2	14.5	20.0	19.5	19.8	24.4	23.9	24.2	21.7	21.2	21.5
2	14.3	14.0	14.2	20.1	19.7	19.9	24.5	24.1	24.3	21.6	21.1	21.5
3	14.3	14.0	14.1	20.0	19.8	19.9	24.4	24.2	24.4	21.6	20.7	21.4
4	14.3	13.9	14.0	20.2	19.8	20.0	24.5	24.1	24.4	21.6	21.0	21.4
5	14.6	14.3	14.5	20.2	20.0	20.1	24.4	23.9	24.3	21.5	21.1	21.4
6	15.2	14.6	14.9	---	19.2	---	24.3	24.0	24.2	21.5	21.0	21.3
7	15.8	15.2	15.5	20.7	19.8	20.4	24.2	23.9	24.1	21.3	21.0	21.2
8	---	15.8	---	20.6	20.3	20.5	24.1	23.8	24.0	21.3	21.1	21.2
9	---	---	---	---	20.3	---	24.0	23.6	23.8	21.2	20.8	21.1
10	16.8	---	---	20.5	19.9	20.3	23.8	23.4	23.6	21.1	20.6	21.0
11	16.7	16.4	16.5	20.8	20.2	20.6	23.7	23.2	23.5	21.0	20.7	20.9
12	16.9	16.4	16.7	21.0	20.5	20.8	23.7	23.1	23.5	20.8	20.5	20.7
13	17.3	16.9	17.1	21.2	20.7	21.1	23.7	23.0	23.5	20.5	20.0	20.4
14	17.7	17.3	17.6	21.5	20.9	21.3	23.7	22.9	23.5	20.2	19.8	20.0
15	17.5	16.8	17.3	---	21.2	---	23.6	23.1	23.5	19.8	19.1	19.5
16	16.8	16.1	16.6	22.0	21.6	21.8	23.6	23.4	23.5	19.1	18.6	18.9
17	16.5	16.1	16.4	22.2	21.7	22.0	23.8	23.2	23.5	18.6	18.1	18.5
18	17.1	16.5	16.9	22.3	21.8	22.1	23.8	23.2	23.6	18.1	17.7	18.0
19	17.7	17.1	17.4	---	21.9	---	23.6	23.2	23.5	17.7	17.3	17.6
20	18.1	17.7	17.9	22.8	22.2	22.5	23.4	23.1	23.3	17.3	17.1	17.2
21	18.0	17.8	17.9	23.0	22.4	22.8	23.4	23.1	23.3	17.1	16.8	17.0
22	17.9	17.2	17.6	23.3	22.6	23.0	23.2	23.0	23.1	17.0	16.8	16.9
23	17.2	17.0	17.1	23.4	22.8	23.2	23.0	22.8	22.9	16.8	16.6	16.8
24	17.2	16.8	17.0	23.5	22.9	23.3	22.8	22.3	22.7	16.8	16.4	16.7
25	16.9	16.5	16.8	23.6	23.1	23.4	22.7	22.3	22.5	16.8	16.6	16.7
26	16.9	16.5	16.7	23.7	23.0	23.5	22.5	22.2	22.4	16.7	16.5	16.7
27	17.7	16.9	17.3	23.9	23.1	23.6	22.3	22.0	22.2	16.8	16.5	16.7
28	18.6	17.7	18.2	23.9	23.4	23.8	22.2	21.8	22.1	16.9	16.4	16.8
29	19.2	18.5	18.9	24.0	23.4	23.9	22.1	21.7	22.0	16.9	16.6	16.8
30	19.7	19.2	19.4	24.2	23.5	24.0	22.0	21.7	21.9	17.0	16.6	16.9
31	---	---	---	24.3	23.8	24.1	21.9	21.5	21.7	---	---	---
MONTH	19.7	13.9	16.6	24.3	19.2	21.9	24.5	21.5	23.3	21.7	16.4	19.1
YEAR	24.5	1.3	11.3									

12399500 COLUMBIA RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 49°00'03", long 117°37'42", in NE ¼ SE ¼ sec.4, T.40 N., R.41 E., Stevens County, Hydrologic Unit 17020001, on left bank at international boundary, 0.5 mi downstream from Pend Oreille River, and at mile 745.0.

DRAINAGE AREA.--59,700 mi^2, approximately.

PERIOD OF RECORD.--October 1937 to current year. Prior to March 1938, monthly discharge only, published in WSP 1316.

REVISED RECORDS.--WSP 932: 1937(m), 1938(M), 1939(m).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Bureau of Reclamation datum). Prior to Apr. 27, 1939, nonrecording gage at same site and datum. Since May 31, 1942, auxiliary water-stage recorder and Jan. 1 to May 30, 1942, auxiliary nonrecording gage 2.2 mi downstream from base gage at same datum.

REMARKS.--No estimated daily discharges. Records good except for periods when the base gage height drops below 1,300 ft, which are fair. Flow regulated by numerous reservoirs. It was estimated that 436,400 acres were under irrigation in the United States in 1980 with diversions for irrigation of an additional 35,000 acres in Canada. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--66 years (water years 1938-2003), 99,450 ft^3/s, 72,052,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 550,100 ft^3/s June 12, 1948, elevation, 1,338.13 ft; minimum discharge, 18,000 ft^3/s Feb. 7, 1954, elevation, 1,289.38 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 1,346 ft, from information by Bureau of Reclamation, discharge, 680,000 ft^3/s. A discharge of about 12,900 ft^3/s occurred Jan. 30 or 31, 1937, based on information from other gaging stations, elevation, 1,287.9 ft, from rating curve extended below 1,291.6 ft and may have been as low in January 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 156,000 ft^3/s June 20, elevation, 1,309.60 ft; minimum daily discharge, 41,600 ft^3/s Feb. 10.

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	78,500	88,100	95,700	81,100	61,500	51,700	65,200	95,300	140,000	119,000	100,000	77,900
2	78,400	84,500	99,500	81,700	55,100	52,300	64,800	77,200	141,000	113,000	104,000	81,000
3	83,300	97,000	100,000	80,600	62,400	54,400	69,400	91,200	147,000	112,000	104,000	77,800
4	80,900	100,000	98,100	77,600	66,400	52,700	73,600	82,400	150,000	107,000	101,000	71,700
5	75,800	93,800	96,200	74,000	64,600	54,900	71,300	91,900	151,000	119,000	99,900	79,100
6	71,900	95,100	94,800	79,000	62,900	55,900	72,600	90,400	148,000	104,000	101,000	71,900
7	70,800	89,600	97,600	77,100	55,700	50,400	72,700	88,300	149,000	106,000	104,000	76,300
8	70,200	90,900	96,300	78,100	55,900	52,500	63,700	93,500	149,000	112,000	99,300	72,700
9	70,600	87,600	98,600	78,800	49,000	54,300	61,900	92,400	139,000	118,000	98,600	69,100
10	69,700	84,200	102,000	79,200	41,600	50,700	65,800	91,600	142,000	112,000	98,400	71,700
11	73,400	86,500	104,000	77,800	47,300	53,500	67,000	91,900	136,000	107,000	100,000	71,300
12	73,600	93,200	103,000	69,500	48,500	58,500	71,200	94,500	136,000	105,000	100,000	73,300
13	70,800	92,600	107,000	73,500	48,900	59,600	68,600	91,400	136,000	98,300	100,000	72,700
14	73,800	90,900	106,000	71,900	47,500	65,900	79,600	95,400	140,000	99,700	96,200	79,300
15	75,700	96,700	104,000	70,400	49,100	71,900	75,100	96,700	133,000	96,500	99,800	87,900
16	73,400	95,200	104,000	74,000	48,700	67,400	81,100	94,500	134,000	94,200	97,900	80,600
17	74,600	90,700	104,000	69,600	44,200	73,000	84,700	92,200	139,000	95,400	94,100	82,700
18	73,300	93,500	97,700	68,200	49,900	66,500	85,000	90,500	138,000	92,600	100,000	83,800
19	76,100	94,000	91,600	67,200	53,100	62,100	82,600	95,000	138,000	101,000	98,900	80,400
20	82,600	92,700	92,900	69,800	55,400	59,400	82,200	88,700	146,000	111,000	103,000	83,100
21	82,700	90,700	91,700	71,300	54,700	61,600	82,200	87,400	143,000	117,000	104,000	79,800
22	85,900	92,000	89,800	73,900	50,900	64,200	87,100	89,500	141,000	114,000	105,000	83,800
23	84,100	89,300	82,900	68,000	49,100	72,100	76,900	84,800	139,000	119,000	103,000	82,200
24	85,800	92,500	88,300	68,600	54,400	72,200	80,800	87,300	133,000	113,000	101,000	83,200
25	88,100	101,000	73,900	67,000	64,700	80,000	81,900	88,100	135,000	108,000	99,100	85,900
26	85,800	106,000	80,900	72,500	59,600	74,000	87,800	107,000	130,000	98,000	95,300	82,500
27	82,800	99,100	82,800	75,200	55,400	74,200	89,000	111,000	119,000	95,600	95,400	90,000
28	85,500	102,000	83,000	78,500	55,000	78,900	94,400	117,000	118,000	101,000	96,100	84,500
29	87,000	103,000	85,500	75,000	---	73,900	95,400	123,000	117,000	94,800	94,200	88,900
30	98,900	92,300	87,000	69,900	---	73,800	95,800	139,000	119,000	92,900	89,300	87,900
31	101,000	---	83,500	68,400	---	69,400	---	140,000	---	96,100	81,400	---
TOTAL	2,465,000	2,804,700	2,922,300	2,287,400	1,511,500	1,961,900	2,329,400	2,999,100	4,126,000	3,272,100	3,063,900	2,393,000
MEAN	79,520	93,490	94,270	73,790	53,980	63,290	77,650	96,750	137,500	105,600	98,840	79,770
MAX	101,000	106,000	107,000	81,700	66,400	80,000	95,800	140,000	151,000	119,000	105,000	90,000
MIN	69,700	84,200	73,900	67,000	41,600	50,400	61,900	77,200	117,000	92,600	81,400	69,100
AC-FT	4,889,000	5,563,000	5,796,000	4,537,000	2,998,000	3,891,000	4,620,000	5,949,000	8,184,000	6,490,000	6,077,000	4,747,000

CAL YR	2002	TOTAL	36,700,700	MEAN	100,500	MAX	231,000	MIN	40,000	AC-FT	72,800,000
WTR YR	2003	TOTAL	32,136,300	MEAN	88,040	MAX	151,000	MIN	41,600	AC-FT	63,740,000

12401500 KETTLE RIVER NEAR FERRY, WA
(International gaging station)

LOCATION.--Lat 48°58'53", long 118°45'55", in SE ¼ NW ¼ sec.10, T.40 N., R.32 E., Ferry County, Hydrologic Unit 17020002, on right bank 0.5 mi upstream from Catherine Creek, 1.3 mi south of international boundary and Ferry, 3.2 mi upstream from Toroda Creek, and at mile 84.02.

DRAINAGE AREA.--2,200 mi^2, approximately.

PERIOD OF RECORD.--August 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,836.8 ft above NGVD of 1929. Prior to Nov. 23, 1928, nonrecording gage at same site and datum.

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

AVERAGE DISCHARGE.--75 years (water years 1929-2003), 1,541 ft^3/s, 1,116,000 acre-ft/yr.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft^3/s May 29, 1948, gage height, 21.15 ft; minimum discharge, 14 ft^3/s, discharge measurement, Jan. 23, 1930, but may have been less during period of ice effect Jan. 18-23, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 26	2200	*11,900	*17.60	No other peak greater than base discharge.			

Minimum discharge, 37 ft^3/s, Nov. 1, Feb. 25, gage height, 8.93 ft.

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	107	66	104	137	193	154	962	4,740	8,980	1,430	e160	58
2	109	70	125	157	187	151	1,120	4,920	8,400	1,290	e151	56
3	120	71	125	161	183	146	1,120	5,050	7,710	1,180	e144	53
4	121	70	128	167	178	144	1,070	5,020	6,670	1,080	e138	53
5	119	83	124	171	175	143	1,010	5,390	6,250	997	129	52
6	120	96	132	169	163	144	959	5,160	6,580	921	122	51
7	120	99	139	164	140	142	905	4,570	6,590	862	118	51
8	117	110	137	153	152	130	880	4,070	6,550	792	114	54
9	120	115	130	92	132	130	961	3,760	6,500	733	110	60
10	120	120	126	54	116	139	1,200	3,620	6,010	676	105	62
11	116	124	124	102	117	142	1,390	3,630	5,420	623	102	66
12	114	132	124	116	116	145	1,610	3,660	5,020	578	101	70
13	113	134	127	128	129	160	2,090	3,890	4,540	536	100	73
14	112	137	139	137	174	208	2,800	4,260	5,120	499	97	75
15	110	137	197	141	171	282	3,010	4,870	4,900	468	96	77
16	111	135	272	140	171	376	2,900	4,670	3,950	439	94	83
17	112	134	265	138	170	445	2,860	4,040	3,550	407	93	90
18	111	128	251	117	167	465	2,820	3,590	3,390	378	92	95
19	111	125	240	127	163	454	2,660	3,250	3,180	354	88	102
20	111	123	216	120	161	455	2,670	3,020	3,170	332	85	108
21	109	124	192	100	163	477	2,930	2,910	3,320	312	82	109
22	108	134	166	120	163	520	3,560	3,010	3,210	294	78	112
23	108	149	162	137	155	626	4,450	4,000	3,230	e274	78	119
24	106	161	164	146	118	699	5,090	5,490	2,820	e258	76	111
25	105	169	163	144	95	688	6,180	8,300	2,440	e242	72	105
26	101	151	163	148	124	664	6,380	11,100	2,200	e229	70	99
27	96	105	161	155	163	625	5,510	10,800	2,050	e215	66	93
28	98	101	144	160	161	600	5,050	9,870	1,920	e203	67	90
29	100	101	128	169	---	582	4,850	9,540	1,730	e191	63	86
30	105	119	98	183	---	597	4,680	9,070	1,580	e180	63	83
31	88	---	115	197	---	703	---	8,580	---	e170	61	---
TOTAL	3,418	3,523	4,881	4,350	4,300	11,336	83,677	167,850	136,980	17,143	3,015	2,396
MEAN	110	117	157	140	154	366	2,789	5,415	4,566	553	97.3	79.9
MAX	121	169	272	197	193	703	6,380	11,100	8,980	1,430	160	119
MIN	88	66	98	54	95	130	880	2,910	1,580	170	61	51
AC-FT	6,780	6,990	9,680	8,630	8,530	22,480	166,000	332,900	271,700	34,000	5,980	4,750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	375	378	269	220	229	421	2,496	6,694	5,099	1,488	432	344
MAX	2,085	1,280	1,161	640	626	1,811	6,351	10,440	9,924	4,380	1,987	1,941
(WY)	(1942)	(1942)	(1942)	(1942)	(1935)	(1983)	(1934)	(1957)	(1974)	(1982)	(1948)	(1941)
MIN	90.9	84.3	78.2	40.3	72.5	110	300	2,222	1,338	346	97.3	79.9
(WY)	(1988)	(1930)	(1930)	(1930)	(1930)	(1930)	(1929)	(1930)	(1987)	(1934)	(2003)	(2003)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	500,537		442,869			
ANNUAL MEAN	1,371		1,213		1,541	
HIGHEST ANNUAL MEAN					2,543	1997
LOWEST ANNUAL MEAN					659	1930
HIGHEST DAILY MEAN	11,800	May 30	11,100	May 26	20,300	May 29, 1948
LOWEST DAILY MEAN	66	Nov 1	51	Sep 6	15	Jan 16, 1930
ANNUAL SEVEN-DAY MINIMUM	78	Oct 31	53	Sep 2	15	Jan 16, 1930
ANNUAL RUNOFF (AC-FT)	992,800		878,400		1,116,000	
10 PERCENT EXCEEDS	4,740		4,670		5,200	
50 PERCENT EXCEEDS	263		160		376	
90 PERCENT EXCEEDS	109		87		129	

e Estimated

12404500 KETTLE RIVER NEAR LAURIER, WA
(International gaging station)

LOCATION.--Lat 48°59'04", long 118°12'55", in SW ¼ NW ¼ sec.11, T.40 N., R.36 E., Ferry County, Hydrologic Unit 17020002, on right bank 1,000 ft downstream from Deep Creek, 1.1 mi south of international boundary, 1.1 mi southeast of Laurier, and at mile 29.71.

DRAINAGE AREA.--3,800 mi^2, approximately.

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 737: 1930-31. WSP 862: 1937. WSP 882: 1938.

GAGE.--Water-stage recorder. Datum of gage is 1,425.5 above NGVD of 1929. Prior to Jan. 3, 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records excellent. Diversions for irrigation of about 720 acres in the United States (for 1946 from United States reports), and 2,090 acres in Canada from the Canada Year Book for 1940. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--74 years (water years 1930-2003), 2,923 ft^3/s, 2,118,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft^3/s May 29, 1948, gage height, 17.25 ft; minimum daily discharge, 70 ft^3/s Jan. 11-31, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1894 reached a stage of about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 18,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 27	0030	*20,900	*12.92	No other peak greater than base discharge.			

Minimum discharge, 112 ft^3/s, Sept. 7, 8, gage height, 2.28 ft.

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	195	175	203	293	456	484	2,710	8,610	16,800	3,130	368	130
2	191	157	205	310	456	468	3,170	8,970	15,900	2,840	348	126
3	195	150	216	351	457	462	3,210	9,110	15,100	2,580	328	123
4	200	153	220	361	453	453	3,040	9,110	13,000	2,370	316	118
5	206	155	224	372	444	446	2,890	9,400	12,100	2,180	304	114
6	205	168	226	366	437	444	2,740	9,390	12,600	2,020	295	114
7	204	180	225	364	411	441	2,600	8,570	13,000	1,880	283	112
8	204	197	232	353	402	433	2,500	7,830	13,000	1,760	271	116
9	204	209	233	316	423	418	2,540	7,270	13,100	1,640	263	118
10	203	219	230	206	398	420	2,870	6,980	11,900	1,520	249	120
11	204	220	233	248	357	428	3,260	6,900	11,000	1,420	235	123
12	201	230	233	261	351	441	3,660	6,920	10,000	1,320	222	126
13	201	237	240	307	362	462	4,410	7,160	9,450	1,220	212	128
14	201	245	261	325	424	516	5,660	7,740	9,540	1,150	205	131
15	200	242	306	339	444	779	6,540	8,650	9,570	1,090	198	138
16	198	240	465	342	475	1,180	6,450	8,840	8,150	1,020	196	147
17	198	236	599	334	480	1,550	6,400	7,880	7,370	941	193	154
18	198	234	553	329	480	1,670	6,390	7,110	7,180	878	190	159
19	198	236	488	302	474	1,670	6,110	6,510	6,890	822	185	165
20	198	228	455	299	474	1,660	5,950	6,070	6,570	766	179	172
21	198	231	418	316	483	1,750	6,150	5,770	6,520	720	173	176
22	197	235	388	300	489	1,920	7,000	5,670	6,280	675	168	179
23	195	240	365	326	483	2,400	8,360	6,520	5,970	633	167	180
24	192	251	344	336	457	2,600	9,310	8,770	5,560	585	161	183
25	192	263	339	344	397	2,490	10,400	13,300	4,940	546	156	185
26	192	266	341	361	380	2,370	11,600	19,500	4,530	513	152	179
27	190	254	340	371	424	2,240	10,400	19,900	4,280	489	146	171
28	189	224	339	386	471	2,100	9,310	17,900	4,090	463	142	162
29	189	194	325	407	---	2,010	8,870	17,600	3,760	438	137	155
30	190	190	298	424	---	1,990	8,630	17,100	3,440	412	135	153
31	187	---	286	449	---	2,160	---	16,200	---	387	132	---
TOTAL	6,115	6,459	9,830	10,398	12,242	38,855	173,130	307,250	271,590	38,408	6,709	4,357
MEAN	197	215	317	335	437	1,253	5,771	9,911	9,053	1,239	216	145
MAX	206	266	599	449	489	2,600	11,600	19,900	16,800	3,130	368	185
MIN	187	150	203	206	351	418	2,500	5,670	3,440	387	132	112
AC-FT	12,130	12,810	19,500	20,620	24,280	77,070	343,400	609,400	538,700	76,180	13,310	8,640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	671	750	605	516	561	1,082	5,202	12,120	9,243	2,798	827	618
MAX	3,815	2,600	2,652	1,450	1,407	4,247	12,170	18,620	17,650	6,928	3,140	3,773
(WY)	(1942)	(1942)	(1942)	(1942)	(1935)	(1983)	(1934)	(1997)	(1974)	(1982)	(1976)	(1941)
MIN	176	202	154	76.5	97.9	212	1,478	4,246	2,888	759	216	145
(WY)	(1988)	(1930)	(1930)	(1930)	(1930)	(1930)	(1937)	(1930)	(1987)	(1934)	(2003)	(2003)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	928,532		885,343			
ANNUAL MEAN	2,544		2,426		2,923	
HIGHEST ANNUAL MEAN					4,725	1997
LOWEST ANNUAL MEAN					1,251	1930
HIGHEST DAILY MEAN	20,100	May 30	19,900	May 27	34,200	May 29, 1948
LOWEST DAILY MEAN	150	Nov 3	112	Sep 7	70	Jan 11, 1930
ANNUAL SEVEN-DAY MINIMUM	163	Nov 1	116	Sep 4	70	Jan 11, 1930
ANNUAL RUNOFF (AC-FT)	1,842,000		1,756,000		2,118,000	
10 PERCENT EXCEEDS	8,540		8,640		9,610	
50 PERCENT EXCEEDS	602		402		796	
90 PERCENT EXCEEDS	198		168		290	

12409000 COLVILLE RIVER AT KETTLE FALLS, WA

LOCATION.--Lat 48°35'40", Long 118°03'41", in NE ¼ NE ¼ sec.30, T.36 N., R.38, E., Stevens County, Hydrologic Unit 17020003, on right bank 600 ft downstream from Washington Water Power Co.'s hydroelectric plant at foot of Meyers Falls, 1.0 mi south of town of Kettle Falls, and at mile 5.0.

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

PERIOD OF RECORD.--October 1922 to current year. Published as "at Meyer Falls" 1922-38.

REVISED RECORDS.--WSP 1316: 1938(M), 1941(M), 1948(M). WSP 1636: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above NGVD of 1929, from topographic map. Prior to Oct. 21, 1932, nonrecording gage at site 500 ft upstream at different datum. Oct. 21, 1932, to Sept. 19, 1938, nonrecording gages at site 200 ft upstream at different datum. Sept. 20, 1938, to Mar. 20, 1949, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Several diversions upstream from station for irrigation. Regulation at low flow by powerplant. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--81 years (water years 1923-2003), 310 ft^3/s, 224,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,440 ft^3/s Jan. 21, 1974, gage height, 9.84 ft; maximum gage height, 10.17 ft Apr. 23, 1956; minimum discharge observed, 0.5 ft^3/s Aug. 15, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,510 ft^3/s Mar. 23, gage height, 7.70 ft; minimum discharge, 21 ft^3/s Nov. 1, result of regulation, and may have been lower during period of ice effect.

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	90	e65	111	186	452	314	1,120	832	443	190	61	61
2	91	e68	113	198	460	312	1,140	813	438	177	61	69
3	91	e70	116	273	460	310	1,160	791	403	173	63	66
4	91	e73	115	346	449	304	1,120	755	375	152	71	64
5	91	e75	113	353	431	301	1,070	753	356	172	76	63
6	91	e80	113	353	401	301	1,040	761	340	157	69	63
7	88	e100	113	344	373	297	994	741	329	152	67	64
8	87	125	113	316	361	290	955	704	316	146	77	77
9	87	151	115	282	339	286	937	651	309	134	76	104
10	87	173	116	243	325	287	932	614	304	133	71	131
11	87	144	118	220	307	293	944	576	333	129	65	118
12	87	145	126	231	295	305	1,010	539	335	120	59	101
13	87	145	152	244	290	455	1,030	572	313	116	61	97
14	91	160	202	255	297	698	1,060	593	300	109	59	95
15	94	142	335	258	297	777	1,140	550	291	109	56	97
16	93	138	418	260	326	1,020	1,150	510	279	104	59	99
17	93	128	461	250	405	1,180	1,140	491	262	105	62	102
18	92	125	392	238	425	1,170	1,150	504	253	95	67	104
19	96	126	315	229	420	1,140	1,140	507	248	95	69	110
20	91	146	245	224	402	1,140	1,090	506	244	93	56	98
21	95	149	223	220	393	1,170	1,050	484	257	91	57	100
22	95	133	210	206	386	1,230	1,010	470	294	82	53	102
23	94	132	201	211	373	1,430	1,010	461	296	84	60	98
24	90	129	191	e230	329	1,480	991	446	277	82	67	97
25	92	122	185	e270	307	1,420	989	448	259	71	70	96
26	93	116	182	e310	308	1,340	981	469	250	73	66	95
27	93	115	182	e350	320	1,290	971	440	231	73	58	86
28	102	110	190	403	320	1,240	973	418	217	72	59	88
29	106	111	196	400	---	1,190	929	399	202	71	63	90
30	97	111	188	398	---	1,130	879	391	196	64	66	91
31	84	---	186	427	---	1,110	---	387	---	63	67	---
TOTAL	2,846	3,607	6,036	8,728	10,251	25,210	31,105	17,576	8,950	3,487	1,991	2,726
MEAN	91.8	120	195	282	366	813	1,037	567	298	112	64.2	90.9
MAX	106	173	461	427	460	1,480	1,160	832	443	190	77	131
MIN	84	65	111	186	290	286	879	387	196	63	53	61
AC-FT	5,650	7,150	11,970	17,310	20,330	50,000	61,700	34,860	17,750	6,920	3,950	5,410

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2003, BY WATER YEAR (WY)

MEAN	119	154	185	212	287	506	850	695	358	158	89.0	97.1
MAX	301	401	783	1,374	970	1,410	2,168	1,744	1,035	467	258	241
(WY)	(1928)	(1928)	(1974)	(1974)	(1974)	(1983)	(1969)	(1948)	(1948)	(1948)	(1948)	(1997)
MIN	35.8	49.5	56.3	32.9	65.8	127	128	93.8	48.4	20.6	12.0	22.7
(WY)	(1932)	(1932)	(1932)	(1930)	(1937)	(1930)	(1930)	(1930)	(1926)	(1977)	(1931)	(1931)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1923 - 2003	
ANNUAL TOTAL	108,874		122,513			
ANNUAL MEAN	298		336		310	
HIGHEST ANNUAL MEAN					768	1974
LOWEST ANNUAL MEAN					70.5	1930
HIGHEST DAILY MEAN	1,630	Apr 16	1,480	Mar 24	3,360	Jan 20, 1974
LOWEST DAILY MEAN	51	Aug 15	53	Aug 22	0.50	Aug 15, 1930
ANNUAL SEVEN-DAY MINIMUM	56	Aug 15	60	Aug 11	5.3	Aug 14, 1930
ANNUAL RUNOFF (AC-FT)	216,000		243,000		224,400	
10 PERCENT EXCEEDS	701		990		730	
50 PERCENT EXCEEDS	198		211		176	
90 PERCENT EXCEEDS	70		70		65	

e Estimated