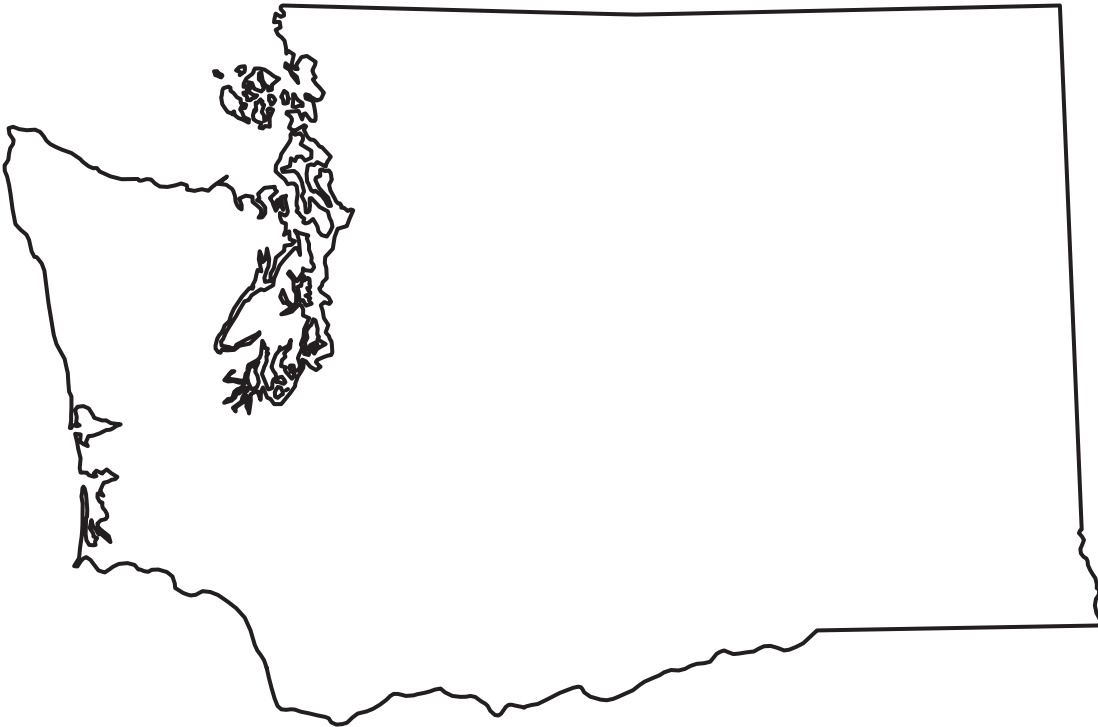


Water Resources Data Washington Water Year 2002

Water-Data Report WA-02-1



CALENDAR FOR WATER YEAR 2002

2001

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3							1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
														30	31					

2002

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5						1	2						1	2
6	7	8	9	10	11	12	3	4	5	6	7	8	9	3	4	5	6	7	8	9
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23
27	28	29	30	31			24	25	26	27	28			24	25	26	27	28	29	30
														31						

APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6				1	2	3	4							1
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14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
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														30						

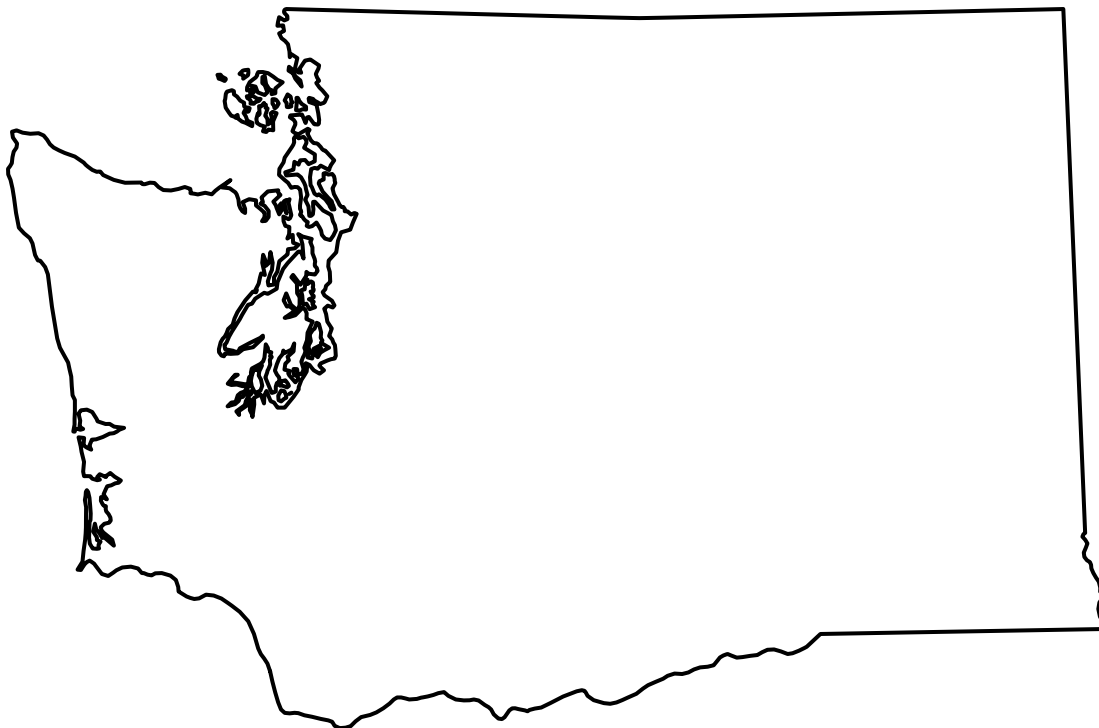
JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3	1	2	3	4	5	6	7
7	8	9	10	11	12	13	4	5	6	7	8	9	10	8	9	10	11	12	13	14
14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21
21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28
28	29	30	31				25	26	27	28	29	30	31	29	30					

U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data Washington Water Year 2002

By R.A. Kimbrough, W.D. Wiggins, R.R. Smith, G.P. Ruppert,
S.M. Knowles, and V.F. Renslow

Water-Data Report WA-02-1



Prepared in cooperation with the
State of Washington and with other agencies



U.S. DEPARTMENT OF THE INTERIOR

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See additional USGS information on water resources of
Washington
on the World Wide Web at
<http://wa.water.usgs.gov/>

2003

PREFACE

This volume of the annual Washington hydrologic data report is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

The report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who edited and assembled the reports. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Washington and with other agencies under the general supervision of Robert A. Kimbrough, Assistant Director for Hydrologic Data, Cynthia Barton, Director, Washington Water Science Center, and William T. Sexton, Regional Executive for Water, Western Region, USGS.

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13. ABSTRACT <i>(Maximum 200 words)</i> Water resources data for the 2002 water year for Washington consist of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels of wells. <ul style="list-style-type: none"> ● Water discharge for 245 gaging stations on streams, canals and drains. ● Stage only records for 10 gaging stations. ● Discharge data for 211 partial-record and miscellaneous sites. ● Stage and (or) contents for 36 lakes and reservoirs. ● Water-quality data for 40 surface-water sites. ● Water levels for 26 observation wells. ● Water-quality data for 16 observation wells. <p>These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Washington.</p>			
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SURFACE-WATER STATIONS IN DOWNSTREAM ORDER, FOR WHICH
RECORDS ARE PUBLISHED IN THIS VOLUME

NOTE--Data for miscellaneous sites are published in separate sections of the data report. See references at the end of this list of page numbers for these sections.

Letter after station name designates type of data: (c) chemical, including periodic biological, microbiological, sediment, pesticide, and radio-chemical where applicable; (d) discharge; (e) elevation; (g) gage height; (g%) total dissolved gas; (k) specific conductance; (o) dissolved oxygen; (p) pH; (r) rainfall; (t) water temperature; and (v) contents.

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WHATCOM COUNTY

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DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Washington have been discontinued. Period of record for daily streamflow or stage records collected and published as daily means, or monthly means for some periods, for the period of record, expressed in water years, are shown for each station. Those stations with an asterisk (*) after the station number are currently operated as a crest-stage station. Discontinued stations with less than 3 years of records are included. Information and data regarding any station may be obtained from the District Office at the address given on the back side of the title page of this report.

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage. ND, not determined]			
Station name	Station number	Drainage area (mi ²)	Period of record (water years)
SOUTHWEST WASHINGTON RIVER BASINS			
Bear Branch (River) near Naselle, Wa.	12009500	11.7	1963-75
Salmon Creek near Naselle, Wa.	12010500	16.4	1953-65
South Fork Naselle River near Naselle, Wa.	12010700	17.9	1964-75;1977
North Nemah River near South Bend, Wa.	12011000	18.0	1946-54;1964-68;1977
Williams Creek near South Bend, Wa.	12011200	9.43	1964-74;1977
Willapa River at Lebam, Wa.	12011500	41.4	1948-71
Fork Creek near Lebam, Wa.	12012000	20.4	1953-70
Stringer Creek near Holcomb, Wa.	12012500	3.02	1953
Mill Creek near Willapa, Wa.	12013000	23.7	1953
Ward Creek near Willapa, Wa.	12014000	19.3	1953
South Fork Willapa River near Raymond, Wa.	12014500	27.8	1953-71
Elkhorn Creek near Raymond, Wa.	12015000	15.6	1953
Clearwater Creek near Raymond, Wa.	12015100	3.98	1964-75
Smith Creek near Raymond, Wa.	12015200	57.7	1963-66
North River near Brooklyn, Wa.	12015500	29.8	1953-65
Fall River at Brooklyn, Wa.	12016000	41.0	1953
Little North River near Cosmopolis, Wa.	12016500	18.6	1946-49;1953
North River near Raymond, Wa.	12017000	219	1927-77;1995-2000
Johns River near Markham, Wa.	12017500	18.9	1942-43
Newskah Creek near Aberdeen, Wa.	12018000	7.44	1946-49
Charley (Charlies) Creek near Aberdeen, Wa.	12018500	5.93	1946-49
CHEHALIS RIVER BASIN			
Chehalis River near Pe Ell, Wa.	12019000	54.7	1944
Rock Creek near Pe Ell, Wa.	12019500	13.4	1944
Elk Creek near Doty, Wa.	12020500	46.7	1942-50;1967-70
South Fork Chehalis River near Boistfort, Wa.	12020900	44.9	1965-80
South Fork Chehalis River at Boistfort, Wa.	12021000	48.0	1942-50;1961-65
Halfway Creek near Boistfort, Wa.	12021500	13.4	1944
Bunker Creek near Adna, Wa.	12022000	20.1	1944
Stearns Creek near Napaville, Wa.	12022500	14.1	1945
Stearns Creek near Adna, Wa.	12023000	27.1	1944
Chehalis River near Chehalis, Wa.	12023500	434	1929-31
North Fork Newaukum River near Forest, Wa.	12024500	31.5	1944;1957-66
Salzer Creek near Centralia, Wa.	12025300	12.6	1968-71
Chehalis River at Centralia, Wa. (S)	12025500	--	1910-11
Skookumchuck River near Centralia, Wa.	12026000	61.7	1929-34;1940-69
Hanaford Creek near Centralia, Wa.	12026500	13.3	1944
Lincoln Creek near Rochester, Wa.	12027000	19.3	1942-50
Scatter Creek near Ground Mound, Wa.	12028000	21.0	1944
Wadell Creek near Little Rock, Wa.	12028500	15.9	1944
Black River at Little Rock, Wa.	12029000	63.7	1942-50
Garrard (Garrod) Creek near Oakville, Wa.	12029500	27.7	1944
Rock Creek near Cedarville, Wa.	12030000	24.8	1942-71
Cedar Creek near Cedarville, Wa.	12030500	38.2	1944
Porter Creek at Porter, Wa.	12030900	35.3	1942-49
Wildcat Creek near Elma, Wa.	12032000	19.8	1944
Cloquallum River (Creek) near Elma, Wa.	12032500	64.9	1942-72
Chehalis River at South Elma, Wa.	12033000	1,417	1942-45;1947-52
East Fork Satsop River near Matlock, Wa.	12033500	23.7	1946-47
Bingham Creek near Satsop, Wa.	12034000	30.0	1946-48
East Fork Satsop River near Elma, Wa.	12034200	65.9	1957-71
Middle Fork Satsop River near Satsop, Wa.	12034500	63.0	1942-43
Chehalis River near Satsop, Wa.	12035002	1,761	1977-83
Big Creek near Grisdale, Wa.	12035450	9.57	1973-96
Wynoochee River at Oxbow near Aberdeen, Wa.	12035500	70.7	1925-52

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
CHEHALIS RIVER BASIN--Continued			
Schafer Creek near Grisdale, Wa.	12036400	12.1	1987-96
Wynoochee River near Montesano, Wa.	12036500	112	1923-30
Anderson Creek near Montesano, Wa.	12036650	2.72	1972-85
City Aberdeen River Intake near Montesano, Wa.	12037000	--	1942
Wynoochee River below Black Creek, near Montesano, Wa.	12037500	180	1942-50
Wishkah River near Wishkah, Wa.	12038000	57.8	1942-43
WESTERN OLYMPIC MOUNTAIN RIVER BASINS			
West Fork Hoquiam River near Hoquiam, Wa.	12038500	16.0	1942-44
Humtuplups River near Humtuplups, Wa.	12039000	130	1933-35;1942-79
Moclips River at Moclips, Wa.	12039220	35.0	1975-81
North Fork Quinault River near Amanda Park, Wa.	12039300	74.1	1964-86
Raft River below Rainy Creek, near Queets, Wa.	12039520	76.0	1974-81
Clearwater River near Clearwater, Wa.	12040000	140	1932;1937-50
Hoh River below Mt. Tom Creek near, Forks, Wa.	12040700	97.8	1985-89
South Fork Hoh River near Forks, Wa.	12040900	50.4	1985-89
Hoh River near Forks (Spruce), Wa.	12041000	208	1926-64
Soleduck River near Fairholm, Wa.	12041500	83.8	1918-21;1933-71; 1977-80
Soleduck River at Snider Ranger Station, near Beaver, Wa.	12042000	116	1922-28
Soleduck River near (at) Quillayute, Wa.	12042500	219	1898-1902;1978-80
Bogachiel River near Forks, Wa.	12042800	111	1975-80
East Fork Dickey River near La Push, Wa.	12043080	39.8	1962-68
Dickey River near La Push, Wa.	12043100	86.3	1962-73;1977-80
Ozette River near Ozette, Wa.	12043150	77.5	1976-79
Sooes River below Miller Creek, near Ozette, Wa.	12043163	32.0	1976-86
EASTERN OLYMPIC MOUNTAIN RIVER BASINS			
Waatch River below Educket Creek, at Neah Bay, Wa.	12043173	9.96	1976-79
Sail River near Neah Bay, Wa.	12043190	5.42	1976-79
Clallam River near Clallam Bay, Wa.	12043350	137	1962
East Twin River near Pysht, Wa.	12043430	14.0	1962-72
Lake Crescent at Piedmont, Wa (S)	12043500	49.1	1919-27
Lyre River at Piedmont, Wa.	12044000	49.5	1918-27
Salt Creek near Port Angeles, Wa.	12044500	8.31	1952
Elwha River above Lake Mills, near Port Angeles, Wa.	12044900	198	1994-98
Elwha River near Port Angeles, Wa. (S)	12046000	315	1911-12
Elwha River below Diversion, near Port Angeles, Wa.	12046500	318	1951-54
Ennis Creek near Port Angeles, Wa.	12047000	8.32	1952
Morse Creek near Port Angeles, Wa.	12047300	46.6	1966-76
Siebert Creek near Port Angeles, Wa.	12047500	15.5	1952-69
Dungeness River below Canyon Creek, near Sequim, Wa.	12048500	170	1897-98
Dungeness River at Dungeness, Wa.	12049000	197	1899-1901;2000-01
Jimmycomelately Creek near Blyn, Wa.	12049500	18.3	1952
Salmon Creek near Maynard, Wa.	12050000	13.0	1952
Snow Creek near Maynard, Wa.	12050500	11.2	1952-72
Andrews Creek near Maynard, Wa.	12051000	10.2	1952
Chimacum Creek near Chimacum, Wa.	12051500	13.8	1952-58
Little Quilcene River near Quilcene, Wa.	12052000	23.7	1926-27;1951-58
Big Quilcene River near (at) Quilcene, Wa.	12052500	66.0	1971-72
Dosewallips River near Brinnon, Wa.	12053000	93.5	1931-50
Dosewallips River at Brinnon, Wa.	12053500	116	1911;1924-25; 1928-30
Hamma Hamma River near Eldon, Wa.	12054500	51.3	1951-71
Jefferson Creek near Eldon, Wa.	12054600	21.6	1958-71
Hamma Hamma River near Hoodspport, Wa.	12055000	83.5	1926-30
Eagle Creek near Lilliwaup, Wa.	12055500	7.06	1951
Finch Creek at Hoodspport, Wa.	12056000	3.45	1951
Lake Cushman (Reservoir) near Hoodspport, Wa. (E)	12057000	93.7	1925-82
North Fork Skokomish River near Hoodspport, Wa. (S 1910-11)	12057500	93.7	1910-82
Dear Meadow Creek near Hoodspport, Wa.	12058000	1.83	1950-73
Dow Creek near Hoodspport, Wa.	12058500	1.67	1950-54
McTaggart Creek near Hoodspport, Wa.	12059000	1.30	1951-53
South Fork Skokomish River near Hoodspport, Wa.	12059800	26.0	1964-70
South Fork Skokomish River near Potlatch, Wa.	12060000	65.6	1924-32;1946-64
Vance Creek near Potlatch, Wa.	12061000	15.6	1955-56

WATER RESOURCES DATA FOR WASHINGTON 2002
DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
SOUTHWESTERN PUGET SOUND RIVER BASINS			
Purdy Creek near Union, Wa.	12062500	3.73	1954-60
Union River near Bremerton, Wa.	12063000	3.16	1946-59
Union River near Belfair, Wa.	12063500	19.8	1947-59
Mission Lake near Bremerton, Wa. (S)	12064000	1.83	1945-53
Mission Creek near Belfair, Wa.	12065000	4.43	1946-53
Gold Creek near Bremerton, Wa.	12065500	1.51	1946-70
Tahuya River (Creek) near Bremerton, Wa.	12066000	5.99	1945-56
Panther Lake near Bremerton, Wa. (S)	12066500	0.80	1945-53
Panther Creek near Bremerton, Wa.	12067000	1.00	1945-53
Tahuya River (Creek) near Belfair, Wa.	12067500	15.0	1945-56
Tahuya River near Tahuya, Wa.	12068000	42.2	1947
Dewatto River (Creek) near Dewatto, Wa.	12068500	18.4	1947-54;1958-74
Anderson Creek near Holley, Wa.	12069000	6.30	1947
Stavis Creek near Seabeck, Wa.	12069500	5.60	1947
Devils Hole Creek at Bangor Subbase, near Bangor, Wa.	12069600	2.61	1995-96
Gamble Creek near Port Gamble, Wa.	12069651	5.97	1995-96
Dogfish Creek near Poulsbo, Wa.	12070000	5.01	1947-71
Johnson Creek DNR site near Poulsbo, Wa.	12070040	0.17	1995-96
North Fork Johnson Creek near Poulsbo, Wa.	12070045	2.04	1995-96
Johnson Creek near Poulsbo, Wa.	12070050	2.52	1995-96
Clear Creek near Silverdale, Wa.	12070500	8.50	1947
Wildcat Lake near Bremerton, Wa. (S)	12071000	2.50	1947-50
Kitsap Lake near Bremerton, Wa. (S)	12071500	2.73	1947-50
Chico Creek near Bremerton, Wa.	12072000	15.3	1947-50;1961-74
Blackjack Creek at Port Orchard, Wa.	12072500	14.5	1947-50
Purdy Creek at Purdy, Wa.	12072800	3.44	1960-62
Burley Creek at Burley, Wa.	12073000	10.7	1947-50;1960-65
Unnamed Tributary to Beaver Creek, near Herron, Wa.	12073550	0.21	1991-94
Unnamed Creek near Key Center, Wa.	12073600	0.20	1991-94
Shumocher Creek (Sherwood Creek) near Union, Wa.	12074000	12.2	1951
Mason Lake near Union, Wa. (S)	12074500	20.2	1951-75
Deer Creek near Shelton, Wa.	12075000	13.6	1943;1948-51
Cranberry Creek near Shelton, Wa.	12075500	15.2	1942-43;1948-51
Johns Creek near Shelton, Wa.	12076000	17.7	1943;1948-51
Goldsborough Creek near Shelton, Wa.	12076500	39.3	1951-71
Goldsborough Creek at Shelton, Wa.	12077000	55.0	1943;1951
Mill Creek at Shelton, Wa.	12077500	19.5	1943;1951
Black Lake Ditch at Lake Outlet, near Tumwater, Wa.	12078705	ND	1988-90
Black Lake Ditch near Olympia, Wa.	12078720	ND	1988-90
Percival Creek near Olympia, Wa.	12078730	5.84	1988-90
Skookum Creek at Kamliche, Wa.	12078000	16.1	1951-59
Kennedy Creek near Kamliche, Wa.	12078400	17.4	1960-71
Kennedy Creek near New Kamliche, Wa.	12078500	18.7	1951
Synder Creek near Olympia, Wa.	12078650	0.52	1971-74
Spurgeon Creek near Olympia, Wa.	12079500	11.0	1949-50
Deschutes River near Olympia, Wa.	12080000	160	1945-54;1957-64
Woodward Creek near Olympia, Wa.	12080500	3.80	1949;1988-90
Woodland Creek at Martin Way, at Lacey, Wa.	12080670	12.4	1988-90
Woodland Creek near Olympia, Wa.	12081000	24.6	1949-69;1988-90
McAllister Springs near Olympia, Wa.	12081500	--	1951-64
NISQUALLY RIVER BASIN			
Nisqually River near Ashford, Wa.	12082000	68.5	1910-14
East Creek near Elbe, Wa.	12083500	11.5	1918-22;1949-50
Nisqually River near Alder, Wa.	12084000	252	1931-45
Little Nisqually River near Alder, Wa.	12084500	28.0	1920-43
Tacoma Power Conduit near LaGrande, Wa.	12086000	--	1919-31
Ohop Lake near Eatonville, Wa. (S)	12087400	17.3	1960-75
Lynch Creek near Eatonville, Wa.	12087500	16.3	1949
Nisqually River above Powell Creek, near McKenna, Wa.	12088400	431	1969-79
Nisqually River near McKenna, Wa.	12088500	445	1941-63
Tanwax Lake near Kapowsin, Wa. (S)	12088900	4.08	1962-75

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
NISQUALLY RIVER BASIN--Continued			
Tanwax Creek near McKenna, Wa.	12089000	26.0	1945-50
Muck Creek near Loveland, Wa.	12090000	16.9	1949
Muck Creek at Roy, Wa.	12090200	86.8	1956-72
SOUTH CENTRAL PUGET SOUND RIVER BASINS			
American Lake near Tillicum, Wa. (E)	12090300	24.5	1956-59
Unnamed Tributary to Clover Creek, at Bingham Avenue East, near Parkland, Wa.	12090340	0.14	1991-92
Unnamed Tributary to North Fork Clover Creek, at Waller Rd E, near Parkland, Wa.	12090365	0.14	1990-94
Unnamed Tributary to North Fork Clover Creek, at 99th Avenue East, near Tacoma, Wa.	12090380	0.19	1991-92
Chambers Creek at Steilacoom Lake, near Steilacoom, Wa.	12091000	78.4	1939-40
Chambers Creek above Flett Creek, near Steilacoom, Wa.	12091040	90.4	1966-71
Flett Creek at 74th Street, at Tacoma, Wa.	12091050	4.23	1959-63
Flett Creek at Mountain View Memorial Park, at Tacoma, Wa.	12091060	5.91	1967-79
Flett Creek below Flett Springs, at Tacoma, Wa.	12091070	6.72	1959-65
Leach Creek at Holding Pond, at Fircrest, Wa.	12091180	4.59	1967-90
Judd Creek near Burton, Wa.	12091700	4.41	1968-75
PUYALLUP RIVER BASIN			
Puyallup River at Electron, Wa.	12092500	131	1946
Kapowsin Creek near Kapowsin, Wa.	12093000	25.9	1927-32;1942-57
Carbon River at Fairfax, Wa.	12093900	76.2	1911-12;1965-78
South Prairie Creek near Enumclaw, Wa.	12094400	22.4	1963-68
Wilkeson (Gale) Creek at Wilkeson, Wa.	12094500	25.0	1949
Voight Creek near Crocker, Wa.	12095500	22.9	1949
Fennel Creek near McMillan, Wa.	12096000	12.5	1949
White River near Greenwater, Wa.	12096600	16.2	1964-70
White River at Greenwater, Wa.	12097000	216	1911-12;1929-75
White River below Clearwater, near Budkley, Wa.	12097850	375	1975-76;1983-96
White River Flume near Buckley, Wa.	12098910	--	1972-73
Boise Creek above Reservoir, near Enumclaw, Wa.	12099300	4.60	1963-66
Boise Creek below Millpond, near Enumclaw, Wa.	12099400	8.27	1963-66
Boise Creek near Enumclaw, Wa.	12099500	12.3	1945-46;1963-66
White (Stuck) River near Sumner, Wa.	12100500	470	1945-71
Clark Creek at Puyallup, Wa.	12102000	1.66	1946-48
Diru Creek below Hatchery at Pioneer Way, near Tacoma, Wa.	12102025	1.18	1990-91
Clear Creek at Pioneer Way, below Fish Hatchery, near Tacoma, Wa.	12102140	3.09	1990-91
Swan Creek at Pioneer Way, near Tacoma, Wa.	12102212	3.45	1990-91
SOUTH CENTRAL PUGET SOUND RIVER BASINS (Continued)			
Wapato Creek near Tacoma, Wa.	12102500	6.00	1949
Hylebos Creek at 5th Avenue, at Milton, Wa.	12102900	4.77	1987-88
West Tributary to Hylebos Creek at south 356th, near Milton, Wa.	12102920	5.67	1987-88
West Tributary to Hylebos Creek at south 373rd, near Milton, Wa.	12103000	7.33	1987-88
Hylebos Creek at Highway 99, at Fife, Wa.	12103020	16.8	1995-99
Joes Creek at Marine Drive, near Tacoma, Wa.	12103205	--	1987-88
Lakota Creek above Sewage Treatment Plant, near Tacoma, Wa.	12103207	2.19	1987
Redondo Creek No. 1 at Redondo Shores, Wa.	12103210	0.82	1987-88
Redondo Creek No. 2 near Des Moines, Wa.	12103212	1.10	1987-88
Unnamed Creek at Sltwater State Park, near Des Moines, Wa.	12103220	2.94	1987-88
DUWAMISH (GREEN) RIVER BASIN			
Green River above Twin Camp Creek near Lester, Wa.	12103380	16.5	1993-99
Green River below intake Creek, near Lester, Wa.	12103400	34.8	1966-77
Snow Creek near Lester, Wa.	12103500	11.5	1945-65
Friday Creek near Lester, Wa.	12104000	4.67	1945-77
Green River near Lester, Wa.	12104500	96.2	1945-90;1993
Green Canyon Creek near Lester, Wa.	12104700	3.23	1960-70
Smay Creek near Lester, Wa.	12105000	8.56	1947-70
Charley Creek near Eagle Gorge, Wa.	12105500	11.3	1947-55
North Fork Green River near Palmer, Wa.	12105700	16.5	1957-65
North Fork Green River near Lemolo, Wa.	12105710	16.7	1965-87
Bear Creek near Eagle Gorge, Wa.	12106000	4.10	1947-56
Green River near Palmer, Wa.	12106500	230	1932-63
Green River at Kanaskat, Wa.	12107000	240	1911

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

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Station name	Station number	Drainage area (mi ²)	Period of record (water years)
DUWAMISH (GREEN) RIVER BASIN--Continued			
Icy Creek near Black Diamond, Wa.	12107300	3.29	1963-68
Green River near Black Diamond, Wa.	12107500	285	1939-48
North Fork Newaukum Creek near Enumclaw, Wa.	12107950	1.93	1977-78
Newaukum Creek near Enumclaw, Wa.	12108000	13.0	1945
Clovercrest Outfall at Enumclaw, Wa.	12108050	0.26	1977-78
Newaukum Creek Tributary near Black Diamond, Wa.	12108450	1.52	1977-78
Burns Creek near Black Diamond, Wa.	12109000	3.47	1945
Little Soos Creek near Kent, Wa.	12109500	6.08	1985-86
Big Soos Creek above Jenkins Creek, near Auburn, Wa.	12110000	20.9	1944-45;1985-86
Wilderness Lake Outlet near Maple Valley, Wa.	12110003	0.66	1977
South Fork Jenkins Creek near Covington, Wa.	12110400	3.47	1985-86
Jenkins Creek near Auburn, Wa.	12110500	13.5	1985-86
Lake Sawyer near Black Diamond, Wa. (S)	12111000	13.0	1952-75
Covington Creek near Black Diamond, Wa.	12111500	13.0	1953-60
Covington Creek near Auburn, Wa.	12112000	21.6	1944-45
Big Soos Creek near Auburn, Wa.	12112500	62.9	1944-56
Soosette Creek near Auburn, Wa.	12112550	5.50	1985-86
LAKE WASHINGTON - CEDAR RIVER BASIN			
North Fork Cedar River near Lester, Wa.	12113500	9.30	1944-63
South Fork Cedar River near Lester, Wa.	12114000	6.00	1944-83
Rack Creek near Cedar Falls, Wa.	12115800	2.14	1983-93
Cedar River at Chester Morse (Cedar) Lake, near North Bend, Wa.	12116000	77.7	1898-99;1902-03
Middle Fork Taylor Creek near Selleck, Wa.	12116700	5.17	1956-64
North Fork Taylor Creek near Selleck, Wa.	12116800	3.77	1956-64
Rock Creek above Walsh Lake Ditch near Landsburg, Wa.	12117700	4.91	1986-90
Walsh Lake Ditch near Landsburg, Wa.	12117820	9.42	1986-90
Rock Creek Diversion near Landsburg, Wa.	12118000	11.0	1932-48
Rock Creek near Ravensdale, Wa.	12118300	--	1956-58
LAKE WASHINGTON RIVER BASINS			
May Creek near Issaquah, Wa.	12119300	2.82	1978-79
May Creek Tributary at State Road 900 near Issaquah, Wa.	12119302	--	1978-79
May Creek at Renton, Wa.	12119375	7.57	1978-79
Honey Creek near Renton, Wa.	12119450	0.70	1978-79
May Creek near Renton, Wa.	12119500	12.5	1945-50;1955-58;1964
May Creek at Mouth near Renton, Wa.	12119600	12.7	1964-72;1978-79
Coal Creek near Bellevue, Wa.	12119700	6.80	1964-68
Lake Hills Storm Sewer Outfall at Bellevue, Wa.	12119725	--	1980-82
148th Ave Storm Sewer below Lake Hills Boulevard, near Bellevue, Wa.	12119730	--	1980-82
148th Ave Upstream Manometer at Bellevue, Wa.	12119731	--	1980-82
148th Ave Downstream Manometer at Bellevue, Wa.	12119732	--	1980-82
Surrey Downs Storm Sewer Outfall at Bellevue, Wa.	12120005	--	1980-82
Juanita Creek near Kirkland, Wa.	12120500	6.69	1945;1963-90
LAKE WASHINGTON - SAMMAMISH RIVER BASIN			
Issaquah Creek near Issaquah, Wa.	12121000	27.0	1945-64
East Fork Issaquah Creek near Issaquah, Wa.	12121500	8.54	1945
East Fork Issaquah Creek at mouth, at Issaquah, Wa.	12121510	9.50	1975-81
Tibbetts Creek near Issaquah, Wa.	12121700	3.90	1963-68;1971-76
Laughing Jacobs Creek near Issaquah, Wa.	12121720	5.05	1987-88
Pine Lake near Issaquah, Wa. (S)	12121800	1.06	1956-77
Pine Lake Creek near Issaquah, Wa.	12121810	1.06	1980-81
Inglewood Creek near Redmond, Wa.	12121830	4.24	1987-88
Sammamish River above Bear Creek, near Redmond, Wa.	12122010	102	1975-78
Bear Creek near Redmond, Wa.	12122500	13.9	1946-49;1980-96
Cottage Lake Creek near Redmond, Wa.	12123000	10.7	1945;1955-65
Cottage Lake Creek above Bear Creek, near Redmond, Wa.	12123100	12.2	1985-86
Bear Creek Tributary near Redmond, Wa.	12123200	1.40	1985-86
Evans Creek near Redmond, Wa.	12123500	10.9	1945
Evans Creek above mouth, near Redmond, Wa.	12124000	13.0	1955-76;1985-86
Bear Creek at Redmond, Wa.	12124500	48.2	1945-50;1955-58; 1984-86
Sammamish River near Redmond, Wa.	12125000	150	1939-57
Bear Creek at Woodinville, Wa.	12125500	15.3	1945;1965-69

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

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Station name	Station number	Drainage area (mi ²)	Period of record (water years)
LAKE WASHINGTON - SAMMAMISH RIVER BASIN--Continued			
Penny Creek near Everett, Wa.	12125800	3.67	1985-86
North Creek below Penny Creek, near Bothell, Wa.	12125900	9.12	1985-86
North Creek Tributary near Woodinville, Wa.	12125950	4.20	1985-86
North Creek near Bothell, Wa.	12126000	24.6	1945-73
North Creek near Woodinville, Wa.	12126100	27.0	1985-86
Sammamish River at Bothell, Wa.	12126500	212	1940-63;1983-87
Swamp Creek near Alderwood Manor, Wa.	12126800	9.55	1984-86
Scriber Creek near Mountlake Terrace, Wa.	12126900	6.14	1985-86
Swamp Creek near Bothell, Wa.	12127000	21.8	1945
Swamp Creek at Kenmore, Wa.	12127100	23.1	1963-90
Lyon Creek at Lake Forest Park, Wa.	12127300	3.67	1963-68
Lake Ballinger near Edmonds, Wa. (S)	12127400	5.09	1961-77
McAleer Creek near Bothel, Wa.	12127500	7.48	1945;1947-49
McAleer Creek at Lake Forest Park, Wa.	12127600	7.80	1963-72
EAST CENTRAL PUGET SOUND RIVER BASINS			
Powder Creek near Mukulteo, Wa	12128500	2.11	1946
SNOHOMISH RIVER BASIN			
Tye River near Skykomish, Wa.	12129000	79.8	1929-31;1946
East Fork Foss River near Skykomish, Wa. (S)	12129500	21.6	1911
Foss River near Skykomish, Wa.	12130000	54.8	1911
South Fork Skykomish (Tye) River near Skykomish, Wa.	12130500	135	1930-31;1946-50
Beckler River near Skykomish, Wa.	12131000	96.5	1929-33;1946-49
West Fork Miller River near Miller River (Berlin), Wa. (S)	12131500	13.4	1911
Miller River (Creek) at (near) Miller River, Wa.	12132000	13.2	1911-19;1929-31;1946
South Fork Skykomish River near Miller River (Berlin), Wa. (S)	12132500	313	1910-11
South Fork Skykomish River near Index, Wa.	12133000	355	1903-05;1911-82
Troublesome Creek near Index, Wa.	12133500	10.6	1929-41
North Fork Skykomish River at Index, Wa.	12134000	146	1911-22;1929-38; 1946-48
Wallace River near Gold Bar, Wa.	12135000	18.6	1929-33; 1946-78; 1980-98
Olney Creek near Gold Bar, Wa.	12135500	8.31	1946-50
Olney Creek neary Startup, Wa.	12136000	10.3	1923-26;1929-34
May Creek near Gold Bar, Wa.	12136500	3.80	1928-35;1946-47
Elk Creek near Sultan, Wa.	12137200	11.4	1977-83
Williamson Creek near Sultan, Wa.	12137260	15.6	1977-83
Sultan River near Startup, Wa.	12137500	74.5	1934-71
Sultan River near Sultan, Wa.	12138000	86.6	1911-27;1929-31
Sultan River below Chaplain Creek, near Sultan, Wa.	12138150	92.6	1975-84
McCoy Creek near Sultan, Wa.	12138500	6.17	1946-50
Elwell Creek near Sultan, Wa.	12139000	22.9	1946
Roesiger Creek near Machias, Wa.	12139500	3.80	1946-48
Woods Creek below Roesiger Creek, near Monroe, Wa.	12140000	19.0	1946
Carpenter Creek near Machias, Wa.	12140500	8.89	1946
Woods Creek near Monroe, Wa.	12141000	56.4	1946-71
Middle Fork Snoqualmie River near North Bend, Wa.	12141500	169	1907-26;1929-32;1945
Calligan Creek near Snoqualmie, Wa.	12142200	7.31	1964-70
Hancock Creek near Snoqualmie, Wa.	12142300	7.67	1964-71
North Fork Snoqualmie River at cable bridge, near North Bend, Wa.	12142500	85.6	1914-15
North Fork Snoqualmie River near North Bend, Wa.	12143000	95.7	1907-26;1929-38; 1961-71
South Fork Snoqualmie River near Garcia, Wa.	12143500	45.8	1910-15
Beaver Creek near Snoqualmie, Wa.	12144800	4.13	1964-67
Tokul Creek near Snoqualmie, Wa.	12145000	32.2	1907-15;1929-31;1945
Patterson Creek near Fall City, Wa.	12146000	15.5	1947-50;1955-71
Patterson Creek 0.8 miles above mouth, near Fall City, Wa.	12146500	21.3	1945
Griffin Creek near Carnation (Tolt), Wa.	12147000	17.1	1945-70
Phelps Creek near Index, Wa.	12147700	2.04	1961
South Fork Tolt River at upper station, near Carnation, Wa.	12147800	8.82	1958-59
Stossel Creek near Carnation, Wa.	12148700	5.58	1957-63
Harris Creek near Tolt, Wa.	12149500	8.39	1945
Ames Creek near Tolt, Wa.	12150000	3.17	1945
Cherry Creek near Duvall, Wa.	12150500	19.2	1945-49;1961-64

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
SNOHOMISH RIVER BASIN--Continued			
Evans Creek near Snohomish, Wa.	12151000	2.75	1946
French Creek near Monroe, Wa.	12151500	7.09	1946
Pilchuck River below Worthy Creek, near Granite Falls, Wa.	12152000	41.7	1946
Pilchuck River near Granite Falls, Wa.	12152500	54.5	1911;1943-58
Little Pilchuck River near Lake Stevens, Wa.	12153000	17.0	1946-70
Lake Stevens at Lake Stevens, Wa. (S)	12153500	6.83	1946-50
Stevens Creek at Lake Stevens, Wa.	12154000	15.3	1946-50
Dubuque Creek near Lake Stevens, Wa.	12154500	7.16	1946-50
Panther Creek near Lake Stevens, Wa.	12155000	5.93	1946
Wood Creek near Everett, Wa.	12156000	1.89	1946-48
Allen Creek at Marysville, Wa.	12156500	7.93	1946
Quilceda Creek near Marysville, Wa.	12157000	15.4	1946-69;1975-77
Quilceda Creek above west fork, near Marysville, Wa.	12157005	17.4	1985-86
West Fork Quilceda Creek near Marysville, Wa.	12157020	9.41	1985-86
EAST CENTRAL PUGET SOUND RIVER BASINS (Continued)			
Lake Goodwin (Tulalip Creek) near Silvana, Wa. (S)	12157500	5.17	1953-75
Lake Shoecraft near Tulalip, Wa. (S)	12158000	6.02	1953-75
STILLAGUAMISH RIVER BASIN			
South Fork Stillaguamish River at Silverton, Wa.	12158500	32.7	1929-32
South Fork Stillaguamish River below Bender Creek, near Silverton, Wa.	12159000	40.7	1950
South Fork Stillaguamish River near Silverton, Wa.	12159500	43.7	1910-18
Boardman Creek near Silverton, Wa.	12160000	8.52	1950
Benson Creek near Granite Falls, Wa.	12160500	2.70	1950
Canyon Creek near Granite Falls, Wa. (S 1911-13)	12161500	55.3	1911-13;1929-32;1950
South Fork Stillaguamish River at Granite Falls, Wa.	12162000	182	1911;1914-16
South Fork Stillaguamish River above Jim Creek, near Arlington, Wa.	12162500	199	1937-58
Jim Creek near Oso, Wa.	12163000	10.9	1948-50
Cub Creek near Oso, Wa.	12163500	6.44	1949-50
Jim Creek near Arlington, Wa.	12164000	46.2	1938-57
South Fork Stillaguamish River near Arlington, Wa.	12164500	254	1929-37
Squire Creek near Darrington, Wa.	12165000	20.0	1950-69
Skykomish River at Sultan, Wa.	12137000	618	1911
North Fork Stillaguamish River near Darrington, Wa.	12165500	82.2	1951-57
Boulder Creek near Oso, Wa.	12166000	27.0	1950
Deer Creek near Oso, Wa.	12166500	65.9	1917-30;1950
Armstrong Creek near Arlington, Wa.	12167500	7.33	1951-58
Stillaguamish River at Silvana, Wa.	12167700	557	1975
Cavanaugh Lake (Lake Creek) near Oso, Wa. (S)	12168000	6.70	1950-51
Pilchuck Creek near Bryant, Wa.	12168500	52.0	1929-31; 1950-51; 1952-75; 1980-98
Portage Creek near Arlington, Wa.	12169000	8.80	1950
Fish Creek near Arlington, Wa.	12169500	7.52	1950-54
Church Creek near Stanwood, Wa.	12170000	6.40	1950
SKAGIT RIVER BASIN			
Skagit River near Hope, B.C.	12170500	357	1915-22;1935-55
Lightening Creek near Newhalem, Wa.	12171000	129	1944-48
Skagit River above Devils Creek, near Newhalem, Wa.	12171500	655	1940-45
Big Beaver Creek near Newhalem, Wa.	12172000	63.2	1940-48;1963-69
Skagit River above Ruby Creek, near Newhalem, Wa.	12172500	780	1929-40
Granite Creek near Newhalem, Wa.	12173000	71.0	1947-48
Ruby Creek below Panther Creek, near Newhalem, Wa.	12173500	206	1948-56;1963-69
Ruby Creek near Newhalem, Wa.	12174000	210	1919-20;1928-49
Skagit River below Ruby Creek near, Newhalem, Wa.	12174500	999	1919-30
Thunder Creek below McAllister Creek, near Newhalem, Wa.	12175400	91.7	1958-62
Thunder Creek near Marblemount, Wa.	12176000	114	1919-30
Skagit River at Reflector Bar, near Newhalem, Wa.	12177000	1,125	1909-22
Stetattle Creek near Newhalem, Wa.	12177500	22.0	1914-15;1933-83
Goodell Creek near Newhalem, Wa.	12178500	38.7	1943-44
Skagit River above Alma Creek, near Marblemount, Wa.	12179000	1,274	1951-95
Alma Creek near Marblemount, Wa.	12179500	8.37	1943

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
SKAGIT RIVER BASIN--Continued			
Skagit River above Bacon Creek near Marblemount, Wa.	12179800	1,289	1977-83
Bacon Creek near Marblemount, Wa.	12180000	50.9	1943-50
Diobsud Creek near Marblemount, Wa.	12180500	25.4	1943-44
Marble Creek near Marblemount, Wa.	12181500	15.9	1943-44
Cascade River near Marblemount, Wa.	12182000	140	1909-13
Cascade River at Marblemount, Wa.	12182500	172	1929-79
Clark Creek at Marblemount, Wa.	12183000	1.42	1944-46
Jordan Creek at Marblemount, Wa.	12183500	12.0	1943-48
Rocky Creek near Marblemount, Wa.	12184000	10.0	1943-44
Upper Illabot Creek near Rockport, Wa.	12184200	27.0	1982-83
Illabot Creek near Rockport, Wa.	12184500	42.4	1943-45;1982-85
North Fork Sauk River near Barlow Pass, Wa.	12185000	76.4	1918-20
Elliot Creek at Goat Lake Outlet, near Monte Cristo, Wa.	12185300	3.03	1983-93
South Fork Sauk River near Barlow Pass, Wa.	12185500	33.1	1918-21;1929-31
Whitechuck River near Darrington, Wa. (S 1910-11)	12186500	77.9	1910-11;1919-22
Sauk River above Clear Creek, near Darrington, Wa.	12187000	259	1910-11;1913
Sauk River at Darrington, Wa.	12187500	293	1914-26;1928-32
Suiattle River below Lime Creek, near Darrington, Wa.	12188000	213	1921-22
Suiattle River above Big Creek, near Darrington, Wa.	12188400	307	1971-80
Big Creek near Mansford, Wa.	12188500	21.0	1943-47
Suiattle River near Mansford, Wa.	12189000	335	1938-50
Jackman Creek near Concrete, Wa.	12190000	23.9	1943-47
Baker Lake near Concrete, Wa. (S)	12190500	119	1910-15
Swift Creek near Concrete, Wa.	12190710	36.4	1982-90
Park Creek at Upper Bridge, near Concrete, Wa.	12190718	10.5	1982-90
Sandy Creek near Concrete, Wa.	12191000	10.8	1953-54
Baker River below Anderson Creek, near Concrete, Wa.	12191500	211	1911-25;1928-32; 1955-59
Sulphur Creek near Concrete, Wa.	12191800	8.36	1963-74;1981-82
Bear Creek near Concrete, Wa.	12192000	10.0	1953-55
North Fork Bear Creek near Concrete, Wa.	12192500	20.2	1953-55
Bear Creek below Tributaries, near Concrete, Wa.	12192600	14.4	1982-86
Thunder Creek near Concrete, Wa.	12192700	22.4	1983-94
Finney Creek near Concrete, Wa.	12194500	51.6	1943-48
Grandy Creek near Concrete, Wa.	12195000	18.9	1943-45
O'Toole Creek near Hamilton, Wa.	12195500	5.69	1943-45
Alder Creek near Hamilton, Wa.	12196000	10.7	1943-71
Skagit River near Hamilton, Wa.	12196150	2,870	1975-77
Day Creek below Day Lake, near Lyman, Wa.	12196200	6.56	1963-71
Day Creek near Hamilton, Wa.	12196400	32.3	1962-69
Day Creek near Lyman, Wa.	12196500	34.2	1943-61
Jones Creek near Lyman, Wa.	12197000	7.80	1943-44
Childs Creek near Lyman, Wa.	12197020	2.40	1974-76
Tank Creek near Lyman, Wa.	12197040	2.50	1974-80
Minkler Creek near Lyman, Wa.	12197110	5.00	1974-80
Gilligan Creek near Lyman, Wa.	12197500	6.31	1943-44
Black Creek near Minkler, Wa.	12197680	0.50	1975-80
Black Creek near Lyman, Wa.	12197690	0.50	1974-75
Wiseman Creek near Lyman, Wa.	12197700	3.00	1974-83
Cool (Coal) Creek near Sedro Woolley, Wa.	12198000	1.88	1948-50
Hansen Creek near Sedro Woolley, Wa.	12198500	9.66	1943-45
Nookachamps Creek near Mount Vernon, Wa.	12199500	22.2	1943-44
East Fork Nookachamps Creek near Big Lake, Wa.	12199800	3.56	1962-71
East Fork Nookachamps Creek near Clear Lake, Wa.	12200000	20.5	1943-50;1962-63
PUGET SOUND LOWLANDS			
Unnamed Tributary to Jasper Bay, on Lopez Island, Wa.	12200728	0.61	1997-98
Unnamed Tributary to Davis Bay, on Lopez Island, Wa.	12200730	1.84	1997-98
Unnamed Tributary to Squaw Bay, on Shaw Island, Wa.	12200737	0.30	1997-98
Unnamed Tributary to Trout Lake, on San Juan Island, Wa.	12200750	0.50	1997-98
Unnamed Tributary to Massaxe Bay, on Orcas Island, Wa.	12200762	0.56	1997-98

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
NORTHEASTERN PUGET SOUND RIVER BASINS			
Friday Creek near Burlington, Wa.	12201000	37.1	1943-49
Anderson Creek near Bellingham, Wa.	12201950	4.13	1968-70;1972
Austin Creek near Bellingham, Wa.	12202000	7.73	1948;1954;1968-70
Smith Creek near Bellingham, Wa.	12202050	5.12	1968-69
Olsen Creek near Bellingham, Wa.	12202300	3.78	1968-69
Whatcom Creek near Bellingham, Wa. (S 1910-14)	12203000	56.1	1911-12;1939-46; 1974-76
Whatcom Creek below Hatchery, near Bellingham, Wa.	12203500	56.1	1946-57;1968-69
Squalicum Creek at Bellingham, Wa.	12204000	12.0	1948-49;1954-55
NOOKSACK RIVER BASIN			
Nooksack River at Excelsior, Wa.	12204500	95.7	1920-21
Nooksack (North Fork) River near Glacier, Wa. (S 1910)	12205500	193	1911;1934-38
Kendall Creek at Kendall, Wa.	12206000	24.0	1948-50
Kendall Creek at mouth, at Kendall, Wa.	12206500	29.2	1954-55
Coal Creek near Kendall, Wa.	12207000	4.57	1948-49;1954-55
North Fork Nooksack River near Deming, Wa.	12207200	282	1964-75
Middle Fork Nooksack River at Ranger Station, near Deming, Wa. (S)	12207500	--	1910
Skookum Creek near Wickersham, Wa.	12209500	23.1	1948-69
South Fork Nooksack River at Saxon Bridge, Wa.	12210000	129	1920-21;1933-34
Anderson Creek near Goshen, Wa.	12211000	12.9	1948;1954-55
Nooksack River near Lynden, Wa.	12211500	648	1945-67
Fishtrap Creek at Lynden, Wa.	12212000	22.3	1948-71
Bertrand Creek near Lynden, Wa.	12212500	40.3	1948;1954-55
Tenmile Creek near Laurel, Wa.	12212900	23.6	1968-72
Tenmile Creek near Ferndale, Wa.	12213000	22.7	1948;1954-55
NORTHEASTERN PUGET SOUND RIVER BASINS (Continued)			
California Creek near Custer, Wa.	12213500	6.85	1954-55
Dakota Creek near Blaine, Wa.	12214000	18.4	1948-55
Sumas River near Sumas, Wa.	12214500	33.0	1948-51;1954-55
Johnson Creek at Sumas, Wa.	12215000	23.0	1954-55
Sumas River near Huntington, B.C. (S 1935-52)	12215100	57.6	1960-78
Saar Creek near Sumas, Wa.	12215500	9.76	1948;1954-55
Chilliwack River (at Lake Outlet) near Vedder Crossing, B.C.	12215700	131	1961-78
Slesse Creek near Vedder Crossing, B.C.	12215900	62.7	1961-78
UPPER COLUMBIA RIVER BASIN			
Calispell Creek near Dalkena, Wa.	12396000	68.3	1950-73
Winchester Creek near Cusick, Wa.	12396100	16.8	1957
Smalle Creek near Cusick, Wa.	12396200	25.1	1957
Trimble Creek near Cusick, Wa.	12396300	3.50	1957
Sullivan Creek near Metaline Falls, Wa.	12397500	122	1912-25
Pend Oreille River below Z Canyon, near Metaline Falls, Wa. (S 1908-10)	12398500	25,200	1909-10;1913-64
Salmo River near Salmo, B.C.	12398900	476	1961-78
Salmo (Salmon) River near Waneta, B.C.	12399000	500	1936-46
Deep Creek near Northport, Wa.	12399600	191	1972-75
Big Sheep Creek (HD Sheep Cr.) near Rossland, B.C.	12399900	134	1961-78
Sheep Creek near Velvet, Wa.	12400000	171	1929-32
Sheep Creek near Northport, Wa.	12400500	225	1929-42
KETTLE RIVER BASIN			
Myers Creek near Myncaster, B.C.	12401000	85.7	1926-50
Curlew Lake near Malo, Wa. (S)	12402000	65.9	1953-54
Curlew Creek near Malo, Wa.	12402500	66.8	1951-54
Curlew Creek near Curlew, Wa.	12403000	89.8	1917-21
Kettle River at Curlew, Wa. (S)	12403500	--	1911-12
Kettle River at Cascade, B.C.	12404000	3,550	1916-34
Kettle River at Boyds, Wa.	12405000	4,070	1914-16

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
UPPER COLUMBIA RIVER BASIN (Continued)			
Columbia River at Kettle Falls, Wa.	12405500	64,500	1913-41
COLVILLE RIVER BASIN			
Deer Lake near Loon Lake, Wa. (S)	12406000	18.2	1953-78
Loon Lake near Loon Lake, Wa. (E)	12406500	14.1	1950-89
Sheep Creek at Loon Lake, Wa.	12407000	37.9	1950-59
Sheep Creek at Springdale, Wa.	12407500	48.2	1953-72
Deer Creek near Valley, Wa.	12407520	36.0	1959-72
Jumpoff Joe Lake near Valley, Wa. (S)	12407530	2.35	1961-75
Waitts Lake near Valley, Wa. (S)	12407550	14.2	1961-75
Chewelah Creek at Chewelah, Wa.	12407700	94.1	1957-74
Colville River at Blue Creek, Wa.	12408000	428	1923-24;1960-66;1979
Lake Thomas near Tiger, Wa. (S)	12408210	12.7	1961-66
Little Pend Oreille River near Colville, Wa.	12408300	132	1958-75
Haller Creek near Arden, Wa.	12408420	37.0	1959-70
White Mud Lake near Colville, Wa. (S)	12408440	15.3	1961-66
Mill Creek below Forks, near Colville, Wa.	12408450	67.9	1959
Mill Creek near Colville, Wa.	12408500	83.0	1939-72;1977-86
UPPER COLUMBIA RIVER BASIN (Franklin D. Roosevelt Lake)			
Mill Creek at Mouth near Colville, Wa.	12408700	146	1959-65
Hall Creek at (near) Inchelium, Wa.	12409500	161	1913-29;1972-73
Stranger Creek at Meteor, Wa.	12410000	50.9	1916-29
Stranger Creek at Inchelium, Wa.	12410500	80.2	1914-17
Harvey Creek near Cedonia, Wa.	12410700	29.9	1958
SPOKANE RIVER BASIN			
Newman Lake near Newman Lake, Wa. (S)	12419800	28.6	1958-80
Liberty Lake at Liberty, Wa. (E)	12420000	13.3	1950-89
Spokane River at Trent, Wa.	12421000	4,200	1912-13
Spokane River below Trent Bridge, near Spokane, Wa.	12421500	4,200	1948-54
Spokane River below Green Street, at Spokane, Wa.	12422000	4,220	1949-52
Hangman (Latah) Creek at Tekoa, Wa.	12423000	130	1904-05
North Fork Hangman (NF Latah) Creek at Tekoa, Wa.	12423500	60.0	1904-05
Spokane River above 7 Mile Bridge, near Spokane, Wa.	12424500	5,020	1949-52
Medical Lake at Medical Lake, Wa. (E)	12425000	1.35	1953-58
Deep Creek near Spokane, Wa.	12425500	76.6	1949
Spokane River below Nine-Mile Dam, near Spokane, Wa.	12426000	5,200	1948-50
Little Spokane River at Scotia, Wa.	12426500	74.2	1948
Little Spokane River at Elk, Wa.	12427000	115	1948-71
Diamond Lake (W. Branch Little Spokane) near Newport, Wa. (S)	12427500	17.4	1953-78
Sacheen Lake near Newport, Wa. (S)	12428000	33.5	1954-75
Eloika Lake near Elk, Wa. (S)	12428500	101	1953-75
Little Spokane River at Milan, Wa.	12429000	274	1948
Little Spokane River at Chattaroy, Wa.	12429500	301	1948
Wethey Creek near Deer Park, Wa.	12430000	12.0	1948
Deep Creek at Colbert, Wa.	12430500	32.8	1948
Little Spokane River at Norman's Ranch near Spokane, Wa. (S)	12431900	700	1911-12
Little Spokane River near Spokane, Wa.	12432000	701	1913
Chamokane Creek near Springdale, Wa.	12433100	99.9	1973-78
Spokane River below Little Falls, near Long Lake, Wa.	12433500	6,220	1913-40
Blue Creek below Midnight Mine drainage, near Wellpinit, Wa.	12433558	7.3	1980;1984-92
Blue Creek near mouth, near Wellpinit, Wa.	12433561	19.1	1984-92
UPPER COLUMBIA RIVER BASIN (Franklin D. Roosevelt Lake) (Continued)			
Sanpoil River above Thirteen Mile Creek, near Republic, Wa.	12433890	263	1972-74
Lost Creek near Aeneas, Wa.	12434000	84.0	1921
West Fork Sanpoil River near Republic, Wa.	12434110	308	1972-74
Sanpoil River near Keller, Wa.	12434500	880	1952-55;1972-74
Sanpoil River at Keller, Wa.	12435000	928	1911-18
Nespelem Canal at Nespelem, Wa.	12437000	--	1921-29
Nespelem River at (near) Nespelem, Wa.	12437500	122	1911-29
Nespelem River below Millpond at Nespelem, Wa.	12437505	123	1972-74
Rufus Woods Lake at Bridgeport, Wa.	12437900	75,400	1955-62

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
OKANOGAN RIVER BASIN			
Okanogan River at Okanogan Falls, B.C.	12438500	2,650	1915-65
Okanogan River at Bridge Street, at Oroville, Wa. (S,E)	12439150	3,133	1965-91
Tonasket River at Oroville, Wa.	12439300	60.1	1967-91
Okanogan River at Zosel Millpond, at Oroville, Wa. (S,E)	12439400	3,195	1965-86
Sinlahekin Creek above Blue Lake, near Loomis, Wa.	12440000	41.7	1924-30
Sinlahekin Creek at Blue Lake, near Loomis, Wa.	12440500	42.9	1920
Sinlehekin Creek at Twin Bridge, near Loomis, Wa.	12441000	75.5	1921-23
Sinlehekin Creek near Loomis, Wa.	12441500	86.0	1903-05
Toats Coulee Creek near Loomis, Wa.	12442000	130	1920-26;1957-70
Whitestone Irrigation Canal near Loomis, Wa.	12442200	--	1957-70
Sinlehekin Creek above Chopaka Creek, near Loomis, Wa.	12442300	256	1957-66
Palmer Lake near Nighthawk, Wa. (E)	12442400	293	1956-68
Oroville-Tonasket Irrigation District Canal near Oroville, Wa.	12443000	--	1916-28
Similkameen River near Oroville, Wa.	12443500	3,580	1911-28
Spectacle Lake near Loomis, Wa. (S)	12443800	17.2	1956-71
Whitestone Lake near Tonasket, Wa. (S)	12444000	52.3	1958-71
Whitestone Creek near Tonasket, Wa.	12444100	55.4	1959-72
Bonaparte Creek near Wauconda, Wa.	12444490	96.6	1968-73
Bonaparte Creek near Anglin, Wa.	12444550	110	1921
Aeneas Lake near Tonasket, Wa. (S)	12444700	32.4	1964-83
Johnson Creek near Riverside, Wa.	12445500	68.2	1903-08
Omak Creek near Omak, Wa.	12445900	119	1972-74;1976-79
No Name Creek near source, near Omak, Wa.	12445939	--	1976-78;1981-88
No Name Creek Diversion near Omak, Wa.	12445940	--	1976-88
No Name Creek below Diversion near Omak, Wa.	12445941	--	1976-88
No Name Creek Diversion Return near Omak, Wa.	12445942	--	1976-79
No Name Creek at Granite Lip, near Omak, Wa.	12445944	--	1976-78;1981-88
Okanogan River at Okanogan, Wa.	12446000	7,900	1911-25
Salmon Creek near Concully (Okanogan), Wa.	12446500	121	1910-22
Salmon Creek near Okanogan (Malott), Wa. (S 1911-12)	12447000	150	1903-10
Okanogan River near Malott, Wa.	12447300	8,220	1958-67
METHOW RIVER BASIN			
Chewack Creek below Boulder Creek near Winthrop, Wa.	12447500	465	1920-21
Twisp River at Twisp, Wa. (S)	12449000	250	1911-13
Beaver Creek below South Fork near Twisp, Wa.	12449600	62.0	1960-78
Beaver Creek near Twisp, Wa.	12449700	68.1	1956-61
Beaver Creek near mouth near Twisp, Wa.	12449710	110	2001
Alta Lake near Pateros, Wa. (S)	12450000	5.01	1954-75
Methow River at Pateros, Wa.	12450500	1,810	1903-20
LAKE CHELAN AND CHELAN RIVER BASIN			
Railroad Creek at Lucerne, Wa.	12451500	64.8	1911-13;1927-57
Safety Harbor Creek near Manson, Wa.	12451600	7.85	1961-69
Grade Creek near Manson, Wa.	12451620	8.45	1961-69
Gold Creek near Manson, Wa.	12451650	6.30	1961-69
Antilon Creek Feeder System Canal near Manson, Wa.	12451700	--	1958-69
ENTIAT RIVER BASIN			
Entiat River at Entiat, Wa.	12453000	419	1911-25;1951-58
MID-COLUMBIA RIVER BASIN			
Pine Canyon Creek near Waterville, Wa.	12453500	11.1	1945-47
WENATCHEE RIVER BASIN			
White (HD Wenatchee) River near Plain, Wa.	12454000	150	1911-14;1954-8
Wenatchee Lake near Plain, Wa. (E)	12454500	273	1932-71
Wenatchee River below Wenatchee Lake, Wa.	12455000	273	1932-58
Nason Creek near Nason, Wa.	12455500	88.7	1911
Phelps Creek near Plain, Wa.	12456000	16.4	1927-31
Chiwaukum Creek near Chiwaukum, Wa.	12457500	49.6	1911
Icicle Creek near Leavenworth, Wa.	12458500	211	1911-15
Peshastin Creek at Blewett, Wa.	12459500	40.0	1911-12
Peshastin Creek below Ingall Creek near Leavenworth, Wa.	12460000	101	1911-12
Wenatchee Valley Canal at Dryden, Wa.	12460500	--	1911-17

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
WENATCHEE RIVER BASIN--Continued			
Wenatchee River at Dryden (Cashmere), Wa.	12461000	1,155	1904-17
Mission Creek above Sand Creek near Cashmere, Wa.	12461400	39.8	1958-71
Sand Creek near Cashmere, Wa.	12461500	18.6	1954-56
Mission Creek at (near) Cashmere, Wa.	12462000	81.2	1954-59
Douglas Creek near Alstown, Wa.	12463000	99.9	1949-55;1963-68
Douglas Creek near Palisades, Wa.	12463500	206	1951-52
Douglas Creek at Palisades, Wa.	12464000	844	1954-55
MID-COLUMBIA RIVER BASIN--Continued			
Columbia River at Trinidad (Wenatchee) (Vernita), Wa. (S 1910)	12464500	90,500	1911,1913-63
Sand Hollow at CRS SW, near Vantage, Wa.	12464606	47	1993-95
West Medical Lake near Medical Lake, Wa. (S)	12464669	1.84	1964-75
Clear Lake near Medical Lake, Wa. (S)	12464670	9.51	1958-80
Crab Creek at Marcellus Road, near Ritzville, Wa.	12464770	384	1994-95
Crab Creek above Sylvan Lake near Lamona, Wa.	12464780	542	1972-74
Coal Creek at Mohler, Wa.	12464800	64.7	1963-74
Sylvan Lake near Lamona, Wa.	12464809	675	1973-74
Crab Creek below Sylvan Lake near Odessa, Wa.	12464810	686	1972-74
Wilson Creek below Corbett Draw near Almira, Wa.	12465400	327	1969-71,1972-79;1991-94
Wilson Creek at Wilson Creek, Wa.	12465500	427	1951-73
Crab Creek at Wilson Creek, Wa. (S)	12466000	1,765	1904
Crab Creek (Upper Crab) Creek at Adrain, Wa.	12466500	1,950	1910-12
Park Creek (Continuation of Grand Coulee) nr Coulee City, Wa.	12467500	400	1942-45
Park Lake near Coulee City, Wa. (E)	12468000	317	1938-68
Park Creek below Park Lake near Coulee City, Wa.	12468500	317	1945-68
Blue Lake near Coulee City, Wa. (E)	12469000	334	1938-68
Rocky Ford Creek near Ephrata, Wa.	12470500	458	1909-12;1942-91
Frenchman Hills Wasteway on SE C Rd,near Moses Lake, Wa.	12471090	202	1993-94
Farrier Coulee near Schrag, Wa.	12471270	42.0	1963-74
Lind Coulee Wasteway at State Route 17, near Warden, Wa.	12471400	703	1993-95;1990-2001
Crab Creek (Lower Crab Creek) near Warden, Wa.	12471500	4,470	1909-12;1943-66
DW 272A1 Drain near Royal Camp, Wa.	12472300	0.88	1977-81
DW 272A Drain near Royal Camp, Wa.	12472350	3.36	1977-81
Crab Creek Lateral abv Royal Lake, nr Othello, Wa.	12472380	--	1994-96
Crab Creek near Smyrna, Wa.	12472500	4,500	1942-60
Columbia River near Julia, Wa. (S)	12473000	--	1905
Columbia River at Hanford, Wa. (S)	12473500	--	1910
PE 16.4 Wasteway near Mouth, near Hanford, Wa.	12473508	118	1987;1994
Columbia River at Ringold, Wa. (E)	12473510	--	1980-81
EL 68-D Wasteway near Othello, Wa.	12473740	121	1979;1994
YAKIMA RIVER BASIN			
Keechelus Lake near Martin, Wa.	12474000	55.8	1906-88
Yakima River near Martin, Wa.	12474500	54.7	1903-78
Cabin Creek near Easton, Wa.	12475000	31.7	1909-11
Kachess Lake near Easton, Wa.	12475500	63.6	1905-88
Kachess River near Easton, Wa.	12476000	63.6	1904-78
Yakima River at Easton, Wa.	12477000	188	1904-05;1910-15; 1941-50; 1950-55
Big Creek near Cle Elum, Wa. (S)	12477500	--	1909
North Fork Cle Elum River at Galena, Wa. (S 1911)	12478000	--	1907;1911
Cle Elum River near Roslyn, Wa.	12479000	203	1904-78
Yakima River at Cle Elum, Wa.	12479500	495	1906-78;1987-90
Teanaway River below Forks near Cle Elum, Wa.	12480000	172	1911-12;1968-73
Teanaway River near Cle Elum, Wa.	12480500	200	1909-14;1947-52
Swauk Creek near Cle Elum, Wa.	12481000	87.8	1909-14
Cascade Canal near Ellensburg, Wa. (S 1905)	12481500	--	1905;1909-11
Taneum Creek near Thorp, Wa.	12482000	74.3	1909-12
West Kittitas Canal near Thorp, Wa.	12482500	--	1904-05;1909-11
Ellensburg Water Co Canal near Ellensburg, Wa.	12483000	--	1904-05;1909-11
Manastash Creek near Ellensburg, Wa.	12483500	74.5	1909-14
Wilson Creek near Ellensburg, Wa.	12483600	13.6	1956-78

WATER RESOURCES DATA FOR WASHINGTON 2002
DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
YAKIMA RIVER BASIN--Continued			
Naneum Creek near Ellensburg, Wa.	12483800	69.5	1957-78
Cooke Creek near Ellensburg, Wa.	12484300	18.6	1957-60
Wilson Creek at Thrall, Wa. (S)	12484490	382	1911
Roza Canal near Moxee City, Wa.	12485000	--	1942-78
Selah-Moxee Canal near Selah, Wa.	12485500	--	1904-05;1909-12
Wenas Creek near Selah, Wa. (S 1910-12)	12486000	192	1909-12
Taylor Canal near Selah, Wa. (S 1905)	12486500	--	1905;1909-12
Yakima River at Selah Gap near North Yakima, Wa. (S 1905)	12487000	2,130	1897-98;1904-05; 1911-12
Bumping Lake near Nile, Wa.	12487500	117	1906;1909-88
Bumping River near Nile, Wa.	12488000	70.7	1906;1909-78
Naches River at Anderson Ranch near Nile, Wa.	12489000	392	1909-14
Naches River at Oak Flat near Nile, Wa.	12489500	641	1904-18
North Fork Tieton River below Clear Creek near Naches, Wa	12490500	61.5	1914-15
Tieton Canal near Naches, Wa.	12492000	--	1910-60
Tieton River at Headworks T Canal, near Naches, Wa.	12492500	239	1906-78
Tieton River above and below Oak Creek, near Naches, Wa.	12493000	296	1902-13
Naches River below Tieton River, near Naches, Wa.	12494000	941	1905;1908-79
Naches Canal Co (Gleed) Canal near Naches, Wa. (S 1905)	12494500	--	1904-05;1909-13
Yakima Valley Canal near Naches, Wa. (S 1905)	12495000	--	1904-05;1909-11
Naches-Cowiche Canal near North Yakima, Wa. (S 1905)	12495500	--	1904-05;1909-11
North Yakima Power Canal near North Yakima, Wa. (S 1905)	12496000	--	1904-05;1910
Schanno Canal near North Yakima, Wa. (S 1905)	12496500	--	1904-05;1909-11
North Yakima Power Waste at North Yakima, Wa.	12497000	--	1909-12
North Yakima Milling Co Waste at North Yakima, Wa.	12497500	--	1909-12
Old Union Canal near North Yakima, Wa. (S 1905)	12498000	--	1904-05;1909-11
Naches Avenue Union Canal at North Yakima, Wa.	12498500	--	1910
Naches River near North Yakima, Wa. (S 1893-95)	12499000	1,106	1893-1915;1987-90
Moxee Co Canals near North Yakima, Wa. (S 1905)	12499500	--	1904-05;1909-11
Fowler Canal near North Yakima, Wa. (S 1905;1909-11)	12500000	--	1904-04;1909-11
Moxee Drain at Birchfield Road near Union Gap, Wa.	12500420	--	1999-2000
North Fork Ahtanum Creek near Tampico, Wa.	12500500	68.9	1907-78
South Fork Ahtanum Creek at Conrad Ranch, near Tampico, Wa.	12501000	24.8	1915-78
South Fork Ahtanum Creek near Tampico, Wa. (S 1907)	12501500	28.5	1908-15
Ahtanum Creek at Narrows near Tampico, Wa.	12502000	119	1908-13;1960-68
Yakima River at Union Gap near Yakima, Wa.	12503000	3,652	1898-1914;1963-66
New Reservation Canal near Parker, Wa.	12503500	--	1904-78
Old Reservation Canal near Parker, Wa. (S 1905)	12504000	--	1904-78
Sunnyside Canal near Parker, Wa.	12504500	--	1904-78
Yakima River near Parker, Wa.	12505000	3,660	1908-78
Reservation Drain at Alfalfa, Wa.	12505500	--	1913-23
Toppenish Creek near Fort Simcoe, Wa.	12506000	122	1909-24
Simcoe Creek below Spring Creek, near Fort Simcoe, Wa.	12506500	81.5	1909-23
Toppenish Creek near White Swan, Wa. (S 1912)	12507000	409	1909-12
Toppenish Creek at Alfalfa, Wa.	12507500	625	1909-12
Satus Creek near Toppenish, Wa.	12508000	271	1909-13
Satus Creek below Dry Creek, near Toppenish, Wa.	12508500	234	1913-24
Drain 61.0 above Drain 61.4, near Sunnyside, Wa.	12508755	3.27	1979-82
Drain 60.7 near Sunnyside, Wa.	12508769	0.92	1979-82
Drain 59.6 below 60.2, near Sunnyside, Wa.	12508775	0.68	1979-82
Drain 59.4 near Sunnyside, Wa.	12508779	--	1979-82
Sulphur Creek Wasteway near Sunnyside, Wa.	12508850	155	1976-77;1987-90
Yakima River near Mabton, Wa.	12509000	5,359	1911-14
Yakima River at Euclid Bridge near Grandview, Wa.	12509050	5,400	1987-90
Yakima River near Prosser, Wa.	12509500	5,453	1904-06;1913-33
Kiona Canal near Kiona, Wa. (S 1908-09)	12501000	--	1904-05;1908-11
Cold Creek at Yakima/Benton County line, near Priest Rapids Dam, Wa.	12510618	--	1990-94
Cold Creek at Highway 24, near Priest Rapids Dam, Wa.	12510625	39.4	1991-95
Dry Creek at Highway 241, near Priest Rapids Dam, Wa.	12510650	57.9	1991-95
Dry Creek near Rattlesnake Spring, near Priest Rapids Dam, Wa.	12510655	--	1991-95
Kennewick Canal near Kiona, Wa. (S 1905)	12511000	--	1904-05;1910-11
Lower Yakima Canal near Kiona, Wa. (S 1905)	12511500	--	1905;1910-11

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
YAKIMA RIVER BASIN--Continued			
Yakima River near Richland, Wa. (S 1907-08)	12512000	6,120	1906-11
Providence Coulee at Cunningham, Wa.	12512500	27.8	1953-77
Providence Coulee near Cunningham, Wa.	12512550	52.1	1998
Esquatzel Coulee at Eltopia, Wa.	12513500	551	1953-79
Esquatzel Diversion Channel below Headworks, near Pasco, Wa.	12513650	798	1994
Columbia River at Pasco, Wa. (S 1904-10;1979-80)	12514000	104,000	1904-10;1964-66; 1980-88
Zintel Canyon Wasteway above Vancouver Street, at Kennewick, Wa.	12514095	ND	1992-93
GRANDE RONDE RIVER BASIN			
Grande Ronde River at Zindel, Wa.	13334000	3,950	1904-12
SNAKE RIVER BASIN			
Asotin Creek (at Shelmans Ranch) near Asotin, Wa.	13334500	156	1904-07;1910-12;1928-60
Asotin Creek below Kearner Gulch, near Asotin, Wa.	13334700	170	1960-82;1990-96
Asotin Creek above Asotin, Wa. (S)	13335000	--	1904-06
Snake River near Clarkston (at Riparia), Wa. (S 1935-48)	13343500	1,032	1900-72
Snake River below Lower Granite Dam, Wa.	13343600	103,000	1979-85
Meadow Creek near Central Ferry, Wa.	13343800	66.2	1963-74
Tucannon River near Pomeroy, Wa.	13344000	160	1913-15;1924-30
PALOUSE RIVER BASIN			
Palouse River at Palouse, Wa.	13345300	360	1973-80
Palouse River at Elberton, Wa. (S 1905)	13345500	406	1904;1905
Palouse River near Colfax, Wa.	13346000	491	1955-64
Palouse River at Colfax, Wa.	13346100	497	1955-73;1976-79
South Fork Palouse River above Paradise Creek, near Pullman, Wa.	13346500	84.4	1934-40
Paradise Creek near Pullman, Wa.	13347000	34.5	1934-38
Dry Fork of South Fork Palouse River, at Pullman, Wa.	13347500	7.28	1935-38
Missouri Flat Creek at Pullman, Wa.	13348500	27.1	1934-40;1960-79
Fourmile Creek at Shawnee, Wa.	13349000	71.6	1934-40
South Fork Palouse River at Colfax, Wa.	13349200	277	1994-94
Palouse River below South Fork, at Colfax, Wa.	13349210	796	1964-72;1976-95
Rebel Flat Creek at Winona, Wa.	13349320	73.2	1993-95
Philleo Ditch near Cheney, Wa.	13349325	14.7	1994-95
Pine Creek at Pine City, Wa.	13349400	302	1961-75
Pine Creek at Pine City Road, at Pine City, Wa.	13349410	306	1994
Rock Creek near Ewan (St. John), Wa.	13349500	523	1904-05;1914-17
Palouse River near Winona, Wa.	13350000	2,056	1915-17
Union Flat Creek near Colfax, Wa.	13350500	189	1953-71
Silver Lake at Medical Lake, Wa. (E)	13351300	19	1958-75
Williams Lake near Amber, Wa. (S)	13351500	23.4	1955-75
Sprague (Colville) Lake near Sprague, Wa. (E)	13351800	289	1958-80
Cow Creek near Keystone, Wa. (S)	13352000	117	1904-05
Cow Creek at Hooper, Wa.	13352500	679	1951-54;1962-70
Snake River below Ice Harbor Dam, Wa.	13353000	108,500	1908-17;1962-90;1996-2000
WALLA WALLA RIVER BASIN			
Blue Creek near Walla Walla, Wa.	14013500	17	1940-71
Yellowhawk Creek at Walla Walla, Wa.	14014000	--	1941-52
Garrison Creek at Walla Walla, Wa.	14014500	--	1941-52
Walla Walla River at Whitman, Wa. (S)	14015500	--	1897-1899
Dry Creek near Walla Walla, Wa.	14016000	48.4	1949-67
East Fork Touchet River near Dayton, Wa.	14016500	102	1941-51;1956-64; 1966-68
East Fork Touchet River below Hatley Creek, near Dayton, Wa.	14016610	106	1964-66
Touchet River at Bolles, Wa.	14017000	361	1924-29;1951-89
Touchet River near Touchet, Wa.	14017500	733	1941-55
Attalia Irrigation District Canal near Wallula, Wa.	14018000	--	1924-25
Walla Walla River near Wallula, Wa.	14019000	1,760	1924-25

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
LOWER COLUMBIA RIVER BASIN			
Alder Creek at Alderdale, Wa.	14034350	197	1962-68;1980-82
Rock Creek near Goldendale, Wa.	14036500	120	1912-13
Rock Creek near Roosevelt, Wa.	14036600	213	1962-68
Klickitat River Basin			
Klickitat River above Pearl Creek, near Glenwood, Wa.	14106000	131	1910;1916-17
Pearl Creek near Glenwood, Wa.	14106500	4	1916-17
Swamp Creek near Glenwood, Wa.	14107500	11.2	1916-17
West Fork Klickitat River near Glenwood, Wa.	14108000	87	1910-11;1916-17; 1945-49; 1953-55
Cunningham Creek near Glenwood, Wa.	14108500	16	1916-17
Big Muddy Creek near Glenwood, Wa.	14109000	22.5	1916-18;1945-49
Cougar Creek near Glenwood, Wa.	14109500	3.8	1916-17
Klickitat River (above, below Big Muddy R) near Glenwood, Wa.	14110000	360	1905-09;1910-71; (S 1905-08)
Indian Ford Springs No 1 near Glenwood, Wa.	14110500	--	1947-48
Klickitat River at Hanson Cable near Klickitat, Wa. (S)	14111000	--	1908-09
Klickitat River below Glenwood, Wa.	14111500	747	1914-15
Buttler Creek near Goldendale, Wa.	14111700	11.6	1964-68
Little Klickitat River near Goldendale, Wa.	14112000	83.5	1911-12;1947-51; 1958-70
Spring Creek near Blockhouse, Wa.	14112300	2.75	1964-68
Mill Creek near Blockhouse, Wa.	14112400	26.90	1964-72
Little Klickitat River near Wahkiacus, Wa.	14112500	280	1945-81
WHITE SALMON RIVER BASIN			
White Salmon River below Cascades Creek, near Trout Lake, Wa.	14121300	32.4	1957-78
White Salmon River above Trout Lake Creek, near Trout Lake, Wa.	14121400	64.9	1959-69
Trout Lake Creek near Trout Lake, Wa.	14121500	69.3	1909-12;1959-69
White Salmon River near Trout Lake, Wa.	14122000	185	1918;1929-31; 1957-67
White Salmon River at Splash Dam, near Trout Lake, Wa.	14122500	240	1912-17
White Salmon River at B-Z Corner, Wa.	14122900	269	1958-65
White Salmon River at Husum, Wa.	14123000	294	1909-20;1930-41; 1957-62
Little White Salmon River near Willard, Wa.	14124000	39.2	1945-49
Little White Salmon River at Willard, Wa.	14124500	114	1904-06;1945-61
Little White Salmon River above Lapham Creek, near Willard, Wa.	14125000	117	1949-64
Little White Salmon River near Cook, Wa.	14125500	134	1957-78
LOWER COLUMBIA RIVER BASIN (Continued)			
Falls Creek near Carson, Wa.	14126500	24.3	1945-49
Wind River above Trout Creek, near Carson, Wa.	14127000	108	1945-69
Trout Creek near Stabler, Wa.	14127300	21.0	1996-99
Trout Creek near Carson, Wa.	14127500	30.3	1945-49
Panther Creek near Carson, Wa.	14128000	30.1	1945-53
Wind River near Carson, Wa.	14128500	225	1935-77;1996-97
Columbia River at Stevenson, Wa.	14128600	239,000	1974-97
Columbia River at Washougal, Wa. (S 1990)	14129400	240,000	1972-81;1990-93
West Fork Washougal River near Washougal, Wa.	14143000	30.3	1951
Washougal River near Washougal, Wa.	14143500	108	1944-81
Little Washougal River near Washougal, Wa.	14144000	23.3	1951-56
Lacamas Creek at Proebstel, Wa.	14144500	22.5	1951
Burnt Bridge Creek at 112th Avenue at Vancouver, Wa.	14211895	3.6	1999-2000
Burnt Bridge Creek at 118h Avenue at Vancouver, Wa.	14211898	18.9	1999-2000
Cold Creek at mouth at Vancouver, Wa.	14211901	2.71	1999-2000
Burnt Bridge Creek near mouth at Vancouver, Wa.	14211902	27.6	1999-2000
Salmon Creek near Battleground, Wa.	14212000	18.3	1944-75; 1988-89
Salmon Creek near Brush Prairie, Wa.	14212500	63.5	1941-42
Salmon Creek near Vancouver, Wa.	14213000	80.7	1951

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
LEWIS RIVER BASIN			
Lewis River near Trout Lake, Wa.	14213200	127	1959-72
Big Creek below Skookum Meadow, near Trout Lake, Wa.	14213500	13.2	1927-31;1955-70
Rush Creek above Meadow Creek, near Trout Lake, Wa.	14214000	5.87	1955-65
Rush Creek above Meadow Creek, near Guler, Wa.	14214200	10.1	1929-30
Meadow Creek below Lone Butte Meadow, near Trout Lake, Wa.	14214500	11.7	1927-31;1955-65
Rush Creek above Falls, near Cougar, Wa.	14215000	26	1928-31;1956-74
Curly Creek near Cougar, Wa.	14215500	11.6	1955-70
Lewis River above Muddy River, near Cougar, Wa.	14216000	227	1927-34;1955-70
Clearwater Creek near mouth, near Cougar, Wa.	14216300	33	1981-89
Muddy River above Clear Creek, near Cougar, Wa.	14216350	84.1	1981-82
Pine Creek near Cougar, Wa.	14216800	22.4	1957-70
Pine Creek at mouth, near Cougar, Wa.	14216900	26	1982
Lewis River at Peterson Ranch, near Cougar, Wa. (S 1910)	14217000	454	1909-10
Swift Creek near Cougar, Wa.	14217500	27.5	1924-34;1954-56
Lewis River near Cougar, Wa. (S 1910-12)	14218000	481	1910-12;1924-58
Canyon Creek near Amboy, Wa.	14219000	64.9	1922-34
Lewis River near Amboy, Wa.	14219500	665	1911-31
Chelatchie Creek at Amboy, Wa.	14221000	12.8	1951
Cedar Creek near Ariel, Wa.	14221500	40.8	1951-55;1961-69
East Fork Lewis River near Yacolt, Wa.	14222000	31.4	1951
KALAMA RIVER BASIN			
Kalama River near Cougar, Wa.	14222920	12.3	1969-70
Fossil Creek near Cougar, Wa.	14222930	8.21	1969-70
Dry Creek near Cougar, Wa.	14222950	3.29	1969-71
Merrill Lake near Cougar, Wa.	14222960	9.08	1969-71
Spring Creek near Cougar, Wa.	14222970	--	1969-71
Kalama River below Falls, near Cougar, Wa.	14222980	37.4	1969-71;1980-82
Kalama River near Kalama, Wa.	14223000	179	1911-13;1916-33
Kalama River below Italian Creek, near Kalama, Wa.	14223500	198	1947-75
COWLITZ RIVER BASIN			
Ohanapecosh River near Lewis, Wa.	14224000	101	1907-13
Clear Fork Cowlitz River near Packwood (Lewis), Wa.	14224500	56.5	1907-13;1930-43; 1950
Coal Creek at mouth, near Lewis, Wa. (S 1915)	14225000	10.5	1911-15
Packwood Lake near Packwood, Wa. (E)	14225400	19.2	1959-80
Lake Creek near Packwood, Wa.	14225500	19.2	1912-24;1930-43; 1950-54; 1959-80
Lake Creek at Mouth near Packwood (Lewis), Wa.	14226000	26.5	1907-15;1962-77
Skate Creek near Packwood, Wa.	14227000	33.9	1950
Hager Creek near Lewis, Wa.	14227500	3.81	1912-14
North Fork Hager Creek near Lewis, Wa.	14228000	1.45	1912-14
Hall Creek near Packwood, Wa.	14228500	10.9	1947-50
Johnson Creek below west fork, near Lewis, Wa.	14229000	33.3	1912-14
Johnson Creek below Glacier Creek, near Packwood, Wa.	14229500	42.8	1951-54
Johnson Creek near Packwood, Wa.	14230000	50	1907-14;1919-24; 1947-50
Silver Creek near Randle, Wa.	14230500	51.1	1950
Siler Creek near Randle, Wa.	14231500	10.1	1950
Yellowjacket Creek near Randle, Wa.	14232000	66.3	1950
Cispus River near Randle, Wa.	14232500	321	1911-12;1931-96
Tower Rock Spring near Randle, Wa.	14233000	--	1950-51
Cowlitz River near Randle, Wa.	14233400	1,030	1948-94
Rainy Creek near Kosmos, Wa.	14234000	17.9	1950-54
Landers Creek near Kosmos, Wa.	14234500	9.61	1950
Cowlitz River near (at) Mossyrock, Wa.	14235000	1,162	1912-17;1926-35; 1946-60
West Fork Tilton River near Morton, Wa.	14235500	16.4	1950-71
Tilton River at Morton, Wa.	14236000	70.2	1950
Cinnabar Creek near Cinebar, Wa.	14236400	4.55	1957-66
Tilton River near Cinebar, Wa.	14236500	156	1941-58
Klickitat Creek at Mossyrock, Wa.	14237000	3.29	1948-72
Winston Creek near Silver Creek, Wa.	14237500	37.8	1950-70

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

[Data listed are for discharge, except where noted with the letter: (E) elevation, (S) stage.]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
COWLITZ RIVER BASIN--Continued			
Mill Creek near Salkum, Wa.	14238500	20.9	1955-59
Cowlitz River at Toledo, Wa.	14238800	1,461	1977-78;1980-82
Salmon Creek near Toledo, Wa.	14239000	77.6	1949;1961-71
Olequa Creek at Winlock, Wa.	14239500	33.7	1949-50
Stillwater Creek near Vader, Wa.	14240000	25.9	1949-50
Coldwater Lake Canal near Spirit Lake, Wa.	14240352	36.2	1985-86
Coldwater Lake near Spirit Lake, Wa. (S)	14240350	36.2	1994-98
North Fork Toutle River above Alder Creek, near Kid Valley, Wa.	14240490	NA	1990
North Fork Toutle River at St. Helens, Wa.	14240500	124	1930-33
North Fork Toutle River below Sediment Retention Structure, near Kid Valley, Wa.	14240525	175	1990-98
Green River above Beaver Creek, near Kid Valley, Wa.	14240800	129	1981-94
Green River near Toutle, Wa.	14241000	131	1947-50
North Fork Toutle River at Kid Valley, Wa.	14241100	284	1980-94
Coldspring Creek near Cougar, Wa.	14241200	5.47	1969-71
South Fork Toutle River above Herrington Creek, near Cougar, Wa.	14241465	34.4	1981
South Fork Toutle River at Camp 12, near Toutle, Wa.	14241490	117	1981-94
Silver Lake at Silver Lake, Wa.	14242000	41.5	1949-50;1953-75;
Toutle River near Silver Lake, Wa.	14242500	474	1909-12;1920-24; 1929-80
Toutle River at Highway 99 Bridge near Castle Rock, Wa.	14242690	511	1980-82
Delameter Creek near Castle Rock, Wa.	14243500	19.6	1949-69
Ostrander Creek near Kelso, Wa.	14244000	25.3	1949
Coweman River above Mulholland Creek, near Kelso, Wa.	14244500	50.5	1951
Coweman River near Kelso, Wa.	14245000	119	1950-84
Cowlitz River at Longview, Wa. (S)	14245150	2,480	1984-90
Columbia River at Longview, Wa.	14245300	256,700	1984-90
LOWER COLUMBIA RIVER BASIN (Continued)			
Elochoman River near Cathlamet, Wa.	14247500	65.8	1941-71
Skamokawa Creek near Skamokawa, Wa.	14248000	17.4	1949-50
Jim Crow Creek near Grays Harbor, Wa.	14248200	5.48	1964-74
Grays River above South Fork Grays River, Wa.	14249000	39.9	1956-75
Grays River below South Fork Grays River, Wa.	14249500	60.3	1956-60
Grays River near Grays River, Wa.	14250000	60.6	1949-51
West Fork Grays River near Grays River, Wa.	14250500	15.2	1949-69
Hull Creek at Grays River, Wa.	14251000	11.9	1949

DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following continuous-record surface-water water-quality stations (gaging stations) in Washington have been discontinued. Period of record for daily water-quality records collected and published as daily means, or monthly means for some periods, for the period of record, expressed in water years, are shown for each station. Information and data regarding any station may be obtained from the District Office at the address given on the back side of the title page of this report.

[Type of record: do (dissolved oxygen), ph (pH), sc (specific conductance), sed (sediment), t (temperature)]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
SOUTHWEST WASHINGTON RIVER BASINS				
Bear Branch (River) near Naselle, Wa.	12009500	11.7	t	1963-66
Naselle River near Naselle, Wa.	12010000	54.8	t	1963-73
North Nemah River near South Bend, Wa.	12011000	18.0	t	1970-71
Willapa River at Lebam, Wa.	12011500	41.4	t	1952-71
North River above Joe Creek, near Raymond, Wa.	12016600	188	t,sed	1965
North River near Raymond, Wa.	12017000	210	t	1963-73
CHEHALIS RIVER BASIN				
Skookumchuck River near Bucoda, Wa.	12026400	112	t,sed	1968-71
Chehalis River near Grand Mound, Wa.	12027500	895	t	1952-74
Chehalis River near Porter, Wa.	12031000	1,294	t,sc,pH,sed	1959-72
Cloquallum River (Creek) near Elma, Wa.	12032500	64.9	t	1972-73
Middle Fork Satsop River near Satsop, Wa.	12034500	56.7	t	1972-73
Wynoochee River near Gridale, Wa.	12035400	41.3	t,sed	1966-67
Wynoochee River above Black Creek, near Montesano, Wa.	12037400	155	t	1970-86
WESTERN OLYMPIC MOUNTAIN RIVER BASINS				
Humtuplups River near Humtuplups, Wa.	12039000	130	t	1970-71
North Fork Quinault River near Amanda Park, Wa.	12039300	74.1	t	1965-79
Hoh River at U.S. Highway 101, near Forks, Wa.	12041200	253	t,sed	1971;1978-80
EASTERN OLYMPIC MOUNTAIN RIVER BASINS				
Elwha River above Lake Mills, near Port Angeles, Wa.	12044900	198	t,sed	1994-98
Elwha River at McDonald Bridge, near Port Angeles, Wa.	12045500	269	t	1976-77
Dungeness River near Sequim, Wa.	12048000	156	t,sed	2000-01
Dungeness River at Highway 101 Bridge, near Carlsberg, Wa.	12048600	178	sed	1971-74;1980; 1999-2000
Dungeness River at Dungeness, Wa.	12049000	197	t,sed	2000-01
Dosewallips River near Brinnon, Wa.	12053000	93.5	t	1970-71
North Fork Skokomish River near Potlatch, Wa.	12059500	117	t	1965-82
South Fork Skokomish River near Hoodspout, Wa.	12059800	26.0	t	1965-71
South Fork Skokomish River near Potlatch, Wa.	12060000	63.4	t	1955-64
South Fork Skokomish River near Union, Wa.	12060500	76.3	t	1980-82
Vance Creek near Potlatch, Wa.	12061000	15.6	t	1955-57
Skokomish River near Potlatch, Wa.	12061500	227	t,sc	1955-62;1964-82; 1996-98
SOUTHWESTERN PUGET SOUND RIVER BASINS				
Purdy Creek near Union, Wa.	12062500	1.43	t	1955-60
Dewatto River near Dewatto, Wa.	12068500	18.4	t	1968-70
Deschutes River near Rainier, Wa.	12079000	89.8	t	1968-70
NISQUALLY RIVER BASIN				
Nisqually River near National, Wa.	12082500	133	t	1952-82
Nisqually River at La Grande, Wa.	12086500	292	t	1966-82
PUYALLUP RIVER BASIN				
Clover Creek at 25th Avenue East, near Parkland, Wa.	12090355	20.7	t,sc	
Puyallup River near Orting, Wa.	12093500	172	sed	1955
South Prairie Creek at South Prairie, Wa.	12095000	79.5	t	1971
White River near Greenwater, Wa.	12096600	16.2	t	1965-68
White River below Clearwater River, near Buckley, Wa.	12097850	375	sed	1974-76
White River near Buckley, Wa.	12098500	401	t,sed	1955;1971-73
Puyallup River at Puyallup, Wa.	12101500	948	t,sc,ph,do	2001
Puyallup River above Clear Creek near Tacoma, Wa.	12102102	960	t,sc,ph,do	2001

WATER RESOURCES DATA FOR WASHINGTON 2002

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
DUWAMISH (GREEN) RIVER BASIN				
Green River above Twin Camp Creek, near Lester, Wa.	12103380	16.5	t,sc	1996-98
Big Soos Creek above Hatchery, near Auburn, Wa.	12112600	66.7	t,sc	1996-98
Green River near Auburn, Wa.	12113000	399	t	1952-86
Springbrook Creek near Orillia, Wa.	12113346	8.44	t,sc,ph,do	1997-2001
Mill Creek near mouth at Orillia, Wa.	12113349	6.03	t,sc,ph,do	1997-2001
Springbrook Creek near Tukwila, Wa.	12113375	20	t,sc	1996-98
LAKE WASHINGTON (CEDAR) BASIN				
Cedar River near Landsburg, Wa.	12117500	121	t	1953-85
Issaquah Creek near mouth, near Issaquah, Wa.	12121600	54.7	t	1971
Sammamish River near Woodinville, Wa.	12125200	157	t	1965-67
Bear Creek at Woodinville, Wa.	12125500	15.3	t	1971
Wallace River at Gold Bar, Wa.	12135000	19.0	t	1955-57;1959-72
SNOHOMISH RIVER BASIN				
Skykomish River at Monroe, Wa.	12141100	834	t,sed	1967-69
Middle Fork Snoqualmie River near Tanner, Wa.	12141300	154	t	1979-80
North Fork Snoqualmie River near Snoqualmie Falls, Wa.	12142000	64.0	t	1979-80
South Fork Snoqualmie River above Alice Creek, near Garcia, Wa.	12143400	41.6	t	1979-80
Snoqualmie River near Carnation, Wa.	12149000	603	t,sed	1967-70
Snohomish River at Snohomish, Wa.	12155500	1,714	t	1961
EAST CENTRAL PUGET SOUND RIVER BASINS				
Mission Creek near Tulalip, Wa.	12157250	7.92	t	1975-76
Tulalip Creek at Tulalip, Wa.	12158040	15.4	t	1975-76
STILLAGUAMISH RIVER BASIN				
North Fork Stillaguamish River near Darrington, Wa.	12165500	82.2	t	1952-57
Pilchuck River near Bryant, Wa.	12168500	52.0	t	1952-72
SKAGIT RIVER BASIN				
Skagit River above Alma Creek, near Marblemount, Wa.	12179000	1,274	t	1953-83
Cascade River at Marblemount, Wa.	12182500	168	t	1952-64;1966-73
Sauk River near Sauk, Wa.	12189500	714	t	1970-71
Skagit River near Hamilton, Wa.	12196150	2,870	t	1975-77
Childs Creek near Lyman, Wa.	12197020	2.4	t	1974-76
Tank Creek near Lyman, Wa.	12197040	2.50	t	1974-80
Minkler Creek near Lyman, Wa.	12197110	5.0	t	1974-80
Black Creek near Minkler, Wa.	12197680	0.5	t	1975-80
Black Creek near Lyman, Wa.	12197690	0.5	t	1974-75
Skagit River near Sedro Wooley, Wa.	12199000	3,015	t,sc,pH,do	1975-79
Skagit River near Mount Vernon, Wa.	12200500	3,093	t,sp	1962-70;1974-82
NORTHEASTERN PUGET SOUND RIVER BASINS				
Samish River near Burlington, Wa.	12201500	87.8	t	1973-74
NOOKSACK RIVER BASIN				
Nooksack River at Deming, Wa.	12210500	584	sc,ph	1959-60
Nooksack River at North Cedarville, Wa.	12210700	588	t,sc,do	1996-98
Fishtrap Creek at Flynn Road, at Lynden, Wa.	12212100	38.1	t,sc,do	1996-98
Nooksack River at Brennan, Wa.	12213140	790	t,sc	1996-98
PEND OREILLE RIVER BASIN				
Pend Oreille River at Metaline Falls, Wa.	12398090	--	t	1949-50
UPPER COLUMBIA RIVER BASIN				
Columbia River at International Boundary	12399500	59,700	t	1952-73
Columbia River at Northport, Wa.	12400520	--	t,sp	1910-11;1952-94
COLVILLE RIVER BASIN				
Chewelah Creek at Chewelah, Wa.	12407700	94.1	t	1973-74
Mill Creek near Colville, Wa.	12408500	83.0	t	1973-74
Colville River at Kettle Falls, Wa.	12409000	1,007	t	1970-71

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
SPOKANE RIVER BASIN				
Spokane River above Liberty Bridge, near Otis Orchards, Wa.	12419500	3,880	t,sp	1964-65
Hangman Creek at Spokane, Wa.	12424000	689	sed	1998-2001
Little Spokane River at Dartford, Wa.	12431000	665	t	1968-70
Spokane River at Long Lake, Wa.	12433000	6,020	t,sc	1959-62; 1967-70;1973-82
Chamokane Creek below Falls, near Longlake, Wa.	12433200	179	t	1984-90
Blue Creek above Midnite Mine Drainage, near Wellpinit, Wa.	12433542	6.0	t,sc,pH	1980; 1984-98
Midnite Mine Drainage near Wellpinit, Wa.	12433556	1.3	t,sc,pH	1980; 1984-98
Blue Creek below Midnite Mine Drainage, near Wellpinit, Wa.	12433558	7.3	t,sc,pH	1980; 1984-98
Blue Creek near mouth, near Wellpinit, Wa.	12433561	19.1	t,sc,pH	1980; 1984-98
UPPER COLUMBIA RIVER BASIN				
Sanpoil River near Keller, Wa.	12434500	880	t	1968-70
Columbia River at Grand Coulee Dam, Wa.	12436500	74,700	t,sc,ph	1951-58;1974-79
OKANOGAN RIVER BASIN				
Okanogan River at Oroville, Wa.	12439500	3,210	t	1960;1986-88
Similkameen River near Nighthawk, Wa.	12442500	3,550	t	1967-71;1986-88
Okanogan River near Tonasket, Wa.	12445000	7,280	t	1986-88
Okanogan River at Malott, Wa.	12447200	8,100	t	1970-71
METHOW RIVER BASIN				
Methow River near Pateros, Wa.	12449950	1,772	t	1969-70
ENTIAT RIVER BASIN				
Entiat River near Ardenvoir, Wa.	12452800	203	t	1968-71
WENATCHEE RIVER BASIN				
White (HD Wenatchee) River near Plain, Wa.	12454000	150	t	1971
Nason Creek near Plain, Wa.	12455550	108	t	1973-74
MID-COLUMBIA RIVER BASIN				
Sand Hollow at CRS SW, near Vantage, Wa.	12464606	47	sc t	1993-94 1993-95
Lind Coulee Wasteway at State Route 17, near Warden, Wa.	12471400	703	t	1994-95;1997-2001
Crab Creek at Morgan Lake Road, near Othello, Wa.	12472000	--	t	1994-95
Columbia River below Priest Rapids Dam, Wa.	12472800	96,000	t	1917-92
DW 272A1 Drain near Royal Camp, Wa.	12472300	0.88	t,sed	1977-82
Crab Creek Lateral above Royal Lake, near Othello, Wa.	12472380	--	t	1996
DW 272A Drain near Royal Camp, Wa.	12472350	3.36	t,sed	1977-82
Crab Creek near Beverly, Wa.	12472600	4,842	t	1959-62; 1968-69,1996
Columbia River at Vernita Bridge, near Priest Rapids, Wa.	12472900	96,000	t	1974-81
Columbia River at Richland, Wa.	12473520	96,900	t	1974-93
EL 68 Wasteway near Othello, Wa.	12473740	--	t	1978-80
YAKIMA RIVER BASIN				
Yakima River near Martin, Wa.	12474500	54.7	t	1981-82
Kachess River near Easton, Wa.	12476000	63.6	t	1981-82
Yakima River at Cle Elum, Wa.	12479500	495	t	1981-82
Yakima River at Roza Dam, Wa.	12484900	1,802	t,sp	1966-71
Roza Canal below Sulphur Creek Wasteway near Sunnyside, Wa.	12485012	--	t,sc,sed	1976-77
Bumping River near Nile, Wa.	12488000	70.7	t	1971;1981-82
American River near Nile, Wa.	12488500	78.9	t	1969-71
Tieton River at Tieton Dam, near Naches, Wa.	12491500	187	t	1981-82
Yakima River above Ahtanum Creek, at Union Gap, Wa.	12500450	3,479	t	1981-82
Ahtanum Creek at Union Gap, Wa.	12502500	173	t	1981-82
Sunnyside Canal below Sulphur Creek Wasteway, near Sunnyside, Wa.	12504512	--	t,sc,sed	1976-77
Yakima River near Parker, Wa.	12505000	3,660	t,sc	1959-70
Toppenish Creek at Indian Church Road, near Granger, Wa.	12507508	--	t	1981-82
Satus Creek at Satus, Wa.	12508621	--	t	1981-82
Drain 61.0 above Drain 61.4, near Sunnyside, Wa.	12508755	3.27	t,sed	1979-82
Drain 60.7 near Sunnyside, Wa.	12508769	0.92	t,sed	1979-82
Drain 59.6 below 60.2, near Sunnyside, Wa.	12508775	0.68	t,sed	1979-82

WATER RESOURCES DATA FOR WASHINGTON 2002

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
YAKIMA RIVER BASIN--Continued				
Drain 59.4 near Sunnyside, Wa.	12508779	0.68	t, sed	1978-81
DID 18 Drain at Sunnyside, Wa.	12508790	14.7	t, sc, sed	1976-77
Black Canyon Creek at Waneta Road, near Sunnyside, Wa.	12500820	35.8	t, sc, sed	1976-77
DID 9 Drain near Sunnyside, Wa.	12508830	27.1	t, sc, sed	1976-77
DID 3 Drain near Sunnyside, Wa.	12508840	18.8	t, sc, sed	1976-77
Sulphur Creek Wasteway near Sunnyside, Wa.	12508850	155	t, sc, sed	1981-82; 1976-77 1987-90
Yakima River at Mabton, Wa.	12508990	5,359	t	1981-82
Yakima River at Kiona, Wa.	12510500	5,615	sc, sed	1953-82
Esquatzel Diversion Channel below Headworks, near Pasco, Wa.	12513650	798	t	1993-95;
SNAKE RIVER BASIN				
Snake River near Clarkstown (at Riparia), Wa.	13343500	103,200	t	1952-55; 1959-64
Tucannon River near Starbuck, Wa.	13344500	431	t, sed	1963-70
PALOUSE RIVER BASIN				
South Fork Palouse River at Colfax, Wa.	13349200	277	t	1994-95
Rebel Flat Creek at Winona, Wa.	13349320	73.2	sed	1965; 1994
Pine Creek at Pine City, Wa.	13349400	302	t	1970-71
Pine Creek at Pine City Road, at Pine City, Wa.	13349410	306	t	1994-95
			sed	1994
Snake River below Ice Harbor Dam, Wa.	13353000	108,500	t	1980
Snake River at Burbank, Wa.	13353200	108,800	t, sc	1960-69; 1972-92
WALLA WALLA RIVER BASIN				
Mill Creek below Blue Creek, near Walla Walla, Wa.	14013600	91	t, sed	1963-70
Touchet River at Bolles, Wa.	14017000	361	t	1970-71
LOWER COLUMBIA RIVER BASIN				
Alder Creek at Alderdale, Wa.	14034350	196	t, sed	1963-68
Rock Creek near Roosevelt, Wa.	14036600	213	t, sed	1963-68
KLUCKITAT RIVER BASIN				
Klickitat River near Pitt, Wa.	14113000	1,297	t	1950-70
WHITE SALMON RIVER BASIN				
White Salmon River near Underwood, Wa.	14123500	386	t	1968-69
LOWER COLUMBIA RIVER BASIN--Continued				
Wind River below Dry Creek near Carson, Wa.	14126600	79.0	t	1973-74
Columbia River at Vancouver, Wa.	14144700	241,000	t, sed	1964-70; 1972-80
LEWIS RIVER BASIN				
Clearwater Creek near mouth, near Cougar, Wa.	14216300	33	sed	1982-88
Yale Reservoir near Yale, Wa.	14218500	596	t, sed	1969-70
Lewis River at Ariel, Wa.	14220500	731	t	1961-63
East Fork Lewis River near Heisson, Wa.	14222500	125	t	1950-72
KALAMA RIVER BASIN				
Kalama River near Cougar, Wa.	14222920	12.3	t	1969-70
Fossil Creek near Cougar, Wa.	14222930	8.21	t	1969
Dry Creek near Cougar, Wa.	14222950	3.29	t, sed	1969-70
Merrill Lake near Cougar, Wa.	14222960	9.08	t, sed	1969-70
Kalama River below Falls near Cougar, Wa.	14222980	37.4	t	1970-71
Kalama River below Italian Creek, near Kalama, Wa.	14223500	198	t	1955-72
Kalama River Above Spencer Creek, near Kalama, Wa.	14223600	202	t	1970-79
COWLITZ RIVER BASIN				
Cowlitz River at Packwood, Wa.	14226500	287	t	1971
Cispus River near Randle, Wa.	14232500	321	t	1950-72;
Cowlitz River near Randle, Wa.	14233400	1,030	t	1953-82
Cowlitz River near Kosmos, Wa.	14233500	1,042	t	1953-68
Rainy Creek near Kosmos, Wa.	14234000	17.9	t	1951-53
Cowlitz River below Mossyrock Dam, Wa.	14234810	1,154	t	1970-82
West Fork Tilton River near Morton, Wa.	14235500	16.4	t	1951-59; 1961-71

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
COWLITZ RIVER BASIN--Continued				
Tilton River above Bear Canyon, near Cinebar, Wa.	14236200	141	t	1965-82
Winston Creek near Silver Creek, Wa.	14237500	37.8	t	1965-71
Cowlitz River below Mayfield Dam, Wa.	14238000	1,400	t	1950-82
North Fork Toutle River above Alder Creek, near Kid Valley, Wa.	14240490	--	t,sc	1990
Green River above Beaver Creek, near Kid Valley, Wa.	14240800	129	t,sc,sed	1980-94
North Fork Toutle River at Kid Valley, Wa.	14241100	284	t,sc,sed	1980-94
Cold Spring Creek near Cougar, Wa.	14241200	5.47	t	1969-71
South Fork Toutle at Camp 12 near Toutle, Wa.	14241490	117	t,sc,sed	1981
Toutle River at Tower Road near Silver Lake, Wa.	14242580	496	t,sc	1990-91
Toutle River near Silver Lake, Wa.	14242500	474	t	1951-62;1964-72
Toutle River at Highway 99 Bridge, near Castle Rock, Wa	14242690	512	t,sc,pH,sed	1980-82
Cowlitz River at Castle Rock, Wa.	14243000	2,238	t,sed	1950-73,1980-85
Coweman River near Kelso, Wa.	14245000	125	t	1950-72
LOWER COLUMBIA RIVER BASIN--Continued				
Abernathy Creek near Longview, Wa.	14246000	20.3	t	1950;1953-57
Mill Creek near Cathlamet, Wa.	14246500	28.3	t	1954
Elochoman River near Cathlamet, Wa.	14247500	65.8	t	1950-71

INTRODUCTION

The Washington Water Science Center of the U.S. Geological Survey (USGS), in cooperation with State, local, and other Federal agencies, obtains a large amount of data pertaining to the water resources of Washington each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series, entitled "Water Resources Data—Washington."

This report includes records on both surface and ground water in the State. The report contains discharge records for 245 stream-gaging stations, stage-only records for 10 gaging stations, discharge measurements for 211 miscellaneous streamflow stations, and annual maximum discharge for 3 crest-stage partial-record streamflow stations; stage and (or) contents records for 36 lakes and reservoirs; water-quality records for 40 surface-water sites; water-level records for 26 observation wells; and water quality records for 16 observation wells.

This series of annual reports for Washington began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Washington were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 12, 13, and 14." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in the libraries of the principal cities of the United States, or if not out of print, may be purchased from the U.S. Geological Survey, Branch of Information Services, Federal Center, Box 25286, Denver, CO 80225.

Publications similar to this report are published annually by the USGS for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report WA-02-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the Information Specialist at the address given on back of title page or by telephone (253) 428-3600.

The USGS is continually updating the availability of its information on the internet. Current streamflow conditions (via satellite) for Washington and other water-resource information can be found at the following Universal Resource Locator (URL): <http://wa.water.usgs.gov>. Nationwide information on water resources, including real-time and historic streamflow data, water-use data, publications, and USGS program activities, can be found at URL: <http://water.usgs.gov>.

COOPERATION

The U.S. Geological Survey, in cooperation with Tribes and State and local agencies within the State of Washington, have had joint-funding agreements for the systematic collection of surface-water, ground-water, and water-quality records since 1909. Organizations that supplied data are acknowledged in the station descriptions. Organizations that assisted in collecting data through joint-funding agreements with the Survey are:

Washington State Department of Ecology	City of Chewelah
Chelan County Conservation District	City of Colville
Chelan County, P.U.D. No. 1	City of Kent
Douglas County, P.U.D. No. 1	City of Lakewood, Public Works Department
Energy Northwest	Lakewood Water District
Grays Harbor County	City of Port Townsend
Jefferson County	City of Puyallup
King County	City of Seattle, City Light Department
Kitsap County	City of Seattle, Seattle Water Department
Lewis County, Department of Public Works	City of Spokane, Wastewater Management Division
Mason County	City of Tacoma, Department of Public Utilities
Okanogan County	City of Tacoma, Department of Public Works, Sewer Utility Division
Pierce County, Department of Public Works	Coeur D'Alene Tribe
Skagit County Public Works Department	Lummi Tribe
Snohomish County Department of Public Works	Makah Nation
Snohomish County, P.U.D. No. 1	Nisqually Indian Tribe
Spokane County, WQMP	Nooksack Tribe
Spokane County Conservation District	Puyallup Tribe of Indians
Stevens County Public Utility District	Quileute Tribe
Stevens County Conservation District	Quinault Indian Nation
Stevens County Commissioners Office	Skokomish Tribe of Indians
Thurston County Department of Water and Waste Management	Spokane Tribe
Whatcom County	Tulalip Tribes
City of Bellevue, Department of Public Works, Storm and Surface Water Utility	Umatilla Tribal Council
City of Bellingham	Yakama Tribal Council

Assistance in the form of funds or services in collecting records was given by the Corps of Engineers, U.S. Department of State; Bonneville Power Administration, U.S. Department of Energy; Bureau of Reclamation; Bureau of Indian Affairs; U.S. Department of Interior; U.S. Fish and Wildlife Service; Bureau of Land Management, and National Marine Fisheries Service.

The following organizations aided in collecting records for stations under Federal Energy Regulatory Commission licenses:

City of Seattle; Lewis County P.U.D.; P.U.D. No. 1 of Chelan County, City of Tacoma Department of Public Utilities; P.U.D. No. 1 of Pend Oreille County; P.U.D. No. 1 of Grant County; P.U.D. No. 1 of Douglas County; Puget Sound Energy; Snohomish County P.U.D. No. 1; Cowlitz County P.U.D.; Avista Corporation; Hydro Technology Systems, and PacificCorp.

SUMMARY OF HYDROLOGIC CONDITIONS

Hydrologic Setting

A distinctively varied climate characterizes Washington and results primarily from two features: (1) the Cascade Range, and (2) the prevailing marine influence of the Pacific Ocean (fig. 1). The north-south trending Cascade Range divides Washington into two areas: the wet western part and the dry eastern part. Average annual precipitation west of the Cascade Range is about 70 inches and ranges from about 30 to 40 inches in the Puget Sound Basin to about 150 to 200 inches on the western slopes of the Olympic Mountains, where temperate rain forests thrive. The Cascade Range acts as a barrier to air masses that move across the State, producing 100 to 150 inches of annual precipitation on the high western slopes of the Cascade Range and leaving much less moisture in the clouds for eastern Washington. Average annual precipitation in eastern Washington is only 7 to 40 inches, with the driest part being the Columbia Basin (fig. 1), where sagebrush and grasses grow and irrigation is required for most crops. About two-thirds of the precipitation in Washington occurs from October to March, either as rain in the lowlands or as snow at high elevations. Occasionally during winter, western Washington receives large amounts of rainfall from Pacific storms, accompanied by mild temperatures. The combination of melting snowpack at high elevations and rainfall during these storms can produce flooding in the lowlands. Snowpack and glaciers in the Olympic Mountains and Cascade Range are sources of water for many rivers in Washington and become the primary source of flow during the relatively dry summer.

Washington's varied climate and topography result in variable streamflow patterns throughout the State, as shown in the graphs of daily mean discharge for selected long-term gaging stations (figs. 1 and 2, table 1). Daily mean discharge at the Chehalis River near Grand Mound (fig. 2A) is representative of the streamflow patterns in the southwest lowlands of the State, where seasonal high flow occurs from November to March, coinciding with the typical winter rainfall. Flow normally decreases through the spring and summer months due to the generally dry weather and absence of snowpack. Daily mean discharge at the Quinault River at Quinault Lake (fig. 2B) is representative of the Olympic Peninsula. Two seasonal peak periods at this gaging station result from winter rainfall from November to January and late spring snowmelt from high altitudes in May and June. Winter rainfall and spring snowmelt in the East Fork Lewis River near Heisson in the southern Cascade Range overlap to produce a high-flow season that generally extends from November to May (fig. 2C). High flow in the Nooksack River at Deming (fig. 2D) is generated by rainfall in winter and again in May and June from a combination of spring rainfall and snowmelt. Daily mean discharge at Puyallup River near Orting (fig. 2E) is representative of the typical winter rainfall of the central Cascade Range and a late spring snowmelt sustained by the permanent snowfields and glaciers on the west slope of the Cascade Range.

Peak flows in rivers draining the east side of the Cascade Range, such as the Wenatchee River at Plain (fig. 2F), normally occur in April to July as a result of snowmelt. Streamflow during the winter generally stays low due to freezing weather that maintains or contributes to the snowpack; exceptions occur when mild weather and heavy rain combine to cause flooding. Daily mean discharge at Ahtanum Creek at Union Gap (fig. 2G) and the Walla Walla River near Touchet (fig. 2H) are representative of agricultural drainage basins in the lower Columbia Basin, where irrigation-return flows cause an increase in discharge from August to winter. During winter, high flows are sustained by a combination of precipitation and return flows. The daily mean discharge at Hangman Creek at Spokane (fig. 2I) is representative of rivers draining the eastern Washington highlands, where a combination of precipitation and melting snow produces maximum discharge in late winter and early spring.

Hydrologic Conditions for 2002

Annual mean streamflow for rivers in Washington for the 2002 water year ranged from below normal to above normal, but was below normal only in the Yakima River Basin and in some river basins in eastern Washington. Only a few stations, such as the Duckabush River near Brinnon, had new period-of-record peak-flow discharges. No rivers had new period-of-record low-flow discharges.

As described in the previous section, streamflow is largely influenced by variabilities in precipitation and snowpack. In general, precipitation for the 2002 water year was near normal except for some areas of eastern Washington, which were below normal, and the northern Cascade Range, which were above normal.

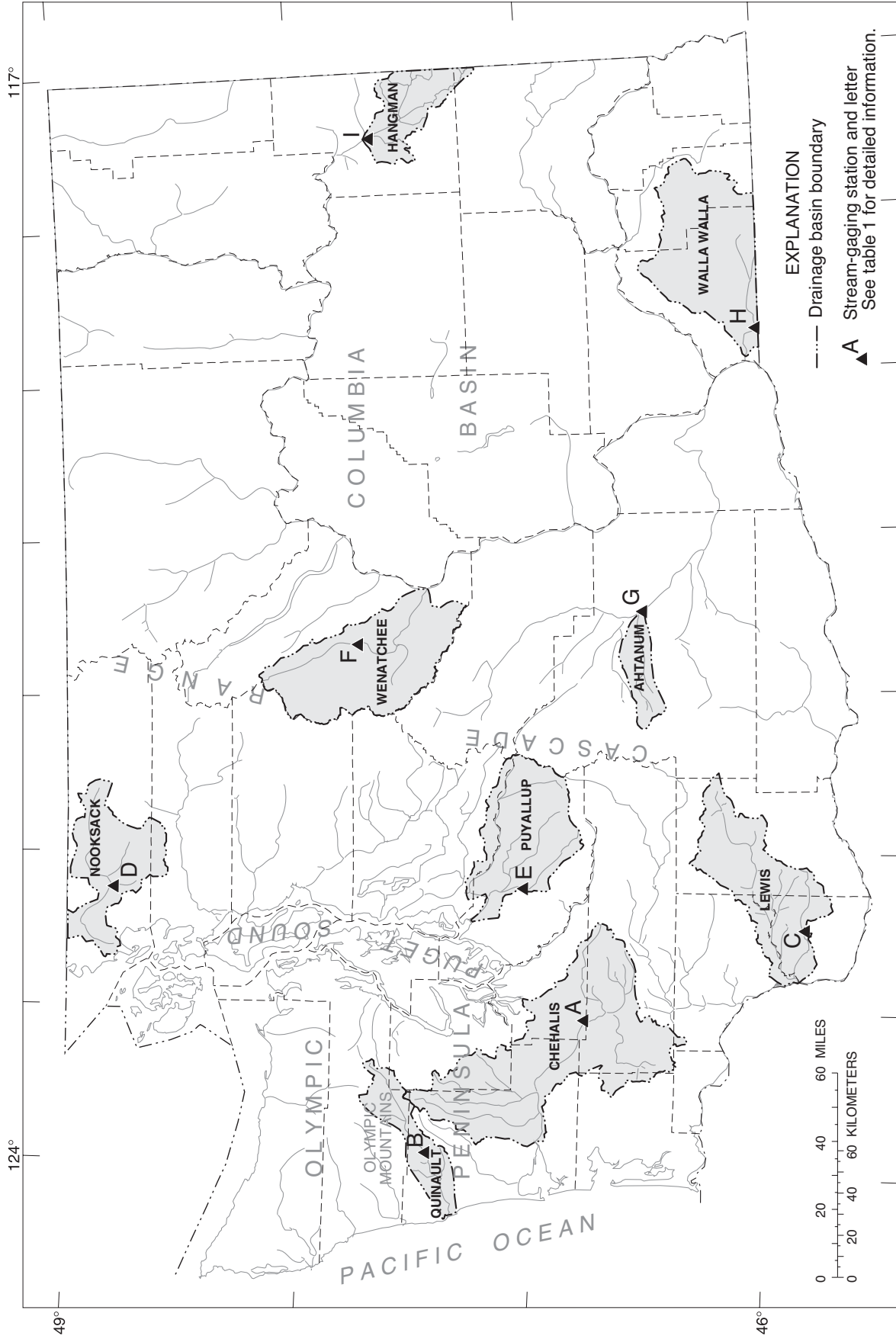


Figure 1. Selected stream-gaging stations and drainage basins in Washington.

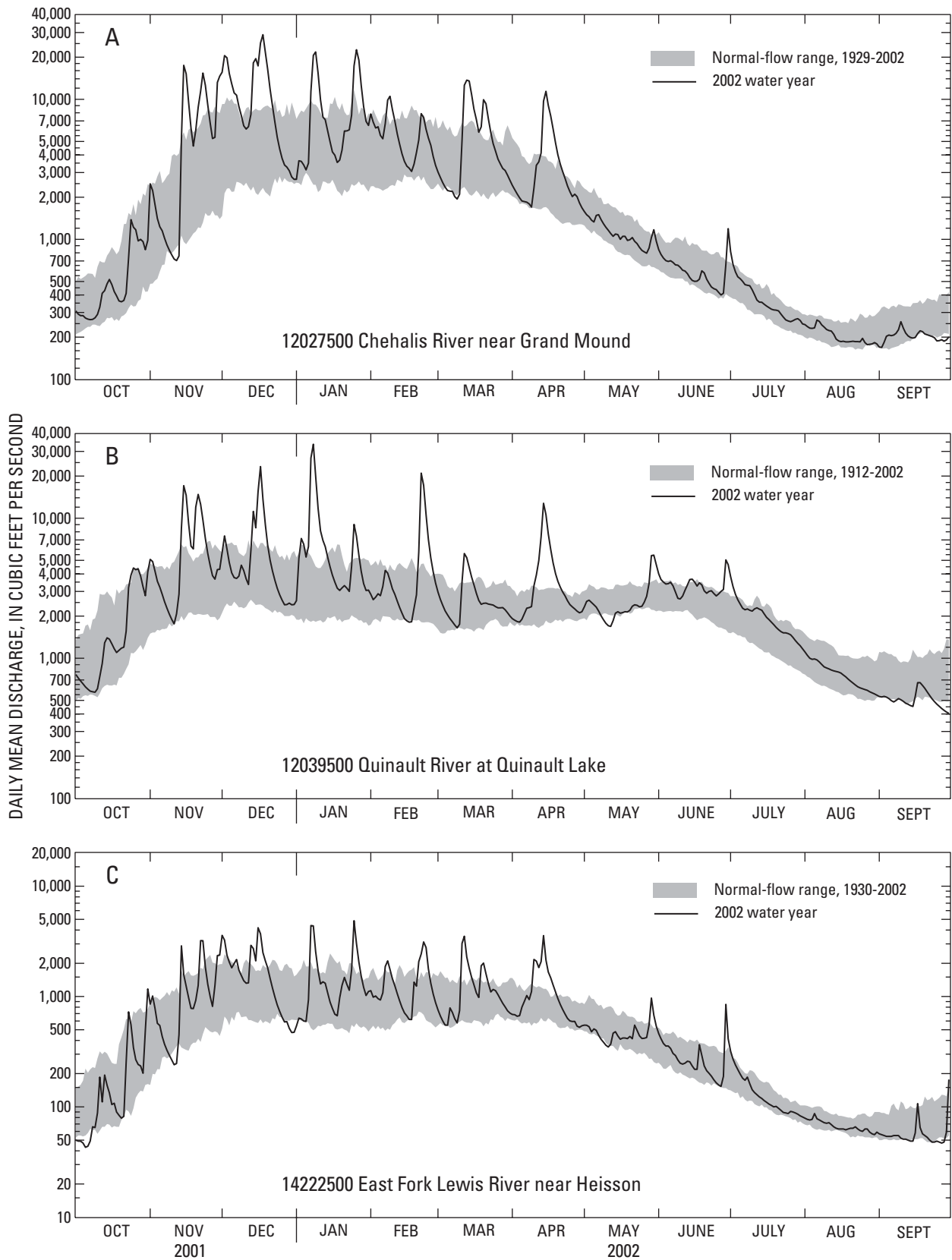


Figure 2. Daily mean discharge for water year 2002 compared with the percentile distribution of daily mean discharges for the period of record, for selected stream-gaging stations. Daily mean discharges equal to or greater than the 25th percentile and equal to or less than the 75th percentile are within the normal range of flow.

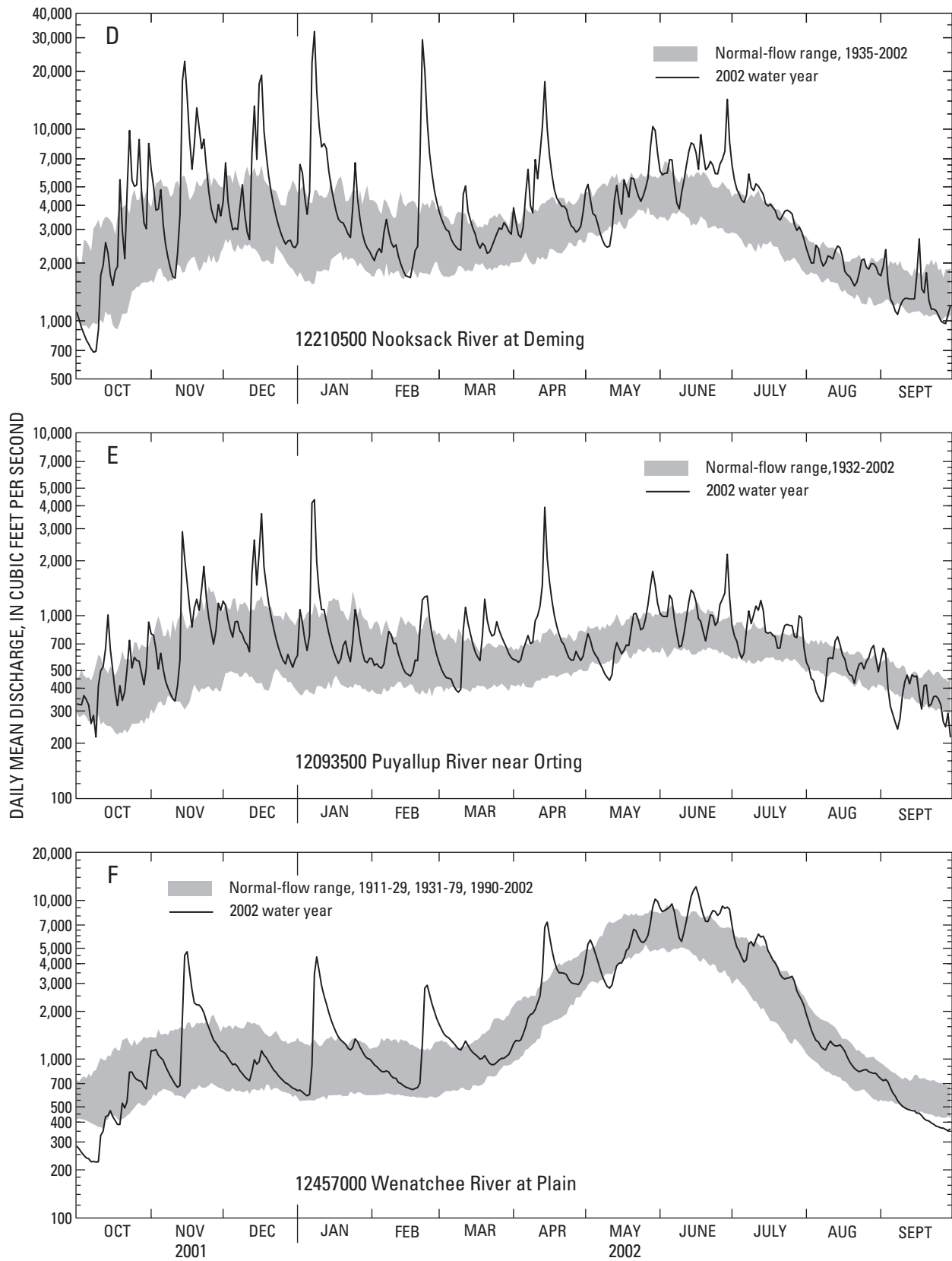


Figure 2. Continued

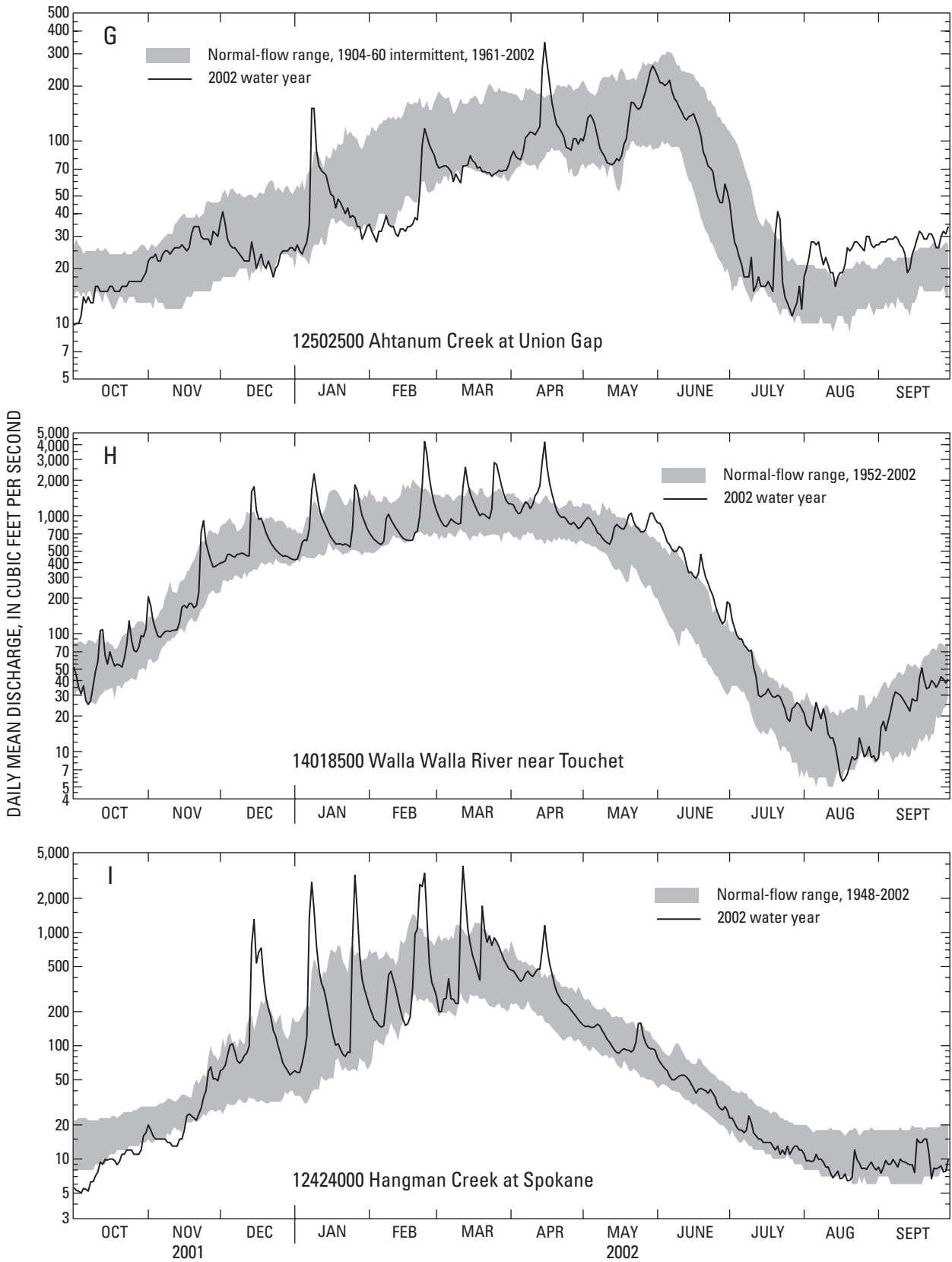


Figure 2. Continued

Table 1. Selected stream-gaging stations in Washington

Letter in figure 2	Station number	Stream-gaging station	Period of record	Annual mean streamflow, 2002 water year	
				Streamflow, in cubic feet per second	Percentage of long-term mean
A	12027500	Chehalis River near Grand Mound	1929-2002	3,638	129
B	12039500	Quinault River at Quinault Lake	1912-2002	3,419	119
C	14222500	East Fork Lewis River near Heisson	1930-2002	779	105
D	12210500	Nooksack River at Deming	1935-2002	4,412	132
E	12093500	Puyallup River near Orting	1932-2002	790	110
F	12457000	Wenatchee River at Plain	1911-1929, 1931-79, 1990-2002	2,468	110
G	12502500	Ahtanum Creek at Union Gap	1961-2002	58	74
H	14018500	Walla Walla River near Touchet	1952-2002	572	100
I	12424000	Hangman Creek at Spokane	1948-2002	229	97

The precipitation during the water year was variable throughout the year and across the State. Precipitation for the period October through January was above normal for most areas except eastern Washington, for February was below to near normal throughout the State, and for March through June was near normal except for the southern Cascade Range, which varied for the period from above normal to below normal. The period July through September was a period of below normal precipitation throughout the State.

The snowpack for the 2002 water year, measured from January through June, was consistently near normal to above normal throughout the State with the exception of January through March in the upper Okanogan River Basin, which was below normal. By April though, all areas reported at least 100 percent of normal, and some areas in the Cascade Range reported significantly above-normal snowpack. The snowpack reached the peak in late March to mid-April in all areas except some upper-elevation sites in the Cascade Range, where the snowpack reached a peak in May. The snowmelt ended before or near the normal date for most areas for that area, from late April to late June.

The annual mean streamflow was above average for the river basins along the Pacific Ocean, the Olympic Peninsula, and the northern Cascade Range (sites A-D, table 1). Some river basins in the central Cascade Range had below-average annual mean streamflows, for example Ahtanum Creek (site G, table 1). Rivers in eastern-most Washington had annual mean streamflows near average (sites H, I, table 1). The variability of streamflow across the State is seen in the daily mean streamflows, which are described by the general regions in the State.

Daily mean streamflows for the rivers along the Pacific Ocean and the Olympic Peninsula were above normal for many days between November and April, depending on the river, and were between normal and above normal for other months (figures 2A and 2B). Streamflow patterns in rivers draining the western Cascade Range varied north to south. Daily mean streamflow in the rivers in the southern Cascade Range were normal for most of the year, with occasional periods of above-normal flow between December and April (figure 2C). Daily mean streamflows in the rivers in the central Cascade Range were primarily between the 50th and 75th percentiles or above normal for the period November through July (figure 2E), and were below normal for parts of August and September. Daily mean streamflows in the rivers in the northern Cascade Range were primarily near or above the 75th percentile from November through July, and normal during other months (figure 2D).

Daily mean streamflows in the rivers draining the eastern side of the Cascade Range varied north to south and were near normal, with most having monthly mean streamflows near normal in most rivers (figures 2F and 2G). Daily mean streamflows in the northern Cascade Range were normal or above the 75th percentile for November through July (figure 2F). Daily mean streamflows in these basins were below normal in October and September. Daily mean streamflows were normal for most of the year in the rivers in the Yakima River basin and southern Cascade Range, with exceptions of some below-normal days in October and February and above-normal days during August and September (figure 2G). The streamflow in eastern Washington varied between the southeastern rivers and the northeastern rivers (figures 2H and 2I). Daily mean streamflows in the rivers in southeastern Washington (figure 2H) were normal except for most days between late May through June, which were above normal. Daily mean streamflows in the rivers in northeastern Washington were primarily normal throughout the year except for several days in October and November, which were below normal.

Surface-Water Quality

The National Water-Quality Assessment (NAWQA) program was established to assess the current water-quality conditions for a large part of the Nation's freshwater streams, rivers, and aquifers and to describe how water quality is changing over time. In 2002, Washington operated seven long-term surface-water-quality NAWQA stations throughout the State. Four of the stations are located in eastern Washington (Palouse River at Hooper, Crab Creek at Rocky Ford Road, Yakima River at Kiona, and Granger Drain at Granger) and are representative of agricultural land use; three are in western Washington, one representing urban land use (Thornton Creek near Seattle), one integrating mixed land use for which the samples are collected at a site locally influenced by urban land use (Duwamish River at Tukwila), and one representing relatively pristine conditions (North Fork Skokomish River near Hoodspport). In addition to these NAWQA stations, the Washington Water Science Center also continued operation of two long-term monitoring sites on the middle Columbia River (Columbia River at Richland and Columbia River near Priest Rapids Dam).

Specific conductance and dissolved-solids concentration generally have an inverse relation to streamflow. The smallest concentrations of dissolved solids usually occur during the high flows of late fall and winter and early spring runoff, when rainfall and snowmelt are the major sources of water. Dissolved solids in western Washington are usually most concentrated during late summer and early fall, when base flow from ground-water sources is the dominant component of flow; but in eastern Washington, dissolved solids may be more concentrated during the irrigation season due to return irrigation flows. Analysis of dissolved solids at these seven sites was discontinued in 2001, but there is a good relation between dissolved solids and specific conductance. Specific conductance at the surface-water NAWQA and Columbia River stations during 2002 ranged from an average of 69 $\mu\text{S}/\text{cm}$ (microsiemens per centimeter at 25 degrees centigrade) on the North Fork Skokomish near Hoodspport to an average of 448 $\mu\text{S}/\text{cm}$ at Granger Drain. The largest value of specific conductance during 2002 was 716 $\mu\text{S}/\text{cm}$, in a sample from Granger Drain during November, and the smallest value of specific conductance was 49 $\mu\text{S}/\text{cm}$, in a sample from the North Fork Skokomish during November. The average specific conductance for all stations sampled was 258 $\mu\text{S}/\text{cm}$.

Surface waters in Washington generally are classified as clear and carry only small amounts of sediment, except where influenced by glaciers, unconsolidated volcanic deposits, or disturbed soils. Water flowing in the Columbia River is very low in sediment, usually less than 10 mg/L (milligrams per liter), and at times there is no measurable sediment. The streams east of the Cascades that characteristically carry sediment concentrations greater than 10 mg/L are those that carry return flow from heavily irrigated and farmed lands in the semiarid region. Concentrations of suspended sediment in samples from the Columbia River during 2002 ranged from 2 to 8 mg/L. Concentrations of suspended sediment in samples from NAWQA stations ranged from an average of 6 mg/L at Crab Creek near Rocky Ford Road to an average of 100 mg/L at Granger Drain near Granger. Samples from Granger Drain generally had the largest sediment concentrations (ranging from 18 to 281 mg/L, with an average of 100 mg/L). The largest sediment concentration (520 mg/L in a sample during April) was measured at the Yakima River at Kiona.

Forty-six different pesticides, metabolites (degradation products), or other trace organic compounds were detected in samples collected from the seven NAWQA surface-water stations during the 2002 water year. The herbicides atrazine, diuron, and 2,4-D, as well as the pesticide degradate deethylatrazine, were the pesticides detected most frequently in samples from the NAWQA stations in eastern and western Washington. Samples for the analysis of pesticides were not collected from the reference station North Fork Skokomish during 2002. Samples collected from Thornton Creek and the Duwamish River each contained pesticides. Samples from both sites contained the insecticides carbaryl and diazinon and the herbicides atrazine, prometon, and simazine; samples from Thornton Creek also contained the herbicides napropamide and trifluralin, and samples from the Duwamish River contained the herbicide metolachor and deethylatrazine, a pesticide degradate of the herbicide atrazine. Concentrations in samples from these urban sites ranged from at or near the limit of detection to a maximum of 0.483 µg/L (micrograms per liter) and 0.230 µg/L for the insecticide carbaryl at Thornton Creek and the Duwamish River, respectively.

Eight herbicides, 2 insecticides, an herbicide degradate, and a trace organic stimulant (caffeine) were detected in samples from Crab Creek at Rocky Ford Road, ranging in concentration from at or near the limit of detection to a maximum concentration of 0.240 µg/L for the herbicide 2,4-D. Twenty herbicides, 3 insecticides, 1 herbicide degradate, and a trace organic stimulant (caffeine) were detected in samples from Palouse River at Hooper, ranging in concentration from at or near the limit of detection to a maximum concentration of 0.180 µg/L for 2,4-D. Fourteen herbicides, 4 insecticides, 3 herbicide degradates, and 1 trace organic stimulant (caffeine) were detected in samples from the Yakima River at Kiona, ranging in concentration from at or near the limit of detection to a maximum concentration of 0.110 µg/L for the herbicide 2,4-D. Nineteen herbicides, 5 insecticides, 8 pesticide degradates, a fungicide, and a trace organic stimulant (caffeine) were detected in samples from Granger Drain at Granger, with a maximum concentration of 1.67 µg/L for the herbicide 2,4-D.

No concentrations for pesticides detected in samples from NAWQA surface-water stations during the 2002 water year exceeded the U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Levels or Health Advisories for drinking water. The USEPA fresh-water chronic criteria for the protection of aquatic life for carbaryl, diazinon, azinphos methyl, and disulfoton are 0.02, 0.009, 0.01, and 0.05 µg/L, respectively. Concentrations of carbaryl in three samples from Thornton Creek in March, April, and May; three samples from Granger Drain in May, August, and September; and two samples from the Duwamish River in November and March exceeded the fresh-water chronic criteria for the protection of aquatic life. Concentrations of diazinon in three samples from Thornton Creek during March, April, and May; one sample from the Duwamish River in March; and one sample from Granger Drain during October exceeded the fresh-water chronic criteria for the protection of aquatic life. Concentrations of azinphos methyl in 11 samples from Granger Drain from May through August; 4 samples from the Yakima River at Kiona during May, July, and August; and 2 samples from Crab Creek at Rocky Ford Road during July and August exceeded the fresh-water chronic criteria for the protection of aquatic life. Concentrations of disulfoton in one sample from Granger Drain during August also exceeded the fresh-water chronic criteria for the protection of aquatic life.

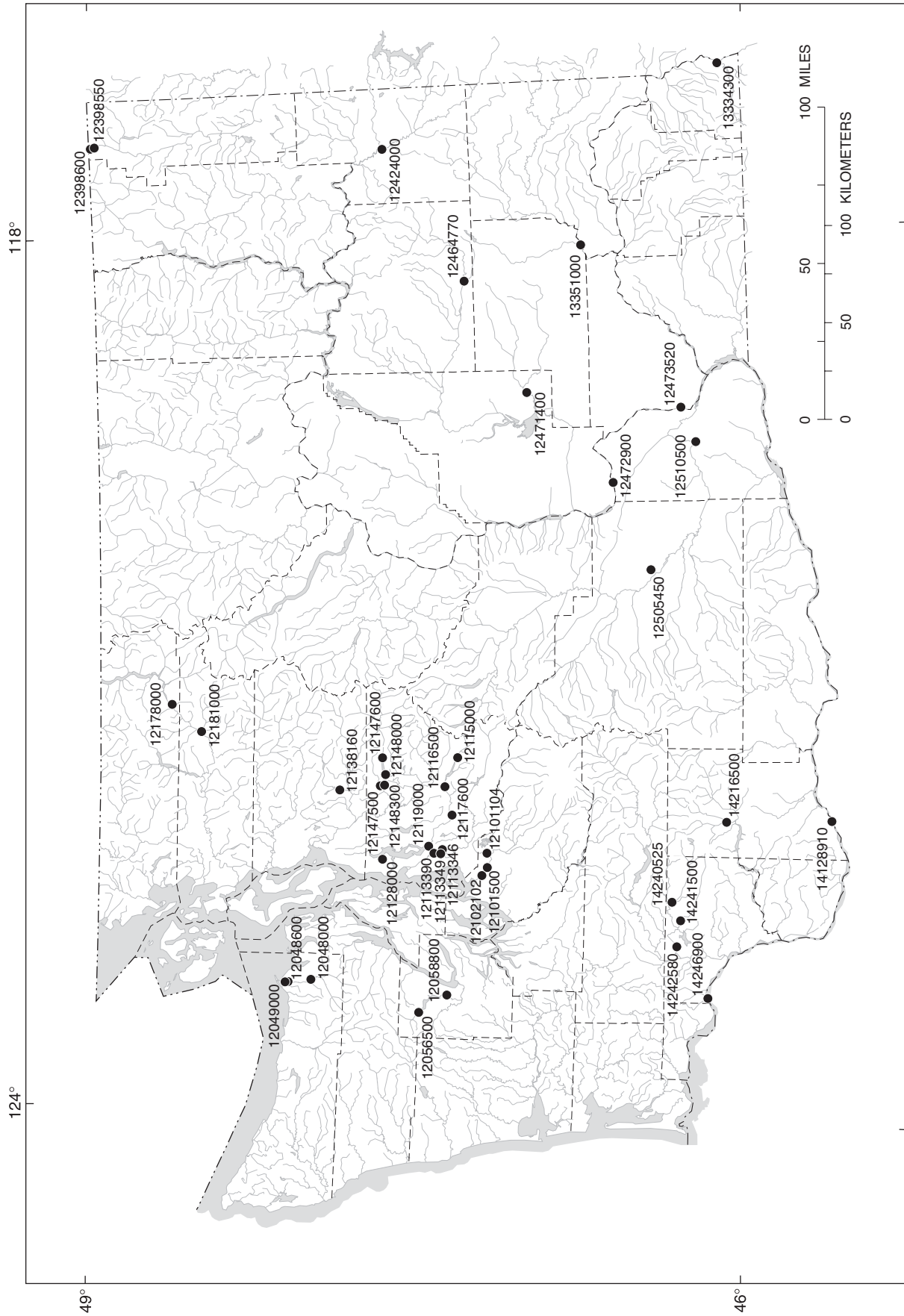


Figure 3. Surface-water stations with water-quality data collection in Washington.

Ground Water

In eastern Washington, water levels in water-table wells in Spokane (25N/45E-16C01) and Whitman (18N/43E-35L01) Counties were above average levels throughout the year, ranging from +0.8 foot to +6.4 feet, and the water-table well in Columbia County (10N/37E-23R01) was below average all year. Water levels in Lincoln County confined well 24N/36E-16A06 were above average (1.9 to 5.5 feet) all year, and water levels in confined well 24N/36E-16A08 ranged from 3.1 feet above to 4.2 feet below average. Long-term water levels for well 25N/45E-16C01 are shown in the hydrograph below.

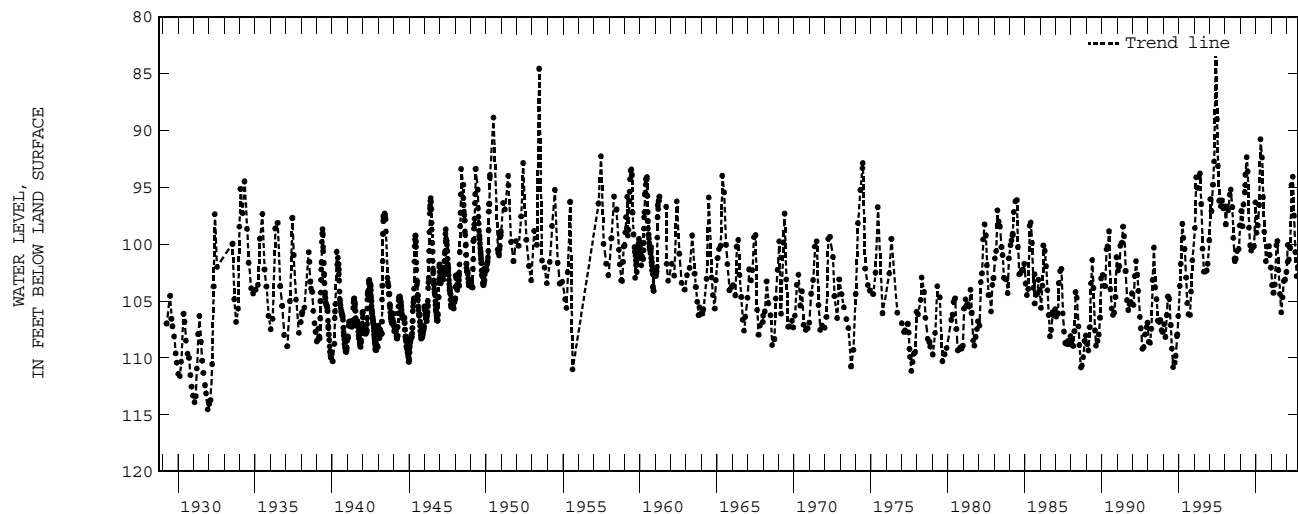
WATER LEVELS, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 31, 2001	103.23	JAN 31, 2002	101.54	MAY 31, 2002	94.07	SEPT 30, 2002	101.98
NOV 30	103.11	FEB 28	101.36	JUNE 30	97.48		
DEC 31	102.44	MAR 29	100.31	JULY 31	100.7		
JAN 31, 2002	100.06	APR 30	94.80	AUG 30	102.82		

WATER YEAR 2002

HIGHEST 94.07 MAY 31, 2002

LOWEST 103.23 OCT 31, 2001



In western Washington, water levels in the confined wells in Thurston County (16N/02W-29L02P2 and L02P3) started the year below average (4.6 feet), reached a maximum deviation of 9.4 feet above average in December and ended the year at 2.9 feet above average. Long-term water levels for well 16N/02W-29L02P2 are shown in the hydrograph below.

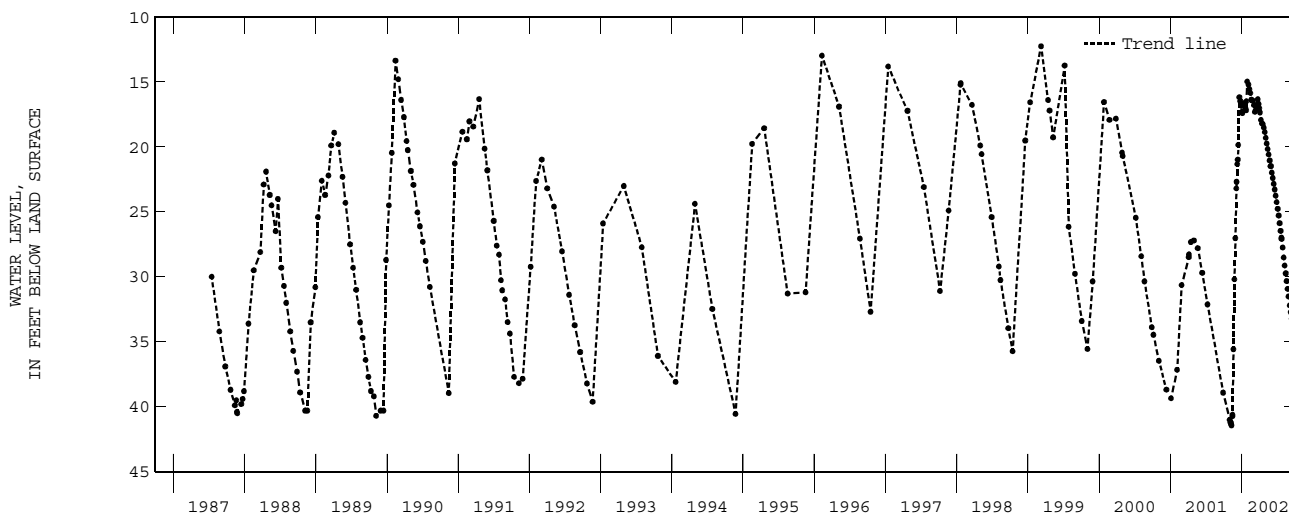
**WATER LEVELS, IN FEET BELOW LAND-SURFACE DATUM,
WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
5	---	41.19	23.19	17.39	15.20	16.79	17.34	19.30	21.98	24.76	28.51	32.20
10	---	41.43	21.32	16.66	15.55	17.30	17.92	19.74	22.39	25.28	29.13	32.71
15	---	40.73	19.84	16.64	15.85	17.13	18.19	20.17	22.84	25.87	29.73	33.22
20	---	35.57	16.18	16.97	16.38	16.75	18.24	20.58	23.28	26.46	30.33	33.74
25	---	30.19	16.47	16.49	16.45	16.33	18.51	21.04	23.75	27.09	30.93	34.25
End of month	---	27.02	16.83	14.97	16.45	16.69	18.86	21.50	24.25	27.74	31.51	34.71

WATER YEAR 2002

HIGHEST 14.97 JAN 30, 2002

LOWEST 41.43 NOV 10, 2001



Departure from long-term average ground-water levels

[All values are in feet; —, no data; *, less than 10 years of record; **, less than 5 years of record, no departure calculated]

Well No.	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
10N/37E-23R01	—	**	—	-1.0*	—	-4.8*	—	-2.5	—	-1.3*	—	—
12N/26E-31C01D1	—	**	+0.9	—	**	**	—	**	+1.0	—	**	**
16N/02W-29L02P3 ^a	-4.6											
16N/02W-29L02P2	—	-0.3	+9.4*	+8.6	+5.7	+2.2*	+2.7	+1.6	+3.7*	+1.9	+1.6	+2.9*
18N/43E-35L01	—	+0.8	+2.6	—	+1.6	—	+3.2	+2.4	+1.3	+1.8	—	+2.1
22N/01W36H01D11	—	-3.3*	**	—	**	—	—	**	**	—	**	—
24N/36E-16A01	-0.4	+1.9	—	+1.0	+1.3	-0.8	-1.7	+1.3	-0.2	-0.2	-0.2	+0.5
24N/36E-16A06	+5.5	—	—	+2.1	+3.4	—	+1.9	—	—	+2.3	—	—
24N/36E-16A08	+0.7	—	—	-1.9	-4.2	—	-3.4	—	—	+3.1	—	—
25N/45E-16C01	+2.2	+2.4	+2.0	+4.6	+2.8	+1.4	+6.4	+5.6	+2.2	+1.9	+1.6	+2.8

^a This site replaced by 16N/02W-29L02P2 in November 2001.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the streamflow representative of undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities. At 10 of these sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program can be found at <http://water.usgs.gov/hbn/>.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program can be found at <http://water.usgs.gov/nasqan/>.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as all data from the individual sites, can be found at <http://bqs.usgs.gov/acidrain/>.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 59 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program can be found at <http://water.usgs.gov/nawqa/>.

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 2002 water year that began October 1, 2001, and ended September 30, 2002. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface water, and ground-water-level data. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Washington, for surface-water stations where only miscellaneous measurements are made.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 12020000, which appears just to the left of the station name, includes the two-digit Part number "12" plus the six-digit downstream-order number "020000." The Part number designates the major river basin; for example, part "12" refers to the Pacific slope basins in Washington and upper Columbia River basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a one-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In the instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

Well-Numbering System

The USGS assigns numbers to wells and springs in Washington that identify their location in a township, range, and section (fig. 4). Well number 12N/26E-31C01 indicates, successively, the township (T. 12 N.) and range (R. 26 E.) north and east of the Willamette base line and meridian. The first number following the hyphen indicates the section (31) within the township, and the letter following the section number gives the 40-acre subdivision of the section, as shown below (fig. 15). The number (01) following the letter is the sequence number of the well within the 40-acre subdivision. This number indicates that the well was the second one inventoried by the USGS personnel in that 40-acre tract. An "S" following the sequence number indicates that the site is a spring, a "D1" after the sequence number indicates that the original reported depth of the well has been changed once, and successive numbers indicate the number of changes in the well depth.

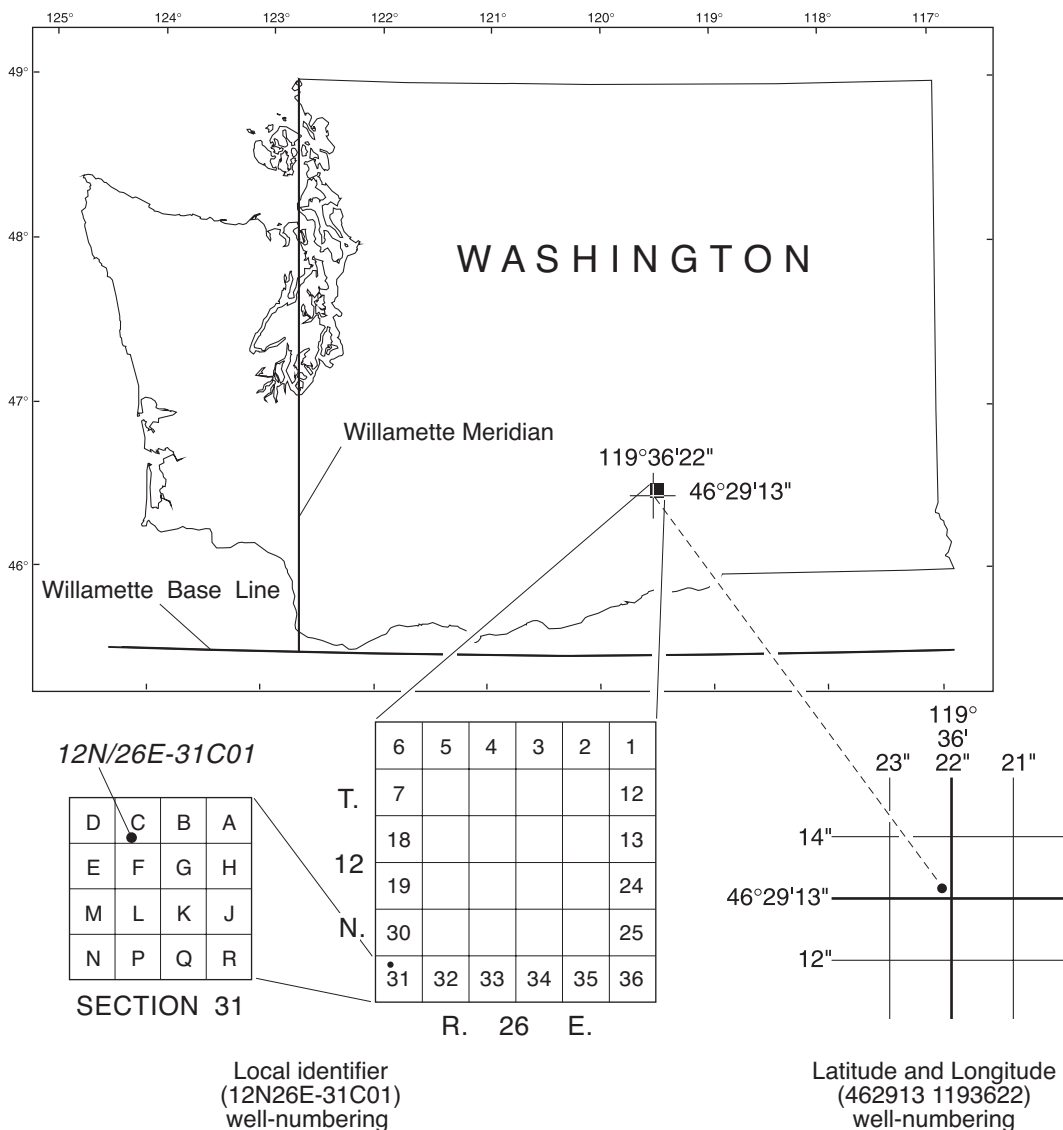


Figure 4. Well-numbering systems used in the State of Washington.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relations between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relation between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with satellite telemetry data collection platforms that transmit data at selected time intervals via satellite to a direct readout ground station, with electronic recorders that store stage values on computer chips at selected time intervals, or with analog recorders that trace continuous graphs of stage. Measurements of discharge are made with current meters using methods adapted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A6. These methods are described in standard textbooks, Water-Supply Paper 2175, and The U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI's), Book 3, Chapters A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with The American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some gaging stations, acoustic velocity meter (AVM) systems are used to compute discharge. The AVM system measures the stream's velocity at one or more paths in the cross section. Coefficients are developed to relate this path velocity to the mean velocity in the cross section. Because the AVM sensors are fixed in position, the adjustment coefficients generally vary with stage. Cross-sectional area curves are developed to relate stage, recorded as noted above, to cross section area. Discharge is computed by multiplying path velocity by the appropriate stage related coefficient and area.

In computing records of lake or reservoir contents, it is necessary to have information available from surveys, curves, or tables that define the relation of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Discharges over lake or reservoir spillways are computed from stage-discharge relations much as other stream discharges are computed.

For some gaging stations there are periods when no gage-height record is obtained, or the validity of the recorded gage height is so questionable that it cannot be used to compute daily discharge or contents. This happens when the data collection platform or recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual and daily flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration. Summary statistics were not included for certain sites where these data would be misleading. Contact the District Office for information concerning summary statistics for these sites.

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages are based on information developed by the Hydraulics and Hydrology Committee of the Pacific Northwest River Basins Commission.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means the instantaneous maximum discharge was revised; "(m)" the instantaneous minimum was revised; and "(P)" the peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to sea level (see "DEFINITION OF TERMS"), and a condensed history of the types, location, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, special methods of computation, conditions that affect natural flow at the station and, possibly, other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic average of the water-year mean discharges. Average discharge is computed only for stations having at least 2 water years of complete record; water years with incomplete record are not included in the computation. The mean-discharge value that uses all published data may differ from that given in the summary statistics data, which is based only on computer-stored data. The summary data does not include values of monthly or yearly data that were determined by various methods for the series of Water-Supply Papers entitled "Compilation of Records of Surface Water of the United States". The average-discharge value is not computed for stations where diversions, storage or other water-use practices cause the value to be meaningless. If water projects that significantly alter flow at a station are put into use after the station has been in operation for a period of years, the new average is computed as soon as 2 water years of record have accumulated after the project began.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a data collection platform, graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made in the U.S. Geological Survey's distributed data system, NWIS, and subsequently to its web-based National data system, NWISWeb [<http://water.usgs.gov/nwis>]. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure the most recent updates. Updates to NWISWeb are currently made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the Washington office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Data table of daily mean values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEAR____-____, BY WATER YEAR (WY)", and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly and daily flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS____-____", will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes. At least 5 complete years of record must be available before this statistic is published for the designated period.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

MAXIMUM PEAK FLOW.--The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.--The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile area drained, assuming the runoff is distributed uniformly in time and area.

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual state data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under the "REMARKS" paragraph. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; the nearest tenth between 1.0 and 10 ft³/s; whole numbers between 10 and 1,000 ft³/s; and 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff because of the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation, or other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, changes in contents of reservoirs, or other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

Monthly records for several ungaged sites are given in a separate section following the gaged sites. The accuracy of records for ungaged sites is generally lower than that for gaged sites, depending on the precision of the computation method and the accuracy of data used in the computations.

For most gaging stations, unpublished, detailed information, on file in the Washington office, includes discharge measurements, gage-height records, and rating tables. Many gaging-station records in Washington through 1979 have been analyzed to determine several statistical summaries: (1) The number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

Other Federal and State agencies have collected discharge data at other sites in Washington during the current water year. Although these records have not been published by the U.S. Geological Survey, the National Water Data Exchange, NAWDEX, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of these sites and will furnish information about them.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuous-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuous records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape or obtained via data collection platform. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 3.

Accuracy of the Records

One of four accuracy classifications is applied for measured physical properties at continuous-record stations on a scale ranging from poor to excellent. The accuracy rating is based on data values recorded before any shifts or corrections are made, as described by Wagner and others (2000). Additional consideration also is given to the amount of publishable record and to the amount of data that have been corrected or shifted.

Rating continuous water-quality records

[\leq , less than or equal to; \pm , plus or minus value shown; $^{\circ}\text{C}$, degree Celsius; $>$, greater than; %, percent; mg/L, milligram per liter; pH unit, standard pH unit]

Measured physical property	Ratings			
	Excellent	Good	Fair	Poor
Water temperature	$\leq \pm 0.2^{\circ}\text{C}$	$> \pm 0.2$ to 0.5°C	$> \pm 0.5$ to 0.8°C	$> \pm 0.8^{\circ}\text{C}$
Specific conductance	$\leq \pm 3\%$	$> \pm 3$ to 10%	$> \pm 10$ to 15%	$> \pm 15\%$
Dissolved oxygen	$\leq \pm 0.3$ mg/L	$> \pm 0.3$ to 0.5 mg/L	$> \pm 0.5$ to 0.8 mg/L	$> \pm 0.8$ mg/L
pH	$\leq \pm 0.2$ unit	$> \pm 0.2$ to 0.5 unit	$> \pm 0.5$ to 0.8 unit	$> \pm 0.8$ unit
Turbidity	$\leq \pm 5\%$	$> \pm 5$ to 10%	$> \pm 10$ to 15%	$> \pm 15\%$

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-site Measurement and Sample Collection

In obtaining water-quality data, it is important that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, treating the samples to prevent changes in quality pending analysis, and shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are detailed in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapter A1, A3, and A4, and Book 9, chapters A1-A9. These references are listed in the PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS section of this report. These methods are consistent with ASTM standards and generally follow ISO standards. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey, Water Resources Division office in Tacoma, Washington.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see "DEFINITION OF TERMS") are obtained from at least five verticals. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean or medium values for each constituent measured and are based upon hourly (or more frequent) punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, maximum, minimum, and mean temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Washington office.

Sediment

Suspended-sediment concentrations are determined from samples collected by one of the standard sampling techniques discussed in TWRI, Book 3, Chapter C2, "Field methods for measurement of fluvial sediment," 1985 revision. Samples are obtained using standard depth- or point-integrating samplers, or by means of an approved pumping sampler. Mean concentrations for the sampled cross section are in turn determined from these samples.

During periods of rapidly changing flow or rapidly changing suspended-sediment concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge. Methods used in the computation of sediment records are described in the TWRI Book 3, Chapters C1 and C3. These methods are consistent with ASTM standards and generally follow ISO standards.

At other stations, suspended-sediment samples were collected periodically. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, periodic measurements of particle-size distributions for the suspended-sediment, bed-load, and bed-material samples are included for stations where samples were obtained to measure this parameter.

Laboratory Measurements

Sediment samples, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used to analyze samples and to compute sediment records are given in the TWRI Book 5, Chapter C1. Methods used by the Geological Survey laboratories are given in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapters A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

In March 1989, the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and 1989. Sulfate values in this report have not been corrected for this bias.

Estimated pesticide concentrations published in this report are identified by flagging individual values with the symbol "E" and printing a table footnote "E - Estimated". "E" codes (used to define surface-water and water-quality table values) are also used to signify estimated values for all detections that are below the lowest calibration standard, above the highest calibration standard, or otherwise less reliable than average because of sample-specific or compound-specific considerations. All E-coded data are considered to be reliable detections, but with greater than average uncertainty in quantification.

Data Presentation

For continuous-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, NWIS, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this section:

<u>PRINT OUTPUT</u>	<u>REMARK</u>
E	Estimated value.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
K	Results based on colony count outside the acceptance range (non-ideal colony count).
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted).
D	Biological organism count equal to or greater than 15 percent (dominant).
V	Analyte was detected in both the environmental sample and the associated blanks
&	Biological organism estimated as dominant.
M	Presence of material verified, but not quantified.

Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this District are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

BLANK SAMPLES—Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this District are:

Source solution blank - a blank solution that is transferred to a sample bottle in an area of the office laboratory with an atmosphere that is relatively clean and protected with respect to target analytes.

Ambient blank - a blank solution that is put in the same type of bottle used for an environmental sample, kept with the set of sample bottles before sample collection, and opened at the site and exposed to the ambient conditions.

Field blank - a blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank - a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank - a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank - a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Pump blank - a blank solution that is processed through the same pump-and-tubing system used for an environmental sample.

Stand-pipe blank - a blank solution that is poured from the containment vessel (stand-pipe) before the pump is inserted to obtain the pump blank.

Filter blank - a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank - a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank - a blank solution that is treated with the sampler preservatives used for an environmental sample.

Canister blank - a blank solution that is taken directly from a stainless-steel canister just before the VOC sampler is submerged to obtain a field blank sample.

REFERENCE SAMPLES—Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

REPLICATE SAMPLES—Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this District are:

Concurrent sample - a type of replicate sample in which the samples are collected simultaneously with two or more samplers or by using one sampler and alternating collection of samples into two or more compositing containers.

Sequential sample - a type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample - a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

SPIKE SAMPLES - Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

Concurrent sample - a type of spike sample that is collected at the same time with the same sampling and compositing devices then spiked with the same spike solution containing laboratory-certified concentrations of selected analytes.

Split sample - a type of spike sample in which a sample is split into subsamples contemporaneous in time and space then spiked with the same spike solution containing laboratory-certified concentrations of selected analytes.

Records of Ground-Water Levels

Water-level data from only a few of the many observation wells in Washington are given in this report.

Ground-water records obtained through cooperative efforts of many Federal, State, and local agencies for several thousand observation wells throughout Washington are not included in this report. These records may be placed in computer storage, published in reports, or kept in files. Information about the availability of ground-water data may be obtained from the District Chief, Washington District, U.S. Geological Survey, 1201 Pacific Avenue, Suite 600, Tacoma, Washington 98402.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the township-range location of the well.

Water-level records are obtained from direct measurements with a steel or electrical tape or from the graph or punched tape of a water-stage recorder. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); a landline location designation; the hydrologic unit number; the distance and direction from a geographic point of reference; and the owner's name.

AQUIFER.--This entry designates by name (if a name exists) and geologic age the aquifer(s) open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and (or) screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

INSTRUMENTATION.--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

DATUM.--This entry describes the land-surface elevation at the well. The elevation of the land-surface datum is described in feet above (or below) sea level; it is reported with a precision depending on the method of determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that also are water-quality observation wells, and may be used to acknowledge the assistance of local (non-Survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. For wells equipped with a recorder, only abbreviated tables are published; generally, only water-level lows are listed for every fifth day and at the end of the month (eom). The highest and lowest water levels of the water year and their dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the internet. These data may be accessed at:

<http://water.usgs.gov>

Some water-quality and ground water data also are available through the internet. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the USGS Water Resources Program Offices in each state (see address on the back of the title page).

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Definitions of common terms such as algae, water level, and precipitation are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting inch/pound units to International System (SI) units on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an “unfiltered” sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also “Annual runoff”)

Adenosine triphosphate (ATP) is an organic, phosphate-rich compound important in the transfer of energy in organisms. Its central role in living cells makes ATP an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample. (See also “Biomass” and “Dry weight”)

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a “filtered” sample.

Annual runoff is the total quantity of water that is discharged (“runs off”) from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 through September 30). Most low-flow frequency analyses use a climatic year (April 1-March 31), which tends to prevent the low-flow period

from being artificially split between adjacent years. The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day, 10-year low-flow statistic.)

Aroclor is the registered trademark for a group of polychlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type, and the last two digits represent the percentage weight of the hydrogen-substituted chlorine.

Artificial substrate is a device that is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is collected. Examples of artificial substrates are basket samplers (made of wire cages filled with clean stream-side rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection. (See also “Substrate”)

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500 °C for 1 hour. Ash mass of zooplankton and phytoplankton is expressed in grams per cubic meter (g/m³), and periphyton and benthic organisms in grams per square meter (g/m²). (See also “Biomass” and “Dry mass”)

Aspect is the direction toward which a slope faces with respect to the compass.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, whereas others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Bankfull stage, as used in this report, is the stage at which a stream first overflows its natural banks formed by floods with 1- to 3-year recurrence intervals.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peak flows per year will be published. (See also “Peak flow”)

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bedload is material in transport that is supported primarily by the streambed. In this report, bedload is considered to consist of particles in transit from the bed to an elevation equal to the top of the bedload sampler nozzle (ranging from 0.25 to 0.5 foot) that are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler also may contain a component of the suspended load.

Bedload discharge (tons per day) is the rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also "Bedload," "Dry weight," "Sediment," and "Suspended-sediment discharge")

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed. (See also "Bedload" and "Sediment")

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as mass per unit area or volume of habitat.

Biomass pigment ratio is an indicator of the total proportion of periphyton that are autotrophic (plants). This is also called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample. (See also "Phytoplankton")

Bottom material (See "Bed material")

Bulk electrical conductivity is the combined electrical conductivity of all material within a doughnut-shaped volume surrounding an induction probe. Bulk conductivity is affected by different physical and chemical properties of the material including the dissolved solids content of the pore water and lithology and porosity of the rock.

Cells/volume refers to the number of cells of any organism that is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample volume, and are generally reported as cells or units per milliliter (mL) or liter (L).

Cells volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm^3) is determined by obtaining critical cell measurements or cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

$$\text{sphere } \frac{4}{3} \pi r^3 \quad \text{cone } \frac{1}{3} \pi r^2 h \quad \text{cylinder } \pi r^2 h.$$

pi (π) is the ratio of the circumference to the diameter of a circle; pi = 3.14159....

From cell volume, total algal biomass expressed as biovolume ($\mu\text{m}^3/\text{mL}$) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes for all species.

Cfs-day (See "Cubic foot per second-day")

Channel bars, as used in this report, are the lowest prominent geomorphic features higher than the channel bed.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with BOD or with carbonaceous organic pollution from sewage or industrial wastes. [See also "Biochemical oxygen demand (BOD)"]

***Clostridium perfringens* (*C. perfringens*)** is a spore-forming bacterium that is common in the feces of human and other warmblooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and presence of microorganisms that are resistant to disinfection and environmental stresses. (See also "Bacteria")

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of water and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable boundaries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel that physically affects the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure, as used in this report, is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Cubic foot per second (CFS, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term "second-foot" sometimes is used synonymously with "cubic foot per second" but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-day, [(ft³/s)/d]) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables are numerically equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, (ft³/s)/mi²] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area. (See also "Annual runoff")

Daily mean suspended-sediment concentration is the time-weighted concentration of suspended sediment

passing a stream cross section during a 24-hour day. (See also "Sediment" and "Suspended-sediment concentration")

Daily-record station is a site where data are collected with sufficient frequency to develop a record of one or more data values per day. The frequency of data collection can range from continuous recording to periodic sample or data collection on a daily or near-daily basis.

Data collection platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data are usually downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or UTM coordinates. (See also "Gage datum," "Land-surface datum," "National Geodetic Vertical Datum of 1929," and "North American Vertical Datum of 1988")

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample. (See also "Phytoplankton")

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or **flow**, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediment or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, etc., within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents, such as suspended sediment, bedload, and dissolved or suspended chemicals, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of "dissolved" constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration in water is the quantity of dissolved material in a sample of water. It is determined either analytically by the “residue-on-evaporation” method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L CaCO₃) can be converted to carbonate concentration by multiplying by 0.60.

Diversity index (H) (Shannon index) is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n},$$

where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth’s surface that contains a drainage system with a common outlet for its surface runoff. (See “Drainage area”)

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass. (See also “Ash mass,” “Biomass,” and “Wet mass”)

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 °C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also “Wet weight”)

Embeddedness is the degree to which gravel-sized and larger particles are surrounded or enclosed by finer-sized particles. (See also “Substrate embeddedness class”)

Enterococcus bacteria are commonly found in the feces of humans and other warmblooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar (nutrient medium for bacterial growth) and subsequent transfer to EIA medium. Enterococci include *Streptococcus faecalis*, *Streptococcus faecium*, *Streptococcus avium*, and their variants. (See also “Bacteria”)

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that are generally considered pollution sensitive; the index usually decreases with pollution.

Escherichia coli (E. coli) are bacteria present in the intestine and feces of warmblooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 °C on mTEC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also “Bacteria”)

Estimated (E) concentration value is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an ‘E’ code will be reported with the value. If the analyte is qualitatively identified as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an ‘E’ code even though the measured value is greater than the MDL. A value reported with an ‘E’ code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<).

Euglenoids (Euglenophyta) are a group of algae that are usually free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also “Phytoplankton”)

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semivolatile and extractable by ethyl acetate from air-dried streambed sediment. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediment.

Fecal coliform bacteria are present in the intestines or feces of warmblooded animals. They often are used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5 °C plus or minus 0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Fecal streptococcal bacteria are present in the intestines of warmblooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Fire algae (*Pyrrhophyta*) are free-swimming unicells characterized by a red pigment spot. (See also "Phytoplankton")

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum itself is not an actual physical object, the datum usually is defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national

datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height often is used interchangeably with the more general term "stage," although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted, and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

Gaging station is a site on a stream, canal, lake, or reservoir where systematic observations of stage, discharge, or other hydrologic data are obtained.

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

Geomorphic channel units, as used in this report, are fluvial geomorphic descriptors of channel shape and stream velocity. Pools, riffles, and runs are types of geomorphic channel units considered for National Water-Quality Assessment (NAWQA) Program habitat sampling.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample. (See also "Phytoplankton")

Habitat, as used in this report, includes all nonliving (physical) aspects of the aquatic ecosystem, although living components like aquatic macrophytes and riparian vegetation also are usually included. Measurements of habitat are typically made over a wider geographic scale than are measurements of species distribution.

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that commonly is recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate (CaCO₃).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. See NOAA web site:

<http://www.co-ops.nos.noaa.gov/tideglos.html>

Hilsenhoff's Biotic Index (HBI) is an indicator of organic pollution that uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = \text{sum} \frac{(n)(a)}{N} ,$$

where n is the number of individuals of each taxon, a is the tolerance value of each taxon, and N is the total number of organisms in the sample.

Horizontal datum (See "Datum")

Hydrologic index stations referred to in this report are continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as defined by the former Office of Water Data Coordination and delineated on the State Hydrologic Unit Maps by the USGS. Each hydrologic unit is identified by an 8-digit number.

Inch (IN., in.), as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were uniformly distributed on it. (See also "Annual runoff")

Instantaneous discharge is the discharge at a particular instant of time. (See also "Discharge")

Island, as used in this report, is a mid-channel bar that has permanent woody vegetation, is flooded once a year on average, and remains stable except during large flood events.

Laboratory reporting level (LRL) is generally equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a "less than" (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values

are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. [Note: In several previous NWQL documents (NWQL Technical Memorandum 98.07, 1998), the LRL was called the nondetection value or NDV—a term that is no longer used.]

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Latent heat flux (often used interchangeably with latent heat-flux density) is the amount of heat energy that converts water from liquid to vapor (evaporation) or from vapor to liquid (condensation) across a specified cross-sectional area per unit time. Usually expressed in watts per square meter.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation:

$$I = I_o e^{-\lambda L} ,$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L} \log_e \frac{I}{I_o} .$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-term method detection level (LT-MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike sample measurements over an extended period of time. LT-MDL data are collected on a continuous basis to assess year-to-year variations in the LT-MDL. The LT-MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT-MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. See NOAA web site:

<http://www.co-ops.nos.noaa.gov/tideglos.html>

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that usually are arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also "Daily mean suspended-sediment concentration" and "Suspended-sediment concentration")

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period. (See also "Discharge")

Mean high or low tide is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also "Datum")

Measuring point (MP) is an arbitrary permanent reference point from which the distance to water surface in a well is measured to obtain water level.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation

of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (UG/G, $\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per kilogram (UG/KG, $\mu\text{g/kg}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, $\mu\text{g/L}$) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

Microsiemens per centimeter (US/CM, $\mu\text{S/cm}$) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of Units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in water as the mass (milligrams) of constituent per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of dry sediment per liter of water-sediment mixture.

Minimum reporting level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method.

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It was formerly called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations, it does not necessarily represent local mean sea level at any particular place. See NOAA web site: <http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88> (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate")

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Vertical Datum of 1988 (NAVD 1988) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian, Mexican, and United States first-order terrestrial leveling networks.

Open or screened interval is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediment. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or **volatile mass** of a living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic

mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m²), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method utilizes the principle of Stokes law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, sedigraph) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification, as used in this report, agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	>0.00024 - 0.004	Sedimentation
Silt	>0.004 - 0.062	Sedimentation
Sand	>0.062 - 2.0	Sedimentation/sieve
Gravel	>2.0 - 64.0	Sieve
Cobble	>64.0 - 256	Manual measurement
Boulder	>256	Manual measurement

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. For the sedimentation method, most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series of times, the peak recorded value may be taken as an approximation of the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

Percent composition or percent of total is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, mass, or volume.

Percent shading is a measure of the amount of sunlight potentially reaching the stream. A clinometer is used to measure left and right bank canopy angles. These values are added together, divided by 180, and multiplied by 100 to compute percentage of shade.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year but at a frequency insufficient to develop a daily record.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. Although primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7.0 standard units are termed "acidic," and solutions with a pH greater than 7.0 are termed "basic." Solutions with a pH of 7.0 are

neutral. The presence and concentration of many dissolved chemical constituents found in water are affected, in part, by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are affected, in part, by the hydrogen-ion activity of water.

Phytoplankton is the plant part of the plankton. They are usually microscopic, and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment and commonly are known as algae. (See also "Plankton")

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7×10^{10} radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

Pool, as used in this report, is a small part of a stream reach with little velocity, commonly with water deeper than surrounding areas.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photo-synthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated (carbon method) by the plants.

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [$\text{mg C}/(\text{m}^2/\text{time})$] for periphyton and macrophytes or per volume [$\text{mg C}/(\text{m}^3/\text{time})$] for phytoplankton. The carbon method defines the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is

of greater sensitivity than the oxygen light and dark bottle method and is preferred for use with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [$\text{mg O}/(\text{m}^2/\text{time})$] for periphyton and macrophytes or per volume [$\text{mg O}/(\text{m}^3/\text{time})$] for phytoplankton. The oxygen method defines production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Radioisotopes are isotopic forms of elements that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Reach, as used in this report, is a length of stream that is chosen to represent a uniform set of physical, chemical, and biological conditions within a segment. It is the principal sampling unit for collecting physical, chemical, and biological data.

Recoverable from bed (bottom) material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. (See also "Bed material")

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or

nonexceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day, 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the nonexceedances of the $7Q_{10}$ occur less than 10 years after the previous nonexceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous nonexceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See "Recurrence interval")

Riffle, as used in this report, is a shallow part of the stream where water flows swiftly over completely or partially submerged obstructions to produce surface agitation.

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council and typically is used to denote location along a river.

Run, as used in this report, is a relatively shallow part of a stream with moderate velocity and little or no surface turbulence.

Runoff is the quantity of water that is discharged ("runs off") from a drainage basin during a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also "Annual runoff")

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as “fluvial sediment.” Sediment includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are affected by environmental and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of pre-precipitation.

Sensible heat flux (often used interchangeably with latent sensible heat-flux density) is the amount of heat energy that moves by turbulent transport through the air across a specified cross-sectional area per unit time and goes to heating (cooling) the air. Usually expressed in watts per square meter.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-term average. The recurrence interval of the $7Q_{10}$ is 10 years; the chance that the annual 7-day minimum flow will be less than the $7Q_{10}$ is 10 percent in any given year. (See also “Annual 7-day minimum” and “Recurrence interval”)

Shelves, as used in this report, are streambank features extending nearly horizontally from the flood plain to the lower limit of persistent woody vegetation.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Sodium hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Soil heat flux (often used interchangeably with soil heat-flux density) is the amount of heat energy that moves by conduction across a specified cross-sectional area of soil per unit time and goes to heating (or cooling) the soil. Usually expressed in watts per square meter.

Soil-water content is the water lost from the soil upon drying to constant mass at 105 °C; expressed either as mass of water per unit mass of dry soil or as the volume of water per unit bulk volume of soil.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved

substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stable isotope ratio (per MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific water, to evaluate mixing of different water, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See “Gage height”)

Stage-discharge relation is the relation between the water-surface elevation, termed stage (gage height), and the volume of water flowing in a channel per unit time.

Streamflow is the discharge that occurs in a natural channel. Although the term “discharge” can be applied to the flow of a canal, the word “streamflow” uniquely describes the discharge in a surface stream course. The term “streamflow” is more general than “runoff” as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Substrate embeddedness class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2mm, sand or finer). Below are the class categories expressed as the percentage covered by fine sediment:

0	no gravel or larger substrate	3	26-50 percent
1	> 75 percent	4	5-25 percent
2	51-75 percent	5	< 5 percent

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

Surficial bed material is the upper surface (0.1 to 0.2 foot) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is defined operationally as the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative suspended water-sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the “total” amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of “suspended, recoverable” constituents are made either by directly analyzing the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total recoverable concentrations of the constituent. (See also “Suspended”)

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also “Sediment”)

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 foot above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also “Sediment” and “Suspended sediment”)

Suspended-sediment discharge (tons/d) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft³/s) x 0.0027. (See also “Sediment,” “Suspended sediment,” and “Suspended-sediment concentration”)

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as “annual suspended-sediment load” or “sand-size suspended-sediment load,” and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also “Sediment”)

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined.

Knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as “suspended, total.” Determinations of “suspended, total” constituents are made either by directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total concentrations of the constituent. (See also “Suspended”)

Suspended solids, total residue at 105 °C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa (Species) richness is the number of species (taxa) present in a defined area or sampling unit.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata*, is the following:

Kingdom:	Animal
Phylum:	Arthropoda
Class:	Insecta
Order:	Ephemeroptera
Family:	Ephemeridae
Genus:	<i>Hexagenia</i>
Species:	<i>Hexagenia limbata</i>

Thalweg is the line formed by connecting points of minimum streambed elevation (deepest part of the channel).

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term “temperature recorder” is used in the table descriptions and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (acre-foot) of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warmblooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory, these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters of sample. (See also "Bacteria")

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to

constituents other than water, this term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total in bottom material is the amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Total length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also "Organism count/volume")

Total recoverable is the amount of a given constituent in a whole-water sample after a sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data for whole-water samples, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures may produce different analytical results.

Total sediment discharge is the mass of suspended-sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also "Bedload," "Bedload discharge," "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Total sediment load or **total load** is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It differs from total sediment discharge in that load refers to the material, whereas discharge refers to the quantity of material, expressed

in units of mass per unit time. (See also “Sediment,” “Suspended-sediment load,” and “Total load”)

Transect, as used in this report, is a line across a stream perpendicular to the flow and along which measurements are taken, so that morphological and flow characteristics along the line are described from bank to bank. Unlike a cross section, no attempt is made to determine known elevation points along the line.

Turbidity is the reduction in the transparency of a solution due to the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to U.S. EPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of pathlength of UV light through a sample.

Unconfined aquifer is an aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure. (See “Water-table aquifer”)

Vertical datum (See “Datum”)

Volatile organic compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings.

VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens.

Water table is that surface in a ground-water body at which the water pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which the water table is found.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2002, is called the “2002 water year.”

WDR is used as an abbreviation for “Water-Data Report” in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports. (WRD was used as an abbreviation for “Water-Resources Data” in reports published prior to 1976.)

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

Wet mass is the mass of living matter plus contained water. (See also “Biomass” and “Dry mass”)

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also “Dry weight”)

WSP is used as an acronym for “Water-Supply Paper” in reference to previously published reports.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and often are large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers. (See also “Plankton”)

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY

The USGS publishes a series of manuals titled the “Techniques of Water-Resources Investigations” that describe procedures for planning and conducting specialized work in water-resources investigations. The material in these manuals is grouped under major subject headings called books and is further divided into sections and chapters. For example, section A of book 3 (Applications of Hydraulics) pertains to surface water. Each chapter then is limited to a narrow field of the section subject matter. This publication format permits flexibility when revision or printing is required.

Manuals in the Techniques of Water-Resources Investigations series, which are listed below, are available online at <http://water.usgs.gov/pubs/twri/>. Printed copies are available for sale from the USGS, Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (an authorized agent of the Superintendent of Documents, Government Printing Office). Please telephone “1-888-ASK-USGS” for current prices, and refer to the title, book number, section number, chapter number, and mention the “U.S. Geological Survey Techniques of Water-Resources Investigations.” Other products can be viewed online at <http://www.usgs.gov/sales.html>, or ordered by telephone or by FAX to (303)236-4693. Order forms for FAX requests are available online at <http://mac.usgs.gov/isb/pubs/forms/>. Prepayment by major credit card or by a check or money order payable to the “U.S. Geological Survey” is required.

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

- 1-D1. *Water temperature—influential factors, field measurement, and data presentation*, by H.H. Stevens, Jr., J.F. Ficke, and G.F. Smoot: USGS–TWRI book 1, chap. D1. 1975. 65 p.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS–TWRI book 1, chap. D2. 1976. 24 p.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

- 2-D1. *Application of surface geophysics to ground-water investigations*, by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS–TWRI book 2, chap. D1. 1974. 116 p.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P. Haeni: USGS–TWRI book 2, chap. D2. 1988. 86 p.

Section E. Subsurface Geophysical Methods

- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W.S. Keys and L.M. MacCary: USGS–TWRI book 2, chap. E1. 1971. 126 p.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS–TWRI book 2, chap. E2. 1990. 150 p.

Section F. Drilling and Sampling Methods

- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

- 3-A1. *General field and office procedures for indirect discharge measurements*, by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M.A. Benson: USGS–TWRI book 3, chap. A2. 1967. 12 p.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G.L. Bodhaine: USGS–TWRI book 3, chap. A3. 1968. 60 p.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H.F. Matthai: USGS–TWRI book 3, chap. A4. 1967. 44 p.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS–TWRI book 3, chap. A5. 1967. 29 p.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS—Continued

- 3-A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.
- 3-A7. *Stage measurement at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.
- 3-A8. *Discharge measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.
- 3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.
- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.
- 3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.
- 3-A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS–TWRI book 3, chap. A15. 1984. 48 p.
- 3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS–TWRI book 3, chap. A16. 1985. 52 p.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS–TWRI book 3, chap. A17. 1985. 38 p.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.
- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.
- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

- 3-B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.
- 3-B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.
- 3-B4. *Supplement 1. Regression modeling of ground-water flow—Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R.L. Cooley: USGS–TWRI book 3, chap. B4. 1993. 8 p.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS–TWRI book 3, chap. B5. 1987. 15 p.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS–TWRI book 3, chap. B6. 1987. 28 p.
- 3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow*, by E.J. Wexler: USGS–TWRI book 3, chap. B7. 1992. 190 p.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS—Continued

- 3-B8. *System and boundary conceptualization in ground-water flow simulation*, by T.E. Reilly: USGS-TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

- 3-C1. *Fluvial sediment concepts*, by H.P. Guy: USGS-TWRI book 3, chap. C1. 1970. 55 p.
- 3-C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS-TWRI book 3, chap. C2. 1999. 89 p.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation**Section A. Statistical Analysis**

- 4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS-TWRI book 4, chap. A1. 1968. 39 p.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS-TWRI book 4, chap. A2. 1968. 15 p.
- 4-A3. *Statistical methods in water resources*, by D.R. Helsel and R.M. Hirsch: USGS-TWRI book 4, chap. A3. 1991. Available only online at <http://water.usgs.gov/pubs/twri/twri4a3/>. (Accessed August 30, 2002.)

Section B. Surface Water

- 4-B1. *Low-flow investigations*, by H.C. Riggs: USGS-TWRI book 4, chap. B1. 1972. 18 p.
- 4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS-TWRI book 4, chap. B2. 1973. 20 p.
- 4-B3. *Regional analyses of streamflow characteristics*, by H.C. Riggs: USGS-TWRI book 4, chap. B3. 1973. 15 p.

Section D. Interrelated Phases of the Hydrologic Cycle

- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS-TWRI book 4, chap. D1. 1970. 17 p.

Book 5. Laboratory Analysis**Section A. Water Analysis**

- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M.J. Fishman and L.C. Friedman, editors: USGS-TWRI book 5, chap. A1. 1989. 545 p.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P.R. Barnett and E.C. Mallory, Jr.: USGS-TWRI book 5, chap. A2. 1971. 31 p.
- 5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS-TWRI book 5, chap. A3. 1987. 80 p.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L.J. Britton and P.E. Greeson, editors: USGS-TWRI book 5, chap. A4. 1989. 363 p.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS-TWRI book 5, chap. A5. 1977. 95 p.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L.C. Friedman and D.E. Erdmann: USGS-TWRI book 5, chap. A6. 1982. 181 p.

Section C. Sediment Analysis

- 5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS-TWRI book 5, chap. C1. 1969. 58 p.

Book 6. Modeling Techniques**Section A. Ground Water**

- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS-TWRI book 6, chap. A1. 1988. 586 p.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS—Continued

- 6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model*, by S.A. Leake and D.E. Prudic: USGS–TWRI book 6, chap. A2. 1991. 68 p.
- 6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual*, by L.J. Torak: USGS–TWRI book 6, chap. A3. 1993. 136 p.
- 6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions*, by R.L. Cooley: USGS–TWRI book 6, chap. A4. 1992. 108 p.
- 6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details*, by L.J. Torak: USGS–TWRI book 6, chap. A5. 1993. 243 p.
- 6-A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler: USGS–TWRI book 6, chap. A5. 1996. 125 p.
- 6-A7. *User's guide to SEAWAT: A computer program for simulation of three-dimensional variable-density ground-water flow*, by Weixing Guo and Christian D. Langevin: USGS–TWRI book 6, chap. A7. 2002. 77 p.

Book 7. Automated Data Processing and Computations**Section C. Computer Programs**

- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS–TWRI book 7, chap. C1. 1976. 116 p.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS–TWRI book 7, chap. C2. 1978. 90 p.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS–TWRI book 7, chap. C3. 1981. 110 p.

Book 8. Instrumentation**Section A. Instruments for Measurement of Water Level**

- 8-A1. *Methods of measuring water levels in deep wells*, by M.S. Garber and F.C. Koopman: USGS–TWRI book 8, chap. A1. 1968. 23 p.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS–TWRI book 8, chap. A2. 1983. 57 p.

Section B. Instruments for Measurement of Discharge

- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G.F. Smoot and C.E. Novak: USGS–TWRI book 8, chap. B2. 1968. 15 p.

Book 9. Handbooks for Water-Resources Investigations**Section A. National Field Manual for the Collection of Water-Quality Data**

- 9-A1. *National Field Manual for the Collection of Water-Quality Data: Preparations for Water Sampling*, by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.
- 9-A2. *National Field Manual for the Collection of Water-Quality Data: Selection of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.
- 9-A3. *National Field Manual for the Collection of Water-Quality Data: Cleaning of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.
- 9-A4. *National Field Manual for the Collection of Water-Quality Data: Collection of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibbs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS—Continued

- 9-A5. *National Field Manual for the Collection of Water-Quality Data: Processing of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999. 149 p.
- 9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Variously paginated.
- 9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.
- 9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.
- 9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.

SURFACE-WATER-DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

Remark Codes

The following remark codes may appear with the water-quality data in this section:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Value is estimated.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
M	Presence of material verified, but not quantified.
N	Presumptive evidence of presence of material.
U	Material specifically analyzed for, but not detected.
A	Value is an average.
V	Analyte was detected in both the environmental sample and the associated blanks.
S	Most probable value.

Dissolved Trace-Element Concentrations

*NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ($\mu\text{g/L}$) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Data above the $\mu\text{g/L}$ level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

*NOTE.--Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).

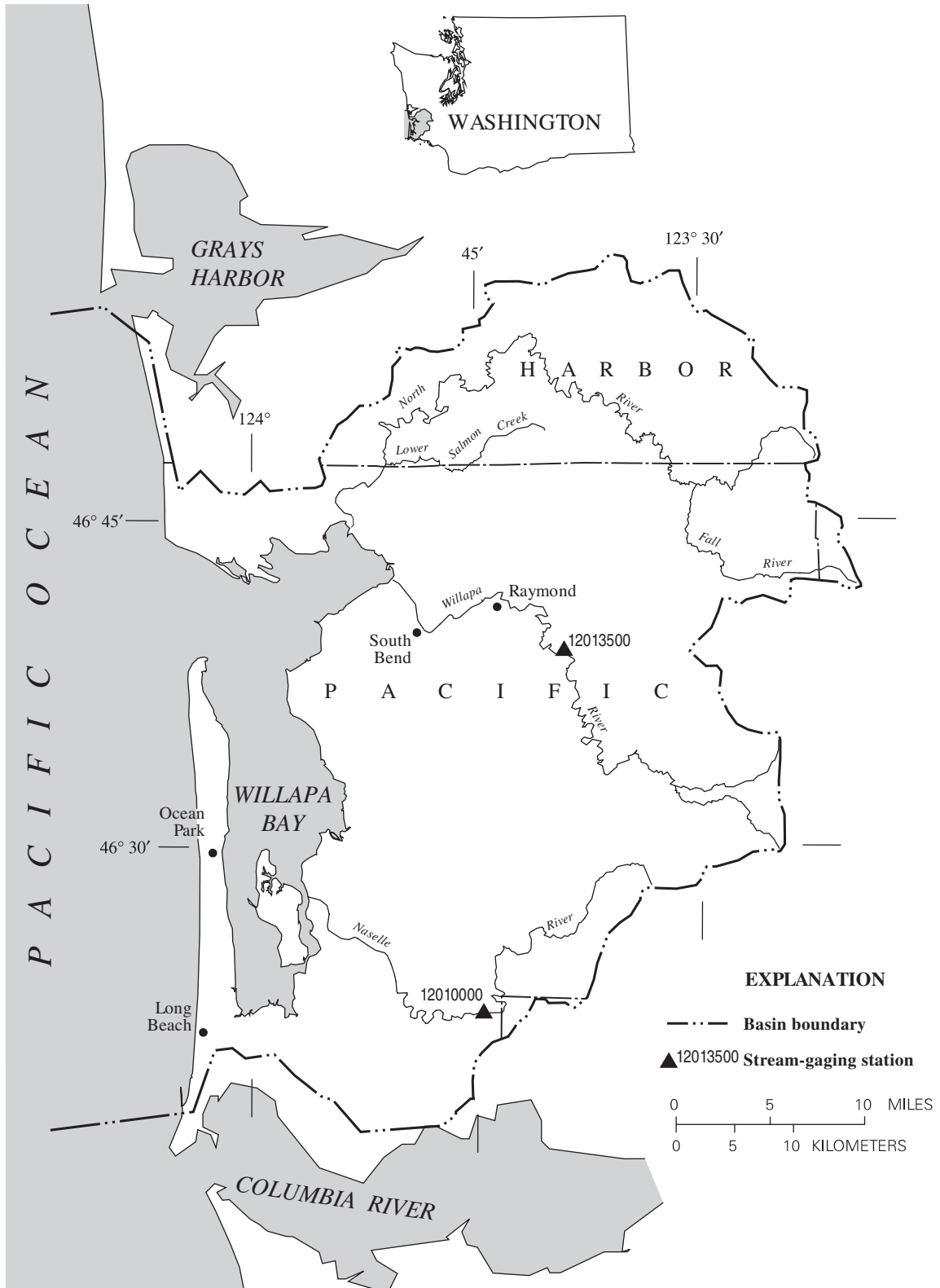


Figure 5. Location of surface-water stations in the Naselle and Willapa River Basins.

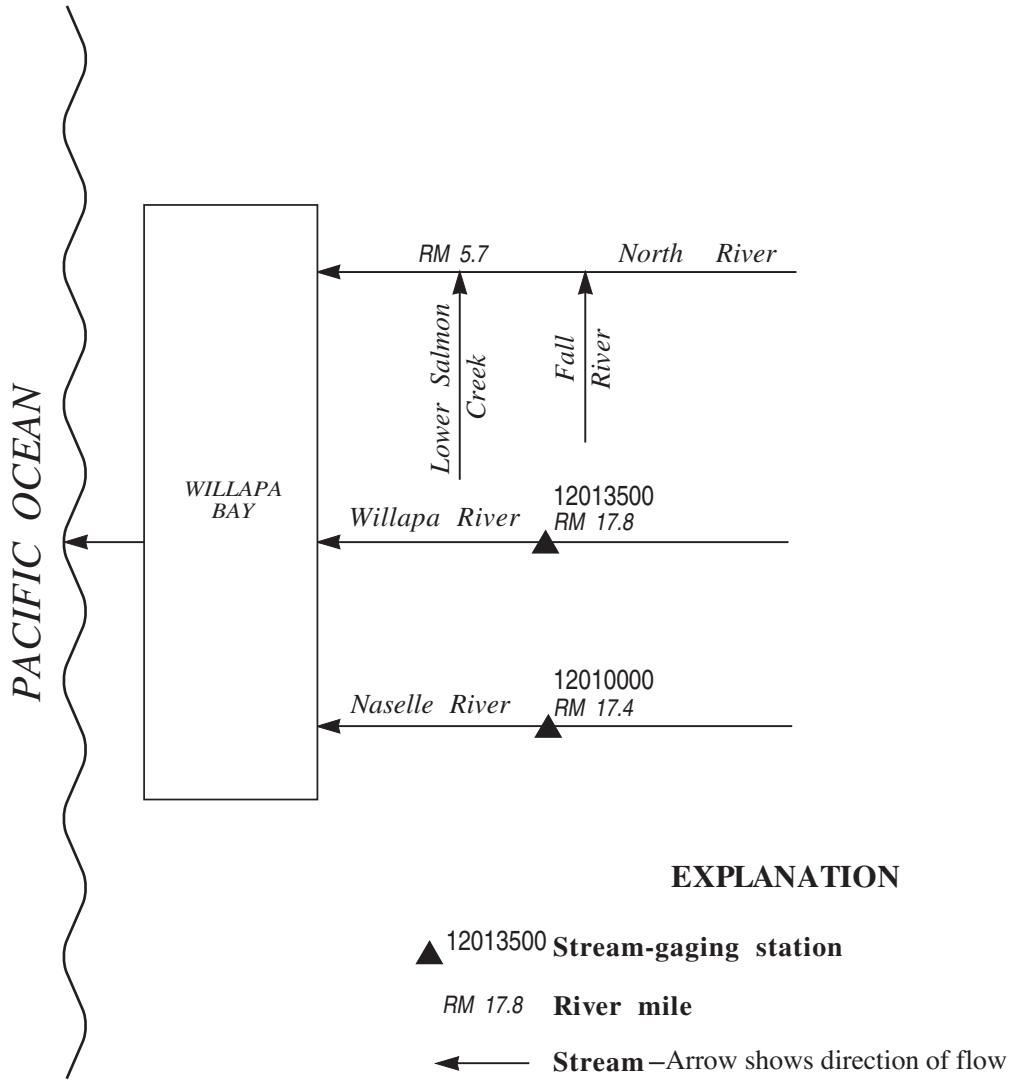


Figure 6. Schematic diagram showing surface-water stations in the Naselle and Willapa River Basins.

GAGING STATION RECORDS

NASELLE RIVER BASIN

12010000 NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°22'27", long 123°44'32", in SW ¼ SW ¼ sec.1, T.10 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on right bank 0.2 mi upstream from county highway bridge, 2.2 mi upstream from Salmon Creek, 3.4 mi east of Naselle, and at mile 17.4.

DRAINAGE AREA.--54.8 mi².

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

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1930(M), 1932-40(M), 1945-46(M).

GAGE.--Water-stage recorder. Elevation of gage is 24 ft above NGVD of 1929, by barometer. Prior to Jan. 11, 1957, nonrecording gage and crest-stage gage at site 1,350 ft downstream at present datum. Jan. 11, 1957, to Dec. 31, 1961, nonrecording gage and crest-stage gage at site 1,200 ft downstream at present datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Chemical analyses October 1965 to September 1970, January to September 1973, November 1975 to June 1980. Water temperatures August 1963 to September 1973. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--73 years (water years 1930-2002), 429 ft³/s, 106.28 in/yr, 310,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft³/s Mar. 18, 1997, gage height, 19.26 ft; minimum discharge, 18 ft³/s Aug. 30, 31, Sept. 1, 1970, Sept. 3, 1982.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2000	*6,870	*14.42	Jan. 7	1230	4,180	11.39
Dec. 13	2030	4,410	11.67	Jan. 25	0230	4,820	12.16
Dec. 16	2230	6,210	13.73				

Minimum discharge, 22 ft³/s Sept. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	574	3500	256	1180	301	253	179	167	182	43	28
2	52	538	2510	279	892	274	228	172	155	e150	43	29
3	51	459	1440	288	843	250	211	166	148	132	42	31
4	49	404	1170	324	722	230	197	155	143	126	44	29
5	48	362	1030	355	656	216	188	167	143	121	47	28
6	46	312	997	1110	735	207	192	169	135	107	61	27
7	49	277	848	3630	841	191	215	167	124	103	44	27
8	57	249	735	2710	893	186	192	147	120	e98	42	29
9	51	226	661	1490	763	188	e240	140	114	92	41	33
10	77	206	687	935	653	450	e550	136	110	86	40	29
11	106	192	787	667	559	1540	e540	129	105	83	40	27
12	94	189	889	824	471	1170	e760	122	99	79	38	26
13	165	593	2530	692	412	909	e1000	121	e92	76	36	26
14	149	4440	3090	570	368	840	e2200	125	91	e73	35	25
15	129	3720	1920	477	335	734	e1900	115	90	70	e35	26
16	110	2140	4860	423	322	652	e1600	110	89	e68	35	30
17	101	1240	3900	379	293	551	1150	106	104	67	e35	e32
18	91	819	2030	345	287	566	850	99	144	67	34	28
19	107	756	1460	400	363	955	643	97	110	65	34	e26
20	113	1210	1060	919	334	1270	513	98	94	63	34	26
21	110	1470	785	846	645	945	428	95	89	59	34	e25
22	264	2800	614	718	632	709	374	100	e86	54	34	24
23	404	2420	497	711	656	561	329	94	e84	52	32	24
24	382	1390	422	2560	597	475	294	e87	81	52	31	23
25	480	892	366	4040	498	412	269	82	76	51	31	e23
26	394	657	324	2100	428	366	260	83	74	52	31	23
27	375	517	294	1210	375	339	242	92	75	51	30	e22
28	331	1280	292	806	335	340	220	176	152	49	29	e23
29	276	2030	250	605	---	317	203	375	450	50	28	24
30	207	1880	227	672	---	289	193	236	224	e49	28	51
31	588	---	217	1420	---	267	---	192	---	45	28	---
TOTAL	5510	34242	40392	32761	16088	16700	16434	4332	3768	2472	1139	824
MEAN	177.7	1141	1303	1057	574.6	538.7	547.8	139.7	125.6	79.74	36.74	27.47
MAX	588	4440	4860	4040	1180	1540	2200	375	450	182	61	51
MIN	46	189	217	256	287	186	188	82	74	45	28	22
AC-FT	10930	67920	80120	64980	31910	33120	32600	8590	7470	4900	2260	1630
CFSM	3.24	20.8	23.8	19.3	10.5	9.83	10.0	2.55	2.29	1.46	0.67	0.50
IN.	3.74	23.24	27.42	22.24	10.92	11.34	11.16	2.94	2.56	1.68	0.77	0.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

	MEAN	275.6	721.9	936.0	860.7	796.6	615.0	397.8	209.5	138.8	76.77	52.46	83.70
MAX	862	1539	2530	1969	1587	1424	858	448	400	250	196	196	455
(WY)	1998	1984	1934	1953	1961	1997	1937	1948	2000	1983	2001	1978	1978
MIN	20.9	37.3	245	215	191	153	120	82.0	54.9	33.8	22.3	26.4	26.4
(WY)	1988	1937	1977	1985	1993	1992	1939	1956	1982	1970	1970	1999	1999

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1930 - 2002
ANNUAL TOTAL	150223	174662	
ANNUAL MEAN	411.6	478.5	428.7
HIGHEST ANNUAL MEAN			611 1974
LOWEST ANNUAL MEAN			226 1977
HIGHEST DAILY MEAN	4860	4860	10400 Jan 22 1935
LOWEST DAILY MEAN	38	22	18 Aug 31 1970
ANNUAL SEVEN-DAY MINIMUM	41	23	19 Oct 16 1987
ANNUAL RUNOFF (AC-FT)	298000	346400	310600
ANNUAL RUNOFF (CFSM)	7.51	8.73	7.82
ANNUAL RUNOFF (INCHES)	101.98	118.57	106.28
10 PERCENT EXCEEDS	749	1170	1060
50 PERCENT EXCEEDS	272	207	219
90 PERCENT EXCEEDS	59	32	39

e Estimated

WILLAPA RIVER BASIN

12013500 WILLAPA RIVER NEAR WILLAPA, WA

LOCATION.--Lat 46°39'04", long 123°39'05", in SW ¼ SW ¼ sec.35, T.14 N., R.8 W., Pacific County, Hydrologic Unit 17100106, on right bank 2,150 ft downstream from Mill Creek, 1.8 mi southeast of Willapa, and at mile 17.8.

DRAINAGE AREA.--130 mi².

PERIOD OF RECORD.--August to October 1947, July 1948 to December 1954, water years 1955-56, 1958-59 (annual maximum), April 1961 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3.57 ft above NGVD of 1929. Aug. 26 to Oct. 16, 1947, water-stage recorder at site 2,060 ft upstream at different datum. July 28, 1948, to Dec. 2, 1954, water-stage recorder, water years 1955-56, 1958-59, nonrecording gage, and Apr. 1, 1961, to Apr. 14, 1974, water-stage recorder at site 2,000 ft upstream at datum 2.12 ft higher.

REMARKS.--Records good. Some diversion for domestic use and irrigation upstream from station. No regulation. U.S. Geological Survey satellite telemeter at station. Chemical analyses October 1965 to September 1986.

AVERAGE DISCHARGE.--47 years (water years 1949-1954, 1962-2002), 641 ft³/s, 66.97 in/yr, 464,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft³/s Dec. 20, 1994, from rating curve extended above 8,000 ft³/s, gage height, 27.28 ft; minimum discharge, 13 ft³/s Aug. 20, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 15	0000	9,140	20.58	Dec. 17	0200	*11,000	23.17
Nov. 22	1500	5,090	13.92	Dec. 17	0300	--	*23.18
Dec. 01	2100	7,730	18.40	Jan. 07	2100	9,100	20.52
Dec. 14	0000	7,190	17.53	Jan. 25	0800	7,680	18.33

Minimum discharge, 18 ft³/s Sept. 24-28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	659	6690	483	1950	552	428	303	167	175	41	23
2	52	533	5520	592	1590	502	392	290	150	144	41	24
3	51	412	3120	567	1480	459	360	276	139	125	40	26
4	48	337	2720	595	1270	423	336	258	133	116	41	26
5	46	317	2410	577	1160	407	318	273	133	114	51	23
6	45	277	2100	1490	1320	396	318	291	136	102	64	24
7	47	240	1770	7670	1670	369	324	274	121	92	52	25
8	50	218	1510	6540	1990	358	296	244	117	90	45	25
9	50	205	1360	3340	1760	370	347	230	116	86	42	28
10	55	190	1210	2140	1520	896	694	217	107	79	39	28
11	94	178	1200	1590	1350	3120	667	206	100	73	39	26
12	78	177	1170	1840	1110	2950	836	196	95	71	36	24
13	119	260	3430	1630	959	2440	1210	191	90	69	33	23
14	114	5640	5610	1360	827	2150	2950	199	85	67	30	23
15	108	6250	3520	1130	730	1730	2320	182	85	64	28	22
16	91	3550	7130	971	710	1480	2170	171	82	62	28	24
17	85	2180	8450	863	634	1280	1880	167	85	61	27	27
18	76	1480	4340	751	599	1210	1480	160	111	60	27	27
19	74	1370	3190	813	819	1700	1170	156	111	60	28	25
20	79	2730	2370	1450	745	2030	963	162	91	60	27	23
21	76	3310	1800	1520	1500	1610	803	160	82	55	28	23
22	121	4450	1420	1390	1480	1280	694	158	77	52	30	23
23	363	3980	1140	1320	1290	1070	603	149	73	49	29	21
24	272	2470	942	3550	1110	911	534	139	72	48	28	19
25	307	1700	801	6790	925	787	481	132	67	47	27	18
26	260	1270	697	4100	797	685	449	128	64	48	27	19
27	299	1020	625	2550	693	641	437	127	62	48	27	18
28	298	2250	606	1810	616	615	383	179	83	46	25	19
29	246	4250	534	1410	---	561	347	354	493	47	24	22
30	217	3510	486	1300	---	509	323	245	244	46	24	60
31	695	---	458	2060	---	466	---	192	---	44	23	---
TOTAL	4569	55413	78329	64192	32604	33957	24513	6409	3571	2300	1051	738
MEAN	147	1847	2527	2071	1164	1095	817	207	119	74.2	33.9	24.6
MAX	695	6250	8450	7670	1990	3120	2950	354	493	175	64	60
MIN	45	177	458	483	599	358	296	127	62	44	23	18
AC-FT	9060	109900	155400	127300	64670	67350	48620	12710	7080	4560	2080	1460
CFSM	1.13	14.2	19.4	15.9	8.96	8.43	6.29	1.59	0.92	0.57	0.26	0.19
IN.	1.31	15.86	22.41	18.37	9.33	9.72	7.01	1.83	1.02	0.66	0.30	0.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

	273	1001	1509	1417	1278	974	604	301	166	76.4	48.6	75.6
MEAN	273	1001	1509	1417	1278	974	604	301	166	76.4	48.6	75.6
MAX	1187	2270	2844	3115	3445	2009	1312	600	486	203	161	378
(WY)	1998	1984	1995	1953	1999	1997	1991	1984	1968	1983	2001	1978
MIN	25.6	65.1	240	213	284	253	284	139	59.8	34.5	20.4	22.6
(WY)	1988	1994	1977	1977	1993	1992	1949	1994	1992	1992	1992	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1949 - 2002

ANNUAL TOTAL			228406			307646						
ANNUAL MEAN			626			843				641		
HIGHEST ANNUAL MEAN										1048		1999
LOWEST ANNUAL MEAN										294		1977
HIGHEST DAILY MEAN			8450	Dec 17		8450	Dec 17		12800		Dec 20	1994
LOWEST DAILY MEAN			39	Aug 20		18	Sep 25		14		Aug 20	1967
ANNUAL SEVEN-DAY MINIMUM			41	Aug 15		19	Sep 23		16		Aug 24	1967
ANNUAL RUNOFF (AC-FT)			453000			610200				464200		
ANNUAL RUNOFF (CFSM)				4.81			6.48			4.93		
ANNUAL RUNOFF (INCHES)				65.36			88.03			66.97		
10 PERCENT EXCEEDS			1200			2210				1630		
50 PERCENT EXCEEDS			337			290				300		
90 PERCENT EXCEEDS			62			27				37		



Figure 7. Location of surface-water stations in the Chehalis River Basin.

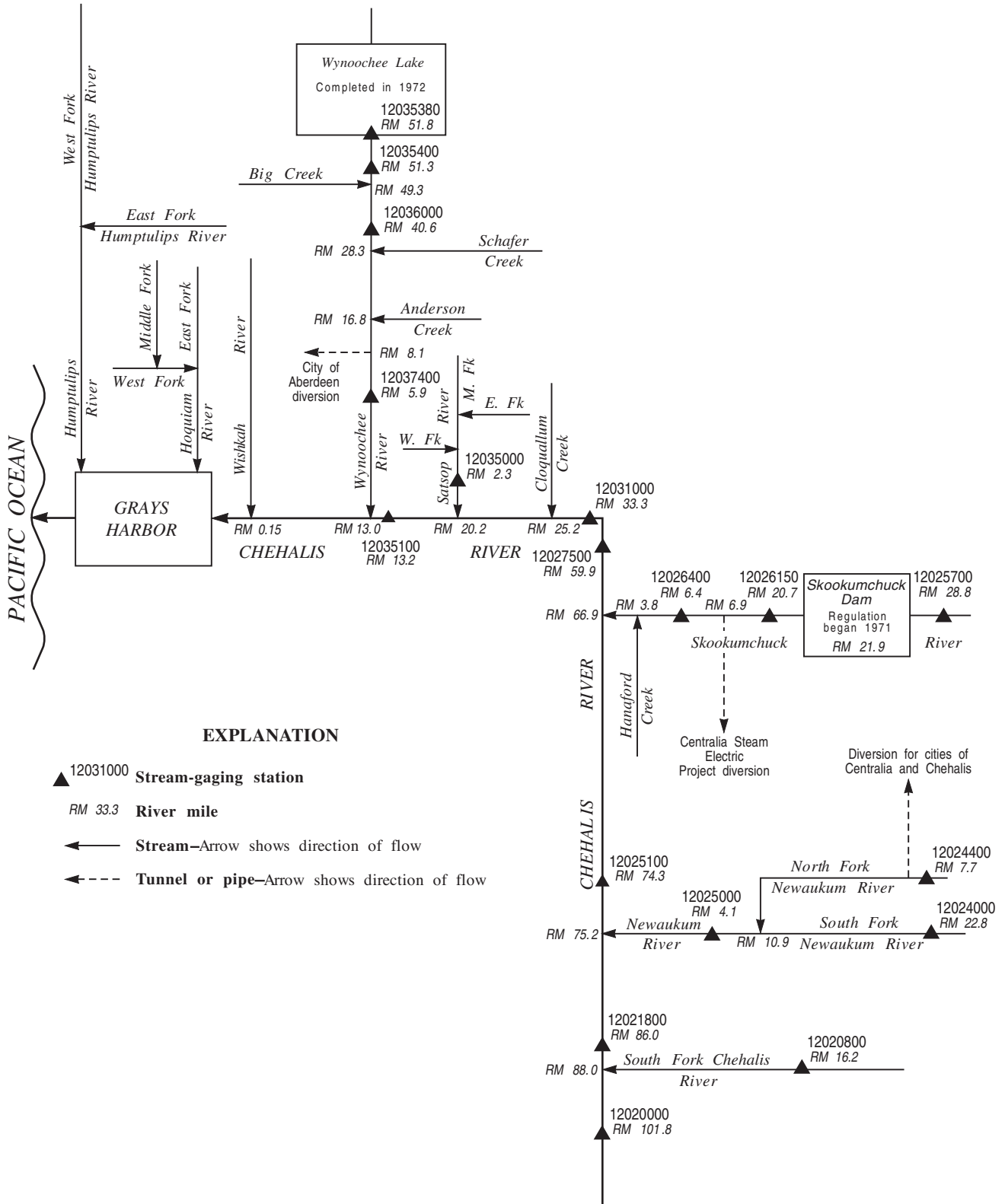


Figure 8. Schematic diagram showing surface-water stations in the Chehalis River Basin.

CHEHALIS RIVER BASIN

12020000 CHEHALIS RIVER NEAR DOTY, WA

LOCATION.--Lat 46°37'03", long 123°16'35", in NE ¼ NW ¼ sec.14, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, on right bank 1.3 mi south of Doty, 1.6 mi upstream from Elk Creek, 3.4 mi north of Pe Ell, and at mile 101.8.

DRAINAGE AREA.--113 mi².

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 1316: 1943(M). WSP 1446: 1946(M). WDR-WA-72-1: 1945(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 301.1 ft above NGVD of 1929 (river-profile survey). Prior to Oct. 1, 1961, nonrecording gage and crest-stage gage at site 50 ft upstream at datum 1 ft higher. Oct 1, 1961 to Sept. 15, 1995, water-stage recorder at site 150 ft upstream at datum 1 ft higher. Prior to Feb. 24, 1999, at same site at datum 1 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Chemical analyses July 1959 to September 1970, sediment records October 1961 to December 1964 (partial-record station).

AVERAGE DISCHARGE.--63 years (water years 1940-2002), 575 ft³/s, 69.16 in/yr, 416,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,900 ft³/s Feb. 8, 1996, gage height, 20.37 ft, from rating curve extended above 8,000 ft³/s on basis of slope-area measurement at gage height 18.36 ft; minimum discharge, 16 ft³/s Aug. 31, Sept. 3, 4, 7, 8, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	1300	14,500	14.67	Jan 07	2030	12,500	13.45
Dec 13	2030	9,170	11.28	Jan 25	0715	8,100	10.51
Dec 16	2300	*16,600	*15.90				

Minimum discharge, 25 ft³/s Aug. 29-31, Sept. 25-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	822	5450	488	1140	470	458	249	137	162	37	26
2	34	586	4180	598	1030	440	421	236	123	126	37	26
3	33	420	2400	604	1260	401	381	226	115	108	36	28
4	31	323	2000	614	1220	374	348	209	110	99	39	26
5	31	294	1730	592	1070	359	330	224	108	92	54	26
6	30	243	1840	1640	1240	358	339	253	109	82	47	26
7	31	208	1780	10700	1930	331	337	237	99	77	42	27
8	34	181	1470	6650	1980	322	308	215	97	78	38	28
9	35	159	1350	3050	1720	338	345	203	95	73	36	30
10	37	142	1210	1950	1360	620	759	196	88	67	34	29
11	62	129	1220	1410	1170	3320	792	189	84	62	34	28
12	56	137	1190	1450	981	3060	1020	183	80	59	33	27
13	65	225	4370	1350	834	2710	1490	180	77	56	32	27
14	63	9740	5260	1170	719	2200	3420	188	73	54	31	26
15	66	4470	2780	983	629	1610	2010	169	71	53	30	26
16	56	2240	9200	880	594	1270	1670	158	70	52	30	28
17	54	1340	8070	795	557	1030	1430	153	72	50	30	30
18	50	942	3360	724	558	912	1110	142	103	49	29	30
19	48	975	2470	829	900	1120	889	136	98	49	29	29
20	51	2150	1940	1180	887	1680	737	140	81	49	29	29
21	52	2510	1540	1370	1930	1330	627	133	73	47	30	29
22	105	4150	1250	1190	1650	1070	549	123	69	44	29	28
23	410	3430	1010	1080	1290	917	482	117	67	43	29	27
24	281	2090	853	3090	1060	848	429	112	66	42	28	26
25	269	1420	734	6420	846	774	386	107	63	42	28	26
26	215	1070	644	3060	727	694	368	104	60	42	28	26
27	228	868	579	1950	628	653	362	102	59	42	28	25
28	224	1760	581	1370	532	637	319	127	74	41	26	25
29	178	3850	516	1050	---	598	290	253	429	42	25	26
30	166	2820	470	931	---	544	268	200	241	41	25	41
31	904	---	447	1160	---	496	---	157	---	38	25	---
TOTAL	3935	49694	71894	60328	30442	31486	22674	5421	3091	1961	1008	831
MEAN	127	1656	2319	1946	1087	1016	756	175	103	63.3	32.5	27.7
MAX	904	9740	9200	10700	1980	3320	3420	253	429	162	54	41
MIN	30	129	447	488	532	322	268	102	59	38	25	25
AC-FT	7810	98570	142600	119700	60380	62450	44970	10750	6130	3890	2000	1650
CFSM	1.12	14.7	20.5	17.2	9.62	8.99	6.69	1.55	0.91	0.56	0.29	0.25
IN.	1.30	16.36	23.67	19.86	10.02	10.37	7.46	1.78	1.02	0.65	0.33	0.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	MEAN	275	920	1271	1225	1170	886	575	275	146	71.0	46.1	76.7
MAX	1121	2131	2486	2888	2940	1870	1285	700	390	183	124	357	
(WY)	1998	1956	1995	1953	1999	1956	1996	1948	1968	1983	1968	1959	
MIN	20.5	57.6	21.7	176	278	216	207	125	62.8	33.9	23.6	22.0	
(WY)	1988	1994	1977	1977	1993	1992	1941	1994	1992	1951	1951	1998	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1940 - 2002

ANNUAL TOTAL		194665		282765								
ANNUAL MEAN		533		775								
HIGHEST ANNUAL MEAN									575			
LOWEST ANNUAL MEAN									911		1956	
HIGHEST DAILY MEAN									253		2001	
LOWEST DAILY MEAN									19200		Feb 8 1996	
ANNUAL SEVEN-DAY MINIMUM									16		Sep 3 1992	
ANNUAL RUNOFF (AC-FT)		386100		560900					17		Aug 29 1992	
ANNUAL RUNOFF (CFSM)		4.72		6.86					416700			
ANNUAL RUNOFF (INCHES)		64.08		93.09					5.09			
10 PERCENT EXCEEDS		1050		1940					69.16			
50 PERCENT EXCEEDS		250		241					1460			
90 PERCENT EXCEEDS		39		29					259			

CHEHALIS RIVER BASIN

12020800 SOUTH FORK CHEHALIS RIVER NEAR WILDWOOD, WA

LOCATION.--Lat 46°26'42", long 123°04'57", in NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.17, T.11 N., R.3 W., Lewis County, Hydrologic Unit 17100103, on left bank at Wildwood Road bridge, 0.4 mi downstream from Black Creek, 1.2 mi southeast of Wildwood, and at mile 16.2.

DRAINAGE AREA.--27.0 mi².

PERIOD OF RECORD.--October 1998, to current year (seasonal records).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (levels by Lewis County).

REMARKS.--Records good except for estimated discharges and daily discharges Oct. 31 to Nov. 13, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,370 ft³/s Nov. 25, 1998, elevation, 361.44 ft, from floodmarks; minimum daily discharge, 7.2 ft³/s, Oct. 19, 21-23, 1999.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996, reached a stage of 363.57 ft from floodmarks, discharge, 5,620 ft³/s, from rating curve extended above 2,600 ft³/s.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum discharge, 3,310 ft³/s Dec. 16, elevation 359.69 ft; minimum discharge, 9.3 ft³/s Oct. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	---	134	1470	109	243	110	89
2	---	96	998	112	215	94	83
3	---	70	606	106	261	86	80
4	---	59	542	103	244	79	74
5	---	57	460	101	220	76	70
6	---	51	538	200	241	77	65
7	---	48	485	1760	363	70	64
8	---	48	384	1240	431	65	62
9	---	46	310	567	352	64	72
10	---	44	276	367	284	e94	149
11	---	42	264	278	236	e840	142
12	---	45	268	281	197	e760	153
13	---	148	1130	236	168	e680	338
14	---	2420	1290	202	143	e560	948
15	15	961	756	174	124	e460	542
16	12	455	2230	154	116	e365	---
17	11	283	1740	136	105	e290	---
18	9.9	204	884	121	100	e250	---
19	10	185	669	139	142	e310	---
20	11	327	501	211	130	445	---
21	11	428	379	241	413	345	---
22	50	845	301	217	319	e270	---
23	74	647	247	208	268	e235	---
24	47	420	207	819	218	204	---
25	41	297	176	1880	182	180	---
26	36	227	155	823	158	160	---
27	39	181	143	478	136	142	---
28	38	532	144	332	119	133	---
29	31	844	122	257	---	119	---
30	36	686	111	215	---	109	---
31	159	---	105	269	---	98	---
TOTAL	630.9	10830	17891	12336	6128	7770	2931
MEAN	37.11	361.0	577.1	397.9	218.9	250.6	195.4
MAX	159	2420	2230	1880	431	840	948
MIN	9.9	42	105	101	100	64	62
AC-FT	1250	21480	35490	24470	12150	15410	5810
CFSM	1.37	13.4	21.4	14.7	8.11	9.28	7.24
IN.	0.87	14.92	24.65	17.00	8.44	10.71	4.04

e Estimated

CHEHALIS RIVER BASIN

59

12021800 CHEHALIS RIVER NEAR ADNA, WA

LOCATION.--Lat 46°37'33", long 123°06'02", in NE ¼ SE ¼ sec.7, T.13 W., R.3 W., Lewis County, Hydrologic Unit 17100103, on right bank at railroad bridge, 2.0 mi downstream from South Fork Chehalis River, 2.0 mi west of Adna, and at mile 86.0.

DRAINAGE AREA.--340 mi².

PERIOD OF RECORD.--October 1998, to current year (seasonal records).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (levels by Lewis County).

REMARKS.--Elevation record only. Probably some diversion upstream for irrigation and domestic use. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 206.66 ft Dec. 17, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996, reached an elevation of 213.14 ft from floodmark at site.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum elevation, 206.66 ft Dec. 17; minimum elevation, 189.62 ft Oct. 19, 20.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	---	191.49	199.26	191.62	193.73	191.78	191.53
2	---	191.05	199.44	---	193.29	191.66	191.46
3	---	190.74	196.33	---	193.40	191.56	191.39
4	---	190.54	195.57	---	193.38	191.47	191.32
5	---	190.46	---	191.78	193.06	191.42	191.27
6	---	190.37	---	192.61	193.14	191.43	191.26
7	---	190.29	194.45	201.69	194.32	191.38	191.24
8	---	190.23	193.74	201.82	195.00	191.33	191.19
9	---	190.18	193.40	196.90	194.49	191.30	191.17
10	---	190.14	192.99	194.71	193.72	191.73	191.76
11	---	190.11	192.90	193.65	193.32	195.39	191.88
12	---	190.12	192.77	193.62	192.87	196.77	192.02
13	---	190.18	195.55	193.51	192.59	196.42	192.54
14	---	199.15	200.28	193.07	192.34	195.54	196.03
15	189.77	199.46	196.63	192.76	192.15	194.31	194.79
16	189.72	195.12	200.12	192.54	192.05	193.59	---
17	189.68	193.43	203.86	192.42	191.96	193.14	---
18	189.66	192.51	198.26	192.21	191.91	192.79	---
19	189.63	192.32	196.56	192.37	192.34	193.28	---
20	189.64	194.06	195.29	192.85	192.43	194.42	---
21	189.68	195.24	194.30	193.35	193.81	193.73	---
22	189.74	197.55	193.59	193.17	194.00	193.13	---
23	190.57	197.47	193.05	193.00	193.30	192.74	---
24	190.53	195.04	192.64	195.28	192.87	192.50	---
25	190.44	193.68	192.36	201.31	192.49	192.30	---
26	190.32	192.89	192.15	198.28	192.24	192.11	---
27	190.27	192.38	191.99	195.54	192.05	191.99	---
28	190.36	193.72	191.94	194.17	191.91	191.92	---
29	190.23	198.18	191.79	193.39	---	191.84	---
30	190.16	196.45	191.66	193.00	---	191.72	---
31	191.11	---	191.60	193.50	---	191.62	---
MEAN	190.09	193.15	194.98	194.43	193.01	192.78	192.06
MAX	191.11	199.46	203.86	201.82	195.00	196.77	196.03
MIN	189.63	190.11	191.60	191.62	191.91	191.30	191.17

CHEHALIS RIVER BASIN

12024000 SOUTH FORK NEWAUKUM RIVER NEAR ONALASKA, WA

LOCATION.--Lat 46°34'33", long 122°41'02", on south line of SE $\frac{1}{4}$ sec.28, T.13 N., R.1 E., Lewis County, Hydrologic Unit 17100103, on right bank at Jorgenson Road bridge, 1 mi upstream from Lost Creek, 1.7 mi east of Onalaska, and at mile 22.8.

DRAINAGE AREA.--42.4 mi².

PERIOD OF RECORD.--July to October 1942, July to October 1943, July 1944 to November 1948, June 1957 to September 1971, October 1943 to September 1958, published as Newaukum River near Onalaska, October 1998, to current year (seasonal records).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (levels by Lewis County). Prior to October 1998 at same site at different datum. Prior to September 28, 1944, nonrecording gage at same site at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Probably some small diversions for irrigation and domestic use upstream from station. No regulation. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--18 years (water years 1944-48, 1957-71) 200 ft³/s, 64.06 in/yr, 144,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,810 ft³/s Dec. 11, 1946, gage height, 8.40 ft, datum then in use; minimum discharge, 17.5 ft³/s Sept. 6-8, 1958.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum discharge 2,140 ft³/s Jan. 25, elevation 534.68 ft; minimum discharge 47 ft³/s Oct. 19, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	---	270	1120	175	331	226	234
2	---	250	1000	197	295	204	220
3	---	200	708	178	351	187	207
4	---	164	585	164	333	174	199
5	---	155	506	158	310	171	202
6	---	130	589	198	343	181	217
7	---	113	544	768	465	162	219
8	---	103	485	848	648	153	196
9	---	96	487	576	547	150	213
10	---	90	467	389	433	169	407
11	---	85	490	307	380	585	588
12	---	90	473	320	322	e720	658
13	---	123	1050	277	285	e880	696
14	---	1250	1320	244	251	e640	1170
15	77	826	874	216	228	e470	728
16	63	528	1410	203	217	e380	---
17	57	339	1510	191	203	e320	---
18	50	257	896	182	229	e285	---
19	51	258	702	260	285	e620	---
20	50	275	542	413	279	785	---
21	57	407	417	456	498	568	---
22	120	877	340	352	559	447	---
23	236	945	288	305	777	380	---
24	209	578	252	731	756	358	---
25	234	417	224	1680	483	341	---
26	169	333	202	971	359	316	---
27	150	271	188	610	297	304	---
28	129	537	193	437	257	311	---
29	110	850	170	343	---	296	---
30	117	814	159	311	---	272	---
31	241	---	160	356	---	250	---
TOTAL	2120	11631	18351	12816	10721	11305	6154
MEAN	124.7	387.7	592.0	413.4	382.9	364.7	410.3
MAX	241	1250	1510	1680	777	880	1170
MIN	50	85	159	158	203	150	196
AC-FT	4210	23070	36400	25420	21270	22420	12210
CFSM	2.94	9.14	14.0	9.75	9.03	8.60	9.68
IN.	1.86	10.20	16.10	11.24	9.41	9.92	5.40

e Estimated

12024400 NORTH FORK NEWAUKUM RIVER NEAR FOREST, WA

LOCATION.--Lat 46°40'03", long 122°46'08", in NW ¼ SE ¼ sec.26, T.14 N., R.1 W., Lewis County, Hydrologic Unit 17100103, on right bank 0.5 mi upstream from Bear Creek, at North Fork Road bridge, 6.3 mi northeast of Forest, and at mile 7.7.

DRAINAGE AREA.--29.6 mi².

PERIOD OF RECORD.--October 1998 to current year (seasonal records).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (levels by Lewis County).

REMARKS.--Records fair. Probably some small diversions for irrigation and domestic use upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,090 ft³/s Dec. 15, 1999, elevation 406.44 ft; minimum daily discharge 11 ft³/s, Oct. 18-23.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum discharge 2,470 ft³/s Dec. 16, elevation 405.20 ft; minimum discharge 18 ft³/s, Oct. 18-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	---	100	676	113	298	132	126
2	---	91	535	126	265	120	120
3	---	72	361	107	322	111	112
4	---	60	316	98	267	104	104
5	---	63	294	95	198	92	99
6	---	54	336	127	219	91	97
7	---	48	293	506	344	83	95
8	---	44	246	556	551	77	87
9	---	41	226	342	369	78	93
10	---	39	216	231	282	114	132
11	---	37	255	178	236	443	169
12	---	40	257	179	200	579	160
13	---	55	635	151	175	731	226
14	---	901	843	136	153	377	567
15	28	509	517	122	140	284	372
16	24	329	1000	117	134	253	---
17	23	206	1160	110	126	208	---
18	20	154	583	105	139	188	---
19	20	164	557	146	187	440	---
20	20	193	404	251	176	540	---
21	23	268	304	281	274	344	---
22	51	567	243	217	284	265	---
23	85	411	199	194	e400	227	---
24	69	257	170	588	e520	217	---
25	74	195	150	1410	e320	205	---
26	53	166	134	727	e200	202	---
27	55	153	125	429	170	189	---
28	50	367	123	353	149	181	---
29	42	555	108	289	---	169	---
30	44	411	100	269	---	155	---
31	95	---	102	306	---	136	---
TOTAL	776	6550	11468	8859	7098	7335	2559
MEAN	45.65	218.3	369.9	285.8	253.5	236.6	170.6
MAX	95	901	1160	1410	551	731	567
MIN	20	37	100	95	126	77	87
AC-FT	1540	12990	22750	17570	14080	14550	5080

e Estimated

CHEHALIS RIVER BASIN

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

LOCATION.--Lat 46°37'13", long 122°56'38", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.9, T.13 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on left bank at highway bridge 3.0 mi southeast of Chehalis, and at mile 4.1.

DRAINAGE AREA.--155 mi².

PERIOD OF RECORD.--March 1929 to September 1931, July 1942 to September 1981, October 1982 to current year.

REVISED RECORDS.--WSP 1012: 1943. WSP 1316: 1929-30(M), 1960(M). WSP 1716: Drainage area. WSP 1932: 1931(M), 1945-49, 1954(M), 1956(P), 1958(M), 1959-60.

GAGE.--Water-stage recorder. Elevation of gage is 190 ft above NGVD of 1929, from topographic map. Prior to Oct. 1, 1929, nonrecording gage at same site at datum 1.0 ft higher. Oct. 1, 1929, to July 5, 1962, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Cities of Chehalis and Centralia divert about 3 ft³/s from North Fork Newaukum River for municipal use. No regulation upstream from station.

AVERAGE DISCHARGE.--61 years (water years, 1930-31, 1943-81, 1983-2002), 503 ft³/s, 44.07 in/yr, 364,200 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft³/s Feb. 8, 1996, gage height, 13.54 ft from outside high-water mark; maximum gage height, 13.62 ft Dec. 9, 1953; minimum discharge, 12 ft³/s Sept. 13, 14, 1949, Aug. 29, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1800	6,870	10.66	Dec. 14	0200	6,750	10.56
Nov. 22	2100	4,390	8.58	Dec. 17	0400	*7,920	*11.43
Nov. 29	0900	4,240	8.45	Jan. 25	1500	6,600	10.44
Dec. 01	2100	5,780	9.75				

Minimum discharge, 36 ft³/s Sept. 26-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	608	4590	487	1220	565	506	299	182	153	53	39
2	50	544	4040	725	978	504	471	289	167	131	52	40
3	49	431	2470	583	1050	451	440	277	163	115	52	42
4	47	336	2100	507	1010	417	413	256	155	108	53	43
5	46	320	1920	467	869	394	400	267	163	103	57	41
6	45	272	1800	655	880	443	410	312	160	93	57	40
7	45	233	1650	2520	1210	418	412	299	146	90	54	41
8	48	204	1310	3070	2380	380	380	269	154	101	51	45
9	51	185	1270	1880	1790	364	377	247	148	93	50	45
10	52	172	1180	1270	1300	428	608	232	136	84	49	43
11	110	162	1400	969	1130	1590	1060	218	130	78	50	40
12	81	163	1450	982	914	2270	1070	208	124	74	49	38
13	141	224	2880	886	791	2530	1080	204	115	71	45	38
14	138	4040	5130	741	684	1950	2700	239	108	69	44	38
15	148	3170	2530	636	607	1440	1770	220	106	68	43	37
16	107	1860	4310	578	583	1320	1370	199	103	66	43	40
17	98	1140	6160	631	548	1200	1250	228	105	64	43	48
18	85	807	2890	538	564	1000	1010	211	120	64	42	46
19	77	769	2600	758	730	1680	834	194	137	63	42	42
20	82	1090	1850	1000	762	2450	720	233	114	63	43	42
21	78	1510	1390	1350	1150	1580	627	221	100	61	43	42
22	128	2730	1100	1140	1380	1200	559	226	93	58	44	40
23	410	2910	890	1080	1510	993	500	210	90	57	43	38
24	380	1680	753	1660	1780	891	449	188	87	58	41	38
25	433	1220	654	5350	1200	842	412	176	84	57	40	37
26	325	1030	578	3410	924	750	385	172	80	58	42	37
27	267	822	526	1930	758	710	426	168	78	60	43	36
28	271	1850	557	1390	653	679	391	239	101	59	42	37
29	210	3580	487	1080	---	651	339	289	281	59	39	38
30	197	2570	435	951	---	601	311	252	201	57	39	46
31	439	---	445	1110	---	546	---	206	---	55	39	---
TOTAL	4690	36632	61345	40334	29355	31237	21680	7248	3931	2390	1427	1217
MEAN	151	1221	1979	1301	1048	1008	723	234	131	77.1	46.0	40.6
MAX	439	4040	6160	5350	2380	2530	2700	312	281	153	57	48
MIN	45	162	435	467	548	364	311	168	78	55	39	36
AC-FT	9300	72660	121700	80000	58230	61960	43000	14380	7800	4740	2830	2410
CFSM	0.98	7.88	12.8	8.39	6.76	6.50	4.66	1.51	0.85	0.50	0.30	0.26
IN.	1.13	8.79	14.72	9.68	7.05	7.50	5.20	1.74	0.94	0.57	0.34	0.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	
MEAN	182	741	1066	1081	988	768	541	296	184	90.7	54.9	68.5
MAX	646	1717	2244	2169	1940	1609	1052	680	464	307	159	243
(WY)	1998	1956	1997	1953	1999	1972	1991	1960	1981	1983	1968	1968
MIN	25.5	47.6	194	192	262	280	278	130	66.3	36.1	21.6	27.9
(WY)	1988	1930	1977	1977	1977	1992	1998	1947	1992	1951	1951	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	FOR WATER YEARS 1930 - 2002
ANNUAL TOTAL	173495	241486	
ANNUAL MEAN	475	662	503
HIGHEST ANNUAL MEAN			795
LOWEST ANNUAL MEAN			244
HIGHEST DAILY MEAN	6160	6160	10200
LOWEST DAILY MEAN	45	36	14
ANNUAL SEVEN-DAY MINIMUM	47	37	15
ANNUAL RUNOFF (AC-FT)	344100	479000	364200
ANNUAL RUNOFF (CFSM)	3.07	4.27	3.24
ANNUAL RUNOFF (INCHES)	41.64	57.96	44.07
10 PERCENT EXCEEDS	1100	1770	1220
50 PERCENT EXCEEDS	231	289	261
90 PERCENT EXCEEDS	52	43	45

12025100 CHEHALIS RIVER AT WASTEWATER TREATMENT PLANT AT CHEHALIS, WA

LOCATION.--Lat 46°39'40", long 122°58'58", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.31, T.14 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on right bank at City of Chehalis wastewater treatment plant, 0.25 mi downstream from State Highway 6 bridge, and at mile 74.3.

DRAINAGE AREA.--618 mi².

PERIOD OF RECORD.--Water years 1999, 2000 (annual maximum). October 2000 to current year (seasonal records).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (levels by Lewis County).

REMARKS.--Elevation record only. Probably some diversion upstream for irrigation and domestic use. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Peak of Nov. 26, 1998, reached an elevation of 177.61 ft from floodmarks at site.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum elevation, 177.20 ft Dec. 17; minimum elevation, 148.63 ft Oct. 20.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	---	153.32	169.92	---	159.84	---	152.60
2	---	152.51	173.46	---	158.48	---	152.27
3	---	151.62	171.40	---	---	---	151.86
4	---	150.93	167.53	---	---	---	151.75
5	---	150.62	165.47	---	157.02	---	151.72
6	---	150.40	163.36	154.70	156.82	---	151.71
7	---	150.14	162.69	---	159.23	---	151.65
8	---	149.93	160.45	---	162.81	---	151.56
9	---	149.79	159.13	173.42	162.78	151.97	151.38
10	---	149.68	157.79	167.28	160.24	152.61	152.93
11	---	149.59	157.64	161.48	158.47	158.38	154.61
12	---	149.59	157.58	159.13	156.90	167.37	154.80
13	---	149.83	159.64	158.90	155.73	167.49	155.63
14	---	159.16	168.78	157.25	---	166.56	160.82
15	149.08	173.38	170.74	156.24	153.98	163.04	163.31
16	148.90	168.14	169.88	155.20	153.99	160.71	---
17	148.79	161.42	175.88	155.12	153.90	159.29	---
18	148.72	157.62	174.60	154.19	153.46	157.72	---
19	148.65	156.02	172.05	154.76	154.00	158.76	---
20	148.66	158.79	167.69	156.05	154.99	162.84	---
21	148.67	162.31	163.11	158.37	156.82	161.14	---
22	148.84	165.94	159.81	157.94	160.34	158.89	---
23	150.22	169.85	---	157.90	---	157.31	---
24	150.98	165.50	---	160.10	---	156.32	---
25	150.72	161.10	---	169.59	157.12	155.61	---
26	150.43	158.46	---	173.95	155.64	154.96	---
27	150.05	156.63	---	170.14	---	154.51	---
28	150.24	157.92	---	164.28	---	154.12	---
29	149.97	168.55	---	160.39	---	153.86	---
30	149.74	168.39	---	158.12	---	153.47	---
31	150.97	---	---	158.28	---	152.99	---
MEAN	149.63	157.57	165.85	160.53	157.26	158.26	153.91
MAX	150.98	173.38	175.88	173.95	162.81	167.49	163.31
MIN	148.65	149.59	157.58	154.19	153.46	151.97	151.38

CHEHALIS RIVER BASIN

12025700 SKOOKUMCHUCK RIVER NEAR VAIL, WA

LOCATION.--Lat 46°46'22", long 122°35'34", in SW 1/4 NW 1/4 sec.20, T.15 N., R.2 E., Thurston County, Hydrologic Unit 17100103, on right bank about 150 ft downstream from logging bridge, 0.4 mi downstream from Hospital Creek, 5.8 mi southeast of Vail, and at mile 28.8.

DRAINAGE AREA.--40.0 mi².

PERIOD OF RECORD.--October 1967 to current year.

REVISED RECORDS.--WDR WA-75-1: 1974.

GAGE.--Water-stage recorder. Elevation of gage is 710 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--35 years (water years 1968-2002), 201 ft³/s, 68.36 in/yr, 145,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,350 ft³/s Feb. 8, 1996, gage height, 11.24 ft; minimum discharge, 13 ft³/s Oct. 29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1045	1,840	7.02	Dec. 17	0000	*3,850	*8.30
Nov. 22	1515	1,450	6.59	Jan. 7	2130	2,050	6.90
Nov. 29	0530	1,320	6.43	Jan. 25	0715	2,770	7.50
Dec. 1	1845	1,980	7.16	Mar. 11	1515	2,060	6.91
Dec. 13	2045	2,580	7.72	Apr. 14	0315	1,830	6.71

Minimum discharge, 23 ft³/s Oct. 4-10, Sept. 22-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	281	1500	180	266	208	220	146	93	85	35	27
2	25	227	1280	241	243	187	212	143	88	75	35	27
3	24	173	735	211	323	172	200	136	83	70	35	28
4	24	141	534	185	312	160	193	125	81	66	36	27
5	23	129	432	176	296	157	197	138	89	62	37	27
6	23	111	567	310	403	150	227	133	79	59	36	27
7	23	98	546	1550	644	140	228	127	75	60	34	28
8	24	88	445	1530	621	132	201	120	75	61	33	27
9	23	81	406	870	519	134	249	115	72	55	32	27
10	31	75	352	543	421	231	470	110	69	52	33	26
11	37	70	363	391	374	1270	591	106	68	50	33	25
12	32	74	379	434	316	1220	736	106	65	49	31	25
13	44	131	1340	408	268	952	912	117	63	48	31	25
14	63	1440	1470	338	229	664	1450	118	62	47	30	25
15	52	874	815	277	205	483	866	108	60	46	30	25
16	44	580	1970	237	192	378	675	103	59	46	30	27
17	40	361	2190	205	185	301	543	109	60	45	29	27
18	36	259	1100	191	204	262	436	102	68	44	29	26
19	35	245	851	202	342	411	363	99	64	44	29	25
20	33	327	634	310	331	704	313	104	58	43	29	25
21	36	549	475	353	760	502	271	100	56	41	29	24
22	72	1020	377	281	861	398	241	99	54	40	29	24
23	184	961	306	247	785	353	214	92	53	39	28	23
24	161	556	259	971	690	339	194	e86	52	39	28	23
25	165	383	225	2070	472	330	182	e83	51	38	28	23
26	121	292	201	1010	359	314	174	e85	49	38	28	23
27	124	240	187	603	289	299	171	e88	51	38	28	23
28	109	467	193	421	242	291	156	e150	78	38	27	23
29	92	1100	181	324	---	275	148	e220	178	38	27	25
30	98	803	169	276	---	254	145	110	105	36	27	27
31	283	---	169	285	---	233	---	100	---	36	27	---
TOTAL	2106	12136	20651	15630	11152	11904	11178	3578	2158	1528	953	764
MEAN	67.9	405	666	504	398	384	373	115	71.9	49.3	30.7	25.5
MAX	283	1440	2190	2070	861	1270	1450	220	178	85	37	28
MIN	23	70	169	176	185	132	145	83	49	36	27	23
AC-FT	4180	24070	40960	31000	22120	23610	22170	7100	4280	3030	1890	1520
CFSM	1.70	10.1	16.7	12.6	9.96	9.60	9.32	2.89	1.80	1.23	0.77	0.64
IN.	1.96	11.29	19.21	14.54	10.37	11.07	10.40	3.33	2.01	1.42	0.89	0.71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

	87.3	293	407	390	364	304	233	137	91.2	48.2	32.0	38.2
MEAN	87.3	293	407	390	364	304	233	137	91.2	48.2	32.0	38.2
MAX	298	622	756	756	797	621	454	261	187	122	71.2	95.7
(WY)	1998	1984	1997	1971	1999	1972	1991	1984	1981	1983	1968	1968
MIN	14.6	37.4	78.4	68.6	92.5	90.9	112	65.1	33.3	27.1	19.3	18.6
(WY)	1988	1994	1977	1977	1977	1992	1973	1994	1992	1992	1992	1987

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1968 - 2002

ANNUAL TOTAL	65333	93738	201
ANNUAL MEAN	179	257	302
HIGHEST ANNUAL MEAN			1999
LOWEST ANNUAL MEAN			103
HIGHEST DAILY MEAN	2190	Dec 17	2190
LOWEST DAILY MEAN	23	Oct 5	23
ANNUAL SEVEN-DAY MINIMUM	23	Oct 3	23
ANNUAL RUNOFF (AC-FT)	129600	185900	145800
ANNUAL RUNOFF (CFSM)	4.47	6.42	5.03
ANNUAL RUNOFF (INCHES)	60.76	87.18	68.36
10 PERCENT EXCEEDS	378	652	463
50 PERCENT EXCEEDS	102	133	115
90 PERCENT EXCEEDS	28	27	26

e Estimated

12026150 SKOOKUMCHUCK RIVER BELOW BLOODY RUN CREEK, NEAR CENTRALIA, WA

LOCATION.--Lat 46°47'25", long 122°44'03", in NW ¼ NW ¼ sec.18, T.15 N., R.1 E., Thurston County, Hydrologic Unit 17100103, on right bank 0.7 mi downstream from Bloody Run Creek, 1.2 mi downstream from Skookumchuck Dam, 12 mi northeast of Centralia, and at mile 20.7.

DRAINAGE AREA.--65.9 mi². Prior to August 1969, 61.7 mi².

PERIOD OF RECORD.--April 1929 to November 1933, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316 and 1736. Published as "near Centralia" (12026000) prior to August 1969.

GAGE.--Water-stage recorder. Datum of gage is 317.34 ft above NGVD of 1929. Apr. 1, 1929, to Sept. 30, 1931, and Feb. 1, 1932, to Dec. 6, 1933, nonrecording gage at site 1.1 mi upstream at different datum. Oct. 9, 1939, to July 31, 1969, at site 1.3 mi upstream at datum 301.04 ft above NGVD OF 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Skookumchuck Dam since January 1971. No diversions upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--67 years (water years 1930-33, 1940-2002), 256 ft³/s, 185,500 acre-ft/yr, unadjusted. 31 years (water years 1972-2002), 264 ft³/s, 190,900 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,020 ft³/s Feb. 8, 1996, gage height, 13.41 ft, result of flow over dam computation, provided by Pacific Power & Light; minimum discharge, 12 ft³/s May 28, 1970, caused by pumping during dam construction.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 02	0015	2,740	10.68	Dec. 17	0245	*4,390	*11.88
Dec. 14	0415	2,900	10.83	Jan. 25	1245	2,990	10.91

Minimum discharge, 92 ft³/s June 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	149	1830	342	410	378	269	201	121	106	100	100
2	146	148	2200	338	381	369	256	197	120	106	99	120
3	141	146	1290	296	374	358	244	195	122	106	99	136
4	140	147	910	269	389	353	233	190	122	106	98	135
5	139	151	724	266	377	325	232	188	124	106	101	135
6	138	149	810	267	391	294	234	185	122	106	102	135
7	136	148	843	380	637	245	244	183	117	106	102	134
8	136	148	684	1610	931	222	240	178	117	106	102	136
9	137	148	606	1230	829	212	236	174	118	101	101	142
10	139	146	538	787	633	209	330	170	122	100	101	143
11	146	146	533	567	530	271	507	166	132	99	100	144
12	145	148	583	502	446	1100	644	160	133	99	102	146
13	141	156	1070	521	393	1350	768	159	130	98	100	144
14	141	317	2440	477	377	1050	1540	156	126	99	100	143
15	140	239	1370	416	372	744	1150	152	123	99	101	143
16	138	213	2090	386	364	572	844	168	123	99	102	143
17	139	196	3360	384	355	462	678	173	119	99	104	143
18	139	181	1630	370	347	389	540	169	115	99	104	143
19	138	184	1210	364	343	468	444	166	112	100	104	143
20	139	198	931	362	352	893	383	162	108	100	104	142
21	139	204	714	376	380	755	336	157	108	100	104	141
22	132	235	552	382	554	572	300	153	106	99	104	141
23	126	223	459	388	785	468	271	151	106	99	103	141
24	123	200	400	501	859	418	247	149	105	98	103	139
25	128	187	374	2440	681	393	228	149	106	98	102	139
26	128	178	368	1680	532	369	218	148	106	100	102	141
27	131	177	358	946	424	356	216	142	106	100	102	141
28	130	198	369	680	380	339	212	141	107	100	102	142
29	128	286	364	522	---	327	209	141	109	100	101	141
30	129	588	355	425	---	308	206	142	106	100	100	143
31	144	---	348	400	---	286	---	129	---	100	100	---
TOTAL	4246	5934	30313	18874	13826	14855	12459	5094	3491	3134	3149	4159
MEAN	137	198	978	609	494	479	415	164	116	101	102	139
MAX	150	588	3360	2440	931	1350	1540	201	133	106	104	146
MIN	123	146	348	266	343	209	206	129	105	98	98	100
AC-FT	8420	11770	60130	37440	27420	29460	24710	10100	6920	6220	6250	8250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

MEAN	141	237	506	494	466	376	294	183	136	105	97.6	137
MAX	230	552	1100	910	1131	829	590	365	254	140	134	167
(WY)	1998	1984	1978	1974	1999	1972	1991	1984	1990	1997	1997	1983
MIN	102	87.6	95.8	92.6	62.5	88.0	145	109	85.4	81.7	78.9	114
(WY)	1999	1988	1977	1977	1977	1977	1973	1989	1989	1992	1985	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1972 - 2002

ANNUAL TOTAL	78435	119534	
ANNUAL MEAN	215	327	264
HIGHEST ANNUAL MEAN			413
LOWEST ANNUAL MEAN			119
HIGHEST DAILY MEAN	3360	Dec 17	3360
LOWEST DAILY MEAN	92	Mar 14	98
ANNUAL SEVEN-DAY MINIMUM	94	Aug 10	99
ANNUAL RUNOFF (AC-FT)	155600		237100
10 PERCENT EXCEEDS	350		696
50 PERCENT EXCEEDS	135		166
90 PERCENT EXCEEDS	98		101

CHEHALIS RIVER BASIN

12031000 CHEHALIS RIVER AT PORTER, WA

LOCATION.--Lat 46°56'17", long 123°18'45", on north line of NE ¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, at downstream end of left bank bridge pier, 30 ft downstream from Porter Creek, 0.1 mi west of Porter, and at mile 33.3.

DRAINAGE AREA.--1,294 mi².

PERIOD OF RECORD.--January 1952 to September 1972, water years 1973-75 (annual maximum), May 1975 to September 1985, October 1985 to September 1986 (monthly means only), October 1986 to current year. Daily routed values for October 1985 to September 1986 are available in the files of the U.S. Geological Survey.

REVISED RECORDS.--WSP 1716: Drainage area. WSP 1932: 1954, 1956, 1960(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 23.64 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 54 ft³/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use upstream from station, including about 3 ft³/s for municipal water supply for Centralia and Chehalis. U.S. Geological Survey satellite telemeter at station. Suspended sediment October 1961 to September 1971. Water temperatures July 1959 to September 1960, October 1961 to July 1972. Chemical analyses July 1959 to September 1973, October 1974 to September 1994.

AVERAGE DISCHARGE.--47 years (water years 1953-72, 1976-2002), 4,101 ft³/s, 43.06 in/yr, 2,971,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,700 ft³/s Feb. 9, 1996, gage height, 25.22 ft; minimum, 164 ft³/s Oct. 17, 1952, gage height, 2.25 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 28, 1937, reached a stage of 24.7 ft, from levels by Grays Harbor County. Flood of December 1933 reached a stage of 23.13 ft, from river profile by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft³/s and maximum (*):

Table with columns for Date, Time, Discharge (ft³/s), Gage height (ft), Date, Time, Discharge (ft³/s), Gage height (ft). It lists peak discharge events for Nov 16, Dec 03, Dec 19, Jan 09, and Jan 27.

Minimum discharge, 336 ft³/s Sept. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

Table with columns for DAY, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP. It provides monthly mean discharge data for each day of the year from 2001 to 2002, including total, mean, max, min, and AC-FT values.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

Table with columns for MEAN, MAX, (WY), MIN, (WY) and corresponding values for each month from 1953 to 1997.

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1953 - 2002

Summary statistics table comparing 2001 calendar year, 2002 water year, and historical data from 1953 to 2002 for metrics like annual total, runoff, and exceedance percentages.

CHEHALIS RIVER BASIN

12035100 CHEHALIS RIVER NEAR MONTESANO, WA

LOCATION.--Lat 46°57'45", long 123°36'12", in NE 1/4 SW 1/4 sec.18, T.17 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, on downstream side of State Highway 107 bridge, 0.2 mi upstream from Wynoochee River, 1.1 mi south of Montesano and at mile 13.2.

DRAINAGE AREA.--1,780 mi².

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder. Datum of gage is 3.32 ft above NGVD of 1929.

REMARKS.--Elevation record only. Large diurnal fluctuation because of tides. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 54 ft³/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use upstream from station, including about 3 ft³/s for municipal water supply for Centralia and Chehalis. U.S. Geological Survey satellite telemeter at station. Chemical analyses, March 1970 to September 1971, October 1977 to June 1980.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded elevation, 18.66 ft Dec. 17, 2001, minimum recorded elevation, -1.17 ft July 12, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum recorded elevation, 18.66 ft Dec. 17; minimum recorded elevation, -1.17 ft July 12.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Table with 14 columns: DAY, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN. Rows for days 1-31 and a MONTH summary row. Columns for months: OCTOBER, NOVEMBER, DECEMBER, JANUARY, FEBRUARY, MARCH.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Table with 14 columns: DAY, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN. Rows for days 1-31 and a MONTH summary row. Columns for months: APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER.

12035380 WYNOOCHEE LAKE NEAR GRIDDALE, WA

LOCATION.--Lat 47°23'08", long 123°36'16", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, in monolith No. 6, near center line axis of Wynoochee Dam on Wynoochee River, 2.0 mi north of Griddale, at river mile 51.8.

DRAINAGE AREA.--41.0 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by Corps of Engineers). Prior to May 22, 1973, staff gage on upstream face of dam.

REMARKS.--Reservoir is formed by concrete gravity-type dam with gate-type spillway; construction began in 1969; completed in 1972. Usable capacity, 67,288 acre-ft below elevation 690 ft, sluice invert level, and 800 ft, full pool elevation. Dead storage, 2,117 acre-ft below elevation 690 ft. Figures given herein represent total contents. Water is used for flood control, water supply, and recreation. Tacoma Public Utilities satellite telemetry at station.

COOPERATION.--Daily elevations at 2400 hours, and capacity table furnished by Corps of Engineers, and by Tacoma Public Utilities.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 70,078 acre-ft July 13, 1983, elevation, 800.60 ft; minimum contents observed, 4,227 acre-ft Oct. 19, 1992, elevation, 701.04 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 69,237 acre-ft May 6-7, elevation, 799.85 ft; minimum contents, 34,644 acre-ft Dec. 8, elevation, 762.90 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	772.80	42,599	--
Oct. 31.....	768.95	39,409	-3,190
Nov. 30.....	768.87	39,344	-65
Dec. 31.....	764.48	35,861	-3,483
CAL YR 2001.....	--	--	-1,719
Jan. 31.....	768.50	39,045	+3,184
Feb. 28.....	775.20	44,656	+5,611
Mar. 31.....	774.99	44,474	-182
Apr. 30.....	799.05	68,341	+23,867
May 31.....	798.95	68,229	-112
June 30.....	798.87	68,140	-89
July 31.....	792.07	60,801	-7,339
Aug. 31.....	780.50	49,411	-11,390
Sep. 30.....	771.35	41,381	-8,030
WTR YR 2002.....	--	--	-1,218

CHEHALIS RIVER BASIN

12035400 WYNOOCHEE RIVER NEAR GRIDDALE, WA

LOCATION.--Lat 47°22'50", long 123°36'31", in NW ¼ SW ¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on right bank 0.5 mi downstream from Wynoochee Dam, 1.7 mi north of Gridsdale, 1.7 mi downstream from Scatter Creek, and at mile 51.3.

DRAINAGE AREA.--41.3 mi².

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 630 ft above NGVD of 1929, from topographic map. Prior to Nov. 3, 1967, at site 1,500 ft upstream at different datum.

REMARKS.--Records good including estimated daily discharges. Since August 1972, flow regulated by Wynoochee Lake (station 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the City of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion upstream from station. Tacoma Public Utilities satellite telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1966-2002), 525 ft³/s, 172.63 in/yr, 380,400 acre-ft/yr, adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft³/s Dec. 12, 1966, gage height, about 18.0 ft, from graph based on gage readings, site and datum then in use; minimum discharge, 0.9 ft³/s Sept. 10, 12, 1974, gage height, 0.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,720 ft³/s, gage height, 6.17 ft Dec. 17; minimum discharge, 183 ft³/s Sept. 09; minimum daily discharge, 187 ft³/s Sept. 09.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	253	884	1320	418	385	1230	223	280	349	264	274	193
2	253	884	1320	583	385	544	243	281	348	241	333	193
3	256	830	1310	1150	385	540	244	284	348	241	315	193
4	256	412	1310	1310	385	540	253	284	402	241	304	193
5	256	405	1300	1300	385	540	253	284	449	241	304	193
6	256	404	1050	1100	647	546	253	284	451	241	304	193
7	256	404	855	629	846	546	253	284	449	241	304	193
8	256	404	754	3870	675	535	253	284	447	241	304	193
9	256	404	e400	4300	480	399	253	308	301	241	304	187
10	259	404	e399	4220	480	399	274	321	300	241	304	198
11	260	404	399	2420	480	906	284	321	300	241	304	213
12	260	404	401	1310	480	1140	284	321	300	241	315	213
13	260	789	630	1310	480	802	289	321	300	241	334	213
14	260	1350	1330	1310	481	403	533	367	300	241	339	213
15	260	1350	1340	1310	480	394	875	475	300	241	339	213
16	260	1340	380	1310	480	394	e600	475	300	251	339	213
17	260	1340	3630	1310	480	394	432	470	325	263	316	211
18	260	1350	3960	1300	482	390	280	349	454	276	281	209
19	260	1350	1310	1010	478	389	280	348	454	276	262	209
20	260	1330	1610	848	480	389	280	348	373	276	240	209
21	260	2230	1530	842	946	389	280	348	328	286	234	209
22	262	2290	1320	637	667	389	280	348	304	296	232	209
23	315	1580	1320	296	1290	389	280	348	280	301	220	209
24	361	1320	1320	867	2580	389	280	348	272	319	208	209
25	889	1320	1310	1300	2340	389	280	348	272	326	203	209
26	913	1320	1300	917	1300	389	280	348	272	326	203	209
27	991	1320	951	396	1310	374	280	348	271	326	199	209
28	986	1250	524	385	1310	227	280	579	471	326	193	209
29	982	1320	421	385	---	227	280	1320	1060	326	193	209
30	927	1320	418	385	---	223	280	553	456	326	193	209
31	884	---	418	385	---	223	---	540	---	326	193	---
TOTAL	12927	31712	35840	39113	21597	15028	9439	12117	11236	8464	8390	6135
MEAN	417	1057	1156	1262	771	485	315	391	375	273	271	204
MAX	991	2290	3960	4300	2580	1230	875	1320	1060	326	339	213
MIN	253	404	380	296	385	223	223	280	271	241	193	187
AC-FT	25640	62900	71090	77580	42840	29810	18720	24030	22290	16790	16640	12170
MEAN†	365	1056	1099	1313	873	482	716	389	373	154	85.4	69.6
CFSM†	8.84	25.57	26.61	31.79	21.14	11.67	17.34	9.42	9.03	3.73	2.07	1.69
IN.†	10.19	28.53	30.69	36.66	22.00	13.45	19.34	10.86	10.08	4.29	2.38	1.88
AC-FT†	22450	62840	67610	80760	48450	29630	42590	23920	22200	9450	5250	4140

CAL YR 2001 TOTAL 166536 MEAN 456 MAX 3960 MIN 209 AC-FT 330300 MEAN† 454 CFSM† 10.99 IN.† 149.18 AC-FT† 328600
WTR YR 2002 TOTAL 211998 MEAN 581 MAX 4300 MIN 187 AC-FT 420500 MEAN† 579 CFSM† 14.01 IN.† 190.36 AC-FT† 419300

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

12036000 WYNOOCHEE RIVER ABOVE SAVE CREEK, NEAR ABERDEEN, WA

LOCATION.--Lat 47°17'57", long 123°39'07", in NE ¼ NE ¼ sec.23, T.21 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 0.8 mi upstream from Save Creek, 2.5 mi downstream from Oxbow Dam Site, 11.0 mi downstream from Wynoochee Dam, 23.5 mi northeast of city hall in Aberdeen, and at mile 40.6.

DRAINAGE AREA.--74.1 mi².

PERIOD OF RECORD.--May 1925 to current year. Published as "at Oxbow, near Aberdeen" 1925-52, where drainage area was 70.7 mi². Records published for both sites October 1951 to October 1952.

REVISED RECORDS.--WSP 1346: 1952. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401 ft above NGVD of 1929 (stadia traverse). Prior to Nov. 7, 1925, nonrecording gage at site 2.3 mi upstream at different datum. Nov. 7, 1925, to Sept. 3, 1947, water-stage recorder at site 1.5 mi upstream at datum 444.0 ft above NGVD of 1929 (levels by City of Aberdeen). Sept. 4, 1947, to Oct. 13, 1952, water-stage recorder at site 2.5 mi upstream at datum about 91 ft higher. Oct. 5, 1951, to Sept. 30, 1976, water-stage recorder on left bank at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Since August 1972, flow regulated by Wynoochee Lake (station 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the City of Aberdeen. Some regulation from August 1969 to September 1972 due to dam construction. No diversions upstream from station. Tacoma Public Utilities satellite telemeter at station.

AVERAGE DISCHARGE.--77 years (water years 1926-2002), 835 ft³/s, 153.03 in/yr, 605,000 acre-ft/yr, adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,600 ft³/s Dec. 9, 1956, gage height, 16.95 ft, from rating curve extended above 9,000 ft³/s; minimum discharge, 57 ft³/s Sept. 3-5, 1972, gage height, 4.43 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,720 ft³/s Dec. 17, gage height, 9.92 ft; minimum discharge, 219 ft³/s Sept. 09.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	321	1420	3160	792	922	1790	494	500	e620	493	369	239
2	316	1420	2610	1070	887	977	489	494	e540	426	391	242
3	315	1270	2110	1760	1090	909	491	485	e500	411	393	239
4	315	789	1980	1840	993	887	487	479	e487	403	386	239
5	315	716	1890	1840	964	871	489	494	e630	393	378	239
6	315	679	1820	2550	1900	857	493	486	e620	385	375	239
7	315	651	1540	4090	2110	845	498	475	e605	380	372	239
8	316	629	1630	5930	1620	832	477	466	e610	375	371	252
9	313	610	1220	5690	1220	679	556	483	e530	369	371	244
10	346	593	1050	5190	1130	791	724	499	e470	365	370	248
11	348	585	981	3470	1070	2290	817	495	e430	363	369	266
12	418	621	1080	2180	1000	2090	1040	491	e400	359	374	265
13	416	1210	3080	2060	938	1600	1600	495	e385	357	395	263
14	418	3170	3170	1960	895	1060	2190	523	e378	355	404	261
15	384	3030	2510	1900	868	943	1940	648	e375	352	404	261
16	368	2260	4590	1850	864	884	1580	647	e370	358	400	315
17	354	1940	5300	1810	851	826	1200	645	e430	367	379	281
18	349	1830	5630	1780	856	796	908	510	e540	381	343	270
19	366	2060	2270	1510	1090	795	813	491	e580	380	328	267
20	354	2630	2290	1400	989	919	747	491	e520	375	305	263
21	388	3320	2190	1390	2920	882	693	485	e440	382	297	261
22	649	3620	1860	1180	4180	855	652	480	e400	394	292	260
23	974	2570	1810	731	2880	831	618	476	e380	398	278	256
24	893	2040	1750	2380	3440	807	589	472	e370	410	267	256
25	1630	1920	1710	3090	3370	772	569	472	e362	417	260	256
26	1370	1850	1670	1950	2000	761	562	471	359	417	256	256
27	1440	1810	1360	1090	1930	752	548	474	361	415	253	254
28	1340	1890	935	946	1870	599	529	701	522	411	245	251
29	1270	2200	749	873	---	558	519	1880	1710	411	244	250
30	1250	2110	711	891	---	529	508	e850	759	409	239	251
31	1500	---	740	1020	---	510	---	e780	---	406	239	---
TOTAL	19666	51443	65396	66213	44847	29497	23820	17838	15683	12117	10347	7683
MEAN	634	1715	2110	2136	1602	952	794	575	523	391	334	256
MAX	1630	3620	5630	5930	4180	2290	2190	1880	1710	493	404	315
MIN	313	585	711	731	851	510	477	466	359	352	239	239
AC-FT	39010	102000	129700	131300	88950	58510	47250	35380	31110	24030	20520	15240
MEAN†	582	1713	2052	2187	1703	948	1196	573	521	271	148	121
CFSM†	7.85	23.12	27.69	29.51	22.98	12.79	16.14	7.73	7.03	3.66	2.00	1.63
IN.†	9.06	25.78	31.93	34.03	23.93	14.76	18.00	8.92	7.85	4.22	2.31	1.82
AC-FT†	35820	101900	126200	134500	94560	58330	71120	35270	31020	16690	9130	7210

CAL YR 2001 TOTAL 281810 MEAN 772 MAX 5630 MIN 313 AC-FT 559000 MEAN† 770 CFSM† 10.39 IN.† 141.02 AC-FT† 557300
WTR YR 2002 TOTAL 364550 MEAN 999 MAX 5930 MIN 239 AC-FT 723100 MEAN† 997 CFSM† 13.45 IN.† 182.67 AC-FT† 721900

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

CHEHALIS RIVER BASIN

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA

LOCATION.--Lat 47°00'42", long 123°39'15", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.27. T.18 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on left bank 2,000 ft upstream from Black Creek, 3.5 mi northwest of Montesano, and at mile 5.9.

DRAINAGE AREA.--155 mi².

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 40 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. City of Aberdeen diverted about 96 ft³/s for municipal supply at intake 2.2 mi upstream. Other small diversions for irrigation and domestic use. Since August 1972, flow regulated by Wynoochee Dam, 45.7 mi upstream, for flood control, during summer months to augment the natural river flow, and for the water supply for the City of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. Sediment records October 1961 to June 1965. Water temperatures October 1969 to September 1986. Tacoma Public Utilities satellite telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1957-72), 1,316 ft³/s, 953,600 acre-ft/yr, unregulated.
30 years (water years 1973-2002), 1,323 ft³/s, 958,300 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,600 ft³/s Mar. 19, 1997, gage height, 20.21 ft; maximum gage height, 20.54 ft Dec. 10, 1956; minimum discharge, 3.0 ft³/s part or all of each day Aug. 26-30, 1967, gage height, 2.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft³/s Dec. 17, gage height, 14.89 ft; minimum discharge, 155 ft³/s Sept. 2, 5-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	267	2180	5860	1300	2120	2220	713	639	751	775	323	158
2	261	2220	5680	1600	1860	1710	668	625	566	547	282	158
3	253	2040	3800	2150	1890	1310	647	599	522	473	314	167
4	249	1690	3340	2500	1840	1220	615	572	507	444	309	160
5	245	1380	3100	2450	1690	1170	603	598	615	422	311	157
6	243	1220	3070	3220	2310	1120	610	601	610	391	307	155
7	245	1100	2730	7370	3570	1080	626	576	588	372	294	155
8	253	1020	2620	8810	2900	1040	584	545	584	368	290	164
9	248	951	2520	7350	2260	949	632	524	523	351	283	195
10	294	895	2160	6150	1980	1110	989	549	408	337	288	169
11	362	854	2010	5140	1830	2810	1130	542	388	326	e289	174
12	371	893	2070	3200	1630	3510	1560	523	373	321	e292	184
13	537	1230	5740	2880	1500	2690	2700	521	364	308	e300	182
14	529	6760	8440	2620	1390	2230	4240	553	356	304	e308	178
15	470	7380	4980	2440	1320	1850	3560	607	355	299	e308	182
16	413	4980	9550	2320	1290	1700	3010	662	346	294	307	227
17	380	3530	10500	2210	1250	1540	2510	673	370	301	304	250
18	358	2900	8450	2140	1240	1440	1950	612	544	310	279	205
19	409	2960	4830	2120	1470	1490	1600	507	568	314	259	194
20	405	4020	3590	2090	1480	1690	1410	506	531	309	243	195
21	415	5000	3470	2160	2930	1650	1260	479	428	306	224	186
22	808	6460	2810	2050	7700	1510	1150	473	382	315	217	180
23	1830	4860	2580	1650	5470	1390	1030	461	356	321	210	176
24	1770	3400	2410	3780	4210	1300	930	448	332	327	197	173
25	2920	2880	2280	7420	4860	1210	861	442	318	341	188	173
26	2610	2610	2180	4420	2880	1130	836	440	309	345	180	171
27	2390	2440	2060	2690	2530	1100	827	441	311	343	175	173
28	2180	2820	1660	2080	2340	1040	762	548	368	340	169	172
29	1950	4200	1370	1770	---	873	708	1680	1770	337	162	172
30	1850	3830	1210	1790	---	796	673	1240	1190	329	158	170
31	2140	---	1240	2400	---	760	---	899	---	325	158	---
TOTAL	27655	88703	118310	102270	69740	46638	39394	19085	15633	11195	7928	5355
MEAN	892	2957	3816	3299	2491	1504	1313	616	521	361	256	178
MAX	2920	7380	10500	8810	7700	3510	4240	1680	1770	775	323	250
MIN	243	854	1210	1300	1240	760	584	440	309	294	158	155
AC-FT	54850	175900	234700	202900	138300	92510	78140	37860	31010	22210	15730	10620

e Estimated

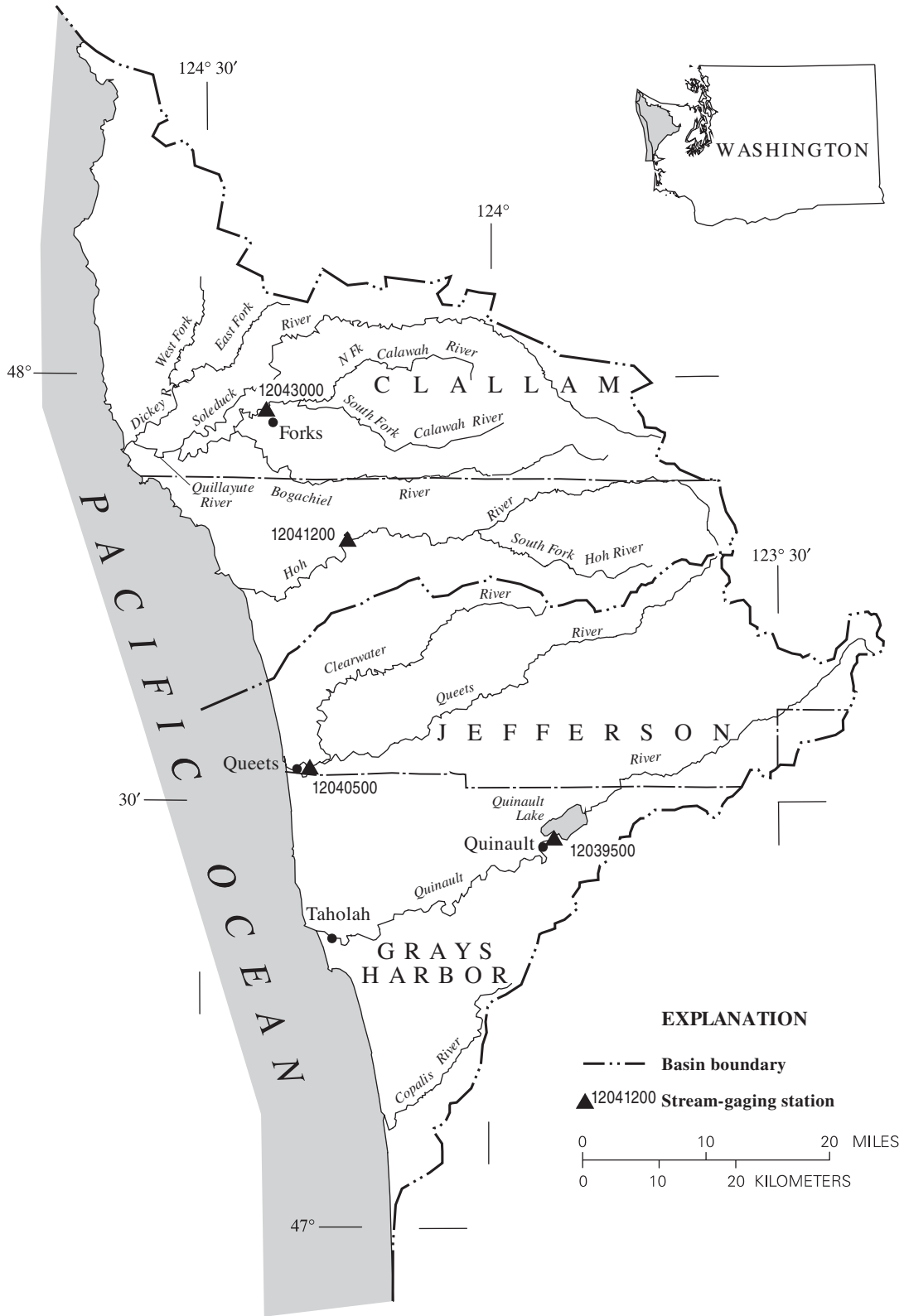


Figure 9. Location of surface-water stations in the Quinault, Queets, Hoh and Quillayute River Basins.

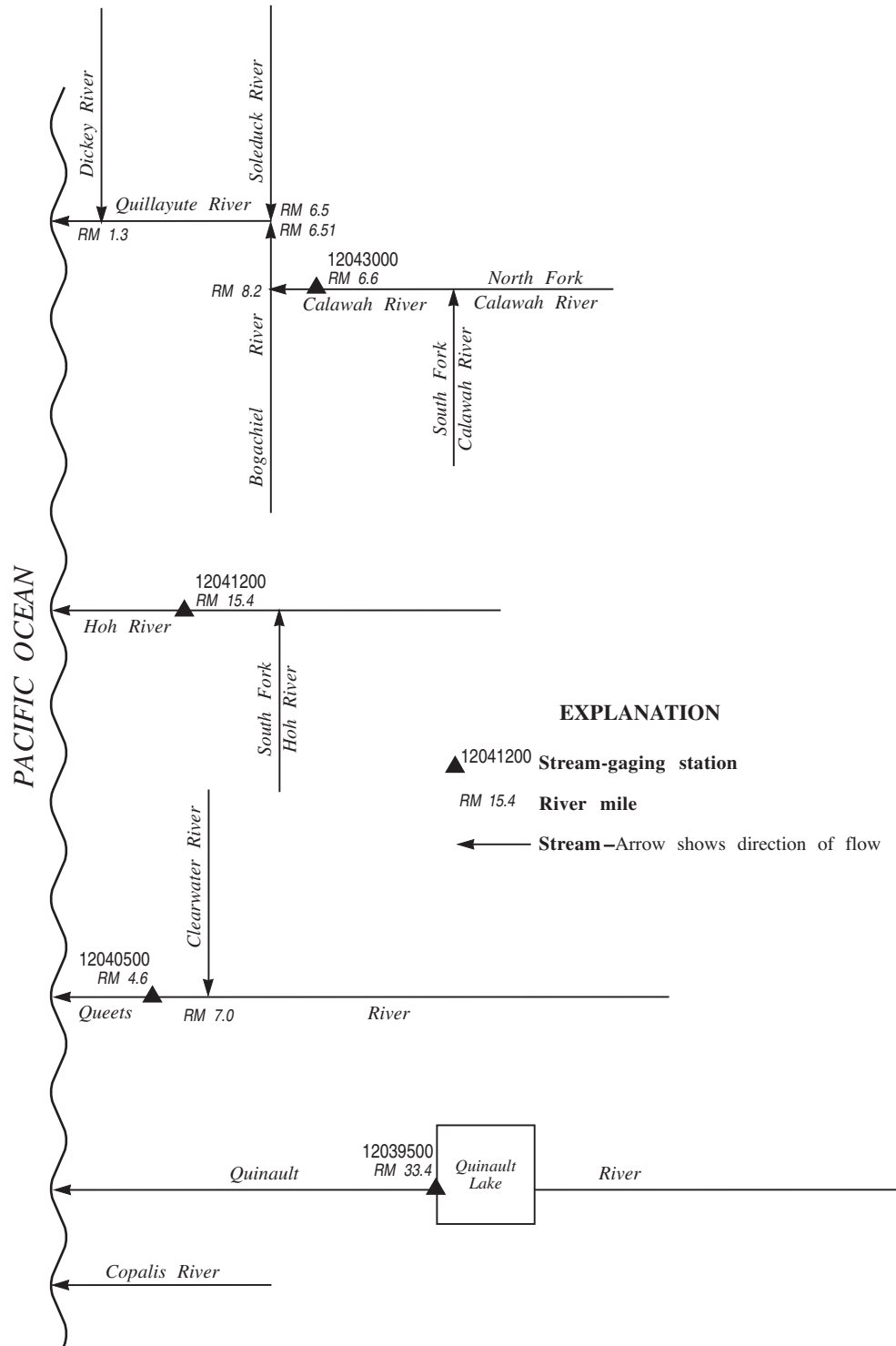


Figure 10. Schematic diagram showing surface-water stations in the Quinault, Queets, Hoh, and Quillayute River Basins.

QUEETS RIVER BASIN

12040500 QUEETS RIVER NEAR CLEARWATER, WA

LOCATION.--Lat 47°32'17", long 124°18'52", in NE ¼ SW ¼ sec.36, T.24 N., R.13 W., Jefferson County, Hydrologic Unit 17100102, Quinault Indian Reservation, on right bank 2.4 mi downstream from mouth of Clearwater River, 0.8 mi east of Queets, and at mile 4.6.

DRAINAGE AREA.--445 mi².

PERIOD OF RECORD.--September 1930 to November 1949, water years 1950-67 (annual maximum), April 1974 to current year.

REVISED RECORDS.--WSP 1316: 1931-49(m).

GAGE.--Water-stage recorder. Datum of gage is 14.5 ft above NGVD of 1929 (river-profile survey). Sept. 15, 1930, to Jan. 22, 1935, at datum 4.0 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station. Chemical analyses October 1977 to September 1993.

AVERAGE DISCHARGE.--47 years (water years 1931-49, 1975-2002), 4,370 ft³/s, 133.43 in/yr, 3,166,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 133,000 ft³/s Dec. 15, 1999, gage height, 27.18 ft, minimum discharge, 300 ft³/s Oct. 21-25, 29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 42,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	1200	51,500	18.89	Jan. 07	1900	86,300	22.95
Dec. 13	2200	51,600	18.90	Feb. 22	0830	70,800	21.27
Dec. 16	2300	*88,600	*23.18				

Minimum discharge, 464 ft³/s Sept. 28, 29, 30

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	920	8340	21600	4170	4670	3830	3290	2570	3290	3080	888	543
2	857	8200	15600	9030	4150	3380	3050	2590	3040	2540	846	552
3	809	5600	8740	8840	6980	3050	2830	2330	2890	2260	807	658
4	780	5080	7460	6240	5480	2800	2760	2090	2750	2140	798	590
5	746	4950	6410	5010	5600	2630	2980	2410	3030	2090	943	532
6	721	3960	7910	13500	12100	2430	3470	2350	3030	1870	867	510
7	706	3400	7160	61400	11200	2290	3980	2330	2480	1840	775	494
8	741	2950	11300	37000	8250	2170	3180	2020	2190	2140	739	533
9	769	2630	11000	16200	6470	2080	3850	1850	1970	1860	733	694
10	984	2380	9080	9690	5330	3610	7210	1820	2180	1830	764	590
11	1980	2210	7260	7120	4980	18100	6320	1730	2310	1990	755	531
12	4650	4210	7470	10400	3890	12500	9470	1750	2550	1900	728	512
13	4310	7130	30100	8000	3290	11200	20300	2150	2640	1780	756	509
14	3900	25000	27400	5870	2860	9160	27700	2470	2830	1740	785	501
15	2680	37500	13900	4680	2550	7490	14600	2120	2500	1550	756	497
16	2190	17300	57700	3950	2600	6400	12900	1860	2260	1480	729	1700
17	2020	9510	36400	3430	2720	5230	9780	2030	2160	1490	692	1470
18	1770	6730	16500	3050	2950	4480	7020	1950	3220	1420	662	806
19	4010	10600	11600	3960	6840	5500	5650	1840	2380	1370	637	667
20	3130	20700	8100	7200	5460	6890	4820	2110	2050	1320	625	676
21	3290	22600	6270	6060	25500	5990	4230	2260	2090	1270	603	604
22	7960	14900	5090	4960	59200	5370	3810	2100	2260	1240	588	550
23	10900	11500	4250	4920	21700	4950	3420	1970	2160	1290	590	522
24	8350	8410	3670	21900	12400	4590	3050	1840	1950	1310	595	507
25	11800	6540	3260	24700	8420	4180	2780	1970	1880	1320	611	495
26	8090	5610	2950	10400	6440	4000	2720	2210	2140	1240	600	487
27	8190	5060	2740	6760	5240	4070	2730	2380	2210	1140	580	477
28	5460	6640	3390	4970	4420	5260	2410	4850	2900	1050	576	469
29	4210	10400	3020	4020	---	4330	2290	9460	10300	1070	579	468
30	3740	8340	2680	4410	---	3820	2360	5330	4180	1000	576	470
31	10900	---	3040	6310	---	3420	---	3920	---	951	556	---
TOTAL	121563	288380	363050	328150	251690	165200	184960	80660	83820	50571	21739	18614
MEAN	3921	9613	11710	10590	8989	5329	6165	2602	2794	1631	701	620
MAX	11800	37500	57700	61400	59200	18100	27700	9460	10300	3080	943	1700
MIN	706	2210	2680	3050	2550	2080	2290	1730	1880	951	556	468
AC-FT	241100	572000	720100	650900	499200	327700	366900	160000	166300	100300	43120	36920
CFSM	8.81	21.6	26.3	23.8	20.2	12.0	13.9	5.85	6.28	3.67	1.58	1.39
IN.	10.16	24.11	30.35	27.43	21.04	13.81	15.46	6.74	7.01	4.23	1.82	1.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	MEAN	3494	7502	8340	7539	6846	5277	4134	3189	2452	1617	1043	1368
MAX	10050	20100	18140	23500	14040	13360	7093	6263	4642	4543	4396	4531	
(WY)	1976	1991	1980	1935	1999	1997	1937	1948	1997	1997	1991	1997	
MIN	348	754	2435	1787	1818	1876	1546	1765	980	682	469	439	
(WY)	1988	1937	1986	1937	1993	1992	1998	1931	1992	1992	1938	1993	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	1549706		1958397			
ANNUAL MEAN	4246		5365		4370	
HIGHEST ANNUAL MEAN					6595	
LOWEST ANNUAL MEAN					2872	
HIGHEST DAILY MEAN	57700		61400		91100	
LOWEST DAILY MEAN	706		468		300	
ANNUAL SEVEN-DAY MINIMUM	753		482		303	
ANNUAL RUNOFF (AC-FT)	3074000		3884000		3166000	
ANNUAL RUNOFF (CFSM)	9.54		12.1		9.82	
ANNUAL RUNOFF (INCHES)	129.55		163.71		133.43	
10 PERCENT EXCEEDS	8370		11200		9320	
50 PERCENT EXCEEDS	2530		2980		2540	
90 PERCENT EXCEEDS	918		650		722	

QUILLAYUTE RIVER BASIN

12043000 CALAWAH RIVER NEAR FORKS, WA

LOCATION.--Lat 47°57'37", long 124°23'30", in NW ¼ SW ¼ sec.4, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on left bank 30 ft downstream from U.S. Highway 101 bridge, 0.8 mi northwest of Forks, and at mile 6.6.

DRAINAGE AREA.--129 mi².

PERIOD OF RECORD.--November 1897 to December 1901, October to December 1975 (discharge measurements and peak discharges), January 1976 to September 1980, March 1984 to current year. Monthly and peak discharge only, November 1897 and August 1898, published in WSP 1316. Published as Calowa River at Forks, November 1897 to December 1899; as Calowa River near Forks, 1900; and as Kalawa River near Forks, 1901.

REVISED RECORDS.--WSP 1316: 1898-1902. WSP 1736: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 201.58 ft above NGVD of 1929. November 1897 to December 1901, nonrecording gage at same site but at different datum; October to December 1975, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records fair except estimated daily discharges, which are poor. No regulation or diversion upstream from station. Chemical analyses October 1976 to September 1978.

AVERAGE DISCHARGE.--25 years (water years 1899-1901, 1977-80, 1985-2002), 1,047 ft³/s, 110.22 in/yr, 758,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,100 ft³/s Dec. 15, 1999, gage height, 20.74 ft, from rating curve extended above 10,000 ft³/s on basis of step-backwater analysis; minimum discharge, 15 ft³/s Sept. 28, 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	1100	12,400	13.18	Jan. 07		(a)	*18.55
Dec. 13	2100	12,400	13.20	Jan. 25	0000	10,300	12.21
Dec. 16	1900	23,800	17.48	Feb. 22	0100	18,000	15.46
Jan. 07	1600	*24,100	17.56				

Minimum discharge, 50 ft³/s Aug 29-31.
(a) from crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	210	2040	5310	1420	1440	970	1160	559	496	410	e105	e51
2	194	1730	4490	2130	1320	866	1050	530	449	350	e100	e66
3	184	1330	2500	2190	2260	791	919	488	414	314	e95	e80
4	175	1220	1900	1750	1980	737	864	471	390	296	e112	e74
5	168	1130	1550	1450	1980	703	938	587	398	274	e133	e64
6	163	970	1990	3520	3180	655	1010	564	389	251	e101	e58
7	160	846	1980	14600	3230	624	1110	533	363	237	e94	e55
8	166	741	2870	8680	2500	589	895	493	343	276	e91	e62
9	166	660	2850	4130	2060	585	1030	468	320	239	e88	e85
10	205	598	2130	2510	1750	817	1550	463	307	217	e84	e72
11	319	555	1790	1860	1570	4790	1400	440	292	204	e82	e62
12	695	711	1840	2810	1350	3480	1750	432	279	195	e79	e55
13	757	1310	6780	2450	1180	3160	3850	465	266	187	e76	e52
14	771	4060	5950	1830	1040	2700	5240	519	258	182	e72	e51
15	609	7590	3430	1480	943	2050	3190	450	251	173	e70	e56
16	536	3710	15300	1260	950	1620	2810	421	241	168	e66	e210
17	478	2180	7720	1100	1040	1310	2290	447	257	164	e64	e150
18	459	1520	3950	1000	1220	1160	1730	409	312	161	e61	e110
19	1040	2380	3170	1170	2300	1270	1460	392	263	158	e60	e119
20	889	4920	2280	1630	2060	1330	1240	430	240	151	e60	e150
21	793	5390	1770	1680	9930	1180	1070	409	226	145	e58	e120
22	1440	3550	1480	1440	13000	1220	954	383	217	139	e57	e98
23	2430	2760	1280	1340	4840	1280	848	367	213	e137	e56	e87
24	1900	2130	1130	5940	2890	1290	759	351	209	e130	e53	e74
25	2550	1690	1020	5980	2020	1200	690	353	199	e128	e53	e66
26	2470	1450	943	2820	1580	1170	664	353	192	e127	e53	e62
27	2450	1290	893	1970	1300	1160	633	348	192	e120	e52	e60
28	1520	1930	1010	1510	1110	1400	579	492	374	e117	e51	58
29	1130	2600	921	1260	---	1320	551	893	1040	e120	e50	61
30	987	2280	849	1350	---	1230	546	680	526	e115	e50	59
31	2320	---	969	1680	---	1130	---	564	---	e110	e50	---
TOTAL	28334	65271	92045	85940	72023	43787	42780	14754	9916	5995	2276	2427
MEAN	914	2176	2969	2772	2572	1412	1426	476	331	193	73.4	80.9
MAX	2550	7590	15300	14600	13000	4790	5240	893	1040	410	133	210
MIN	160	555	849	1000	943	585	546	348	192	110	50	51
AC-FT	56200	129500	182600	170500	142900	86850	84850	29260	19670	11890	4510	4810
CFSM	7.09	16.9	23.0	21.5	19.9	10.9	11.1	3.69	2.56	1.50	0.57	0.63
IN.	8.17	18.82	26.54	24.78	20.77	12.63	12.34	4.25	2.86	1.73	0.66	0.70

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 2002, BY WATER YEAR (WY)

	720	1954	2187	1881	1833	1428	1000	658	431	219	164	206
MEAN	720	1954	2187	1881	1833	1428	1000	658	431	219	164	206
MAX	1977	4706	4395	3428	3782	3583	1532	1161	1128	788	766	812
(WY)	1998	1991	1980	1997	1999	1997	1997	1984	1900	1997	1991	1978
MIN	49.3	439	585	476	405	419	451	258	124	95.9	63.9	59.0
(WY)	1988	1994	1986	1979	1993	1992	1998	1995	1995	1995	1992	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1898 - 2002
ANNUAL TOTAL	374952	465548	
ANNUAL MEAN	1027	1275	1047
HIGHEST ANNUAL MEAN			1555
LOWEST ANNUAL MEAN			665
HIGHEST DAILY MEAN	15300	Dec 16	22900
LOWEST DAILY MEAN	127	Aug 1	15
ANNUAL SEVEN-DAY MINIMUM	140	Jul 21	26
ANNUAL RUNOFF (AC-FT)	743700	923400	758100
ANNUAL RUNOFF (CFSM)	7.96	9.89	8.11
ANNUAL RUNOFF (INCHES)	108.13	134.25	110.22
10 PERCENT EXCEEDS	2150	2810	2430
50 PERCENT EXCEEDS	630	737	560
90 PERCENT EXCEEDS	181	73	97

e Estimated

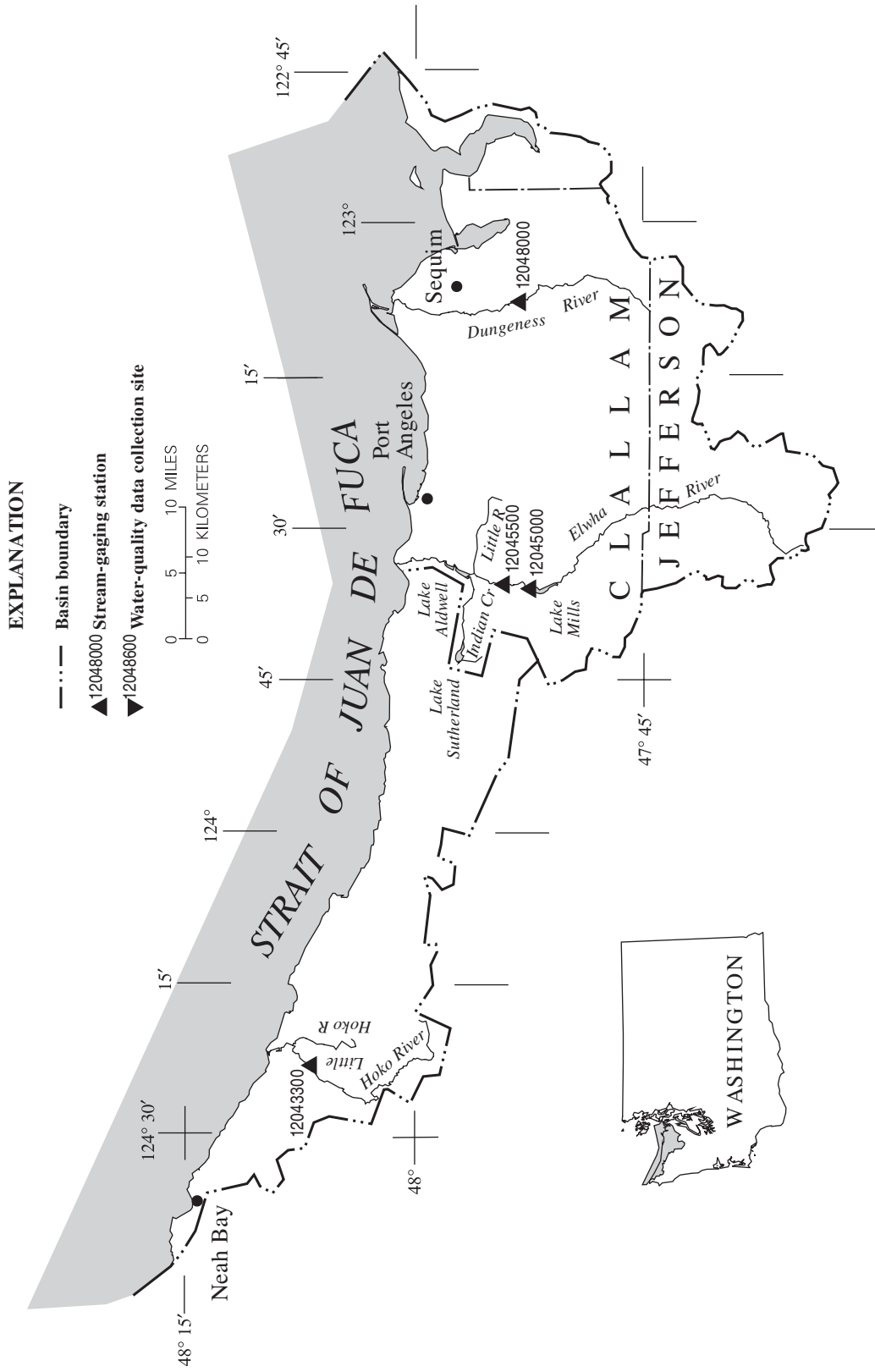


Figure 11. Location of surface-water and water-quality stations in the Hoko, Elwha, and Dungeness River Basins.

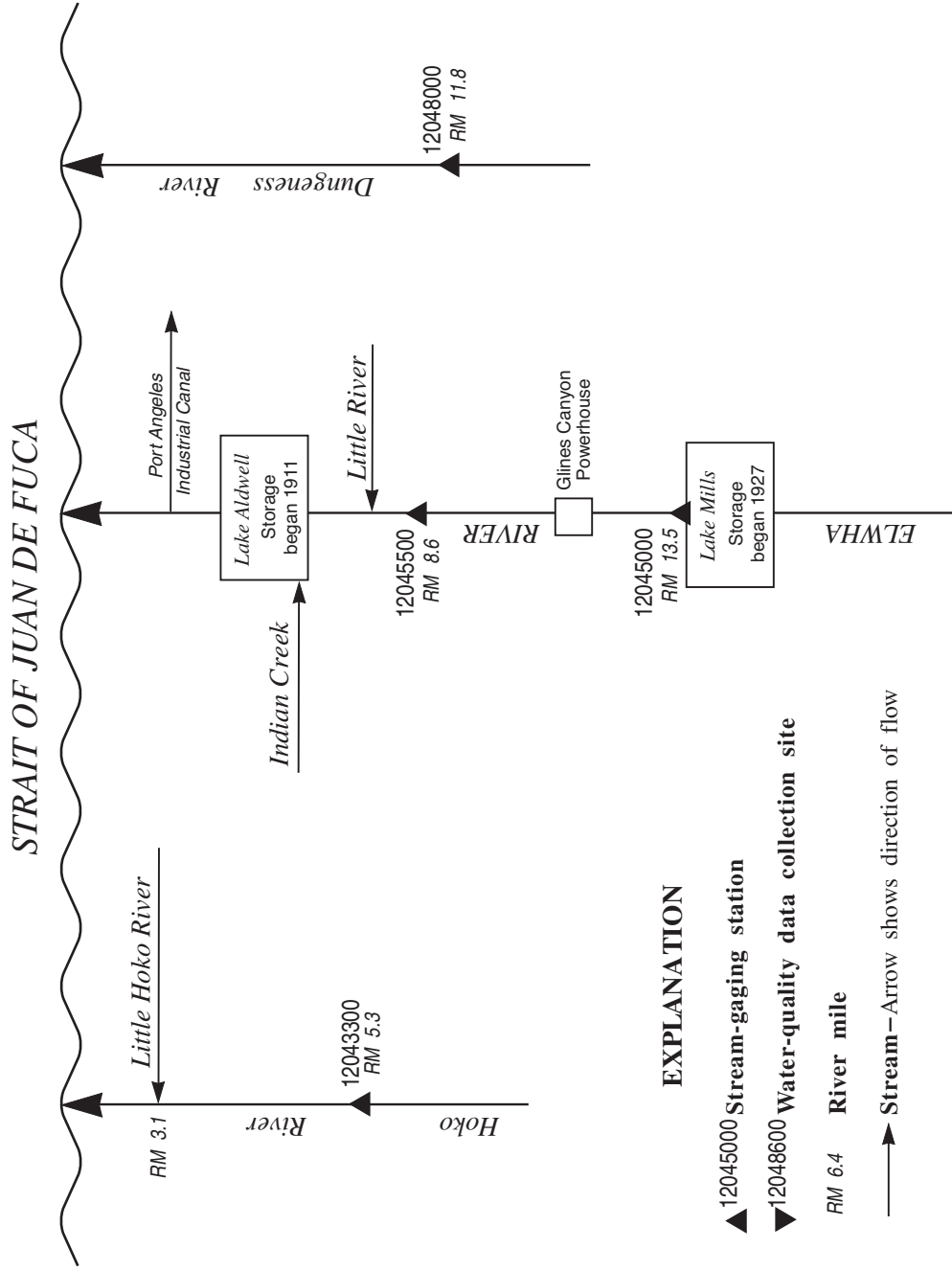


Figure 12. Schematic diagram showing surface-water and water-quality stations in the Hoko, Elwha, and Dungeness River Basins.

HOKO RIVER BASIN

12043300 HOKO RIVER NEAR SEKIU, WA

LOCATION.--Lat 48°14'30", long 124°22'57", in NE 1/4 SW 1/4 sec.28, T.32 N., R.13 W., Clallam County, Hydrologic Unit 17110021, on right bank 2.2 mi upstream from Little Hoko River, 4.0 mi southwest of Sekiu and at mile 5.3.

DRAINAGE AREA.--51.2 mi².

PERIOD OF RECORD.--July 1962 to September 1974, water years 1976-78 (annual maximum), June 1983 to September 1995 (seasonal records), October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 50 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for period Dec. 16 to Feb. 5, and estimated periods, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--19 years (water years 1963-74, 1996-2002), 412 ft³/s, 109.23 in/yr, 298,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,400 ft³/s Dec. 15, 1999, gage height, 16.75 ft, from rating curve extended above 2,100 ft³/s, on basis of slope-area measurement at gage height, 12.49 ft; minimum discharge, 11 ft³/s Oct. 1-13, 21-24, 1987, Aug. 29, 30, 1992, Sept. 30, 1998, Oct. 01, 1999.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 13	2300	6,210	9.32	Jan. 07	1645	6,500	9.54
Dec. 16	2000	8,370	10.86	Feb. 22	0230	*10,200	*12.05

Minimum discharge, 15 ft³/s Aug. 28-31, Sept. 1, 2, 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	742	e1500	693	672	279	392	121	128	151	30	15
2	96	765	e1300	934	571	247	324	117	114	126	30	22
3	85	526	e900	757	739	224	276	112	105	112	29	28
4	74	542	e700	609	639	203	241	113	99	108	34	25
5	68	486	e600	549	637	191	220	148	121	99	45	22
6	64	409	801	1100	1250	173	233	135	113	88	35	19
7	62	336	707	3970	1430	163	294	122	100	81	31	17
8	65	285	904	3010	1190	156	235	111	93	91	29	19
9	61	247	824	1410	1000	151	249	106	85	81	28	29
10	79	218	720	858	801	219	338	102	80	73	27	24
11	125	197	618	661	750	1240	316	96	78	66	26	20
12	485	221	754	960	594	891	432	91	74	62	25	18
13	440	317	2920	776	500	1030	1230	90	68	59	e23	16
14	515	1040	2730	590	429	812	1830	106	64	57	e22	15
15	361	2090	1330	484	384	744	1160	92	64	54	e22	17
16	304	1140	5270	425	359	625	960	85	60	51	21	86
17	253	671	2890	369	360	471	713	93	68	51	20	60
18	270	478	1530	333	370	411	510	84	93	50	19	37
19	584	950	1290	404	558	603	398	79	76	50	19	40
20	429	1270	890	656	499	644	326	85	66	46	19	55
21	407	998	677	644	4990	474	280	83	60	43	18	40
22	575	757	575	611	6240	393	249	78	55	40	18	32
23	886	565	483	640	1890	366	219	74	53	38	17	28
24	689	482	424	1990	920	368	196	70	52	36	17	26
25	1080	403	376	1690	610	327	180	71	50	36	18	24
26	1030	379	350	935	466	337	177	72	47	36	18	22
27	922	379	330	679	379	354	169	70	48	35	17	21
28	585	e600	364	524	321	464	149	91	90	35	16	20
29	428	e900	312	428	---	395	139	242	357	35	15	21
30	361	e800	315	606	---	375	129	188	195	34	15	20
31	822	---	353	878	---	361	---	148	---	32	15	---
TOTAL	12318	19193	33737	29173	29548	13691	12564	3275	2756	1956	718	838
MEAN	397	640	1088	941	1055	442	419	106	91.9	63.1	23.2	27.9
MAX	1080	2090	5270	3970	6240	1240	1830	242	357	151	45	86
MIN	61	197	312	333	321	151	129	70	47	32	15	15
AC-FT	24430	38070	66920	57860	58610	27160	24920	6500	5470	3880	1420	1660
CFSM	7.76	12.5	21.3	18.4	20.6	8.63	8.18	2.06	1.79	1.23	0.45	0.55
IN.	8.95	13.94	24.51	21.20	21.47	9.95	9.13	2.38	2.00	1.42	0.52	0.61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

	309	726	883	898	682	536	328	184	110	68.6	44.5	70.1
MEAN	309	726	883	898	682	536	328	184	110	68.6	44.5	70.1
MAX (WY)	907	1706	1376	1414	1410	1140	625	383	373	296	288	322
MIN (WY)	1968	1996	1967	1997	1999	1997	1970	1974	1997	1997	1991	1968
MIN (WY)	13.0	200	464	427	251	177	146	81.4	35.3	22.0	14.6	14.6
MIN (WY)	1988	2001	2001	1963	2001	1965	1973	1998	1972	1967	1967	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1962 - 2002

ANNUAL TOTAL		121891		159767								
ANNUAL MEAN		334		438						412		
HIGHEST ANNUAL MEAN										585		1974
LOWEST ANNUAL MEAN										231		2001
HIGHEST DAILY MEAN			5270	Dec 16		6240	Feb 22		9320	Dec 15	1999	
LOWEST DAILY MEAN			28	Jul 26		15	Aug 29		11	Oct 10	1987	
ANNUAL SEVEN-DAY MINIMUM			32	Jul 21		16	Aug 26		11	Oct 10	1987	
ANNUAL RUNOFF (AC-FT)			241800			316900				298200		
ANNUAL RUNOFF (CFSM)			6.52			8.55				8.04		
ANNUAL RUNOFF (INCHES)			88.56			116.08				109.23		
10 PERCENT EXCEEDS			712			954				1000		
50 PERCENT EXCEEDS			196			233				204		
90 PERCENT EXCEEDS			51			24				30		

e Estimated

ELWHA RIVER BASIN

12045000 LAKE MILLS AT GLINES CANYON, NEAR PORT ANGELES, WA

LOCATION.--Lat 48°00'08", long 123°35'55", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.17, T.29 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Park, at Glines Canyon Dam on Elwha River, 2 mi upstream from Griff Creek, 4.1 mi south of Elwha, and 11 mi southwest of Port Angeles.

DRAINAGE AREA.--245 mi².

PERIOD OF RECORD.--April 1927 to current year. Prior to October 1950, monthly change in contents only, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 19.67 ft below NGVD of 1929.

REMARKS.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Usable capacity, 6,150 acre-ft between gage heights 592.0 ft, normal minimum operation level, and 610.0 ft, top of spillway gates. Storage below gage height 592.0 ft, 25,240 acre-ft. Figures given herein represent total contents. Water is used for power production.

COOPERATION.--Gage-height record furnished by Daishowa America Co., Ltd., Oct. 1 to Feb. 28, 2000. By Bureau of Reclamation since Mar. 1, 2000. Capacity table, revised Oct. 1, 1989, was furnished by Hosey and Associates to be used starting in the 1990 water year.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 39,940 acre-ft Dec. 22, 1936, gage height, 613.0 ft; minimum contents observed since reservoir first filled in May 1927, 24,290 acre-ft Nov. 14, 1929, gage height, 574.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 31,488 acre-ft Nov. 13, gage height, 610.3 ft; minimum contents observed, 30,121 acre-ft Oct. 9, gage height, 606.3 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	608.8	30,975	--
Oct. 31.....	609.8	31,317	+342
Nov. 30.....	609.8	31,317	0
Dec. 31.....	609.7	31,283	-34
CAL YR 2001.....	--	--	+205
Jan. 31.....	608.8	30,975	-308
Feb. 28.....	609.8	31,317	+342
Mar. 31.....	609.6	31,249	-68
Apr. 30.....	609.9	31,351	+102
May 31.....	609.7	31,283	-68
June 30.....	609.6	31,249	-34
July 31.....	609.1	31,078	-171
Aug. 31.....	607.8	30,634	-444
Sept. 30.....	608.8	30,975	+341
WTR YR 2002.....	--	--	0

12045500 ELWHA RIVER AT McDONALD BRIDGE, NEAR PORT ANGELES, WA

LOCATION.--Lat 48°03'18", long 123°34'55", in NE ¼ NW ¼ sec.33, T.30 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Forest, on right bank 300 ft upstream from site of McDonald Bridge (now removed), 0.7 mi upstream from Little River, 4.9 mi below Glines Canyon Dam, 8 mi southwest of Port Angeles, and at mile 8.6.

DRAINAGE AREA.--269 mi.

PERIOD OF RECORD.--October 1897 to December 1901, October 1918 to current year. Published as "at McDonald" October 1897 to December 1901.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1286: 1898, 1899(M), 1900-1902, 1919, 1920-31(M), 1932, 1933(M). WSP 1566: 1957(M).

GAGE.--Water-stage recorder. Datum of gage is 200.00 ft above NGVD of 1929. Oct. 1, 1897, to Dec. 31, 1901, nonrecording gage at McDonald Bridge at different datum. Dec. 9, 1918, to May 1, 1936, water-stage recorder under McDonald Bridge at datum 7.4 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Water is diverted through Glines Canyon powerhouse and returned to river upstream from gage. Flow partly regulated by Lake Mills 4.9 mi upstream (station 12045000). Chemical analyses July 1959 to June 1960, July 1960 to September 1970 (partial-record station), October 1971 to September 1986. Water temperatures April 1976 to August 1977, October 1994 to April 1998. Suspended sediment discharge April 1994 to September 1995. Miscellaneous sediment measurements October 1995 to September 1997. Prior to 1962, published as Elwha River near Port Angeles. October 1971 to September 1974 published as Elwha River below Little River, near Port Angeles. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--88 years (water years 1898-1901, 1919-2002), 1,511 ft³/s, 76.28 in/yr, 1,095,000 acre-ft/yr, adjusted for storage since April 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,600 ft³/s Nov. 18, 1897, gage height, 14.5 ft, from graph based on gage readings, site and datum then in use, from rating curve extended above 3,300 ft³/s on basis of two determinations of flow over dam at discharge 26,700 ft³/s and 30,100 ft³/s, referred to 1897 datum; minimum daily discharge, 10 ft³/s Oct. 3, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,700 ft³/s Jan. 7, gage height, 22.84 ft; minimum discharge, 144 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	369	1370	2520	1470	1160	1630	1100	1840	2530	2180	879	555
2	364	1270	2460	3490	1280	1460	1060	2200	2530	2040	816	554
3	367	1020	1870	3120	1270	1450	e959	1930	2600	1910	783	554
4	367	971	1630	2390	1220	1210	1030	1830	2640	1780	802	535
5	367	1080	1440	2140	1160	1310	1190	1680	3050	1660	809	414
6	367	862	1620	3620	1400	1210	1260	1610	2990	1640	784	409
7	367	802	1340	18000	1460	1190	1330	1450	2400	1710	716	424
8	367	727	1900	12600	1380	1040	1240	1310	2170	1920	655	452
9	367	682	1790	7100	1240	1020	1280	1300	1920	1750	748	344
10	368	681	1540	5050	1160	1040	1830	e1280	2190	1970	852	375
11	456	682	1420	4000	1150	2190	1730	e1260	2570	2160	750	409
12	481	1670	1380	3540	1010	2130	2020	e1400	2870	2090	656	384
13	605	1930	2810	3130	997	1910	2820	e1580	3210	1970	725	367
14	531	6090	3780	2830	1030	1680	5550	1560	3600	1940	819	369
15	441	8070	2540	2540	861	1470	3400	1540	3470	1790	764	372
16	408	4450	8800	2330	1020	1260	2830	1470	3140	1630	706	438
17	415	2940	8330	2090	902	1240	2180	1610	2960	1690	683	580
18	398	2230	4400	1950	876	1220	1980	1650	2970	1580	625	407
19	399	3810	3290	1900	1240	1160	1860	1570	2540	1510	561	318
20	399	6260	2760	1810	1110	1130	1770	1630	2440	1470	523	399
21	408	5480	2310	1710	3280	916	1710	1800	2520	1370	527	371
22	714	4310	2000	1610	7740	1060	1710	1810	2850	1370	538	365
23	1500	3240	1800	1460	4630	1030	1590	1790	2690	1480	541	345
24	881	2740	1550	2330	3140	1060	1560	1750	2540	1480	548	312
25	909	2310	1590	3120	2570	1110	1500	1950	e2640	1520	652	310
26	972	1950	1410	2110	2180	1120	1450	2340	2960	1400	694	318
27	1450	1800	1370	1880	1840	1080	1380	2590	3040	1300	638	318
28	961	1850	1390	1680	1750	1060	1280	3030	2890	1110	572	318
29	773	1860	1360	1460	---	1050	1460	3900	3790	1280	558	317
30	699	1670	1260	1460	---	1010	1460	3110	2550	1110	558	281
31	1930	---	1270	1450	---	926	---	2750	---	1040	556	---
TOTAL	19400	74807	74930	105370	50056	39372	53519	58520	83260	50850	21038	11914
MEAN	626	2494	2417	3399	1788	1270	1784	1888	2775	1640	679	397
MAX	1930	8070	8800	18000	7740	2190	5550	3900	3790	2180	879	580
MIN	364	681	1260	1450	861	916	959	1260	1920	1040	523	281
AC-FT	38480	148400	148600	209000	99290	78090	106200	116100	165100	100900	41730	23630
MEAN†	631	2495	2416	3393	1794	1269	1787	1886	2775	1637	671	403
CFSM†	2.35	9.28	8.98	12.61	6.67	4.72	6.64	7.01	10.32	6.09	2.49	1.50
IN.†	2.71	10.34	10.36	14.55	6.94	5.44	7.41	8.09	11.51	7.02	2.88	1.67
AC-FT†	38820	148400	148600	208700	99630	78020	106300	116000	165100	100700	41290	23970

CAL YR 2001 TOTAL 414141 MEAN 1135 MAX 8800 MIN 310 AC-FT 821400 MEAN† 1135 CFSM† 4.22 IN.† 57.27 AC-FT† 821600
WTR YR 2002 TOTAL 643036 MEAN 1762 MAX 18000 MIN 281 AC-FT 1275000 MEAN† 1761 CFSM† 6.55 IN.† 88.87 AC-FT† 1275000

† Adjusted for change in contents in Lake Mills.

e Estimated

DUNGENESS RIVER BASIN

12048000 DUNGENESS RIVER NEAR SEQUIM, WA

LOCATION.--Lat 48°00'52", long 123°07'53", in NW ¼ NE ¼ sec.13, T.29 N., R.4 W., Clallam County, Hydrologic Unit 17110020, on right bank 1.0 mi upstream from Canyon Creek, 4.8 mi southwest of Sequim, and at mile 11.8.

DRAINAGE AREA.--156 mi².

PERIOD OF RECORD.--June 1923 to September 1930, June 1937 to current year. July 1897 to July 1898 at site downstream from Canyon Creek, published as "near Sequim," records not equivalent.

REVISED RECORDS.--WSP 1316: 1924-25(M), 1927(M). WSP 1932: 1957, 1958-59(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 569.3 ft above NGVD of 1929 (river-profile survey). June 8, 1923, to Sept. 30, 1930, nonrecording gage just above fish-hatchery diversion 0.5 mi downstream at different datum. June 19 to Aug. 12, 1937, nonrecording gage at present site and datum.

REMARKS.--Records good. No estimated daily discharges. No regulation or diversion upstream from station. Water temperatures July 1968 to September 1969, October 1970 to December 1970, January 2000 to September 2001. Suspended sediment discharge November 1999 to September 2001. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1924-30, 1938-2002), 384 ft³/s, 33.40 in/yr, 277,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,610 ft³/s Jan. 7, 2002, gage height, 8.37 ft; maximum gage height, 8.58 ft Nov. 27, 1949; minimum discharge, 61 ft³/s Nov. 23, 1993, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	1215	2,770	5.97	Jan. 07	2045	*7,610	*8.37
Nov. 20	0445	2,210	5.57	Feb. 22	0630	2,230	5.58
Dec. 16	2145	5,240	7.37				

Minimum discharge, 73 ft³/s Oct. 9, 10, 18-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	224	527	349	272	350	251	448	772	628	321	197
2	96	193	526	900	262	326	262	541	743	580	304	196
3	95	170	381	800	265	307	265	537	738	551	288	201
4	86	156	329	583	256	297	270	486	772	520	278	192
5	81	170	296	493	257	285	303	443	985	471	273	185
6	77	154	280	838	268	270	328	412	951	465	266	187
7	77	140	259	4640	288	258	326	384	758	509	257	197
8	77	129	372	3720	272	246	312	365	625	576	250	175
9	73	125	398	1830	253	243	318	352	548	572	253	167
10	76	119	347	1240	255	242	344	337	576	610	269	165
11	82	124	315	962	251	425	348	330	685	707	263	160
12	78	311	288	887	238	455	363	350	800	663	253	160
13	81	416	472	739	229	399	487	423	930	636	260	160
14	81	1600	782	661	221	346	1320	449	1080	627	266	157
15	80	2220	521	581	216	319	881	430	1080	549	261	156
16	77	1160	2460	533	221	298	669	415	978	526	250	167
17	78	679	2520	486	222	269	558	439	871	547	236	172
18	74	497	1160	456	220	252	481	440	862	525	226	159
19	77	916	770	435	259	249	442	429	730	510	224	155
20	76	1850	591	414	247	236	427	436	676	466	254	152
21	78	1260	494	388	913	225	423	486	734	432	226	146
22	95	926	464	363	2030	233	425	499	842	429	217	142
23	154	707	413	344	1270	245	418	490	850	458	211	139
24	109	574	372	351	801	261	404	483	802	464	210	138
25	105	487	344	394	582	291	395	539	824	450	216	135
26	129	418	329	354	489	309	393	690	964	447	232	133
27	271	377	321	332	429	296	383	812	994	415	214	131
28	176	369	326	312	385	274	366	946	934	391	206	130
29	140	383	311	297	---	259	360	1200	1050	411	208	130
30	136	346	301	291	---	251	384	1000	751	391	208	127
31	309	---	301	282	---	249	---	863	---	356	201	---
TOTAL	3320	17200	17570	25255	11871	8965	12906	16454	24905	15882	7601	4811
MEAN	107	573	567	815	424	289	430	531	830	512	245	160
MAX	309	2220	2520	4640	2030	455	1320	1200	1080	707	321	201
MIN	73	119	259	282	216	225	251	330	548	356	201	127
AC-FT	6590	34120	34850	50090	23550	17780	25600	32640	49400	31500	15080	9540
CFSM	0.69	3.68	3.63	5.22	2.72	1.85	2.76	3.40	5.32	3.28	1.57	1.03
IN.	0.79	4.10	4.19	6.02	2.83	2.14	3.08	3.92	5.94	3.79	1.81	1.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2002, BY WATER YEAR (WY)

	211	355	432	405	387	293	325	562	703	495	267	173
MEAN	211	355	432	405	387	293	325	562	703	495	267	173
MAX	621	1099	1034	1075	1042	819	519	893	1465	1235	868	364
(WY)	1998	1991	1980	1968	1924	1972	1925	1956	1999	1999	1999	1954
MIN	80.6	84.9	117	74.3	106	133	171	292	289	179	129	93.8
(WY)	1988	1988	1977	1979	1929	1962	1975	1977	1926	1926	1944	1928

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1923 - 2002
ANNUAL TOTAL	99074	166740	
ANNUAL MEAN	271	457	384
HIGHEST ANNUAL MEAN			696
LOWEST ANNUAL MEAN			197
HIGHEST DAILY MEAN	2520	Dec 17	4640
LOWEST DAILY MEAN	73	Oct 9	73
ANNUAL SEVEN-DAY MINIMUM	77	Oct 6	77
ANNUAL RUNOFF (AC-FT)	196500	330700	277800
ANNUAL RUNOFF (CFSM)	1.74	2.93	2.46
ANNUAL RUNOFF (INCHES)	23.63	39.76	33.40
10 PERCENT EXCEEDS	460	866	731
50 PERCENT EXCEEDS	185	346	294
90 PERCENT EXCEEDS	103	137	133

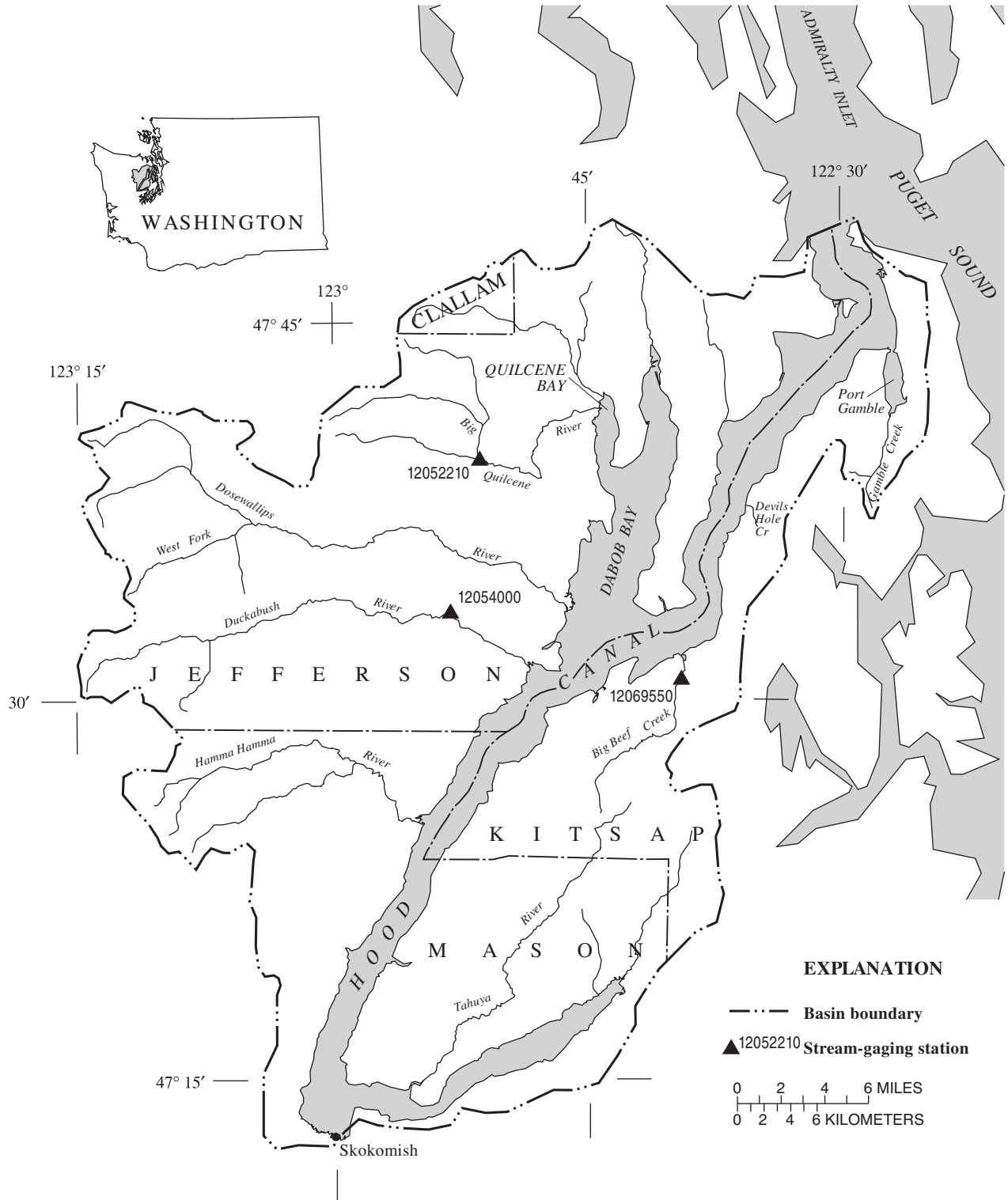


Figure 13. Location of surface-water stations in the Big Quilcene River, Duckabush River, and Big Beef Creek Basins.

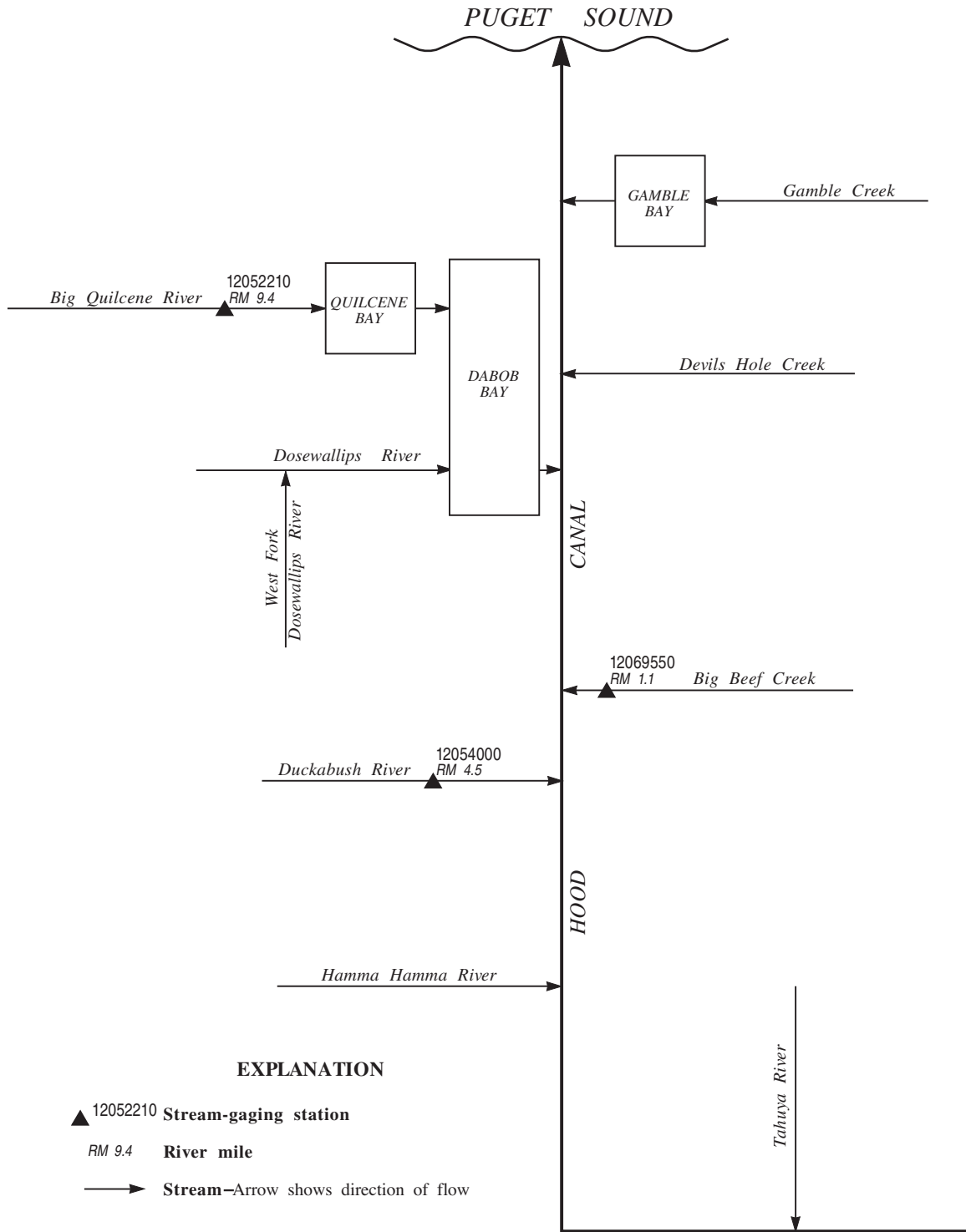


Figure 14. Schematic diagram showing surface-water stations in the Big Quilcene River, Duckabush River, and Big Beef Creek Basins.

12052210 BIG QUILCENE RIVER BELOW DIVERSION DAM, NEAR QUILCENE, WA

LOCATION.--Lat 47°47'05", long 122°58'42", in SW ¼ SE ¼ sec.31, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, on left bank, 5.5 mi southwest of Quilcene, and at mile 9.4.

DRAINAGE AREA.--49.4 mi².

PERIOD OF RECORD.--January 1994 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,009.23 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records fair. Water for municipal use is diverted upstream by City of Port Townsend.

AVERAGE DISCHARGE.--8 years (water years 1995-2002), 155 ft³/s, 112,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,690 ft³/s Jan. 7, 2002, gage height, 5.48 ft, from rating curve extended above 2,000 ft³/s; maximum gage height, 6.41 ft Dec. 12, 1995; minimum discharge, 11 ft³/s Sept. 26, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,690 ft³/s, Jan. 7, gage height, 5.48 ft; minimum discharge, 11 ft³/s Sept. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	48	454	173	103	141	114	153	184	128	60	29
2	29	34	363	614	99	131	111	180	176	114	57	28
3	29	30	242	498	111	125	108	172	174	106	55	29
4	29	32	196	363	102	118	108	160	176	103	52	28
5	28	28	146	301	104	113	121	148	184	98	53	29
6	29	25	127	669	122	106	134	138	190	95	51	31
7	28	26	115	2250	125	102	135	128	174	95	48	30
8	29	26	158	1710	109	96	129	122	151	97	46	28
9	29	27	171	798	105	97	132	119	138	98	47	28
10	29	27	156	542	99	111	141	112	139	99	43	29
11	28	28	135	434	92	280	146	109	154	104	42	28
12	29	38	121	393	88	248	156	110	168	107	53	29
13	29	102	241	355	87	194	204	130	185	106	54	29
14	29	456	385	310	86	165	424	145	205	104	38	29
15	29	809	285	266	84	147	332	143	207	99	37	29
16	31	493	1350	222	83	134	272	136	199	94	41	29
17	28	286	1120	205	82	121	216	144	174	91	38	28
18	29	192	500	192	84	113	190	139	163	88	38	27
19	30	616	355	191	144	107	175	138	149	87	37	28
20	28	1540	276	190	123	103	164	142	139	83	36	29
21	28	921	214	194	312	100	154	159	135	80	33	28
22	30	621	177	159	551	99	146	168	145	77	31	28
23	22	460	156	153	431	102	137	162	154	75	29	28
24	25	350	144	150	326	107	129	155	144	76	29	28
25	26	278	131	162	267	126	125	164	137	76	29	29
26	30	216	117	141	206	134	123	178	144	76	29	29
27	54	176	113	136	180	128	120	193	154	74	29	29
28	31	173	120	126	160	121	116	217	154	71	28	28
29	27	189	116	120	---	116	115	247	150	69	28	28
30	30	173	110	114	---	115	124	239	142	66	28	29
31	68	---	116	107	---	113	---	208	---	63	28	---
TOTAL	948	8420	8410	12238	4465	4013	4801	4858	4888	2799	1247	858
MEAN	30.6	281	271	395	159	129	160	157	163	90.3	40.2	28.6
MAX	68	1540	1350	2250	551	280	424	247	207	128	60	31
MIN	22	25	110	107	82	96	108	109	135	63	28	27
AC-FT	1880	16700	16680	24270	8860	7960	9520	9640	9700	5550	2470	1700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1994	74.9	183	239	241	197
1995	172	156	179	170	120
1996	60.3	37.3	176	73.8	1997
1997	328	316	330	395	385
1998	326	214	308	439	360
1999	214	308	439	360	176
2000	214	308	439	360	176
2001	214	308	439	360	176
2002	214	308	439	360	176

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1994 - 2002

ANNUAL TOTAL	32075	57945	
ANNUAL MEAN	87.9	159	
HIGHEST ANNUAL MEAN			155
LOWEST ANNUAL MEAN			235
HIGHEST DAILY MEAN	1540	Nov 20	2250
LOWEST DAILY MEAN	22	Oct 23	19
ANNUAL SEVEN-DAY MINIMUM	26	Aug 15	21
ANNUAL RUNOFF (AC-FT)	63620		112100
10 PERCENT EXCEEDS	150		318
50 PERCENT EXCEEDS	47		113
90 PERCENT EXCEEDS	28		28

DUCKABUSH RIVER BASIN

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW ¼ SW ¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi west of Brinnon, and at mile 4.5.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--August to December 1910 (gage height only), December 1910 to December 1911, June 1938 to current year.
Published as "near Duckabush" water years 1910-11.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft above NGVD of 1929. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Records good except estimated daily discharges, which are poor. No regulation or diversion upstream from station. Chemical analyses April 1972 to September 1974.

AVERAGE DISCHARGE.--64 years (water years 1939-2002), 417 ft³/s, 85.17 in/yr, 302,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,880 ft³/s Jan. 7, 2002, gage height, 8.85 ft; minimum daily discharge, 41 ft³/s Oct. 23-30, 1987, Oct. 15-17, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	0930	5,560	7.04	Jan. 2	1000	3,580	5.89
Nov. 20	0215	5,160	6.83	Jan. 7	1730	*9,880	*8.85
Dec. 16	2115	6,710	7.59				

Minimum discharge, 54 ft³/s Oct. 9, 10, but may have been lower during period of estimated record, Sep. 19-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	420	951	629	256	316	225	511	619	502	184	95
2	64	344	771	2760	247	289	232	590	640	455	176	95
3	62	257	513	1630	335	266	224	531	656	436	170	101
4	60	224	418	926	297	254	237	458	666	396	165	95
5	59	218	363	922	276	244	291	396	745	358	164	91
6	56	184	345	2430	396	229	326	350	708	357	168	91
7	55	163	322	6920	415	216	321	317	586	386	157	92
8	55	147	416	3610	333	206	298	297	501	435	149	87
9	55	136	434	1710	288	204	341	283	467	411	150	85
10	61	124	371	1160	264	234	468	272	553	439	156	e84
11	83	122	322	912	251	651	478	271	649	493	151	e82
12	81	563	290	879	232	612	544	310	733	466	143	e80
13	93	877	937	714	218	485	742	439	802	456	143	e78
14	82	3150	1110	619	206	393	1430	437	859	429	143	e77
15	73	3920	658	548	198	332	812	394	812	373	140	e77
16	67	1550	3620	497	197	294	606	366	727	359	134	e97
17	66	822	2600	448	196	260	518	443	659	353	126	103
18	62	595	1150	409	199	239	459	431	664	330	122	93
19	61	2520	782	381	409	224	417	421	575	309	119	e82
20	61	4130	606	361	314	219	394	447	541	296	118	e81
21	61	2560	506	339	968	210	382	523	590	281	114	e77
22	115	1830	442	316	1940	214	376	514	663	276	110	e74
23	240	1150	394	299	1200	227	362	486	641	288	107	e71
24	158	818	358	399	790	250	340	461	584	289	108	e68
25	175	639	323	614	577	280	326	522	602	285	109	e66
26	181	536	291	456	474	290	322	615	667	274	108	e64
27	371	465	281	377	404	263	318	675	671	245	105	e62
28	237	458	343	333	355	241	309	837	651	229	102	e60
29	179	536	331	302	---	228	319	1140	883	228	101	e57
30	209	485	298	284	---	224	380	829	579	215	100	e56
31	640	---	326	270	---	219	---	685	---	201	97	---
TOTAL	3888	29943	20872	32454	12235	8813	12797	15251	19693	10850	4139	2421
MEAN	125	998	673	1047	437	284	427	492	656	350	134	80.7
MAX	640	4130	3620	6920	1940	651	1430	1140	883	502	184	103
MIN	55	122	281	270	196	204	224	271	467	201	97	56
AC-FT	7710	59390	41400	64370	24270	17480	25380	30250	39060	21520	8210	4800
CFSM	1.89	15.0	10.1	15.7	6.57	4.28	6.41	7.40	9.87	5.26	2.01	1.21
IN.	2.17	16.75	11.68	18.15	6.84	4.93	7.16	8.53	11.02	6.07	2.32	1.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

	MEAN	280	538	599	518	498	384	395	555	573	359	173	135
MAX	954	1446	1470	1180	1050	883	656	1043	1146	936	598	523	
(WY)	1998	1984	1967	1953	1991	1972	1943	1956	1999	1999	1999	1978	
MIN	44.4	79.6	167	116	133	138	214	314	242	136	75.1	57.6	
(WY)	1988	1994	1977	1979	1985	1985	1973	1977	1992	1977	1944	1942	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	115398		173356			
ANNUAL MEAN	316		475		417	
HIGHEST ANNUAL MEAN					670	
LOWEST ANNUAL MEAN					204	
HIGHEST DAILY MEAN	4130		6920		Jan 7 2002	
LOWEST DAILY MEAN	55		55		Oct 7 1987	
ANNUAL SEVEN-DAY MINIMUM	57		57		Oct 23 1987	
ANNUAL RUNOFF (AC-FT)	228900		343900		302000	
ANNUAL RUNOFF (CFSM)	4.75		7.14		6.27	
ANNUAL RUNOFF (INCHES)	64.55		96.98		85.17	
10 PERCENT EXCEEDS	531		820		803	
50 PERCENT EXCEEDS	202		326		311	
90 PERCENT EXCEEDS	82		83		97	

e Estimated

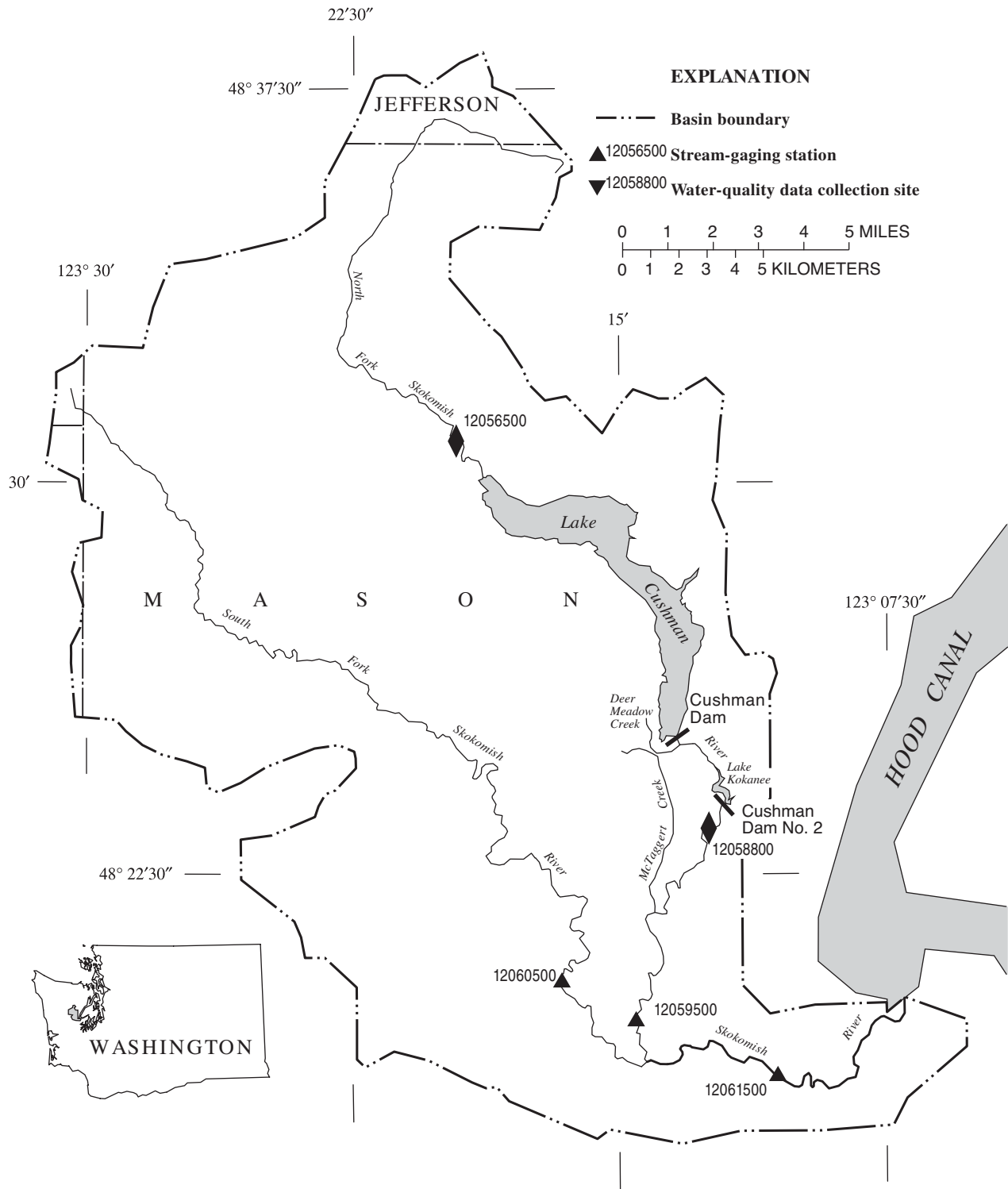


Figure 15. Location of surface-water and water-quality stations in the Skokomish River Basin.

EXPLANATION

- ▲ 12061500 Stream-gaging station
- ▼ 12058800 Water-quality data collection site
- RM 16.5 River mile
- Stream—Arrow shows direction of flow
- - - → Tunnel or pipe—Arrow shows direction of flow

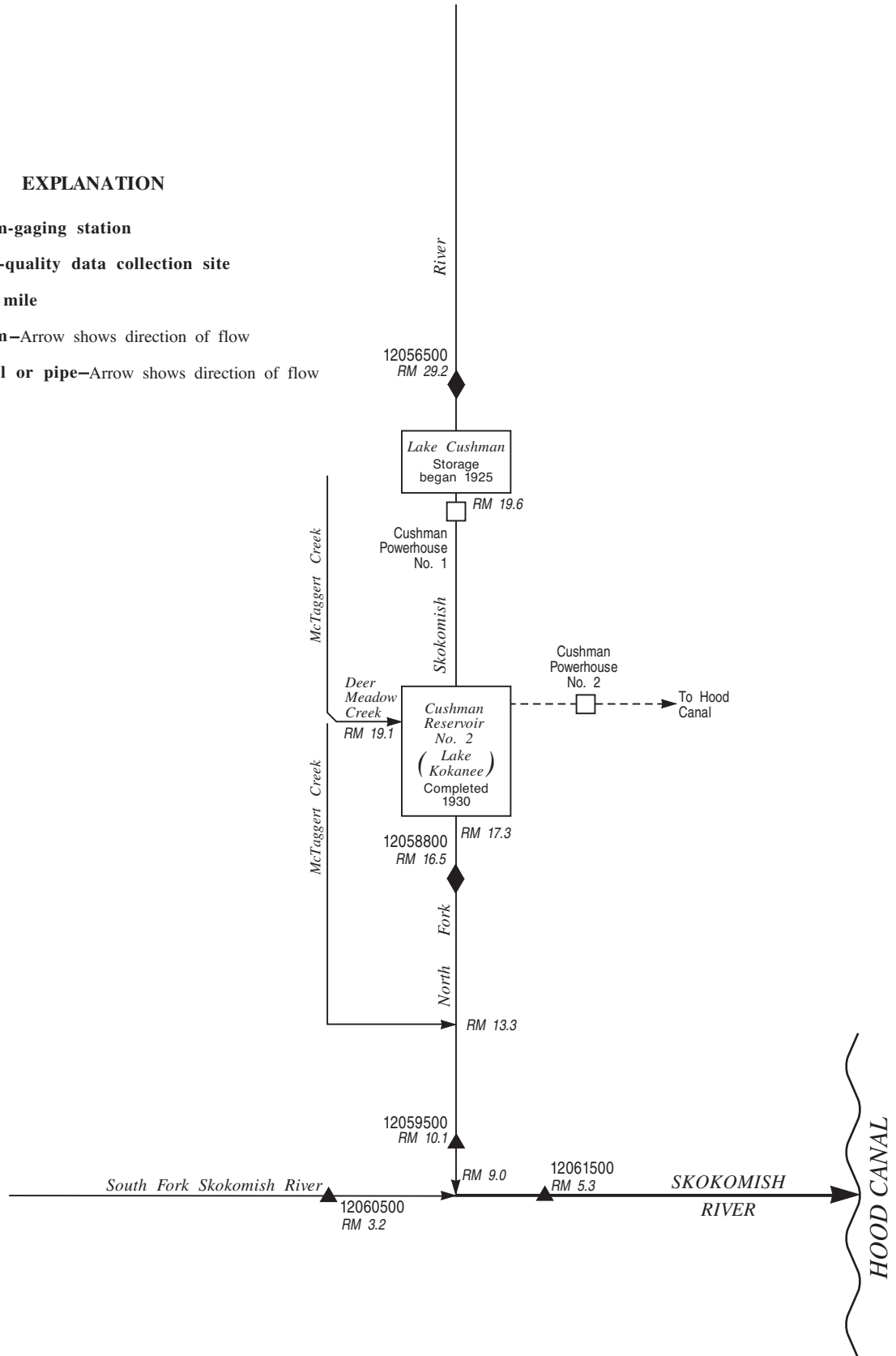


Figure 16. Schematic diagram showing surface-water and water-quality stations in the Skokomish River Basin.

SKOKOMISH RIVER BASIN

93

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

LOCATION.--Lat 47°30'52", long 123°19'43", in NW ¼ sec.4, T.23 N., R.5 W., Mason County, Hydrologic Unit 17110017, Olympic National Park, on left bank 1.2 mi upstream from Lake Cushman, 2.8 mi upstream from Dry Creek, 11.3 mi northwest of Hoodspport, and at mile 29.2.

DRAINAGE AREA.--57.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to current year.

REVISED RECORDS.--WSP 1286: 1932, 1935, 1937(M), 1942(M), 1947(P), 1948(M). WSP 1636: 1940(M). WSP 1736: 1927. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 762.26 ft above NGVD of 1929. Prior to Nov. 1, 1934, water-stage recorder, and Nov. 1, 1934, to Nov. 10, 1941, nonrecording gages, on right bank at same datum.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station. Chemical analyses December 1973 to September 1985.

AVERAGE DISCHARGE.--78 years (water years 1925-2002), 510 ft³/s, 121.10 in/yr, 369,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s Nov. 5, 1934, gage height, 14.4 ft, from high-water mark, from rating curve extended above 9,800 ft³/s on basis of slope-area measurement at gage height 12.2 ft; minimum discharge recorded, 16 ft³/s Sept. 23, 1930, gage height, 1.12 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2000	6,250	7.21	Jan. 07	1515	*12,900	*9.86
Nov. 20	0230	5,040	6.61	Feb. 22	0030	3,920	6.01
Dec. 16	1930	9,890	8.37	Apr. 14	0145	3,440	5.73
Jan. 02	0845	3,730	5.88				

Minimum discharge, 53 ft³/s Sept. 28, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	593	810	1060	334	403	279	624	679	494	169	83
2	77	494	819	3180	323	366	283	661	723	450	163	83
3	74	378	585	2020	396	345	284	562	743	431	158	84
4	70	331	498	1230	357	332	314	484	726	399	159	80
5	66	303	440	1160	344	320	383	437	770	369	161	77
6	64	264	449	3900	419	300	425	398	718	362	164	75
7	62	240	426	9660	456	280	418	365	596	371	151	75
8	63	219	516	4620	388	263	379	342	513	388	143	74
9	62	203	517	2500	344	260	545	329	503	364	142	75
10	88	191	453	1640	324	281	838	317	613	382	145	73
11	105	192	407	1270	301	961	889	327	705	402	140	71
12	129	679	396	1280	280	770	1080	390	799	377	136	69
13	120	1150	1430	1030	263	568	1730	517	874	365	136	68
14	111	3470	1570	867	249	464	2350	485	902	342	135	67
15	92	3990	858	746	239	400	1140	446	805	312	129	67
16	83	1820	4980	660	238	355	816	426	702	303	121	102
17	79	1020	2980	596	235	318	653	471	686	292	113	83
18	74	740	1470	547	246	293	573	453	733	276	109	70
19	91	2790	1000	511	496	282	537	452	570	262	104	67
20	82	4200	793	500	411	280	518	513	532	253	102	67
21	95	3230	666	458	1940	260	503	571	589	245	99	64
22	272	2250	581	425	3410	262	489	540	646	241	98	61
23	514	1500	521	400	1710	274	455	511	605	245	97	60
24	302	1080	477	755	1070	295	432	484	543	241	98	58
25	402	840	440	981	743	309	420	556	559	237	98	58
26	362	694	411	631	596	311	416	641	607	226	95	57
27	469	604	397	511	511	296	408	703	592	208	93	56
28	323	595	461	440	448	284	393	1340	865	201	91	54
29	257	606	435	393	---	274	420	1590	1150	196	91	53
30	399	556	412	372	---	265	501	930	592	186	88	53
31	1090	---	454	354	---	264	---	744	---	177	86	---
TOTAL	6159	35222	26652	44697	17071	10935	18871	17609	20640	9597	3814	2084
MEAN	199	1174	860	1442	610	353	629	568	688	310	123	69.5
MAX	1090	4200	4980	9660	3410	961	2350	1590	1150	494	169	102
MIN	62	191	396	354	235	260	279	317	503	177	86	53
AC-FT	12220	69860	52860	88660	33860	21690	37430	34930	40940	19040	7570	4130
CFSM	3.47	20.5	15.0	25.2	10.7	6.17	11.0	9.93	12.0	5.41	2.15	1.21
IN.	4.01	22.91	17.33	29.07	11.10	7.11	12.27	11.45	13.42	6.24	2.48	1.36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2002, BY WATER YEAR (WY)

MEAN	369	713	792	698	634	499	515	660	603	341	157	145
MAX	1143	1762	1778	1915	1465	1325	901	1304	1332	1037	551	624
(WY)	1998	1984	1934	1953	1991	1972	1943	1956	1956	1999	1999	1978
MIN	42.3	40.0	244	124	111	190	268	333	180	88.5	54.9	50.2
(WY)	1988	1937	1979	1937	1929	1955	1975	1930	1992	1926	1926	1926

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1924 - 2002

ANNUAL TOTAL	148580	213351	
ANNUAL MEAN	407	585	510
HIGHEST ANNUAL MEAN			762
LOWEST ANNUAL MEAN			256
HIGHEST DAILY MEAN	4980	9660	9980
LOWEST DAILY MEAN	62	53	17
ANNUAL SEVEN-DAY MINIMUM	66	56	20
ANNUAL RUNOFF (AC-FT)	294700	423200	369300
ANNUAL RUNOFF (CFSM)	7.12	10.2	8.91
ANNUAL RUNOFF (INCHES)	96.63	138.75	121.10
10 PERCENT EXCEEDS	680	1080	1020
50 PERCENT EXCEEDS	274	399	374
90 PERCENT EXCEEDS	98	82	92

SKOKOMISH RIVER BASIN

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1996 to April 1998 (discontinued).

WATER TEMPERATURE: April 1965 to September 1982, June 1989 to December 1989, December 1990 to April 1991, June 1992 to April 1998, October 1999 to current year.

INSTRUMENTATION.--Temperature recorder April 1965 to September 1982, June 1989 to April 1998, October 1999 to current year.

Water-quality monitor April 1996 to April 1998 (discontinued). Electronic Data Logger with 15-minute recording interval. Prior to June 13, 1997, a 60-minute recording interval.

REMARKS.--Record rated poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 108 microsiemens September 11, 28, 1996; minimum recorded, 25 microsiemens March 18, 19, 1997.

WATER TEMPERATURE: Maximum recorded, 16.5°C (rounded) Aug. 14, 15, 1992; minimum, 0.0°C Mar. 24, 1976, Jan. 31, 1996, Dec. 29, 1996.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 13.6°C Aug. 14 and 15; minimum, 0.3°C Jan. 25.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	10.3	8.7	9.4	6.8	6.3	6.6	4.2	2.9	3.5	4.4	3.8	4.2
2	10.4	8.8	9.4	7.0	6.7	6.8	4.7	4.1	4.5	4.4	3.8	4.1
3	10.0	8.5	9.1	6.8	6.2	6.5	4.6	3.4	4.4	4.6	3.7	4.2
4	9.8	8.3	8.8	7.1	6.1	6.6	4.4	3.4	3.9	4.8	4.3	4.6
5	9.3	7.8	8.5	7.4	5.9	6.7	4.0	3.1	3.8	4.6	4.2	4.4
6	9.4	8.0	8.6	6.0	5.3	5.7	3.9	2.9	3.6	4.7	3.8	4.3
7	9.3	8.5	8.8	5.7	5.3	5.5	4.4	3.8	4.2	5.0	3.8	4.3
8	9.5	8.3	8.8	5.6	4.9	5.3	4.4	4.0	4.3	5.2	4.5	4.8
9	9.0	7.9	8.4	5.5	5.0	5.3	4.3	3.6	4.1	4.9	4.4	4.6
10	8.5	7.8	8.1	6.2	5.1	5.6	4.4	1.9	3.9	5.0	3.5	4.5
11	8.5	7.6	8.0	6.8	6.1	6.5	4.3	3.9	4.2	5.3	---	---
12	8.7	7.8	8.2	7.1	6.7	7.0	4.4	4.1	4.2	5.0	4.4	4.7
13	8.8	7.9	8.3	7.0	6.5	6.8	4.3	3.2	3.8	4.4	3.3	4.0
14	9.0	8.2	8.5	7.6	6.6	7.1	4.3	3.5	4.1	3.6	2.8	3.2
15	8.6	7.7	8.1	7.6	6.6	7.3	4.4	3.0	3.9	2.9	2.4	2.7
16	8.9	7.6	8.2	6.9	6.3	6.7	4.8	3.1	3.6	3.0	1.3	2.5
17	8.2	7.0	7.5	6.3	5.4	6.0	4.7	4.1	4.4	2.9	1.7	2.7
18	8.2	7.1	7.6	5.8	4.6	5.2	4.3	3.2	3.8	3.1	1.4	2.6
19	8.7	7.8	8.2	7.2	5.2	6.5	4.2	3.8	4.0	2.5	1.4	1.8
20	8.4	7.5	7.9	7.0	6.2	6.7	4.5	4.0	4.3	3.6	1.9	2.8
21	8.4	7.6	7.9	6.6	5.7	6.3	4.6	4.2	4.4	3.1	1.6	2.6
22	7.9	7.0	7.5	6.3	5.5	6.0	4.4	4.1	4.3	2.8	0.6	1.9
23	7.0	6.4	6.7	6.1	5.5	5.9	4.4	4.1	4.2	2.9	1.1	2.3
24	6.7	6.1	6.4	5.9	5.3	5.6	4.1	3.8	4.0	2.7	0.6	1.6
25	7.0	6.2	6.6	5.6	5.1	5.3	3.9	3.7	3.8	2.5	0.3	1.1
26	7.2	6.6	6.9	5.2	4.9	5.1	4.2	3.7	3.9	2.8	0.4	1.9
27	6.9	5.9	6.3	5.4	4.9	5.1	4.4	4.0	4.2	2.3	1.0	1.6
28	6.0	5.2	5.6	5.2	2.3	3.6	4.4	4.0	4.2	2.3	1.5	2.1
29	6.3	5.5	5.9	4.5	3.7	4.2	4.4	3.9	4.2	2.3	1.4	2.0
30	6.5	5.9	6.2	4.2	2.8	3.5	4.3	3.8	4.1	2.2	0.4	1.6
31	6.7	6.0	6.3	---	---	---	4.6	4.2	4.4	3.4	0.5	1.8
MONTH	10.4	5.2	7.8	7.6	2.3	5.9	4.8	1.9	4.1	5.3	0.3	3.0

SKOKOMISH RIVER BASIN

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (MG/L) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT DIS FIELD (MG/L AS CACO3) (39086)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
NOV 14...	1150	2450	738	12.5	107	7.6	49	10.5	7.1	19	23	0	.73
JAN 09...	1210	2520	751	13.2	104	6.9	52	4.1	4.7	21	25	0	.71
MAR 13...	1140	558	743	13.2	101	7.4	71	4.8	3.4	30	36	0	.84
MAY 09...	1150	327	746	12.9	105	7.7	84	12.2	5.6	34	42	0	.77
JUN 13...	1310	794	743	11.8	103	7.6	59	22.1	8.1	24	29	0	.48
JUL 11...	1340	375	746	10.8	100	7.7	69	18.4	11.0	29	35	0	.50
SEP 09...	1550	75	748	10.8	99	7.6	101	--	10.9	42	52	0	.91

Date	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 14...	2.8	<.04	.11	.06	<.008	.17	<.02	.030	27	179
JAN 09...	3.9	<.04	.10	E.04	<.008	--	<.02	.044	32	218
MAR 13...	5.0	<.04	<.10	<.05	<.008	--	<.02	E.003	2.0	3.0
MAY 09...	6.2	<.04	<.10	<.05	<.008	--	.02	.011	<.5	--
JUN 13...	3.8	<.04	<.10	<.05	<.008	--	<.02	.006	3.0	6.4
JUL 11...	4.5	<.04	<.10	<.05	<.008	--	<.02	.004	2.0	2.0
SEP 09...	7.4	<.04	<.10	<.05	<.008	--	<.02	.004	1.0	.20

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER-ATURE WATER (DEG C) (00010)	PERI-PHYTON BIOMASS WEIGHT (G/SQ M) (00572)	PERI-PHYTON BIOMASS TOTAL (G/SQ M) (00573)	PERI-PHYTON BIOMASS DRY (G/SQ M) (49954)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON FLUOROM (MG/M2) (70950)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)
AUG 29...	1100	92	11.8	220	234.8	15.800	353	44.8

12058800 NORTH FORK SKOKOMISH RIVER BELOW LOWER CUSHMAN DAM, NEAR POTLATCH, WA

LOCATION.--Lat 47°23'27", long 123°12'30", in SE ¼ SE ¼ sec.17, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on right bank 1.2 mi downstream from Lower Cushman Dam (Cushman Dam No. 2), 2.8 mi northwest of Potlatch, and at mile 16.5.

DRAINAGE AREA.--102 mi², approximately, includes 99 mi² upstream from Cushman Dam No. 2 which is noncontributing except during spillage.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 230 ft above NGVD of 1929, from topographic map. Prior to Sept. 25, 1991, water-stage recorder at site 400 ft downstream at datum 7.66 ft lower.

REMARKS.--No estimated daily discharges. Records good. Upper portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No. 2. Flow regulated at Lake Cushman and at Cushman Reservoir No. 2 to supply powerplant, which discharges into Hood Canal. Entire flow of river normally diverted at Cushman Dam No. 2 except infrequent releases. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--14 years (water years 1989-2002), 54.7 ft³/s, 39,660 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,680 ft³/s Dec. 19, 1995, gage height, 10.97 ft, from rating curve extended above 370 ft³/s; minimum discharge, 4.7 ft³/s June 13-15, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,990 ft³/s, Jan. 11, gage height, 9.41 ft; minimum discharge, 64 ft³/s, Oct. 3, 6, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	66	77	66	68	68	67	66	66	66	66	66
2	65	66	72	67	68	67	67	67	66	66	66	66
3	65	66	68	66	68	67	67	67	66	66	67	66
4	65	66	67	65	68	67	67	66	66	66	67	66
5	65	66	67	66	68	67	67	66	66	66	66	66
6	64	66	68	73	71	67	67	66	66	66	66	66
7	65	66	66	92	72	67	67	66	66	66	66	67
8	65	66	66	77	70	67	66	66	66	66	66	66
9	66	66	66	71	69	67	67	66	66	66	66	67
10	66	66	66	1120	69	67	67	66	66	66	66	67
11	66	66	66	1930	68	73	67	66	66	66	66	67
12	66	66	66	1910	67	72	67	66	66	66	66	66
13	66	68	75	1900	68	72	69	66	66	66	66	66
14	66	77	73	900	67	71	72	66	66	66	66	67
15	66	75	71	68	67	70	71	66	66	66	66	66
16	66	71	92	68	67	68	70	66	66	66	66	66
17	66	68	79	67	67	68	70	66	66	66	66	67
18	65	67	72	67	67	69	68	66	66	66	66	66
19	65	68	69	68	67	69	68	66	66	66	66	67
20	65	72	67	67	67	70	68	66	66	66	66	66
21	65	73	66	67	75	70	67	66	66	66	66	67
22	66	73	66	67	78	70	68	66	66	66	66	67
23	66	70	66	68	72	68	68	66	66	66	66	67
24	66	67	66	70	71	68	67	66	66	67	66	67
25	66	67	66	72	70	68	67	66	66	66	66	67
26	66	66	66	70	69	67	67	66	66	66	67	66
27	67	66	65	69	69	67	67	66	67	66	66	67
28	66	67	66	68	68	67	67	66	67	66	66	67
29	66	69	65	68	---	67	67	66	66	66	66	67
30	66	69	65	69	---	67	67	66	66	66	66	67
31	67	---	65	69	---	67	---	66	---	66	66	---
TOTAL	2035	2045	2135	9565	1935	2119	2031	2048	1982	2047	2049	1996
MEAN	65.6	68.2	68.9	309	69.1	68.4	67.7	66.1	66.1	66.0	66.1	66.5
MAX	67	77	92	1930	78	73	72	67	67	67	67	67
MIN	64	66	65	65	67	67	66	66	66	66	66	66
AC-FT	4040	4060	4230	18970	3840	4200	4030	4060	3930	4060	4060	3960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	42.6	48.8	108	62.8	55.6	45.1	61.3	42.9	44.8	43.7	49.2	48.5			
MAX	67.5	95.4	872	309	183	68.5	232	66.9	66.1	66.0	131	99.3			
(WY)	2001	1991	1996	2002	1992	2000	1999	2000	2002	1991	1990				
MIN	33.0	33.6	32.4	33.9	30.7	30.4	31.3	29.2	30.1	29.6	28.4	31.5			
(WY)	1990	1990	1989	1991	1993	1993	1993	1989	1989	1988	1988	1989			

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1988 - 2002

ANNUAL TOTAL	23922	31987		
ANNUAL MEAN	65.5	87.6	54.7	
HIGHEST ANNUAL MEAN			117	1996
LOWEST ANNUAL MEAN			33.1	1989
HIGHEST DAILY MEAN	92	Dec 16	1930	Jan 11
LOWEST DAILY MEAN	63	Mar 8	64	Oct 6
ANNUAL SEVEN-DAY MINIMUM	64	Jun 3	65	Oct 1
ANNUAL RUNOFF (AC-FT)	47450	63450	39660	
10 PERCENT EXCEEDS	67	70	67	
50 PERCENT EXCEEDS	65	66	38	
90 PERCENT EXCEEDS	64	66	32	

12058800 NORTH FORK SKOKOMISH RIVER BELOW LOWER CUSHMAN DAM, NEAR POTLATCH, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1989 to August 1990, December 1990 to April 1991, August 1993 to current year.

INSTRUMENTATION.--Temperature recorder.

REMARKS.--Record rated good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 13.0°C (rounded) July 4, 5, Oct. 6, 8-10, 1989, June 3, 4, 2000; minimum, 3.5°C (rounded) Feb. 15, 1995.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 10.7°C June 29; minimum, 4.5°C Mar. 18.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.4	8.8	9.1	9.4	9.2	9.3	8.3	8.0	8.2	6.8	6.5	6.6
2	9.3	8.7	9.0	9.4	9.1	9.3	8.2	7.9	8.0	6.9	6.8	6.8
3	9.3	8.7	9.0	9.4	8.9	9.2	8.1	6.8	7.9	6.9	6.6	6.8
4	9.3	8.6	9.0	9.5	9.1	9.3	7.9	7.4	7.7	6.8	6.5	6.7
5	9.2	8.7	9.0	9.3	8.9	9.1	7.7	7.3	7.6	6.7	6.5	6.6
6	9.4	8.9	9.1	9.1	8.7	8.9	7.8	7.5	7.7	7.1	6.6	6.8
7	9.3	9.0	9.1	9.2	8.8	9.0	7.8	7.5	7.6	7.4	7.0	7.2
8	9.3	8.7	9.0	9.3	8.7	9.0	7.9	7.5	7.7	7.2	6.7	7.0
9	9.3	8.7	8.9	9.2	8.7	8.9	7.7	7.4	7.5	6.8	6.5	6.7
10	9.0	8.7	8.9	9.3	8.7	9.0	7.7	7.4	7.5	6.5	6.3	6.5
11	9.2	8.6	8.9	9.3	9.0	9.2	7.7	7.5	7.6	6.6	6.5	6.6
12	9.4	8.9	9.1	9.4	9.2	9.3	7.8	7.5	7.6	6.6	6.4	6.5
13	9.2	8.9	9.0	9.3	9.2	9.2	7.8	7.6	7.7	6.5	6.2	6.3
14	9.3	8.9	9.1	9.3	9.1	9.2	7.6	7.3	7.4	6.3	6.0	6.2
15	9.3	8.7	8.9	9.5	9.3	9.4	7.4	7.0	7.2	6.2	5.8	6.0
16	9.2	8.7	9.0	9.3	9.0	9.2	7.7	7.4	7.6	6.2	5.9	6.0
17	9.1	8.6	8.8	9.2	8.7	9.0	7.5	7.2	7.3	6.1	5.9	6.0
18	9.1	8.7	8.9	9.1	8.6	8.8	7.3	7.0	7.1	6.1	5.8	5.9
19	9.5	9.1	9.3	9.2	8.9	9.1	7.2	7.0	7.1	6.1	5.7	5.9
20	9.4	9.1	9.2	9.2	9.1	9.2	7.2	7.0	7.1	5.9	5.4	5.7
21	9.3	9.1	9.2	9.1	8.9	9.0	7.3	6.9	7.1	5.7	5.4	5.6
22	9.2	9.0	9.1	9.0	8.8	8.9	7.1	6.8	7.0	5.6	5.3	5.5
23	9.1	8.8	9.0	8.9	8.5	8.7	7.0	6.7	6.8	5.6	5.3	5.5
24	9.3	8.8	9.0	8.7	8.6	8.7	6.8	6.5	6.6	5.9	5.6	5.8
25	9.4	9.1	9.2	8.8	8.3	8.6	6.6	6.4	6.5	5.9	5.5	5.7
26	9.3	9.0	9.2	8.5	8.2	8.3	6.6	6.3	6.5	5.5	5.0	5.4
27	9.1	8.9	9.0	8.5	8.2	8.3	6.7	6.5	6.6	5.4	5.1	5.3
28	9.0	8.6	8.8	8.3	7.5	8.0	6.9	6.5	6.7	5.4	5.1	5.3
29	9.1	8.6	8.9	8.3	8.0	8.2	6.7	6.4	6.5	5.4	5.1	5.3
30	9.3	8.9	9.1	8.2	7.6	8.0	6.6	6.3	6.5	5.5	5.2	5.3
31	9.4	9.1	9.2	---	---	---	6.8	6.6	6.7	5.6	5.3	5.4
MONTH	9.5	8.6	9.0	9.5	7.5	8.9	8.3	6.3	7.2	7.4	5.0	6.1

SKOKOMISH RIVER BASIN

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°19'42", long 123°14'33", in NE ¼ NW ¼ sec.7, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on left bank 1.1 mi upstream from South Fork Skokomish River, 5.4 mi southwest of Potlatch, 7.2 mi downstream from City of Tacoma Cushman Dam No. 2, and at mile 10.1.

DRAINAGE AREA.--117 mi², includes 99 mi² upstream from Cushman Dam No. 2, which is noncontributing except during spillage.

PERIOD OF RECORD.--March 1944 to November 1949 (destroyed by flood of Nov. 27, 1949), March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 63.49 ft above NGVD of 1929 (levels by City of Tacoma). Prior to Nov. 27, 1949, and Mar. 18 to May 9, 1950, water-stage recorder at site 200 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Upper portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No.2. Flow regulated at Lake Cushman and at Cushman Reservoir No.2 to supply powerplant, which discharges into Hood Canal. Entire flow of river normally diverted at Cushman Dam No.2 except infrequent releases. Water temperatures March 1965 to September 1982.

AVERAGE DISCHARGE.--52 years (water years 1951-2002), 118 ft³/s, 85,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft³/s Nov. 4, 1955, gage height, 10.45 ft; minimum recorded discharge, 1.3 ft³/s Sept. 5, 14, 16, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,030 ft³/s Dec. 16, gage height, 7.10 ft; minimum discharge 62 ft³/s, several days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	123	724	173	192	171	118	105	88	78	67	67
2	65	114	619	219	181	160	114	105	89	75	67	67
3	65	105	367	222	196	153	112	104	88	73	67	67
4	65	99	294	201	186	147	111	102	88	73	68	67
5	65	94	257	208	181	140	110	103	86	72	67	67
6	66	91	265	490	261	136	109	100	85	72	67	68
7	67	88	248	1870	322	132	108	98	85	72	66	68
8	67	84	243	1060	262	126	106	98	84	71	66	68
9	68	82	231	529	223	130	113	98	82	70	66	68
10	73	81	226	1350	201	156	120	96	83	70	66	68
11	69	80	218	2590	182	452	132	93	83	70	66	67
12	71	83	228	2600	170	392	141	93	82	69	65	66
13	70	144	602	2530	161	338	187	93	80	69	65	66
14	71	610	633	1530	152	269	307	93	80	69	65	67
15	69	650	408	217	147	230	256	90	80	69	65	68
16	69	368	1730	188	143	201	236	91	79	69	65	69
17	68	246	1190	174	138	180	211	91	84	69	66	66
18	67	189	597	164	136	171	186	88	83	68	67	66
19	67	230	436	159	153	164	169	92	79	69	67	65
20	67	426	340	165	141	181	157	91	77	69	66	66
21	67	571	278	155	478	169	146	90	77	68	67	65
22	77	606	243	140	966	164	137	89	76	67	67	65
23	85	382	213	139	546	155	130	89	76	68	67	65
24	80	265	193	278	362	148	125	89	74	67	67	64
25	104	210	179	458	273	144	122	89	72	68	67	66
26	89	176	168	301	228	140	120	89	72	68	68	68
27	105	155	159	239	202	135	119	89	72	68	67	69
28	95	183	175	206	184	130	114	97	90	67	67	70
29	87	256	158	186	---	126	112	98	100	67	67	69
30	94	266	148	184	---	123	108	91	81	68	68	69
31	146	---	154	209	---	120	---	89	---	67	67	---
TOTAL	2383	7057	11924	19134	6967	5583	4336	2923	2455	2159	2063	2011
MEAN	76.9	235	385	617	249	180	145	94.3	81.8	69.6	66.5	67.0
MAX	146	650	1730	2600	966	452	307	105	100	78	68	70
MIN	65	80	148	139	136	120	106	88	72	67	65	64
AC-FT	4730	14000	23650	37950	13820	11070	8600	5800	4870	4280	4090	3990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	(WY)	(WY)	(WY)
MEAN	71.1	195	272	243	217	149	97.0
MAX	943	1005	1262	938	982	570	272
(WY)	1952	1976	1951	1974	1951	1961	1999
MIN	5.38	12.6	32.9	41.3	63.6	58.7	32.7
(WY)	1953	1977	1977	1979	1988	1981	1973

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1950 - 2002

ANNUAL TOTAL	48033	68995	
ANNUAL MEAN	132	189	118
HIGHEST ANNUAL MEAN			311
LOWEST ANNUAL MEAN			36.6
HIGHEST DAILY MEAN	1730	Dec 16	2600
LOWEST DAILY MEAN	63	Sep 10	64
ANNUAL SEVEN-DAY MINIMUM	65	Sep 28	65
ANNUAL RUNOFF (AC-FT)	95270		136900
10 PERCENT EXCEEDS	214		313
50 PERCENT EXCEEDS	96		99
90 PERCENT EXCEEDS	67		67
			85240
			240
			58
			11
			1.4
			1.8
			Sep 12 1951
			Nov 4 1955
			Sep 14 1951
			Sep 12 1951

SKOKOMISH RIVER BASIN

12060500 SOUTH FORK SKOKOMISH RIVER NEAR UNION, WA

LOCATION.--Lat 47°20'26", long 123°16'44", in SW ¼ NE ¼ sec.2, T.21 N., R.5 W., Mason County, Hydrologic Unit 17110017, on right bank 3.0 mi upstream from Vance Creek, 2.3 mi upstream from confluence with North Fork, and 8.5 mi west of Union.

DRAINAGE AREA.--76.3 mi².

PERIOD OF RECORD.--August 1931 to September 1984, October 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is 103.35 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good except for discharges above 2,500 ft³/s, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1932-84, 1996-2002), 747 ft³/s, 133.05 in/yr, 541,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,400 ft³/s Mar. 19, 1997, gage height, 8.98 ft, from rating curve extended above 10,000 ft³/s; maximum gage height, 11.0 ft Jan. 22, 1935, Nov. 26, 1949; minimum discharge, 62 ft³/s Sept. 18, 1938; minimum gage height, 0.21 ft Sept. 30, 2002.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2230	8,130	5.35	Jan. 7	1530	*16,500	7.18
Dec. 13	2115	7,030	4.93	Feb. 21	2145	7,840	4.78
Dec. 16	1945	15,300	*7.24				

Minimum discharge, 73 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	1000	2440	1010	694	694	426	551	440	356	128	89
2	122	825	2450	2400	655	625	419	563	425	306	126	89
3	120	645	1470	2040	944	570	404	504	419	279	124	90
4	118	524	1130	1490	894	531	403	456	402	261	127	89
5	115	460	907	1290	798	501	437	431	402	250	128	89
6	113	403	936	4000	1330	474	516	406	386	239	128	93
7	113	363	944	12400	1690	448	523	375	349	224	126	95
8	113	331	1010	6690	1190	416	466	355	322	222	121	91
9	113	305	1130	3420	930	415	552	340	300	215	115	94
10	128	285	931	2260	805	543	1060	331	318	212	113	90
11	147	272	796	1770	742	2570	1200	322	332	207	112	89
12	150	375	788	1790	668	2090	1760	330	342	197	108	89
13	191	835	3530	1560	604	1500	2530	392	359	196	105	89
14	167	4290	3500	1280	551	1090	3770	399	366	191	105	89
15	153	4550	1740	1090	512	883	2000	373	340	185	105	85
16	141	2280	8920	954	501	751	1600	345	316	177	105	111
17	133	1400	4850	853	484	650	1310	358	320	175	105	122
18	128	978	2170	773	493	593	1100	343	402	167	103	99
19	128	1940	1590	723	1130	558	970	337	316	163	102	91
20	128	4310	1280	737	994	649	884	352	286	162	102	89
21	134	4400	1030	710	3860	604	802	367	278	157	101	89
22	269	3560	885	663	6650	569	717	352	282	154	95	85
23	781	2130	765	624	3060	567	646	338	275	153	95	85
24	573	1510	678	2110	1980	587	592	324	260	149	95	85
25	814	1150	612	3460	1420	589	554	333	250	147	95	82
26	627	901	552	1730	1100	570	529	355	250	140	95	82
27	679	760	516	1210	908	541	515	368	251	140	95	82
28	572	788	663	936	783	512	486	609	321	138	92	82
29	445	1180	669	792	---	481	476	1150	945	134	92	78
30	465	1050	594	739	---	459	500	658	470	132	92	75
31	1410	---	629	752	---	432	---	505	---	131	90	---
TOTAL	9417	43800	50105	62256	36370	22462	28147	13222	10724	5959	3325	2687
MEAN	304	1460	1616	2008	1299	725	938	427	357	192	107	89.6
MAX	1410	4550	8920	12400	6650	2570	3770	1150	945	356	128	122
MIN	113	272	516	624	484	415	403	322	250	131	90	75
AC-FT	18680	86880	99380	123500	72140	44550	55830	26230	21270	11820	6600	5330
CFSM	3.98	19.1	21.2	26.3	17.0	9.50	12.3	5.59	4.69	2.52	1.41	1.17
IN.	4.59	21.35	24.43	30.35	17.73	10.95	13.72	6.45	5.23	2.91	1.62	1.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	539	1170	1500	1338	1208	932	753	599	387	225	142	196
MEAN	539	1170	1500	1338	1208	932	753	599	387	225	142	196
MAX (WY)	1727	2952	3330	4030	2594	2138	1397	1259	909	479	294	795
MIN (WY)	1968	1984	1967	1953	1961	1972	1937	1948	1956	1974	2001	1978
MIN (WY)	85.3	76.8	538	243	414	446	343	298	161	105	80.1	69.0
MIN (WY)	1937	1937	1979	1949	1956	1942	1973	1947	1934	1944	1940	1938

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1931 - 2002

ANNUAL TOTAL		209862		288474		
ANNUAL MEAN		575		790		
HIGHEST ANNUAL MEAN						1058
LOWEST ANNUAL MEAN						423
HIGHEST DAILY MEAN		8920	Dec 16	12400	Jan 7	15800
LOWEST DAILY MEAN		109	Aug 20	75	Sep 30	63
ANNUAL SEVEN-DAY MINIMUM		114	Aug 14	81	Sep 24	64
ANNUAL RUNOFF (AC-FT)		416300		572200		541300
ANNUAL RUNOFF (CFSM)			7.54		10.4	9.79
ANNUAL RUNOFF (INCHES)			102.32		140.65	133.05
10 PERCENT EXCEEDS			1040		1750	1620
50 PERCENT EXCEEDS			373		456	467
90 PERCENT EXCEEDS			131		95	113

SKOKOMISH RIVER BASIN

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°18'36", long 123°10'33", in SE ¼ NW ¼ sec.15, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream side of right pier of bridge on U.S. Highway 101, 3.7 mi downstream from confluence of North and South Forks, 4.7 mi southwest of Potlatch, and at mile 5.3.

DRAINAGE AREA.--227 mi², includes 99 mi² upstream from Cushman Dam No. 2, which is noncontributing except during spillage.

PERIOD OF RECORD.--July 1943 to current year.

REVISED RECORDS.--WSP 1716: 1950(M), 1956. WSP 1932: Drainage area. WDR WA-72: 1968(M), 1971(M). WDR WA-75: 1974.

GAGE.--Water-stage recorder. Datum of gage is 10.67 ft above NGVD of 1929. Prior to May 27, 1964, water-stage recorders or nonrecording gage at several sites about 0.6 mi upstream at different datums. Supplementary water-stage recorder on right bank at site 0.6 mi upstream at datum 16.47 ft above NGVD of 1929 used Nov. 16 to Dec. 10, 1964, June 11 to July 7, and Nov. 2-24, 1965.

REMARKS.--Records good except for estimated daily discharges and discharges above 10,000 cfs which are fair. Above stages of about 15 ft, the river flows out of the main channel upstream from the gage into three channels that bypass the gage. Flow partly regulated at Lake Cushman and Cushman Reservoir No. 2. In normal years, practically entire flow of North Fork is diverted at Cushman Dam No. 2 and is discharged into Puget Sound through Cushman powerplant No. 2. Chemical analyses August 1960 to September 1961, October 1961 to September 1970 (partial-record station), October 1971 to September 1974. Water temperatures May 1955 to September 1962, October 1963 to September 1982. Water temperatures and specific conductance July 1996 to April 1998. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--59 years (water years 1944-2002), 1,213 ft³/s, 128.72 in/yr, 878,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s, Nov. 23, 1990, gage height, 16.80 ft (floodmark), from rating curve extended above 14,000 ft³/s; maximum gage height, 17.75 ft, Mar. 19, 1997; minimum discharge, 99 ft³/s, Oct. 27, 28, Nov. 6-9, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1933 reached an elevation of 30.8 ft NGVD of 1929 at site on left bank 150 ft upstream from old highway bridge, discharge, 18,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,800 ft³/s Dec. 17, gage height, 17.17 ft; minimum discharge, 181 ft³/s Sept. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	231	1460	5340	1470	1350	1340	874	891	689	620	263	202
2	225	1240	6210	3660	1250	1220	856	906	659	549	260	202
3	221	1020	2680	3180	1540	1130	829	858	645	505	257	202
4	217	866	2050	2370	1550	1060	812	806	623	480	263	202
5	213	773	1720	2000	1420	1000	834	782	611	462	263	199
6	210	693	1730	5520	2130	958	900	748	603	442	264	200
7	210	633	1710	e20100	2880	911	925	714	572	430	260	209
8	209	582	1700	e16700	2100	870	864	683	543	420	251	206
9	207	540	1860	8170	1690	855	916	658	517	407	246	210
10	231	506	1680	4770	1470	1060	1470	638	526	399	242	205
11	255	480	1510	5590	1350	5160	1670	622	543	391	240	200
12	260	560	1510	5330	1230	3770	2390	619	551	383	236	196
13	299	947	6180	4700	1130	2750	3330	663	559	377	233	193
14	289	7510	9760	3400	1040	2100	7050	684	570	371	229	192
15	272	e13600	3320	1710	970	1730	3310	664	551	362	227	193
16	258	4990	e14900	1490	939	1500	2470	636	524	352	225	219
17	242	2580	e16000	1350	910	1320	2040	640	537	343	223	237
18	237	1880	5650	1240	899	1220	1740	632	628	336	221	217
19	235	2850	3330	1180	1480	1160	1550	624	548	330	221	206
20	234	9160	2510	1230	1510	1330	1420	630	502	323	219	202
21	245	e11800	2030	1180	6340	1240	1310	644	484	316	218	198
22	361	9210	1730	1100	e15800	1160	1210	630	482	310	217	194
23	980	4080	1510	1060	7520	1130	1120	619	475	304	214	193
24	853	2620	1360	3410	3590	1130	1040	603	459	300	212	190
25	1190	2020	1240	8380	2510	1120	988	605	446	297	213	189
26	980	1680	1150	3100	2000	1090	951	622	441	294	213	188
27	1010	1470	1080	2100	1690	1060	936	636	442	290	212	187
28	901	1500	1260	1650	1490	1020	885	794	502	283	209	186
29	734	2060	1260	1420	---	975	860	1360	1170	278	206	184
30	719	1970	1160	1360	---	930	862	935	765	273	205	184
31	1780	---	1180	1490	---	893	---	766	---	266	203	---
TOTAL	14508	91280	106310	121410	69778	44192	46412	22312	17167	11493	7165	5985
MEAN	468	3043	3429	3916	2492	1426	1547	720	572	371	231	200
MAX	1780	13600	16000	20100	15800	5160	7050	1360	1170	620	264	237
MIN	207	480	1080	1060	899	855	812	603	441	266	203	184
AC-FT	28780	181100	210900	240800	138400	87650	92060	44260	34050	22800	14210	11870
CFSM	3.66	23.8	26.8	30.6	19.5	11.1	12.1	5.62	4.47	2.90	1.81	1.56
IN.	4.22	26.53	30.90	35.28	20.28	12.84	13.49	6.48	4.99	3.34	2.08	1.74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	802	1972	2400	2190	2130	1589	1202	848	566	353	252	300
MEAN	802	1972	2400	2190	2130	1589	1202	848	566	353	252	300
MAX	2570	5582	5169	5540	4067	3432	2005	1675	1213	783	690	1039
(WY)	1976	1991	1995	1953	1995	1972	1969	1948	1956	1974	1991	1978
MIN	115	286	772	524	709	704	487	473	261	189	144	147
(WY)	1988	1994	1986	1949	1985	2001	1973	1980	1992	1944	1944	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1943 - 2002
ANNUAL TOTAL	376916	558012	
ANNUAL MEAN	1033	1529	1213
HIGHEST ANNUAL MEAN			1993
LOWEST ANNUAL MEAN			635
HIGHEST DAILY MEAN	16000	Dec 17	30000
LOWEST DAILY MEAN	180	Aug 20	99
ANNUAL SEVEN-DAY MINIMUM	185	Aug 14	105
ANNUAL RUNOFF (AC-FT)	747600	1107000	878500
ANNUAL RUNOFF (CFSM)	8.07	11.9	9.47
ANNUAL RUNOFF (INCHES)	109.54	162.17	128.72
10 PERCENT EXCEEDS	1710	3310	2600
50 PERCENT EXCEEDS	597	853	732
90 PERCENT EXCEEDS	225	212	205

e Estimated

BIG BEEF CREEK BASIN

103

12069550 BIG BEEF CREEK NEAR SEABECK, WA

LOCATION.--Lat 47°38'27", long 122°47'02", in NW ¼ SE ¼ sec.22, T.25 N., R.1 W., Kitsap County, Hydrologic Unit 17110018, on left bank 1.1 mi upstream from county road bridge across Big Beef Harbor, and 1.9 mi east of Seabek.

DRAINAGE AREA.--13.8 mi².

PERIOD OF RECORD.--August 1969 to October 1981, June 1983 to September 1995 (seasonal records), October 1995 to current year.

REVISED RECORDS.--WDR WA-76-1: 1975(M).

GAGE.--Water-stage recorder. Elevation of gage is 40 ft above NGVD of 1929, from topographic map. Prior to July 7, 1978, at site 110 ft downstream at datum 2.03 ft lower.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Lake Symington, 4.6 mi upstream. No diversions upstream from station.

AVERAGE DISCHARGE.--19 years (water years 1970-81, 1996-2002), 42.2 ft³/s, 41.57 in/yr, 30,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,840 ft³/s Jan. 1, 1997, gage height, 6.97 ft, from rating curve extended above 700 ft³/s on basis of slope-area measurement at gage height of 6.97 ft; minimum discharge, 2.2 ft³/s Aug. 12-17, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,520 ft³/s Dec. 16; gage height, 6.53 ft; maximum gage height, 6.84 ft from inside high water mark affected by back water from debris; minimum discharge, 2.7 ft³/s Aug. 17, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	16	577	e62	51	43	22	17	e11	6.5	3.2	2.8
2	3.1	13	355	e75	48	40	21	17	e10	5.7	3.2	3.2
3	3.1	10	146	71	50	37	20	16	e10	5.2	3.1	3.1
4	3.2	9.8	96	67	47	35	20	15	e9.8	5.0	3.3	3.0
5	3.2	9.3	75	70	45	34	19	15	e9.3	4.8	3.9	2.9
6	3.1	8.6	71	158	91	32	18	14	e8.8	4.5	3.3	2.9
7	3.1	8.0	61	1020	156	32	18	15	e8.8	4.9	3.1	2.9
8	3.6	7.9	54	775	125	30	18	15	e8.7	5.4	3.0	3.7
9	3.3	7.8	47	319	88	32	20	14	e8.5	4.9	3.0	3.7
10	3.7	7.5	64	180	69	55	23	14	e8.3	4.6	3.1	3.5
11	4.1	7.4	60	125	59	200	23	13	e8.1	4.4	4.0	3.4
12	4.3	9.1	57	114	51	181	24	13	e7.5	4.3	3.2	3.4
13	4.2	20	165	101	46	137	28	13	e7.3	4.2	3.0	3.2
14	4.4	137	293	e78	42	91	49	12	e7.4	4.2	2.9	3.2
15	4.1	245	195	e66	39	67	47	12	e7.3	4.1	2.9	3.3
16	5.1	146	837	e56	38	56	41	12	e7.0	4.0	2.8	3.4
17	5.4	76	761	e52	37	47	41	13	e7.3	3.9	2.8	3.3
18	4.8	45	308	e50	36	44	34	13	e7.4	3.9	2.8	3.2
19	7.0	83	179	e49	39	45	31	12	7.8	3.8	2.8	3.1
20	5.4	167	123	e50	36	46	28	12	7.6	3.8	2.9	3.0
21	4.1	258	95	e43	81	42	26	12	7.2	4.6	2.9	2.9
22	5.3	346	78	e37	160	38	24	12	7.1	4.3	2.9	3.0
23	7.9	208	71	35	134	35	22	11	6.8	3.5	2.8	3.0
24	9.0	112	e64	46	94	33	21	11	6.5	3.2	2.8	3.0
25	10	66	e58	157	70	30	20	11	6.4	3.2	3.8	3.0
26	8.8	42	e53	132	58	28	20	11	6.3	3.3	3.5	3.0
27	17	29	e50	96	51	27	21	11	6.4	5.0	3.2	3.0
28	13	40	e52	75	46	25	20	12	8.0	4.9	2.9	3.0
29	9.5	149	e50	61	---	25	19	15	10	4.7	2.8	3.0
30	10	190	e49	53	---	24	18	14	7.8	4.0	2.8	3.0
31	19	---	e51	55	---	23	---	12	---	3.3	3.0	---
TOTAL	194.9	2473.4	5195	4328	1887	1614	756	409	240.4	136.1	95.7	94.1
MEAN	6.29	82.4	168	140	67.4	52.1	25.2	13.2	8.01	4.39	3.09	3.14
MAX	19	346	837	1020	160	200	49	17	11	6.5	4.0	3.7
MIN	3.1	7.4	47	35	36	23	18	11	6.3	3.2	2.8	2.8
AC-FT	387	4910	10300	8580	3740	3200	1500	811	477	270	190	187
CFSM	0.46	5.97	12.1	10.1	4.88	3.77	1.83	0.96	0.58	0.32	0.22	0.23
IN.	0.53	6.67	14.00	11.67	5.09	4.35	2.04	1.10	0.65	0.37	0.26	0.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2002, BY WATER YEAR (WY)

MEAN	13.1	51.1	106	95.5	87.5	69.4	34.4	17.3	9.94	5.77	4.29	5.48
MAX	77.4	136	205	178	300	144	67.6	37.8	17.9	10.5	8.41	21.0
(WY)	1998	1976	1999	1999	1999	1997	1996	1996	2000	1997	1975	1978
MIN	3.36	4.23	8.03	9.65	15.0	27.5	11.1	9.32	5.05	3.57	2.48	2.56
(WY)	1988	1994	1977	1977	1977	1996	1977	1977	1989	1991	1994	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1969 - 2002	
ANNUAL TOTAL	12631.7		17423.6			
ANNUAL MEAN	34.6		47.7		42.2	
HIGHEST ANNUAL MEAN					82.1	
LOWEST ANNUAL MEAN					14.9	
HIGHEST DAILY MEAN	837		1020		1600	
LOWEST DAILY MEAN	2.9		2.8		2.2	
ANNUAL SEVEN-DAY MINIMUM	3.0		2.8		2.3	
ANNUAL RUNOFF (AC-FT)	25050		34560		30590	
ANNUAL RUNOFF (CFSM)	2.51		3.46		3.06	
ANNUAL RUNOFF (INCHES)	34.05		46.97		41.57	
10 PERCENT EXCEEDS	59		113		103	
50 PERCENT EXCEEDS	17		14		16	
90 PERCENT EXCEEDS	3.8		3.1		4.2	

e Estimated

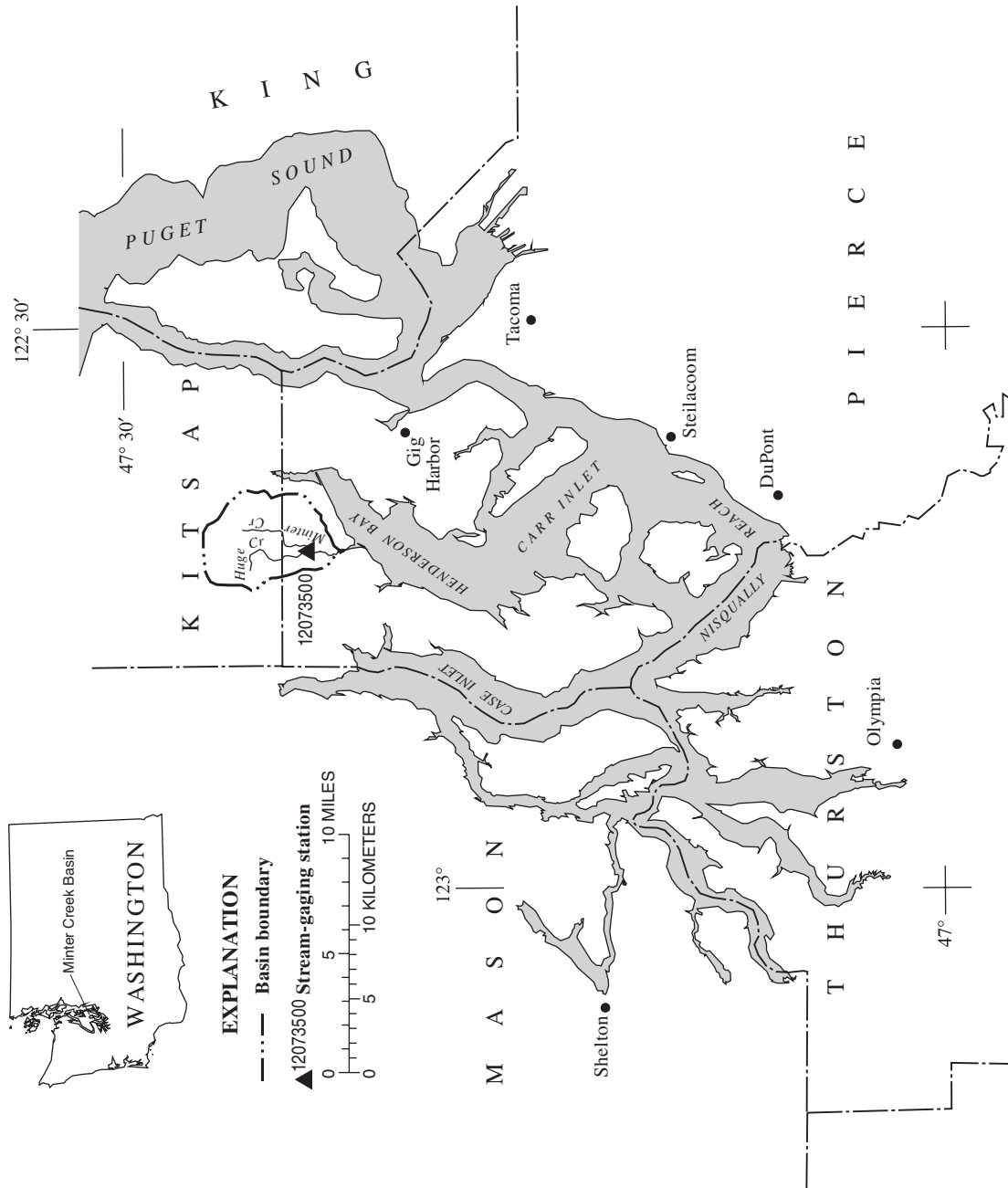


Figure 17. Location of the surface-water station in the Minter Creek Basin.

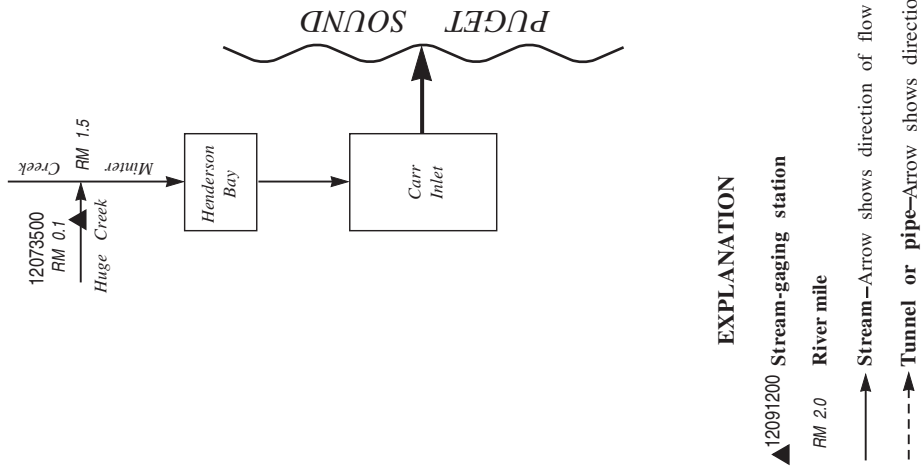


Figure 18. Schematic diagram showing the surface-water station in the Minter Creek Basin.

MINTER CREEK BASIN

12073500 HUGE CREEK NEAR WAUNA, WA

LOCATION.--Lat 47°23'22", long 122°41'52", at north line sec.20, T.22 N., R.1 E., Pierce County, Hydrologic Unit 17110019, on right bank 25 ft upstream from bridge, 0.1 mi upstream from mouth, and 2.5 mi west of Wauna.

DRAINAGE AREA.--6.47 mi².

PERIOD OF RECORD.--July 1947 to September 1969, October 1977 to current year.

REVISED RECORDS.--WSP 1636: 1953-54, 1956, 1957(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 100 ft above NGVD of 1929, from topographic map. Prior to Sept. 27, 1978, at site 50 ft downstream and prior to June 26, 1951, at datum 0.86 ft higher.

REMARKS.--Records good except for period Oct. 16 to May 1, which is poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--47 years (water years 1948-69, 1978-2002), 11.2 ft³/s, 23.59 in/yr, 8,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 526 ft³/s, Mar. 19, 1997, gage height, 5.76 ft; minimum discharge, 2.4 ft³/s, Sept. 30, 1994, Oct. 1, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 70 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 16		*285	*4.43	Jan. 25	0615	212	3.12
Jan. 07		280	4.40				

Minimum discharge, 2.8 ft³/s, Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	4.5	52	e22	16	12	e8.3	e7.8	6.4	5.5	4.5	4.4
2	3.3	4.9	45	e27	15	11	e8.0	8.1	6.4	5.4	4.5	4.4
3	3.2	4.1	27	e26	15	10	e7.8	7.9	6.2	5.3	4.5	4.4
4	3.6	3.7	26	e25	14	9.8	e7.9	7.8	6.2	5.3	4.8	4.4
5	3.5	4.1	26	e25	14	9.7	e7.8	7.7	6.1	5.2	5.0	4.4
6	3.2	3.8	30	e50	19	9.6	e7.6	7.9	6.0	5.1	5.0	4.4
7	3.4	3.7	21	e240	24	9.5	e7.6	7.8	6.1	5.6	4.7	4.4
8	3.4	e3.4	17	e170	22	9.2	e7.9	7.5	6.3	5.6	4.5	4.5
9	3.5	e3.4	14	e105	17	9.3	e8.9	7.4	6.0	5.2	4.5	4.5
10	4.2	e3.2	13	e52	16	11	e10	7.4	6.0	5.1	4.5	4.3
11	4.0	e3.4	12	e43	14	38	e10	7.2	5.9	5.0	4.5	4.3
12	3.9	e4.7	e11	e38	13	37	e10	7.2	5.7	4.9	4.4	4.1
13	3.9	e10	e15	e25	13	33	e13	7.4	5.5	4.8	4.3	4.1
14	4.0	27	e54	e22	12	21	e21	7.4	5.6	4.9	4.3	4.2
15	3.9	16	e40	e19	12	18	e20	7.1	5.6	4.8	4.3	4.3
16	3.6	10	e250	e18	12	16	e18	7.1	5.6	4.8	4.3	4.9
17	3.6	7.4	e220	e16	12	15	e18	7.9	6.0	4.8	4.3	4.5
18	3.5	6.1	e80	e14	12	15	e15	7.2	6.7	4.8	4.3	4.2
19	3.6	8.0	e56	e14	12	15	e13	7.2	6.1	4.8	4.5	4.2
20	3.5	12	e42	e14	10	19	e12	7.3	5.6	4.7	4.9	4.3
21	3.8	20	e33	13	24	15	e12	7.3	5.5	4.6	4.5	4.1
22	5.2	37	e28	12	44	14	e11	7.2	5.5	4.6	4.5	4.0
23	4.9	27	e24	11	35	12	e9.9	7.0	5.4	4.5	4.5	4.0
24	4.3	16	e21	43	25	11	e9.4	6.8	5.4	4.5	4.5	4.1
25	5.5	11	e20	98	18	11	e9.0	6.7	5.3	4.7	4.5	4.1
26	4.3	8.4	e19	53	16	e9.6	e8.6	6.6	5.2	4.8	4.5	4.1
27	6.3	7.2	e17	37	14	e9.4	e9.0	6.6	5.3	4.7	4.4	4.1
28	4.9	15	e18	27	12	e9.4	e8.9	7.3	7.3	4.7	4.3	4.1
29	3.9	43	e18	20	---	e9.2	e8.6	7.7	8.3	4.8	4.3	4.1
30	4.2	37	e17	18	---	e8.8	e8.2	6.7	5.8	4.9	4.3	4.0
31	6.3	---	e18	18	---	e8.6	---	6.5	---	4.7	4.3	---
TOTAL	125.8	365.0	1284	1315	482	446.1	326.4	226.7	179.0	153.1	139.2	127.9
MEAN	4.06	12.2	41.4	42.4	17.2	14.4	10.9	7.31	5.97	4.94	4.49	4.26
MAX	6.3	43	250	240	44	38	21	8.1	8.3	5.6	5.0	4.9
MIN	3.2	3.2	11	11	10	8.6	7.6	6.5	5.2	4.5	4.3	4.0
AC-FT	250	724	2550	2610	956	885	647	450	355	304	276	254
CFSM	0.63	1.88	6.40	6.56	2.66	2.22	1.68	1.13	0.92	0.76	0.69	0.66
IN.	0.72	2.10	7.38	7.56	2.77	2.56	1.88	1.30	1.03	0.88	0.80	0.74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2002, BY WATER YEAR (WY)

	5.50	10.5	18.6	23.5	22.5	16.3	10.6	7.51	6.08	5.06	4.60	4.66
MEAN	5.50	10.5	18.6	23.5	22.5	16.3	10.6	7.51	6.08	5.06	4.60	4.66
MAX	9.76	29.2	41.4	47.1	58.1	42.7	24.6	12.4	8.60	7.31	6.18	6.68
(WY)	1998	1991	2002	1966	1999	1997	1991	1959	1984	1961	1968	1978
MIN	3.45	3.55	4.97	5.37	5.73	7.16	6.07	4.52	4.24	3.50	3.15	3.23
(WY)	1988	1994	1953	1979	1993	2001	2001	1994	2001	1994	1994	1989

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1947 - 2002

ANNUAL TOTAL		3239.0		5170.2								
ANNUAL MEAN		8.87		14.2						11.2		
HIGHEST ANNUAL MEAN										19.8		1999
LOWEST ANNUAL MEAN										5.57		2001
HIGHEST DAILY MEAN		250	Dec 16	250	Dec 16	400	Mar 19 1997					
LOWEST DAILY MEAN		3.2	Oct 3	3.2	Oct 3	2.7	Sep 30 1994					
ANNUAL SEVEN-DAY MINIMUM		3.4	Sep 30	3.4	Oct 1	2.8	Oct 4 1994					
ANNUAL RUNOFF (AC-FT)		6420		10260		8140						
ANNUAL RUNOFF (CFSM)		1.37		2.19		1.74						
ANNUAL RUNOFF (INCHES)		18.62		29.73		23.59						
10 PERCENT EXCEEDS		14		26		22						
50 PERCENT EXCEEDS		5.2		7.3		6.8						
90 PERCENT EXCEEDS		3.5		4.1		4.2						

e Estimated

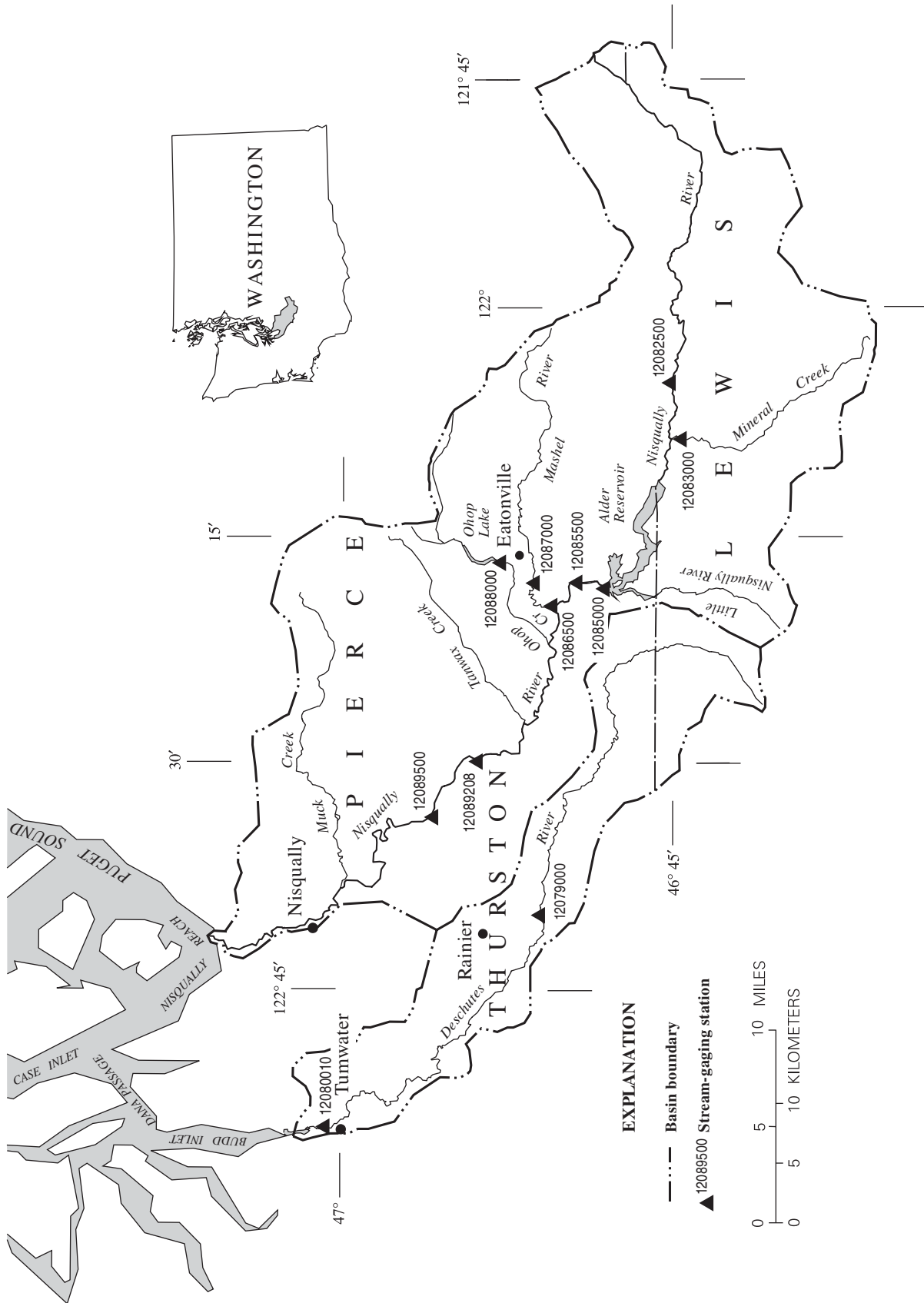


Figure 19. Location of surface-water stations in the Deschutes and Nisqually River Basins.

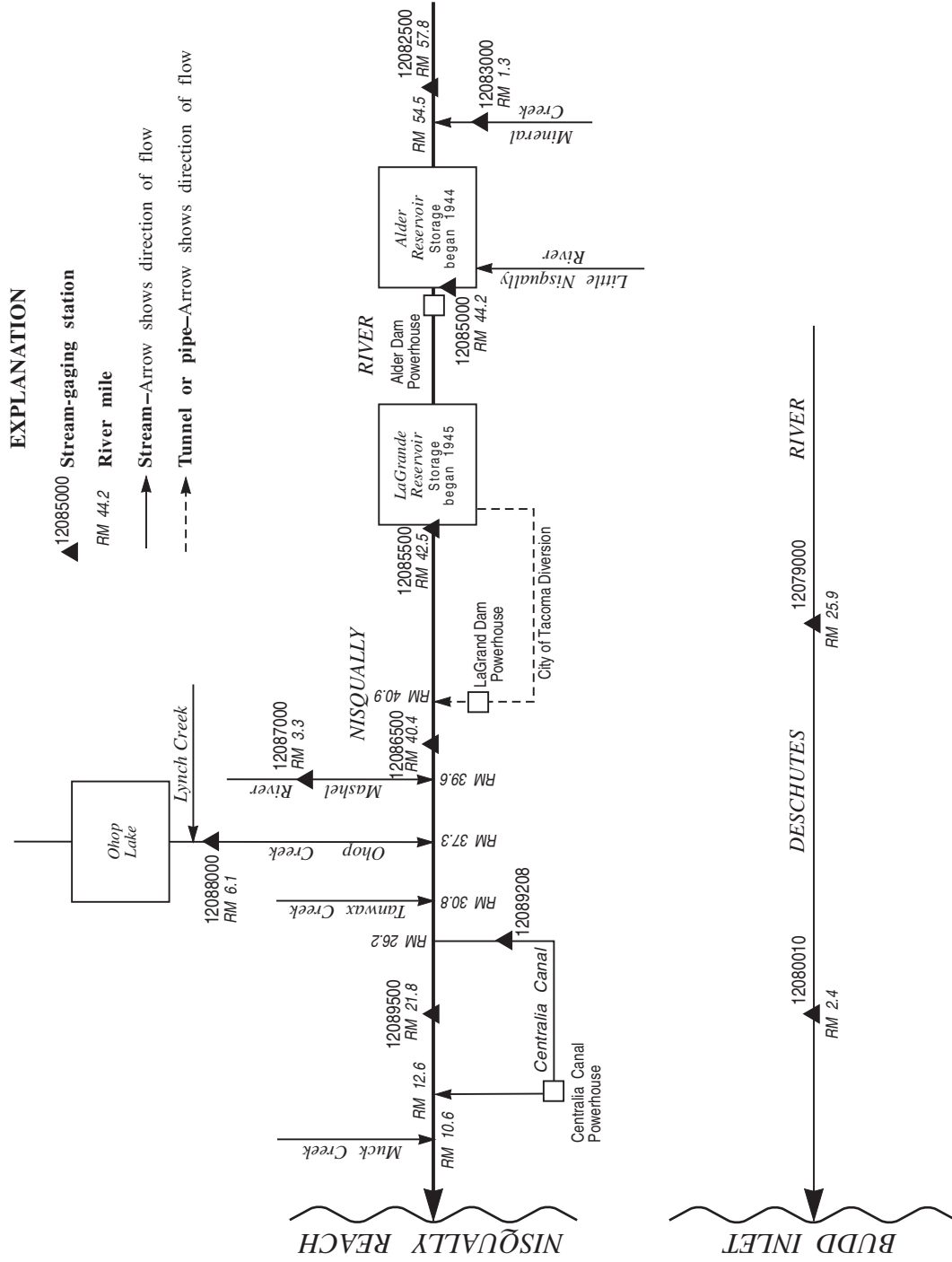


Figure 20. Schematic diagram showing surface-water stations in the Deschutes and Nisqually River Basins.

DESCHUTES RIVER BASIN

12080010 DESCHUTES RIVER AT E STREET BRIDGE, AT TUMWATER, WA

LOCATION.--Lat 47°00'43", long 122°54'07", in NW ¼ Land Grant parcel 60, T.18 N., R.2 W., Thurston County, Hydrologic Unit 17110016, on left bank at "E" Street bridge, 0.2 mi upstream from Capitol Boulevard, and at mile 2.4.

DRAINAGE AREA.--162 mi².

PERIOD OF RECORD.--April 1945 to November 1954, water years 1955-57 (annual maximum), June 1957 to June 1964, published as "12080000 Deschutes River near Olympia". October 1990 to current year.

REVISED RECORDS.--WDR WA-96-1: 1991(P), 1992(P).

GAGE.--Water-stage recorder. Datum of gage is 62.01 ft above NGVD of 1929. April 1945 to Nov. 1954, water-stage recorder, Nov. 1954 to June 1957, crest-stage gage, June 1957 to June 1964, water-stage recorder, at site 1 mi upstream, at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Some small diversions for irrigation and domestic use upstream from station. No regulation. Miscellaneous discharge measurement site 1971-72, 1975, 1977-90.

AVERAGE DISCHARGE.--27 years (water years 1946-54, 1958-63, 1991-2002), 408 ft³/s, 34.20 in/yr, 295,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft³/s Feb. 9, 1996, gage height, 34.17 ft, on basis of slope-area measurement of peak flow; minimum discharge, 51 ft³/s Sept. 22-24, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 15	0345	2,480	28.92	Jan 08	1715	3,430	29.92
Dec 02	1130	3,030	29.52	Jan 26	0145	2,880	29.32
Dec 14	1730	3,430	29.94	Mar 12	1115	2,580	28.98
Dec 17	2130	*5,170	*31.44				

Minimum discharge, 59 ft³/s Oct. 6-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	348	1730	432	743	561	397	310	222	179	e92	79
2	65	291	2690	483	691	525	385	308	211	164	e91	78
3	63	233	1660	519	675	497	373	302	204	155	e88	78
4	61	196	1150	483	724	476	360	294	196	149	e88	78
5	61	170	929	452	683	462	351	288	194	145	e90	79
6	60	154	850	486	684	460	358	297	192	139	e108	79
7	59	138	1030	1450	982	447	361	291	187	139	e114	79
8	61	126	849	3080	1250	428	357	283	184	141	e100	84
9	60	118	748	2010	1220	413	349	271	180	142	e96	83
10	69	110	660	1170	964	448	436	265	175	134	e94	80
11	67	104	612	886	855	906	539	258	168	128	e96	78
12	74	104	604	790	764	2290	615	254	166	125	e94	76
13	71	124	867	833	689	1700	774	254	162	124	e92	75
14	73	1020	2880	753	624	1280	1580	264	158	121	e92	74
15	72	1890	1810	662	578	979	1510	258	155	120	e90	74
16	75	1090	1740	591	551	813	1020	252	154	118	e90	75
17	72	667	3910	541	531	720	824	253	154	117	e89	74
18	69	462	2860	504	520	653	692	246	154	116	e87	76
19	68	384	1730	491	559	677	594	241	156	115	e87	75
20	68	547	1350	508	628	951	530	246	150	114	e87	74
21	70	832	1050	616	758	926	482	251	147	112	e85	73
22	80	1030	868	605	1230	782	444	253	142	109	e85	73
23	85	1800	743	567	1070	693	411	241	137	107	e83	73
24	147	1070	656	742	998	639	381	229	135	105	e83	72
25	146	690	594	1920	849	590	361	223	135	e104	e81	72
26	144	519	545	2220	740	547	348	218	133	e102	e81	72
27	147	418	509	1350	666	516	352	217	133	e100	e80	72
28	152	462	491	1020	608	488	350	232	146	e98	e80	71
29	143	1570	474	852	---	461	329	250	180	e98	e80	71
30	127	1570	447	765	---	435	315	267	218	e97	e79	71
31	156	---	434	737	---	416	---	242	---	e96	79	---
TOTAL	2733	18237	37470	28518	21834	22179	16178	8058	5028	3813	2761	2268
MEAN	88.2	608	1209	920	780	715	539	260	168	123	89.1	75.6
MAX	156	1890	3910	3080	1250	2290	1580	310	222	179	114	84
MIN	59	104	434	432	520	413	315	217	133	96	79	71
AC-FT	5420	36170	74320	56570	43310	43990	32090	15980	9970	7560	5480	4500
CFSM	0.54	3.75	7.46	5.68	4.81	4.42	3.33	1.60	1.03	0.76	0.55	0.47
IN.	0.63	4.19	8.60	6.55	5.01	5.09	3.71	1.85	1.15	0.88	0.63	0.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	MEAN	163	506	738	766	836	606	471	304	194	132	107	99.9
MAX	463	921	1480	1308	1753	1176	936	499	300	186	148	162	
(WY)	1998	2000	1999	1953	1999	1950	1991	1948	1997	1997	1997	1997	
MIN	76.8	84.1	239	195	244	236	283	140	110	77.1	69.8	57.2	
(WY)	1953	1994	2001	2001	1993	2001	2001	1994	1992	1992	1992	1995	

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1945 - 2002

ANNUAL TOTAL			107807				169077					
ANNUAL MEAN			295				463			408		
HIGHEST ANNUAL MEAN									658		1999	
LOWEST ANNUAL MEAN									178		2001	
HIGHEST DAILY MEAN				3910	Dec 17		3910	Dec 17	8150		Feb 9 1996	
LOWEST DAILY MEAN				59	Oct 7		59	Oct 7	52		Sep 22 1995	
ANNUAL SEVEN-DAY MINIMUM				61	Oct 3		61	Oct 3	53		Sep 18 1995	
ANNUAL RUNOFF (AC-FT)			213800				335400			295400		
ANNUAL RUNOFF (CFSM)				1.82			2.86			2.52		
ANNUAL RUNOFF (INCHES)				24.76			38.83			34.20		
10 PERCENT EXCEEDS				598			1020			904		
50 PERCENT EXCEEDS				181			258			251		
90 PERCENT EXCEEDS				68			75			94		

e Estimated

NISQUALLY RIVER BASIN

12082500 NISQUALLY RIVER NEAR NATIONAL, WA

LOCATION.--Lat 46°45'10", long 122°04'57", in SW 1/4 SW 1/4 sec.29, T.15 N., R.6 E., Pierce County, Hydrologic Unit 17110015, on right bank 100 ft downstream from old railroad bridge, 1.2 mi west of National, 3.3 mi upstream from Mineral Creek, and at mile 57.8.

DRAINAGE AREA.--133 mi².

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1716: 1943(M), 1947(P), 1950-51, 1956(M). WDR WA-74-1: 1968(M), 1969(M), 1972(P).

GAGE.--Water-stage recorder. Elevation of gage is 1,450 ft above NGVD of 1929, from river-profile map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Small diversions for domestic use. Water temperatures published October 1951 to September 1982. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1943-2002), 773 ft³/s, 78.96 in/yr, 559,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft³/s, Feb. 8, 1996, gage height, 12.18 ft; minimum discharge, 100 ft³/s, Nov. 10, 17, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1400	4,610	6.40	Dec. 17	0130	4,840	7.03
Nov. 22	2245	2,800	5.90	Jan. 08	0030	*8,630	*8.26
Dec. 13	2230	3,260	6.19	Apr. 14	0415	5,470	6.98

Minimum discharge, 157 ft³/s, Oct. 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	275	896	1060	305	485	673	572	813	1480	1080	578	568
2	305	916	1030	434	461	616	576	937	1430	973	546	579
3	314	802	872	429	444	574	583	868	1360	921	502	552
4	339	702	774	384	426	545	628	763	1370	844	497	367
5	294	707	693	363	432	535	734	710	1640	762	435	321
6	278	611	708	622	479	522	817	651	1580	797	411	313
7	213	547	644	5130	602	481	901	595	1240	932	383	300
8	206	503	617	5910	577	454	853	539	1010	1070	402	263
9	168	467	589	2830	520	435	891	499	879	926	500	291
10	231	445	559	1840	512	472	1260	468	914	1060	629	357
11	294	430	525	1440	503	1170	1380	475	1070	1150	617	446
12	393	491	503	1410	460	1350	1500	565	1320	1120	624	e460
13	463	687	1530	1260	435	1040	2010	791	1650	1200	693	e470
14	706	3620	2290	1070	408	877	4410	839	1930	1110	756	440
15	428	3010	1420	943	400	769	2410	818	1840	925	709	417
16	339	2120	2790	849	402	687	1560	802	1600	893	655	385
17	269	1430	3090	772	401	613	1170	e860	1300	892	605	299
18	233	982	1600	721	421	560	957	e940	1310	838	552	266
19	280	937	1110	712	499	566	830	e980	1140	788	524	341
20	281	1140	841	710	494	626	760	e1200	1090	720	523	383
21	298	1270	679	670	896	606	709	e1300	1210	729	491	327
22	404	1800	573	610	1370	586	673	1140	1330	794	572	349
23	495	2200	485	562	1420	592	626	1060	1320	835	585	373
24	441	1470	423	642	1440	609	592	1010	1190	816	601	391
25	488	1130	375	951	1150	655	584	1080	1210	812	574	379
26	505	930	337	764	967	657	598	1220	1420	768	589	341
27	505	793	310	656	839	635	608	1400	1440	696	599	267
28	434	819	325	572	748	618	565	1830	1440	692	658	253
29	380	958	293	522	---	601	572	2310	2130	815	673	288
30	531	875	274	511	---	585	653	2020	1410	830	575	212
31	908	---	295	498	---	572	---	1710	---	655	522	---
TOTAL	11698	33688	27614	35092	18191	20281	30982	31193	41253	27443	17580	10998
MEAN	377	1123	891	1132	650	654	1033	1006	1375	885	567	367
MAX	908	3620	3090	5910	1440	1350	4410	2310	2130	1200	756	579
MIN	168	430	274	305	400	435	565	468	879	655	383	212
AC-FT	23200	66820	54770	69600	36080	40230	61450	61870	81830	54430	34870	21810
CFSM	2.84	8.44	6.70	8.51	4.88	4.92	7.76	7.57	10.3	6.66	4.26	2.76
IN.	3.27	9.42	7.72	9.82	5.09	5.67	8.67	8.72	11.54	7.68	4.92	3.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2002, BY WATER YEAR (WY)

MEAN	466	835	957	866	821	648	786	1037	1058	808	563	432
MAX	1333	2696	2344	1805	2330	1784	1276	1681	2010	1334	952	739
(WY)	1948	1996	1976	1974	1996	1972	1990	1949	1974	1974	1999	1959
MIN	205	140	246	285	318	296	362	596	490	433	333	275
(WY)	1990	1953	1953	1979	1966	1955	1975	1992	1992	1992	1994	1985

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1942 - 2002

ANNUAL TOTAL	224486	306013										
ANNUAL MEAN	615	838								773		
HIGHEST ANNUAL MEAN										1186		1996
LOWEST ANNUAL MEAN										496		1944
HIGHEST DAILY MEAN				3620	Nov 14		5910	Jan 8		15700	Feb 8	1996
LOWEST DAILY MEAN				168	Oct 9		168	Oct 9		105	Nov 10	1987
ANNUAL SEVEN-DAY MINIMUM				241	Oct 5		241	Oct 5		116	Nov 26	1952
ANNUAL RUNOFF (AC-FT)		445300					607000			559900		
ANNUAL RUNOFF (CFSM)			4.62				6.30			5.81		
ANNUAL RUNOFF (INCHES)			62.79				85.59			78.96		
10 PERCENT EXCEEDS			965				1430			1340		
50 PERCENT EXCEEDS			518				655			629		
90 PERCENT EXCEEDS			278				340			320		

e Estimated

NISQUALLY RIVER BASIN

12083000 MINERAL CREEK NEAR MINERAL, WA

LOCATION.--Lat 46°44'40", long 122°08'36", in SE 1/4 SW 1/4 sec.35, T.15 N., R.5 E., Lewis County, Hydrologic Unit 17110015, on right bank 0.3 mi downstream from railroad bridge, 2.3 mi northeast of Mineral, and at mile 1.3.

DRAINAGE AREA.--75.2 mi².

PERIOD OF RECORD.--June 1942 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WRD WA-74: 1971(P).

GAGE.--Water-stage recorder. Elevation of gage is 1,340 ft above NGVD of 1929, from topographic map. Prior to May 14, 1987, at site 0.25 mi downstream at datum 1.90 ft lower.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1943-2002), 363 ft³/s, 65.60 in/yr, 263,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft³/s Feb. 8, 1996, gage height, 12.89 ft, from rating curve extended above 560 ft³/s, based on runoff comparisons with nearby stations; minimum discharge, 13 ft³/s Sept. 23-25, 1989, gage height, 6.93 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	0745	3,410	12.26	Jan 07	2215	*6,130	13.05
Dec 13	2230	4,950	12.90	Mar 11	2000	2,920	11.56
Dec 17	0030	5,860	*13.22	Apr 14	0615	4,820	12.57

Minimum discharge, 19 ft³/s Sept. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	385	960	147	280	339	278	460	425	142	40	26
2	29	305	963	257	240	287	277	500	398	125	37	26
3	29	244	708	249	257	251	278	465	372	113	37	29
4	28	203	582	223	240	227	298	414	354	105	36	27
5	28	204	486	212	237	233	361	405	361	99	39	26
6	27	176	566	414	304	223	440	384	336	93	41	26
7	28	154	533	3870	522	192	491	355	292	95	37	26
8	30	137	464	4410	474	176	455	333	264	117	35	26
9	31	129	427	2260	373	164	496	313	230	93	34	26
10	33	119	397	1360	323	212	1030	300	227	84	34	25
11	61	111	369	940	306	1650	1100	296	238	79	34	25
12	48	118	350	943	263	1560	1240	320	248	72	32	24
13	53	212	2300	806	229	921	1920	401	256	68	30	23
14	50	2620	2700	673	199	664	3670	427	256	66	29	23
15	46	1340	1170	561	182	527	1830	415	236	64	28	23
16	42	843	3470	476	181	441	1200	398	205	62	28	24
17	45	599	3420	396	174	366	904	406	178	60	28	28
18	42	461	1350	339	190	317	726	419	196	57	27	26
19	41	449	824	323	309	356	621	411	175	56	27	23
20	40	532	568	388	336	490	560	440	153	55	30	22
21	40	706	426	387	1220	414	505	513	144	52	31	22
22	71	1360	336	303	1380	374	463	494	137	51	30	21
23	230	1620	272	260	1240	370	425	454	131	49	28	21
24	163	968	230	656	1150	368	397	418	122	47	28	21
25	155	691	196	1610	815	387	383	419	112	46	27	21
26	132	540	164	842	627	383	379	442	107	46	29	20
27	120	445	145	576	507	361	391	470	104	46	30	20
28	116	534	178	429	410	334	368	580	125	43	27	20
29	102	882	144	331	---	316	365	723	289	43	27	21
30	131	745	126	285	---	304	397	589	177	42	26	24
31	409	---	127	323	---	293	---	488	---	41	26	---
TOTAL	2430	17832	24951	25249	12968	13500	22248	13452	6848	2211	972	715
MEAN	78.4	594	805	814	463	435	742	434	228	71.3	31.4	23.8
MAX	409	2620	3470	4410	1380	1650	3670	723	425	142	41	29
MIN	27	111	126	147	174	164	277	296	104	41	26	20
AC-FT	4820	35370	49490	50080	25720	26780	44130	26680	13580	4390	1930	1420
CFSM	1.04	7.90	10.7	10.8	6.16	5.79	9.86	5.77	3.04	0.95	0.42	0.32
IN.	1.20	8.82	12.34	12.49	6.42	6.68	11.01	6.65	3.39	1.09	0.48	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2002, BY WATER YEAR (WY)

MEAN	153	513	685	656	614	483	493	386	209	83.0	46.7	54.8
MAX	527	1219	1463	1568	1443	1358	873	745	552	195	94.5	192
(WY)	1956	1956	1976	1953	1982	1972	1991	1949	1955	1983	1968	1959
MIN	23.1	35.9	128	138	146	155	226	141	50.9	38.9	23.6	18.3
(WY)	1953	1953	1977	1977	1977	1992	1973	1994	1992	1970	1970	1989

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1942 - 2002

ANNUAL TOTAL		96121				143376						
ANNUAL MEAN		263				393				363		
HIGHEST ANNUAL MEAN										527		1974
LOWEST ANNUAL MEAN										173		2001
HIGHEST DAILY MEAN				3470	Dec 16	4410	Jan 8	9260	Feb 8 1996			
LOWEST DAILY MEAN				27	Sep 23	20	Sep 26	13	Sep 24 1989			
ANNUAL SEVEN-DAY MINIMUM				28	Sep 18	21	Sep 22	15	Sep 19 1989			
ANNUAL RUNOFF (AC-FT)		190700				284400				263000		
ANNUAL RUNOFF (CFSM)		3.50				5.22				4.83		
ANNUAL RUNOFF (INCHES)		47.55				70.93				65.60		
10 PERCENT EXCEEDS		516				859				785		
50 PERCENT EXCEEDS		175				256				234		
90 PERCENT EXCEEDS		36				28				37		

NISQUALLY RIVER BASIN

12085000 ALDER RESERVOIR AT ALDER, WA

LOCATION.--Lat 46°48'09", long 122°18'37", in SE ¼ NW ¼ sec.9, T.15 N., R.4 E., Thurston County, Hydrologic Unit 17110015, near left end of Alder Dam on Nisqually River, 1.0 mi west of Alder, 1.7 mi upstream from La Grande Dam, 4.6 mi upstream from Mashel River, and at mile 44.2.

DRAINAGE AREA.--286 mi².

PERIOD OF RECORD.--November 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft above NGVD of 1929 (levels by Tacoma Public Utilities). Prior to July 8, 1946, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete-arch dam; storage began Nov. 7, 1944; dam completed in 1945. Usable capacity, 161,457 acre-ft (based on 1985 resurvey) between gage heights 1,114 ft, lower limit of operating range, and 1,207 ft, top of spillway gates. Unused storage below gage height 1,114 ft, 52,110 acre-ft. Crest of spillway is at gage height 1,177 ft. Figures given herein represent total contents. Water is used by City of Tacoma for power generation. Chemical analyses December 1973 to September 1983 (samples were taken near the dam).

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 233,848 acre-ft Dec. 4, 1975, gage height, 1,207.68 ft; minimum contents since reservoir first filled, 74,200 acre-ft Nov. 26, 2000, gage height, 1,137.36 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 210,500 acre-ft June 29, 30; maximum gage height, 1,206.05 ft June 29; minimum contents 102,100 acre-ft Nov. 13, gage height, 1,159.40 ft.

Capacity table (gage height, in feet, and total contents, in acre-feet)
(Based on project resurvey and maps provided by Tacoma Public Utilities in 1985)

1,143	80,474	1,170	120,736	1,200	192,544
1,150	89,003	1,180	141,570	1,207	213,570
1,160	103,084	1,190	164,970		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130600	106500	167400	168800	171900	166300	170100	178900	200200	208000	197200	172500
2	129200	107500	170200	167400	169500	164900	169500	178100	200600	207200	196400	171900
3	127900	108000	171100	165900	167100	164300	168900	177700	200700	206600	195400	171100
4	126800	108000	170500	164100	164700	163600	168600	177000	201000	206000	194700	170100
5	125600	108100	169300	162300	163000	162900	168700	176200	202500	205500	193700	168900
6	124200	107500	168800	162600	161200	162200	169200	175400	203900	205100	192600	167900
7	122800	106900	168000	182000	160100	161300	170100	174200	204500	205200	191400	166800
8	121600	105900	166400	199000	159200	160200	170600	173500	204600	205500	190200	165600
9	120000	105100	164700	203600	157700	160200	171600	173100	204400	205400	189300	164500
10	118500	104000	163100	203500	155900	158600	174600	172900	204100	205600	188600	163500
11	117200	102900	161200	201200	154900	164700	176900	172500	203700	205800	187900	162600
12	116100	102300	159300	199400	154600	171400	179900	172500	203500	206100	187100	161800
13	115400	102600	165900	196500	154300	174900	186100	173200	203900	206300	186500	161000
14	115300	119700	174500	193700	153600	176900	199300	174100	204900	206500	185900	160000
15	114600	129300	172500	192400	153300	178000	202300	174900	205800	206200	185300	159100
16	113500	134000	181900	191200	152300	178600	201800	175500	206100	206000	184700	158200
17	112300	136300	192800	189500	151700	178800	200700	176400	205500	205800	184000	157100
18	111000	137600	194200	187800	151200	178200	200000	177300	205200	205500	183200	155900
19	109700	139400	193400	186100	151200	177400	199400	178400	204700	205100	182200	154700
20	108400	141600	192400	184700	151000	177200	198600	179900	204600	204500	181400	153700
21	107100	144600	191700	183100	155600	177000	197100	181900	204800	203900	180400	152500
22	106100	151300	190900	181100	160700	177400	195500	183500	205500	203500	179500	151500
23	106300	158600	189300	178800	165600	176500	193800	184800	206200	203100	178800	150400
24	105800	161500	187600	178200	170000	175700	191800	185600	206600	202500	178100	149300
25	105600	162800	185800	182000	171700	175000	189700	186400	207100	201900	177300	148300
26	105000	162600	183400	182700	171200	174300	187800	187600	208000	201300	176700	147200
27	104500	161200	181000	181800	169900	173400	186000	189200	208700	200400	175900	146000
28	103800	161100	178800	180200	168200	172300	184000	192300	209300	199700	175300	144800
29	103100	162600	176300	178400	---	171400	182000	196100	210500	199200	174800	143700
30	102600	163800	173800	176200	---	170700	180200	198600	209500	198800	174000	142500
31	104800	---	171000	174200	---	170400	---	199900	---	198000	173300	---
MAX	130600	163800	194200	203600	171900	178800	202300	199900	210500	208000	197200	172500
MIN	102600	102300	159300	162300	151000	158600	168600	172500	200200	198000	173300	142500
†	1161.09	1189.52	1192.30	1193.45	1191.25	1192.11	1195.62	1202.46	1205.71	1201.82	1193.13	1180.44
‡	-27200	+59000	+7200	+3200	-6000	+2200	+9800	+19700	+9600	-11500	-24700	-30800

CAL YR 2001 MAX 211200 MIN 84100 AC-FT+ +87200
WTR YR 2002 MAX 210500 MIN 102300 AC-FT+ +10500

† Gage Height, in feet, at end of month.
‡ Change in contents, in acre-feet.

NISQUALLY RIVER BASIN

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA

LOCATION.--Lat 46°49'23", long 122°18'13", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.33, T.16 N., R.4 E., Thurston County, Hydrologic Unit 17110015, at left end of gate control structure, 1.1 mi southeast of La Grande, 1.7 mi downstream from Alder Dam, and at mile 42.5.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--January 1945 to current year. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Monthend contents January 1945 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft below NGVD of 1929 (levels by City of Tacoma). Prior to June 12, 1947, monthend gage heights furnished by City of Tacoma from temporary gages in pool upstream from dam.

REMARKS.--Reservoir is formed by concrete gravity dam completed in 1944; storage began in February 1945. Useable storage, 1,053 acre-ft between gage heights 910 ft, minimum practical head, and 935 ft, normal reservoir level. Dead storage below gage height 910 ft, 1,629 acre-ft. Figures given herein represent total contents. Water used by Tacoma Public Utilities for power generation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,760 acre-ft May 14, 1950, gage height, 936.4 ft; minimum contents observed since reservoir first filled, 1,370 acre-ft Aug. 24, 1956, gage height, 900.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,635 acre-ft Dec. 21, gage height, 934.15 ft; minimum contents, 1,646 acre-ft Feb. 6, gage height, 910.60 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	927.73	2,305	--
Oct. 31.....	929.13	2,373	+68
Nov. 30.....	933.07	2,577	+204
Dec. 31.....	932.99	2,572	-5
CAL YR 2002.....	--	--	+316
Jan. 31.....	932.94	2,570	-2
Feb. 28.....	932.07	2,524	-46
Mar. 31.....	928.33	2,334	-190
Apr. 30.....	931.47	2,492	+158
May 31.....	924.47	2,155	-337
June 30.....	930.70	2,453	+298
July 31.....	928.76	2,355	-98
Aug. 31.....	930.52	2,444	+89
Sept. 30.....	931.40	2,489	+45
WTR YR 2002.....	--	--	+184

12086500 NISQUALLY RIVER AT LA GRANDE, WA

LOCATION.--Lat 46°50'25", long 122°19'38", in NW ¼ SE ¼ sec.29, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on right bank 0.4 mi downstream from Tacoma Public Utilities powerplant, 0.6 mi northwest of La Grande, 0.8 mi upstream from Mashel River, and at mile 40.4.

DRAINAGE AREA.--292 mi².

PERIOD OF RECORD.--September 1906 to October 1911, November to December 1911 (gage heights only), October 1919 to September 1931, October 1943 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" September 1906 to October 1911, and as "near La Grande" November to December 1911 and October 1919 to September 1931.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50. WRD WA-74: 1956(M), 1959-61(M), 1965.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 490 ft above NGVD of 1929, from river-profile map. See WSP 1932 for history of changes prior to Feb. 8, 1945.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Tacoma Public Utilities powerplant at La Grande since December 1943, by Alder Reservoir (station 12085000) since November 1944, and by La Grande Reservoir (station 12085500) since February 1945. All diversions returned to river upstream from gage. U.S. Geological Survey satellite telemeter at station. Chemical analyses October 1972 to September 1985. Water temperatures October 1965 to September 1982.

AVERAGE DISCHARGE.--76 years (water years 1907-11, 1920-31, 1944-2002), 1,436 ft³/s, 66.78 in/yr, 1,040,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,500 ft³/s, Feb. 8, 1996, gage height, 15.30 ft, from rating curve extended above 5,300 ft³/s and computed flow over dam as provided by Tacoma Public Utilities; practically no flow on many occasions at site "near La Grande" (which excluded diversion between 1920 and 1930) as a result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,750 ft³/s, Dec. 18, gage height, 7.39 ft; minimum discharge, 760 ft³/s July 13; minimum daily discharge, 912 ft³/s, Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1010	1040	2120	2250	2280	2220	1390	2260	1820	2010	1080	918
2	1010	1050	2110	2250	2280	1880	1400	2250	1830	1510	1060	921
3	997	1040	2250	2220	2300	1360	1400	1850	1810	1390	1050	916
4	998	1040	2310	2220	2260	1350	1400	1810	1820	1370	1050	918
5	1000	1040	2270	2210	2270	1370	1400	1810	1490	1160	1050	917
6	1010	1050	2270	2210	2310	1380	1400	1820	1360	1170	1050	918
7	993	1040	2290	3190	2320	1390	1400	1780	1360	1170	1050	918
8	998	1040	2320	4220	2290	1390	1400	1440	1360	1170	1050	912
9	1000	1040	2290	4340	2290	1390	1400	1200	1360	1170	1050	916
10	1020	1050	2310	4410	2300	1390	1720	1170	1360	1180	1050	919
11	1010	1050	2300	4400	1870	1400	2280	1160	1580	1170	1050	918
12	1010	1050	2300	4420	1260	1410	2300	1160	1770	1170	1050	918
13	1000	1070	2380	4480	1240	1410	2260	1170	1760	1170	1050	930
14	1000	1220	3300	3830	1240	1400	3930	1170	1770	1220	1050	944
15	1000	1320	5080	2530	1240	1400	4380	1170	1780	1190	1050	939
16	1000	1320	5140	2290	1230	1400	4300	1170	1790	1170	1020	939
17	1000	1290	5470	2300	1240	1400	3670	1170	1790	1150	1010	942
18	1020	1220	5010	2250	1240	1500	2790	1170	1790	1150	1010	937
19	999	1270	4390	2250	1240	1810	2330	1170	1650	1150	1000	941
20	983	1520	3510	2250	1240	1820	2340	1160	1360	1150	991	940
21	983	1520	2470	2250	1240	1650	2320	1170	1260	1140	979	939
22	989	1540	2220	2250	1240	1230	2270	1170	1050	1140	982	939
23	993	1720	2220	2250	1240	1810	2250	1180	1030	1170	988	941
24	992	1810	2200	2260	1250	1810	2250	1260	1020	1220	920	939
25	992	1800	2200	2290	1680	1810	2260	1360	1030	1200	920	939
26	993	1960	2220	2260	2280	1820	2280	1350	1030	1180	921	937
27	993	2310	2220	2260	2270	1820	2270	1360	1140	1170	925	938
28	990	2330	2240	2250	2290	1830	2280	1360	1330	1170	927	936
29	987	2340	2220	2250	---	1720	2280	1590	1990	1170	921	935
30	1000	2100	2230	2270	---	1420	2250	1820	2210	1170	918	935
31	1010	---	2260	2280	---	1400	---	1840	---	1170	919	---
TOTAL	30980	42190	86120	85390	49430	48390	67600	44520	45700	37890	31141	27899
MEAN	999	1406	2778	2755	1765	1561	2253	1436	1523	1222	1005	930
MAX	1020	2340	5470	4480	2320	2220	4380	2260	2210	2010	1080	944
MIN	983	1040	2110	2210	1230	1230	1390	1160	1020	1140	918	912
AC-FT	61450	83680	170800	169400	98040	95980	134100	88310	90650	75150	61770	55340
MEAN†	558	2402	2894	2806	1657	1593	2422	1751	1689	1033	604	413
CFSM†	1.91	8.23	9.91	9.61	5.67	5.46	8.29	6.00	5.78	3.54	2.97	1.41
IN.†	2.20	9.18	11.43	11.08	5.91	6.29	9.25	6.92	6.45	4.08	2.39	1.58
AC-FT†	34320	142900	178000	172600	91990	97990	144100	107700	100500	63550	37160	24580

CAL YR 2001 TOTAL 385830 MEAN 1057 MAX 5470 MIN 695 AC-FT 765300 MEAN† 1178 CFSM† 4.03 IN.† 54.76 AC-FT† 852800
WTR YR 2002 TOTAL 597250 MEAN 1636 MAX 5470 MIN 912 AC-FT 1185000 MEAN† 1652 CFSM† 5.66 IN.† 76.80 AC-FT† 1196000

† Adjusted for change in contents in Alder and La Grande Reservoirs.

NISQUALLY RIVER BASIN

12087000 MASHEL RIVER NEAR LA GRANDE, WA

LOCATION.--Lat 46°51'25", long 122°18'05", in NW 1/4 SE 1/4 sec.21, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on left bank, 50 ft downstream from State Highway 7 bridge, 1.8 mi northeast of La Grande, and at mile 3.3.

DRAINAGE AREA.--80.7 mi².

PERIOD OF RECORD.--October 1940 to September 1957, October 1991 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 619.53 ft above NGVD of 1929. Prior to Oct. 1, 1957, on right bank at same datum.

REMARKS.No estimated daily discharges. Records good. Small diversion for municipal supply for Eatonville. Some regulation at low water by millpond in Eatonville.

AVERAGE DISCHARGE.--28 years (1940-56, 1992-2002), 226 ft³/s, 38.05 in/yr, 163,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,980 ft³/s Dec. 11, 1946, gage height, 9.30 ft, from rating curve extended above 3,200 ft³/s, present datum; minimum discharge, 2.3 ft³/s Aug. 27, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	2315	2,090	5.99	Jan. 07	2330	2,250	6.12
Dec. 01	0615	1,580	5.49	Mar. 11	2030	1,720	5.64
Dec. 13	2245	2,500	6.34	Apr. 14	0615	1,910	5.82
Dec. 17	0145	*3,940	*7.35				

Minimum discharge, 7.7 ft³/s Sept. 27-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	235	1370	235	258	239	276	250	118	43	14	9.6
2	13	174	1090	374	227	209	278	250	111	36	14	10
3	12	130	696	305	258	187	269	206	104	33	14	14
4	12	100	518	231	245	175	285	169	98	31	14	14
5	11	136	410	196	225	185	344	159	120	31	18	12
6	11	108	465	297	284	193	371	169	108	29	22	11
7	11	86	462	1470	474	165	396	162	87	28	18	13
8	12	71	388	1660	542	150	326	155	82	86	16	14
9	14	60	393	862	472	151	327	140	73	50	15	13
10	14	52	359	539	441	245	500	142	64	36	14	12
11	39	45	361	402	432	968	499	134	65	30	15	11
12	26	49	308	420	336	1180	509	145	62	26	13	11
13	76	104	1070	369	281	751	601	199	59	24	12	10
14	137	930	1640	306	238	539	1550	219	57	23	12	9.7
15	87	781	873	256	214	416	897	187	53	22	12	9.6
16	47	573	1680	224	217	344	658	164	46	21	12	10
17	46	394	2440	202	221	286	492	163	44	20	11	13
18	34	274	1310	184	255	238	409	164	44	20	11	12
19	32	272	890	206	360	397	341	155	47	20	11	11
20	38	402	609	242	379	643	300	194	40	19	12	9.9
21	34	464	451	281	614	470	264	269	36	18	14	10
22	52	1030	356	227	907	405	250	240	34	17	13	9.5
23	158	1450	289	194	1000	392	225	199	32	17	12	9.1
24	112	688	244	269	1020	396	200	172	31	17	11	8.8
25	150	444	211	726	586	546	192	164	29	16	11	8.6
26	107	334	187	516	427	449	193	161	27	17	11	8.6
27	91	255	176	356	338	395	277	160	26	17	13	8.4
28	97	558	215	274	283	356	238	206	36	17	12	8.1
29	70	999	198	227	---	346	208	213	112	17	11	9.3
30	61	787	179	214	---	313	220	173	62	16	11	11
31	215	---	219	263	---	284	---	139	---	15	9.6	---
TOTAL	1833	11985	20057	12527	11534	12013	11895	5622	1907	812	408.6	321.2
MEAN	59.13	399.5	647.0	404.1	411.9	387.5	396.5	181.4	63.57	26.19	13.18	10.71
MAX	215	1450	2440	1660	1020	1180	1550	269	120	86	22	14
MIN	11	45	176	184	214	150	192	134	26	15	9.6	8.1
AC-FT	3640	23770	39780	24850	22880	23830	23590	11150	3780	1610	810	637
CFSM	0.73	4.95	8.02	5.01	5.10	4.80	4.91	2.25	0.79	0.32	0.16	0.13
IN.	0.84	5.52	9.25	5.77	5.32	5.54	5.48	2.59	0.88	0.37	0.19	0.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	MEAN	112.0	330.3	444.1	360.6	395.1	309.1	287.1	215.6	151.1	59.27	24.53	34.60
MAX	307	688	890	694	786	567	475	441	329	178	70.6	115	
(WY)	1956	1956	1947	1953	1996	1950	1955	1945	1946	1993	1954	1954	
MIN	10.0	12.9	83.2	113	98.8	88.2	132	67.2	25.2	14.7	12.3	10.7	
(WY)	1953	1953	1953	2001	1941	1941	1942	1947	1992	1951	1996	2002	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	69140		90914.8			
ANNUAL MEAN	189.4		249.1		226.0	
HIGHEST ANNUAL MEAN					337	
LOWEST ANNUAL MEAN					125	
HIGHEST DAILY MEAN	2440	Dec 17	2440	Dec 17	5570	Dec 11 1946
LOWEST DAILY MEAN	11	Sep 23	8.1	Sep 28	4.6	Oct 12 1991
ANNUAL SEVEN-DAY MINIMUM	12	Sep 18	8.7	Sep 23	5.1	Oct 7 1991
ANNUAL RUNOFF (AC-FT)	137100		180300		163700	
ANNUAL RUNOFF (CFSM)	2.35		3.09		2.80	
ANNUAL RUNOFF (INCHES)	31.87		41.91		38.05	
10 PERCENT EXCEEDS	405		564		511	
50 PERCENT EXCEEDS	110		169		141	
90 PERCENT EXCEEDS	14		12		16	

NISQUALLY RIVER BASIN

12088000 OHOP CREEK NEAR EATONVILLE, WA

LOCATION.--Lat 46°52'52", long 122°16'40", in SE 1/4 SE 1/4 sec.10, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on left bank, 150 ft downstream from Lynch Creek, 0.2 mi downstream from outlet of Ohop Lake, 0.8 mi northwest of Eatonville, and at mile 6.1.

DRAINAGE AREA.--34.5 mi².

PERIOD OF RECORD.--June 1927 to September 1932, September 1941 to September 1971, June 1993 to current year.

REVISED RECORDS.--WSP 1286: 1946. WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 517.76 ft above NGVD of 1929 (stadia traverse). June 1, 1927 to Sept. 30, 1932, water-stage recorder at datum 4.83 ft higher; Sept. 6, 1941, to Mar. 17, 1942, nonrecording gage and Mar. 18, 1942, to June 15, 1964, water-stage recorder at datum 2.04 ft higher; all at site 250 ft downstream. June 15, 1964, to Aug. 26, 1966, water-stage recorder at site on left bank across stream at datum 2.04 ft higher. Aug. 27, 1966, to Sept. 30, 1971, water-stage recorder at site on right bank at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow affected by natural storage in Ohop Lake.

AVERAGE DISCHARGE.--44 years (water years 1928-32, 1942-71, 1994-2002), 66.3 ft³/s, 26.10 in/yr, 48,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft³/s Feb. 8, 1996, gage height, 8.76 ft; minimum discharge, 2.2 ft³/s Sept. 2, 1994 and Sept. 1, 2, 2002.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 17	unknown	*523	(a) *4.24	No other peak greater than base discharge.			

Minimum discharge, 2.2 ft³/s Sept. 1, 2.

(a) from crest stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	70	258	e70	111	129	70	51	31	24	11	2.5
2	9.9	65	252	e130	101	119	67	47	33	20	9.2	7.9
3	8.9	59	225	e110	104	111	62	43	28	17	7.4	18
4	7.8	52	192	e80	105	104	58	40	25	14	5.5	13
5	6.8	78	170	e70	92	103	57	40	29	14	6.7	10
6	6.3	67	187	e100	94	109	58	42	25	13	27	7.3
7	8.7	58	225	e250	127	103	59	44	22	14	12	7.0
8	8.2	52	187	e300	195	98	54	45	20	28	13	9.5
9	7.6	49	176	e200	210	96	54	42	18	21	12	12
10	7.9	47	160	e170	203	109	64	43	17	20	10	8.9
11	19	45	169	e150	221	186	75	40	15	19	10	6.3
12	16	48	147	e160	225	244	85	37	14	16	11	6.8
13	22	71	219	e130	190	257	104	37	12	13	13	10
14	29	194	e300	e110	163	253	311	42	16	11	11	8.8
15	25	178	e220	e90	147	220	256	37	31	9.6	9.1	7.9
16	24	168	e250	e80	138	197	246	34	23	7.0	8.0	7.0
17	24	135	e500	e70	133	177	192	33	19	5.3	6.9	7.4
18	20	102	e400	e60	141	156	149	31	20	5.1	6.2	6.5
19	17	85	e300	e70	154	216	120	30	22	5.0	5.4	5.5
20	18	87	e240	e80	151	337	100	35	17	4.8	6.7	5.4
21	20	87	e200	e90	162	245	85	67	14	4.4	7.2	4.6
22	29	151	e160	e76	180	188	74	56	12	4.2	5.6	4.2
23	46	253	e130	e70	232	152	66	50	11	7.7	4.2	4.1
24	34	191	e100	e110	274	130	58	42	13	18	3.6	3.8
25	46	141	e80	e190	221	144	53	37	16	14	3.4	3.6
26	40	117	e64	e150	185	125	52	35	13	11	3.4	3.6
27	43	90	e56	e120	160	115	77	33	11	9.6	3.6	3.7
28	52	143	e64	e100	143	103	77	42	17	7.0	3.3	3.6
29	44	211	e62	e80	---	95	64	40	38	5.7	3.0	4.9
30	41	206	e60	e76	---	85	55	35	31	4.3	2.6	5.5
31	69	---	e66	e95	---	74	---	30	---	5.6	2.7	---
TOTAL	761.1	3300	5819	3637	4562	4780	2902	1260	613	372.3	243.7	209.3
MEAN	24.6	110	188	117	163	154	96.7	40.6	20.4	12.0	7.86	6.98
MAX	69	253	500	300	274	337	311	67	38	28	27	18
MIN	6.3	45	56	60	92	74	52	30	11	4.2	2.6	2.5
AC-FT	1510	6550	11540	7210	9050	9480	5760	2500	1220	738	483	415
CFSM	0.71	3.19	5.44	3.40	4.72	4.47	2.80	1.18	0.59	0.35	0.23	0.20
IN.	0.82	3.56	6.27	3.92	4.92	5.15	3.13	1.36	0.66	0.40	0.26	0.23

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2002, BY WATER YEAR (WY)

	35.2	86.2	121	121	115	95.9	83.0	54.9	40.9	20.2	11.1	15.2
MEAN	35.2	86.2	121	121	115	95.9	83.0	54.9	40.9	20.2	11.1	15.2
MAX	90.8	235	268	258	305	191	141	138	114	64.5	59.6	70.9
(WY)	1928	1961	1947	1971	1996	1932	1928	1960	1942	1993	1968	1968
MIN	7.69	8.76	24.6	32.8	36.1	46.4	39.4	19.2	12.2	6.04	4.95	4.44
(WY)	1930	1953	1953	2001	2001	2001	1998	1947	1932	1944	1994	1952

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1927 - 2002

ANNUAL TOTAL	20099.4	28459.4	
ANNUAL MEAN	55.1	78.0	
HIGHEST ANNUAL MEAN			98.4 1956
LOWEST ANNUAL MEAN			32.4 1994
HIGHEST DAILY MEAN	500	Dec 17	2090 Feb 8 1996
LOWEST DAILY MEAN	4.7	Sep 1	2.5 Aug 23 1944
ANNUAL SEVEN-DAY MINIMUM	6.9	Aug 29	3.0 Aug 26 2002
ANNUAL RUNOFF (AC-FT)	39870	56450	48010
ANNUAL RUNOFF (CFSM)	1.60	2.26	1.92
ANNUAL RUNOFF (INCHES)	21.67	30.69	26.10
10 PERCENT EXCEEDS	137	198	150
50 PERCENT EXCEEDS	34	50	43
90 PERCENT EXCEEDS	8.3	6.3	8.4

e Estimated

NISQUALLY RIVER BASIN

12089208 CENTRALIA POWER CANAL NEAR MCKENNA, WA

LOCATION.--Lat 46°54'01", long 122°29'50", in NE ¼ SW ¼ sec.1, T.16 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank 1,000 ft downstream from headworks at dam, and 3.7 mi southeast of McKenna.

PERIOD OF RECORD.--March 1979 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 330 ft above NGVD of 1929, from topographic map. Prior to Oct. 20, 1999, at site 500 ft upstream at datum 10.00 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by headworks 1,000 ft upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft³/s Nov. 11, 1990, gage height, 7.72 ft at datum then in use; minimum discharge, no flow on many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 828 ft³/s July 4, gage height, 16.26 ft; Maximum gage height 16.46 Jan. 8; minimum discharge, 46 ft³/s Nov. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	403	720	770	771	760	756	744	744	748	743	682	563
2	396	685	769	770	760	753	739	747	750	745	682	565
3	391	620	769	770	762	750	747	750	749	748	684	577
4	391	579	771	770	760	754	740	749	744	783	684	588
5	388	615	771	770	756	752	742	747	740	724	687	583
6	388	614	770	769	759	754	740	746	733	696	704	583
7	387	554	771	769	755	755	734	748	727	699	686	586
8	392	530	772	743	748	757	731	752	724	769	675	584
9	399	510	772	766	748	752	748	755	724	760	680	590
10	415	501	771	677	747	749	752	757	744	732	687	586
11	435	494	772	745	751	743	753	752	742	719	693	582
12	437	209	768	762	754	746	758	739	736	708	694	580
13	469	51	770	763	753	755	755	744	744	690	698	590
14	514	50	765	758	751	753	756	754	750	748	696	612
15	529	49	591	760	756	748	754	751	752	731	691	608
16	460	48	717	760	756	756	752	746	750	688	673	297
17	457	48	377	751	754	756	752	744	748	654	652	106
18	458	47	707	752	746	752	746	741	748	650	655	97
19	450	47	769	759	748	741	746	723	743	650	654	221
20	436	48	767	755	754	744	740	732	748	655	648	440
21	437	48	770	760	748	750	742	740	753	651	637	378
22	457	48	770	757	744	743	747	737	698	637	640	372
23	577	232	770	757	751	742	741	732	654	642	648	408
24	554	710	773	752	747	745	744	730	648	745	581	432
25	562	766	769	743	746	738	742	739	652	728	570	402
26	551	769	767	757	754	746	755	737	648	702	570	386
27	536	770	771	747	754	751	754	736	683	681	571	381
28	559	772	768	756	755	747	752	739	738	678	575	381
29	510	770	770	759	---	746	749	739	739	679	574	381
30	503	771	770	759	---	742	752	751	740	671	569	380
31	607	---	770	761	---	741	---	749	---	662	565	---
TOTAL	14448	12675	23177	23448	21077	23217	22407	23050	21797	21768	20105	13839
MEAN	466.1	422.5	747.6	756.4	752.8	748.9	746.9	743.5	726.6	702.2	648.5	461.3
MAX	607	772	773	771	762	757	758	757	753	783	704	612
MIN	387	47	377	677	744	738	731	723	648	637	565	97
AC-FT	28660	25140	45970	46510	41810	46050	44440	45720	43230	43180	39880	27450

CAL YR 2001 TOTAL 179172 MEAN 490.9 MAX 773 MIN 47 AC-FT 355400
WTR YR 2002 TOTAL 241008 MEAN 660.3 MAX 783 MIN 47 AC-FT 478000

NISQUALLY RIVER BASIN

12089500 NISQUALLY RIVER AT MCKENNA, WA

LOCATION.--Lat 46°56'01", long 122°33'35", in SE ¼ NW ¼ sec.28, T.17 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank at downstream side of State Highway 507 bridge at McKenna, and at mile 21.8.

DRAINAGE AREA.--517 mi².

PERIOD OF RECORD.--October 1947 to September 1968, May 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 285.47 ft above NGVD of 1929. Oct.1, 1947 to Sept. 30, 1968, water-stage recorder at site 80 ft downstream at present datum, and Oct. 1, 1968 to Oct. 11, 1985, water-stage recorder at site 20 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Alder Reservoir (station 12085000) at mile 44.2 and La Grande Reservoir (station 12085500) at mile 42.5. Centralia Power Canal (station 12089208) diverts water 4.4 mi upstream from station, which is returned to river at powerplant 9.2 mi downstream from station. Centralia Power Canal was built in 1929 and put into operation in 1930. Minor diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--46 years (water years 1948-68, 1978-2002), 1,309 ft³/s, 948,200 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s Feb. 8 or 9, 1996, gage height, 17.13 ft, estimated based on comparison with upstream gaging stations; minimum discharge, 20 ft³/s Sept. 10, 11, 1965, Aug. 31, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,100 ft³/s Dec. 17, gage height, 8.06 ft; minimum discharge, 367 ft³/s several days in Aug. and Sept.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	574	635	3080	1970	2090	1960	1100	2010	1340	1620	434	376
2	575	588	3040	2070	2040	1590	1120	2000	1330	989	381	375
3	575	584	2750	2020	2040	1000	1080	1640	1310	681	377	376
4	574	578	2620	1920	2030	860	1080	1480	1320	667	379	374
5	576	574	2380	1850	1960	886	1130	1460	1010	538	381	373
6	577	574	2370	1870	2030	920	1150	1490	823	530	390	373
7	577	578	2530	3440	2320	895	1200	1450	772	531	398	372
8	577	580	2390	5450	2600	865	1130	1110	758	532	399	373
9	578	583	2340	4680	2640	847	1090	776	753	524	392	373
10	583	584	2250	4440	2470	928	1470	674	717	520	387	373
11	576	583	2280	4150	2230	1540	2280	659	884	522	384	372
12	577	887	2200	3970	1230	2410	2310	660	1190	527	381	371
13	578	1140	2700	4000	1050	1980	2350	695	1180	527	378	372
14	579	2060	4710	3620	965	1770	4490	723	1160	519	377	370
15	576	2410	5840	2300	890	1560	4830	696	1190	513	378	371
16	590	2200	6130	1930	859	1400	4530	667	1190	514	378	670
17	583	1900	8540	1910	849	1300	3810	665	1190	516	382	879
18	576	1660	6300	1810	883	1240	2980	660	1180	518	381	885
19	571	1580	4920	1810	969	1760	2420	663	1110	516	380	768
20	567	2060	3990	1840	1040	2380	2290	688	746	516	379	537
21	563	2180	2780	1970	1160	2150	2230	774	674	515	376	595
22	567	2490	2290	1910	1590	1370	2120	770	577	514	375	599
23	560	3510	2160	1850	1600	1920	2070	723	534	510	376	567
24	575	2240	2030	1920	1960	1860	2020	730	533	510	377	544
25	583	1790	1970	2500	1720	2010	2010	855	528	509	378	574
26	577	1680	1930	2530	2270	1910	2000	856	523	508	378	585
27	574	2000	1880	2300	2120	1830	2090	854	559	508	377	593
28	569	2230	1940	2120	2050	1760	2110	911	736	506	374	593
29	577	2930	1900	2040	---	1640	2030	1090	1410	507	375	595
30	582	2580	1880	2020	---	1290	1990	1400	1750	508	375	600
31	600	---	1960	2040	---	1130	---	1380	---	512	375	---
TOTAL	17866	45968	96080	80250	47655	46961	64510	31209	28977	17927	11852	15178
MEAN	576	1532	3099	2589	1702	1515	2150	1007	966	578	382	506
MAX	600	3510	8540	5450	2640	2410	4830	2010	1750	1620	434	885
MIN	560	574	1880	1810	849	847	1080	659	523	506	374	370
AC-FT	35440	91180	190600	159200	94520	93150	128000	61900	57480	35560	23510	30110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

MEAN	837	1661	2354	2155	2217	1589	1353	1165	906	573	436	522
MAX	1693	4071	5516	4397	6198	3398	2714	2659	1894	1419	1104	1167
(WY)	1956	1956	1978	1997	1996	1950	1991	1949	1950	1999	1999	1977
MIN	298	272	595	620	593	405	553	499	254	85.5	137	148
(WY)	1962	1953	2001	2001	2001	1962	1978	1978	1965	1965	1963	1965

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1948 - 2002
ANNUAL TOTAL	309700	504433	
ANNUAL MEAN	848	1382	1309
HIGHEST ANNUAL MEAN			2238
LOWEST ANNUAL MEAN			590
HIGHEST DAILY MEAN	8540	8540	27300
LOWEST DAILY MEAN	361	370	22
ANNUAL SEVEN-DAY MINIMUM	363	372	27
ANNUAL RUNOFF (AC-FT)	614300	1001000	948200
10 PERCENT EXCEEDS	1980	2440	2320
50 PERCENT EXCEEDS	583	1000	930
90 PERCENT EXCEEDS	383	381	385

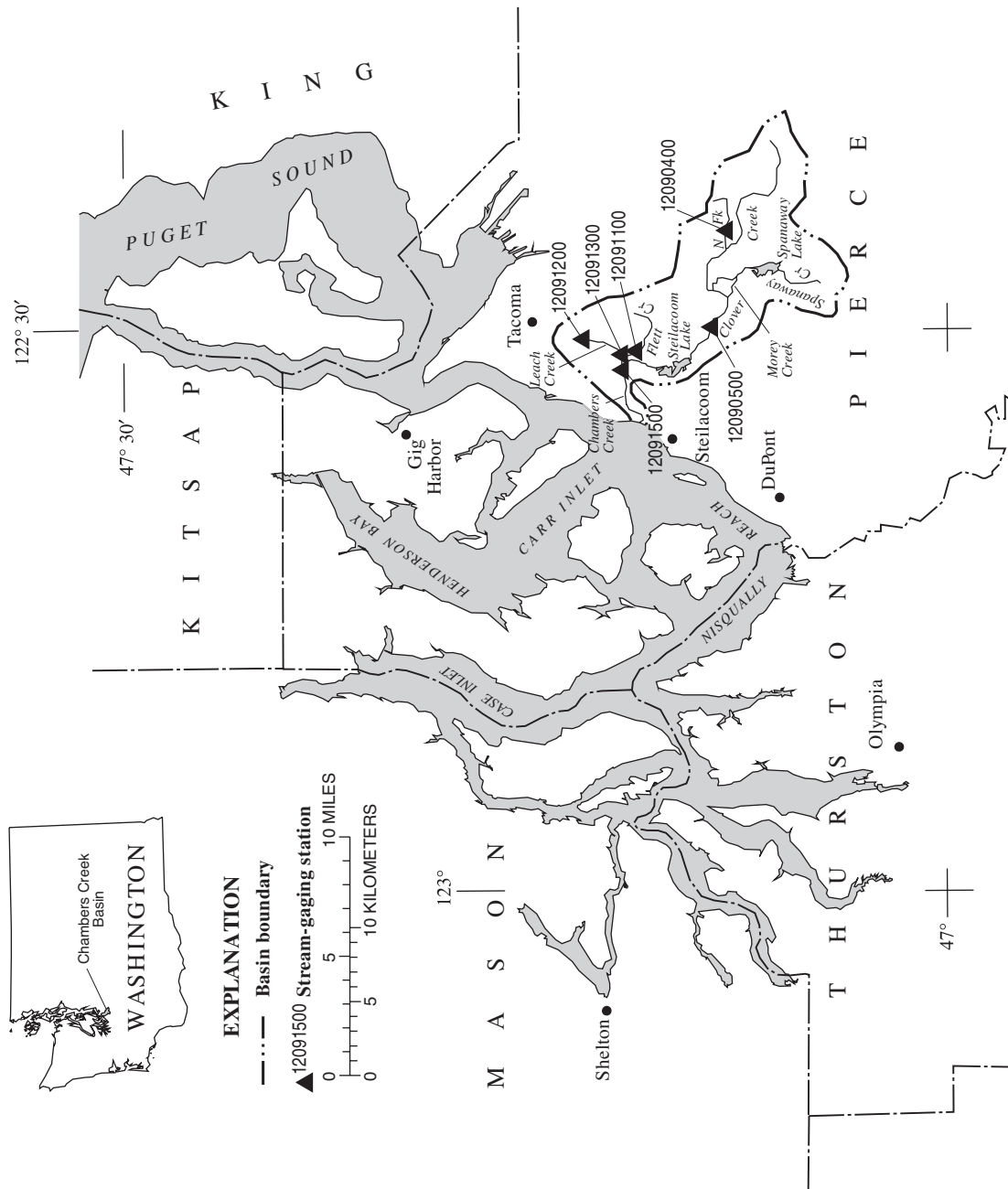


Figure 21. Location of surface-water stations in the Chambers Creek Basin.

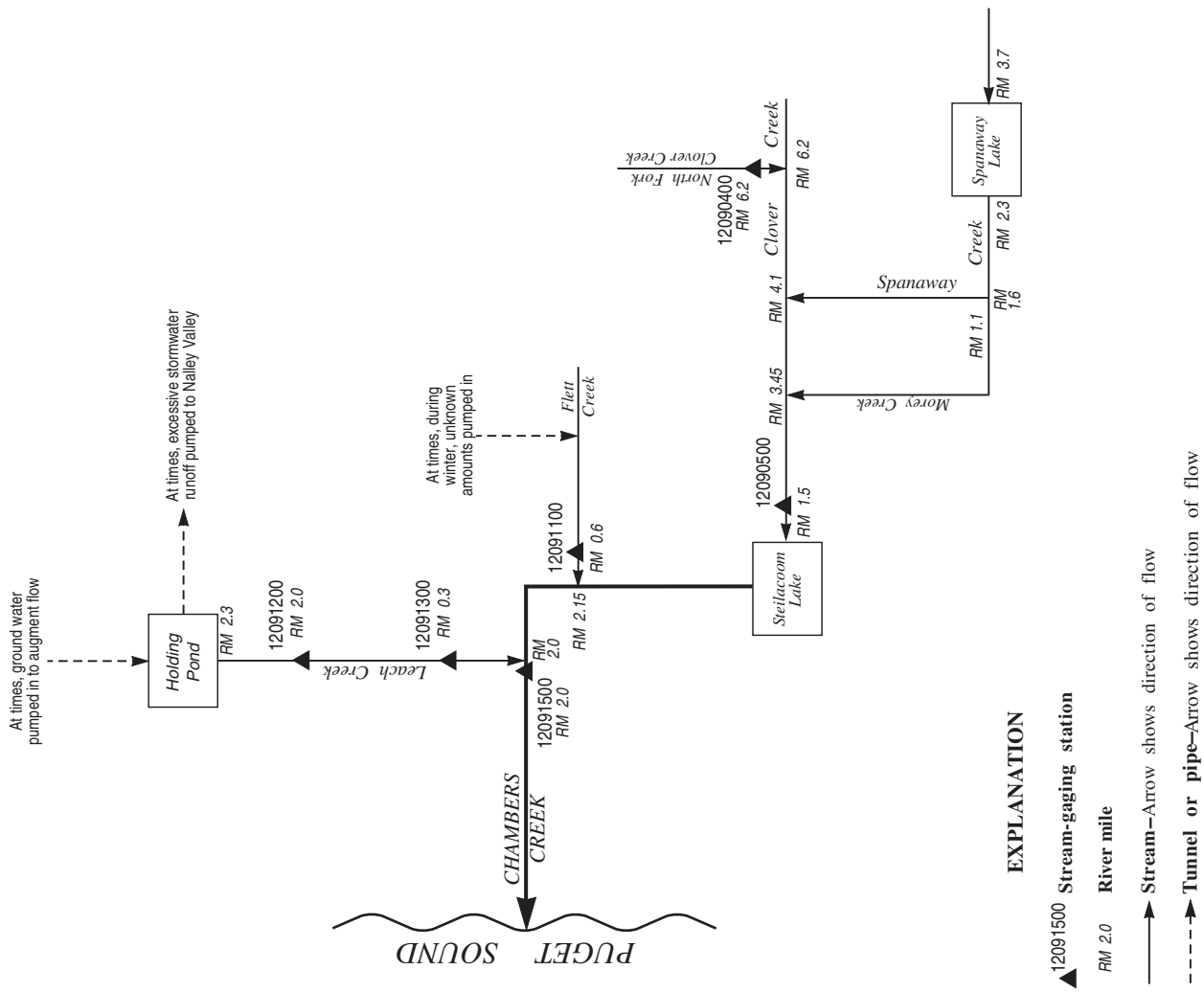


Figure 22. Schematic diagram showing surface-water stations in the Chambers Creek Basin.

CHAMBERS CREEK BASIN

12090400 NORTH FORK CLOVER CREEK NEAR PARKLAND, WA

LOCATION.--Lat 47°08'05", long 122°24'50", in SE ¼ NW ¼ sec.15, T.19 N., R.3 E., Pierce County, Hydrologic Unit 17110019, at Golden Given Avenue crossing, 1.5 mi southeast of Parkland.

DRAINAGE AREA.--6.25 mi².

PERIOD OF RECORD.--Water years 1960-1975 (annual maximum), November 1990 to September 1992, October 1994 to September 1997, October 1997 to April 1999 (seasonal records), October 1999 to current year.

REVISED RECORDS.--WDR WA-01-1: 1999(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 315 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair. Two flood control ponds (completed in 1999 and 2000, 228 acre-ft, total) upstream from station.

AVERAGE DISCHARGE.--7 years (water years 1992, 1995-97, 2000-02), 7.79 ft³/s, 16.94 in/yr, 5,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined Feb. 8, 1996, gage height, 12.81 ft, from outside high-water mark, affected by backwater; minimum discharge, no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 197 ft³/s Nov. 14, gage height, 7.90 ft, from crest-stage gage; minimum discharge, no flow for many days during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	1.1	25	15	19	3.1	1.0	2.1	0.00	0.00	0.00	0.00
2	0.00	0.17	31	29	12	2.4	0.85	1.6	0.00	0.00	0.00	0.00
3	0.00	0.00	31	15	9.0	2.0	0.51	1.3	0.00	0.00	0.00	0.00
4	0.00	0.06	20	10	7.2	1.7	0.25	0.80	0.00	0.00	0.00	0.00
5	0.00	2.0	16	7.7	7.1	1.9	0.15	0.99	0.03	0.00	0.00	0.00
6	0.00	0.15	20	14	9.6	1.8	0.10	0.98	0.00	0.00	0.00	0.00
7	0.00	0.00	11	59	18	1.6	0.00	0.76	0.00	0.10	0.00	0.00
8	0.00	0.00	7.7	46	41	1.2	0.00	0.53	0.00	0.72	0.00	0.00
9	0.00	0.00	6.7	25	19	1.1	0.83	0.56	0.00	0.08	0.00	0.00
10	0.46	0.00	8.0	15	12	0.98	6.9	3.2	0.00	0.00	0.00	0.00
11	0.00	0.00	8.3	9.8	8.7	27	8.5	1.7	0.00	0.00	0.00	0.00
12	0.00	1.0	5.8	10	6.8	43	10	0.92	0.00	0.03	0.00	0.00
13	0.00	7.9	72	7.4	e5.2	28	32	0.74	0.00	0.00	0.00	0.00
14	0.00	125	74	5.5	3.6	14	101	0.87	0.00	0.00	0.00	0.00
15	0.00	66	37	3.9	2.9	9.0	41	0.45	0.00	0.00	0.00	0.00
16	0.00	30	76	2.9	2.9	9.2	21	0.15	0.00	0.00	0.00	0.00
17	0.00	13	80	2.4	3.1	14	13	0.59	0.00	0.00	0.00	0.00
18	0.00	5.5	39	2.2	4.4	15	8.0	0.27	0.00	0.00	0.00	0.00
19	0.00	11	30	4.9	7.7	e34	6.1	0.10	0.00	0.00	0.00	0.00
20	0.00	15	22	6.8	5.7	e90	4.8	0.75	0.00	0.00	0.00	0.00
21	0.00	15	15	9.0	33	37	4.0	1.1	0.00	0.00	0.00	0.00
22	0.33	46	11	6.8	23	18	3.4	0.44	0.00	0.00	0.00	0.00
23	2.5	38	7.5	4.6	39	10	2.8	0.14	0.00	0.00	0.00	0.00
24	0.49	16	5.7	21	33	6.8	2.2	0.00	0.00	0.00	0.00	0.00
25	1.9	8.4	4.1	93	16	5.5	1.7	0.00	0.00	0.00	0.00	0.00
26	0.01	4.7	3.3	56	10	4.1	2.0	0.00	0.00	0.00	0.00	0.00
27	7.3	2.8	3.0	30	6.6	3.3	9.4	0.03	0.00	0.00	0.00	0.00
28	1.2	42	9.1	18	4.7	2.6	6.9	0.73	1.0	0.00	0.00	0.00
29	0.00	41	6.1	11	---	2.2	4.1	1.2	2.5	0.00	0.00	0.00
30	0.45	24	4.1	14	---	1.8	3.0	0.29	0.34	0.00	0.00	0.00
31	9.5	---	9.1	22	---	1.3	---	0.00	---	0.00	0.00	---
TOTAL	24.14	515.78	698.5	576.9	370.2	393.58	295.49	23.29	3.87	0.93	0.00	0.00
MEAN	0.78	17.2	22.5	18.6	13.2	12.7	9.85	0.75	0.13	0.030	0.000	0.000
MAX	9.5	125	80	93	41	90	101	3.2	2.5	0.72	0.00	0.00
MIN	0.00	0.00	3.0	2.2	2.9	0.98	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	48	1020	1390	1140	734	781	586	46	7.7	1.8	0.00	0.00
CFSM	0.12	2.75	3.61	2.98	2.12	2.03	1.58	0.12	0.02	0.00	0.00	0.00
IN.	0.14	3.07	4.16	3.43	2.20	2.34	1.76	0.14	0.02	0.01	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	1.14	11.3	20.6	20.7	19.7	12.9	9.49	2.45	0.85	0.11	0.080	0.12
MAX	4.24	20.6	40.3	42.2	41.9	23.2	27.8	5.41	3.01	0.23	0.42	0.40
(WY)	1998	1996	1999	1997	1996	1997	1991	1996	2001	1995	2001	1997
MIN	0.000	2.76	3.63	7.21	7.29	3.73	1.55	0.13	0.023	0.000	0.000	0.000
(WY)	1995	1995	2001	2001	2001	1992	1999	1992	1995	1991	1996	2000

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1991 - 2002

ANNUAL TOTAL	2458.61	2902.68		
ANNUAL MEAN	6.74	7.95	7.79	
HIGHEST ANNUAL MEAN			11.8	1997
LOWEST ANNUAL MEAN			4.18	2001
HIGHEST DAILY MEAN	125	Nov 14	125	Nov 14
LOWEST DAILY MEAN	0.00	May 13	0.00	Oct 1
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 17	0.00	Oct 1
ANNUAL RUNOFF (AC-FT)	4880		5760	5640
ANNUAL RUNOFF (CFSM)	1.08		1.27	1.25
ANNUAL RUNOFF (INCHES)	14.63		17.28	16.94
10 PERCENT EXCEEDS	16		25	21
50 PERCENT EXCEEDS	2.1		0.85	1.1
90 PERCENT EXCEEDS	0.00		0.00	0.00

e Estimated

CHAMBERS CREEK BASIN

12090500 CLOVER CREEK NEAR TILLICUM, WA

LOCATION.--Lat 47°08'46", long 122°30'33", in NW ¼ SE ¼ sec.11, T.19 N., R.2 E., Pierce County, Hydrologic Unit 17110019, at Pacific Highway SW, Lakewood, Washington, 2.5 mi northeast of Tillicum.

DRAINAGE AREA.--73.8 mi².

PERIOD OF RECORD.--June 1949 to October 1954, October 1959 to September 1970 (annual maximums only), September 1990 to October 1992, October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 250 ft above NGVD of 1929, from topographic map. Prior to October 22, 1999, at Bridgeport Way, ¼ mi. upstream, at various datums.

REMARKS.--Records good except for flows below 5 ft³/s, which are fair.

AVERAGE DISCHARGE.--15 years (water years 1950-54, 1991-92, 1995-2002), 44.8 ft³/s, 8.25 in/yr, 32,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 568 ft³/s Feb. 12, 1991, gage height, 5.71 ft (datum then in use); no flow for many days in 1949, 1952-53, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 119 ft³/s Dec. 16, 18, gage height, 16.30 ft; minimum discharge, no flow on many days in Oct. and Nov.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.10	65	64	83	71	69	60	32	20	6.9	2.2
2	0.00	0.00	65	66	80	68	67	57	31	20	6.9	2.2
3	0.00	0.00	66	65	76	66	65	56	30	19	6.8	2.4
4	0.00	0.00	66	63	74	64	64	54	30	19	7.0	2.0
5	0.00	0.79	62	61	72	63	62	54	30	18	6.7	2.0
6	0.00	0.15	61	64	72	62	60	53	29	17	6.4	1.8
7	0.00	0.01	58	77	78	62	59	52	29	18	5.8	1.8
8	0.00	0.00	56	84	84	60	58	51	29	20	5.6	2.0
9	0.00	0.00	53	84	86	59	60	49	28	18	5.3	2.0
10	0.51	0.00	53	79	82	58	63	51	28	17	4.9	1.9
11	0.08	0.00	52	75	78	72	63	49	26	15	4.7	2.0
12	0.00	0.61	53	74	75	84	65	48	24	14	4.5	1.4
13	0.00	6.3	73	70	73	87	78	47	24	13	4.1	1.4
14	0.00	40	84	66	70	82	99	46	25	12	3.8	1.4
15	0.00	30	87	64	68	77	104	44	24	12	3.7	1.2
16	0.00	32	96	62	66	76	97	42	24	12	3.5	1.4
17	0.00	30	108	59	65	77	89	43	24	12	3.4	1.1
18	0.00	26	113	58	64	78	83	41	24	11	3.4	1.2
19	0.00	28	108	57	66	87	79	40	23	11	3.2	1.4
20	0.00	27	101	57	64	104	75	41	22	11	3.2	1.2
21	0.00	29	94	57	75	109	72	39	20	10	3.4	1.0
22	0.02	41	85	57	78	103	69	38	18	9.6	3.1	0.99
23	2.2	32	80	56	85	96	67	38	16	8.5	3.7	0.94
24	0.34	27	75	64	89	91	64	37	17	8.1	3.5	0.94
25	1.0	27	71	89	87	87	62	36	15	8.2	3.4	0.88
26	0.06	26	68	102	81	84	63	35	15	8.1	3.3	0.79
27	4.3	25	66	99	77	81	67	34	15	8.1	3.2	0.75
28	0.11	41	66	92	74	78	66	35	23	7.9	3.2	0.68
29	0.00	68	64	85	---	76	63	35	22	7.9	2.8	0.74
30	0.00	66	62	83	---	74	62	34	20	7.5	2.6	0.73
31	4.5	---	62	84	---	71	---	33	---	7.1	2.3	---
TOTAL	13.12	602.96	2273	2217	2122	2407	2114	1372	717	400.0	134.3	42.44
MEAN	0.42	20.1	73.3	71.5	75.8	77.6	70.5	44.3	23.9	12.9	4.33	1.41
MAX	4.5	68	113	102	89	109	104	60	32	20	7.0	2.4
MIN	0.00	0.00	52	56	64	58	58	33	15	7.1	2.3	0.68
AC-FT	26	1200	4510	4400	4210	4770	4190	2720	1420	793	266	84
CFSM	0.01	0.27	0.99	0.97	1.03	1.05	0.95	0.60	0.32	0.17	0.06	0.02
IN.	0.01	0.30	1.15	1.12	1.07	1.21	1.07	0.69	0.36	0.20	0.07	0.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)
	4.50	13.8	0.000	1998	14.8	37.0	0.000	1991	56.2	119	0.000	1951
	90.1	232	13.4	1997	114	279	14.8	1951	100	196	15.3	2001
	70.9	133	22.8	1991	42.7	78.5	17.8	1996	24.8	42.1	9.93	1992
	13.5	26.9	3.55	1996	5.80	12.5	0.56	1996	5.80	12.5	0.56	1952
	3.58	11.5	0.077	1997	3.58	11.5	0.077	1997	3.58	11.5	0.077	1952

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1949 - 2002
ANNUAL TOTAL	5961.08	14414.82	
ANNUAL MEAN	16.3	39.5	44.8
HIGHEST ANNUAL MEAN			81.9
LOWEST ANNUAL MEAN			9.72
HIGHEST DAILY MEAN	113	Dec 18	532
LOWEST DAILY MEAN	0.00	Sep 30	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Sep 30	0.00
ANNUAL RUNOFF (AC-FT)	11820	28590	32450
ANNUAL RUNOFF (CFSM)	0.22	0.54	0.61
ANNUAL RUNOFF (INCHES)	3.00	7.27	8.25
10 PERCENT EXCEEDS	36	83	117
50 PERCENT EXCEEDS	13	35	23
90 PERCENT EXCEEDS	0.11	0.44	1.9

CHAMBERS CREEK BASIN

12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE ¼ NE ¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 1.0 mi south of Fircrest, and 2 mi upstream from mouth.

DRAINAGE AREA.--4.73 mi² includes 0.68 mi² storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to September 1985, October 1985 to April 1988 (seasonal records), October 1988 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder, metal weir control, and crest-stage gage. Prior to Oct. 19, 1979, at site 20 ft downstream at same datum. Datum of gage is 222.98 ft above NGVD of 1929 (levels by U.S. Geological Survey National Mapping Division).

REMARKS.--No estimated daily discharges. Records fair except for flows below 3 ft³/s, which are poor. Since Oct. 1, 1961, flow may be regulated at dam upstream from station. Low flows supplemented from well in basin beginning June 30, 1993. Storage is not retained. Excess stormwater runoff pumped into Nalley Valley since early 1992. Drainage into basin influenced by urbanizing of area. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1958-85, 1989-2002), 4.75 ft³/s, 13.66 in/yr, 3,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 309 ft³/s Nov. 24, 1990, gage height, 5.76 ft, from rating curve extended above 200 ft³/s; minimum discharge, 0.1 ft³/s Sept. 22, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 289 ft³/s Nov. 14, gage height, 5.10 ft; minimum recorded discharge, 1.2 ft³/s Aug. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	4.3	22	21	4.1	3.2	4.1	2.6	2.5	2.3	2.1	4.1
2	1.7	6.9	20	8.6	3.9	3.0	3.6	2.7	2.5	2.3	2.1	4.2
3	1.7	3.1	12	3.6	5.5	3.0	3.7	2.6	2.5	2.3	2.1	4.2
4	1.7	8.3	11	3.2	3.6	3.0	3.7	2.6	2.5	2.3	2.5	4.2
5	1.6	5.0	9.4	6.7	6.1	3.6	3.7	3.0	3.2	2.3	2.2	4.1
6	1.6	3.4	14	20	13	3.0	3.8	2.7	2.5	2.2	2.1	4.3
7	2.0	3.0	4.4	42	17	2.9	3.8	3.2	2.7	11	2.1	4.2
8	1.9	2.9	5.5	10	13	2.9	3.8	3.0	2.5	7.0	2.1	4.2
9	1.7	2.9	8.4	4.4	4.0	3.4	8.8	2.7	2.4	2.5	2.3	4.1
10	10	2.8	9.8	3.7	4.1	4.0	20	2.9	2.4	2.3	2.1	4.1
11	2.0	3.1	5.2	3.5	3.5	31	17	2.6	2.5	2.2	2.1	4.1
12	3.2	13	7.0	11	3.4	21	9.7	2.6	2.6	2.2	2.0	4.1
13	3.3	22	39	3.3	3.4	8.8	29	3.9	2.6	2.2	2.0	4.1
14	4.5	100	12	3.1	3.3	3.8	30	3.9	2.6	2.2	2.0	4.0
15	3.0	26	18	3.0	3.3	5.9	5.2	2.6	2.7	2.3	2.0	4.0
16	2.9	7.4	41	2.9	5.7	13	5.8	2.6	2.8	2.2	2.0	7.6
17	2.8	2.6	19	2.9	4.3	5.0	3.8	5.8	8.2	2.2	2.0	4.1
18	2.8	2.1	9.1	7.5	5.0	8.7	3.4	3.6	2.9	2.1	2.0	4.1
19	3.1	20	9.1	3.9	16	17	3.2	3.0	2.8	2.1	1.9	4.5
20	2.9	11	6.8	14	3.7	25	3.1	6.1	2.8	2.1	2.7	4.2
21	6.4	12	3.8	3.3	28	5.3	2.9	5.6	3.0	2.1	2.1	4.2
22	9.4	40	3.4	2.3	27	4.5	3.0	3.5	2.6	2.1	2.1	4.2
23	5.8	7.9	3.2	3.7	24	5.5	3.0	2.7	2.4	2.1	2.0	4.2
24	13	2.8	3.0	36	5.5	4.4	2.8	2.7	2.3	2.1	2.3	4.2
25	9.8	3.8	2.9	42	3.9	4.1	2.6	2.7	2.3	2.1	2.1	3.6
26	7.4	3.5	2.9	8.6	3.6	4.5	4.5	2.7	2.3	2.7	2.1	2.5
27	28	2.9	5.0	6.6	3.4	4.0	8.9	4.5	3.7	2.1	2.4	2.5
28	2.9	34	8.6	5.6	3.3	3.8	6.5	8.6	20	2.0	4.2	2.5
29	2.7	15	3.0	3.9	---	3.7	3.1	4.4	16	2.0	4.5	5.0
30	7.3	16	2.9	7.4	---	3.8	2.7	2.6	2.5	2.2	3.9	2.4
31	20	---	8.4	15	---	3.7	---	2.5	---	2.1	4.0	---
TOTAL	169.3	387.7	329.8	312.7	224.6	218.5	209.2	107.2	115.3	81.9	74.1	121.8
MEAN	5.46	12.9	10.6	10.1	8.02	7.05	6.97	3.46	3.84	2.64	2.39	4.06
MAX	28	100	41	42	28	31	30	8.6	20	11	4.5	7.6
MIN	1.6	2.1	2.9	2.3	3.3	2.9	2.6	2.5	2.3	2.0	1.9	2.4
AC-FT	336	769	654	620	445	433	415	213	229	162	147	242
CFSM	1.15	2.73	2.25	2.13	1.70	1.49	1.47	0.73	0.81	0.56	0.51	0.86
IN.	1.33	3.05	2.59	2.46	1.77	1.72	1.65	0.84	0.91	0.64	0.58	0.96

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

	4.21	7.29	7.70	7.86	6.75	5.54	4.29	3.13	2.97	2.36	2.50	2.91
MEAN	4.21	7.29	7.70	7.86	6.75	5.54	4.29	3.13	2.97	2.36	2.50	2.91
MAX	8.60	16.8	15.5	16.3	15.1	12.4	10.3	5.73	5.30	4.58	5.17	6.92
(WY)	1998	1991	1997	1990	1999	1972	1991	1997	1997	1983	2001	1978
MIN	1.57	2.53	3.54	2.80	1.72	2.22	2.09	1.72	1.40	1.33	1.12	1.24
(WY)	1973	1977	1977	1962	1993	1992	1977	1965	1969	1969	1969	1989

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1957 - 2002
ANNUAL TOTAL	2024.5	2352.1	
ANNUAL MEAN	5.55	6.44	4.75
HIGHEST ANNUAL MEAN			8.15
LOWEST ANNUAL MEAN			2.61
HIGHEST DAILY MEAN	100	Nov 14	166
LOWEST DAILY MEAN	1.6	Oct 5	0.50
ANNUAL SEVEN-DAY MINIMUM	1.7	Oct 2	0.71
ANNUAL RUNOFF (AC-FT)	4020	4670	3440
ANNUAL RUNOFF (CFSM)	1.17	1.36	1.01
ANNUAL RUNOFF (INCHES)	15.92	18.50	13.66
10 PERCENT EXCEEDS	13	15	10
50 PERCENT EXCEEDS	2.8	3.6	2.6
90 PERCENT EXCEEDS	2.1	2.1	1.5

CHAMBERS CREEK BASIN

12091300 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW ¼ NW ¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 0.3 mi upstream from mouth, and 4.1 mi northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi², includes 0.68 mi² storm drainage from Flett Creek basin. Area used prior to July 1967, 5.88 mi².

PERIOD OF RECORD.--February 1957 to September 1985, October 1985 to September 1992 (seasonal records), October 1992 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 140 ft above NGVD of 1929 (levels by U.S. Geological Survey National Mapping Division). Prior to June 27, 1973, water-stage recorder at site 150 ft upstream at different datum. Supplementary water-stage recorder at site 50 ft downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973, to Mar. 14, 1975, nonrecording gage at site 350 ft upstream at different datum.

REMARKS.--Records fair except estimated daily discharges which are poor. Drainage basin influenced by urbanizing of area. Some pumping for community use upstream from gage. Flow can be regulated by manually operated gate in flood control dam. Beginning early 1992, during major runoff events, stormwater can be pumped from holding pond above flood control dam into Nalley Valley drainage. Low flows supplemented from well in basin beginning June 30, 1993. Chemical analyses October 1962 to September 1965, October 1975 to September 1976.

AVERAGE DISCHARGE.--38 years (water years 1958-85, 1993-2002), 10.9 ft³/s, 7,870 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 378 ft³/s, Jan. 18, 1986, by culvert computation of peak flow through culvert, gage height, 5.21 ft, from outside high-water mark; minimum discharge, 2.0 ft³/s, July 3, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 224 ft³/s, Nov. 14, gage height, 4.33 ft from outside high water mark; minimum discharge, 6.5 ft³/s, Aug. 19, Sept 27-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	11	25	20	9.3	8.2	9.6	7.8	7.6	7.8	7.2	8.5
2	6.8	12	27	18	8.9	8.1	9.2	7.9	7.5	7.9	7.3	8.5
3	6.9	7.9	20	8.5	9.9	8.1	8.7	7.7	7.5	7.9	7.2	8.6
4	6.9	8.5	16	8.2	8.5	8.0	8.4	7.7	7.6	7.8	7.6	8.5
5	6.9	14	14	8.9	10	8.6	8.4	8.1	8.0	7.8	7.4	8.4
6	7.0	7.9	21	22	13	8.1	8.4	7.9	7.5	7.8	7.3	8.5
7	7.1	8.0	9.7	52	19	8.0	8.4	7.8	7.7	12	7.3	8.6
8	7.5	7.7	10	22	23	8.0	8.3	8.2	7.6	13	7.2	8.6
9	7.0	7.7	12	10	9.0	8.2	13	7.7	7.5	7.8	7.4	8.6
10	15	7.8	14	8.7	8.8	8.7	24	7.9	7.5	7.7	7.3	8.6
11	7.5	7.8	10	8.4	8.4	38	19	7.7	7.5	7.6	7.3	8.6
12	7.5	16	11	16	8.2	26	18	7.7	7.4	7.6	7.2	8.6
13	8.0	26	49	8.3	8.1	16	37	8.6	7.4	7.6	7.2	8.6
14	9.1	e119	23	7.9	8.0	9.5	40	9.3	7.3	7.6	7.2	8.5
15	7.8	e43	20	7.7	8.0	11	12	7.7	7.3	7.6	7.2	8.5
16	7.8	e16	51	7.6	10	18	11	7.7	7.3	7.7	7.2	9.7
17	7.8	e9.4	30	7.6	8.7	13	9.5	10	9.9	7.6	7.1	7.6
18	7.8	e8.0	14	8.9	9.2	14	8.6	8.8	7.8	7.5	7.1	7.4
19	8.0	e25	15	11	20	21	8.4	8.0	7.5	7.6	7.0	7.4
20	7.8	17	12	17	8.7	38	8.4	10	7.5	7.6	7.5	7.8
21	11	16	9.0	9.3	34	11	8.3	9.7	7.6	7.5	7.2	7.6
22	14	54	8.3	7.6	33	9.9	8.3	8.3	7.4	7.6	7.2	7.6
23	12	20	8.0	7.7	31	10	8.1	7.6	7.3	7.6	7.2	7.4
24	14	8.1	7.9	36	12	9.1	8.0	7.6	7.3	7.6	7.3	7.5
25	19	8.3	7.7	54	9.2	8.8	8.0	7.6	7.2	7.5	7.3	7.5
26	9.0	8.4	7.7	18	8.6	9.0	9.5	7.6	7.2	7.9	7.4	6.9
27	34	7.5	7.9	12	8.4	8.8	14	7.9	7.8	7.5	7.3	6.8
28	10	39	15	11	8.4	8.7	11	12	15	7.4	8.5	6.7
29	7.5	26	7.9	8.6	---	9.0	8.4	11	22	7.4	8.9	7.9
30	11	18	7.7	12	---	9.1	8.0	7.6	8.0	7.4	8.4	6.5
31	27	---	12	19	---	9.6	---	7.5	---	7.2	8.5	---
TOTAL	326.1	585.0	502.8	473.9	361.3	389.5	369.9	258.6	249.7	246.1	230.4	240.5
MEAN	10.5	19.5	16.2	15.3	12.9	12.6	12.3	8.34	8.32	7.94	7.43	8.02
MAX	34	119	51	54	34	38	40	12	22	13	8.9	9.7
MIN	6.8	7.5	7.7	7.6	8.0	8.0	8.0	7.5	7.2	7.2	7.0	6.5
AC-FT	647	1160	997	940	717	773	734	513	495	488	457	477

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

	9.85	14.3	15.0	16.3	14.9	12.6	10.9	9.03	8.16	7.10	7.15	7.89
MEAN	9.85	14.3	15.0	16.3	14.9	12.6	10.9	9.03	8.16	7.10	7.15	7.89
MAX	17.4	28.9	28.7	34.4	28.1	25.2	23.0	18.3	14.5	10.6	9.91	13.7
(WY)	1986	1991	1997	1990	1974	1972	1991	1984	1984	1983	2001	1997
MIN	5.96	7.30	8.64	6.87	6.66	5.12	6.36	5.78	5.23	5.04	4.40	5.19
(WY)	1988	1970	1977	1985	1973	1973	1971	1971	1969	1973	1969	1974

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1957 - 2002

ANNUAL TOTAL	4015.6	4233.8	
ANNUAL MEAN	11.0	11.6	10.9
HIGHEST ANNUAL MEAN			15.2
LOWEST ANNUAL MEAN			7.50
HIGHEST DAILY MEAN	119	Nov 14	250
LOWEST DAILY MEAN	6.7	Sep 20	3.6
ANNUAL SEVEN-DAY MINIMUM	7.0	May 21	3.8
ANNUAL RUNOFF (AC-FT)	7960	8400	7870
10 PERCENT EXCEEDS	19	20	18
50 PERCENT EXCEEDS	7.8	8.3	8.2
90 PERCENT EXCEEDS	7.2	7.3	5.7

e Estimated

12091500 CHAMBERS CREEK BELOW LEACH CREEK, NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'52", long 122°31'39", in NE ¼ NE ¼ sec.27, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 200 ft downstream from Leach Creek, 1.5 mi downstream from outlet of Steilacoom Lake, and 4 mi northeast of Steilacoom.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--December 1937 to September 1940, July 1943 to September 1965, October 1997 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 100 ft above NGVD of 1929, from topographic map. Prior to October 1997, at several sites within 0.10 mi downstream from present site at various datums.

REMARKS.--Records good except those above 250 ft³/s, which are fair, and estimated daily discharges, which are poor. Some diversions from tributaries for domestic use.

AVERAGE DISCHARGE.--29 years (water years 1939-40, 1944-65, 1998-2002), 112 ft³/s, 81,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 792 ft³/s, Jan. 5, 1956, gage height, 3.58 ft, site and datum then in use; minimum discharge, 14 ft³/s Aug. 15-17, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 360 ft³/s, Dec. 16, gage height, 3.55 ft; minimum discharge, 31 ft³/s, Oct. 4-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	65	200	196	222	178	172	143	106	e62	e38	39
2	32	60	208	209	206	175	166	141	105	e56	e38	39
3	32	54	204	187	204	172	162	139	102	e50	e38	39
4	32	49	202	181	197	169	159	131	100	e46	e39	39
5	32	55	202	190	195	165	157	128	100	e45	e38	38
6	31	46	211	202	198	162	156	130	98	e45	e37	38
7	31	43	191	277	208	159	153	131	97	e50	e37	38
8	31	42	174	257	226	157	151	130	96	e55	e38	38
9	31	40	171	234	205	155	128	129	95	e53	e37	38
10	40	39	172	225	201	155	138	131	94	e48	e37	37
11	36	39	174	216	199	210	150	131	93	e46	e37	37
12	37	48	178	215	188	230	162	128	90	e45	e38	37
13	39	66	249	202	183	226	212	129	88	e43	e38	37
14	40	214	258	188	177	211	282	130	86	e42	e38	37
15	38	154	257	182	174	193	241	125	85	e42	e37	36
16	37	142	314	178	176	200	247	122	85	e41	e37	36
17	35	133	283	174	172	202	254	130	86	e42	e37	37
18	35	124	271	172	170	194	214	126	75	e42	e37	36
19	38	135	277	174	188	213	165	122	75	e42	e37	36
20	41	133	269	183	175	288	148	127	76	e41	e37	36
21	43	130	268	174	227	248	152	124	76	e41	e39	36
22	46	171	248	170	239	248	153	121	76	e40	e37	36
23	47	146	228	167	245	242	151	118	75	e39	e41	35
24	48	137	198	212	223	219	148	117	75	e38	e40	35
25	62	143	190	287	215	209	147	116	74	e38	e40	35
26	67	133	184	261	199	201	149	115	65	e39	e40	34
27	94	122	179	247	186	193	164	114	e53	e39	e40	34
28	68	176	188	241	181	187	160	119	e52	e40	e40	34
29	59	191	175	232	---	181	151	119	e70	e40	e39	34
30	58	184	171	231	---	178	146	112	e67	e39	39	34
31	82	---	182	230	---	175	---	109	---	e38	39	---
TOTAL	1375	3214	6676	6494	5579	6095	5138	3887	2515	1367	1184	1095
MEAN	44.4	107	215	209	199	197	171	125	83.8	44.1	38.2	36.5
MAX	94	214	314	287	245	288	282	143	106	62	41	39
MIN	31	39	171	167	170	155	128	109	52	38	37	34
AC-FT	2730	6370	13240	12880	11070	12090	10190	7710	4990	2710	2350	2170
CFSM	0.43	1.03	2.07	2.01	1.92	1.89	1.65	1.21	0.81	0.42	0.37	0.35
IN.	0.49	1.15	2.39	2.32	2.00	2.18	1.84	1.39	0.90	0.49	0.42	0.39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)
	54.7	96.9	36.0	1998	71.7	111	37.6	1998	129	357	40.5	1956
	185	496	43.7	1951	213	499	72.1	1951	201	448	63.1	1950
	153	270	60.4	1948	117	201	60.4	1948	85.0	126	51.5	1948
	61.2	101	39.2	1948	49.0	94.6	34.5	1948	46.9	79.7	33.0	1948
	184	59.3	1945	1945	184	1944	1944	1944	1962	1962	1962	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1938 - 2002
ANNUAL TOTAL	28263	44619	
ANNUAL MEAN	77.4	122	112
HIGHEST ANNUAL MEAN			184
LOWEST ANNUAL MEAN			59.3
HIGHEST DAILY MEAN	314	Dec 16	650
LOWEST DAILY MEAN	31	Sep 19	14
ANNUAL SEVEN-DAY MINIMUM	31	Oct 3	26
ANNUAL RUNOFF (AC-FT)	56060	88500	81270
ANNUAL RUNOFF (CFSM)	0.74	1.18	1.08
ANNUAL RUNOFF (INCHES)	10.11	15.96	14.66
10 PERCENT EXCEEDS	161	224	220
50 PERCENT EXCEEDS	66	126	84
90 PERCENT EXCEEDS	34	37	41

e Estimated

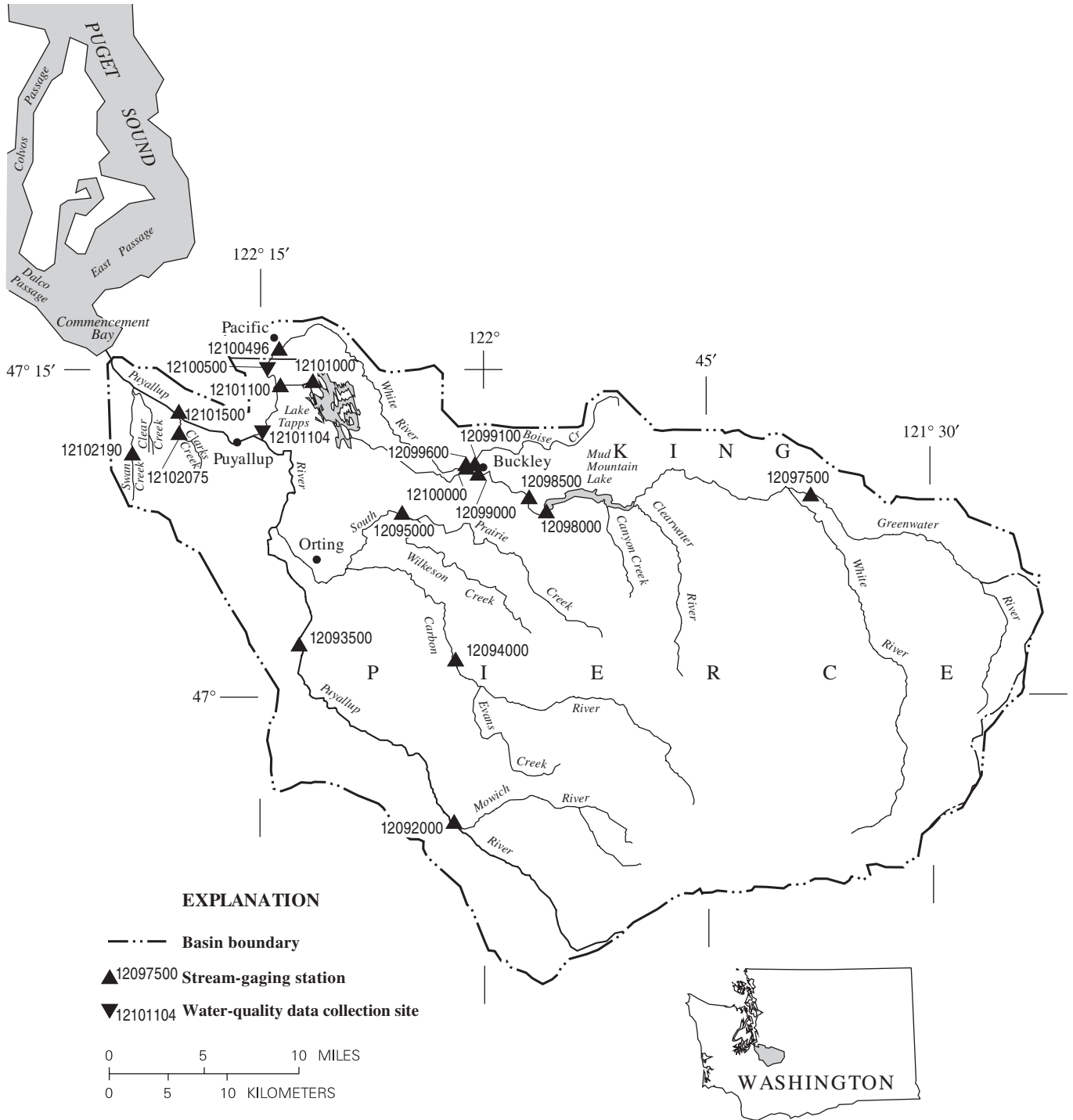


Figure 23. Location of surface-water and water-quality stations in the Puyallup River Basin.

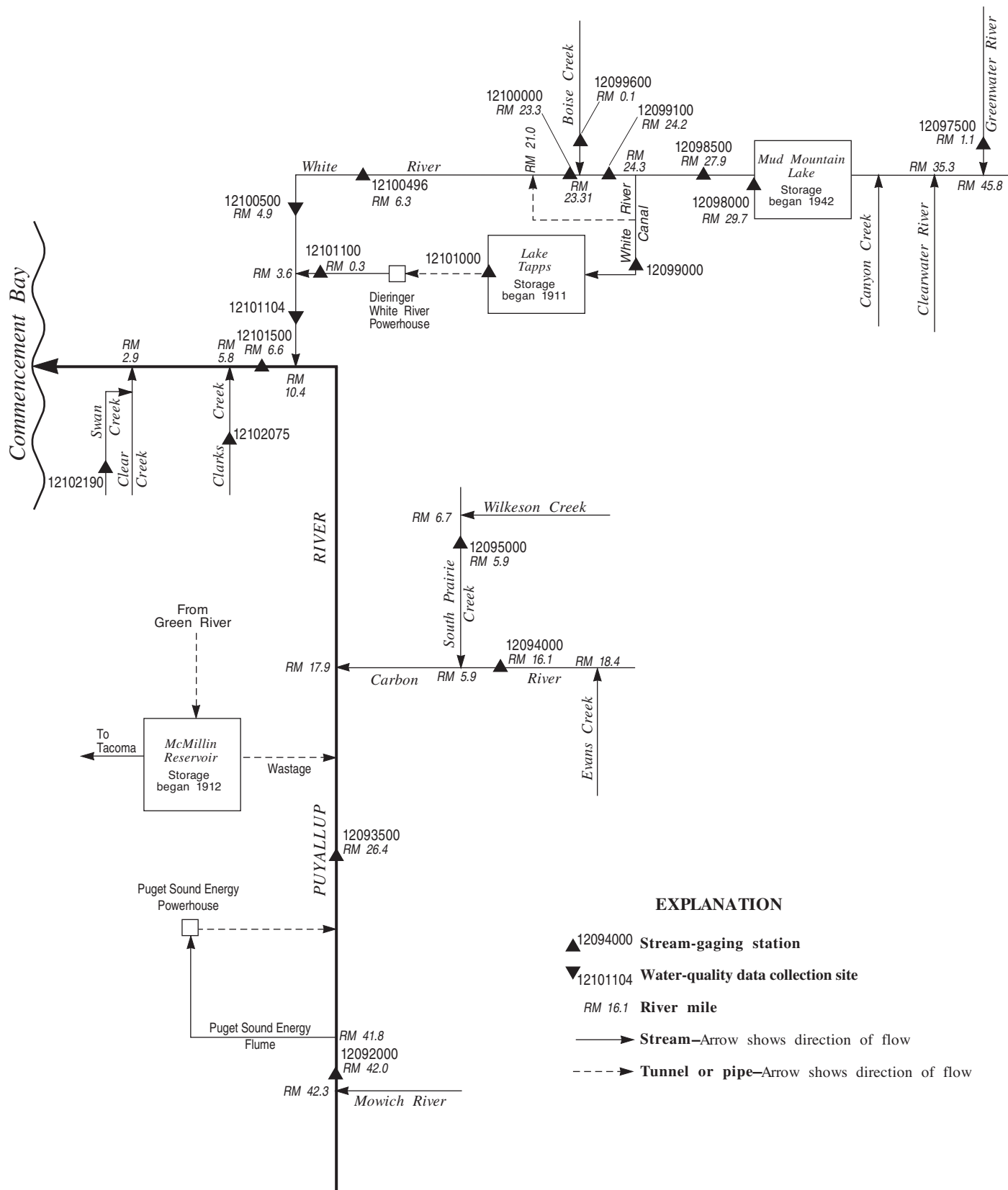


Figure 24. Schematic diagram showing surface-water stations in the Puyallup River Basin.

PUYALLUP RIVER BASIN

12092000 PUYALLUP RIVER NEAR ELECTRON, WA

LOCATION.--Lat 46°54'14", long 122°02'02", in SE 1/4 NW 1/4 sec.3, T.16 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on right bank 1,000 ft upstream from Puget Sound Energy's flume headworks, 0.3 mi downstream from Mowich River, 9.8 mi southeast of Electron, and at mile 42.0.

DRAINAGE AREA.--92.8 mi².

PERIOD OF RECORD.--October 1908 to December 1933, October 1944 to September 1949, October 1957 to current year.

REVISED RECORDS.--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area. WSP 1566: 1945(M), 1947(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,632.7 ft above NGVD of 1929. Prior to Jan. 1, 1913, nonrecording gage, and Jan. 1, 1913, to Sept. 30, 1926, Oct. 1, 1944, to Sept. 30, 1949, and Oct. 1, 1957, to Nov. 22, 1959 (gage destroyed by flood), water-stage recorder, at sites near present gage at different datums. Aug. 19, 1960, to Dec. 23, 1980, at site 160 ft downstream at different datum. Dec. 24, 1980, to Dec. 24, 1987, at site 60 ft downstream at different datum. Dec. 24, 1987, to Feb. 8, 1996 (gage destroyed by flood), at site on left bank near present gage at same datum. Feb. 8 to June 5, 1996, no gage at site.

REMARKS.--No estimated daily discharges. Records fair except for flows above 3,000 ft³/s, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemetry at station.

AVERAGE DISCHARGE.--75 years (water years 1909-33, 1945-49, 1958-2002), 528 ft³/s, 77.27 in/yr, 382,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s Feb. 8, 1996, gage height, 10.94 ft, from floodmarks, result of slope-area measurement; minimum daily discharge, 75 ft³/s Oct. 19, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1145	3,030	5.96	Jan. 07	2145	*4,460	*6.89
Dec. 13	2245	2,670	5.67	Apr. 14	0330	3,340	6.19
Dec. 17	0000	3,210	6.10	Jun. 29	0645	2,510	5.50

Minimum discharge, 143 ft³/s Oct. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	298	678	746	426	257	338	345	509	862	774	544	589
2	292	697	651	916	239	308	348	577	826	679	495	671
3	307	549	517	690	252	290	355	520	807	630	439	567
4	355	455	448	524	233	279	394	455	847	570	418	362
5	292	486	399	454	240	277	472	430	1130	532	352	286
6	279	376	460	795	269	266	528	392	1020	591	322	244
7	195	320	399	3070	309	243	576	352	786	784	297	220
8	245	281	405	2780	288	231	514	329	646	940	323	195
9	169	252	384	1450	255	224	553	308	555	827	448	253
10	370	235	359	954	267	238	721	285	595	963	598	367
11	427	228	330	775	265	624	751	281	709	1090	554	447
12	561	342	317	794	243	638	845	349	877	1030	592	464
13	600	527	1290	676	232	469	1220	503	1040	1200	737	412
14	1090	2390	1520	587	220	415	2400	527	1180	998	772	475
15	604	1780	884	510	217	371	1290	494	1150	772	689	448
16	423	1150	1690	460	222	332	891	466	1020	756	607	442
17	309	784	1940	417	225	295	679	509	841	762	562	332
18	239	599	1100	393	242	269	560	536	808	737	484	293
19	333	1040	794	394	324	340	495	548	693	717	460	414
20	277	1060	635	415	297	428	458	673	645	632	445	378
21	312	885	523	379	600	380	428	779	786	655	435	290
22	521	1160	448	334	856	382	415	783	903	791	499	308
23	626	1200	388	316	873	392	379	714	881	861	535	342
24	422	808	339	429	794	439	353	642	789	872	535	344
25	505	642	303	575	602	484	350	676	856	848	514	328
26	498	528	275	427	496	452	355	797	1050	852	565	276
27	472	453	272	358	425	416	381	993	1090	736	597	219
28	373	620	359	311	383	402	344	1280	1250	780	671	210
29	308	731	305	285	---	376	349	1490	1880	1000	692	241
30	494	604	277	279	---	352	414	1170	1080	952	542	163
31	849	---	345	278	---	340	---	969	---	634	485	---
TOTAL	13045	21860	19102	21451	10125	11290	18163	19336	27602	24965	16208	10580
MEAN	421	729	616	692	362	364	605	624	920	805	523	353
MAX	1090	2390	1940	3070	873	638	2400	1490	1880	1200	772	671
MIN	169	228	272	278	217	224	344	281	555	532	297	163
AC-FT	25870	43360	37890	42550	20080	22390	36030	38350	54750	49520	32150	20990
CFSM	4.53	7.85	6.64	7.46	3.90	3.92	6.52	6.72	9.91	8.68	5.63	3.80
IN.	5.23	8.76	7.66	8.60	4.06	4.53	7.28	7.75	11.06	10.01	6.50	4.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	395	568	594	534	448	368	429	620	764	674	542	404																																																																																		
MAX	1015	1468	2217	1071	1053	944	657	1019	1248	1256	746	727																																																																																		
(WY)	1960	1933	1934	1918	1996	1972	1988	1929	1974	1917	1917	1927																																																																																		
MIN	185	134	174	193	154	146	200	380	406	407	338	257																																																																																		
(WY)	1981	1930	1915	1979	1922	1922	1975	1909	1996	1996	1996	1996																																																																																		

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1909 - 2002	
ANNUAL TOTAL	186696		213727			
ANNUAL MEAN	511		586		528	
HIGHEST ANNUAL MEAN					664	
LOWEST ANNUAL MEAN					378	
HIGHEST DAILY MEAN	2390		3070		10000	
LOWEST DAILY MEAN	139		163		75	
ANNUAL SEVEN-DAY MINIMUM	150		229		104	
ANNUAL RUNOFF (AC-FT)	370300		423900		382300	
ANNUAL RUNOFF (CFSM)	5.51		6.31		5.69	
ANNUAL RUNOFF (INCHES)	74.84		85.68		77.27	
10 PERCENT EXCEEDS	845		1010		896	
50 PERCENT EXCEEDS	476		486		440	
90 PERCENT EXCEEDS	198		269		222	

PUYALLUP RIVER BASIN

12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW ¼ SW ¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft downstream from highway bridge, 4.0 mi south of Orting, 8.5 mi upstream from Carbon River, and at mile 26.4.

DRAINAGE AREA.--172 mi².

PERIOD OF RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft above NGVD of 1929. Prior to Feb. 6, 1946, at site 600 ft upstream at datum 8.93 ft higher. Supplementary water-stage recorder 200 ft upstream at datum 7.1 ft higher than present gage datum, used at times during period in 1942-46. Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Up to 400 ft³/s diverted for Electron powerplant of Puget Sound Energy, which is returned to river 4.8 mi upstream from gage. Minor regulation by Electron powerplant. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--71 years (water years 1932-2002), 716 ft³/s, 56.54 in/yr, 518,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft³/s Feb. 8, 1996, from slope area measurement, gage height, 11.37 ft; minimum discharge, 25 ft³/s Nov. 28, 1952; minimum daily, 59 ft³/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 17	0130	6,450	8.80	Apr 14	0645	5,800	8.59
Jan 08	0015	*8,230	*9.31				

Minimum discharge, 197 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	328	794	1200	605	581	553	575	704	1030	884	556	575
2	326	781	1140	1080	534	507	570	796	993	774	519	662
3	324	657	956	916	545	476	555	736	989	722	453	619
4	365	510	838	738	524	457	573	651	988	637	440	401
5	347	622	762	645	515	454	650	611	1290	584	384	318
6	322	510	925	781	543	449	709	587	1230	623	359	288
7	e256	440	931	4150	676	413	779	547	954	841	339	e260
8	e284	402	825	4320	819	392	702	514	795	1060	340	e239
9	e216	374	788	1970	789	380	716	479	673	905	425	273
10	e411	350	720	1350	706	395	937	459	684	1010	582	366
11	498	340	693	1080	704	826	998	442	799	1130	588	436
12	524	412	633	1080	617	1110	1130	476	973	1070	581	472
13	659	573	1700	932	564	912	1470	637	1190	1210	727	423
14	1010	2880	2600	805	514	797	3930	711	1380	1070	766	474
15	658	2060	1470	708	485	699	2070	663	1330	813	692	462
16	504	1520	2190	639	476	634	1530	618	1190	801	611	467
17	e382	1120	3620	587	466	e594	1210	647	966	810	577	367
18	e321	864	1860	547	492	e567	1000	690	928	779	505	307
19	e413	1100	1450	578	571	e774	873	685	814	766	474	413
20	e343	1230	1170	684	566	1230	787	841	727	663	469	417
21	e383	1070	991	726	839	950	722	1020	854	664	426	319
22	511	1390	857	619	1220	829	694	1030	1010	800	494	327
23	732	1860	750	559	1270	773	636	942	1000	883	543	360
24	516	1250	673	718	1280	790	590	836	885	895	551	362
25	591	975	614	1080	961	927	570	857	924	884	511	350
26	568	821	568	927	795	831	571	962	1150	881	561	324
27	563	698	543	742	688	766	638	1150	1230	769	587	262
28	485	826	613	631	609	716	598	1450	1330	758	656	246
29	419	1170	562	564	---	670	568	1750	2170	999	687	291
30	514	1070	521	552	---	620	601	1470	1270	968	578	215
31	922	---	575	584	---	589	---	1170	---	669	492	---
TOTAL	14695	28669	33738	31897	19349	21080	27952	25131	31746	26322	16473	11295
MEAN	474	956	1088	1029	691	680	932	811	1058	849	531	376
MAX	1010	2880	3620	4320	1280	1230	3930	1750	2170	1210	766	662
MIN	216	340	521	547	466	380	555	442	673	584	339	215
AC-FT	29150	56860	66920	63270	38380	41810	55440	49850	62970	52210	32670	22400
CFSM	2.76	5.56	6.33	5.98	4.02	3.95	5.42	4.71	6.15	4.94	3.09	2.19
IN.	3.18	6.20	7.30	6.90	4.18	4.56	6.05	5.44	6.87	5.69	3.56	2.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2002, BY WATER YEAR (WY)

	MEAN	477	826	960	889	768	615	651	787	880	729	563	445
MAX	1291	2149	3015	2314	2291	1619	1038	1282	1470	1239	881	748	
(WY)	1960	1996	1934	1934	1996	1972	1991	1936	1974	1933	1983	1968	
MIN	210	92.8	205	205	280	266	303	494	311	483	373	283	
(WY)	1953	1953	1953	1937	1977	1941	1975	1941	1934	1977	1957	1936	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1932 - 2002
ANNUAL TOTAL	228497	288347	
ANNUAL MEAN	626	790	716
HIGHEST ANNUAL MEAN			1174
LOWEST ANNUAL MEAN			465
HIGHEST DAILY MEAN	3620	Dec 17	4320
LOWEST DAILY MEAN	215	Feb 27	215
ANNUAL SEVEN-DAY MINIMUM	229	Feb 23	293
ANNUAL RUNOFF (AC-FT)	453200	571900	518500
ANNUAL RUNOFF (CFSM)	3.64	4.59	4.16
ANNUAL RUNOFF (INCHES)	49.42	62.36	56.54
10 PERCENT EXCEEDS	981	1220	1180
50 PERCENT EXCEEDS	567	676	588
90 PERCENT EXCEEDS	283	381	310

e Estimated

PUYALLUP RIVER BASIN

12094000 CARBON RIVER NEAR FAIRFAX, WA

LOCATION.--Lat 47°01'41", long 122°01'53", in SW 1/4 SW 1/4 sec.22, T.18 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank, 1.1 mi upstream from State Highway 165 (Fairfax) bridge, 1.2 mi northwest of Fairfax, 2.3 mi downstream from Evans Creek, 4 mi south of Carbonado, and at mile 16.1.

DRAINAGE AREA.--78.9 mi².

PERIOD OF RECORD.--December 1910 to June 1912, April 1929 to September 1965, October 1965 to May 1978, October 1991 to current year. Published as "at Fairfax" 1910-12, 1966-78.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,201.7 ft above NGVD of 1929 (USGS National Mapping Division). Prior to July 12, 1912, nonrecording gage at railroad crossing 1.7 mi upstream at different datum. March 1929 to September 1965, recording gage 350 ft upstream at datum 1,212.6 ft above NGVD of 1929. October 1965 to May 1978, recording gage 1.7 mi upstream at datum then in use.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--59 years (water years 1930-77, 1992-2002), 429 ft³/s, 73.79 in/yr, 310,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Feb. 8, 1996, gage height, 15.85 ft; minimum discharge, 32 ft³/s Nov. 24, 1993.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1990, reached a stage of 8.68 ft, from floodmark at former site and datum 350 ft upstream, discharge, 13,000 ft³/s, from rating extended above 6,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1630	3,180	10.69	Jan. 08	0115	4,200	11.46
Dec. 14	0030	1,850	9.59	Apr. 14	0700	*4,330	*11.55
Dec. 17	0200	2,200	9.88	Jun. 29	0830	2,070	9.70

Minimum discharge, 90 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	628	432	274	238	272	247	412	861	787	339	280
2	118	638	406	390	218	246	246	513	823	666	309	340
3	115	507	359	398	219	229	242	461	798	598	276	320
4	120	381	324	332	206	218	258	376	836	512	276	192
5	113	429	298	291	209	219	322	344	1190	481	270	176
6	105	350	364	300	218	211	414	304	1140	499	243	155
7	96	299	325	1760	245	192	510	274	811	629	219	145
8	126	266	318	2890	266	180	429	260	616	830	212	127
9	121	239	313	1180	244	174	414	246	466	673	237	131
10	185	220	301	819	242	173	537	234	478	751	300	159
11	318	208	268	632	243	340	622	226	639	855	318	176
12	357	220	245	629	225	465	761	248	830	931	299	196
13	452	320	871	517	211	346	1170	390	1050	928	326	193
14	737	2270	1310	416	198	306	3210	493	1190	806	351	195
15	487	1610	729	346	189	274	1410	432	1150	588	363	212
16	301	946	1170	320	187	249	879	376	1000	557	312	220
17	242	662	1580	291	185	227	632	398	784	588	277	189
18	201	475	901	274	192	210	495	446	814	565	274	148
19	236	490	634	283	214	296	420	436	728	539	248	160
20	259	499	487	322	215	461	382	578	682	453	228	194
21	286	451	392	304	498	344	347	717	781	419	236	147
22	426	587	345	265	975	329	336	752	878	468	236	138
23	633	773	302	247	985	327	308	638	847	538	265	145
24	403	535	273	382	879	340	286	564	717	547	290	141
25	459	419	250	615	593	363	277	594	784	530	302	137
26	457	363	232	450	440	340	281	725	967	515	279	128
27	410	315	225	334	347	316	301	870	1010	452	276	121
28	331	355	271	288	307	302	272	1110	1070	413	320	116
29	288	445	251	257	---	280	268	1410	1760	588	324	125
30	321	400	234	249	---	259	307	1250	1180	624	278	110
31	608	---	259	264	---	247	---	1010	---	421	229	---
TOTAL	9422	16300	14669	16319	9388	8735	16583	17087	26880	18751	8712	5216
MEAN	304	543	473	526	335	282	553	551	896	605	281	174
MAX	737	2270	1580	2890	985	465	3210	1410	1760	931	363	340
MIN	96	208	225	247	185	173	242	226	466	413	212	110
AC-FT	18690	32330	29100	32370	18620	17330	32890	33890	53320	37190	17280	10350
CFSM	3.85	6.89	6.00	6.67	4.25	3.57	7.01	6.99	11.4	7.67	3.56	2.20
IN.	4.44	7.69	6.92	7.69	4.43	4.12	7.82	8.06	12.67	8.84	4.11	2.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

MEAN	313	496	545	467	381	312	385	557	649	486	316	243
MAX	830	1732	1952	948	1301	879	577	854	1083	828	500	538
(WY)	1960	1996	1934	1934	1996	1972	1938	1936	1964	1972	1964	1959
MIN	109	59.0	110	110	131	143	134	346	306	264	201	158
(WY)	1975	1930	1953	1937	1966	1941	1975	1941	1992	1940	1994	1930

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1930 - 2002
ANNUAL TOTAL	130911	168062	
ANNUAL MEAN	359	460	429
HIGHEST ANNUAL MEAN			664
LOWEST ANNUAL MEAN			276
HIGHEST DAILY MEAN	2270	3210	9020
LOWEST DAILY MEAN	96	96	40
ANNUAL SEVEN-DAY MINIMUM	111	111	42
ANNUAL RUNOFF (AC-FT)	259700	333400	310500
ANNUAL RUNOFF (CFSM)	4.55	5.84	5.43
ANNUAL RUNOFF (INCHES)	61.72	79.24	73.79
10 PERCENT EXCEEDS	613	870	769
50 PERCENT EXCEEDS	314	334	338
90 PERCENT EXCEEDS	149	191	159

PUYALLUP RIVER BASIN

12095000 SOUTH PRAIRIE CREEK AT SOUTH PRAIRIE, WA

LOCATION.--Lat 47°08'23", long 122°05'29", in the NE ¼ NW ¼ sec.18, T.19 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 300 ft upstream from bridge on State Highway 162, 0.8 mi downstream from Wilkeson Creek, 0.3 mi east of South Prairie, and at mile 5.9.

DRAINAGE AREA.--79.5 mi².

PERIOD OF RECORD.--June 1949 to September 1971, October 1987 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WDR WA-96-1: 1980(M), 1991(P).

GAGE.--Water-stage recorder. Datum of gage is 400.0 ft above NGVD of 1929. June 1949 to June 1969, water-stage recorder at site 400 ft downstream at different datum. June 1969 to September 1971, at present site at different datum.

REMARKS.--No estimated daily discharges. Records good except for period June to September, which is poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1950-71, 1988-2002), 236 ft³/s, 40.27 in/yr, 170,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,170 ft³/s Feb. 8, 1996, gage height, 35.14 ft, on basis of contracted-opening measurement of peak flow; minimum discharge, 20 ft³/s Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1330	1,590	30.16	Jan. 08	0130	1,400	29.78
Dec. 14	0030	1,670	30.07	Apr. 14	0615	*2,100	*30.48
Dec. 17	0215	1,670	30.07				

Minimum discharge, 38 ft³/s Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	253	430	216	259	215	216	216	215	261	56	40
2	48	220	358	284	239	196	213	231	213	223	52	42
3	46	166	315	259	234	184	204	211	214	204	50	66
4	46	132	270	224	226	177	204	189	213	191	52	52
5	45	206	259	206	220	180	225	182	312	187	64	44
6	43	157	317	210	228	181	252	180	254	174	87	43
7	45	127	309	731	290	166	274	174	200	181	65	44
8	58	109	276	1140	419	158	245	171	191	227	56	46
9	71	95	270	747	364	152	246	162	174	184	49	47
10	71	86	262	518	309	160	330	157	160	172	48	45
11	140	78	267	386	300	395	337	152	152	165	48	43
12	91	79	237	358	259	639	439	157	175	144	44	42
13	123	126	793	288	236	514	636	210	217	131	49	41
14	154	1130	1200	253	214	393	1530	250	240	117	48	41
15	131	733	663	227	201	323	803	214	198	91	45	41
16	89	521	930	210	194	275	558	192	177	78	45	47
17	93	403	1250	197	190	248	421	196	142	69	45	56
18	74	304	724	187	203	225	334	201	212	66	47	49
19	71	277	533	210	218	376	284	200	156	73	47	46
20	89	259	400	312	228	1050	260	232	115	72	49	50
21	77	251	323	384	494	647	239	315	139	68	50	48
22	131	379	275	279	783	489	227	325	136	69	48	45
23	208	700	244	239	725	407	210	262	125	64	46	43
24	147	459	222	338	645	371	196	225	98	64	42	43
25	187	334	205	765	439	397	188	227	103	63	42	44
26	164	265	191	603	327	342	186	255	119	66	47	45
27	169	229	182	406	269	304	227	265	108	66	45	46
28	160	299	222	303	240	267	206	360	330	62	41	48
29	122	476	198	255	---	245	192	360	631	66	39	58
30	149	436	182	248	---	229	196	293	341	60	40	58
31	284	---	204	267	---	216	---	242	---	57	40	---
TOTAL	3375	9289	12511	11250	8953	10121	10078	7006	6060	3715	1526	1403
MEAN	109	310	404	363	320	326	336	226	202	120	49.2	46.8
MAX	284	1130	1250	1140	783	1050	1530	360	631	261	87	66
MIN	43	78	182	187	190	152	186	152	98	57	39	40
AC-FT	6690	18420	24820	22310	17760	20080	19990	13900	12020	7370	3030	2780
CFSM	1.37	3.89	5.08	4.56	4.02	4.11	4.23	2.84	2.54	1.51	0.62	0.59
IN.	1.58	4.35	5.85	5.26	4.19	4.74	4.72	3.28	2.84	1.74	0.71	0.66

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

MEAN	140	313	363	382	348	274	291	259	219	111	64.2	68.8
MAX	349	723	728	732	966	527	517	463	439	270	193	233
(WY)	1960	1991	1956	1997	1996	1950	1991	1960	1993	1993	1968	1968
MIN	26.4	35.2	61.5	126	112	138	157	131	59.1	48.7	32.7	34.9
(WY)	1988	1953	1953	1957	1993	1992	1995	1992	1992	1995	1996	1967

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1949 - 2002

ANNUAL TOTAL	68059	85287										
ANNUAL MEAN	186	234								236		
HIGHEST ANNUAL MEAN										338		1997
LOWEST ANNUAL MEAN										141		1994
HIGHEST DAILY MEAN	1250	1530	Dec 17							6700	Feb 8	1996
LOWEST DAILY MEAN	35	39	Sep 24							24	Sep 6	1951
ANNUAL SEVEN-DAY MINIMUM	39	41	Sep 19							25	Oct 8	1987
ANNUAL RUNOFF (AC-FT)	135000	169200								170700		
ANNUAL RUNOFF (CFSM)	2.35	2.94								2.96		
ANNUAL RUNOFF (INCHES)	31.85	39.91								40.27		
10 PERCENT EXCEEDS	333	432								451		
50 PERCENT EXCEEDS	140	204								178		
90 PERCENT EXCEEDS	45	47								46		

PUYALLUP RIVER BASIN

12097500 GREENWATER RIVER AT GREENWATER, WA

LOCATION.--Lat 47°09'13", long 121°38'10", in NE ¼ NE ¼ sec.10, T.19 N., R.9 E., Pierce County, Hydrologic Unit 17110014, on left bank at bridge crossing, 0.7 mi east of Greenwater, and at mile 1.1.

DRAINAGE AREA.--73.5 mi².

PERIOD OF RECORD.--September 1911 to August 1912 (fragmentary), May 1929 to September 1977, June 1980 to September 1993 (seasonal records), October 1993 to current year. Published as "near Enumclaw" 1911-12.

REVISED RECORDS.--WSP 1716: 1947(M). WA-94-1: 1990(M), 1993(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft above NGVD of 1929, from river-profile survey. Prior to Aug. 10, 1912, nonrecording gages at sites approximately 500 ft upstream at different datums. May 1, 1929, to Aug. 14, 1934, water-stage recorder at site 1,400 ft upstream at different datum. Aug. 17, 1934, to Sept. 30, 1977, water-stage recorder at site 500 ft upstream at different datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--No estimated daily discharges. Records good. No regulation upstream from station.

AVERAGE DISCHARGE.--57 years (water years 1930-77, 1994-2002), 213 ft³/s, 39.31 in/yr, 154,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,900 ft³/s Feb. 8, 1996, gage height, 8.94 ft, from rating curve extended above 2,400 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 22 ft³/s Oct. 27-31, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 2, 1977, reached a stage of 9.8 ft former site and datum, from floodmarks, discharge, about 10,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 638 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 08	0500	856	5.31	May 29	2215	823	5.16
Apr. 14	0830	*1,710	*6.33	Jun. 15	0330	672	4.92

Minimum discharge, 28 ft³/s Oct. 4, 5, 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	128	139	105	142	177	203	467	721	321	81	45
2	29	127	138	106	135	163	222	536	692	292	77	45
3	29	119	130	105	131	154	220	500	667	273	75	46
4	29	110	124	100	126	153	246	449	652	260	74	44
5	28	111	119	97	125	155	305	413	657	248	74	43
6	28	100	122	107	123	149	318	375	666	228	75	42
7	29	92	120	374	128	140	363	343	612	218	73	42
8	34	86	118	758	134	131	343	315	551	227	69	42
9	42	81	122	567	129	126	332	302	488	206	66	41
10	43	77	118	446	128	123	367	288	467	192	65	41
11	53	73	113	375	127	174	422	286	477	183	63	40
12	59	71	108	352	123	268	486	315	507	176	62	40
13	91	81	231	320	119	240	612	402	562	169	60	40
14	128	289	404	285	113	216	1430	430	626	160	58	39
15	86	269	276	254	114	198	976	433	642	152	57	39
16	65	232	316	231	119	182	704	429	626	144	56	40
17	58	204	427	213	118	168	566	442	582	140	55	40
18	51	177	336	199	123	156	479	470	543	134	54	39
19	57	165	270	192	135	160	427	489	499	130	54	38
20	63	164	230	196	141	189	404	587	456	124	54	38
21	61	161	199	193	224	177	380	643	430	116	54	37
22	77	175	178	176	453	165	364	670	422	110	53	36
23	134	228	161	165	439	161	349	637	415	106	52	36
24	113	201	148	188	370	165	328	602	400	103	50	36
25	119	181	138	256	293	187	322	610	385	98	50	35
26	117	163	130	236	246	208	329	668	381	97	50	35
27	110	148	125	202	216	200	335	714	378	94	49	34
28	99	142	121	181	194	194	314	760	382	90	47	34
29	88	141	116	163	---	190	331	797	385	88	46	34
30	82	133	111	158	---	187	381	801	346	86	46	34
31	115	---	108	151	---	193	---	769	---	83	45	---
TOTAL	2147	4429	5496	7451	4968	5449	12858	15942	15617	5048	1844	1175
MEAN	69.3	148	177	240	177	176	429	514	521	163	59.5	39.2
MAX	134	289	427	758	453	268	1430	801	721	321	81	46
MIN	28	71	108	97	113	123	203	286	346	83	45	34
AC-FT	4260	8780	10900	14780	9850	10810	25500	31620	30980	10010	3660	2330
CFSM	0.94	2.01	2.41	3.27	2.41	2.39	5.83	7.00	7.08	2.22	0.81	0.53
IN.	1.09	2.24	2.78	3.77	2.51	2.76	6.51	8.07	7.90	2.55	0.93	0.59

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	73.8	183	259	249	220	195	284	432	364	146	65.5	51.9																																																																			
MAX	347	784	1116	597	809	640	457	833	900	371	133	128																																																																			
(WY)	1960	1996	1934	1934	1996	1972	1956	1949	1950	1950	1976	1959																																																																			
MIN	24.1	29.7	35.0	45.3	70.3	77.5	124	158	83.0	51.6	36.5	30.9																																																																			
(WY)	1988	1937	1953	1937	1936	1941	1973	1941	1992	1934	1934	1987																																																																			

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1929 - 2002

	2001 CALENDAR YEAR	2002 WATER YEAR	1929 - 2002
ANNUAL TOTAL	48273	82424	
ANNUAL MEAN	132	226	213
HIGHEST ANNUAL MEAN			328
LOWEST ANNUAL MEAN			92.4
HIGHEST DAILY MEAN	427	Dec 17	4800
LOWEST DAILY MEAN	28	Oct 5	22
ANNUAL SEVEN-DAY MINIMUM	29	Oct 1	23
ANNUAL RUNOFF (AC-FT)	95750	163500	154100
ANNUAL RUNOFF (CFSM)	1.80	3.07	2.89
ANNUAL RUNOFF (INCHES)	24.43	41.72	39.31
10 PERCENT EXCEEDS	284	499	461
50 PERCENT EXCEEDS	108	158	147
90 PERCENT EXCEEDS	39	44	44

PUYALLUP RIVER BASIN

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'27", long 121°55'48", in NE ¼ NE ¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi southeast of Buckley, 5.6 mi downstream from Clearwater River, and at mile 29.7.

DRAINAGE AREA.--400 mi².

PERIOD OF RECORD.--October 1943 to current year. Daily contents at 0800 hours only October 1944 to September 1987. Monthend contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is NGVD of 1929 (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earthfill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft between elevations 895 ft, invert of outlet tunnel, and 1,215 ft, spillway crest. Storage is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers (revised by U.S.G.S. below 917 ft). Table uncertain below about 970 ft, due to siltation. Mud Mountain Lake is considered to have no appreciable storage below 917 ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 89,245 acre-ft Feb. 9, 1996, elevation, 1,196.1 ft; no contents at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 13,669 acre-ft Apr. 15, elevation, 1,057.3 ft; no contents many days during the year.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	174	0.00	0.00	0.00	90	0.00	0.00	158	101	0.00	0.00
2	94	149	0.00	0.00	0.00	0.00	0.00	0.00	140	91	0.00	0.00
3	93	128	0.00	0.00	0.00	0.00	0.00	0.00	130	0.00	0.00	0.00
4	94	120	0.00	0.00	0.00	0.00	0.00	0.00	121	0.00	0.00	0.00
5	93	127	0.00	0.00	0.00	0.00	165	0.00	147	0.00	0.00	0.00
6	90	117	0.00	0.00	0.00	0.00	170	0.00	176	0.00	0.00	0.00
7	89	112	0.00	215	0.00	0.00	200	0.00	128	0.00	0.00	0.00
8	90	108	0.00	5240	0.00	0.00	2913	0.00	100	0.00	0.00	0.00
9	92	106	0.00	7066	0.00	0.00	3093	0.00	0.00	0.00	0.00	0.00
10	91	103	0.00	3024	0.00	0.00	2764	0.00	0.00	0.00	0.00	0.00
11	109	101	0.00	536	0.00	0.00	2855	0.00	0.00	0.00	0.00	0.00
12	97	99	578	217	0.00	144	1365	0.00	98	0.00	0.00	0.00
13	114	112	194	187	0.00	119	531	0.00	118	0.00	0.00	0.00
14	116	603	1023	170	0.00	106	5039	0.00	183	0.00	0.00	0.00
15	111	4439	215	0.00	0.00	97	13669	0.00	174	0.00	0.00	0.00
16	104	279	230	0.00	0.00	90	12819	0.00	174	0.00	0.00	0.00
17	101	0.00	597	1885	0.00	0.00	8345	0.00	138	0.00	0.00	0.00
18	95	0.00	270	3444	0.00	0.00	3216	0.00	114	0.00	0.00	0.00
19	95	0.00	207	0.00	0.00	0.00	149	0.00	105	0.00	0.00	0.00
20	101	0.00	172	0.00	0.00	131	0.00	0.00	93	---	0.00	0.00
21	100	0.00	160	0.00	0.00	112	0.00	101	101	---	0.00	0.00
22	107	---	147	0.00	130	0.00	0.00	103	104	0.00	0.00	0.00
23	156	108	140	0.00	200	0.00	0.00	96	114	0.00	0.00	0.00
24	120	0.00	134	0.00	178	0.00	0.00	0.00	103	0.00	---	0.00
25	127	0.00	129	0.00	142	0.00	0.00	0.00	102	0.00	---	0.00
26	123	0.00	126	0.00	119	0.00	0.00	98	111	0.00	0.00	0.00
27	115	0.00	122	0.00	106	0.00	0.00	109	130	0.00	0.00	0.00
28	109	0.00	125	0.00	98	0.00	0.00	167	120	0.00	0.00	0.00
29	107	0.00	120	0.00	---	0.00	0.00	220	263	0.00	0.00	0.00
30	105	0.00	117	0.00	---	0.00	0.00	230	150	0.00	0.00	0.00
31	143	---	117	0.00	---	0.00	---	195	---	0.00	0.00	---
MAX	156	4439	1023	7066	200	144	13669	230	263	101	0.00	0.00
MIN	89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(††)	927.4	904.4	913.8	904.2	917.6	906.2	910.4	928.1	921.4	905.3	901.5	899.8
(†)	162	0	0	0	93	0	0	169	116	0	0	0
(‡)	+69	-162	0	0	+93	-93	0	+169	-53	-116	0	0

CAL YR 2001 AC-FT† -123
WTR YR 2002 AC-FT‡ -93

†† Monthend elevation, in feet, at 2400 hours.
† Monthend contents, in acre-feet.
‡ Change in contents, in acre-feet.

PUYALLUP RIVER BASIN

12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'55", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi upstream from Red Creek, 1.7 mi downstream from Mud Mountain Dam, 3.8 mi east of Buckley, 7.4 mi downstream from Clearwater River and at mile 27.9.

DRAINAGE AREA.--401 mi².

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage, and Dec. 9, 1928, to Nov. 30, 1933, water-stage recorder at site 3.0 mi upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records fair. Flow regulated by Mud Mountain Lake (station 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No diversion upstream from station. Chemical analyses July 1981; water temperatures March 1971 to September 1972; sediment records November 1971 to November 1972. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--69 years (water years 1929-33, 1939-2002), 1,439 ft³/s, 48.73 in/yr, 1,043,000 acre-ft/yr, adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 3,500 ft³/s; probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958; Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily discharge, 59 ft³/s June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft, from floodmarks, at former site, discharge, 28,000 ft³/s, from rating curve extended above 3,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,720 ft³/s Jan. 8, elevation, 806.02 ft; minimum discharge 282 ft³/s Dec. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	403	1350	1380	723	1120	1300	e1110	2010	3240	2380	1030	e881
2	410	1180	1370	780	1060	1180	e1180	2320	2970	2140	989	797
3	402	1000	1200	798	1040	1100	e1120	2250	2840	2010	936	e753
4	406	857	1060	758	998	1060	e1240	2040	2800	1870	935	694
5	390	924	999	739	979	1080	e1590	1920	3140	1750	881	619
6	383	787	1070	815	973	1050	e1760	1790	3330	1680	847	574
7	369	705	1020	4320	1060	971	1550	1650	2720	1790	809	559
8	398	648	954	6850	1150	932	e1440	1540	2220	2000	796	520
9	404	616	1000	6880	1080	908	2100	1490	1840	1830	812	502
10	397	593	952	5150	1040	899	2150	1430	1730	1840	864	e476
11	597	575	891	3200	1050	1500	2890	1400	1960	1990	872	e522
12	494	586	927	2890	968	2500	3220	1470	2320	1990	848	e524
13	684	751	2470	2630	932	1950	3550	1800	2880	2000	899	e546
14	848	3340	4480	2270	901	1650	4950	2010	3620	1860	930	594
15	695	5250	2500	1950	890	1470	5260	1970	3910	1660	908	e613
16	587	3820	3320	1520	904	1320	5410	1900	3560	1520	887	607
17	530	2830	4860	853	902	1200	5120	1960	2870	1510	860	e602
18	466	1860	2870	2510	944	1090	4060	2070	2620	1480	811	e516
19	508	1640	1890	1450	1020	1310	2240	2120	2320	1450	795	e560
20	552	2320	1500	1560	1070	2190	2070	2570	2090	1350	797	e626
21	519	1910	1250	1600	1860	1760	1950	2800	2210	1260	766	e502
22	627	1970	1090	1360	3860	1470	1870	2810	2460	1270	777	e489
23	1130	3230	990	1240	3710	1370	1770	2610	2550	1350	786	e507
24	862	2450	915	1550	3180	1360	1660	2440	2250	1350	795	e524
25	954	1960	860	2500	2440	1450	1620	2500	2220	1320	835	e505
26	866	1580	816	2090	1980	1490	1640	2760	2490	1320	813	e502
27	805	1330	786	1660	1680	1420	1710	3060	2760	1210	802	e463
28	707	1290	797	1390	1480	1340	1610	3550	2790	1140	e870	e511
29	623	1460	759	1220	---	1320	1610	4170	4090	1280	e802	e469
30	648	1310	730	1210	---	1250	1720	4160	3020	1340	e778	e494
31	1300	---	742	1200	---	1240	---	3710	---	1140	e771	---
TOTAL	18964	50122	46448	65666	40271	42130	71170	72280	81820	50080	26301	17051
MEAN	612	1671	1498	2118	1438	1359	2372	2332	2727	1615	848	568
MAX	1300	5250	4860	6880	3860	2500	5410	4170	4090	2380	1030	881
MIN	369	575	730	723	890	899	1110	1400	1730	1140	766	463
AC-FT	37620	99420	92130	130200	79880	83560	141200	143400	162300	99330	52170	33820
MEAN†	613	1669	1498	2117	1440	1357	2374	2335	2727	1613	848	569
CFSM†	1.53	4.16	3.74	5.28	3.59	3.38	5.92	5.82	6.80	4.02	2.11	1.42
IN.†	1.76	4.64	4.31	6.09	3.74	3.90	6.60	6.71	7.58	4.64	2.44	1.58
AC-FT†	37690	99260	92130	130200	79970	83470	141200	143600	162200	99210	52170	33820

CAL YR 2001 TOTAL 417767 MEAN 1145 MAX 5250 MIN 248 AC-FT 828600 MEAN† 1144 CFSM† 2.85 IN.† 38.74 AC-FT† 828500
WTR YR 2002 TOTAL 582303 MEAN 1595 MAX 6880 MIN 369 AC-FT 1155000 MEAN† 1595 CFSM† 3.98 IN.† 54.01 AC-FT† 1155000

† Adjusted for change in contents in Mud Mountain Lake.

e Estimated

PUYALLUP RIVER BASIN

12099000 WHITE RIVER CANAL AT BUCKLEY, WA

LOCATION.--Lat 47°10'19", long 122°01'13", in SE ¼ SE ¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on right bank 0.8 mi downstream from diversion dam, and 0.8 mi northwest of Buckley.

PERIOD OF RECORD.--February 1913 to September 1938 (monthly runoff only, published in WSP 1316), October 1981 to current year. Records for September 1958 to September 1981 available in files of the U.S. Geological Survey. Records prior to October 1961, published as White River flume near Buckley, at site 0.5 mi downstream from White River diversion dam. September 1959 to September 1992 station at site 4.0 mi downstream from diversion dam.

GAGE.--Water-stage recorder. Elevation of gage is 650 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. Flow completely regulated at White River diversion dam about 0.8 mi upstream from gage. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,340 ft³/s Dec. 17, 2001; no flow on many days during most years.

EXTREMES FOR CURRENT YEAR.--Maximum daily recorded discharge, 2,340 ft³/s Dec. 17; minimum discharge, no flow Nov. 18, Aug. 3-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e172	1190	e750	e583	e939	978	e737	1660	2000	2080	847	561
2	e188	1080	e744	e642	e876	890	e760	1960	1990	1980	706	512
3	e175	e869	e634	e658	e848	834	e694	1970	1980	1850	23	461
4	e185	e744	523	e617	e815	805	e808	1750	1960	1650	0.00	387
5	e172	e819	546	e598	e788	852	e1130	1580	2020	1460	0.00	345
6	e168	e671	e824	e665	e779	825	e1300	1470	1990	1360	0.00	292
7	e155	e587	e882	e2270	e862	750	e1020	1310	e1720	1510	0.00	271
8	e175	e532	e821	e1850	e1000	728	e772	1160	e1530	1790	0.00	228
9	e188	e497	e858	e1480	e900	692	1650	1090	e1440	1570	0.00	209
10	e175	e471	e819	e2210	e854	817	1700	1030	e1400	1560	0.00	172
11	e381	e453	e761	e1570	e864	1120	e2080	1010	e1520	1700	0.00	213
12	e281	e461	e775	e1480	e773	1950	e2130	1100	e1720	1710	0.00	211
13	e467	e628	e1950	e1400	e740	1540	e2230	1440	2070	1410	0.00	239
14	e633	e1910	e2310	e1150	e709	1260	e2220	1670	2080	1280	0.00	279
15	e483	e1880	e1940	e965	e695	1120	e2290	1620	2100	1250	0.00	299
16	e381	e188	e2160	e747	e719	995	e2250	1580	2090	1280	0.00	311
17	e314	e38	e2340	e498	e720	952	e2090	1610	2050	1310	0.00	296
18	e261	e16	e1820	e1530	e762	855	e1950	1760	2100	1200	0.00	215
19	e294	e251	e1550	e1150	e842	1090	e1210	1850	1810	1180	0.00	250
20	e341	e962	e1330	e1290	e919	1970	e786	2030	1200	1030	0.00	328
21	e311	e875	e1120	e1370	e1590	1500	e1610	2080	1960	779	0.00	218
22	e427	e1000	e973	e1160	e2320	1210	e1560	2070	2010	772	0.00	198
23	839	e1820	e864	e1070	e2240	1090	e1480	1720	1630	1070	0.00	192
24	670	e1370	e791	e1370	e2120	1090	e1400	1810	1660	1080	0.00	213
25	e769	e1190	e731	e2130	e1990	1140	e1360	2040	1800	1030	132	195
26	e711	e913	e680	e1840	e1730	1230	e1380	2120	2000	1070	496	197
27	e606	e759	e650	e1480	e1490	1100	e1450	2140	2110	959	490	162
28	e517	e735	e658	e1220	1190	1020	e1350	2050	2100	933	556	207
29	e427	e811	e619	e1070	---	996	e1350	1970	2110	1160	513	164
30	e473	e712	e590	e1070	---	963	e1450	2030	2100	1210	488	203
31	1190	---	e600	e1060	---	950	---	2160	---	959	481	---
TOTAL	12529	24432	32613	38193	31074	33312	44197	52840	56250	41182	4732.00	8028
MEAN	404	814	1052	1232	1110	1075	1473	1705	1875	1328	153	268
MAX	1190	1910	2340	2270	2320	1970	2290	2160	2110	2080	847	561
MIN	155	16	523	498	695	692	694	1010	1200	772	0.00	162
AC-FT	24850	48460	64690	75760	61640	66070	87660	104800	111600	81680	9390	15920
CAL YR 2001	TOTAL	268124.6	MEAN	735	MAX	2340	MIN	0.00	AC-FT	531800		
WTR YR 2002	TOTAL	379382.00	MEAN	1039	MAX	2340	MIN	0.00	AC-FT	752500		

e Estimated

12099100 WHITE RIVER ABOVE BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'13", long 122°00'13", in SW $\frac{1}{4}$ sec.35, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank, 200 ft below diversion dam, and 1.5 mi northeast of Buckley, and at river mile 24.2.

DRAINAGE AREA.--411 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 660 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Since November 1911, White River Canal has diverted water from left bank, 200 ft upstream, for storage into Lake Tapps. Water is returned to the White River 20.6 miles downstream via Lake Tapps Diversion, after power development at the Dieringer Powerplant. Since 1942, flows have been regulated by Mud Mountain Dam for flood control. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,750 ft³/s, Jan. 8, 2002, from rating curve extended above 6,000 ft³/s, gage height, 43.13 ft from crest-stage gage; minimum discharge, 37 ft³/s Jan. 25, 2000.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,750 ft³/s Jan. 8, from rating curve extended as explained above, gage height 43.13 ft; minimum recorded discharge 60 ft³/s Jan. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	240	99	e616	e134	172	e279	e364	332	e1360	546	e284	e313
2	229	87	e606	e129	175	e277	e402	392	1130	376	e349	e311
3	235	85	e548	e134	187	e274	e414	320	971	e331	e857	e309
4	231	107	504	e136	181	e283	e419	304	920	e329	e910	e301
5	236	99	459	e134	190	e280	e447	306	e1170	e332	e855	e310
6	231	107	287	e141	192	e279	e445	302	1340	e353	e838	e302
7	233	110	141	e1820	190	e280	e524	308	e908	e343	e795	e297
8	242	107	135	e4700	139	e284	e701	312	e598	e326	e785	e288
9	232	119	139	e5230	173	e286	e436	313	e349	e342	807	e299
10	240	113	134	e2670	185	e290	e423	311	e255	e364	891	e306
11	231	115	124	e1460	182	e338	e780	314	e365	e434	912	e305
12	230	118	153	e1220	185	e427	1010	328	486	394	837	e309
13	232	113	e484	e1060	191	e263	e1190	329	786	e652	920	e304
14	248	1390	e1980	e945	189	e265	e2600	316	e1420	e647	988	e307
15	237	3430	418	e816	183	e270	e2780	314	e1640	e452	e954	e303
16	224	e2990	e1010	661	181	e276	e2980	312	e1530	e330	e912	e302
17	231	e1650	e2350	e187	176	e277	e2950	317	e998	e300	e873	e305
18	234	e1450	e991	e800	179	e283	e1930	319	e718	e303	e814	e301
19	236	e1240	e335	175	182	e306	e809	322	e769	e295	e783	e306
20	228	e1270	e172	137	175	e331	e1240	e466	e1110	e280	e789	e310
21	227	e1020	e142	138	319	e229	374	e662	e633	e368	e751	e291
22	227	e957	e137	113	e1310	e249	363	e698	e695	e411	e760	e299
23	232	e1310	e132	98	1330	e263	340	e813	e1160	e300	e775	e310
24	220	e1080	e130	105	e896	e271	288	e593	e860	e299	e785	e310
25	207	e731	e126	322	e268	e274	300	e422	e721	e310	e581	e307
26	213	e670	e125	144	e160	e268	298	e649	e763	e305	e295	e302
27	223	e557	e129	107	e154	e264	310	e930	e831	e289	e301	e300
28	209	e552	e132	100	e165	e283	289	e1510	e902	e284	e302	e304
29	227	e629	e134	96	---	e268	305	e2090	e2050	e299	e304	e302
30	223	e579	e132	84	---	e274	317	e2110	e1150	e290	e289	e290
31	221	---	e138	85	---	e276	---	e1690	---	e284	e293	---
TOTAL	7109	22884	13043	24081	8209	8767	26028	18704	28588	11168	21589	9103
MEAN	229	763	421	777	293	283	868	603	953	360	696	303
MAX	248	3430	2350	5230	1330	427	2980	2110	2050	652	988	313
MIN	207	85	124	84	139	229	288	302	255	280	284	288
AC-FT	14100	45390	25870	47760	16280	17390	51630	37100	56700	22150	42820	18060

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2002, BY WATER YEAR (WY)

MEAN	167	813	639	325	295	267	420	472	850	366	466	280
MAX	229	1561	1380	777	346	312	868	603	1479	662	696	339
(WY)	2002	2000	2000	2002	2001	2001	2002	2002	1999	1999	2002	2000
MIN	133	116	115	84.4	205	172	138	349	348	215	248	224
(WY)	2000	2001	2001	2000	1999	1999	1999	2001	2001	2000	2000	1999

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1999 - 2002	
ANNUAL TOTAL	121239		199273			
ANNUAL MEAN	332		546		430	
HIGHEST ANNUAL MEAN					546	
LOWEST ANNUAL MEAN					245	
HIGHEST DAILY MEAN	3430		Nov 15		5400	
LOWEST DAILY MEAN	85		Nov 3		68	
ANNUAL SEVEN-DAY MINIMUM	99		Nov 1		72	
ANNUAL RUNOFF (AC-FT)	240500		395300		311800	
10 PERCENT EXCEEDS	402		1160		887	
50 PERCENT EXCEEDS	291		307		291	
90 PERCENT EXCEEDS	119		136		115	

e Estimated

PUYALLUP RIVER BASIN

12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE 1/4 SE 1/4 sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on left bank at downstream side of county road bridge, 1.0 mi northeast of Buckley, and at mile 0.1.

DRAINAGE AREA.--15.4 mi².

PERIOD OF RECORD.--March 1977 to September 1981, December 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above NGVD of 1929, from topographic map. Prior to January 25, 1984, at site 25 ft upstream at datum 0.91 ft higher. Prior to Mar. 27, 1996, at site 10 ft downstream, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair except for discharges above 200 ft³/s, which are poor. Flow partly regulated by millpond at mile 5.6. Diversions upstream from station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft³/s during low-flow periods enters Boise Creek upstream from millpond. U.S. Geological Survey satellite telemeter at station. Chemical analyses November 1961 to July 1964.

AVERAGE DISCHARGE.--24 years (water years 1978-81, 1983-2002), 32.8 ft³/s, 23,730 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,200 ft³/s Feb. 8, 1996, gage height, 4.26 ft from rating curve extended above 180 ft³/s on basis of slope-area measurement of peak flow 0.94 mi upstream from station; minimum discharge, 1.7 ft³/s Sept. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1030	304	3.06	Mar. 19	2245	*315	*3.11
Nov. 22	2000	242	2.77	Apr. 14	0030	263	2.87
Dec. 13	1630	242	2.76				

Minimum discharge, 4.4 ft³/s Sept. 25, 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	29	60	28	51	34	46	29	23	29	8.1	6.9
2	5.7	27	52	37	44	31	45	29	21	23	7.8	7.4
3	5.3	23	53	27	43	29	41	28	20	19	8.2	10
4	5.2	22	43	26	38	28	40	27	19	18	8.7	7.4
5	4.9	36	49	25	39	33	41	29	33	16	11	6.8
6	5.3	23	62	30	39	33	45	29	22	15	11	6.8
7	5.5	19	48	109	53	29	46	27	20	16	8.4	6.9
8	9.2	17	45	103	79	26	42	26	20	19	8.2	6.8
9	8.7	15	45	78	52	25	48	24	19	14	7.8	6.7
10	11	14	56	61	47	25	62	23	17	12	7.7	5.8
11	12	13	53	50	43	59	59	22	16	12	7.7	6.0
12	8.0	16	46	47	37	75	65	22	16	11	7.3	6.3
13	8.5	29	142	39	34	60	102	25	15	11	7.1	6.0
14	11	205	123	36	31	49	189	31	15	11	7.0	5.6
15	12	122	89	32	29	46	115	29	15	11	7.0	5.4
16	9.8	91	116	29	29	42	85	26	14	11	6.9	5.9
17	11	65	117	28	29	42	71	26	14	10	6.7	6.6
18	8.9	48	85	28	34	37	59	25	18	9.9	6.5	5.6
19	12	46	78	40	36	108	51	24	19	10	8.4	5.9
20	13	40	62	72	36	211	46	27	14	9.9	8.8	7.3
21	14	48	53	72	70	99	42	34	13	9.8	7.0	6.3
22	17	106	45	51	81	72	40	36	12	9.2	6.5	5.7
23	21	111	39	41	106	60	36	33	12	9.4	6.5	5.2
24	19	72	36	58	81	55	33	28	12	9.1	6.7	4.9
25	31	57	33	123	59	55	31	26	11	9.1	6.8	4.7
26	21	47	30	82	48	51	31	25	11	9.7	7.4	4.5
27	28	39	29	60	41	47	46	26	13	9.7	7.0	4.7
28	21	67	31	48	37	44	35	39	50	9.5	6.6	5.1
29	15	82	27	41	---	46	31	35	71	11	6.3	7.2
30	19	60	26	54	---	44	29	29	41	9.1	6.6	5.4
31	39	---	29	64	---	42	---	26	---	8.3	6.9	---
TOTAL	417.6	1589	1802	1619	1346	1637	1652	865	616	391.7	234.6	185.8
MEAN	13.5	53.0	58.1	52.2	48.1	52.8	55.1	27.9	20.5	12.6	7.57	6.19
MAX	39	205	142	123	106	211	189	39	71	29	11	10
MIN	4.9	13	26	25	29	25	29	22	11	8.3	6.3	4.5
AC-FT	828	3150	3570	3210	2670	3250	3280	1720	1220	777	465	369

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2002, BY WATER YEAR (WY)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	13.8	46.6	52.3	55.2	55.9	44.7	39.9	31.0	23.7	14.8	9.15	9.38														
MAX	29.8	124	96.2	162	145	76.7	69.3	57.5	55.1	35.5	16.3	29.5														
(WY)	1986	1991	1978	1984	1996	1997	1991	1984	1990	1983	1993	1978														
MIN	4.65	7.85	18.7	20.9	17.0	25.1	16.5	15.6	8.45	6.20	4.72	3.37														
(WY)	1990	1980	2001	2001	2001	1978	1995	1982	1982	1987	1987	1989														

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1977 - 2002

ANNUAL TOTAL	9999.6	12355.7		
ANNUAL MEAN	27.4	33.9	32.8	
HIGHEST ANNUAL MEAN			50.4	1991
LOWEST ANNUAL MEAN			21.3	2001
HIGHEST DAILY MEAN	205	Nov 14	211	Mar 20
LOWEST DAILY MEAN	4.9	Oct 5	4.5	Sep 26
ANNUAL SEVEN-DAY MINIMUM	5.4	Oct 1	5.0	Sep 22
ANNUAL RUNOFF (AC-FT)	19830	24510	23730	
10 PERCENT EXCEEDS	60	70	66	
50 PERCENT EXCEEDS	19	28	23	
90 PERCENT EXCEEDS	6.8	6.8	6.9	

PUYALLUP RIVER BASIN

12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE ¼ SE ¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 500 ft upstream from State Highway 410 bridge, 200 ft downstream from Boise Creek, 1.0 mi northeast of Buckley, and at mile 23.3

DRAINAGE AREA.--427 mi².

PERIOD OF RECORD.--July 1910 to November 1911, April 1977 to current year. February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 620 ft above NGVD of 1929, from topographic map. June 8, 1910, to Nov. 30, 1911, nonrecording gage at site 150 ft upstream at different datum, and Jan. 18, 1913, to Sept. 30, 1938, water-stage recorder at site 100 ft upstream at datum NGVD of 1929 (levels by Puget Sound Energy).

REMARKS.--No estimated daily discharges. Records fair. Since November 1911, White River Canal (station 12099000) has diverted from left bank 1.0 mi upstream for storage in Lake Tapps (station 12101000). Water is returned to White River 19.7 mi downstream via the Lake Tapps Diversion (station 12101100) after power development at White River Powerplant at Dieringer. Since 1942, flow regulated by Mud Mountain Lake (station 12098000) for flood control. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--25 years (water years 1978-2002), 547 ft³/s, 396,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft³/s Dec. 18, 1917, during period of combined flows; minimum, not determined. River, excluding canal, since April 1977, maximum discharge, 14,900 ft³/s Nov. 24, 1986, gage height, 8.48 ft; minimum discharge, 25 ft³/s Nov. 19, 1979, gage height, 2.41 ft; minimum daily discharge, 31 ft³/s July 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,560 ft³/s Jan. 9, gage height, 6.49 ft; minimum discharge, 67 ft³/s Jan. 17, minimum daily discharge, 114 ft³/s Nov. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	254	131	691	168	230	328	425	434	1400	565	299	321
2	239	118	677	172	224	320	459	503	1130	391	365	319
3	243	114	616	166	233	320	468	421	1010	354	874	321
4	240	134	566	166	225	323	473	399	978	352	927	309
5	240	140	508	166	231	322	499	404	1220	352	869	318
6	237	138	309	178	230	323	499	398	1450	373	845	310
7	238	137	191	1990	244	320	585	402	958	363	800	306
8	246	132	180	4910	230	319	755	400	657	351	785	297
9	237	134	184	5370	229	320	495	401	382	358	807	307
10	244	133	191	2830	234	325	497	397	284	384	874	313
11	242	134	182	1600	228	408	856	398	391	455	891	312
12	233	140	197	1370	226	515	1120	409	584	417	860	316
13	233	150	662	1140	228	331	1340	415	887	674	920	311
14	250	1630	2120	1030	222	323	2820	409	1490	662	973	314
15	248	3490	606	905	223	323	2940	402	1700	470	968	309
16	232	3180	1170	700	214	327	3110	398	1580	350	928	309
17	235	1810	2500	245	210	325	3010	403	1100	318	886	313
18	232	1550	1140	830	215	325	2100	403	782	319	825	308
19	237	1290	455	243	220	423	1070	404	834	310	796	313
20	233	1400	247	219	214	549	1430	656	1150	294	803	318
21	234	1090	207	221	342	336	512	888	674	381	762	299
22	237	1080	194	176	1430	329	486	927	737	423	770	307
23	251	1510	182	148	1440	326	464	1060	1190	314	784	316
24	240	1150	176	172	1040	331	400	847	892	313	798	316
25	242	836	170	441	371	334	405	665	753	321	595	313
26	232	713	166	247	237	329	404	803	791	318	304	308
27	244	612	165	182	227	322	439	1070	860	302	309	307
28	225	627	169	163	242	334	398	1560	963	297	310	311
29	227	729	167	150	---	326	406	2120	2100	315	311	310
30	236	659	165	150	---	326	417	2140	1230	302	298	297
31	257	---	171	162	---	327	---	1740	---	295	301	---
TOTAL	7418	25091	15324	26610	9839	10689	29282	22276	30157	11693	21837	9328
MEAN	239	836	494	858	351	345	976	719	1005	377	704	311
MAX	257	3490	2500	5370	1440	549	3110	2140	2100	674	973	321
MIN	225	114	165	148	210	319	398	397	284	294	298	297
AC-FT	14710	49770	30400	52780	19520	21200	58080	44180	59820	23190	43310	18500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2002, BY WATER YEAR (WY)

	185	677	913	707	871	447	455	557	691	449	366	206
MEAN	185	677	913	707	871	447	455	557	691	449	366	206
MAX	510	2557	4014	2888	3789	1363	1171	2165	1898	1473	825	511
(WY)	1986	1996	1978	1984	1996	1997	1989	1997	1984	1982	1978	1988
MIN	48.4	40.9	135	69.8	130	122	89.9	67.6	172	58.2	57.4	45.2
(WY)	1980	1980	2001	1979	1985	1985	1982	1977	1992	1978	1977	1979

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1977 - 2002

ANNUAL TOTAL		135130		219544		
ANNUAL MEAN		370		601		547
HIGHEST ANNUAL MEAN						1228
LOWEST ANNUAL MEAN						200
HIGHEST DAILY MEAN		3490	Nov 15	5370	Jan 9	13500
LOWEST DAILY MEAN		114	Nov 3	114	Nov 3	31
ANNUAL SEVEN-DAY MINIMUM		130	Nov 1	130	Nov 1	37
ANNUAL RUNOFF (AC-FT)		268000		435500		396300
10 PERCENT EXCEEDS		454		1220		1330
50 PERCENT EXCEEDS		349		336		197
90 PERCENT EXCEEDS		142		182		76

PUYALLUP RIVER BASIN

12100496 WHITE RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°15'58", long 122°13'43", in SE ¼ NE ¼ sec.36, T.21 N., R.4 E., King County, Hydrologic Unit 17110014, on left bank 100 ft downstream from railroad bridge, 2.7 mi upstream from the White River Power Plant tailrace, 2.9 mi south of Auburn, and at mile 6.3.

DRAINAGE AREA.--464 mi².

PERIOD OF RECORD.--October 1987 to September 1989, October 1990 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929.

REMARKS.--Records fair except estimated daily discharges, which are poor. Since November 1911, White River Canal (station 12099000) has diverted from left bank 18.0 mi upstream for storage in Lake Tapps (station 12101000). Water is returned to White River 2.7 mi downstream via the Lake Tapps Diversion (station 12101100) after power development at White River Powerplant at Dieringer. Since 1942, flow regulated by Mud Mountain Lake (station 12098000) for flood control. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--14 years (water years 1988-89, 1991-2002), 681 ft³/s, 493,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s Feb. 10, 1996, elevation, 83.15 ft; minimum discharge, 89 ft³/s Feb. 17, 18, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,840 ft³/s Jan. 9, elevation, 82.57 ft; minimum daily discharge, 133 ft³/s Nov. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	297	200	756	e229	336	439	e568	e581	e1450	e740	e409	e419
2	277	143	741	e232	319	437	e602	e673	e1220	e560	e477	e417
3	280	133	707	e227	316	435	e608	e570	e1080	e500	1000	e419
4	279	146	625	e227	303	435	e615	e551	e1040	e494	994	e409
5	272	181	602	e227	308	439	e635	e546	e1280	e494	951	e415
6	270	163	439	e239	312	439	e635	e538	e1550	e511	932	e407
7	275	160	268	1940	331	437	e750	e541	e1050	e499	901	e403
8	286	153	229	6020	e318	435	e900	e535	750	e492	886	e401
9	279	152	236	6820	e316	434	e722	e532	495	e499	897	e409
10	290	152	243	3730	327	437	e722	e530	383	e535	942	e417
11	293	153	268	2080	319	481	e1100	e538	415	e610	962	e415
12	274	165	239	1720	309	600	e1360	e549	e693	e553	936	e419
13	280	190	650	1470	306	492	e1610	e554	e1000	e809	973	e415
14	299	1990	2690	1330	302	466	2960	e551	e1620	e795	1010	e417
15	290	3890	786	1190	296	460	3200	e543	e1860	e584	1020	e411
16	276	4510	1100	978	286	460	3530	e535	e1700	e468	983	e410
17	277	2540	3130	e378	279	463	3670	e541	e1260	e425	954	e416
18	272	1800	1310	e969	289	460	2760	e546	e906	e427	912	e410
19	278	1340	581	373	295	510	1100	e541	e966	e418	894	e414
20	275	1530	315	316	298	e650	1610	e776	e1350	e402	900	e421
21	280	1170	e267	337	353	533	e663	e1000	e787	e493	875	e401
22	282	1240	e251	291	e1480	489	e616	e1040	e842	e527	880	e408
23	301	1860	e244	239	e1550	475	e589	e1170	e1310	e420	887	e416
24	287	1280	e239	264	e1150	470	e568	e940	e981	e418	898	e416
25	302	921	e234	559	525	468	e554	e769	e837	e427	e698	e413
26	278	789	e229	420	e368	460	e549	e899	e896	e432	e405	e408
27	309	676	e229	321	e372	452	e576	e1160	e951	e414	e411	e407
28	280	735	e231	281	e380	451	e538	e1650	e1080	e409	e411	e410
29	271	848	e229	256	---	449	e549	e2240	e2270	e420	e411	e409
30	283	761	e229	273	---	447	e565	e2230	1380	e411	e399	e398
31	341	---	e232	299	---	445	---	e1820	---	e407	e401	---
TOTAL	8833	29971	18529	34235	12343	14548	35424	26189	33402	15593	24609	12350
MEAN	285	999	598	1104	441	469	1181	845	1113	503	794	412
MAX	341	4510	3130	6820	1550	650	3670	2240	2270	809	1020	421
MIN	270	133	229	227	279	434	538	530	383	402	399	398
AC-FT	17520	59450	36750	67910	24480	28860	70260	51950	66250	30930	48810	24500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	294	996	1113	839	1087	539	691	690	744	426	465	325			
MAX	537	2835	3794	2371	4575	1426	1415	2200	1798	1277	873	560			
(WY)	1998	1996	1996	1997	1996	1997	1991	1997	1997	1988	1991	1988			
MIN	165	168	188	202	176	193	188	170	189	214	246	160			
(WY)	1992	1994	1994	2001	1994	1992	1995	1992	1992	1998	1994	1989			

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1988 - 2002

ANNUAL TOTAL	160290	266026													
ANNUAL MEAN	439	729								681					
HIGHEST ANNUAL MEAN										1411				1996	
LOWEST ANNUAL MEAN										243				1994	
HIGHEST DAILY MEAN				4510	Nov 16		6820	Jan 9		12800	Feb 10			1996	
LOWEST DAILY MEAN				133	Nov 3		133	Nov 3		116	Oct 12			1988	
ANNUAL SEVEN-DAY MINIMUM				154	Nov 2		154	Nov 2		129	Dec 27			1987	
ANNUAL RUNOFF (AC-FT)				317900			527700			493500					
10 PERCENT EXCEEDS				574			1370			1520					
50 PERCENT EXCEEDS				394			475			300					
90 PERCENT EXCEEDS				209			266			170					

e Estimated

PUYALLUP RIVER BASIN

12100500 WHITE RIVER NEAR SUMNER, WA

WATER-QUALITY RECORDS

LOCATION.--Lat 47°14'58", long 122°14'36", in NE ¼ SW ¼ sec.1, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, on right bank, 300 feet downstream from 8th Street E. bridge, 3.3 miles north of Sumner, WA, and at mile 4.9.

DRAINAGE AREA.--470 mi².

PERIOD OF RECORD.--Water years 1961-75, August to September 2002.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August to September 2002.

pH: August to September 2002.

WATER TEMPERATURE: August to September 2002.

DISSOLVED OXYGEN: August to September 2002.

INSTRUMENTATION.--Water-quality monitor since August 2002. Electronic data logger with 30-minute logging interval.

REMARKS.--Interruption in record due to malfunction of the recording instrument and removal for servicing. Specific conductance records good. pH records good, except for Aug. 8-9, which are fair. Water temperature records excellent. Dissolved-oxygen records good, except for Sept. 23-30, which are poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--No previous record.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 88 uS/cm on Sept. 29; minimum recorded, 50 uS/cm on Aug. 3, but may have been lower during periods of missing record.

pH: Maximum recorded, 9.0 units on Sept. 13-14 and Sept. 28-30, but may have been higher during periods of missing record; minimum recorded, 7.2 units on Aug. 3 and 9, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum recorded, 21.1°C on Aug. 28, but may have been higher during periods of missing record; minimum recorded, 9.6°C on Sept. 22.

DISSOLVED OXYGEN: Maximum recorded, 11.6 mg/L Sept. 28; minimum recorded, 8.0 mg/L Sept. 9.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), AUGUST TO SEPTEMBER 2002

DAY	AUGUST			SEPTEMBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	69	66	68
2	---	---	---	68	61	65
3	66	50	56	67	63	65
4	59	56	58	71	61	66
5	61	58	59	75	70	71
6	64	60	62	78	72	75
7	---	---	---	78	75	77
8	---	---	---	80	76	77
9	69	66	68	83	79	80
10	67	62	65	83	80	82
11	64	60	62	81	77	79
12	65	60	62	77	74	75
13	---	---	---	76	72	74
14	---	---	---	76	71	73
15	---	---	---	73	70	72
16	---	---	---	73	69	71
17	60	57	59	77	70	74
18	62	59	61	---	---	---
19	64	61	63	---	---	---
20	65	61	63	78	74	76
21	65	62	64	79	72	74
22	66	60	63	82	76	78
23	64	59	62	84	76	80
24	61	57	59	84	78	80
25	63	57	60	86	78	81
26	68	63	66	87	79	83
27	70	65	68	87	79	83
28	68	62	66	87	82	84
29	66	61	64	88	81	84
30	66	62	64	87	82	84
31	69	62	66	---	---	---
MONTH	70	50	63	88	61	76
YEAR	88	50	70			

PUYALLUP RIVER BASIN

12100500 WHITE RIVER NEAR SUMNER, WA--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, AUGUST TO SEPTEMBER 2002

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
AUGUST			SEPTEMBER			
1	---	---	---	7.7	7.5	7.5
2	---	---	---	7.6	7.4	7.5
3	7.4	7.2	7.3	7.6	7.4	7.5
4	7.4	7.4	7.4	7.7	7.4	7.5
5	7.5	7.4	7.4	7.8	7.4	7.5
6	7.6	7.4	7.4	7.9	7.5	7.5
7	---	---	---	8.1	7.5	7.6
8	---	---	---	8.1	7.5	7.6
9	7.7	7.2	7.4	8.5	7.5	7.6
10	7.6	7.4	7.5	8.8	7.5	7.6
11	7.8	7.5	7.7	8.9	7.5	7.6
12	7.8	7.4	7.6	8.9	7.4	7.5
13	---	---	---	9.0	7.4	7.5
14	---	---	---	9.0	7.4	7.5
15	---	---	---	8.4	7.5	7.5
16	---	---	---	8.4	7.4	7.5
17	7.8	7.5	7.6	8.8	7.5	7.5
18	7.6	7.5	7.6	---	---	---
19	7.6	7.5	7.6	---	---	---
20	7.7	7.5	7.6	8.9	7.5	7.5
21	7.6	7.5	7.6	8.7	7.4	7.5
22	7.6	7.5	7.5	8.8	7.4	7.5
23	7.6	7.5	7.5	8.8	7.3	7.5
24	7.6	7.4	7.5	8.9	7.3	7.4
25	7.5	7.4	7.5	8.9	7.3	7.4
26	7.6	7.4	7.5	8.9	7.3	7.5
27	7.6	7.4	7.4	8.9	7.3	7.4
28	7.6	7.4	7.4	9.0	7.3	7.5
29	7.6	7.4	7.5	9.0	7.3	7.6
30	7.6	7.5	7.5	9.0	7.4	7.5
31	7.7	7.4	7.5	---	---	---
MAX	7.8	7.5	7.7	9.0	7.5	7.6
MIN	7.4	7.2	7.3	7.6	7.3	7.4
YEAR	MAX			MAXIMUM 9.0	MINIMUM 7.4	
	MIN			MAXIMUM 7.5	MINIMUM 7.2	
	MEDIAN			MAXIMUM 7.7	MINIMUM 7.3	

TEMPERATURE, WATER (DEG. C), AUGUST TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
AUGUST			SEPTEMBER			
1	---	---	---	16.6	14.1	15.3
2	---	---	---	16.0	12.7	14.5
3	16.0	12.0	13.7	17.6	13.3	15.1
4	15.2	13.0	13.9	16.6	11.4	13.9
5	15.8	11.7	13.4	16.3	10.7	13.4
6	15.5	12.6	13.7	16.4	11.3	13.7
7	---	---	---	15.8	12.2	13.7
8	---	---	---	13.7	10.9	12.5
9	19.2	14.0	16.3	17.7	12.0	14.5
10	16.8	14.1	16.0	18.5	13.3	15.8
11	18.3	13.9	15.9	18.6	13.5	16.0
12	18.8	14.4	16.3	18.9	13.6	16.1
13	---	---	---	19.0	13.5	16.2
14	---	---	---	18.7	13.7	16.1
15	---	---	---	16.4	14.3	15.1
16	---	---	---	15.3	13.2	14.3
17	18.1	14.2	15.8	16.2	12.4	14.0
18	17.0	13.6	15.1	---	---	---
19	16.0	13.4	14.5	---	---	---
20	15.3	13.4	14.6	16.2	12.4	14.1
21	15.3	12.5	13.5	14.4	9.9	12.3
22	17.6	12.6	14.8	14.7	9.6	12.1
23	18.6	14.1	16.1	15.6	10.5	12.9
24	18.2	14.8	16.3	16.0	11.2	13.5
25	15.9	14.8	15.4	15.9	11.3	13.5
26	17.3	13.6	15.4	14.8	11.2	12.9
27	19.7	13.3	16.3	14.7	10.8	12.6
28	21.1	14.5	17.6	15.0	10.6	12.7
29	20.4	15.4	17.6	13.6	11.5	12.5
30	19.1	14.4	16.4	12.3	9.8	11.0
31	18.3	12.5	15.4	---	---	---
MONTH	21.1	11.7	15.4	19.0	9.6	13.9
YEAR	21.1	9.6	14.6			

PUYALLUP RIVER BASIN

12100500 WHITE RIVER NEAR SUMNER, WA--Continued

OXYGEN DISSOLVED (MG/L), AUGUST TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
AUGUST			SEPTEMBER			
1	---	---	---	9.5	8.9	9.3
2	---	---	---	10.0	9.2	9.6
3	10.7	9.6	10.2	9.8	8.9	9.4
4	10.4	10.0	10.2	10.2	9.4	9.8
5	10.7	9.9	10.4	10.7	9.4	10.0
6	10.6	9.9	10.3	10.7	9.4	10.0
7	---	---	---	10.5	9.6	10.0
8	---	---	---	10.9	9.8	10.3
9	9.8	8.9	9.4	10.3	8.0	9.4
10	9.7	9.1	9.3	10.7	8.9	9.7
11	9.7	8.9	9.4	10.6	8.9	9.7
12	9.8	8.9	9.3	10.5	9.0	9.7
13	---	---	---	10.6	8.6	9.8
14	---	---	---	9.6	8.3	8.9
15	---	---	---	10.4	8.8	9.7
16	---	---	---	10.5	9.5	9.9
17	9.7	9.0	9.4	10.4	9.4	9.9
18	9.9	9.2	9.6	---	---	---
19	10.0	9.5	9.8	---	---	---
20	10.2	9.6	9.9	10.6	9.0	9.7
21	10.4	9.4	9.9	11.0	9.3	10.0
22	10.0	9.1	9.6	11.0	9.2	10.1
23	9.7	8.9	9.4	11.5	9.2	10.0
24	9.6	9.0	9.3	11.0	9.4	10.1
25	9.7	9.3	9.5	11.2	9.4	10.2
26	9.8	9.2	9.6	11.2	9.6	10.3
27	10.2	8.8	9.6	11.1	9.3	10.2
28	9.7	8.4	9.1	11.6	9.0	10.2
29	9.4	8.4	8.9	10.9	9.2	10.0
30	9.6	8.8	9.2	11.4	9.7	10.4
31	10.0	8.7	9.4	---	---	---
MONTH	10.7	8.4	9.6	11.6	8.0	9.9
YEAR	11.6	8.0	9.7			

12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE 1/4 NE 1/4 sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi east of Dieringer, and 3.5 mi northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 0.7 ft above NGVD of 1929 (levels by Puget Sound Energy).

REMARKS.--Reservoir is formed by a diked natural lake into which a large part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959, put into use Oct. 1, 1958), 46,600 acre-ft between gage heights of 515 ft, normal minimum pool, and 543 ft, normal maximum pool. Dead storage unknown. Figures given herein represent usable contents. Reservoir is used for power development at the White River Powerplant at Dieringer. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Prior to October 1, 1990, and July 1996 to May 1997, gage-height record furnished by Puget Sound Energy. Contents curve furnished by Puget Sound Energy.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft June 30, 1958, gage height, 541.57 ft, capacity table dated Jan. 19, 1920; maximum gage height observed, 543.07 ft July 8, 1990; minimum contents observed, not determined (below normal minimum pool) Apr. 3, 1978, gage height, 514.90 ft; minimum gage height, 505.70 ft June 24, 1912.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 46,353 acre-ft July 13, gage height, 542.88 ft; minimum contents 11,311 acre-ft Jan. 17, gage height, 525.27 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	542.18	44,590	--
Oct. 31.....	530.95	20,216	-24,374
Nov. 30.....	531.33	20,902	+686
Dec. 31.....	526.39	12,916	-7,986
CAL YR 2001.....	--	--	-27,537
Jan. 31.....	528.62	16,321	+3,405
Feb. 28.....	535.18	28,465	+12,144
Mar. 31.....	535.25	28,614	+149
Apr. 30.....	539.25	37,552	+8,938
May 31.....	542.53	45,472	+7,920
June 30.....	542.67	45,824	+352
July 31.....	542.34	44,993	-831
Aug. 31.....	542.33	44,968	-25
Sept. 30.....	540.81	41,241	-3,727
WTR YR 2002.....	--	--	-3,349

PUYALLUP RIVER BASIN

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft downstream from White River Powerplant at Dieringer, and 1,400 ft upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 42.36 ft above NGVD of 1929 (levels by Puget Sound Power and Light Co.). Prior to September 30, 1990, at same site at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good except for discharges below 15 ft³/s, which are fair. Flow regulated by White River Powerplant. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--44 years (water years 1959-2002), 944 ft³/s, 684,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s Jan. 29, 1965, gage height, 6.23 ft, datum then in use; maximum gage height, 12.44 ft Dec. 1, 1995 (backwater from White River); no flow many days in July and August 1990, Sept. 29, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,180 ft³/s June 13, gage height, 9.63 ft; minimum discharge, 2.0 ft³/s Aug. 14-16, 18, 19, 21, 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	651	1130	1030	1510	1400	1350	1410	2050	1960	846	23
2	998	730	1260	990	1370	1400	1100	1410	2050	1960	29	284
3	945	652	1140	34	34	1400	1030	1410	2060	1620	29	515
4	983	738	1170	1110	895	1400	1110	1400	2060	1620	29	467
5	955	679	1140	1150	52	1410	1040	1400	2070	1620	29	604
6	729	683	1170	967	1020	1200	63	1400	2070	1620	29	572
7	29	939	666	1250	890	1080	855	1400	2050	1170	25	27
8	703	1240	884	1650	997	1050	1060	1390	1690	1880	17	435
9	658	739	587	1230	939	890	1150	1400	1660	1660	17	27
10	741	784	1140	1560	950	24	1410	1420	1940	1580	17	27
11	986	831	1200	1540	1060	888	1410	1420	1940	1590	17	456
12	701	441	569	893	1040	1030	1400	1420	2010	1160	17	259
13	29	876	1320	1060	1080	1100	1410	1420	1950	1470	11	29
14	29	1110	1530	1000	81	1150	1410	1420	1970	1470	2.5	29
15	1080	1170	1850	1020	29	1330	1400	1410	1940	1470	2.2	29
16	984	1150	1870	1070	29	81	1400	1400	1860	1180	2.3	271
17	1280	1190	1890	646	865	27	1390	1350	1900	1120	2.6	547
18	990	26	1890	955	1130	996	1410	762	2000	1430	2.5	663
19	415	240	1920	166	1200	1170	1400	656	2000	1440	2.5	27
20	458	1200	1910	1020	959	1410	1400	1220	2010	1440	2.6	27
21	29	1070	1890	1240	956	1400	1400	1480	1770	477	2.5	27
22	1140	529	1780	1560	53	1410	1400	1480	1910	887	2.6	532
23	1070	526	1840	1180	32	1410	1400	1780	1660	1410	2.6	225
24	1260	576	1830	1010	1280	1410	1400	1780	1660	1130	2.6	27
25	1070	434	1790	1190	1430	1370	1420	2000	1740	875	2.4	27
26	1140	938	1690	1550	1090	1070	1420	1950	1780	969	208	578
27	1030	812	1080	1550	1150	1070	1420	1970	1760	134	754	27
28	1250	1140	1030	1550	1400	963	1420	2050	1970	1420	404	27
29	1280	636	867	1520	---	1140	1430	2050	1970	1150	484	587
30	1130	608	470	1070	---	1400	1420	2040	1960	1110	480	1340
31	1050	---	1500	1200	---	1400	---	2040	---	918	23	---
TOTAL	26162	23338	42003	34961	23521	34479	38328	47138	57460	40940	3494.9	8715
MEAN	844	778	1355	1128	840	1112	1278	1521	1915	1321	113	290
MAX	1280	1240	1920	1650	1510	1410	1430	2050	2070	1960	846	1340
MIN	29	26	470	34	29	24	63	656	1660	134	2.2	23
AC-FT	51890	46290	83310	69350	46650	68390	76020	93500	114000	81200	6930	17290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2002, BY WATER YEAR (WY)

MEAN	619	895	1084	1184	1102	1067	1089	1054	1244	929	577	527
MAX	1443	1516	1719	1939	1819	1545	1716	1715	1925	1807	1018	1251
(WY)	1960	1959	1967	1967	1970	1961	1966	1961	2000	1999	1983	1974
MIN	163	200	135	480	159	376	298	261	415	6.09	5.88	8.11
(WY)	1988	1988	2001	1993	2001	1989	1971	1972	1972	1988	1988	1988

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1958 - 2002

ANNUAL TOTAL	292134.09	380539.9		
ANNUAL MEAN	800	1043	944	
HIGHEST ANNUAL MEAN			1232	1961
LOWEST ANNUAL MEAN			654	1988
HIGHEST DAILY MEAN	2030	Jun 14	2070	Jun 5
LOWEST DAILY MEAN	0.51	Aug 8	2.2	Aug 15
ANNUAL SEVEN-DAY MINIMUM	0.55	Aug 8	2.5	Aug 14
ANNUAL RUNOFF (AC-FT)	579400		754800	684100
10 PERCENT EXCEEDS	1590		1870	1640
50 PERCENT EXCEEDS	884		1130	960
90 PERCENT EXCEEDS	17		29	87

12101104 WHITE RIVER ABOVE TACOMA AVENUE BRIDGE AT SUMNER, WA

WATER-QUALITY RECORDS

LOCATION.--Lat 47°13'01.9", long 122°14'08.5", in SW ¼ SE ¼ sec.13, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, on left bank, 0.1 mile upstream from Tacoma Avenue Bridge in Sumner, and at mile 1.8.

DRAINAGE AREA.--470 mi², approximately.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 2001 to September 2002 (seasonal records).
 pH: August 2001 to September 2002 (seasonal records).
 WATER TEMPERATURE: August 2001 to September 2002 (seasonal records).
 DISSOLVED OXYGEN: August 2001 to September 2002 (seasonal records).

INSTRUMENTATION.--Water-quality monitor since August 2001. Electronic data logger with 30-minute logging interval.

REMARKS.--Interruption in record due to routine instrument service and to instrument failures. Specific conductance records excellent, except for Aug. 21-30, which are good. pH records excellent, except for Sept. 19-23, which are good. Water temperature records excellent. Dissolved oxygen records good Aug. 17 to Sept. 30; fair Aug. 3-9 and Aug. 13; and poor Aug. 10-12 and Aug. 14-16.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 98 uS/cm on Sept. 30, 2001; minimum recorded, 50 uS/cm on Aug. 30, 2002.
 pH: Maximum recorded, 8.3 on Sept. 28, 2002; minimum recorded, 6.7 on Sept. 4-6, 2002.
 WATER TEMPERATURE: Maximum recorded, 20.4° C on Aug. 10, 2001; minimum recorded, 9.7° C on Sept. 28, 2001.
 DISSOLVED OXYGEN: Maximum recorded, 11.4 mg/L Sept. 21, 2002; minimum recorded 7.9 mg/L Aug. 12, 2001 and Sept. 3, 2002.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 90 uS/cm on Sept. 30; minimum recorded, 50 uS/cm on Aug. 30.
 pH: Maximum recorded, 8.3 on Sept. 28; minimum recorded, 6.7 on Sept. 4-6.
 WATER TEMPERATURE: Maximum recorded, 19.6° C on Aug. 13, but may have been higher during periods of missing record; minimum recorded, 9.9° C on Sept. 22.
 DISSOLVED OXYGEN: Maximum recorded, 11.4 mg/L Sept. 21; minimum recorded, 7.9 mg/L Sept. 3.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), AUGUST TO SEPTEMBER 2002

DAY	AUGUST			SEPTEMBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	71	69	70
2	---	---	---	70	55	62
3	70	52	59	67	52	59
4	61	60	60	74	53	61
5	66	60	63	76	53	63
6	68	63	66	78	55	65
7	---	---	---	80	78	79
8	---	---	---	82	55	70
9	68	64	66	85	82	83
10	65	60	63	86	82	84
11	62	58	60	85	57	71
12	62	59	61	81	56	73
13	62	57	60	80	75	77
14	58	55	57	79	74	77
15	57	53	55	78	74	76
16	58	56	57	77	56	70
17	60	58	59	77	56	66
18	62	59	61	---	---	---
19	64	61	63	---	---	---
20	66	62	64	88	80	82
21	68	63	66	86	79	81
22	69	65	68	88	61	74
23	68	65	67	89	60	81
24	66	63	65	87	82	84
25	71	64	66	89	83	84
26	78	62	70	89	60	73
27	77	55	62	88	63	85
28	74	53	63	89	84	85
29	69	51	59	89	61	73
30	67	50	58	90	56	66
31	71	66	68	---	---	---
MONTH	78	50	62	90	52	74
YEAR	90	50	68			

PUYALLUP RIVER BASIN

12101104 WHITE RIVER ABOVE TACOMA AVENUE BRIDGE AT SUMNER, WA--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, AUGUST TO SEPTEMBER 2002

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
AUGUST			SEPTEMBER			
1	---	---	---	7.1	7.0	7.0
2	---	---	---	7.0	6.9	7.0
3	7.3	7.1	7.2	7.0	6.8	7.0
4	7.3	7.2	7.3	7.0	6.7	7.0
5	7.3	7.2	7.2	6.9	6.7	6.8
6	7.4	7.2	7.3	6.9	6.7	6.8
7	---	---	---	7.1	6.9	7.0
8	---	---	---	7.0	6.8	6.9
9	7.3	7.0	7.1	7.5	6.9	7.1
10	7.1	7.0	7.0	7.8	7.0	7.1
11	7.1	7.0	7.0	7.2	6.9	7.0
12	7.1	7.0	7.0	7.4	6.9	7.0
13	7.1	7.0	7.0	8.1	7.0	7.1
14	7.0	7.0	7.0	8.0	7.0	7.1
15	7.0	7.0	7.0	7.4	7.0	7.1
16	7.1	7.0	7.1	7.3	6.9	7.0
17	7.1	7.0	7.1	7.1	6.8	7.0
18	7.1	7.0	7.1	---	---	---
19	7.1	7.0	7.1	---	---	---
20	7.2	7.1	7.1	8.2	7.2	7.3
21	7.2	7.1	7.1	7.9	7.2	7.3
22	7.2	7.1	7.1	7.2	7.0	7.2
23	7.2	7.1	7.1	7.8	6.8	7.2
24	7.2	7.1	7.1	8.0	6.9	7.0
25	7.2	6.9	7.1	8.1	6.9	7.0
26	7.0	6.8	7.0	7.1	6.8	6.9
27	7.0	6.8	6.8	8.1	6.8	7.0
28	7.0	6.8	6.9	8.3	6.9	7.1
29	7.0	6.8	6.9	7.2	6.8	7.0
30	7.0	6.8	6.9	7.1	6.8	6.9
31	7.1	7.0	7.0	---	---	---
MAX	7.4	7.2	7.3	8.3	7.2	7.3
MIN	7.0	6.8	6.8	6.9	6.7	6.8
YEAR	MAX			MAXIMUM 8.3	MINIMUM 6.9	
	MIN			MAXIMUM 7.2	MINIMUM 6.7	
	MEDIAN			MAXIMUM 7.3	MINIMUM 6.8	

TEMPERATURE, WATER (DEG. C), AUGUST TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
AUGUST			SEPTEMBER			
1	---	---	---	16.8	13.9	15.1
2	---	---	---	16.8	12.8	15.3
3	16.7	12.1	14.0	17.3	13.4	15.8
4	15.2	13.0	13.9	16.8	11.6	14.6
5	15.6	11.9	13.5	16.7	10.9	14.5
6	15.4	12.7	13.7	16.6	11.5	14.7
7	---	---	---	15.2	12.2	13.7
8	---	---	---	15.7	11.1	13.7
9	18.8	13.7	16.0	16.8	12.1	14.2
10	16.8	14.5	15.9	17.5	13.3	15.4
11	18.0	13.5	15.5	16.9	13.4	15.5
12	18.8	14.0	16.1	17.4	13.6	15.6
13	19.6	15.1	17.1	17.9	13.5	15.8
14	18.9	15.6	17.0	17.8	13.6	15.8
15	18.1	15.0	16.4	16.7	14.0	14.9
16	17.9	15.0	16.1	16.3	13.0	14.5
17	17.8	13.8	15.6	16.6	12.5	14.7
18	16.8	13.3	14.9	---	---	---
19	15.7	13.1	14.3	---	---	---
20	15.0	13.6	14.5	15.3	12.2	13.8
21	15.0	12.2	13.3	13.9	10.2	12.2
22	17.2	12.3	14.4	15.6	9.9	13.2
23	18.3	13.8	15.7	15.8	10.6	12.9
24	17.9	14.6	16.0	15.3	11.4	13.4
25	16.0	14.9	15.2	15.2	11.4	13.3
26	17.1	13.5	15.2	15.6	11.3	13.7
27	18.0	13.9	16.6	15.2	11.0	12.7
28	19.1	14.8	17.5	14.4	10.7	12.5
29	18.9	15.2	17.4	15.5	11.9	13.9
30	18.5	16.0	17.2	15.0	10.8	13.8
31	17.4	12.8	15.2	---	---	---
MONTH	19.6	11.9	15.5	17.9	9.9	14.3
YEAR	19.6	9.9	14.9			

PUYALLUP RIVER BASIN

12101104 WHITE RIVER ABOVE TACOMA AVENUE BRIDGE AT SUMNER, WA--Continued

OXYGEN DISSOLVED (MG/L), AUGUST TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
AUGUST			SEPTEMBER			
1	---	---	---	9.7	8.8	9.3
2	---	---	---	9.8	8.3	9.0
3	11.1	9.7	10.6	9.5	7.9	8.6
4	10.8	10.5	10.7	10.2	8.5	9.1
5	11.3	10.2	10.8	10.6	8.5	9.3
6	10.9	10.2	10.6	10.4	8.5	9.2
7	---	---	---	10.3	9.2	9.8
8	---	---	---	10.6	8.7	9.5
9	10.0	9.1	9.5	10.3	8.9	9.8
10	9.8	9.3	9.5	10.1	8.7	9.4
11	10.0	9.1	9.6	10.2	8.3	9.1
12	9.8	9.0	9.5	10.0	8.4	9.2
13	9.7	8.9	9.3	10.0	8.6	9.3
14	9.6	8.9	9.3	10.1	8.8	9.5
15	9.8	9.2	9.5	10.1	9.0	9.6
16	9.8	9.3	9.6	10.3	8.7	9.6
17	10.0	9.1	9.7	10.4	8.7	9.3
18	10.2	9.3	9.7	---	---	---
19	10.1	9.3	9.7	---	---	---
20	9.6	9.4	9.5	10.8	9.5	10.1
21	10.3	9.6	9.9	11.4	9.6	10.5
22	10.2	9.0	9.7	11.1	8.9	9.8
23	9.8	8.8	9.4	10.8	8.5	9.9
24	9.6	8.8	9.2	10.5	8.9	9.7
25	9.4	9.0	9.3	10.5	8.9	9.7
26	9.8	8.9	9.3	10.4	8.3	9.0
27	10.1	8.5	9.1	10.7	8.3	9.7
28	9.8	8.6	9.0	11.0	9.2	10.1
29	9.6	8.3	8.8	9.7	8.7	9.2
30	9.2	8.2	8.8	9.8	8.6	9.2
31	10.0	8.8	9.4	---	---	---
MONTH	11.3	8.2	9.6	11.4	7.9	9.5
YEAR	11.4	7.9	9.5			

PUYALLUP RIVER BASIN

12101500 PUYALLUP RIVER AT PUYALLUP, WA

LOCATION.--Lat 47°12'31", long 122°19'33", in SE ¼ NW ¼ sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, on left bank 0.8 mi upstream from bridge at Clark Creek, 2.0 mi northwest of Puyallup City Hall, and at mile 6.6.

DRAINAGE AREA.--948 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Dec. 3, 1919, at sites 1.2 mi upstream and 900 ft upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft upstream at datum 9.61 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. All diverted water returned to river upstream from gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (station 12101000). Flood flow regulated by Mud Mountain Lake (station 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt upstream from station. U.S. Geological Survey satellite telemeter at station. Chemical analyses October 1958 to September 1968, October 1970 to September 1972, October 1974 to September 1994. Water temperatures July 1959 to September 1961, August 1965 to September 1966. Since 1912 the City of Tacoma pipeline diversion from Green River has released as much as 123 ft³/s daily, and from 1957-1990 an average of about 15 ft³/s per month into Puyallup River 0.5 mi east of McMillin. Since 1990 releases have been minimal.

AVERAGE DISCHARGE.--88 years (water years 1915-2002), 3,330 ft³/s, 2,413,000 acre-ft/yr, adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake, October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Dec. 10, 1933, elevation, 31.0 ft, present datum; minimum discharge, 306 ft³/s Sept. 25, 1955, elevation, 8.23 ft; minimum daily discharge, 400 ft³/s Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,000 ft³/s Jan. 8, elevation, 19.24 ft; minimum discharge, 829 ft³/s Oct. 8, elevation, 9.20 ft; minimum daily discharge, 906 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1900	2860	4540	3220	3800	3120	3210	3700	5760	5050	2290	1480
2	1900	2690	4670	3720	3550	3030	3040	3970	5380	4420	1670	1930
3	1830	2410	4460	2790	2120	2970	2880	3900	5250	3960	1960	2220
4	1920	2100	4120	3410	2790	2960	2930	3620	5180	3730	2030	1770
5	1880	2330	3990	3300	1990	2970	3030	3490	5860	3630	1930	1710
6	1610	2090	4000	3220	2900	2880	2360	3470	6340	3600	1890	1630
7	906	2120	3540	7500	3130	2570	3160	3320	5430	3390	1770	1080
8	1500	2130	3380	14100	4000	2520	3470	3250	4480	4600	1660	1400
9	1580	1820	3000	11300	3580	2390	3320	3150	3900	4270	1750	1020
10	1580	1740	3630	7950	3230	1530	4050	3080	3870	4190	2020	1140
11	2450	1750	3650	5790	3450	2940	4370	3000	4110	4350	2200	1640
12	1800	1460	2810	4660	3070	4710	5130	3000	4680	3970	2070	1570
13	1980	2230	4790	4280	2990	4060	5920	3250	5290	4480	2270	1290
14	2220	7880	9440	3980	1980	3650	12900	3600	6220	4520	2420	1310
15	2850	9280	6130	3790	1740	3630	9780	3440	6520	3840	2440	1340
16	2290	8550	6660	3630	1690	2350	8230	3260	6090	3290	2240	1570
17	2340	5800	11400	2950	2370	2100	7470	3260	5310	3200	2140	1760
18	1960	3920	7380	3200	2740	2730	6160	2790	5050	3450	1950	1720
19	1410	3530	5630	2620	2920	3210	4360	2610	4890	3440	1860	1240
20	1610	e4570	4780	3390	2820	6250	4770	3390	5040	3260	1830	1280
21	1130	e4230	4360	3920	3340	4720	3840	4380	4640	2410	1770	1130
22	2340	e4250	4010	4120	4820	4080	3600	4580	4870	2800	1800	1560
23	3170	e5700	3880	3290	5210	3850	3520	4670	5060	3470	1890	1320
24	2760	e4720	3790	3650	5870	3740	3370	4370	4720	4720	3300	1150
25	2680	e3800	3700	5260	4530	3980	3340	4320	4660	2990	1880	1120
26	2740	e3730	3570	5380	3460	3560	3350	4540	4920	3150	1680	1530
27	2700	e3370	3030	4510	3140	3370	3620	5120	5290	2080	2200	1110
28	2540	3880	3050	4060	3200	3140	3560	6330	5670	3130	2080	980
29	2600	4210	2790	3730	---	3140	3460	7530	8500	3360	2240	1570
30	2350	4090	2090	3380	---	3340	3500	7530	6930	3300	2090	2140
31	3310	---	3510	3300	---	3250	---	6440	---	2950	1420	---
TOTAL	65836	113240	139780	143400	90430	102740	135700	126360	159910	111580	61390	43710
MEAN	2124	3775	4509	4626	3230	3314	4523	4076	5330	3599	1980	1457
MAX	3310	9280	11400	14100	5870	6250	12900	7530	8500	5050	2440	2220
MIN	906	1460	2090	2620	1690	1530	2360	2610	3870	2080	1420	980
AC-FT	130600	224600	277300	284400	179400	203800	269200	250600	317200	221300	121800	86700
MEAN†	1727	3787	4379	4680	3449	3315	4675	4203	5339	3585	1980	1395
CFSM†	1.82	3.99	4.62	4.94	3.64	3.50	4.93	4.43	5.63	3.78	2.09	1.47
IN.†	2.10	4.46	5.33	5.69	3.79	4.03	5.50	5.11	6.28	4.36	2.41	1.64
AC-FT†	106200	225300	269300	287800	191500	203900	278100	258500	317600	220500	121800	82970

CAL YR 2001 TOTAL 1010567 MEAN 2769 MAX 11400 MIN 895 AC-FT 2004000 MEAN† 2729 CFSM† 2.88 IN.† 39.08 AC-FT† 1976000
WTR YR 2002 TOTAL 1294076 MEAN 3545 MAX 14100 MIN 906 AC-FT 2567000 MEAN† 3541 CFSM† 3.74 IN.† 50.71 AC-FT† 2564000

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

PUYALLUP RIVER BASIN

12102075 CLARKS CREEK AT TACOMA ROAD, NEAR PUYALLUP, WA

LOCATION.--Lat 47°11'52", long 122°20'10", in NE ¼ NE ¼ sec.30, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, at private bridge at end of Tacoma Road, 1.0 mi northwest of Puyallup, and at mile 1.5.

DRAINAGE AREA.--13.0 mi².

PERIOD OF RECORD.--October 1992 to September 1995 (discharge measurements only). March 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929.

REMARKS.--No estimated daily discharges. Records fair.

AVERAGE DISCHARGE.--7 years (water year 1996-2002), 62.9 ft³/s, 65.75 in/yr, 45,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 190 ft³/s Nov. 14, 2001, elevation 23.13 ft, but was likely exceeded Feb. 8 or 9, 1996; maximum elevation, 25.60 ft Feb. 8 or 9, 1996, from inside high-water mark, affected by backwater from the Puyallup River; minimum daily discharge, 33 ft³/s June 26-29, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 190 ft³/s Nov. 14, elevation, 23.13 ft; minimum discharge, 37 ft³/s Apr. 2-4, 6-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	52	89	75	62	44	40	46	45	45	48	53
2	47	50	92	78	59	43	39	47	44	46	47	52
3	48	49	91	70	59	43	39	47	44	45	48	52
4	46	51	84	69	57	43	39	46	45	46	49	52
5	47	57	82	69	59	44	39	47	48	45	52	51
6	47	50	87	74	59	43	39	47	45	45	52	51
7	47	50	77	101	63	43	38	48	46	50	50	52
8	47	49	78	85	70	42	39	48	45	51	49	52
9	47	48	78	74	56	42	45	47	45	47	49	52
10	54	49	82	71	55	42	49	47	45	46	50	51
11	49	48	78	70	53	59	46	46	46	45	50	51
12	48	52	77	71	52	58	43	46	45	46	49	51
13	47	61	119	68	51	48	57	47	44	46	50	50
14	48	152	100	67	50	44	81	46	43	47	50	50
15	48	109	86	67	50	43	56	45	45	47	51	50
16	48	88	110	66	50	47	51	45	45	47	51	51
17	47	78	106	65	50	45	48	47	45	47	52	51
18	47	76	87	66	49	46	47	45	46	47	52	50
19	48	86	85	67	50	62	47	46	43	47	52	50
20	47	83	80	68	47	80	47	47	43	47	52	51
21	50	82	76	66	63	51	46	47	44	48	51	50
22	51	108	74	64	51	46	46	46	44	47	52	50
23	52	94	73	64	66	43	46	46	44	47	52	50
24	51	82	72	75	53	42	46	46	43	47	51	49
25	54	78	72	110	48	41	46	45	43	48	51	49
26	51	77	71	77	47	40	48	46	42	49	52	49
27	64	76	71	67	45	40	54	45	44	49	52	50
28	51	106	74	64	45	40	47	49	52	49	51	49
29	50	97	70	62	---	39	47	48	51	48	52	50
30	51	89	69	66	---	40	46	46	47	48	52	50
31	64	---	73	69	---	40	---	45	---	49	51	---
TOTAL	1543	2227	2563	2225	1519	1423	1401	1439	1351	1461	1570	1519
MEAN	49.8	74.2	82.7	71.8	54.2	45.9	46.7	46.4	45.0	47.1	50.6	50.6
MAX	64	152	119	110	70	80	81	49	52	51	52	53
MIN	46	48	69	62	45	39	38	45	42	45	47	49
AC-FT	3060	4420	5080	4410	3010	2820	2780	2850	2680	2900	3110	3010
CFSM	3.83	5.71	6.36	5.52	4.17	3.53	3.59	3.57	3.46	3.63	3.90	3.89
IN.	4.42	6.37	7.33	6.37	4.35	4.07	4.01	4.12	3.87	4.18	4.49	4.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

MEAN	58.4	69.5	72.1	68.4	67.3	62.2	62.3	58.9	55.5	54.0	56.1	55.1
MAX	68.0	75.9	84.3	83.3	88.8	87.6	82.3	77.6	67.9	66.2	66.3	64.6
(WY)	1998	1999	1997	1997	1996	1997	1997	1997	1998	1999	1997	1997
MIN	46.9	58.3	58.5	57.1	53.0	42.3	46.7	41.0	37.6	42.1	42.8	42.2
(WY)	1996	1996	2001	2001	2001	1995	2002	1995	1995	1996	1995	1995

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1995 - 2002

ANNUAL TOTAL	20478	20241	
ANNUAL MEAN	56.1	55.5	62.9
HIGHEST ANNUAL MEAN			73.8
LOWEST ANNUAL MEAN			53.4
HIGHEST DAILY MEAN	152	152	190
LOWEST DAILY MEAN	45	38	33
ANNUAL SEVEN-DAY MINIMUM	46	39	34
ANNUAL RUNOFF (AC-FT)	40620	40150	45570
ANNUAL RUNOFF (CFSM)	4.32	4.27	4.84
ANNUAL RUNOFF (INCHES)	58.60	57.92	65.75
10 PERCENT EXCEEDS	76	78	78
50 PERCENT EXCEEDS	51	50	62
90 PERCENT EXCEEDS	47	44	47

PUYALLUP RIVER BASIN

12102190 SWAN CREEK AT 80TH STREET EAST, NEAR TACOMA, WA

LOCATION.--Lat 47°11'05", long 122°23'33", in SE ¼ SW ¼ sec.26, T.20 N., R.3 E., Pierce County, Hydrologic Unit 17110014, on right bank, downstream from 80th Street East crossing, 5.1 mi south-southeast of Tacoma.

DRAINAGE AREA.--2.35 mi².

PERIOD OF RECORD.--October 1989 to September 1991, October 1994 to September 1997, October 1997 to current year (seasonal records).

REVISED RECORDS.--WDR WA-97-1: 1996 (M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 395 ft above NGVD of 1929, from topographic map. Prior to November 1994, at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair except those above 100 ft³/s and below 5 ft³/s, which are poor.

AVERAGE DISCHARGE.--5 years (water years 1990-91, 1995-97), 4.78 ft³/s, 27.66 in/yr, 3,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined but occurred Feb. 8, 1996, elevation, 10.85 ft, from outside high-water mark; no flow many days each year.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum discharge, 123 ft³/s Nov. 14, elevation, 8.64 ft; no flow several days in October.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	0.07	2.0	12	5.5	5.5	1.8	1.1
2	0.02	1.1	14	9.3	3.4	1.6	0.93
3	0.00	0.58	13	3.9	2.9	1.4	0.75
4	0.00	0.33	7.8	3.0	2.5	1.2	0.62
5	0.00	1.5	6.5	2.7	2.5	1.3	0.48
6	0.00	0.94	9.3	5.6	3.4	1.4	0.44
7	0.00	0.43	5.3	29	7.7	1.3	0.44
8	0.00	0.30	4.1	14	16	1.2	0.34
9	0.00	0.24	4.0	5.3	4.5	0.97	0.98
10	0.09	0.20	5.3	3.6	3.2	0.92	4.8
11	0.17	0.18	5.5	2.9	2.8	14	5.1
12	0.10	0.60	4.0	3.5	2.2	17	5.0
13	0.10	3.3	45	2.8	2.0	8.6	18
14	0.06	72	19	2.3	1.7	4.5	42
15	0.04	19	7.5	1.9	1.5	3.7	9.3
16	0.01	9.4	34	1.6	1.6	4.2	5.2
17	0.00	5.2	24	1.5	1.7	5.1	3.7
18	0.00	3.4	7.0	1.5	2.2	5.2	2.5
19	0.00	6.8	7.1	2.7	3.5	16	2.1
20	0.00	7.6	5.0	2.9	2.6	37	1.8
21	0.0	7.0	3.8	3.2	15	7.6	1.5
22	0.17	26	3.0	2.7	6.6	4.1	1.5
23	1.2	14	2.4	2.1	16	3.0	1.2
24	0.59	5.5	2.0	7.9	9.4	2.4	0.84
25	1.5	3.9	1.8	43	4.2	2.2	0.70
26	0.40	3.2	1.6	15	3.1	1.9	0.86
27	2.7	3.0	1.6	6.2	2.4	1.9	5.9
28	1.9	28	3.4	4.1	2.1	1.6	3.4
29	0.63	17	2.4	3.0	---	1.4	2.0
30	0.58	8.8	2.0	4.8	---	1.3	1.4
31	3.6	---	3.4	7.9	---	1.2	---
TOTAL	13.93	251.50	266.8	205.4	132.2	156.99	124.88
MEAN	0.45	8.38	8.61	6.63	4.72	5.06	4.16
MAX	3.6	72	45	43	16	37	42
MIN	0.00	0.18	1.6	1.5	1.5	0.92	0.34
AC-FT	28	499	529	407	262	311	248
CFSM	0.19	3.57	3.66	2.82	2.01	2.15	1.77
IN.	0.22	3.98	4.22	3.25	2.09	2.49	1.98

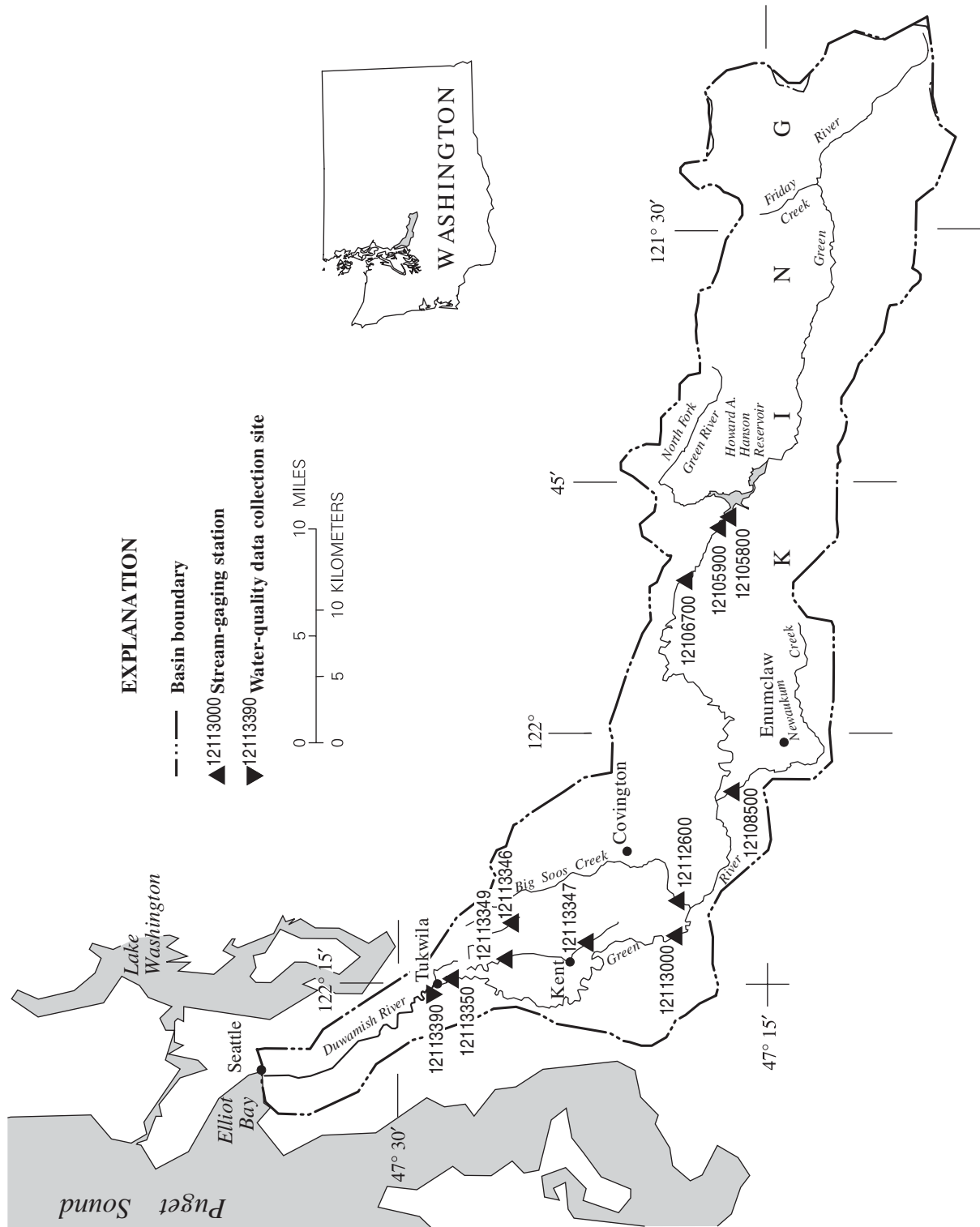


Figure 25. Location of surface-water and water-quality stations in the Duwamish River Basin.

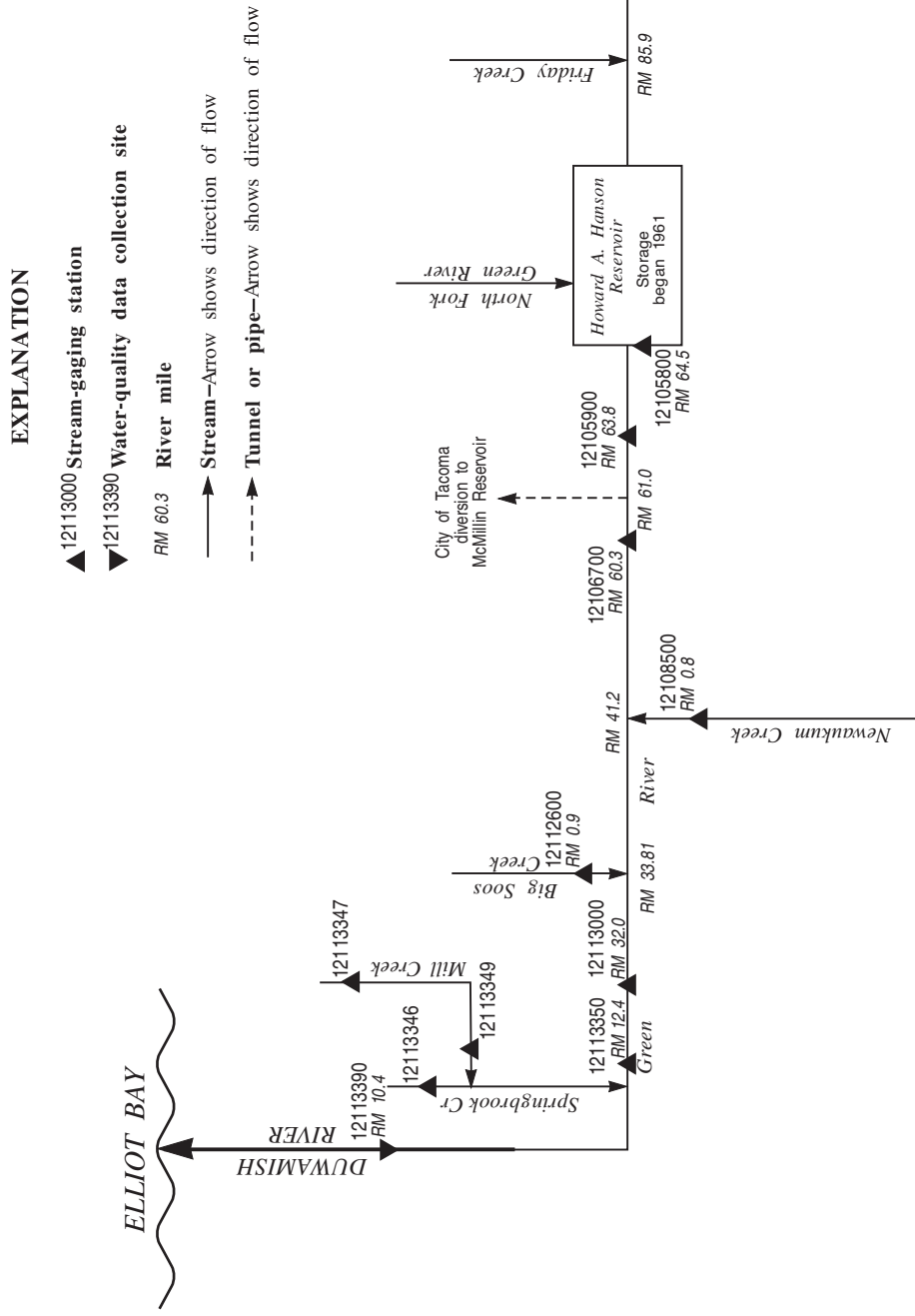


Figure 26. Schematic diagram showing surface-water and water-quality stations in the Duwamish River Basin.

DUWAMISH RIVER BASIN

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE ¼ SE ¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure, just upstream from Howard A. Hanson Dam on Green River, 1.4 mi upstream from Bear Creek, 5.1 mi southeast of Palmer, and at mile 64.5.

DRAINAGE AREA.--220 mi², approximately.

PERIOD OF RECORD.--December 1961 to current year.

REVISED RECORDS.--WDR WA-96-1: 1985-1995 maximum and minimum contents.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929, supplementary adjustment of 1947.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity, 105,463 acre-ft between elevations 1,035 ft, invert of outlet tunnel, and 1,206 ft, top of spillway gates. Retained during initial flood conditions, storage is released as soon as possible after a flood to attenuate flows downstream and to maintain reservoir capacity for possible future floods. Storage is used during summer months to augment the natural river flow.

COOPERATION.--Elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 68,811 acre-ft Feb. 10, 1996, elevation, 1,182.0 ft; minimum contents observed, 34 acre-ft Nov. 2, 1962, elevation, 1,037.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 51,200 acre-ft June 19, elevation, 1,167.7 ft; minimum contents 777 acre-ft Dec. 16, elevation, 1,065.0 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on conic method by Corps of Engineers in 1984)

1,045	13	1,080	2,422	1,140	24,622
1,050	64	1,090	4,081	1,150	32,982
1,055	201	1,100	6,313	1,160	42,804
1,060	439	1,110	9,271	1,170	53,902
1,065	777	1,120	13,140	1,180	66,186
1,070	1,220	1,130	18,126	1,190	79,912

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13300	3950	1660	2200	1760	2710	22800	43300	49700	50500	26900	22900
2	12900	4320	2040	2020	1900	3600	23500	44000	50100	49900	26900	22600
3	12500	4320	2310	1920	1950	4280	23500	44200	50600	49200	26800	22400
4	12100	3870	1900	1790	1950	4790	24500	43700	50600	48400	26800	22300
5	11600	3290	1930	1820	1820	5510	24800	42800	50600	47700	26700	22100
6	11300	2810	1900	1920	1900	6190	25300	41800	50800	46700	26700	21800
7	11000	2460	2080	3240	2020	6760	26400	40900	50600	45600	26700	21600
8	10600	2350	1530	3650	2110	7230	27800	40600	50500	44600	26700	21300
9	10400	2130	1760	2540	2260	7430	28300	39900	50200	43800	26600	21000
10	10300	2310	2030	1920	2300	7570	29200	39400	50700	42800	26500	20800
11	10100	2390	1850	1700	2310	7780	30300	38600	50900	41900	26500	20600
12	10500	2370	1490	1650	2240	10100	30700	37900	50800	40800	26400	20300
13	10800	2370	2390	1810	2070	11800	31100	37900	50900	39700	26300	20000
14	11400	3490	3140	1440	1840	12700	35700	39000	50900	38500	26100	19800
15	12600	2170	1350	1500	1570	13200	39700	40000	50900	37300	26100	19500
16	13100	1520	1230	1890	1750	13200	39600	40300	50800	36200	25900	19300
17	13000	3110	1290	2020	1920	14100	39100	40900	50800	35000	25700	19100
18	12600	3460	1420	1890	2080	14200	39400	41900	50800	33700	25500	18900
19	12200	3200	1150	2270	1890	14300	39700	42900	51200	32700	25400	18600
20	11600	2000	1990	2620	2040	15000	39800	44200	51000	31800	25200	18400
21	10900	2000	2080	3560	1630	16300	39800	45500	50800	31000	25100	18100
22	10300	2070	2520	3600	2620	16800	39600	46300	50800	30100	24900	17800
23	10900	3840	2680	2210	2590	17100	39600	46500	50700	29400	24800	17600
24	11400	4420	2620	1470	3070	17300	39700	46800	50600	28900	24500	17200
25	10800	3870	2410	2150	2490	17300	39700	47000	50600	28400	24300	16800
26	9900	2880	2080	1790	2000	18200	39800	47700	50500	28100	24200	16400
27	8080	2030	1930	2440	1900	18900	40100	48500	50600	27800	24000	15900
28	6390	1780	1830	2650	1900	19500	40300	49300	50700	27500	23800	15400
29	4620	1560	2090	2910	---	20500	40500	49300	51000	27300	23600	15000
30	3870	1340	2260	2990	---	21300	41400	49100	50900	27100	23400	14600
31	3440	---	2370	2390	---	22100	---	49200	---	26900	23100	---
MEAN	10468	2789	1978	2257	2067	12508	34057	43529	50687	37074	25552	19270
MAX	13300	4420	3140	3650	3070	22100	41400	49300	51200	50500	26900	22900
MIN	3440	1340	1150	1440	1570	2710	22800	37900	49700	26900	23100	14600
(††)	1088.1	1073.1	1078.8	1076.7	1079.9	1137.1	1160.0	1166.2	1167.1	1143.0	1137.7	1122.4
(†)	3725	1548	2255	1979	2407	22547	42804	49552	50567	26942	22963	14228
(‡)	-9680	-2177	+707	-276	+428	+20140	+20257	+6748	+1015	-23625	-3979	-8735

CAL YR 2001 MEAN 15080 MAX 31800 MIN 1150 AC-FT(†) -786
WTR YR 2002 MEAN 20264 MAX 51200 MIN 1150 AC-FT(†) +823

†† Monthend elevation, in feet, at 2400 hours.
† Monthend contents, in acre-feet.
‡ Change in Contents, in acre-feet.

DUWAMISH RIVER BASIN

12105900 GREEN RIVER BELOW HOWARD A. HANSON RESERVOIR, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE ¼ NW ¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi upstream from Bear Creek, 0.7 mi downstream from Howard A. Hanson Dam, 5.0 mi southeast of Palmer, and at mile 63.8.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 990 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow.

AVERAGE DISCHARGE.--42 years (water years 1961-2002), 1001 ft³/s, 61.51 in/yr, 725,200 acre-ft/yr, adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s Feb. 21, 1961, gage height, 14.40 ft; minimum discharge, 87 ft³/s Dec. 29, 1961, gage height, 3.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,930 ft³/s Jan. 8, gage height, 11.39 ft; minimum discharge, 236 ft³/s Aug. 11, 13, 14, gage height, 4.23 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	336	1500	786	717	1020	563	978	1660	1840	1010	248	278
2	335	1580	816	707	843	529	1080	2100	1730	1000	239	277
3	333	1570	994	698	847	545	1030	2210	1790	1000	239	255
4	332	1530	937	638	843	480	1090	2050	1850	998	239	252
5	311	1400	826	604	766	445	1290	2050	1860	1020	239	266
6	287	1220	869	614	722	472	1500	1860	2000	1050	239	275
7	285	1020	1140	2960	777	480	1590	1410	1810	1040	239	283
8	284	878	1030	5590	813	536	1780	1320	1470	977	239	281
9	303	690	848	4420	822	571	1650	1340	1080	927	239	274
10	340	606	956	2840	824	573	1810	1320	1070	941	239	268
11	357	609	1020	2120	824	585	2390	1440	1340	938	239	276
12	357	608	822	1960	818	811	2920	1440	1490	948	239	273
13	359	939	2900	1970	805	1000	3500	1440	1670	963	239	268
14	363	3820	4890	1620	785	1010	4670	1600	1780	959	239	266
15	398	3770	3000	1210	623	903	4700	1810	1680	955	248	266
16	526	1680	3130	1080	536	805	3320	1690	1460	950	256	266
17	592	1380	3430	1090	546	809	2350	1500	1220	944	263	266
18	590	1470	2640	907	686	809	1850	1510	1130	895	263	270
19	780	1730	1730	824	732	814	1610	1520	1250	795	256	276
20	920	1470	1430	854	934	740	1610	1680	1180	742	246	275
21	908	1210	1200	1160	1610	773	1610	1890	1080	738	245	273
22	901	1240	1030	1610	3090	802	1580	2250	1050	677	258	273
23	1370	1780	1040	1460	2990	758	1470	2080	996	578	261	273
24	1840	2050	1030	1780	2660	758	1370	1900	891	513	261	271
25	2040	1990	1010	2890	2260	760	1250	1820	811	456	261	329
26	2220	1750	910	2200	1690	764	1180	1820	747	412	259	375
27	2140	1350	817	1450	1330	769	1240	1930	732	400	256	373
28	1980	1150	663	1200	935	774	1240	2660	773	399	266	370
29	1460	1120	587	1050	---	861	1180	2950	981	362	271	369
30	1150	899	595	1260	---	916	714	2660	1070	322	274	367
31	1260	---	678	1350	---	921	---	2150	---	277	279	---
TOTAL	25657	44009	43754	50833	32131	22336	55552	57060	39831	24186	7778	8684
MEAN	827.6	1467	1411	1640	1148	720.5	1852	1841	1328	780.2	250.9	289.5
MAX	2220	3820	4890	5590	3090	1010	4700	2950	2000	1050	279	375
MIN	284	606	587	604	536	445	714	1320	732	277	239	252
AC-FT	50890	87290	86790	100800	63730	44300	110200	113200	79000	47970	15430	17220
MEAN†	670	1431	1423	1634	1156	1048	2194	1950	1345	396	186	143
CFSM†	3.03	6.48	6.44	7.39	5.23	4.74	9.93	8.82	6.09	1.79	0.84	0.65
IN.†	3.50	7.22	7.42	8.53	5.44	5.47	11.07	10.17	6.79	2.06	0.97	0.72
AC-FT†	41210	85110	87500	100500	64160	64440	130500	119900	80020	24340	11450	8480

CAL YR 2001 TOTAL 302835 MEAN 829.7 MAX 4890 MIN 217 AC-FT 600700 MEAN† 828 CFSM† 3.75 IN.† 50.90 AC-FT† 599900
WTR YR 2002 TOTAL 411811 MEAN 1128 MAX 5590 MIN 239 AC-FT 816800 MEAN† 1129 CFSM† 5.11 IN.† 69.37 AC-FT† 817600

† Adjusted for change in contents in Howard A. Hanson Reservoir.

DUWAMISH RIVER BASIN

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12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE ¼ SE ¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at City of Tacoma purification plant, 0.7 mi downstream from diversion dam, 2 mi southeast of Palmer, and at mile 60.3.

DRAINAGE AREA.--231 mi².

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 859.53 ft above NGVD of 1929. Prior to Oct. 1, 1987, water-stage recorder at site 0.1 mi upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 4.1 mi upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 64 ft³/s upstream from station for municipal supply, of which a small amount is returned to the river 300 ft upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1964-2002), 958 ft³/s, 693,900 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s Feb. 12, 1981, gage height, 12.05 ft, at site then in use; minimum discharge, 20 ft³/s part or all of each day Oct. 26, 27, Nov. 3, 4, 6, 1974, gage height, 3.90 ft, at site then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, had a discharge of 27,800 ft³/s, on basis of slope-area measurement at site 0.5 mi downstream from present gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,760 ft³/s Jan 8, gage height, 9.41 ft; minimum discharge, 91 ft³/s Aug. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	1430	800	666	1010	585	1050	1620	1810	934	129	149
2	226	1480	819	662	830	521	1140	2060	1700	920	118	153
3	224	1450	962	652	832	533	1100	2160	1750	903	114	139
4	220	1410	916	597	823	465	1130	2000	1820	891	116	127
5	202	1310	794	563	748	424	1320	2010	1820	905	135	142
6	177	1140	854	580	702	450	1540	1830	1930	932	124	150
7	176	958	1100	2860	767	458	1630	1410	1780	930	117	158
8	182	806	1020	5400	812	511	1810	1300	1450	866	116	158
9	200	637	860	4430	813	550	1690	1260	1100	804	114	152
10	243	548	935	2830	815	553	1920	1230	1060	817	114	145
11	269	547	994	2090	814	710	2470	1350	1290	814	116	149
12	265	548	811	1910	798	969	3040	1340	1390	821	115	148
13	268	858	3070	1880	780	1170	3670	1350	1510	837	116	143
14	286	3740	4910	1570	756	1140	4900	1490	1600	831	114	142
15	315	3810	3040	1170	605	1050	4720	1670	1510	825	119	141
16	491	1770	3170	1020	502	886	3380	1580	1320	820	127	144
17	552	1420	3520	1030	516	863	2400	1430	1100	814	134	141
18	510	1460	2680	880	652	858	1870	1420	1020	771	136	143
19	688	1670	1780	804	725	897	1620	1420	1110	680	132	154
20	823	1450	1410	891	899	988	1610	1560	1060	629	124	163
21	812	1220	1180	1160	1630	893	1600	1750	957	625	120	163
22	814	1310	990	1530	3210	887	1580	2180	930	570	133	160
23	1290	1880	984	1430	3180	824	1480	2050	884	465	136	196
24	1730	2040	971	1880	2800	824	1380	1850	784	395	136	159
25	1890	1930	951	3050	2330	833	1260	1770	707	340	136	210
26	2030	1670	862	2290	1710	839	1200	1780	646	291	136	257
27	1940	1300	764	1430	1340	844	1260	1880	643	274	132	254
28	1780	1110	624	1170	970	850	1250	2610	707	275	139	254
29	1330	1120	540	1020	---	938	1210	2920	975	241	162	259
30	1040	930	545	1200	---	992	737	2640	1020	201	146	252
31	1210	---	626	1310	---	994	---	2130	---	195	150	---
TOTAL	22410	42952	43482	49955	32369	24299	56967	55050	37383	20616	3956	5105
MEAN	722.9	1432	1403	1611	1156	783.8	1899	1776	1246	665.0	127.6	170.2
MAX	2030	3810	4910	5400	3210	1170	4900	2920	1930	934	162	259
MIN	176	547	540	563	502	424	737	1230	643	195	114	127
AC-FT	44450	85200	86250	99090	64200	48200	113000	109200	74150	40890	7850	10130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2002, BY WATER YEAR (WY)

MEAN	473.0	1269	1572	1599	1456	1155	1325	1259	705.4	324.2	161.3	228.8
MAX	1198	4074	4591	3225	3481	3801	2376	2605	2514	809	306	757
(WY)	1996	1991	1976	1984	1982	1972	1985	1972	1974	1972	1974	1968
MIN	66.2	82.7	371	399	367	432	286	381	129	118	98.6	109
(WY)	1975	1988	1986	1979	1969	1981	1992	1994	1987	1965	1969	1979

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	FOR 2002 WATER YEAR	FOR WATER YEARS 1963 - 2002
ANNUAL TOTAL	273799	394544		
ANNUAL MEAN	750.1	1081		957.8
HIGHEST ANNUAL MEAN				1562
LOWEST ANNUAL MEAN				573
HIGHEST DAILY MEAN	4910	5400	Jan 8	10900
LOWEST DAILY MEAN	106	114	Aug 3	20
ANNUAL SEVEN-DAY MINIMUM	112	115	Aug 8	22
ANNUAL RUNOFF (AC-FT)	543100	782600		693900
10 PERCENT EXCEEDS	1450	2020		2070
50 PERCENT EXCEEDS	547	897		616
90 PERCENT EXCEEDS	129	144		133

DUWAMISH RIVER BASIN

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW ¼ SW ¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi downstream from West Whitney Hill bridge, 0.8 mi upstream from mouth, and 3.5 mi southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi².

PERIOD OF RECORD.--July 1944 to November 1950, water years 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WDR WA-74-1: 1973(M). WDR WA-76-1: 1975. WDR WA-00-1: 1999 (m).

GAGE.--Water-stage recorder. Elevation of gage is 310 ft above NGVD of 1929, from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Records good except for those above 80 ft³/s, which are fair and those above 200 ft³/s, which are poor. Many small diversions upstream from station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--56 years (water years 1945-50, 1953-2002), 59.8 ft³/s, 29.63 in/yr, 43,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,640 ft³/s Feb. 8, 1996, gage height, 3.95 ft from rating curve extended above 1,260 ft³/s; minimum discharge, 8.0 ft³/s Oct. 13, 14, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 20	1000	*488	*3.02	No other peak greater than base discharge.			

Minimum discharge, 9.8 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	36	119	61	122	62	64	49	32	40	21	15
2	12	31	96	85	94	58	61	48	31	35	19	15
3	12	25	102	65	85	55	59	47	30	32	19	17
4	11	23	82	58	79	53	57	45	29	31	20	15
5	11	43	92	54	78	59	55	47	40	29	24	15
6	11	34	106	59	80	63	55	49	32	28	27	14
7	11	26	89	185	92	61	52	48	30	27	23	14
8	13	22	77	210	186	57	49	45	30	e27	20	14
9	16	19	81	138	117	53	56	43	30	29	19	14
10	17	18	97	97	92	49	78	41	27	28	19	14
11	21	17	112	80	84	118	75	40	26	27	19	14
12	16	19	84	79	74	181	74	39	25	26	18	13
13	16	41	183	70	70	142	110	39	23	25	e17	13
14	18	291	252	65	66	98	240	43	23	25	e17	13
15	18	347	176	60	62	90	175	38	23	e24	e16	13
16	17	264	213	58	60	88	114	37	23	24	e16	13
17	17	166	237	54	59	94	100	38	23	24	16	14
18	16	75	162	52	64	89	80	37	25	23	16	14
19	17	74	149	76	66	149	73	36	28	23	16	13
20	19	72	115	118	64	422	69	38	24	23	24	14
21	19	81	95	136	119	249	66	38	22	23	18	13
22	24	145	81	101	111	160	63	39	21	23	17	13
23	32	200	73	77	156	115	60	39	20	23	16	13
24	26	128	67	90	156	96	57	36	20	23	15	13
25	39	86	63	221	100	88	55	34	20	23	15	12
26	26	76	60	210	80	81	53	34	19	23	16	12
27	35	66	58	131	71	78	74	33	19	24	16	12
28	34	118	62	98	67	73	65	39	40	23	15	12
29	23	165	57	82	---	70	57	40	71	24	15	12
30	23	136	52	104	---	67	52	36	51	23	15	12
31	51	---	59	133	---	65	---	34	---	22	14	---
TOTAL	633	2844	3351	3107	2554	3183	2298	1249	857	804	558	405
MEAN	20.4	94.8	108	100	91.2	103	76.6	40.3	28.6	25.9	18.0	13.5
MAX	51	347	252	221	186	422	240	49	71	40	27	17
MIN	11	17	52	52	59	49	49	33	19	22	14	12
AC-FT	1260	5640	6650	6160	5070	6310	4560	2480	1700	1590	1110	803
CFSM	0.75	3.46	3.95	3.66	3.33	3.75	2.80	1.47	1.04	0.95	0.66	0.49
IN.	0.86	3.86	4.55	4.22	3.47	4.32	3.12	1.70	1.16	1.09	0.76	0.55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)

	24.7	66.3	97.6	115	105	88.5	69.4	48.5	39.4	26.2	20.0	19.7
MEAN	24.7	66.3	97.6	115	105	88.5	69.4	48.5	39.4	26.2	20.0	19.7
MAX	58.9	215	225	252	267	215	134	97.0	98.1	48.6	32.2	39.2
(WY)	1956	1991	1956	1975	1996	1950	1991	1984	1990	1997	1976	1959
MIN	9.42	9.99	11.2	37.4	34.4	40.7	40.0	31.0	20.7	16.8	12.9	11.1
(WY)	1953	1953	1953	1977	1977	1992	1977	1992	1992	1995	1958	1994

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1944 - 2002

ANNUAL TOTAL	17106	21843	
ANNUAL MEAN	46.9	59.8	59.8
HIGHEST ANNUAL MEAN			85.9 1956
LOWEST ANNUAL MEAN			33.7 2001
HIGHEST DAILY MEAN	347	Nov 15	422 Mar 20 1670 Feb 9 1996
LOWEST DAILY MEAN	11	Aug 20	11 Oct 4 8.3 Oct 11 1952
ANNUAL SEVEN-DAY MINIMUM	11	Oct 1	11 Oct 1 8.3 Oct 11 1952
ANNUAL RUNOFF (AC-FT)	33930	43330	43290
ANNUAL RUNOFF (CFSM)	1.71	2.18	2.18
ANNUAL RUNOFF (INCHES)	23.22	29.66	29.63
10 PERCENT EXCEEDS	94	120	117
50 PERCENT EXCEEDS	34	41	41
90 PERCENT EXCEEDS	13	15	17

e Estimated

DUWAMISH RIVER BASIN

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW ¼ sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi upstream from fish hatchery, 2.7 mi east of Auburn, and at mile 0.9.

DRAINAGE AREA.--66.7 mi², excludes 3.67 mi² in vicinity of Youngs Lake (flow from which has been diverted to Cedar River since about 1935).

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 77.2 ft above NGVD of 1929.

REMARKS.--Records good, except for estimated daily discharges, which are fair. City of Seattle diverts probably less than 2 ft³/s from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966, fish hatchery 0.5 mi upstream from station diverted up to 19 ft³/s which was returned downstream from the station. U.S Geological Survey satellite telemeter at station. Chemical analyses October 1962 to September 1971, at site 1.0 mi upstream.

AVERAGE DISCHARGE.--36 years (water years 1967-2002), 125 ft³/s, 25.45 in/yr, 90,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft³/s Feb. 9, 1996, gage height, 8.88 ft, estimated from slope-area measurement of peak flow; minimum discharge, 11 ft³/s Sept. 5, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 440 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1245	*725	5.53	Apr. 14	0800	460	4.95
Dec. 16	2245	650	*5.59				

Minimum discharge, 20 ft³/s Sept. 24, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	63	287	184	301	198	159	127	72	50	31	26
2	29	59	288	208	270	187	153	122	71	44	29	26
3	26	54	297	191	249	179	148	119	69	43	33	29
4	27	50	281	178	231	173	144	115	68	44	35	23
5	26	59	261	170	225	170	139	117	71	43	34	24
6	24	54	262	177	226	167	139	113	66	42	31	24
7	24	48	242	314	234	159	134	113	64	43	31	26
8	26	45	221	366	334	151	129	109	66	52	30	26
9	26	42	217	312	295	147	133	106	66	46	31	26
10	28	41	226	260	255	143	171	108	62	42	34	22
11	29	40	229	229	227	206	199	104	59	40	34	21
12	28	43	216	224	210	e260	179	100	58	38	32	23
13	27	71	354	211	201	e240	245	97	55	38	27	23
14	35	506	529	195	195	210	437	101	53	38	27	24
15	35	583	460	183	187	194	372	95	53	37	27	25
16	34	451	539	174	174	195	300	92	50	35	27	26
17	32	329	593	167	170	206	264	91	47	35	29	24
18	30	246	481	164	173	193	233	90	52	35	29	24
19	30	226	416	191	174	210	209	89	55	36	29	24
20	30	245	361	222	170	352	193	94	50	35	26	23
21	32	238	316	239	237	343	180	92	46	35	27	24
22	36	275	283	214	303	293	172	88	45	34	28	25
23	35	327	258	194	333	257	161	85	44	31	26	24
24	e35	292	240	212	340	234	152	82	43	31	27	21
25	e40	249	223	365	291	216	145	81	41	31	27	21
26	45	219	211	402	252	202	141	79	40	32	27	23
27	60	195	202	343	227	191	158	78	40	34	23	23
28	e56	234	201	291	211	181	151	81	47	35	23	24
29	e52	285	190	255	---	174	140	87	72	34	23	27
30	46	284	180	258	---	168	132	80	58	31	22	26
31	66	---	181	290	---	162	---	75	---	31	25	---
TOTAL	1079	5853	9245	7383	6695	6361	5612	3010	1683	1175	884	727
MEAN	34.8	195	298	238	239	205	187	97.1	56.1	37.9	28.5	24.2
MAX	66	583	593	402	340	352	437	127	72	52	35	29
MIN	24	40	180	164	170	143	129	75	40	31	22	21
AC-FT	2140	11610	18340	14640	13280	12620	11130	5970	3340	2330	1750	1440
CFSM	0.52	2.93	4.47	3.57	3.58	3.08	2.80	1.46	0.84	0.57	0.43	0.36
IN.	0.60	3.26	5.16	4.12	3.73	3.55	3.13	1.68	0.94	0.66	0.49	0.41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

MEAN	42.7	112	215	252	242	209	154	96.9	71.5	44.6	32.9	33.2
MAX	90.9	433	401	535	555	453	343	174	150	78.6	46.8	57.9
(WY)	1998	1991	1976	1997	1996	1972	1991	1984	1990	1997	1976	1978
MIN	25.9	33.1	58.0	84.3	73.6	102	80.5	57.0	34.7	26.4	22.8	20.4
(WY)	1988	1994	1977	1977	1977	2001	1977	1985	1992	1985	1994	1995

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1967 - 2002	
ANNUAL TOTAL	37881		49707			
ANNUAL MEAN	104		136		125	
HIGHEST ANNUAL MEAN					195	
LOWEST ANNUAL MEAN					63.5	
HIGHEST DAILY MEAN	593	Dec 17	593	Dec 17	3580	Feb 9 1996
LOWEST DAILY MEAN	24	Oct 6	21	Sep 11	18	Sep 16 1995
ANNUAL SEVEN-DAY MINIMUM	26	Oct 3	23	Sep 20	18	Sep 18 1995
ANNUAL RUNOFF (AC-FT)	75140		98590		90500	
ANNUAL RUNOFF (CFSM)	1.56		2.04		1.87	
ANNUAL RUNOFF (INCHES)	21.13		27.72		25.45	
10 PERCENT EXCEEDS	226		290		276	
50 PERCENT EXCEEDS	75		95		81	
90 PERCENT EXCEEDS	30		26		30	

e Estimated

DUWAMISH RIVER BASIN

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW ¼ NW ¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi east of Auburn, 1.8 mi downstream from Big Soos Creek, and at mile 32.0.

DRAINAGE AREA.--399 mi², excludes 3.67 mi² in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--Records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 32.5 mi upstream from station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 64 ft³/s from river at headworks near Palmer, 29 mi upstream from station, for municipal use. Minor diversions on upstream tributaries for domestic use. U.S. Geological Survey satellite telemeter at station. Water temperatures March 1952 to September 1986.

AVERAGE DISCHARGE.--25 years (water years 1937-61), 1,346 ft³/s, 974,500 acre-ft/yr, unregulated.
41 years (water years 1962-2002), 1,336 ft³/s, 967,700 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s Nov. 23, 1959, elevation, 69.75 ft; minimum discharge, 81 ft³/s Sept. 23, 1952; minimum elevation, 52.76 ft Oct. 22, 29-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	0015	7,200	60.27	Jan. 08	2315	7,080	60.22
Dec. 14	0730	7,160	60.28	Apr. 14	2345	*7,460	*60.49

Minimum discharge, 220 ft³/s Sep. 4; elevation 52.99 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	366	1740	1570	1160	2010	1210	1550	1770	2240	1220	339	255
2	361	1840	1530	1230	1590	1080	1650	2500	2100	1190	282	259
3	356	1800	1610	1160	1540	1050	1680	2780	2070	1170	272	278
4	353	1750	1710	1100	1490	1030	1560	2540	2180	1150	271	234
5	345	1720	1480	1010	1440	907	1750	2540	2220	1150	276	235
6	310	1520	1500	1030	1350	944	2050	2480	2240	1190	294	248
7	301	1340	1650	2470	1410	925	2080	2050	2330	1190	267	257
8	306	1050	1760	6380	1750	916	2340	1710	1850	1210	258	261
9	314	950	1470	6270	1610	968	2260	1790	1610	1060	255	261
10	352	749	1520	4090	1520	958	2390	1620	1290	1080	255	248
11	413	734	1680	3020	1470	1200	3020	1780	1510	1070	255	243
12	402	741	1520	2620	1410	1630	3630	1770	1700	1050	251	252
13	401	915	2780	2580	1370	1820	4560	1760	1760	1080	243	242
14	421	3800	6790	2320	1320	1730	6310	1850	1930	1070	240	239
15	443	5880	4790	1870	1230	1660	7020	2050	1890	1070	237	241
16	516	3270	4330	1560	1010	1490	5100	2100	1700	1060	247	247
17	725	2070	5230	1530	1000	1490	3880	1820	1470	1050	252	247
18	658	2030	4140	1450	1060	1450	2880	1800	1330	1030	255	241
19	719	2090	3190	1350	1260	1580	2480	1800	1360	933	255	246
20	1020	2240	2360	1490	1270	2480	2380	1900	1400	837	255	258
21	1030	1830	2140	1710	2030	2090	2330	2100	1250	827	245	257
22	1030	2020	1760	2120	3700	1910	2290	2500	1190	808	245	257
23	1300	2580	1680	2140	4410	1690	2160	2610	1160	696	250	259
24	1960	2860	1620	2220	3830	1600	2030	2300	1060	611	250	282
25	2190	2640	1560	3980	3370	1550	1880	2180	962	563	251	252
26	2340	2350	1480	4030	2600	1520	1770	2180	879	507	254	338
27	2410	1960	1340	2450	2080	1500	1870	2180	850	474	245	349
28	2200	1760	1260	2100	1810	1470	1840	2860	952	461	239	354
29	1910	1930	1070	1760	---	1490	1800	3520	1210	460	254	368
30	1350	1830	1030	1870	---	1560	1350	3290	1390	404	261	358
31	1460	---	1080	2180	---	1550	---	e2700	---	374	254	---
TOTAL	28262	59989	68630	72250	51940	44448	79890	68830	47083	28045	8007	8066
MEAN	911.7	2000	2214	2331	1855	1434	2663	2220	1569	904.7	258.3	268.9
MAX	2410	5880	6790	6380	4410	2480	7020	3520	2330	1220	339	368
MIN	301	734	1030	1010	1000	907	1350	1620	850	374	237	234
AC-FT	56060	119000	136100	143300	103000	88160	158500	136500	93390	55630	15880	16000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

	MEAN	630.3	1593	2157	2289	2110	1701	1807	1592	986.5	532.0	311.8	368.2
MAX	1364	5045	5654	3908	4969	4994	3023	2896	2849	2849	1069	514	955
(WY)	1996	1991	1976	1975	1996	1972	1989	1972	1974	1974	1974	1974	1968
MIN	173	194	597	703	720	891	601	603	330	262	227	210	210
(WY)	1988	1988	2001	1988	1977	1963	1992	1994	1987	1987	1989	1989	1989

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1962 - 2002

ANNUAL TOTAL		405145		565440								
ANNUAL MEAN		1110		1549						1336		
HIGHEST ANNUAL MEAN										2071		1972
LOWEST ANNUAL MEAN										785		1977
HIGHEST DAILY MEAN			6790	Dec 14		7020	Apr 15		11600	Dec 3	1975	
LOWEST DAILY MEAN			250	Aug 19		234	Sep 4		152	Oct 30	1987	
ANNUAL SEVEN-DAY MINIMUM			256	Sep 5		243	Sep 13		157	Oct 20	1987	
ANNUAL RUNOFF (AC-FT)		803600		1122000						967700		
10 PERCENT EXCEEDS			2020			2610				2700		
50 PERCENT EXCEEDS			821			1490				978		
90 PERCENT EXCEEDS			304			255				270		

e Estimated

DUWAMISH RIVER BASIN

12113346 SPRING BROOK CREEK NEAR ORILLIA, WA

LOCATION.--Lat 47°25'53", long 122°13'35", in SW ¼ SW ¼ sec.31, T.23 N., R.5 E., King County, Hydrologic Unit 17110013, on right bank 50 ft upstream from 84th Avenue South (East Valley Highway), 1.2 mi upstream from confluence with Mill Creek, and 1.0 mi southeast of Orillia.

DRAINAGE AREA.--8.44 mi².

PERIOD OF RECORD.--October 1993 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (City of Kent benchmark). U.S. Geological Survey satellite telemeter at station.

REMARKS.--Records poor. Natural flow affected by urbanization and construction of flood-control catchments.

AVERAGE DISCHARGE.--9 years (water years 1994-2002), 10.6 ft³/s, 17.07 in/yr, 7,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 450 ft³/s Feb. 9, 1996, elevation, 19.55 ft; minimum discharge, 0.74 ft³/s Aug. 2-5, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 324 ft³/s Nov. 14, elevation, 19.40 ft; minimum discharge, 1.7 ft³/s Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	11	30	20	14	6.1	4.2	4.9	4.1	3.8	2.9	2.1
2	2.9	15	28	23	10	5.6	4.0	6.4	3.9	3.5	2.8	3.1
3	2.8	5.3	25	10	9.3	5.3	3.9	4.7	3.9	3.3	2.8	4.8
4	2.8	8.9	19	8.5	7.9	5.2	3.9	4.5	4.8	3.4	2.9	2.7
5	2.7	17	16	9.6	13	6.9	3.8	4.6	6.4	3.6	3.0	2.3
6	2.9	5.3	26	25	18	5.3	3.8	5.7	4.1	3.2	3.0	2.2
7	2.8	3.8	10	67	30	4.8	3.7	5.0	9.3	13	2.8	2.6
8	9.0	3.4	9.1	35	43	4.5	3.5	4.3	6.8	38	2.7	2.3
9	3.5	3.3	11	17	14	4.4	7.9	4.2	4.3	5.1	2.6	2.3
10	12	3.1	16	12	10	4.5	e15	4.1	3.9	4.6	2.8	2.1
11	10	3.3	11	11	8.7	41	e11	4.0	3.7	4.1	2.7	2.0
12	3.9	16	9.4	17	7.7	24	9.1	4.0	3.7	3.7	2.6	2.0
13	4.2	46	86	9.7	7.3	15	52	5.9	3.7	3.5	2.5	1.9
14	7.5	e220	44	8.5	6.5	8.1	55	5.1	3.5	3.5	2.8	1.8
15	6.2	49	34	8.0	6.2	7.1	20	3.9	3.7	3.9	2.4	1.9
16	7.0	21	74	7.3	6.6	22	17	3.8	3.9	3.6	2.5	5.9
17	5.6	9.4	43	6.9	7.0	14	13	6.4	6.8	3.3	2.3	6.1
18	3.4	6.1	25	11	8.4	12	8.8	4.1	12	3.2	2.4	2.3
19	4.2	29	24	21	16	19	7.6	4.0	4.3	3.2	2.8	2.0
20	3.6	26	17	26	6.7	41	7.2	9.1	4.0	3.2	2.8	2.2
21	12	17	14	18	42	15	7.4	4.4	3.9	3.1	2.6	2.0
22	10	65	12	9.6	44	9.9	7.0	3.9	3.7	3.2	2.4	1.9
23	5.6	26	10	8.0	34	7.9	6.0	3.8	3.6	3.0	2.4	1.9
24	11	11	9.8	27	25	6.7	5.6	3.8	3.7	3.5	2.2	2.0
25	36	8.5	9.3	63	12	5.9	5.4	3.9	3.6	3.0	2.3	2.0
26	11	6.1	8.9	30	9.2	5.4	9.0	4.0	3.5	3.5	2.4	2.0
27	56	4.5	8.8	18	7.7	5.0	16	4.6	5.1	3.2	2.3	2.0
28	13	46	13	13	6.9	4.6	6.3	7.8	20	3.2	2.3	2.0
29	4.5	29	8.4	11	---	4.4	5.4	7.8	34	3.4	2.3	6.8
30	11	22	7.9	18	---	4.3	5.1	4.2	5.7	3.0	2.1	2.5
31	40	---	13	24	---	4.2	---	4.0	---	3.0	2.0	---
TOTAL	310.2	737.0	672.6	593.1	431.1	329.1	327.6	150.9	187.6	151.8	79.4	79.7
MEAN	10.01	24.57	21.70	19.13	15.40	10.62	10.92	4.868	6.253	4.897	2.561	2.657
MAX	56	220	86	67	44	41	55	9.1	34	38	3.0	6.8
MIN	2.7	3.1	7.9	6.9	6.2	4.2	3.5	3.8	3.5	3.0	2.0	1.8
AC-FT	615	1460	1330	1180	855	653	650	299	372	301	157	158
CFSM	1.19	2.91	2.57	2.27	1.82	1.26	1.29	0.58	0.74	0.58	0.30	0.31
IN.	1.37	3.25	2.96	2.61	1.90	1.45	1.44	0.67	0.83	0.67	0.35	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

MEAN	9.253	19.37	20.08	17.67	16.19	11.94	9.111	5.923	5.744	4.089	4.330	3.887
MAX	15.5	43.5	30.9	25.0	35.8	15.8	15.0	8.00	10.5	5.92	7.51	7.23
(WY)	2001	2000	1999	1996	1996	1998	1996	1996	2001	1997	2001	1997
MIN	4.45	5.08	9.55	7.46	6.97	6.41	5.81	3.34	2.99	2.59	2.14	1.71
(WY)	1994	1994	2001	1994	1997	1996	1995	1995	1996	1994	1994	1999

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1994 - 2002

ANNUAL TOTAL	3932.3	4050.1	
ANNUAL MEAN	10.77	11.10	10.60
HIGHEST ANNUAL MEAN			14.5
LOWEST ANNUAL MEAN			6.22
HIGHEST DAILY MEAN	220	Nov 14	303
LOWEST DAILY MEAN	1.9	Jul 12	0.74
ANNUAL SEVEN-DAY MINIMUM	2.1	Jul 2	0.87
ANNUAL RUNOFF (AC-FT)	7800		7680
ANNUAL RUNOFF (CFSM)	1.28		1.26
ANNUAL RUNOFF (INCHES)	17.33		17.07
10 PERCENT EXCEEDS	25		23
50 PERCENT EXCEEDS	5.5		5.4
90 PERCENT EXCEEDS	2.2		2.3

e Estimated

DUWAMISH RIVER BASIN

12113347 MILL CREEK AT EARTHWORKS PARK, AT KENT, WA

LOCATION.--Lat 47°23'00", long 122°13'25", in SW ¼ NW ¼ sec.19, T.22 N., R.5 E., King County, Hydrologic Unit 17110013, at control-manhole of flood-detention basin in Earthworks Park, 250 ft upstream from Titus St., and 0.6 mi east of Kent City Hall.

DRAINAGE AREA.--2.49 mi².

PERIOD OF RECORD.--January 1994 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (City of Kent benchmark).

REMARKS.--Records poor. Natural flow affected by urbanization and construction of flood-control catchments. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--8 years (water year 1995-2002), 4.29 ft³/s, 23.40 in/yr, 3,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined Feb. 9, 1996, elevation, 47.52 ft, affected by backwater from debris caught on downstream culvert grates; maximum elevation, 48.05 ft May 13, 1996, affected by backwater from debris caught on downstream culvert grates; minimum discharge, 0.31 ft³/s July 5, 1995, Aug. 12, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 233 ft³/s Nov. 14, elevation, 47.39 ft; minimum discharge, 0.44 ft³/s Nov. 19, but may have been less during period of estimated record in July and Aug.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.87	2.0	6.8	5.3	5.6	3.6	1.9	1.6	1.3	1.1	e0.96	0.78
2	0.85	3.4	10	4.1	4.9	3.4	1.9	1.7	1.3	e0.98	0.95	1.1
3	0.85	1.3	6.6	2.5	4.7	3.2	1.8	1.6	1.2	e0.98	0.96	1.0
4	0.85	2.5	2.8	2.2	4.2	3.2	1.8	1.5	1.3	e0.96	0.99	0.80
5	0.84	2.4	2.4	2.4	5.5	3.9	1.8	1.5	1.7	e0.96	0.94	0.78
6	0.85	1.2	3.7	5.8	6.5	3.1	1.7	1.5	1.2	e1.1	0.97	0.78
7	0.89	1.0	1.8	19	9.7	3.0	1.7	1.5	1.2	e7.0	0.94	0.80
8	0.97	0.92	1.5	13	13	2.8	1.7	1.5	1.2	e3.0	0.94	0.76
9	0.85	0.85	1.3	7.6	7.8	2.8	3.3	1.7	1.1	e1.2	0.99	0.76
10	2.5	0.82	2.2	5.7	5.5	2.7	4.9	1.9	1.1	e1.1	0.92	0.74
11	1.0	0.81	1.5	4.9	4.6	12	3.6	1.5	1.1	e0.99	0.91	0.74
12	0.91	3.3	1.6	6.2	4.1	10	3.0	1.4	e1.1	0.99	0.91	0.73
13	0.92	12	40	4.4	3.9	6.5	19	1.8	e1.1	0.99	0.84	0.73
14	4.2	124	25	3.9	3.6	4.4	20	1.5	1.1	0.99	0.81	0.73
15	1.1	35	12	3.6	3.5	3.9	8.9	1.4	1.1	0.99	0.88	0.75
16	1.4	28	42	3.4	3.5	6.7	7.4	1.3	1.1	0.98	0.88	0.82
17	1.1	9.0	17	3.2	3.5	5.2	4.5	1.7	1.3	0.98	0.87	1.2
18	0.91	1.4	8.7	4.3	3.9	4.3	3.2	1.3	e2.0	e0.97	0.87	0.78
19	1.2	6.5	6.8	6.1	5.2	5.5	2.6	1.3	1.0	e0.97	0.91	0.76
20	0.91	3.9	4.9	9.0	3.5	10	2.3	2.5	1.0	0.96	0.95	0.75
21	2.2	2.6	4.0	6.4	11	6.2	2.3	1.8	1.0	0.96	e0.90	0.75
22	1.8	20	3.5	4.6	12	4.0	2.2	1.4	0.99	0.96	e0.86	0.75
23	1.1	18	3.0	4.0	13	3.1	1.9	1.3	0.97	0.96	e0.86	0.75
24	2.6	9.8	2.7	13	11	2.8	1.8	1.3	0.98	0.96	e0.82	0.75
25	3.2	7.8	2.5	32	6.6	2.5	1.9	1.3	0.98	0.96	e0.82	0.74
26	1.5	4.3	2.3	25	5.0	2.3	3.0	1.3	0.96	0.96	e0.80	0.74
27	7.1	2.5	2.3	19	4.3	2.2	5.0	1.4	1.0	0.96	e0.79	0.75
28	1.7	8.6	3.1	11	4.0	2.1	2.2	2.1	e5.0	0.96	0.78	0.74
29	1.2	7.2	2.2	8.3	---	2.0	2.0	e1.5	2.7	0.96	0.78	1.1
30	2.4	4.2	2.1	10	---	1.9	1.9	e1.3	1.2	0.99	0.77	0.77
31	6.9	---	3.1	7.7	---	1.9	---	1.3	---	e0.98	0.77	---
TOTAL	55.67	325.30	229.4	257.6	173.6	131.2	121.2	47.7	40.28	38.80	27.34	24.13
MEAN	1.80	10.8	7.40	8.31	6.20	4.23	4.04	1.54	1.34	1.25	0.88	0.80
MAX	7.1	124	42	32	13	12	20	2.5	5.0	7.0	0.99	1.2
MIN	0.84	0.81	1.3	2.2	3.5	1.9	1.7	1.3	0.96	0.96	0.77	0.73
AC-FT	110	645	455	511	344	260	240	95	80	77	54	48
CFSM	0.72	4.35	2.97	3.34	2.49	1.70	1.62	0.62	0.54	0.50	0.35	0.32
IN.	0.83	4.86	3.43	3.85	2.59	1.96	1.81	0.71	0.60	0.58	0.41	0.36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999	2000	2001	2002			
MEAN	2.25	8.08	8.67	8.48	7.70	5.15	3.30	2.06	1.78	1.13	1.08	1.13
MAX	4.44	13.2	12.6	15.1	20.0	8.34	8.03	3.09	3.45	1.66	1.40	1.88
(WY)	1998	2000	1996	1997	1996	1999	1999	1997	1997	1999	1997	1997
MIN	1.25	2.82	2.29	2.73	2.43	2.55	1.69	1.08	1.08	0.85	0.59	0.80
(WY)	2000	2001	2001	2001	2001	2001	1998	1995	1995	2000	1994	1999

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1994 - 2002

ANNUAL TOTAL	1199.88	1472.22		
ANNUAL MEAN	3.29	4.03	4.29	
HIGHEST ANNUAL MEAN			6.32	1996
LOWEST ANNUAL MEAN			2.21	2001
HIGHEST DAILY MEAN	124	Nov 14	124	Nov 14 2001
LOWEST DAILY MEAN	0.71	Jul 5	0.73	Sep 12
ANNUAL SEVEN-DAY MINIMUM	0.76	Jul 1	0.74	Sep 9
ANNUAL RUNOFF (AC-FT)	2380		2920	3110
ANNUAL RUNOFF (CFSM)	1.32		1.62	1.72
ANNUAL RUNOFF (INCHES)	17.93		21.99	23.40
10 PERCENT EXCEEDS	6.5		8.6	10
50 PERCENT EXCEEDS	1.7		1.8	2.0
90 PERCENT EXCEEDS	0.88		0.82	0.80

e Estimated

DUWAMISH RIVER BASIN

12113349 MILL CREEK NEAR MOUTH, AT ORILLIA, WA

LOCATION.--Lat 47°26'20", long 122°14'26", in SE ¼ NW ¼ sec.36, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on left bank 15 ft upstream from Burlington-Northern railroad trestle, in Orillia.

DRAINAGE AREA.--6.03 mi².

PERIOD OF RECORD.--February 1994 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (City of Kent benchmark).

REMARKS.--No estimated daily discharges. Records fair. Natural flow affected by Green River Natural Resource area located 1.75 miles upstream and by urbanization. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--8 years (water year 1995-2002), 16.4 ft³/s, 11,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 376 ft³/s Feb. 9, 1996, from rating curve extended above 133 ft³/s, elevation, 18.77 ft; minimum discharge, 0.35 ft³/s Aug. 12, 2001, result of construction upstream from station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 342 ft³/s Nov. 14, elevation, 17.53 ft; minimum discharge, 0.98 ft³/s Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	11	39	26	21	12	6.4	5.6	3.4	4.3	1.3	1.3
2	1.5	16	40	36	16	9.8	5.8	7.0	3.3	3.6	1.3	1.7
3	1.5	5.9	36	14	14	8.9	5.6	5.4	3.2	3.2	1.4	2.6
4	1.4	9.2	28	11	11	8.5	5.3	4.7	4.0	3.1	1.3	1.3
5	1.4	17	24	12	19	10	5.3	4.8	6.2	2.9	1.5	1.2
6	1.5	5.3	33	35	29	8.3	5.1	5.5	3.5	2.8	1.3	1.2
7	1.4	3.8	21	124	45	7.7	5.0	5.2	7.9	12	1.3	1.6
8	4.4	3.4	19	76	89	6.8	4.8	4.3	4.8	40	1.2	1.2
9	1.6	3.1	18	36	34	6.2	16	4.0	3.7	4.4	1.1	1.2
10	8.9	3.1	22	25	23	6.3	31	4.8	3.3	3.3	1.1	1.2
11	5.4	3.1	19	20	18	69	19	4.1	3.2	2.9	1.1	1.1
12	1.8	24	16	27	14	48	17	3.8	3.2	2.5	1.3	1.1
13	2.2	59	122	16	12	34	85	6.1	3.2	2.3	1.3	1.1
14	6.2	264	101	12	11	20	109	6.3	3.1	2.1	1.3	1.0
15	3.4	114	67	10	9.7	16	49	4.0	3.0	2.1	1.2	1.1
16	4.1	56	130	8.9	10	39	36	3.8	3.1	2.0	1.3	3.8
17	2.9	35	98	7.8	10	30	27	8.4	6.4	1.8	1.2	3.0
18	1.7	26	54	12	13	23	18	4.2	11	1.8	1.2	1.5
19	2.1	41	46	27	26	33	14	4.1	3.4	1.7	1.2	1.1
20	1.9	37	29	35	11	81	11	12	3.1	1.6	1.2	1.2
21	8.6	29	22	28	76	35	10	5.8	3.1	1.6	1.2	1.0
22	5.7	72	17	15	88	24	9.4	4.3	3.1	1.6	1.2	1.0
23	3.3	46	14	11	69	18	7.6	3.9	3.1	1.6	1.3	1.0
24	7.7	26	12	43	52	15	6.7	3.7	3.0	1.5	1.2	1.1
25	24	22	9.8	119	27	12	6.2	3.7	3.0	1.5	1.2	1.1
26	6.3	19	8.8	71	21	10	12	3.6	3.0	1.5	1.2	1.1
27	48	15	8.2	44	16	9.3	23	3.9	3.7	1.5	1.2	1.1
28	12	61	15	30	15	8.5	9.1	8.6	19	1.5	1.2	1.1
29	5.4	47	8.1	21	---	7.8	7.2	9.1	35	1.6	1.2	4.7
30	12	34	7.3	27	---	7.1	6.3	3.9	5.6	1.5	1.2	1.4
31	33	---	15	36	---	6.7	---	3.5	---	1.3	1.2	---
TOTAL	222.7	1107.9	1099.2	1015.7	799.7	630.9	572.8	162.1	167.6	117.1	38.4	45.1
MEAN	7.18	36.9	35.5	32.8	28.6	20.4	19.1	5.23	5.59	3.78	1.24	1.50
MAX	48	264	130	124	89	81	109	12	35	40	1.5	4.7
MIN	1.4	3.1	7.3	7.8	9.7	6.2	4.8	3.5	3.0	1.3	1.1	1.0
AC-FT	442	2200	2180	2010	1590	1250	1140	322	332	232	76	89

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999	2000	2001	2002			
MEAN	10.1	28.5	33.1	31.6	30.7	21.5	14.2	8.42	6.97	3.78	3.51	3.51
MAX	18.5	50.7	51.8	50.8	64.8	38.5	27.2	12.5	13.3	6.66	6.57	9.19
(WY)	1998	2000	1997	1997	1996	1997	1996	1996	2001	1997	2001	1997
MIN	5.75	13.0	11.1	13.3	11.9	12.4	6.53	3.75	3.62	1.95	1.24	1.50
(WY)	2000	2001	2001	2001	2001	2001	1998	1995	1995	1994	2002	2002

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1994 - 2002

ANNUAL TOTAL	5176.81	5979.2										
ANNUAL MEAN	14.2	16.4										
HIGHEST ANNUAL MEAN									16.4			
LOWEST ANNUAL MEAN									21.4			1999
HIGHEST DAILY MEAN									10.5			2001
LOWEST DAILY MEAN												
ANNUAL SEVEN-DAY MINIMUM				264	Nov 14		264	Nov 14	323	Feb 9	1996	
ANNUAL RUNOFF (AC-FT)	10270			0.91	Aug 12		1.0	Sep 14	0.78	Oct 7	1994	
10 PERCENT EXCEEDS	34			1.2	Aug 10		1.1	Sep 21	0.80	Oct 6	1994	
50 PERCENT EXCEEDS	7.0						6.4		41			
90 PERCENT EXCEEDS	1.5						1.2		7.8			
									1.6			

D UWAMISH RIVER BASIN

12113350 GREEN RIVER AT TUKWILA, WA

LOCATION.--Lat 47°27'55", long 122°14'48", in NW ¼ SW ¼ sec.24, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on left bank under West Valley Freeway bridge 0.6 mi southeast of Tukwila, 1.4 mi upstream from Black River, and at mile 12.4.

DRAINAGE AREA.--440 mi².

PERIOD OF RECORD.--October 1960 to September 1984 (discharge). October 1998 to current year (stage only).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (Corps of Engineers bench mark).

REMARKS.--Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions and regulation on upstream tributaries. River stage is affected daily by backwater during high tide. Chemical analyses October 1967 to September 1970. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 21.70 ft Jan. 31, 1965; minimum observed elevation 1.00 ft Sept. 2, 1999.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1959, reached a stage of 22.63 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 16.23 ft Dec. 14, minimum elevation, 1.83 ft Sept. 5.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.36	6.57	7.80	---	8.23	6.42	6.46	6.37	8.08	5.49	3.16	2.85
2	3.33	6.92	7.52	6.83	7.17	5.83	6.51	8.25	7.66	5.32	3.00	3.04
3	3.34	6.86	7.32	6.36	6.91	5.63	6.62	8.81	7.40	5.25	3.15	3.24
4	3.37	6.81	7.56	6.09	6.65	5.57	6.28	8.56	7.64	5.16	3.25	3.32
5	3.48	6.79	7.01	5.89	6.63	5.32	6.72	8.48	7.73	5.16	3.36	3.44
6	3.40	6.42	6.93	5.96	6.47	5.27	7.25	8.45	7.67	5.30	3.55	3.63
7	3.26	5.84	6.79	7.60	6.64	5.20	7.51	7.75	8.12	5.49	3.55	3.70
8	3.21	5.31	7.32	14.33	7.65	5.11	7.82	6.82	7.20	5.71	3.57	3.66
9	3.05	5.13	6.60	15.70	7.16	5.24	7.98	6.95	6.79	5.34	3.59	3.61
10	3.32	4.62	6.57	12.67	6.92	5.43	8.07	6.58	5.90	5.39	3.64	3.55
11	3.27	4.56	6.91	10.45	6.56	6.11	8.98	6.80	6.25	5.45	3.57	3.45
12	3.36	4.75	6.75	9.53	6.42	7.02	10.05	6.88	6.74	5.37	3.43	3.32
13	3.36	5.24	7.86	9.19	6.33	7.47	11.72	6.90	6.78	5.36	3.36	3.24
14	3.61	9.23	15.12	---	6.10	7.15	14.13	6.98	7.19	5.27	3.34	3.17
15	3.81	15.15	14.38	7.92	6.01	7.04	15.75	7.38	7.19	5.21	3.31	3.15
16	3.97	12.29	12.43	7.06	5.53	6.73	13.92	7.68	6.86	5.15	3.26	3.20
17	4.24	8.83	14.09	6.82	5.42	6.63	11.85	7.12	6.38	5.07	3.33	3.27
18	4.30	8.33	12.91	6.73	5.40	6.41	9.78	7.01	5.97	5.03	3.33	3.12
19	4.27	8.30	11.23	6.48	6.00	6.46	8.92	6.98	5.83	4.91	3.50	3.24
20	4.64	8.97	9.31	6.79	5.73	8.47	8.52	7.09	6.13	4.77	3.46	3.18
21	4.86	7.88	8.72	7.10	7.26	8.11	8.36	7.53	5.82	4.73	3.38	3.16
22	4.94	8.23	7.77	7.69	9.99	7.56	8.25	8.03	5.73	4.85	3.40	3.16
23	4.97	8.97	7.33	8.01	12.50	6.99	7.97	8.70	5.72	4.78	3.36	3.21
24	6.37	9.67	7.11	7.77	11.52	6.82	7.68	8.12	5.56	4.56	3.31	3.33
25	7.25	9.21	6.92	10.98	10.78	6.63	7.43	7.94	5.34	4.31	3.15	3.16
26	7.66	8.68	6.80	12.66	---	6.59	7.27	7.92	5.18	4.13	3.00	3.26
27	8.13	7.90	6.60	9.68	---	6.53	7.47	7.94	5.02	3.87	2.95	3.34
28	7.65	7.76	6.55	8.64	---	6.49	7.37	8.64	5.14	3.65	2.92	3.36
29	7.24	8.12	6.22	7.72	---	6.41	7.22	9.97	5.50	3.53	2.87	3.38
30	6.06	7.99	6.13	7.59	---	6.56	6.65	9.95	5.86	3.39	2.80	3.27
31	6.14	---	6.20	8.30	---	6.53	---	9.14	---	3.17	2.79	---
MAX	8.13	15.15	15.12	15.70	12.50	8.47	15.75	9.97	8.12	5.71	3.64	3.70
MIN	3.05	4.56	6.13	5.89	5.40	5.11	6.28	6.37	5.02	3.17	2.79	2.85

12113390 DUWAMISH RIVER AT GOLF COURSE, AT TUKWILA, WA

WATER-QUALITY RECORDS

LOCATION.--Lat 47°28'45", long 122°15'27", in NE ¼ SW ¼ sec.14, T.23 N., R.4 E., King County, Hydrologic Unit 17110012, on left bank at footbridge, 0.5 mi downstream from Black River confluence, at Tukwila, 10.4 mi upstream from mouth.

DRAINAGE AREA.--461 mi².

PERIOD OF RECORD.--March 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1996 to September 1999 (discontinued).

WATER TEMPERATURE: March 1996 to September 1999 (discontinued).

REMARKS.--During periods of low flow, river stage and water-quality parameters are affected to an unknown degree by daily tide cycle.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 386 microsiemens Sept 8, 1999, but may have been higher during periods of missing record; minimum, 34 microsiemens Jan. 2, 1999, but may have been lower during periods of missing record.

TEMPERATURE: Maximum, 23.5°C July 25, 1996; minimum, 1.0°C Dec. 22-23, 1998.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-AIRE (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	
Date		SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER, FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, SOLVED (UG/L) (46342)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)
NOV														
13...	1110	913	758	9.4	82	7.5	92	--	9.2	32	39	0	3.73	
DEC														
13...	1020	2020	753	11.0	91	7.5	95	8.1	6.8	32	40	0	4.85	
JAN														
11...	1040	3500	771	11.7	94	7.8	57	8.6	6.4	21	25	0	2.23	
FEB														
12...	1220	1740	774	11.8	91	7.4	101	10.3	5.0	34	42	0	6.15	
MAR														
12...	1110	2100	762	11.3	93	7.5	86	6.6	6.8	31	38	0	3.35	
APR														
09...	1120	2590	759	10.9	93	7.5	66	10.5	8.4	26	32	0	2.68	
MAY														
13...	1310	1780	772	10.4	92	7.3	71	11.6	10.5	27	33	0	3.08	
JUN														
11...	1310	1550	767	9.6	89	7.3	85	19.1	12.3	27	33	0	5.52	
JUL														
08...	1120	1420	773	10.1	97	7.5	67	17.9	14.1	27	33	0	2.84	
AUG														
05...	1040	414	768	7.8	78	7.5	191	17.7	15.8	58	70	0	19.3	
SEP														
10...	1510	468	765	9.2	95	7.5	151	25.7	16.9	49	59	0	12.1	

GREEN RIVER BASIN

12113390 DUWAMISH RIVER AT GOLF COURSE, AT TUKWILA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)
	NOV 13...	<.010	<.002	E.033	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002
DEC 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
FEB 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	<.010	<.002	E.230	<.020	<.005	<.018	<.003	E.003	.010	<.005	<.02	<.002	<.009
APR 09...	<.010	<.002	E.006	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
MAY 13...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
JUN 11...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
JUL 08...	<.010	<.002	E.006	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
AUG 05...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
SEP 10...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
Date	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THON WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER FLTRD 0.7 U GF, REC (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P, P' DDE DISSOLV (UG/L) (34653)	PARA- THON, DIS- SOLVED (UG/L) (39542)
NOV 13...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.007
DEC 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
FEB 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
APR 09...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
MAY 13...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
JUN 11...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
JUL 08...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	E.009	<.006	<.002	<.007	<.003	<.010
AUG 05...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
SEP 10...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010

12113390 DUWAMISH RIVER AT GOLF COURSE, AT TUKWILA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)
NOV 13...	<.002	<.010	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.011	<.02	<.034	<.02
DEC 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	<.004	<.022	<.006	<.011	M	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
FEB 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	<.004	<.022	<.006	<.011	M	<.004	<.010	<.011	<.02	.006	<.02	<.034	<.02
APR 09...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
MAY 13...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
JUN 11...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
JUL 08...	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	.017	<.02	<.034	<.02
AUG 05...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
SEP 10...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02

Date	TER- BUTHYL- AZINE, WATER, DISS, REC (UG/L) (04022)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
NOV 13...	U	<.005	<.002	<.009	11	27.1
DEC 13...	--	--	--	--	24	131
JAN 11...	U	<.005	<.002	<.009	27	255
FEB 12...	--	--	--	--	9.0	42.3
MAR 12...	U	<.005	<.002	<.009	27	153
APR 09...	--	<.005	<.002	<.009	20	140
MAY 13...	--	<.005	<.002	<.009	16	76.9
JUN 11...	--	<.005	<.002	<.009	10	41.9
JUL 08...	--	<.005	<.002	<.009	15	57.5
AUG 05...	--	<.005	<.002	<.009	5.0	5.6
SEP 10...	--	<.005	<.002	<.009	5.0	6.3

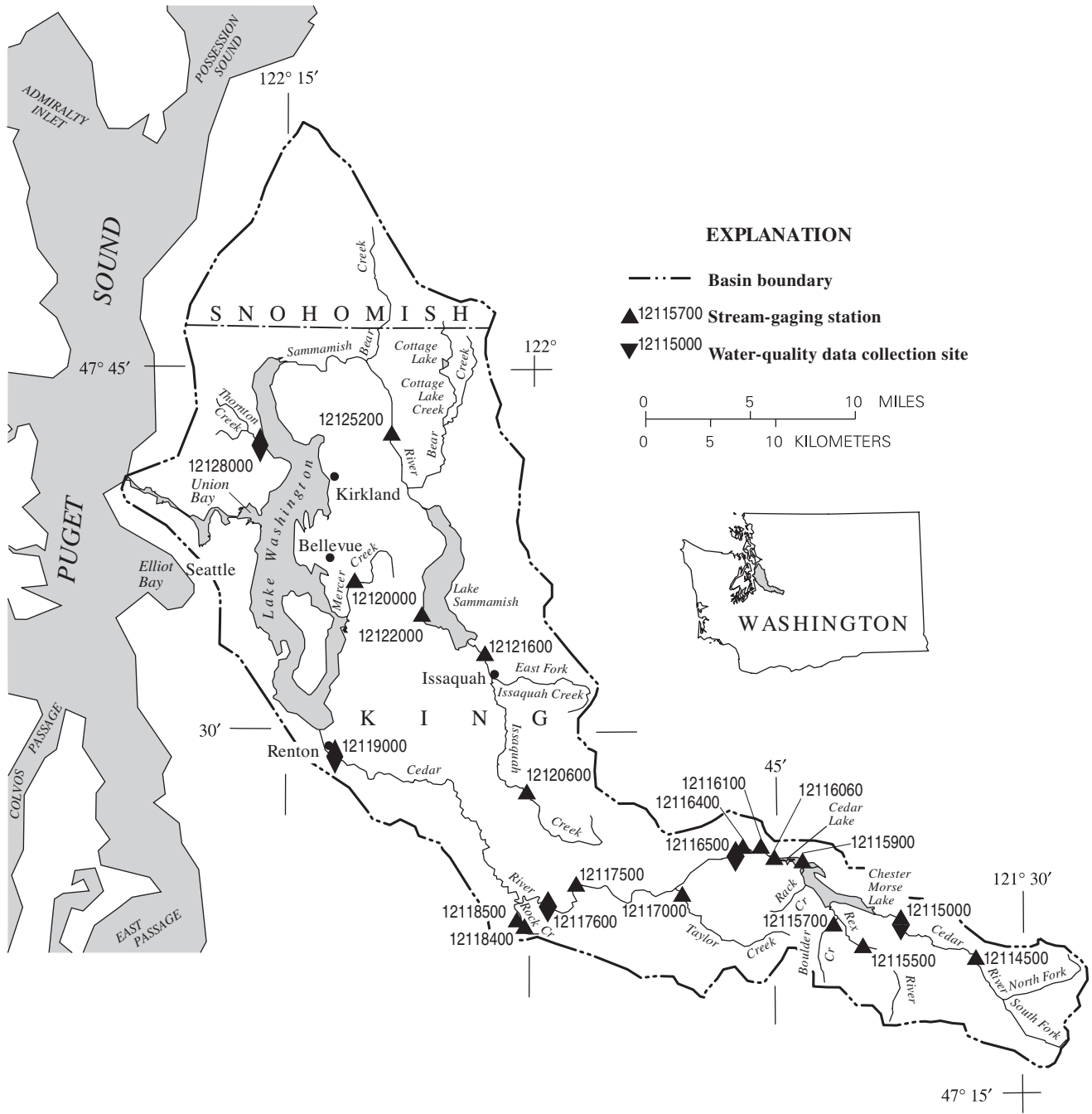


Figure 27. Location of surface-water and water-quality stations in the Lake Washington and Sammamish River Basins.

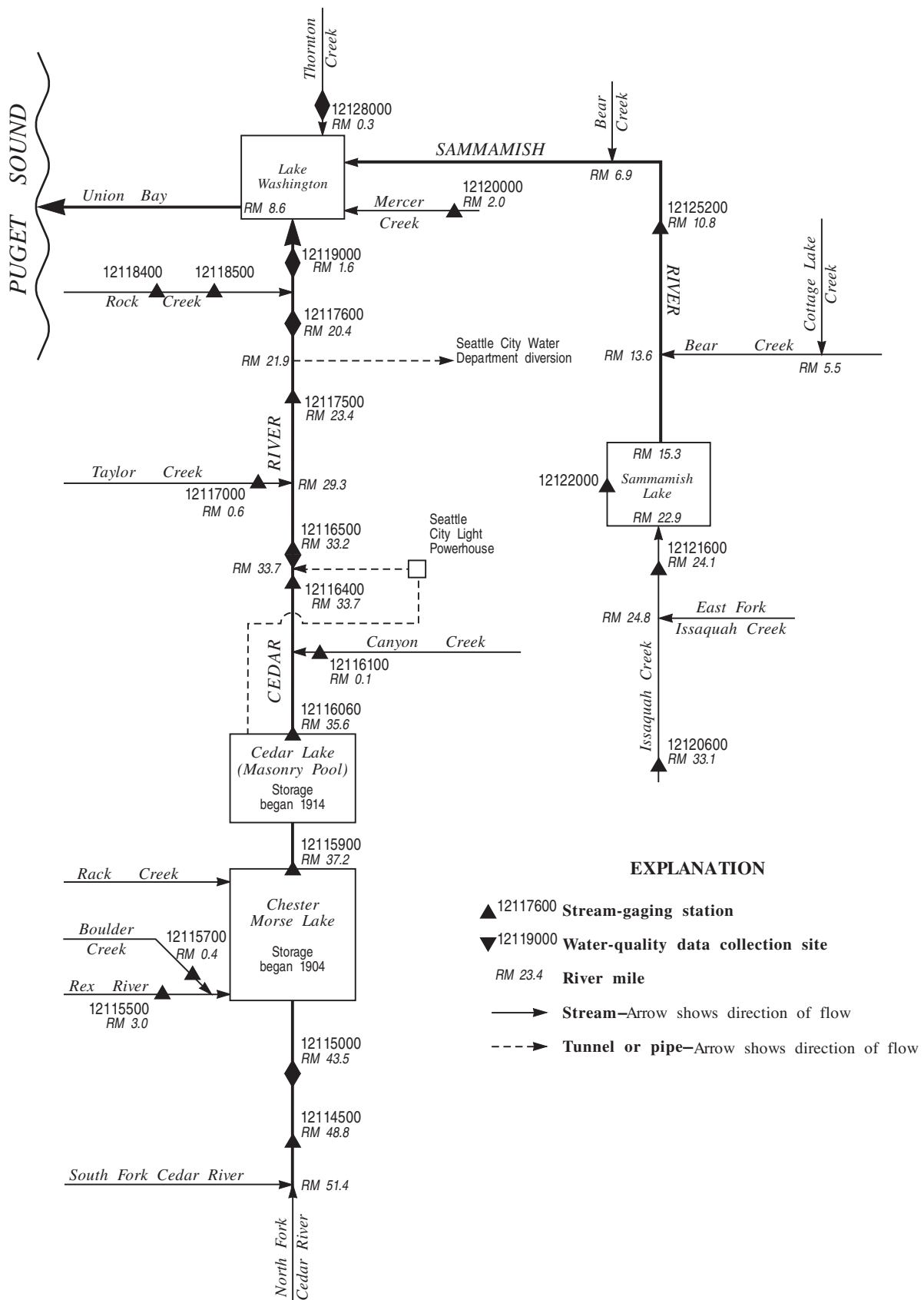


Figure 28. Schematic diagram showing surface-water and water-quality stations in the Lake Washington and Sammamish River Basins.

LAKE WASHINGTON BASIN

12114500 CEDAR RIVER BELOW BEAR CREEK, NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°20'32", long 121°32'52", in SE ¼ SE ¼ sec.32, T.22 N., R.10 E., King County, Hydrologic Unit 17110012, on right bank 500 ft downstream from Bear Creek, and 12.2 mi southeast of town of Cedar Falls.

DRAINAGE AREA.--25.4 mi².

PERIOD OF RECORD.--October 1945 to December 1963, October 1975 to current year.

REVISED RECORDS.--WSP 1716: 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,880 ft above NGVD of 1929, from topographic map. Prior to Sept. 16, 1960, at site 90 ft upstream at datum 2.35 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1946-63, 1976-2002), 164 ft³/s, 87.87 in/yr, 119,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,620 ft³/s Nov. 22, 1959, gage height, 6.98 ft site and datum then in use, from rating curve extended above 890 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 12 ft³/s Nov. 27, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	0700	814	3.96	Apr. 14	0500	*1,370	*4.70
Dec. 17	0000	771	3.89	May 29	0000	712	3.79
Jan. 8	0000	1090	4.37				

Minimum discharge, 16 ft³/s Oct. 4-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	386	115	67	88	128	129	310	469	242	47	23
2	17	331	109	69	80	115	131	353	455	217	45	24
3	17	270	95	65	75	104	128	319	448	199	44	26
4	17	232	88	65	71	97	135	277	454	185	43	23
5	16	221	82	63	68	95	157	256	504	172	43	23
6	16	186	87	103	66	88	222	229	513	172	45	23
7	17	159	87	633	70	81	312	200	402	192	41	22
8	24	142	82	958	68	77	276	178	326	207	39	22
9	28	127	80	622	63	73	257	165	285	170	38	23
10	30	112	74	382	63	72	315	157	307	185	36	22
11	64	100	70	291	61	185	352	160	379	181	35	21
12	68	95	67	303	e59	223	498	190	469	165	34	21
13	122	144	380	268	e57	184	727	276	585	154	33	21
14	197	666	439	221	e55	161	1150	333	616	137	32	20
15	120	460	265	185	e53	145	645	334	537	119	31	20
16	84	337	512	162	e51	133	418	313	448	110	30	23
17	79	260	554	144	e50	120	311	325	370	104	30	22
18	65	209	335	133	e55	109	259	339	412	98	29	21
19	119	188	253	128	60	104	229	350	420	92	29	20
20	112	183	204	129	60	97	215	445	363	83	30	21
21	114	210	171	118	138	83	203	431	384	78	29	20
22	201	257	148	104	297	79	210	484	397	74	28	19
23	390	323	132	97	315	76	203	440	364	70	27	19
24	279	254	119	174	285	74	189	394	325	66	27	19
25	289	206	107	228	225	76	184	396	319	63	27	19
26	278	174	97	169	186	79	186	438	353	60	27	19
27	247	153	91	142	160	80	185	498	332	58	26	19
28	200	142	86	127	142	104	186	692	321	56	25	19
29	167	129	79	112	---	111	203	695	410	57	25	19
30	163	114	74	104	---	124	241	608	284	53	25	22
31	298	---	71	97	---	121	---	534	---	50	24	---
TOTAL	3855	6770	5153	6463	3021	3398	8856	11119	12251	3869	1024	635
MEAN	124.4	225.7	166.2	208.5	107.9	109.6	295.2	358.7	408.4	124.8	33.03	21.17
MAX	390	666	554	958	315	223	1150	695	616	242	47	26
MIN	16	95	67	63	50	72	128	157	284	50	24	19
AC-FT	7650	13430	10220	12820	5990	6740	17570	22050	24300	7670	2030	1260
CFSM	4.90	8.88	6.54	8.21	4.25	4.32	11.6	14.1	16.1	4.91	1.30	0.83
IN.	5.65	9.92	7.55	9.47	4.42	4.98	12.97	16.28	17.94	5.67	1.50	0.93

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
MEAN	96.99	221.0	207.4	167.8	169.1
MAX	262	697	496	459	407
(WY)	1960	1991	1976	1953	1996
MIN	15.3	16.6	27.9	49.9	43.9
(WY)	1988	1953	1953	1952	1956

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1946 - 2002
ANNUAL TOTAL	46759	66414	
ANNUAL MEAN	128.1	182.0	164.3
HIGHEST ANNUAL MEAN			234
LOWEST ANNUAL MEAN			102
HIGHEST DAILY MEAN	666	Nov 14	3880
LOWEST DAILY MEAN	16	Oct 5	13
ANNUAL SEVEN-DAY MINIMUM	17	Sep 30	14
ANNUAL RUNOFF (AC-FT)	92750		119000
ANNUAL RUNOFF (CFSM)	5.04	7.16	6.47
ANNUAL RUNOFF (INCHES)	68.48	97.27	87.87
10 PERCENT EXCEEDS	278	411	359
50 PERCENT EXCEEDS	94	128	110
90 PERCENT EXCEEDS	22	24	28

e Estimated

LAKE WASHINGTON BASIN

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°22'13", long 121°37'26", in SE ¼ SW ¼ sec.23, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 1.4 mi upstream from Chester Morse Lake, 8.3 mi southeast of town of Cedar Falls, and at mile 43.5.

DRAINAGE AREA.--40.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P), 1955(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,560 ft above NGVD of 1929 from topographic map. Prior to Oct. 26, 1957, at site 80 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--57 years (water years 1946-2002), 259 ft³/s, 86.53 in/yr, 187,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,490 ft³/s Nov. 22, 1959, gage height, 11.34 ft, from high-water mark in well, from rating curve extended above 4,300 ft³/s, on basis of slope-area measurements at gage heights 10.16 ft and 11.34 ft; maximum gage height, 11.4 ft Feb. 11, 1951, backwater from Chester Morse Lake; minimum discharge, 19 ft³/s Oct. 23-26, 29-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 14	0030	1,270	5.79	Jan. 08	0130	1,970	6.54
Dec. 17	0145	1,380	5.93	Apr. 14	0645	*2,480	*6.97

Minimum discharge, 23 ft³/s Oct. 4-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	611	217	118	161	209	231	480	e685	373	71	35
2	25	530	214	125	150	188	234	553	e675	328	68	36
3	24	422	187	119	145	173	221	495	e660	298	65	40
4	24	348	169	120	136	163	229	423	e670	276	64	36
5	23	332	156	116	131	163	272	397	e715	253	65	35
6	23	276	163	168	130	151	381	358	e760	246	71	34
7	23	235	166	1080	145	141	546	314	e600	263	64	34
8	26	205	158	1660	147	133	475	282	e480	291	60	34
9	36	182	168	1040	137	125	429	262	e420	239	57	34
10	39	162	153	656	134	127	542	246	460	250	55	33
11	109	148	141	496	131	349	605	247	555	250	54	32
12	97	139	136	512	121	451	839	292	659	230	52	32
13	186	180	750	459	114	359	1190	433	813	214	50	31
14	301	1030	928	375	108	301	2000	522	910	193	48	30
15	210	785	523	312	103	263	1080	522	e790	170	47	30
16	146	596	943	272	101	231	718	481	e660	156	47	32
17	135	446	1050	238	100	203	543	499	e540	148	45	34
18	108	350	631	216	108	186	441	526	e590	139	44	31
19	166	314	456	212	119	182	386	536	e600	132	43	30
20	175	298	359	227	126	182	359	655	e530	122	47	30
21	166	354	296	214	299	157	333	645	e555	114	45	30
22	275	449	253	190	608	147	340	719	581	108	43	29
23	569	608	221	173	619	141	331	661	537	103	42	28
24	443	453	197	313	543	140	306	601	465	97	41	27
25	465	355	179	525	406	147	296	600	448	93	41	27
26	443	296	164	356	327	155	299	649	491	90	41	27
27	378	256	153	270	274	160	300	723	476	86	40	27
28	299	238	146	224	239	198	293	1000	460	83	39	27
29	244	221	136	195	---	217	320	1020	627	84	37	27
30	227	195	128	185	---	229	375	903	451	79	36	29
31	432	---	124	177	---	226	---	e805	---	74	36	---
TOTAL	5842	11014	9665	11343	5862	6197	14914	16849	17863	5582	1558	941
MEAN	188.5	367.1	311.8	365.9	209.4	199.9	497.1	543.5	595.4	180.1	50.26	31.37
MAX	569	1030	1050	1660	619	451	2000	1020	910	373	71	40
MIN	23	139	124	116	100	125	221	246	420	74	36	27
AC-FT	11590	21850	19170	22500	11630	12290	29580	33420	35430	11070	3090	1870
CFSM	4.63	9.02	7.66	8.99	5.14	4.91	12.2	13.4	14.6	4.42	1.23	0.77
IN.	5.34	10.07	8.83	10.37	5.36	5.66	13.63	15.40	16.33	5.10	1.42	0.86

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	MEAN	149.9	335.3	350.0	305.8	293.7	240.4	353.9	455.9	356.7	150.9	58.30	65.16
MAX	403	1269	780	722	692	698	580	834	874	472	150	365	
(WY)	1948	1991	1976	1953	1996	1972	1989	1956	1974	1955	1964	1959	
MIN	20.1	27.1	63.5	91.7	81.9	99.1	160	170	62.6	49.6	32.5	25.4	
(WY)	1988	1953	1953	1979	1969	1955	1967	1992	1992	1977	1987	1987	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1946 - 2002

ANNUAL TOTAL		73695		107630						259.2		
ANNUAL MEAN		201.9		294.9								
HIGHEST ANNUAL MEAN										373		1959
LOWEST ANNUAL MEAN										157		2001
HIGHEST DAILY MEAN			1050	Dec 17		2000	Apr 14		6400		Nov 25	1990
LOWEST DAILY MEAN			23	Oct 5		23	Oct 5		19		Oct 23	1987
ANNUAL SEVEN-DAY MINIMUM			24	Oct 1		24	Oct 1		19		Oct 23	1987
ANNUAL RUNOFF (AC-FT)		146200		213500						187800		
ANNUAL RUNOFF (CFSM)		4.96		7.25						6.37		
ANNUAL RUNOFF (INCHES)		67.36		98.37						86.53		
10 PERCENT EXCEEDS		444		637						546		
50 PERCENT EXCEEDS		153		217						183		
90 PERCENT EXCEEDS		32		36						43		

e Estimated

LAKE WASHINGTON BASIN

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1997 to current year.

INSTRUMENTATION.--Temperature recorder since May, 1997.

REMARKS.--Records excellent except those for Oct. 1, 2 and July 19 to Sept. 30, which are good.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 16.5°C (rounded) Sept. 3, 4, 6, 14, 1998; minimum, 0.0°C March 19, 20, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 13.4°C Jul. 24; minimum, 0.0°C Mar. 19, 20.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	9.0	9.9	6.0	6.0	6.0	4.2	3.5	3.9	3.9	3.2	3.4
2	10.2	8.6	9.3	6.7	6.0	6.2	4.2	3.9	4.1	4.2	3.5	3.9
3	10.2	8.1	8.9	6.7	5.7	6.2	4.2	3.5	4.0	3.9	3.2	3.7
4	10.2	8.1	8.8	6.7	6.0	6.3	3.9	3.5	3.7	4.2	3.5	3.9
5	10.2	8.5	9.0	6.4	5.7	6.0	3.9	3.2	3.5	4.2	3.9	3.9
6	9.5	8.1	8.6	5.7	4.9	5.4	3.5	3.2	3.4	4.2	3.5	3.9
7	9.2	7.8	8.5	5.3	4.6	5.0	3.9	3.5	3.8	3.9	3.5	3.8
8	9.2	8.5	8.6	5.7	4.9	5.2	4.6	3.9	4.2	3.9	3.5	3.8
9	9.9	8.5	9.0	5.7	4.9	5.2	4.2	3.9	4.0	3.9	3.9	3.9
10	9.2	8.1	8.6	6.4	5.3	5.7	3.9	3.5	3.8	4.2	3.9	4.0
11	8.8	7.8	8.3	6.4	5.7	6.0	4.2	3.5	3.9	4.6	3.9	4.2
12	8.5	7.8	8.2	6.4	6.0	6.2	3.9	3.5	3.7	4.2	3.5	3.9
13	8.1	7.8	7.8	6.7	6.4	6.5	3.5	2.8	3.2	4.2	3.5	3.7
14	8.1	7.4	7.9	6.7	6.0	6.5	3.9	3.2	3.4	3.5	3.2	3.5
15	8.5	7.1	7.8	6.7	6.4	6.6	3.9	2.8	3.5	3.5	3.2	3.2
16	7.8	7.4	7.7	6.4	6.4	6.4	3.9	2.8	3.5	3.2	2.8	3.1
17	8.1	7.4	7.6	6.4	4.9	5.8	3.9	3.2	3.6	3.5	3.2	3.3
18	7.4	7.1	7.3	5.7	4.9	5.3	3.2	2.8	3.1	3.5	2.8	3.2
19	7.8	7.4	7.5	6.0	5.3	5.7	3.5	3.2	3.4	3.2	2.5	2.8
20	7.4	6.7	7.2	6.4	5.7	6.0	3.9	3.5	3.7	2.8	2.5	2.7
21	7.1	6.7	6.8	6.0	5.7	5.8	3.9	3.5	3.8	2.8	2.5	2.6
22	7.1	6.7	7.0	5.7	5.3	5.5	3.5	3.2	3.4	2.5	2.1	2.4
23	6.7	6.0	6.1	5.7	4.9	5.3	3.5	3.2	3.3	2.8	2.5	2.5
24	6.0	5.3	5.5	4.9	4.9	4.9	3.2	2.8	3.1	2.8	2.5	2.7
25	6.4	5.7	6.0	5.3	4.6	4.8	2.8	2.5	2.8	2.8	2.5	2.6
26	7.1	6.0	6.5	4.9	4.6	4.7	2.8	2.5	2.7	2.8	2.1	2.6
27	6.7	5.7	6.0	4.9	4.6	4.7	3.2	2.8	3.0	2.8	2.5	2.6
28	5.7	4.9	5.3	4.6	1.4	2.9	3.5	2.5	3.0	2.8	2.1	2.4
29	6.0	4.9	5.5	3.5	2.8	3.2	3.5	2.8	3.2	2.8	2.5	2.6
30	6.4	6.0	6.2	4.2	3.5	3.8	3.5	3.2	3.3	2.5	1.1	1.8
31	6.4	6.0	6.1	---	---	---	4.2	3.2	3.6	2.5	2.1	2.3
MONTH	11.5	4.9	7.5	6.7	1.4	5.5	4.6	2.5	3.5	4.6	1.1	3.2

LAKE WASHINGTON BASIN

12115500 REX RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'03", long 121°39'43", in NE ¼ NW ¼ sec.33, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 3.0 mi upstream from mouth and Chester Morse Lake, and 7.5 mi southeast of town of Cedar Falls.

DRAINAGE AREA.--13.4 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M). WSP 1932: Drainage area. WDR WA-74-1: 1973.

GAGE.--Water-stage recorder. Elevation of gage is 1,700 ft above NGVD of 1929, from topographic map. Prior to Oct. 1, 2000, published at datum 1,600 ft above NGVD of 1929.

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

AVERAGE DISCHARGE.--57 years (water years 1946-2002), 101 ft³/s, 102.71 in/yr, 73,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft³/s Nov. 22, 1959, gage height, 8.20 ft, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement at gage height 7.19 ft and slope-area measurement at gage height 8.20 ft; maximum gage height, 9.31 ft Nov. 19, 1962, backwater from debris; minimum discharge, 3.0 ft³/s Sept. 6-8, 1986, gage height, 3.23 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 13	1715	803	5.55	Apr. 14	0245	*1,190	*6.06
Jan. 7	2230	930	5.73				

Minimum discharge, 5.3 ft³/s Sept. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	277	73	33	45	65	78	183	236	121	15	7.0
2	7.5	217	77	43	43	58	76	190	232	100	14	8.1
3	7.0	155	65	41	41	52	71	159	225	86	14	15
4	7.0	127	56	44	38	48	77	129	230	78	14	8.7
5	6.5	128	50	43	36	46	97	120	273	69	15	7.9
6	6.5	99	53	99	38	42	179	105	265	62	23	7.4
7	6.5	83	54	576	45	40	241	89	204	59	15	7.0
8	21	71	52	588	44	e37	177	81	163	61	14	7.1
9	37	62	57	325	43	e34	170	77	161	51	13	7.7
10	53	54	51	204	42	35	265	74	193	48	12	7.0
11	126	49	46	153	41	181	270	83	217	44	12	6.7
12	143	48	51	190	37	202	405	128	241	41	12	6.5
13	160	100	583	155	34	140	563	193	283	37	11	6.5
14	249	361	386	118	31	105	766	238	273	33	11	6.1
15	133	273	198	97	29	86	317	194	235	31	9.8	6.1
16	92	216	397	80	29	73	222	171	193	29	9.4	10
17	72	158	341	68	29	63	164	204	171	27	9.0	9.0
18	57	118	203	61	36	56	132	200	237	25	8.9	7.1
19	125	e122	138	58	43	61	117	209	196	24	8.6	6.9
20	93	e120	104	67	46	58	109	241	168	22	11	9.6
21	112	e135	83	63	188	44	101	232	167	21	9.9	7.0
22	173	223	70	54	323	42	134	277	161	20	9.2	6.1
23	203	263	61	52	284	39	113	230	144	19	8.9	6.1
24	171	167	54	167	229	38	98	213	126	18	8.3	6.1
25	231	120	49	281	150	40	95	228	118	18	7.9	5.7
26	180	95	45	149	111	44	97	243	119	17	8.5	5.7
27	138	79	42	e95	e84	46	94	258	113	17	7.9	5.7
28	104	70	42	e73	72	70	95	337	150	17	7.9	5.7
29	86	69	38	63	---	76	112	340	235	19	7.5	7.4
30	92	59	34	55	---	77	143	295	150	17	7.5	9.1
31	241	---	35	50	---	72	---	259	---	16	7.5	---
TOTAL	3140.6	4118	3588	4145	2211	2070	5578	5980	5879	1247	342.7	222.0
MEAN	101.3	137.3	115.7	133.7	78.96	66.77	185.9	192.9	196.0	40.23	11.05	7.400
MAX	249	361	583	588	323	202	766	340	283	121	23	15
MIN	6.5	48	34	33	29	34	71	74	113	16	7.5	5.7
AC-FT	6230	8170	7120	8220	4390	4110	11060	11860	11660	2470	680	440
CFSM	7.56	10.2	8.64	9.98	5.89	4.98	13.9	14.4	14.6	3.00	0.82	0.55
IN.	8.72	11.43	9.96	11.51	6.14	5.75	15.49	16.60	16.32	3.46	0.95	0.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	MEAN	71.55	148.4	151.0	132.0	119.0	91.57	136.2	160.7	115.8	44.71	17.76	29.22
MAX	171	489	357	326	281	250	248	280	354	174	62.4	189	
(WY)	1948	1991	1976	1953	1982	1972	1989	1971	1974	1955	1964	1959	
MIN	6.30	7.90	28.9	32.6	20.6	28.7	50.7	41.7	17.1	12.3	6.73	6.54	
(WY)	1953	1953	1986	1957	1969	1955	1967	1992	1992	1958	1986	1967	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1946 - 2002
ANNUAL TOTAL	28407.6	38521.3	
ANNUAL MEAN	77.83	105.5	101.3
HIGHEST ANNUAL MEAN			146
LOWEST ANNUAL MEAN			61.5
HIGHEST DAILY MEAN	583	Dec 13	2750
LOWEST DAILY MEAN	6.5	Oct 5	3.1
ANNUAL SEVEN-DAY MINIMUM	6.9	Oct 1	3.8
ANNUAL RUNOFF (AC-FT)	56350	76410	73380
ANNUAL RUNOFF (CFSM)	5.81	7.88	7.56
ANNUAL RUNOFF (INCHES)	78.86	106.94	102.71
10 PERCENT EXCEEDS	177	239	219
50 PERCENT EXCEEDS	53	70	65
90 PERCENT EXCEEDS	8.9	8.0	13

e Estimated

LAKE WASHINGTON BASIN

12115700 BOULDER CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'59", long 121°41'30", in NW ¼ NW ¼ sec.29, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 5.8 mi southeast of Cedar Falls, and at mile 0.4.

DRAINAGE AREA.--4.64 mi².

PERIOD OF RECORD.--March 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,610 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--19 years (water years 1984-2002), 24.6 ft³/s, 71.89 in/yr, 17,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft³/s Nov. 23, 1986, gage height, 4.16 ft; maximum gage height, 5.37 ft Feb. 8, 1996; minimum discharge, no flow for many days during August through October most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 310 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 14	0100	*315	*4.15	No other peak greater than base discharge.			

Minimum discharge, 0.98 ft³/s Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	59	22	11	15	21	28	52	54	30	3.5	1.5
2	1.4	54	25	13	13	18	27	55	51	24	3.3	2.0
3	1.3	43	21	12	13	16	25	47	49	20	3.2	3.6
4	1.2	36	19	13	12	15	27	39	48	18	3.3	2.1
5	1.2	36	17	13	12	15	32	38	59	16	3.9	1.8
6	1.2	29	18	26	12	13	54	33	57	14	6.1	1.7
7	1.2	25	18	175	14	12	66	29	47	13	4.0	1.7
8	4.0	22	19	166	13	12	53	26	40	13	3.4	1.6
9	6.7	19	22	98	13	11	52	25	37	11	3.1	1.8
10	9.8	16	19	61	12	11	76	24	40	9.7	3.0	1.5
11	33	14	17	46	12	46	82	26	44	9.0	2.8	1.4
12	27	14	18	50	11	50	121	36	48	8.3	2.7	1.3
13	34	30	163	44	9.9	37	173	51	55	7.6	2.5	1.2
14	46	162	116	37	9.4	30	222	63	54	7.1	2.4	1.2
15	32	90	61	30	8.9	26	102	54	45	6.6	2.2	1.2
16	24	66	122	26	8.7	22	69	48	38	6.1	2.2	2.0
17	18	51	99	22	8.9	18	52	53	34	5.8	2.1	1.8
18	14	39	62	20	12	16	42	52	50	5.5	2.0	1.4
19	29	41	43	20	15	16	38	53	42	5.4	2.0	1.5
20	25	40	34	23	16	16	35	61	36	5.1	2.6	1.9
21	25	47	28	21	72	13	34	60	35	4.7	2.3	1.5
22	38	71	23	18	139	13	45	70	33	4.5	2.1	1.3
23	46	89	20	17	98	13	39	60	29	4.2	1.9	1.2
24	42	57	17	42	72	13	35	54	26	4.1	1.9	1.1
25	62	42	16	68	48	15	33	56	23	3.9	1.8	1.1
26	49	33	14	43	36	16	33	59	23	3.9	1.9	1.1
27	39	28	13	30	29	17	32	63	22	3.8	1.8	1.1
28	30	26	13	23	25	23	32	88	34	4.1	1.7	1.1
29	24	23	12	19	---	26	36	90	54	4.6	1.6	1.4
30	26	21	11	18	---	27	44	72	37	4.1	1.6	1.2
31	51	---	12	17	---	25	---	60	---	3.7	1.6	---
TOTAL	743.4	1323	1114	1222	759.8	622	1739	1597	1244	280.8	80.5	46.3
MEAN	24.0	44.1	35.9	39.4	27.1	20.1	58.0	51.5	41.5	9.06	2.60	1.54
MAX	62	162	163	175	139	50	222	90	59	30	6.1	3.6
MIN	1.2	14	11	11	8.7	11	25	24	22	3.7	1.6	1.1
AC-FT	1470	2620	2210	2420	1510	1230	3450	3170	2470	557	160	92
CFSM	5.17	9.50	7.74	8.50	5.85	4.32	12.5	11.1	8.94	1.95	0.56	0.33
IN.	5.96	10.61	8.93	9.80	6.09	4.99	13.94	12.80	9.97	2.25	0.65	0.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	14.2	48.0	38.6	35.3	32.4	28.6	36.9	31.6	18.2	6.74	1.62	2.81								
MAX	42.0	124	137	73.2	97.8	48.9	70.7	52.9	42.8	27.8	5.22	12.2								
(WY)	1986	1996	1999	1984	1996	1993	1985	1999	1983	1993	1983	1983								
MIN	0.000	2.07	5.92	9.96	10.9	9.34	16.3	9.21	2.03	0.22	0.000	0.000								
(WY)	1988	1988	1986	1985	1994	1992	1995	1992	1992	1987	1987	1987								

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002	
ANNUAL TOTAL	7940.7		10771.8			
ANNUAL MEAN	21.8		29.5		24.6	
HIGHEST ANNUAL MEAN					37.0 1999	
LOWEST ANNUAL MEAN					15.6 1992	
HIGHEST DAILY MEAN	163	Dec 13	222	Apr 14	850	Feb 8 1996
LOWEST DAILY MEAN	1.0	Sep 24	1.1	Sep 24	0.00	Aug 8 1984
ANNUAL SEVEN-DAY MINIMUM	1.2	Sep 18	1.1	Sep 22	0.00	Aug 8 1984
ANNUAL RUNOFF (AC-FT)	15750		21370		17790	
ANNUAL RUNOFF (CFSM)	4.69		6.36		5.29	
ANNUAL RUNOFF (INCHES)	63.66		86.36		71.89	
10 PERCENT EXCEEDS	49		60		54	
50 PERCENT EXCEEDS	16		22		14	
90 PERCENT EXCEEDS	1.8		1.8		0.63	

LAKE WASHINGTON BASIN

12115900 CHESTER MORSE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°24'34", long 121°43'22", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.12, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, at the overflow dike, 3.1 mi southeast of town of Cedar Falls, and at mile 37.2.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Prior to Aug. 22, 2001, nonrecording gage at same site and datum. Datum of gage is 7.39 ft above NGVD of 1929 (levels by City of Seattle).

REMARKS.--Reservoir is formed by concrete overflow dike (wooden crib dam prior to 1989). Usable capacity, 37,186 acre-ft between gage heights 1,532 ft, minimum operation level, and 1,555 ft, spillway crest. Unused storage below gage height 1,532 ft is 38,137 acre-ft. Occasionally, elevation of downstream Cedar Lake exceeds 1,555 ft and the overflow dike is submerged. Chester Morse Lake is then controlled by masonry gravity dam at Cedar Lake. Water is used by City of Seattle for municipal water supply and power production. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Prior to Aug. 22, 2001, gage-height record furnished by City of Seattle Water Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1,568.59 ft Nov. 25, 1990; minimum observed, 1,533.24 ft Nov. 8, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 1,564.11 ft June 6; minimum, 1,545.64 ft Apr. 6.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1548.93	1551.24	1550.20	1548.98	1551.27	1552.98	1547.06	1550.62	1562.82	1560.50	1557.73	1552.74
2	1548.84	1551.89	1550.07	1548.33	1550.93	1552.79	1546.80	1551.16	1563.13	1560.52	1557.53	1552.60
3	1548.73	1552.21	1549.88	1547.88	1550.59	1552.57	1546.49	1551.68	1563.42	1560.60	1557.33	1552.51
4	1548.63	1552.23	1549.69	1547.63	1550.32	1552.33	1546.12	1551.92	1563.65	1560.75	1557.13	1552.36
5	1548.42	1552.35	1549.54	1547.53	1549.96	1552.07	1545.79	1552.10	1563.86	1560.88	1556.96	1552.19
6	1548.18	1552.44	1549.39	1547.45	1549.69	1551.70	1545.67	1552.28	1564.04	1560.96	1556.85	1552.03
7	1547.91	1552.44	1549.30	1548.33	1549.55	1551.26	1545.97	1552.32	1563.94	1561.04	1556.70	1551.87
8	1547.73	1552.32	1549.15	1551.62	1549.46	1550.76	1546.40	1552.08	1563.37	1561.16	1556.53	1551.73
9	1547.63	1552.07	1549.06	1553.96	1549.34	1550.33	1546.49	1551.79	1562.64	1561.24	1556.36	1551.58
10	1547.48	1551.79	1548.96	1554.68	1549.17	1549.79	1546.71	1551.53	1561.86	1561.29	1556.21	1551.43
11	1547.61	1551.47	1548.79	1554.79	1549.00	1549.37	1547.25	1551.38	1561.46	1561.31	1556.08	1551.27
12	1547.78	1551.10	1548.66	1554.74	1548.90	1550.09	1548.00	1551.41	1561.48	1561.30	1555.93	1551.06
13	1548.12	1550.81	1549.20	1555.00	1548.68	1550.40	1549.60	1551.62	1561.91	1561.27	1555.77	1550.84
14	1548.51	1551.57	1552.22	1554.84	1548.54	1550.45	1552.38	1552.27	1562.58	1561.19	1555.61	1550.60
15	1549.21	1553.61	1553.30	1554.27	1548.51	1550.43	1554.54	1553.00	1563.19	1561.12	1555.45	1550.37
16	1549.34	1554.68	1554.24	1553.42	1548.24	1550.39	1555.04	1553.58	1563.60	1561.01	1555.28	1550.18
17	1549.53	1555.11	1556.58	1552.48	1548.08	1550.34	1554.90	1554.09	1563.67	1560.85	1555.13	1549.99
18	1549.58	1555.12	1557.74	1551.70	1548.01	1550.31	1554.50	1554.66	1563.33	1560.65	1554.96	1549.79
19	1549.60	1554.78	1557.83	1551.26	1547.88	1550.42	1553.71	1555.22	1563.14	1560.43	1554.80	1549.56
20	1549.93	1554.48	1557.55	1550.90	1547.93	1550.81	1552.85	1555.87	1562.78	1560.22	1554.64	1549.36
21	1550.05	1554.11	1557.05	1550.65	1548.02	1550.87	1552.01	1556.59	1562.35	1559.98	1554.49	1549.15
22	1550.28	1553.56	1556.38	1550.31	1549.22	1550.49	1551.29	1557.37	1561.95	1559.74	1554.34	1548.92
23	1550.74	1553.67	1555.35	1549.90	1550.79	1549.97	1550.85	1558.18	1561.54	1559.49	1554.18	1548.70
24	1551.14	1553.62	1554.48	1549.64	1551.91	1549.44	1550.55	1558.66	1561.04	1559.25	1554.02	1548.48
25	1550.77	1553.03	1553.47	1550.52	1552.57	1548.88	1550.39	1558.78	1560.64	1558.99	1553.86	1548.25
26	1550.95	1552.38	1552.50	1551.42	1552.90	1548.32	1550.26	1558.84	1560.39	1558.79	1553.70	1547.99
27	1551.03	1551.64	1551.65	1551.66	1553.09	1547.89	1550.19	1559.00	1560.22	1558.61	1553.55	1547.70
28	1551.01	1551.12	1550.94	1551.69	1553.11	1547.59	1550.13	1559.60	1560.09	1558.43	1553.39	1547.44
29	1550.83	1550.68	1550.47	1551.63	---	1547.55	1550.13	1560.60	1560.32	1558.27	1553.23	1547.23
30	1550.66	1550.41	1549.96	1551.57	---	1547.46	1550.28	1561.64	1560.53	1558.09	1553.07	1546.96
31	1550.64	---	1549.39	1551.48	---	1547.28	---	1562.37	---	1557.91	1552.91	---
MAX	1551.14	1555.12	1557.83	1555.00	1553.11	1552.98	1555.04	1562.37	1564.04	1561.31	1557.73	1552.74
MIN	1547.48	1550.41	1548.66	1547.45	1547.88	1547.28	1545.67	1550.62	1560.09	1557.91	1552.91	1546.96

CAL YR 2001 MAX 1563.66 MIN 1541.46
WTR YR 2002 MAX 1564.04 MIN 1545.67

LAKE WASHINGTON BASIN

12116100 CANYON CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'11", long 121°45'55", in NW ¼ SE ¼ sec.3, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 400 ft upstream from mouth, and 0.8 mi east of town of Cedar Falls.

DRAINAGE AREA.--0.19 mi².

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder and wooden control. Elevation of gage is 1,040 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--57 years (water years 1946-2002), 15.2 ft³/s, 10,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131 ft³/s Dec. 7, 1975, gage height, 2.22 ft; minimum daily discharge, 0.22 ft³/s Nov. 6-11, 17-22, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s June 10-12; minimum discharge, 1.3 ft³/s Oct. 27-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	1.8	13	13	8.4	6.7	6.3	6.5	20	35	28	16
2	3.9	2.0	12	13	8.4	6.9	6.2	6.5	23	35	28	16
3	3.7	2.3	12	12	8.4	6.9	6.0	6.5	26	35	28	16
4	3.5	2.5	11	11	8.4	7.2	5.9	6.5	30	34	27	15
5	3.5	2.8	11	11	8.4	7.2	5.9	6.8	35	34	26	15
6	3.3	3.1	11	10	8.4	7.2	5.7	6.9	40	34	25	15
7	3.0	3.4	10	10	8.4	7.4	5.6	6.9	44	35	25	15
8	3.0	3.8	10	9.9	8.3	7.6	5.3	7.2	47	35	25	15
9	2.8	4.0	10	9.4	8.0	7.6	5.3	7.2	48	35	24	13
10	2.7	4.4	9.9	8.8	8.0	7.6	5.3	7.2	49	35	24	13
11	2.6	4.8	9.6	8.8	8.0	8.3	5.3	7.3	49	35	23	13
12	2.4	5.2	9.6	8.8	7.6	8.1	5.3	7.6	49	35	23	13
13	2.3	5.8	10	8.8	7.6	7.8	5.3	7.6	48	36	23	13
14	2.3	7.9	9.9	8.8	7.3	7.6	6.3	7.7	48	36	22	13
15	2.0	7.2	9.6	8.8	7.2	7.6	5.2	7.9	48	36	22	12
16	1.9	7.2	9.9	9.0	7.2	7.3	5.0	8.0	48	36	21	12
17	1.8	7.6	9.8	9.2	7.2	7.2	5.0	8.0	49	35	21	12
18	1.7	7.8	9.6	9.3	7.1	7.2	5.0	8.0	49	35	20	12
19	1.6	8.7	9.9	9.6	6.9	7.3	5.1	8.2	49	35	20	12
20	1.5	9.3	11	9.6	6.9	8.1	5.3	8.5	48	35	19	11
21	1.5	9.8	12	9.6	7.1	7.2	5.5	8.8	49	35	19	11
22	1.4	11	13	9.6	7.2	7.2	5.7	9.2	48	34	19	11
23	1.4	12	15	9.4	6.9	7.2	5.9	9.7	47	34	19	11
24	1.4	11	15	9.3	6.9	7.2	5.9	10	46	33	18	10
25	1.4	11	16	10	6.5	6.9	6.1	11	45	32	18	10
26	1.4	11	16	9.3	6.5	6.9	6.2	12	43	32	18	10
27	1.4	11	16	8.8	6.5	6.9	6.5	13	41	31	18	9.6
28	1.3	12	16	8.7	6.5	6.6	6.5	15	39	31	17	9.6
29	1.3	13	15	8.4	---	6.5	6.5	16	38	30	16	9.2
30	1.4	12	15	8.4	---	6.5	6.5	16	36	29	16	9.2
31	1.7	---	14	8.4	---	6.5	---	18	---	28	16	---
TOTAL	69.1	215.4	371.8	298.7	210.2	224.4	171.6	285.7	1279	1050	668	372.6
MEAN	2.229	7.180	11.99	9.635	7.507	7.239	5.720	9.216	42.63	33.87	21.55	12.42
MAX	4.0	13	16	13	8.4	8.3	6.5	18	49	36	28	16
MIN	1.3	1.8	9.6	8.4	6.5	6.5	5.0	6.5	20	28	16	9.2
AC-FT	137	427	737	592	417	445	340	567	2540	2080	1320	739

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	3.024	7.827	16.48	15.68	14.86	12.43	13.04	22.80	32.56	24.44	13.43	5.380
MEAN	3.024	7.827	16.48	15.68	14.86	12.43	13.04	22.80	32.56	24.44	13.43	5.380
MAX	22.6	67.3	58.6	51.5	65.6	47.7	53.8	51.6	73.1	63.9	39.8	18.5
(WY)	1960	1948	1976	1954	1953	1950	1988	1988	1946	1955	1955	1955
MIN	0.32	0.23	0.46	0.63	0.38	0.41	4.31	3.65	9.80	5.74	1.55	0.53
(WY)	1988	1988	1953	2001	2001	2001	1956	1999	1963	1978	1987	1978

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1945 - 2002

ANNUAL TOTAL	5210.19	5216.5		
ANNUAL MEAN	14.27	14.29	15.16	
HIGHEST ANNUAL MEAN			29.3	1950
LOWEST ANNUAL MEAN			6.25	1977
HIGHEST DAILY MEAN	59	Jun 21	120	Dec 7 1975
LOWEST DAILY MEAN	0.30	Feb 15	0.22	Nov 6 1987
ANNUAL SEVEN-DAY MINIMUM	0.30	Feb 15	0.22	Nov 5 1987
ANNUAL RUNOFF (AC-FT)	10330		10980	
10 PERCENT EXCEEDS	43		35	
50 PERCENT EXCEEDS	9.9		11	
90 PERCENT EXCEEDS	0.40		1.6	

12116400 CEDAR RIVER AT POWERPLANT, AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'08", long 121°46'49", in SE $\frac{1}{4}$ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, on right bank 100 ft upstream from Seattle Municipal Powerplant at town of Cedar Falls, and at mile 33.7.

DRAINAGE AREA.--83.9 mi², includes 78.4 mi² upstream from Cedar Lake which is non-contributing except during spillage and seepage from dam.

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder, crest-stage gage and concrete weir. Datum of gage is 900.00 ft above NGVD of 1929 (City of Seattle benchmark).

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060) to supply powerplant, which discharges below gage. Entire flow of river normally diverted at Cedar Lake except for infrequent releases. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 720 ft³/s June 22, gage height, 34.44 ft; minimum discharge, 3.3 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5.1	26	36	21	24	e22	20	24	e40	165	76	e20
2	4.8	29	34	21	23	e20	20	27	e42	48	75	20
3	4.4	27	30	21	24	19	19	26	e45	45	74	20
4	4.1	25	28	21	23	19	e18	24	49	43	74	19
5	3.8	26	26	20	22	19	e20	e21	58	41	66	17
6	3.6	24	28	23	22	18	28	21	117	40	51	17
7	3.5	22	26	85	24	17	33	20	513	40	50	17
8	4.4	20	25	94	25	17	29	20	594	40	50	16
9	4.9	19	28	60	24	16	27	19	590	40	39	16
10	5.0	18	26	41	22	17	36	18	610	39	27	23
11	16	17	24	33	22	32	47	e18	473	57	26	52
12	17	18	24	32	20	34	66	e18	242	84	25	75
13	25	21	74	29	19	29	93	e23	65	84	25	e81
14	32	102	75	162	18	26	160	e29	62	84	e25	e86
15	28	74	48	398	18	24	175	e27	58	84	e24	e86
16	21	51	69	533	17	23	355	e25	104	107	24	e88
17	18	40	72	426	17	21	342	e26	530	149	24	e89
18	15	33	111	125	19	20	491	e28	694	172	23	88
19	19	33	115	24	21	26	625	e26	692	170	23	88
20	21	73	150	26	21	36	614	e28	686	170	23	87
21	20	302	317	25	42	26	602	e37	686	170	22	87
22	21	469	448	23	79	22	449	e34	682	168	22	86
23	22	486	442	22	65	21	146	32	673	168	22	86
24	24	467	438	29	50	20	22	31	588	167	21	98
25	35	455	434	53	37	20	21	32	411	137	21	131
26	33	447	342	37	30	20	21	34	301	92	21	130
27	28	364	154	30	26	20	20	36	300	79	22	130
28	23	114	25	26	e24	20	20	51	246	79	22	130
29	20	36	24	23	---	20	20	60	212	78	22	130
30	19	32	22	23	---	20	21	e47	198	78	20	129
31	24	---	22	26	---	20	---	e42	---	76	e20	---
TOTAL	524.6	3870	3717	2512	778	684	4560	904	10561	2994	1059	2142
MEAN	16.9	129	120	81.0	27.8	22.1	152	29.2	352	96.6	34.2	71.4
MAX	35	486	448	533	79	36	625	60	694	172	76	131
MIN	3.5	17	22	20	17	16	18	18	40	39	20	16
AC-FT	1040	7680	7370	4980	1540	1360	9040	1790	20950	5940	2100	4250

e Estimated

LAKE WASHINGTON BASIN

12116500 CEDAR RIVER AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'02", long 121°47'27", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 0.5 mi downstream from Seattle municipal powerplant at town of Cedar Falls, 4.0 mi downstream from Chester Morse Lake, and at mile 33.2.

DRAINAGE AREA.--84.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1914 to current year.

REVISED RECORDS.--WSP 722: 1930. WSP 1286: 1934(M), drainage area. WA-96-1: 1991(M).

GAGE.--Water-stage recorder. Datum of gage is 902.1 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good except for period July 1-18, which is fair. All diversions are returned to river upstream from station. Flow regulated by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060). U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--88 years (water years 1915-2002), 321 ft³/s, 232,400 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s, Nov. 24, 1990, gage height, 14.00 ft, from flood mark, from rating curve extended above 5,000 ft³/s; no flow part or all of each day Nov. 25, 1917, Aug. 18, 1923, Sept. 30 to Oct. 5, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,340 ft³/s Apr. 18, gage height, 7.83 ft; minimum discharge, 12.0 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	314	578	536	499	360	589	243	414	377	78	17
2	90	315	554	522	500	358	635	259	434	215	78	18
3	88	455	469	379	499	356	636	379	448	97	77	18
4	105	401	373	264	498	361	638	379	476	49	76	16
5	201	277	372	212	456	520	646	363	717	47	68	14
6	216	268	377	216	340	530	658	345	786	47	55	13
7	216	281	381	275	340	575	661	529	1190	45	53	13
8	216	369	377	391	338	666	691	557	1290	45	52	13
9	216	392	380	599	334	667	735	550	1280	46	42	13
10	216	404	367	746	334	669	747	435	1130	43	27	21
11	224	405	300	672	301	544	759	346	803	58	25	53
12	223	408	196	638	249	456	779	266	570	86	24	74
13	233	382	178	679	250	535	805	195	376	91	23	80
14	241	232	318	859	230	498	861	159	355	96	22	84
15	254	262	463	1090	205	414	865	154	349	101	22	84
16	295	412	150	1190	200	334	1050	155	400	127	22	85
17	277	511	263	1070	201	258	1030	175	842	154	21	86
18	239	709	568	781	204	170	1180	177	1020	168	21	84
19	232	739	783	676	204	82	1330	176	1010	168	21	84
20	255	779	848	681	203	226	1320	177	1010	167	21	84
21	256	994	1000	682	224	486	1300	177	1010	167	20	83
22	246	1150	1140	678	259	713	1150	177	1010	165	20	82
23	188	1150	1130	644	250	711	852	234	1000	163	19	82
24	188	1140	1120	284	236	711	576	457	915	163	18	93
25	183	1130	1110	214	221	696	546	706	730	137	18	126
26	166	1120	1030	328	211	601	544	710	614	94	18	126
27	316	1040	849	322	242	485	466	653	618	82	20	126
28	310	807	727	318	359	421	383	507	560	82	19	126
29	308	672	726	313	---	443	330	385	520	81	19	126
30	319	574	725	331	---	541	262	299	494	80	18	126
31	332	---	678	406	---	541	---	368	---	79	17	---
TOTAL	6940	18092	18530	16996	8387	14928	23024	10692	22371	3520	1034	2050
MEAN	223.9	603.1	597.7	548.3	299.5	481.5	767.5	344.9	745.7	113.5	33.35	68.33
MAX	332	1150	1140	1190	500	713	1330	710	1290	377	78	126
MIN	88	232	150	212	200	82	262	154	349	43	17	13
AC-FT	13770	35890	36750	33710	16640	29610	45670	21210	44370	6980	2050	4070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2002, BY WATER YEAR (WY)

MEAN	163.9	352.4	527.3	497.5	425.2	354.1	361.7	391.9	386.6	187.4	112.1	102.1
MAX	547	1780	2197	1393	1256	1324	767	868	1419	814	424	324
(WY)	1960	1991	1918	1918	1982	1972	2002	1997	1917	1917	1954	1959
MIN	34.7	24.9	47.7	133	95.0	89.0	75.3	59.5	46.3	24.5	20.2	28.3
(WY)	1953	1953	1953	1952	1988	1941	1995	1992	1963	1926	2001	1957

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1914 - 2002
ANNUAL TOTAL	84601	146564	
ANNUAL MEAN	231.8	401.5	320.8
HIGHEST ANNUAL MEAN			567
LOWEST ANNUAL MEAN			93.0
HIGHEST DAILY MEAN	1150	1330	7440
LOWEST DAILY MEAN	13	13	0.00
ANNUAL SEVEN-DAY MINIMUM	14	14	0.04
ANNUAL RUNOFF (AC-FT)	167800	290700	232400
10 PERCENT EXCEEDS	501	860	694
50 PERCENT EXCEEDS	175	331	227
90 PERCENT EXCEEDS	30	46	61

LAKE WASHINGTON BASIN

12116500 CEDAR RIVER AT CEDAR FALLS, WA--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1999 to current year.

REMARKS.--Records excellent except for period July 19 to Sept. 30, which are good.

INSTRUMENTATION.--Temperature recorder since March, 1999.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.5°C (rounded) Aug. 8, 9, 16, 2000; minimum, 1.2°C Feb. 12, 2001.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 17.7°C Sept. 13, 14 minimum, 2.0°C Feb. 3, 4, Mar. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	15.1	14.5	14.8	8.1	8.0	8.0	5.1	5.0	5.1	3.0	3.0	3.0
2	15.1	14.2	14.6	8.1	7.9	8.0	5.1	5.0	5.1	3.2	3.0	3.1
3	14.7	14.2	14.4	8.1	7.8	8.0	5.0	4.9	5.0	3.3	3.1	3.2
4	14.6	13.9	14.2	8.1	7.9	8.0	5.0	4.8	4.9	3.5	3.3	3.4
5	13.9	13.3	13.6	8.0	7.8	7.9	4.8	4.6	4.7	3.6	3.4	3.5
6	13.3	13.0	13.2	7.9	7.7	7.8	4.7	4.5	4.7	4.1	3.4	3.7
7	13.0	12.7	12.9	7.7	7.4	7.6	4.7	4.5	4.6	4.8	4.1	4.5
8	12.7	12.3	12.6	7.5	7.2	7.4	4.7	4.6	4.7	4.7	4.0	4.3
9	12.4	12.0	12.2	7.4	7.1	7.2	4.7	4.4	4.6	4.0	3.8	3.9
10	12.0	11.7	11.8	7.3	7.1	7.2	4.6	4.5	4.5	3.8	3.7	3.8
11	11.7	11.2	11.4	7.3	7.1	7.2	4.6	4.5	4.6	3.9	3.7	3.8
12	11.3	11.1	11.2	7.3	7.1	7.2	5.2	4.6	4.7	3.8	3.7	3.7
13	11.3	10.9	11.1	7.7	7.2	7.3	5.6	5.1	5.5	3.7	3.5	3.7
14	11.0	10.7	10.9	8.5	7.7	8.2	5.3	4.3	4.8	3.7	3.4	3.5
15	11.0	10.5	10.7	8.2	7.6	7.9	5.1	4.2	4.4	3.5	3.3	3.4
16	10.6	10.3	10.4	7.6	7.5	7.6	5.7	5.1	5.5	3.4	3.3	3.3
17	10.4	10.1	10.2	7.5	7.3	7.4	5.5	4.1	4.6	3.3	3.2	3.3
18	10.2	9.8	10.0	7.3	7.0	7.2	4.2	3.8	4.0	3.3	3.1	3.2
19	9.9	9.8	9.9	7.0	6.9	7.0	3.9	3.7	3.8	3.2	3.0	3.1
20	9.9	9.6	9.7	7.2	6.8	6.9	3.9	3.7	3.8	3.0	2.9	3.0
21	9.7	9.5	9.6	6.9	6.8	6.9	4.0	3.8	3.8	3.0	2.9	2.9
22	9.5	9.3	9.5	6.8	6.7	6.8	3.9	3.7	3.8	2.9	2.7	2.8
23	9.3	8.5	9.1	6.7	6.5	6.6	3.8	3.6	3.7	2.8	2.6	2.7
24	8.5	8.2	8.4	6.5	6.3	6.4	3.6	3.4	3.5	3.5	2.8	3.1
25	8.3	8.1	8.2	6.4	6.2	6.3	3.4	3.1	3.2	3.7	2.9	3.4
26	8.6	8.1	8.4	6.3	6.2	6.3	3.1	3.0	3.0	3.1	2.6	2.9
27	8.4	8.2	8.3	6.3	6.1	6.3	3.0	2.8	2.9	2.6	2.3	2.4
28	8.3	8.0	8.1	6.1	5.4	5.7	2.9	2.8	2.8	2.5	2.3	2.5
29	8.2	7.9	8.1	5.5	5.1	5.3	2.9	2.8	2.9	2.6	2.3	2.5
30	8.2	8.0	8.1	5.1	4.9	5.0	3.0	2.8	2.9	2.4	2.2	2.3
31	8.1	8.0	8.0	---	---	---	3.0	2.9	3.0	2.4	2.2	2.3
MONTH	15.1	7.9	10.8	8.5	4.9	7.1	5.7	2.8	4.2	4.8	2.2	3.2

LAKE WASHINGTON BASIN

12117000 TAYLOR CREEK NEAR SELLECK, WA

LOCATION.--Lat 47°23'12", long 121°50'42", in NW ¼ NW ¼ sec.19, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 0.6 mi upstream from mouth, and 1.3 mi northeast of Selleck.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--June to October 1945, August 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 940 ft above NGVD of 1929, from topographic map. June to October 1945 on right bank 350 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--46 years (water years 1957-2002), 97.4 ft³/s, 76.93 in/yr, 70,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,130 ft³/s Feb. 8, 1996, gage height, 5.53 ft from rating curve extended above 900 ft³/s; minimum discharge, 15 ft³/s Oct. 3, 4, 7-14, 1979, Oct. 28-31, Nov. 3-10, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1029	575	3.72	Jan. 7	2215	554	3.69
Dec. 13	1700	*878	*4.09	Feb. 22	0945	508	3.62
Dec. 16	0945	596	3.75	Apr. 14	0415	859	4.07

Minimum discharge, 21 ft³/s Oct. 4-7, Sep. 22-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	120	148	100	129	126	131	127	112	88	36	25
2	22	119	144	107	122	118	126	133	104	77	35	29
3	22	101	126	100	124	113	121	127	98	70	34	37
4	22	93	118	99	118	109	120	119	95	66	34	26
5	21	100	111	95	117	114	129	128	106	63	34	25
6	21	84	128	117	118	105	164	119	106	59	41	25
7	21	76	118	369	128	100	175	114	102	58	35	24
8	31	70	116	390	131	96	155	108	101	60	33	24
9	35	65	127	281	122	94	158	103	93	55	32	24
10	35	60	117	207	120	96	196	100	88	53	32	24
11	96	56	109	173	117	235	216	97	84	50	32	23
12	57	57	121	177	111	210	295	99	82	49	31	23
13	79	92	591	153	105	168	387	112	81	48	30	23
14	96	423	439	140	101	150	654	124	81	47	29	22
15	75	278	276	130	98	141	359	115	79	46	28	22
16	58	203	494	123	96	130	270	108	75	45	28	24
17	49	155	413	116	96	118	220	111	73	44	28	24
18	43	125	287	114	113	114	190	107	91	43	28	23
19	62	134	228	121	122	142	174	105	82	43	28	22
20	57	128	191	142	118	206	161	112	73	42	29	24
21	57	135	168	132	270	149	152	116	70	41	28	22
22	71	211	152	118	407	131	161	127	67	40	28	22
23	75	256	140	113	316	122	153	118	64	39	27	21
24	83	182	131	202	245	122	143	110	62	38	26	21
25	123	146	124	323	191	137	136	106	60	38	26	21
26	98	126	118	214	164	133	132	105	58	38	27	21
27	89	113	114	165	147	129	133	111	61	38	26	21
28	76	112	115	143	136	136	125	153	97	38	25	21
29	66	138	107	131	---	134	122	167	161	42	25	22
30	71	126	103	131	---	133	124	141	102	39	25	21
31	120	---	105	140	---	128	---	124	---	37	25	---
TOTAL	1854	4084	5779	5066	4182	4139	5782	3646	2608	1534	925	706
MEAN	59.81	136.1	186.4	163.4	149.4	133.5	192.7	117.6	86.93	49.48	29.84	23.53
MAX	123	423	591	390	407	235	654	167	161	88	41	37
MIN	21	56	103	95	96	94	120	97	58	37	25	21
AC-FT	3680	8100	11460	10050	8290	8210	11470	7230	5170	3040	1830	1400
CFSM	3.48	7.91	10.8	9.50	8.68	7.76	11.2	6.84	5.05	2.88	1.73	1.37
IN.	4.01	8.83	12.50	10.96	9.04	8.95	12.51	7.89	5.64	3.32	2.00	1.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

MEAN	47.95	113.6	152.3	167.3	151.1	125.8	123.0	101.7	75.47	48.23	31.96	33.30
MAX	132	317	291	285	337	313	193	158	171	91.3	56.3	128
(WY)	1960	1991	1976	1997	1996	1972	2002	1971	1964	1993	1968	1959
MIN	16.5	21.0	55.3	62.3	55.2	68.5	68.5	52.5	34.4	25.6	19.6	17.9
(WY)	1988	1988	2001	1988	1977	1992	1995	1992	1992	1958	1958	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1956 - 2002

ANNUAL TOTAL	29931	40305	
ANNUAL MEAN	82.00	110.4	97.39
HIGHEST ANNUAL MEAN			141
LOWEST ANNUAL MEAN			59.5
HIGHEST DAILY MEAN	591	Dec 13	654
LOWEST DAILY MEAN	21	Oct 5	21
ANNUAL SEVEN-DAY MINIMUM	22	Oct 1	21
ANNUAL RUNOFF (AC-FT)	59370	79940	70550
ANNUAL RUNOFF (CFSM)	4.77	6.42	5.66
ANNUAL RUNOFF (INCHES)	64.73	87.17	76.93
10 PERCENT EXCEEDS	138	190	184
50 PERCENT EXCEEDS	68	106	78
90 PERCENT EXCEEDS	28	25	26

LAKE WASHINGTON BASIN

12117500 CEDAR RIVER NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'38", long 121°57'12", on west line NW ¼ SW ¼ sec.17, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 1.8 mi upstream from intake of Seattle water-supply system near Landsburg, 4.0 mi east of Maple Valley, 5.9 mi downstream from Taylor Creek, and at mile 23.4.

DRAINAGE AREA.--121 mi², excludes Walsh Lake diversion which enters Cedar River at mile 19.5, and excludes 1.9 mi² of Walsh Lake drainage in Cedar River basin which is normally diverted into Issaquah Creek.

PERIOD OF RECORD.--August 1895 to current year (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

REVISED RECORDS.--WSP 313: 1895-98, 1902-09. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M). WSP 1736: 1960. WSP 1932: 1947, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.9 ft above NGVD of 1929. Prior to Oct. 1, 1898, nonrecording gage at site 2.2 mi downstream at different datum. Mar. 24, 1901, to May 15, 1913, nonrecording gage at site 2 mi downstream at datum 535.84 ft NGVD of 1929 (levels by City of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder 0.2 mi downstream at different datum.

REMARKS.--Records good. All diversions except Rock Creek returned to river upstream from station. Rock Creek, a tributary which entered naturally just upstream from station prior to 1932, is diverted during summer months to enter river at a point about 3.9 mi downstream from station. Some regulation by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060), 12.2 mi upstream. Chemical analyses July 1959 to July 1960. Water temperatures published August 1953 to September 1985. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--107 years (water years 1896-2002), 690 ft³/s, 499,900 acre-ft/yr, unadjusted, includes data published in WSP 1316.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s Nov. 19, 1911, gage height, 10.0 ft, from graph based on gage readings, site and datum then in use, by computation of peak flow over dam, peak caused by failure of flashboards at Chester Morse Lake; minimum discharge observed, 83 ft³/s Sept. 19, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,240 ft³/s Apr 14, gage height, 3.84 ft; minimum discharge, 252 ft³/s Sept. 7-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	318	670	1070	955	977	789	1020	650	760	779	339	258
2	315	635	1050	948	966	775	1070	656	775	598	337	262
3	314	757	925	790	970	763	1060	765	782	465	335	283
4	315	716	794	658	956	754	1060	763	795	386	334	261
5	407	613	775	588	925	908	1060	762	1070	374	332	258
6	422	571	799	602	794	928	1110	719	1110	362	320	257
7	422	552	793	950	811	949	1130	911	1510	357	312	253
8	444	625	781	1140	821	1050	1130	943	1630	366	307	252
9	452	637	820	1180	801	1040	1190	934	1620	351	302	252
10	446	647	792	1280	790	1050	1260	810	1500	344	285	252
11	537	640	711	1170	763	1130	1300	713	1190	345	283	267
12	491	647	627	1140	693	974	1390	634	959	373	278	295
13	534	682	1210	1130	680	1010	1550	573	724	372	278	300
14	573	1230	1200	1260	654	962	1980	550	693	368	275	307
15	545	978	1180	1490	619	876	1630	531	682	367	e275	307
16	565	924	1110	1610	609	783	1700	517	685	377	e272	310
17	545	910	1110	1540	608	690	1650	536	1130	417	e272	316
18	493	1050	1220	1260	636	603	1680	535	1360	446	e272	314
19	514	1100	1380	1170	647	566	1790	527	1350	446	e272	311
20	524	1130	1400	1200	636	810	1770	538	1350	444	e273	310
21	523	1340	1500	1200	844	960	1750	539	1340	441	270	309
22	537	1620	1630	1170	1070	1190	1660	550	1340	439	268	307
23	490	1730	1610	1130	981	1170	1370	569	1330	437	268	307
24	492	1630	1590	887	871	1170	1080	766	1260	436	265	307
25	570	1570	1580	950	772	1180	1010	1050	1090	418	265	335
26	497	1540	1500	939	723	1080	996	1060	961	367	265	335
27	615	1460	1320	851	703	957	929	1030	964	351	265	335
28	599	1240	1170	803	802	877	815	941	982	349	264	335
29	582	1160	1150	773	---	880	747	859	1020	353	264	345
30	592	1040	1140	783	---	988	679	695	918	347	262	347
31	669	---	1110	881	---	981	---	733	---	343	261	---
TOTAL	15342	30044	35047	32428	22122	28843	38566	22359	32880	12618	8870	8887
MEAN	495	1001	1131	1046	790	930	1286	721	1096	407	286	296
MAX	669	1730	1630	1610	1070	1190	1980	1060	1630	779	339	347
MIN	314	552	627	588	608	566	679	517	682	343	261	252
AC-FT	30430	59590	69520	64320	43880	57210	76500	44350	65220	25030	17590	17630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 2002, BY WATER YEAR (WY)

	392	728	958	980	901	792	782	793	744	483	348	321
MEAN	392	728	958	980	901	792	782	793	744	483	348	321
MAX	1015	2371	3126	2198	2009	2233	1498	1412	1795	1077	735	716
(WY)	1960	1991	1934	1918	1982	1972	1897	1897	1917	1917	1954	1959
MIN	141	141	179	369	368	360	335	306	320	262	124	127
(WY)	1905	1896	1953	1988	1988	1941	1941	1915	1992	1898	1898	1898

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1895 - 2002	
ANNUAL TOTAL	193162		288006			
ANNUAL MEAN	529		789		684	
HIGHEST ANNUAL MEAN					1066	
LOWEST ANNUAL MEAN					340	
HIGHEST DAILY MEAN	1730	Nov 23	1980	Apr 14	13600	Nov 19 1911
LOWEST DAILY MEAN	270	Sep 6	252	Sep 8	83	Sep 19 1898
ANNUAL SEVEN-DAY MINIMUM	274	Sep 1	255	Sep 4	87	Sep 13 1898
ANNUAL RUNOFF (AC-FT)	383100		571300		495200	
10 PERCENT EXCEEDS	1000		1340		1170	
50 PERCENT EXCEEDS	425		763		568	
90 PERCENT EXCEEDS	299		305		289	

e Estimated

12117600 CEDAR RIVER BELOW DIVERSION, NEAR LANDSBURG, WA

LOCATION.--Lat 47°22'47", long 121°58'56", in SE ¼ NW ¼ sec.24, T.22 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 0.8 mi northeast of the Issaquah-Ravensdale road bridge, 0.9 mi northwest of Landsburg, and at mile 20.4.

DRAINAGE AREA.--124 mi², excludes Walsh Lake diversion, which enters Cedar River at mile 19.5, and excludes 1.9 mi of Walsh Lake drainage in Cedar River basin, which is normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 490 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060) 15 mi upstream for operation of powerplant at Cedar Falls 13.1 mi upstream from station. Seattle City Water diversion 1.5 mi upstream from the gage diverted an average discharge of about 122 ft³/s during the water year. U.S. Geological Survey telemeter at station.

AVERAGE DISCHARGE.--10 years (water years 1993-2002), 538 ft³/s, 389,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,560 ft³/s Nov. 30, 1995, gage height, 10.32 ft, from rating curve extended above 2,000 ft³/s; maximum gage height, 10.70 ft Nov. 30, 1995, from outside high-water mark; minimum discharge, 45 ft³/s Sept. 9, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,410 ft³/s Apr. 14, gage height, 6.65 ft; minimum discharge, 117 ft³/s Aug. 8, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	223	606	1030	879	902	720	1050	573	512	655	196	133
2	223	534	1010	874	893	679	1100	574	537	472	195	137
3	225	708	883	727	897	667	1100	696	528	316	197	164
4	224	672	747	588	883	657	1030	701	607	215	197	137
5	312	560	725	515	854	844	943	701	927	204	173	131
6	375	508	752	526	727	919	891	648	979	205	146	131
7	332	449	746	921	740	847	908	836	1380	212	126	131
8	363	457	730	1170	756	953	909	859	1500	221	129	133
9	373	473	776	1210	734	951	965	853	1490	216	159	132
10	365	482	749	1250	722	954	1040	737	1380	217	153	129
11	497	474	665	1090	697	1040	1080	635	1070	219	146	136
12	399	458	573	1020	617	879	1190	555	809	205	148	138
13	425	461	1200	1020	605	923	1420	494	588	193	146	142
14	459	1280	1250	1140	579	918	2090	452	551	192	144	142
15	421	1040	1190	1390	544	842	1680	430	542	189	142	141
16	407	867	1120	1560	533	749	1730	431	538	193	144	157
17	392	716	1160	1490	531	650	1550	459	981	193	144	195
18	351	868	1260	1210	560	563	1490	459	1220	193	146	194
19	385	919	1430	1120	569	508	1660	461	1230	194	149	203
20	409	1030	1420	1160	560	721	1600	476	1230	192	153	207
21	414	1380	1460	1160	815	997	1570	475	1220	189	147	212
22	437	1670	1560	1120	1110	1230	1490	473	1210	188	147	225
23	418	1790	1520	1090	979	1210	1170	478	1200	190	145	229
24	425	1620	1480	854	811	1210	862	719	1050	203	142	231
25	511	1530	1470	946	728	1220	789	1070	857	210	151	243
26	435	1470	1390	927	775	1120	781	1090	754	213	152	233
27	559	1340	1210	791	734	997	732	1070	751	213	156	228
28	548	1160	1060	742	822	917	623	918	804	210	146	220
29	522	1130	1030	712	---	889	569	756	883	215	134	229
30	533	994	1030	719	---	957	571	511	793	209	132	224
31	621	---	1020	814	---	971	---	478	---	199	136	---
TOTAL	12583	27646	33646	30735	20677	27702	34583	20068	28121	7135	4721	5287
MEAN	406	922	1085	991	738	894	1153	647	937	230	152	176
MAX	621	1790	1560	1560	1110	1230	2090	1090	1500	655	197	243
MIN	223	449	573	515	531	508	569	430	512	188	126	129
AC-FT	24960	54840	66740	60960	41010	54950	68600	39800	55780	14150	9360	10490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
MEAN	336	702	943	873	771	579	598	527	432	248	133	168
MAX	417	1490	1755	1736	1865	1232	1153	1098	937	509	194	228
(WY)	1996	1996	2000	1999	1996	1997	2002	1997	2002	1997	1993	2000
MIN	256	329	346	295	277	298	287	237	196	107	96.5	119
(WY)	1995	1994	2001	2001	2001	2001	1995	1992	1992	1992	1992	1995

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1992 - 2002
ANNUAL TOTAL	148296	252904	
ANNUAL MEAN	406	693	538
HIGHEST ANNUAL MEAN			826
LOWEST ANNUAL MEAN			294
HIGHEST DAILY MEAN	1790	Nov 23	294
LOWEST DAILY MEAN	96	Aug 16	6170
ANNUAL SEVEN-DAY MINIMUM	98	Aug 10	126
ANNUAL RUNOFF (AC-FT)	294100		132
10 PERCENT EXCEEDS	885		1240
50 PERCENT EXCEEDS	279		672
90 PERCENT EXCEEDS	153		153
			389500
			1180
			358
			146

LAKE WASHINGTON BASIN

12117600 CEDAR RIVER BELOW DIVERSION, NEAR LANDBURG, WA

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 2001 to current year.

INSTRUMENTATION.--Temperature recorder since May, 2001.

REMARKS.--Records excellent.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 15.5°C July 22, 2002; minimum, 4.3°C March 22, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.5°C July 22; minimum, 4.3°C March 22.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.7	10.3	10.9	8.8	8.5	8.7	6.7	6.3	6.5	5.9	5.3	5.7
2	11.2	9.9	10.6	9.1	8.5	8.9	6.6	6.3	6.4	6.0	5.7	5.9
3	11.1	9.8	10.4	8.7	8.1	8.5	6.4	6.0	6.3	6.5	5.7	6.0
4	11.0	9.5	10.3	9.0	8.5	8.8	6.6	6.2	6.4	6.9	6.4	6.7
5	11.8	10.4	11.0	8.8	8.0	8.4	6.4	6.0	6.2	7.3	6.7	7.0
6	11.7	10.6	11.1	8.2	7.5	7.9	6.6	6.2	6.4	7.4	6.9	7.1
7	11.2	10.4	10.8	8.0	7.4	7.7	6.6	6.3	6.5	7.4	7.1	7.2
8	11.2	10.6	10.9	8.2	7.5	7.8	6.9	6.4	6.7	7.3	6.6	7.0
9	10.9	10.3	10.6	8.0	7.4	7.7	6.7	6.1	6.3	6.6	5.8	6.4
10	10.4	9.7	10.0	8.5	7.7	8.1	6.3	5.9	6.1	6.1	5.7	5.9
11	10.4	9.9	10.1	8.5	8.0	8.3	6.6	6.1	6.4	6.4	5.8	6.1
12	10.4	9.7	10	8.5	8.3	8.4	7.0	6.1	6.5	6.2	5.9	6.1
13	10.4	10.2	10.3	8.6	8.3	8.5	7.1	6.4	6.7	5.9	5.4	5.7
14	10.8	10.0	10.4	9.3	8.5	9.0	6.6	5.9	6.4	5.5	4.9	5.2
15	10.3	9.3	9.9	9.2	8.5	9.0	6.3	5.8	5.9	5.0	4.6	4.8
16	10.2	9.7	9.9	8.7	8.3	8.5	7.3	6.3	7.0	4.8	4.7	4.7
17	10.1	9.5	9.8	8.3	7.5	8.0	7.3	6.0	6.5	5.0	4.7	4.8
18	9.7	9.1	9.4	8.0	7.3	7.7	6.0	5.5	5.8	5.3	4.8	5.0
19	10.0	9.7	9.8	8.0	7.7	7.9	5.7	5.3	5.5	5.4	5.2	5.3
20	9.7	8.9	9.3	8.0	7.8	7.9	5.7	5.5	5.6	5.3	5.1	5.2
21	9.5	9.1	9.3	8.0	7.6	7.8	5.7	5.2	5.5	5.2	4.8	5.0
22	9.8	9.4	9.5	7.6	7.4	7.6	5.5	5.1	5.3	5.0	4.8	4.9
23	9.4	8.9	9.1	7.5	7.0	7.4	5.4	5.1	5.2	5.2	4.9	5.0
24	9.0	8.4	8.6	7.2	6.9	7.0	5.2	5.0	5.1	6.6	5.2	5.9
25	8.9	8.3	8.5	7.1	6.8	6.9	5.0	4.8	4.9	6.6	5.4	6.0
26	9.4	8.6	9.0	7.1	6.8	7.0	5.0	4.6	4.8	5.5	5.0	5.3
27	9.3	8.0	8.6	7.1	6.8	7.0	5.4	4.9	5.1	5.5	5.1	5.3
28	8.3	7.5	7.9	6.9	6.1	6.4	5.4	5.1	5.3	5.5	4.9	5.2
29	8.7	7.6	8.2	6.5	6.2	6.3	5.4	5.0	5.2	5.6	5.1	5.3
30	8.9	8.5	8.7	6.4	6.2	6.3	5.4	5.0	5.2	5.3	4.6	5.0
31	8.8	8.6	8.7	---	---	---	5.5	5.3	5.4	5.3	5.0	5.1
MONTH	11.8	7.5	9.7	9.3	6.1	7.8	7.3	4.6	5.9	7.4	4.6	5.7

12118400 ROCK CREEK AT STATE HIGHWAY 516, NEAR RAVENSDALE, WA

LOCATION.--Lat 47°21'45", long 122°00'35", in NE ¼ SW ¼ sec.26, T.22 N., R.6 E., on left bank in Parshall Flume, upstream of State Hwy 516, 1.5 mi northeast of Ravensdale, King Co.

DRAINAGE AREA.--11.2 mi².

PERIOD OF RECORD.--June 1956 to September 1962. May 2001 to current year. Published as "State Highway 5A" 1956-62.

GAGE.--Water-stage recorder. Elevation of gage is 530 ft above NGVD of 1929, from topographic map. Prior to May, 2001, recording gage at same site at different datum.

REMARKS.--Records good, except for discharges above 40 ft³/s and below 5 ft³/s, which are fair. Diversions by City of Kent upstream of gage for municipal use may effect flow.

AVERAGE DISCHARGE.--7 years (water years 1956-1962, 2002), 17.0 ft³/s, 20.58 in/yr, 12,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 114 ft³/s Dec. 16, 1959, gage height 2.89 ft datum then in use; minimum, 1.7 ft³/s Oct. 4, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 43 ft³/s Dec 17, 18, gage height 2.17 ft; minimum discharge, 1.7 ft³/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	4.0	19	26	35	33	28	18	7.5	4.2	4.8	4.2
2	2.3	3.5	20	25	36	32	26	17	7.3	4.1	4.5	4.2
3	2.0	3.2	20	23	35	30	25	16	7.2	3.9	4.7	3.8
4	1.9	3.1	20	22	35	30	24	16	7.0	4.1	5.3	3.2
5	1.9	3.3	21	24	33	30	23	16	7.0	4.1	4.6	2.9
6	2.1	3.5	20	22	33	27	23	15	6.7	4.1	4.7	3.1
7	2.1	3.8	19	24	32	25	22	14	6.6	3.9	4.6	3.6
8	2.0	4.1	20	25	33	24	21	14	6.4	4.2	4.0	4.3
9	2.0	4.1	20	25	33	23	21	14	6.3	6.2	3.8	4.0
10	2.8	3.8	19	25	33	22	21	13	6.2	5.6	4.5	3.7
11	3.1	3.6	19	25	32	23	22	13	6.1	4.9	4.2	3.6
12	3.2	4.1	19	25	32	24	22	13	6.0	3.8	3.9	3.3
13	3.2	4.4	25	24	32	26	26	12	6.2	3.8	4.6	3.4
14	3.2	9.3	33	23	30	30	33	12	5.8	3.4	3.9	3.6
15	3.3	11	35	23	30	28	34	12	6.0	3.5	2.9	4.3
16	3.5	7.4	38	22	29	26	34	11	6.3	3.4	3.6	4.0
17	3.1	6.7	41	21	29	26	33	11	5.9	3.6	3.3	3.7
18	3.1	6.5	42	21	28	25	32	11	6.1	4.4	3.1	3.7
19	3.2	6.6	41	22	27	26	31	10	6.0	3.7	3.2	3.7
20	3.1	6.8	40	22	25	34	30	10	5.9	3.9	3.5	3.5
21	3.1	7.9	40	22	27	40	28	9.9	5.1	3.6	3.6	3.5
22	3.1	9.0	39	22	30	40	26	9.7	5.0	3.3	3.2	3.4
23	3.0	11	37	22	33	39	25	9.4	5.0	4.4	2.9	3.4
24	3.2	12	36	23	35	38	24	9.2	4.6	4.1	3.4	3.5
25	3.4	12	36	29	e35	36	23	8.8	4.5	4.0	3.3	3.7
26	3.4	12	36	33	35	35	22	8.5	4.4	3.6	3.3	4.0
27	3.7	12	34	34	35	34	22	8.3	4.6	3.7	3.6	3.9
28	3.8	13	31	34	33	33	21	8.3	5.1	3.8	3.4	4.0
29	3.7	14	28	34	---	32	19	8.2	5.3	4.8	3.3	4.1
30	3.7	17	28	33	---	30	18	8.0	5.0	5.8	3.8	4.0
31	3.5	---	26	33	---	29	---	7.8	---	4.6	4.1	---
TOTAL	90.7	222.7	902	788	895	930	759	364.1	177.1	128.5	119.6	111.3
MEAN	2.93	7.42	29.1	25.4	32.0	30.0	25.3	11.7	5.90	4.15	3.86	3.71
MAX	3.8	17	42	34	36	40	34	18	7.5	6.2	5.3	4.3
MIN	1.9	3.1	19	21	25	22	18	7.8	4.4	3.3	2.9	2.9
AC-FT	180	442	1790	1560	1780	1840	1510	722	351	255	237	221
CFSM	0.26	0.66	2.60	2.27	2.85	2.68	2.26	1.05	0.53	0.37	0.34	0.33
IN.	0.30	0.74	3.00	2.62	2.97	3.09	2.52	1.21	0.59	0.43	0.40	0.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

MEAN	6.23	12.6	25.0	26.6	32.5	28.9	22.6	16.0	11.0	8.23	6.64	5.72
MAX	11.7	29.0	48.7	46.5	56.9	51.8	30.7	26.0	16.5	11.3	8.92	7.92
(WY)	1960	1960	1960	1959	1961	1961	1961	1961	1960	1956	1956	1959
MIN	2.93	5.18	7.40	15.0	11.0	13.2	13.9	7.64	5.90	4.15	2.88	2.10
(WY)	2002	1962	1962	1962	1962	1962	1958	2001	2002	2002	2001	2001

SUMMARY STATISTICS

FOR 2002 WATER YEAR

WATER YEARS 1956 - 2002

ANNUAL TOTAL	5488.0		
ANNUAL MEAN	15.0	17.0	
HIGHEST ANNUAL MEAN		23.9	1961
LOWEST ANNUAL MEAN		9.75	1962
HIGHEST DAILY MEAN	42	110	Dec 16 1959
LOWEST DAILY MEAN	1.9	1.9	Sep 8 2001
ANNUAL SEVEN-DAY MINIMUM	2.0	2.0	Sep 23 2001
ANNUAL RUNOFF (AC-FT)	10890	12290	
ANNUAL RUNOFF (CFSM)	1.34	1.51	
ANNUAL RUNOFF (INCHES)	18.23	20.58	
10 PERCENT EXCEEDS	33	34	
50 PERCENT EXCEEDS	9.4	12	
90 PERCENT EXCEEDS	3.3	5.0	

e Estimated

LAKE WASHINGTON BASIN

12118500 ROCK CREEK NEAR MAPLE VALLEY, WA

LOCATION.--Lat 47°22'50", long 122°01'10", in SE 1/4 NE 1/4 sec.22, T.22 N., R.6 E., on right bank 20 ft below box culvert exit, 650 ft upstream from mouth and 2 mi southeast of Maple Valley.

DRAINAGE AREA.--12.6 mi².

PERIOD OF RECORD.--June 1945 to September 1973, May 2001 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 425 ft above NGVD of 1929, from topographic map. Prior to March 16, 1953, recording gage at site 50 ft upstream at datum 13.10 ft higher. March 16, 1953, to September 30, 1973, recording gage at site 100 ft upstream at datum 13.951 ft higher.

REMARKS.--No estimated daily discharges. Records good. Diversions by City of Kent upstream of gage for municipal use may effect flow.

AVERAGE DISCHARGE.--29 years (water years 1946-73, 2002), 19.9 ft³/s, 14,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 221 ft³/s Mar. 6, 1972, gage height 4.06 ft datum then in use; minimum, 0.29 ft³/s Sept. 27, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 60 ft³/s Dec. 18, 19, gage height 11.57 ft; minimum discharge, 1.2 ft³/s, Oct. 5, 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	5.1	23	28	41	35	31	19	7.9	4.7	4.4	4.1
2	2.0	4.5	24	28	43	33	29	19	7.7	4.4	4.2	4.2
3	1.6	3.7	25	25	42	32	27	18	7.5	4.0	4.5	3.9
4	1.4	3.7	24	25	41	31	26	17	7.3	4.2	5.1	3.0
5	1.3	3.9	24	25	40	31	25	17	7.5	4.1	4.9	2.5
6	1.5	4.2	24	24	39	29	24	16	7.2	4.1	4.5	2.6
7	1.6	4.7	23	26	37	27	23	16	7.2	4.2	4.9	2.9
8	1.6	4.7	23	27	38	26	22	15	7.0	4.3	4.1	3.7
9	1.4	4.8	23	28	37	25	21	15	6.8	6.1	3.6	3.5
10	2.2	4.3	23	28	38	24	22	15	6.6	5.7	4.4	3.3
11	3.1	4.0	22	28	36	25	22	14	6.6	4.8	4.4	3.2
12	3.0	4.9	22	28	35	25	22	14	6.5	3.8	4.0	2.7
13	3.2	5.9	28	27	35	27	24	13	6.6	3.6	4.6	2.7
14	3.4	15	38	26	33	30	32	13	6.3	3.2	3.7	2.9
15	3.4	16	42	26	32	29	36	12	6.5	3.2	2.6	3.6
16	3.9	11	46	25	31	28	38	12	6.7	3.1	3.1	3.5
17	3.6	10	55	24	30	27	37	12	6.6	3.3	2.9	3.1
18	3.5	10	58	24	29	26	35	12	6.9	4.3	2.6	3.2
19	3.7	10	58	24	28	28	35	11	6.6	3.7	3.0	2.9
20	3.5	10	54	25	26	37	33	11	6.3	3.8	3.3	2.7
21	3.6	11	51	25	28	47	31	11	5.1	3.6	3.1	2.6
22	3.5	13	47	24	30	51	29	11	5.2	3.3	3.0	2.5
23	3.5	15	44	25	34	49	28	10	5.1	4.4	2.6	2.5
24	3.8	16	42	26	37	46	27	9.9	4.8	4.2	3.1	2.6
25	4.0	17	40	31	38	43	25	9.6	4.5	4.1	3.0	2.7
26	3.9	17	39	37	38	40	24	9.3	4.3	3.7	3.0	2.8
27	4.8	17	36	39	38	39	24	9.0	4.5	3.8	3.3	2.9
28	4.8	17	34	39	36	36	23	9.0	5.6	3.8	3.1	2.9
29	4.6	19	32	40	---	35	21	9.1	5.7	4.6	3.0	3.1
30	4.6	21	32	38	---	34	20	8.5	5.5	6.0	3.3	3.0
31	4.5	---	29	39	---	32	---	8.2	---	4.6	3.8	---
TOTAL	96.1	303.4	1085	884	990	1027	816	395.6	188.6	128.7	113.1	91.8
MEAN	3.10	10.1	35.0	28.5	35.4	33.1	27.2	12.8	6.29	4.15	3.65	3.06
MAX	4.8	21	58	40	43	51	38	19	7.9	6.1	5.1	4.2
MIN	1.3	3.7	22	24	26	24	20	8.2	4.3	3.1	2.6	2.5
AC-FT	191	602	2150	1750	1960	2040	1620	785	374	255	224	182
CFSM	0.25	0.80	2.78	2.26	2.81	2.63	2.16	1.01	0.50	0.33	0.29	0.24
IN.	0.28	0.90	3.20	2.61	2.92	3.03	2.41	1.17	0.56	0.38	0.33	0.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN
MEAN	6.01	12.6	29.0
MAX	14.8	38.4	81.1
(WY)	1960	1960	1956
MIN	1.84	3.31	4.04
(WY)	1971	1968	1953

SUMMARY STATISTICS

FOR 2002 WATER YEAR

WATER YEARS 1945 - 2002

ANNUAL TOTAL	6119.3		
ANNUAL MEAN	16.8		19.9
HIGHEST ANNUAL MEAN			30.6
LOWEST ANNUAL MEAN			9.81
HIGHEST DAILY MEAN		58	218
LOWEST DAILY MEAN		1.3	0.36
ANNUAL SEVEN-DAY MINIMUM		1.5	0.78
ANNUAL RUNOFF (AC-FT)	12140		14410
ANNUAL RUNOFF (CFSM)	1.33		1.58
ANNUAL RUNOFF (INCHES)	18.07		21.45
10 PERCENT EXCEEDS	38		43
50 PERCENT EXCEEDS	11		14
90 PERCENT EXCEEDS	3.0		4.2

LAKE WASHINGTON BASIN

12119000 CEDAR RIVER AT RENTON, WA

LOCATION.--Lat 47°28'58", long 122°12'08", in SW ¼ NW ¼ sec.17, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 125 ft downstream from bridge on Mill Avenue at Renton, and at mile 1.6.

DRAINAGE AREA.--184 mi², includes 3.67 mi² in vicinity of Youngs Lake in Big Soos Creek basin, excludes 1.9 mi² from upper Rock Creek, Cedar River basin, normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to current year.

REVISED RECORD.--WSP 1316: 1901-02. WSP 1932: Drainage area. WDR WA-75-1: 1972-74.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 15.20 ft above NGVD of 1929. Prior to Jan. 1, 1908, nonrecording gages within 1 mi of present site, at datum 10.67 ft above NGVD of 1929. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft upstream at datum 20.13 ft above NGVD of 1929, and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft above NGVD of 1929.

REMARKS.--Records good, except for estimated daily discharges, which are fair. Flow partly regulated by Chester Morse Lake and Masonry Dam for operation of powerplant at Cedar Falls 32.1 mi upstream from gage. An average daily discharge of about 122 ft³/s was diverted during the year at Landsburg by the City of Seattle for municipal use, computed from data furnished by Seattle Water Department. U.S. Geological Survey satellite telemeter at station. Chemical analyses July 1959 to August 1964, December 1965 to September 1971.

AVERAGE DISCHARGE.--57 years (water years 1946-2002), 667 ft³/s, 483,300 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s Nov. 24, 1990, gage height, 17.13 ft from outside high-water mark; minimum daily discharge, 30 ft³/s July 1, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,620 ft³/s Apr. 14, gage height, 10.80 ft; minimum discharge, 151 ft³/s Aug. 8, 29, Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	257	695	1320	1050	1180	912	1130	693	629	711	226	170
2	258	582	1280	1040	1150	830	1190	685	652	577	225	172
3	259	738	1170	914	1130	807	1170	770	645	e420	224	199
4	259	742	1030	751	1100	788	1130	806	661	e270	231	177
5	311	647	971	660	1080	917	1030	814	909	e255	215	169
6	393	556	994	670	973	1080	954	771	1030	e257	197	168
7	359	512	967	1160	972	956	974	932	1300	e270	172	168
8	404	469	927	1460	1090	1070	959	979	1470	e283	156	169
9	422	484	1010	1420	987	1070	1030	978	1470	e270	184	169
10	413	500	1000	1480	943	1070	1150	886	1410	269	185	163
11	508	487	918	1320	912	1280	1210	769	1130	268	176	167
12	492	496	804	1210	807	1140	1300	686	875	256	176	173
13	467	521	1460	1180	778	1140	1560	642	653	239	175	174
14	504	1720	1780	1240	747	1120	2400	611	590	234	171	177
15	495	1530	1620	1490	691	1050	2010	568	607	233	169	177
16	470	1230	1650	1650	676	975	1990	561	599	230	170	185
17	465	963	1690	1630	664	858	1800	579	867	236	170	223
18	420	1020	1590	1380	694	742	1640	579	1190	239	170	223
19	432	1110	1740	1300	709	701	1810	581	1210	240	175	234
20	466	1190	1690	1340	697	1050	1740	594	1210	238	182	238
21	469	1490	1660	1370	984	1280	1700	592	1200	235	178	243
22	487	1820	1750	1300	1430	e1440	1660	598	1180	235	176	250
23	485	2000	1700	1270	1380	e1430	1350	583	1190	232	173	257
24	481	1810	1650	1140	1190	e1440	1040	751	1100	238	170	259
25	587	1670	1630	1370	1010	e1400	907	1140	917	235	176	270
26	520	1620	1580	1340	1010	1280	902	1190	766	244	180	267
27	621	1520	1420	1120	942	1150	e850	1190	759	246	181	264
28	631	1410	1230	1020	994	1040	e730	1080	843	242	189	255
29	574	1430	1190	953	---	1010	e680	952	914	249	163	263
30	570	1300	1170	967	---	1040	e690	697	833	244	165	259
31	692	---	1180	1110	---	1050	---	602	---	235	170	---
TOTAL	14171	32262	41771	37305	26920	33116	38686	23859	28809	8630	5670	6282
MEAN	457	1075	1347	1203	961	1068	1290	770	960	278	183	209
MAX	692	2000	1780	1650	1430	1440	2400	1190	1470	711	231	270
MIN	257	469	804	660	664	701	680	561	590	230	156	163
AC-FT	28110	63990	82850	73990	53400	65690	76730	47320	57140	17120	11250	12460

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	353	742	1071	1094	1054	867	784	710	632	303	193	227
MEAN	353	742	1071	1094	1054	867	784	710	632	303	193	227
MAX	864	2673	2845	1924	2374	2577	1290	1226	1757	785	582	601
(WY)	1960	1991	1976	1999	1982	1972	2002	1997	1964	1955	1954	1964
MIN	76.4	61.2	91.2	283	299	389	335	274	168	44.9	41.1	52.9
(WY)	1953	1953	1953	1988	1988	1992	1973	1992	1958	1958	1958	1958

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1946 - 2002

ANNUAL TOTAL	184693	297481	
ANNUAL MEAN	506	815	667
HIGHEST ANNUAL MEAN			1016
LOWEST ANNUAL MEAN			373
HIGHEST DAILY MEAN	2000	Nov 23	2400
LOWEST DAILY MEAN	126	Aug 13	156
ANNUAL SEVEN-DAY MINIMUM	127	Aug 11	168
ANNUAL RUNOFF (AC-FT)	366300	590100	483300
10 PERCENT EXCEEDS	1130	1470	1290
50 PERCENT EXCEEDS	372	788	514
90 PERCENT EXCEEDS	192	183	152

e Estimated

LAKE WASHINGTON BASIN

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12119000 CEDAR RIVER AT RENTON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-71, March 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1965 to February 1967, March 1978 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Records excellent except Nov. 13 - Mar. 30, Apr. 17-27, May 4-20, which are good and Apr. 28 - May 3, which are fair.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 24.0°C (rounded) Aug. 8, 1978; minimum, 0.0°C (rounded) Dec. 30, 1978 to Jan. 1, 1979, Jan. 29, 1980.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum 19.6°C July 23; minimum 4.5°C Feb. 2, 12, March 8.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.1	11.1	12.1	9.7	9.1	9.4	7.4	6.7	7.1	6.6	5.3	6.0
2	12.8	10.5	11.7	10.3	9.5	9.8	7.3	6.6	6.9	6.8	6.0	6.5
3	12.5	10.3	11.4	9.5	8.7	9.2	6.9	6.3	6.7	6.7	5.6	6.2
4	12.4	10.0	11.2	9.8	9.1	9.5	7.0	6.5	6.7	7.3	6.5	6.9
5	12.8	9.9	11.3	9.6	8.5	9.1	6.8	6.5	6.6	7.5	6.7	7.1
6	12.5	10.9	11.6	8.6	7.8	8.2	7.2	6.5	6.8	8.0	6.9	7.3
7	11.7	10.7	11.2	8.7	7.4	8.0	7.3	6.6	6.9	8.1	7.7	7.9
8	12.4	11.3	11.6	8.8	7.1	7.9	7.3	6.8	7.1	7.9	7.3	7.7
9	12.1	10.8	11.4	8.6	7.2	7.9	7.3	6.5	6.8	7.4	6.4	7.1
10	11.0	9.9	10.4	9.0	7.3	8.1	6.7	6.3	6.5	6.6	5.9	6.2
11	11.8	10.6	11.1	9.4	8.3	8.8	7.0	6.3	6.6	7.0	6.3	6.6
12	11.3	10.2	10.7	9.5	9.0	9.2	7.2	6.2	6.6	6.9	6.4	6.7
13	11.7	10.9	11.3	9.7	9.1	9.4	7.6	7.0	7.4	6.5	5.8	6.1
14	12.0	10.9	11.4	10.2	9.5	9.9	7.1	6.3	6.7	5.9	5.2	5.5
15	11.7	10.6	11.1	10.1	9.3	9.9	6.6	6.2	6.3	5.4	4.8	5.1
16	10.9	10.3	10.6	9.5	8.9	9.2	7.7	6.6	7.3	5.2	4.6	4.9
17	11.1	9.8	10.5	9.0	7.7	8.5	7.6	6.2	6.8	5.4	4.9	5.1
18	10.5	9.5	10.0	8.5	7.1	7.9	6.5	6.0	6.2	5.6	4.8	5.2
19	11.2	10.3	10.7	8.8	8.1	8.5	6.2	5.8	6.0	5.8	5.5	5.7
20	10.6	9.6	10.1	8.9	8.5	8.7	6.3	5.9	6.1	5.9	5.5	5.7
21	10.3	9.3	9.7	8.6	8.3	8.4	6.4	5.6	6.0	5.7	5.1	5.4
22	10.8	10.0	10.3	8.4	8.0	8.2	6.0	5.2	5.6	5.4	4.9	5.2
23	10.5	9.5	10.0	8.2	7.6	8.0	5.9	5.2	5.6	5.6	5.1	5.3
24	9.7	9.2	9.4	7.8	7.2	7.5	5.8	5.2	5.4	6.5	5.6	6.1
25	9.9	9.1	9.5	7.6	7.0	7.4	5.5	4.9	5.2	6.6	5.3	6.2
26	10.6	9.3	9.9	7.6	7.0	7.3	5.4	4.6	5.0	5.5	4.9	5.3
27	10.2	8.8	9.5	7.6	7.1	7.3	5.9	5.3	5.6	5.6	4.7	5.1
28	9.0	7.8	8.4	7.1	6.4	6.7	6.3	5.5	5.9	5.3	4.8	5.0
29	9.2	7.9	8.6	7.0	6.4	6.7	6.0	5.2	5.5	5.6	4.8	5.2
30	9.9	9.1	9.4	7.2	6.5	6.8	5.9	5.1	5.5	5.3	4.7	5.0
31	9.8	9.1	9.4	---	---	---	6.4	5.4	6.0	5.5	5.2	5.3
MONTH	13.1	7.8	10.5	10.3	6.4	8.4	7.7	4.6	6.3	8.1	4.6	6.0

LAKE WASHINGTON BASIN

12120000 MERCER CREEK NEAR BELLEVUE, WA

LOCATION.--Lat 47°36'11", long 122°10'47", in NW 1/4 NW 1/4 sec.4, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 40 ft upstream from Burlington Northern Railroad trestle, 1.2 mi southeast of Bellevue, and 2.0 mi upstream from mouth.

DRAINAGE AREA.--12.0 mi².

PERIOD OF RECORD.--June to October 1945, June 1955 to current year.

REVISED RECORDS.--WSP 1446: Drainage area. WDR WA-83-1: 1977-79(P).

GAGE.--Water-stage recorder. Datum of gage is 17.11 ft above NGVD of 1929 (levels by Municipality of Metropolitan Seattle engineers). Prior to June 5, 1959, at site 600 ft downstream at different datums.

REMARKS.--No estimated daily discharges. Records good except for the period Oct. 10 to Nov. 15, which is fair. Natural flow affected by urbanization and construction of flood-control catchments.

AVERAGE DISCHARGE.--47 years (water years 1956-2002), 22.6 ft³/s, 25.62 in/yr, 16,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 832 ft³/s Jan. 18, 1986, gage height, 6.50 ft; maximum gage height, 8.68 ft Mar. 6, 1972, caused by backwater from plugged culvert; minimum discharge, 1.9 ft³/s Aug. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Table with 8 columns: Date, Time, Discharge (ft³/s), Gage height (ft), Date, Time, Discharge (ft³/s), Gage height (ft). Rows include data for Nov 14, Nov 22, Dec 13, Dec 16, Feb 08, Feb 22, Apr 14, and Oct 30.

Minimum discharge, 4.0 ft³/s, Aug. 9, 12-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

Large data table with columns for DAY, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP. Rows 1-31 show daily mean discharge values. Summary rows include TOTAL, MEAN, MAX, MIN, AC-FT, CFMS, IN.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

Table with 12 columns representing months (OCT to SEP) and 5 rows for MEAN, MAX (WY), MIN (WY), and values for 1988 and 1997.

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1945 - 2002

Summary statistics table comparing 2001 Calendar Year, 2002 Water Year, and Water Years 1945-2002. Rows include ANNUAL TOTAL, ANNUAL MEAN, HIGHEST ANNUAL MEAN, LOWEST ANNUAL MEAN, HIGHEST DAILY MEAN, LOWEST DAILY MEAN, ANNUAL SEVEN-DAY MINIMUM, ANNUAL RUNOFF (AC-FT), ANNUAL RUNOFF (CFMS), ANNUAL RUNOFF (INCHES), and 10, 50, and 90 Percent Exceeds.

LAKE WASHINGTON BASIN

12120600 ISSAQUAH CREEK NEAR HOBART, WA

LOCATION.--Lat 47°27'27", long 122°00'14", in NE 1/4 NW 1/4 sec.26, T.23 N., R.6 E., King County, Hydrologic Unit 17110012, on left bank 20 ft downstream from highway bridge, 2.9 mi northwest of Hobart, and 10.2 mi upstream from mouth, 1.6 mi northwest of Issaquah, and at mile 33.1 (continuation of Sammamish River).

DRAINAGE AREA.--17.6 mi².

PERIOD OF RECORD.--October 1986 to current year.

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

REMARKS.--No estimated daily discharges. Records good except for period Oct. 4-7, which is poor. No known regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1987-2002), 48.2 ft³/s, 37.19 in/yr, 34,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,360 ft³/s Nov. 24, 1990, gage height, 9.90 ft; minimum discharge, 5.3 ft³/s, Sept. 17-20, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1400	*1,190	*8.78	Dec. 16	1215	411	6.64
Nov. 22	2100	319	6.28	Apr. 14	0330	430	6.71
Dec. 13	1700	590	7.24				

Minimum discharge, 7.9 ft³/s Sept. 26-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	50	180	42	105	65	50	38	28	24	12	10
2	11	51	160	48	93	60	47	37	26	20	11	11
3	11	43	131	42	91	56	44	35	25	19	11	15
4	12	39	114	40	84	53	42	33	25	18	12	12
5	11	51	106	39	84	53	40	36	32	17	12	11
6	9.2	41	120	45	88	50	42	35	28	16	12	10
7	10	34	106	122	95	48	39	36	27	17	11	10
8	17	30	97	131	121	47	38	34	29	21	11	10
9	17	26	123	93	102	46	42	33	27	17	11	10
10	15	24	111	75	91	45	73	31	24	15	11	9.9
11	22	22	101	66	83	103	87	29	23	14	11	9.7
12	18	23	96	65	74	88	79	28	22	14	11	9.5
13	26	54	368	58	67	79	157	29	20	13	11	9.3
14	24	636	277	53	61	74	315	31	20	13	11	9.2
15	18	320	191	49	57	79	171	28	19	13	10	9.5
16	19	184	331	47	54	77	131	27	19	12	10	11
17	22	118	251	46	53	70	109	28	19	12	10	10
18	17	86	164	47	60	67	90	26	21	12	10	9.5
19	26	95	137	68	61	99	78	25	22	12	10	9.4
20	25	97	103	88	56	204	70	30	19	12	12	9.7
21	24	98	83	90	128	129	64	28	18	12	11	9.0
22	32	179	73	72	183	99	63	33	17	11	11	8.7
23	27	198	65	63	163	84	59	32	16	11	10	8.7
24	27	128	60	91	139	77	53	28	16	11	10	8.7
25	60	101	55	209	105	73	48	26	16	12	11	8.6
26	42	86	50	151	89	66	47	25	15	12	11	8.4
27	54	76	48	112	78	61	52	24	16	13	10	8.3
28	47	104	48	91	72	58	46	31	31	12	9.9	8.2
29	35	176	45	79	---	56	42	55	47	14	9.9	12
30	34	174	42	91	---	54	40	36	26	13	9.9	9.2
31	56	---	43	119	---	50	---	31	---	12	9.9	---
TOTAL	780.2	3344	3879	2432	2537	2270	2258	978	693	444	333.6	295.5
MEAN	25.2	111	125	78.5	90.6	73.2	75.3	31.5	23.1	14.3	10.8	9.85
MAX	60	636	368	209	183	204	315	55	47	24	12	15
MIN	9.2	22	42	39	53	45	38	24	15	11	9.9	8.2
AC-FT	1550	6630	7690	4820	5030	4500	4480	1940	1370	881	662	586
CFSM	1.43	6.33	7.11	4.46	5.15	4.16	4.28	1.79	1.31	0.81	0.61	0.56
IN.	1.65	7.07	8.20	5.14	5.36	4.80	4.77	2.07	1.46	0.94	0.71	0.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2002, BY WATER YEAR (WY)

	20.2	80.8	82.8	83.7	75.4	70.6	54.9	35.6	32.1	20.3	12.4	11.2
MEAN	20.2	80.8	82.8	83.7	75.4	70.6	54.9	35.6	32.1	20.3	12.4	11.2
MAX	41.2	245	156	140	159	137	98.4	58.3	69.3	59.1	18.2	18.1
(WY)	1998	1991	1999	1997	1996	1997	1991	1996	1990	1997	1993	1997
MIN	8.55	12.6	28.1	39.2	25.5	35.6	31.9	21.5	14.2	10.4	8.94	8.53
(WY)	1988	1988	2001	2001	1993	1992	1998	1992	1992	1995	1994	1992

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1987 - 2002

ANNUAL TOTAL	16534.3	20244.3	
ANNUAL MEAN	45.3	55.5	
HIGHEST ANNUAL MEAN			80.9 1991
LOWEST ANNUAL MEAN			28.0 1994
HIGHEST DAILY MEAN	636	Nov 14	1000 Feb 8 1996
LOWEST DAILY MEAN	8.8	Sep 24	5.4 Sep 18 1992
ANNUAL SEVEN-DAY MINIMUM	9.3	Sep 19	5.7 Sep 16 1992
ANNUAL RUNOFF (AC-FT)	32800	40150	34900
ANNUAL RUNOFF (CFSM)	2.57	3.15	2.74
ANNUAL RUNOFF (INCHES)	34.95	42.79	37.19
10 PERCENT EXCEEDS	96	118	103
50 PERCENT EXCEEDS	30	38	31
90 PERCENT EXCEEDS	11	10	10

LAKE WASHINGTON BASIN

12121600 ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WA

LOCATION.--Lat 47°33'09", long 122°02'48", in SE 1/4 NW 1/4 sec.21, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 30 ft downstream from S.E. 56th Street bridge, 0.7 mi downstream from North Fork, 1.2 mi upstream from mouth, 1.6 mi northwest of Issaquah, and at mile 24.1 (continuation of Sammamish River).

DRAINAGE AREA.--56.6 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--September 1963 to current year.

REVISED RECORDS.--WDR WA-77-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 35.99 ft above NGVD of 1929.

REMARKS.--Records good, except for estimated daily discharges, which are fair. Washington State Department of Fish and Wildlife operated a fish trap at the gaging site July 16 to September 9, 2002. Many minor diversions for irrigation and domestic use upstream from station. Chemical analyses November 1964 to September 1971, October 1973 to September 1974. Water temperatures September 1970 to September 1971. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1964-2002), 133 ft³/s, 31.88 in/yr, 96,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,200 ft³/s Jan. 9, 1990, gage height, 13.50 ft; minimum discharge, 10 ft³/s Aug. 12, 1984, Sept. 29, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1745	*2,080	*11.50	Jan. 25	1030	999	7.91
Dec. 13	2045	1,510	9.71	Apr. 14	0515	983	7.85
Dec. 16	1400	1,120	8.36				

Minimum discharge, 13 ft³/s Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	139	497	e135	325	176	146	107	72	66	e29	e23
2	20	133	469	e145	283	160	133	104	66	53	e27	e27
3	20	117	382	e130	268	148	122	100	63	47	e26	e34
4	20	107	335	120	240	136	117	95	61	44	e26	e26
5	19	142	287	118	e239	142	111	97	75	42	e27	e23
6	19	114	317	140	e273	131	113	96	90	39	e26	e22
7	21	97	260	411	e323	120	105	101	74	40	e26	e22
8	31	87	e241	447	e469	114	100	94	73	52	e26	e22
9	36	78	e285	303	e358	109	112	87	69	43	e25	e22
10	30	71	e272	253	e309	108	176	85	62	38	e25	21
11	47	65	e238	212	e275	287	232	82	59	34	e25	20
12	35	69	e239	e190	e237	283	215	79	54	32	e26	20
13	49	128	908	e165	e210	260	417	79	50	31	e24	19
14	48	1380	932	e150	e184	222	822	85	e48	29	e22	19
15	42	824	571	e140	e171	235	502	76	e48	29	e22	18
16	53	413	938	e135	e157	228	399	72	e48	e28	e21	22
17	70	247	846	127	e155	203	320	74	e48	e29	e21	22
18	46	162	557	134	e164	185	259	69	e51	e29	e22	20
19	59	190	467	267	e174	259	218	67	e55	e29	e22	21
20	64	214	367	309	159	582	194	77	47	e29	e22	21
21	61	212	300	309	368	390	177	72	43	e29	e23	20
22	76	386	260	236	574	292	172	80	39	e27	e22	20
23	70	595	227	201	522	243	160	81	37	e27	e21	20
24	74	373	e205	287	441	221	147	72	37	e27	e21	20
25	148	251	e190	810	323	212	137	67	36	e28	e22	20
26	115	190	e175	567	262	190	130	63	35	e29	e22	19
27	164	152	e160	368	220	178	146	62	35	e29	e22	17
28	142	247	e150	287	200	171	132	76	64	e30	e21	17
29	103	460	e140	238	---	165	121	135	113	e32	e20	24
30	94	471	e135	267	---	158	114	94	65	e31	e19	22
31	148	---	e135	349	---	148	---	80	---	e30	e19	---
TOTAL	1944	8114	11485	7950	7883	6456	6249	2608	1717	1082	722	643
MEAN	62.7	270	370	256	282	208	208	84.1	57.2	34.9	23.3	21.4
MAX	164	1380	938	810	574	582	822	135	113	66	29	34
MIN	19	65	135	118	155	108	100	62	35	27	19	17
AC-FT	3860	16090	22780	15770	15640	12810	12390	5170	3410	2150	1430	1280
CFSM	1.11	4.78	6.55	4.53	4.97	3.68	3.68	1.49	1.01	0.62	0.41	0.38
IN.	1.28	5.33	7.55	5.23	5.18	4.24	4.11	1.71	1.13	0.71	0.47	0.42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2002, BY WATER YEAR (WY)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002												
MEAN	54.2	162	248	271	228	196	152	94.6	77.8	46.3	32.2	36.3																																							
MAX	151	440	520	472	546	420	280	166	179	116	56.4	85.5																																							
(WY)	1976	1991	1976	1964	1982	1972	1991	1996	1964	1997	1976	1978																																							
MIN	19.6	24.6	74.9	106	70.8	86.2	81.5	56.0	29.8	25.2	16.6	19.1																																							
(WY)	1988	1980	2001	2001	1993	1992	1977	1992	1992	1995	1994	1987																																							

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1964 - 2002

ANNUAL TOTAL	42475	56853	
ANNUAL MEAN	116	156	
HIGHEST ANNUAL MEAN			133
LOWEST ANNUAL MEAN			197
HIGHEST DAILY MEAN			1972
LOWEST DAILY MEAN			72.6
ANNUAL SEVEN-DAY MINIMUM	1380	Nov 14	2350
ANNUAL RUNOFF (AC-FT)	84250	Nov 14	13
ANNUAL RUNOFF (CFSM)	2.06	Sep 21	14
ANNUAL RUNOFF (INCHES)	27.92	Sep 30	14
10 PERCENT EXCEEDS	240		2.35
50 PERCENT EXCEEDS	76		37.37
90 PERCENT EXCEEDS	22		31.88

e Estimated

LAKE WASHINGTON BASIN

12125200 SAMMAMISH RIVER NEAR WOODINVILLE, WA

LOCATION.--Lat 47°42'15", long 122°08'29", in SW ¼ SW ¼ sec.26, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 3.9 mi upstream from Bear Creek, 3.6 mi southeast of Woodinville, and at mile 10.8.

DRAINAGE AREA.--159 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek which is normally diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Corps of Engineers bench mark). Prior to July 7, 1970, auxiliary water-stage recorder 2 mi downstream from base gage at same datum.

REMARKS.--No estimated daily discharges. Records good. Some regulation at Sammamish Lake. Many small diversions for irrigation and domestic use. Water temperatures August 1965 to February 1967.

AVERAGE DISCHARGE.--37 years (water years 1966-2002), 311 ft³/s, 26.55 in/yr, 225,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,870 ft³/s Jan. 1, 1997, elevation, 26.93 ft; minimum daily discharge, 25 ft³/s Aug. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,670 ft³/s Dec. 17, elevation, 23.13 ft; minimum discharge, 50 ft³/s Aug. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	227	1010	476	724	618	435	334	182	195	66	70
2	86	221	1020	506	678	577	416	320	180	166	62	74
3	82	203	924	461	649	542	397	308	176	153	59	84
4	75	204	857	430	605	512	381	289	177	145	61	79
5	72	237	812	410	591	489	368	278	181	144	58	76
6	71	211	756	431	622	465	360	286	189	136	58	73
7	68	194	668	644	664	444	369	275	195	141	61	74
8	88	179	610	837	854	438	342	260	199	215	57	74
9	78	165	578	714	754	424	349	245	199	174	56	72
10	76	152	579	645	731	436	402	233	198	157	55	71
11	147	142	567	601	749	559	392	222	187	142	57	70
12	105	158	545	603	676	566	398	212	180	132	68	69
13	97	235	772	577	624	569	460	211	175	126	65	69
14	85	832	1020	538	576	553	684	222	170	120	61	69
15	77	904	969	505	538	599	676	207	165	112	58	69
16	123	745	1230	477	505	598	755	195	161	107	55	73
17	154	617	1600	453	481	574	696	205	157	105	55	71
18	112	527	1440	441	466	549	644	189	173	99	56	69
19	117	576	1310	545	488	555	599	183	185	97	56	68
20	114	646	1170	530	459	654	559	199	181	96	64	69
21	122	657	1060	512	641	649	525	192	175	92	63	67
22	123	822	960	490	982	630	499	197	166	90	62	68
23	111	1180	867	469	938	598	477	186	158	88	62	64
24	112	986	790	467	894	569	443	174	147	85	67	60
25	221	795	723	730	808	545	417	163	143	81	68	59
26	193	670	667	731	740	520	408	158	146	79	65	56
27	341	572	620	706	683	504	423	154	144	77	65	57
28	280	691	587	682	668	508	390	171	170	73	64	60
29	234	915	545	639	---	508	365	206	202	71	65	106
30	224	929	508	677	---	482	349	194	176	71	65	74
31	260	---	491	725	---	456	---	187	---	68	65	---
TOTAL	4139	15592	26255	17652	18788	16690	13978	6855	5237	3637	1899	2114
MEAN	134	520	847	569	671	538	466	221	175	117	61.3	70.5
MAX	341	1180	1600	837	982	654	755	334	202	215	68	106
MIN	68	142	491	410	459	424	342	154	143	68	55	56
AC-FT	8210	30930	52080	35010	37270	33100	27730	13600	10390	7210	3770	4190
CFSM	0.84	3.27	5.33	3.58	4.22	3.39	2.93	1.39	1.10	0.74	0.39	0.44
IN.	0.97	3.65	6.14	4.13	4.40	3.90	3.27	1.60	1.23	0.85	0.44	0.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)

MEAN	120	318	587	627	552	483	360	237	187	112	72.7	85.9
MAX	338	681	1078	1318	1066	1214	675	421	373	258	124	189
(WY)	1982	1976	1976	1997	1982	1972	1991	1996	1993	1997	1976	1978
MIN	49.8	70.1	186	246	200	222	199	150	84.7	59.8	33.1	43.0
(WY)	1988	1988	1977	1993	1977	2001	1992	1994	1992	1994	1994	1994

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1965 - 2002
ANNUAL TOTAL	104879	132836	
ANNUAL MEAN	287	364	311
HIGHEST ANNUAL MEAN			482 1997
LOWEST ANNUAL MEAN			179 1994
HIGHEST DAILY MEAN	1600	Dec 17 1600	2830 Jan 2 1997
LOWEST DAILY MEAN	53	Aug 20 55	25 Aug 2 1977
ANNUAL SEVEN-DAY MINIMUM	57	Aug 14 57	29 Aug 16 1994
ANNUAL RUNOFF (AC-FT)	208000	263500	225100
ANNUAL RUNOFF (CFSM)	1.81	2.29	1.95
ANNUAL RUNOFF (INCHES)	24.54	31.08	26.55
10 PERCENT EXCEEDS	613	742	678
50 PERCENT EXCEEDS	241	234	224
90 PERCENT EXCEEDS	86	68	66

LAKE WASHINGTON BASIN

12128000 THORNTON CREEK NEAR SEATTLE, WA

LOCATION.--Lat 47°41'45", long 122°16'30", in NW ¼ SE ¼ sec.34, T.26 N., R.4 E., King County, Hydrologic Unit 17110012, on left bank, at highway crossing, 1.5 mi north of Seattle city limits, and at mile 0.25.

DRAINAGE AREA.--12.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1945 to September 1946, May 1961 to September 1968, March 1996 to current year.

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Elevation of gage is 40 ft above NGVD of 1929, from topographic map. June 1945 to September 1946 at datum 0.09 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Intermittent regulation and diversions. Natural flow affected by urbanization and flood-control catchments.

AVERAGE DISCHARGE.--14 years (water years 1946, 1962-68, 1997-2002), 12.0 ft³/s, 13.52 in/yr, 8,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 423 ft³/s Dec. 31, 1996, gage height, 5.26 ft; minimum daily discharge, 0.39 ft³/s Sept. 22, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 81 ft³/s Nov. 14, gage height, 2.47 ft, maximum gage height, 3.01 ft May 13, result of temporary fishtrap on weir; minimum discharge, 2.4 ft³/s Sept. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	6.1	35	14	14	9.3	7.7	7.0	5.4	11	3.9	3.7
2	3.7	8.3	25	17	11	8.9	7.6	7.4	5.3	5.5	3.6	3.7
3	3.6	5.2	26	11	13	8.6	7.5	8.2	5.2	5.0	3.7	4.7
4	3.5	11	26	9.2	9.9	8.5	6.9	7.3	5.1	5.1	3.7	3.9
5	3.4	6.9	26	14	12	8.8	7.4	7.1	4.7	4.7	3.4	3.4
6	3.4	5.2	23	21	23	8.2	7.4	e8.9	9.9	4.4	3.4	4.4
7	3.4	4.6	16	42	23	8.1	12	e8.6	7.9	7.9	3.6	3.5
8	5.0	4.6	14	36	26	9.3	7.7	e6.2	6.1	18	3.5	3.7
9	4.7	4.5	19	22	15	9.3	14	e6.8	5.3	6.9	3.4	4.3
10	5.5	4.5	28	16	17	19	17	e6.6	5.1	5.5	3.5	3.6
11	8.9	4.5	19	15	16	31	9.3	e6.3	5.0	4.6	3.4	3.2
12	5.7	11	18	19	12	22	8.2	e6.0	4.9	4.6	3.2	3.8
13	5.2	31	39	12	11	14	20	e9.4	4.6	4.1	3.3	3.7
14	3.9	63	24	10	9.8	12	24	e9.4	4.6	4.1	3.3	3.5
15	4.5	30	27	9.6	9.4	16	15	e6.6	4.7	4.0	3.2	3.2
16	15	18	53	9.4	10	19	17	6.0	4.7	4.0	3.1	4.8
17	8.9	11	29	8.9	10	13	13	11	4.8	3.9	3.1	4.6
18	5.3	8.6	24	14	10	14	10	6.7	5.3	3.8	3.2	3.8
19	7.2	29	17	22	16	14	8.6	6.5	4.9	3.8	3.4	3.7
20	4.8	28	15	14	9.6	17	8.1	12	4.3	3.8	4.0	3.8
21	13	25	12	10	40	11	7.8	6.9	4.3	3.9	4.2	3.3
22	8.1	43	10	9.0	40	9.8	7.6	6.7	4.2	3.7	3.6	3.7
23	4.9	23	9.4	9.0	25	9.2	7.3	6.2	4.3	4.1	3.2	3.7
24	12	15	9.1	17	16	9.2	7.1	5.9	4.1	3.7	3.4	4.0
25	21	13	8.8	32	12	8.9	7.3	5.9	4.0	3.7	3.6	3.3
26	15	11	8.6	19	11	8.1	12	5.8	3.8	4.0	3.7	3.5
27	42	9.9	8.5	18	10	8.0	16	5.6	4.1	3.7	3.7	3.3
28	8.2	30	9.6	19	11	13	8.5	7.4	13	4.3	3.6	3.0
29	5.9	33	8.1	14	---	9.6	7.7	11	11	4.6	3.6	9.3
30	14	28	7.9	23	---	8.7	7.2	5.9	6.6	4.4	3.8	4.1
31	19	---	11	20	---	8.0	---	5.5	---	4.2	3.6	---
TOTAL	272.5	525.9	606.0	526.1	442.7	373.5	316.9	226.8	167.2	159.0	108.9	118.2
MEAN	8.79	17.5	19.5	17.0	15.8	12.0	10.6	7.32	5.57	5.13	3.51	3.94
MAX	42	63	53	42	40	31	24	12	13	18	4.2	9.3
MIN	3.4	4.5	7.9	8.9	9.4	8.0	6.9	5.5	3.8	3.7	3.1	3.0
AC-FT	541	1040	1200	1040	878	741	629	450	332	315	216	234
CFSM	0.73	1.45	1.62	1.40	1.31	1.00	0.87	0.60	0.46	0.42	0.29	0.33
IN.	0.84	1.62	1.86	1.62	1.36	1.15	0.97	0.70	0.51	0.49	0.33	0.36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	1945	1946	1946	1946	1946	1946	1946	1946	1946	1946	1946	1946
MEAN	10.1	15.5	18.0	19.6	17.6	16.1	12.3	9.11	7.90	5.97	5.71	7.35
MAX	18.0	29.8	30.7	36.2	45.0	34.4	25.8	13.8	15.1	10.1	10.1	17.3
(WY)	1946	1946	1946	1946	1946	1946	1946	1946	1946	1946	1945	1945
MIN	7.36	7.96	9.78	11.8	8.42	10.2	8.64	6.63	3.62	3.26	1.79	1.27
(WY)	1999	1968	2001	2001	2001	1965	2000	2001	1997	1996	1999	1999

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1945 - 2002

	2001	2002	1945-2002
ANNUAL TOTAL	3472.7	3843.7	
ANNUAL MEAN	9.51	10.5	12.0
HIGHEST ANNUAL MEAN			23.0 1946
LOWEST ANNUAL MEAN			8.11 2001
HIGHEST DAILY MEAN			129 Dec 31 1996
LOWEST DAILY MEAN	2.2	3.0	0.39 Sep 22 1999
ANNUAL SEVEN-DAY MINIMUM	2.8	3.2	0.52 Sep 9 1999
ANNUAL RUNOFF (AC-FT)	6890	7620	8720
ANNUAL RUNOFF (CFSM)	0.79	0.87	1.00
ANNUAL RUNOFF (INCHES)	10.68	11.82	13.52
10 PERCENT EXCEEDS	20	23	24
50 PERCENT EXCEEDS	6.1	8.0	9.3
90 PERCENT EXCEEDS	3.4	3.6	4.4

e Estimated

12128000 THORNTON CREEK NEAR SEATTLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1996 to September 1998.

WATER TEMPERATURE: March 1996 to current year.

DISSOLVED OXYGEN: March to September 1996.

INSTRUMENTATION.--Water-quality monitor since March 1996. Electronic data logger with fifteen-minute recording interval.

REMARKS.--Records excellent. Unpublished dissolved oxygen data for portions of the 1997 water year are available in the files of the Washington District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 330 microsiemens Aug. 13, 1996, but may have been higher during periods of missing record; minimum recorded, 46 microsiemens Mar. 18, 1997, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum recorded, 23.0°C (rounded) July 27, 1998; minimum recorded, 0.0°C (rounded) Dec. 29, 1996.

DISSOLVED OXYGEN: Maximum recorded, 12.7 mg/L Mar. 20, 1996, but may have been higher during periods of missing record; minimum recorded, 5.0 mg/L Apr. 7, 1996, but may have been lower during periods of missing record.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 21.1°C July 22; minimum, 4.5°C Dec. 25.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.9	11.6	12.8	11.3	10.7	11.0	8.4	7.5	8.0	7.5	6.1	6.8
2	13.1	10.8	12.1	11.5	10.7	11.3	8.0	7.5	7.8	8.1	7.3	7.7
3	12.8	10.8	11.9	11.6	10.4	10.9	8.0	7.3	7.8	7.9	6.8	7.4
4	12.8	10.4	11.7	11.7	11.0	11.3	7.5	6.8	7.2	8.4	7.6	7.9
5	12.4	9.7	11.2	11.1	9.6	10.3	7.4	6.8	7.1	8.3	7.6	7.9
6	12.9	11.2	12.0	9.6	8.7	9.2	7.9	7.0	7.5	9.6	7.5	8.2
7	11.9	11.0	11.5	9.2	7.9	8.6	8.4	7.7	8.1	10.9	9.6	10.4
8	12.9	11.7	12.3	9.2	7.3	8.3	8.7	8.3	8.5	10.5	9.5	9.9
9	12.6	11.4	12.0	8.9	7.5	8.2	8.4	7.3	7.7	9.5	8.6	9.1
10	11.7	10.4	11.0	9.4	7.5	8.4	7.5	6.9	7.2	8.8	8.3	8.5
11	11.7	6.7	9.9	10.2	9.0	9.6	7.8	6.9	7.3	9.2	8.4	8.7
12	12.1	10.7	11.1	10.9	10.2	10.5	7.7	6.8	7.2	9.1	8.5	8.7
13	12.2	11.6	11.9	11.4	10.8	11.0	8.6	7.7	8.2	8.5	7.4	7.9
14	12.7	11.5	12.0	12.3	11.1	11.7	8.4	7.3	7.9	7.5	6.4	7.1
15	12.5	11.1	11.6	12.1	11.4	11.8	7.5	7.0	7.3	7.2	6.0	6.6
16	12.0	10.8	11.6	11.4	10.6	11.1	8.9	7.3	8.4	7.1	6.8	6.9
17	11.2	9.8	10.5	10.6	8.9	9.9	8.8	7.4	7.8	7.4	6.7	7.0
18	11.2	9.8	10.4	9.5	7.8	8.7	7.7	7.2	7.4	7.2	6.6	6.8
19	12.5	11.2	11.9	10.5	9.2	9.8	7.7	7.3	7.4	6.9	6.4	6.7
20	11.6	10.1	10.7	10.7	10.3	10.5	7.5	7.1	7.3	7.5	6.8	7.1
21	11.2	10.4	10.7	10.4	10.1	10.3	7.7	6.6	7.2	6.9	6.5	6.7
22	12.1	11.1	11.4	10.2	9.1	9.6	7.5	5.9	6.7	7.2	6.3	6.7
23	11.4	10.4	10.8	9.9	9.1	9.5	7.3	5.8	6.4	7.3	6.1	6.5
24	10.8	10.0	10.3	9.5	8.9	9.2	6.1	4.9	5.5	7.8	7.3	7.6
25	11.2	10.2	10.7	9.4	9.0	9.2	5.7	4.5	5.2	7.4	6.2	6.7
26	11.8	10.6	11.0	9.3	8.8	9.0	5.8	4.6	5.2	6.5	5.8	6.1
27	10.6	9.4	9.9	8.9	8.4	8.7	7.4	5.8	6.6	5.8	5.4	5.6
28	9.5	8.7	9.2	8.4	6.1	7.1	7.8	6.7	7.3	5.6	4.9	5.3
29	10.0	8.4	9.2	8.0	6.9	7.6	7.4	6.1	6.7	5.6	4.9	5.2
30	11.7	10.0	10.7	8.0	7.3	7.7	6.7	5.7	6.3	5.8	5.1	5.4
31	11.5	10.5	10.9	---	---	---	7.9	6.6	7.2	6.5	5.8	6.2
MONTH	13.9	6.7	11.1	12.3	6.1	9.7	8.9	4.5	7.2	10.9	4.9	7.3

LAKE WASHINGTON BASIN

12128000 THORNTON CREEK NEAR SEATTLE, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT													
10...	1050	5.3	763	10.2	91	7.8	236	8.1	10.3	83	100	0	6.89
NOV													
15...	0920	28	757	9.8	91	7.7	139	13.4	11.7	39	48	0	4.85
DEC													
12...	0940	11	766	11.5	94	7.7	187	5.9	7.1	65	80	0	5.99
JAN													
10...	0940	15	772	11.3	95	7.8	181	6.6	8.3	62	75	0	6.08
FEB													
11...	1010	15	780	12.1	95	7.6	157	6.3	6.2	55	67	0	4.85
MAR													
11...	1010	32	756	11.4	97	7.3	72	--	7.9	24	29	0	2.67
APR													
10...	1050	15	773	11.1	98	7.8	137	13.5	10.7	52	63	0	3.88
MAY													
14...	1040	9.5	771	10.6	95	7.9	202	9.9	11.1	75	91	0	5.12
JUN													
12...	1010	4.7	766	10.6	105	8.1	237	21.0	15.0	88	106	0	7.24
JUL													
09...	0920	7.5	772	9.2	90	7.9	167	16.7	14.8	63	77	0	4.81
AUG													
06...	0930	3.5	769	9.4	94	8.0	248	14.7	15.7	92	111	0	6.86
SEP													
11...	1430	3.2	764	9.3	95	8.0	245	24.5	16.5	89	107	0	6.78

Date	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, TOTAL (MG/L AS N) (00600)	ORTHO-PHOSPHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)
OCT													
10...	16.6	.07	.42	1.11	.008	1.5	.05	.126	--	--	--	--	--
NOV													
15...	13.1	<.04	.69	1.23	.010	1.9	E.01	.098	<.002	<.004	<.002	<.005	<.007
DEC													
12...	15.5	.04	.29	1.25	.010	1.5	.02	.053	--	--	--	--	--
JAN													
10...	14.9	E.03	.36	1.41	.009	1.8	.02	.053	<.006	<.006	<.004	<.005	<.007
FEB													
11...	11.8	E.04	.30	1.00	.011	1.3	.02	.049	--	--	--	--	--
MAR													
11...	4.6	.06	.64	.43	.011	1.1	E.02	.156	<.006	<.006	<.004	<.005	<.007
APR													
10...	9.8	E.04	.27	.69	<.008	.96	.05	.023	<.006	<.006	<.004	<.005	<.007
MAY													
14...	14.3	E.03	.52	.95	.009	1.5	E.02	.080	<.006	<.006	<.004	<.005	.008
JUN													
12...	17.0	<.04	.29	1.14	E.005	1.4	.03	.069	<.006	<.006	<.004	<.005	<.007
JUL													
09...	11.4	.06	.44	.82	.013	1.3	.03	.091	<.006	<.006	<.004	<.005	.008
AUG													
06...	17.3	E.03	.55	.95	.010	1.5	.03	.106	<.006	<.006	<.004	<.005	<.007
SEP													
11...	17.7	<.04	.26	1.03	E.007	1.3	.05	.083	<.006	<.006	<.004	<.005	<.007

LAKE WASHINGTON BASIN

12128000 THORNTON CREEK NEAR SEATTLE, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DISUL- FOTON WATER FLTRD 0.7 U (UG/L) (82677)	EPTC WATER FLTRD 0.7 U (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)
	OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--
NOV 15...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	.005	<.005	<.02	<.002	<.009
DEC 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 10...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	.008	<.005	<.02	<.002	<.009
FEB 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	<.010	<.002	E.483	<.020	<.005	<.018	<.003	<.006	.029	<.005	<.02	<.002	<.009
APR 10...	<.010	<.002	E.054	<.020	<.005	<.018	<.003	<.006	.013	<.005	<.02	<.002	<.009
MAY 14...	<.010	<.002	E.064	<.020	<.005	<.018	<.003	<.006	.011	<.005	<.02	<.002	<.009
JUN 12...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
JUL 09...	<.010	<.002	E.018	<.020	<.005	<.018	<.003	<.006	.007	<.005	<.02	<.002	<.009
AUG 06...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
SEP 11...	<.010	<.002	<.041	<.020	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
Date	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THON, DIS- SOLVED (UG/L) (39532)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THON WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P, P' DDE DISSOLV (UG/L) (34653)	PARA- THON, DIS- SOLVED (UG/L) (39542)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 15...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.007
DEC 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 10...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
FEB 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
APR 10...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	.014	<.003	<.010
MAY 14...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
JUN 12...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
JUL 09...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
AUG 06...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
SEP 11...	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010

LAKE WASHINGTON BASIN

12128000 THORNTON CREEK NEAR SEATTLE, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 15...	<.002	<.010	<.006	<.011	.02	<.004	<.010	<.011	<.02	<.011	<.02	<.034	<.02
DEC 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 10...	<.004	<.022	<.006	<.011	.02	<.004	<.010	<.011	<.02	<.010	<.02	<.034	<.02
FEB 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	<.004	<.022	<.006	<.011	.02	<.004	<.010	<.011	<.02	.022	<.02	<.034	<.02
APR 10...	<.004	<.022	<.006	<.011	.03	<.004	<.010	<.011	<.02	.018	<.02	<.034	<.02
MAY 14...	<.004	<.022	<.006	<.011	.04	<.004	<.010	<.011	<.02	.012	<.02	<.034	<.02
JUN 12...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
JUL 09...	<.004	<.022	<.006	<.011	.06	<.004	<.010	<.011	<.02	.017	<.02	<.034	<.02
AUG 06...	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.010	<.02	<.034	<.02
SEP 11...	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	E.004	<.02	<.034	<.02

Date	TER- BUTHYL- AZINE, WATER, DISS, REC (UG/L) (04022)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED PENDEDED (T/DAY) (80155)
OCT 10...	--	--	--	--	15	.21
NOV 15...	U	<.005	<.002	<.009	22	1.7
DEC 12...	--	--	--	--	13	.39
JAN 10...	U	<.005	<.002	<.009	9.0	.36
FEB 11...	--	--	--	--	10	.41
MAR 11...	U	<.005	<.002	.011	108	9.3
APR 10...	--	<.005	<.002	<.009	15	.61
MAY 14...	--	<.005	<.002	<.009	27	.69
JUN 12...	--	<.005	<.002	<.009	5.0	.06
JUL 09...	--	<.005	<.002	<.009	5.0	.10
AUG 06...	--	<.005	<.002	<.009	12	.11
SEP 11...	--	<.005	<.002	<.009	7.0	.06

Date	Time	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TUR- BID- ITY FIELD WATER UNFLTRD (NTU) (61028)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SILICA, DIS- SOLVED (MG/L) AS SIO2) (00955)	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI- PHYTON BIOMASS ASH FREE DRY G/SQ M (49954)	BIOMASS CHLORO- PHYLL RATIO PERI- PHYTON (UNITS) (70950)	CLOSTR- IDIUM PERFRIN MCP MF, WATER (COL/ 100 ML) (90915)
MAR 11...	1010	32	28	11.4	7.3	72	7.9	6.35	--	--	--	--	E400
AUG 27...	1100	4.1	--	--	--	--	16.3	--	380	391.3	14.200	791	--

LAKE WASHINGTON BASIN

12128000 THORNTON CREEK NEAR SEATTLE, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	COLI- PHAGE, E. COLI C13, 1-AGAR (PLAQUE 100 ML) (90903)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PLAQUE 100 ML) (90904)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2) (70957)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
MAR					
11...	94	5	E770	--	85
AUG					
27...	--	--	--	18.0	--



Figure 29. Location of surface-water and water-quality stations in the Snohomish and Stillaguamish River Basins.

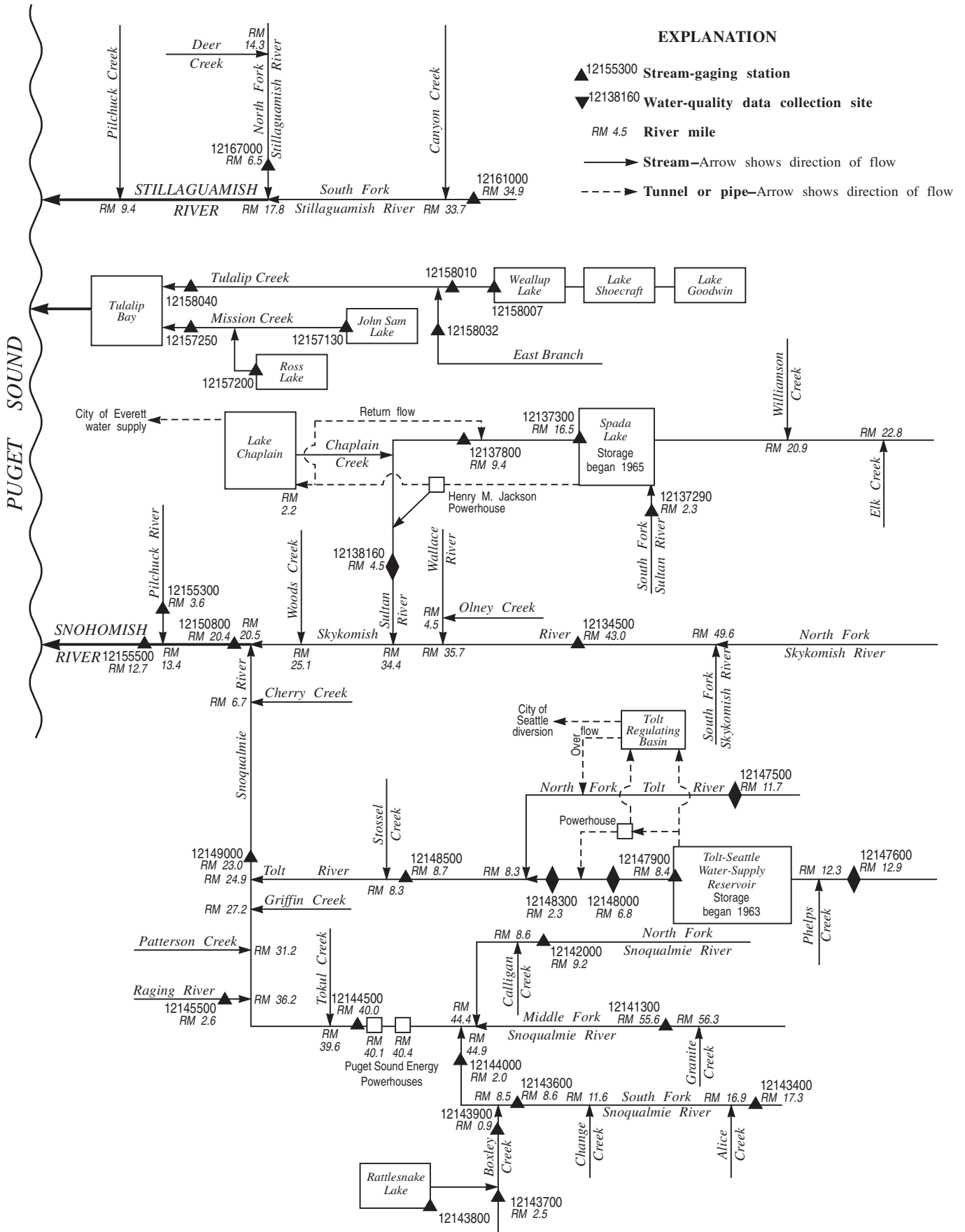


Figure 30. Schematic diagram showing surface-water and water-quality stations in the Snohomish and Stillaguamish River Basins.

SNOHOMISH RIVER BASIN

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA

LOCATION.--Lat 47°50'15", long 121°39'56", in SW 1/4 SW 1/4 sec.9, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 2.0 mi southeast of Gold Bar, 7.3 mi upstream from Wallace River, and at mile 43.0.

DRAINAGE AREA.--535 mi².

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

REVISED RECORDS.--WSP 1316: 1932-35(M), 1944(M).

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 209.26 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. No regulation. Several small diversions upstream from station. Chemical analyses July 1959 to September 1970, October 1977 to June 1980. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--74 years (water years 1929-2002), 3,962 ft³/s, 100.63 in/yr, 2,871,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 102,000 ft³/s Nov. 24, 1990, gage height, 22.49 ft, from rating curve extended above 53,000 ft³/s; minimum discharge, 298 ft³/s Oct. 30, 1987; minimum gage height, 2.73 ft Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 19,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1530	33,600	14.36	Feb. 22	1630	34,800	14.57
Dec. 17	0245	29,500	13.63	Apr. 14	0800	35,800	14.74
Jan. 08	0130	*46,100	*16.37	June 29	0900	20,800	11.82

Minimum discharge, 403 ft³/s Oct. 6-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	495	9450	3700	1800	2130	3460	3340	7520	10700	8440	2030	814
2	474	7990	4920	2050	1990	3080	3460	8430	10600	7310	1870	833
3	453	6240	3740	2140	1980	2830	3150	8080	10700	6760	1710	1190
4	438	4930	3170	2180	1920	2680	3180	6530	10900	6390	1630	1020
5	423	5030	2810	2120	1840	2710	3820	5850	12200	6040	1680	865
6	413	4080	2930	2730	1940	2530	5170	5300	13300	6020	2100	778
7	412	3390	3200	30900	2510	2360	6980	4520	9880	6730	1850	724
8	499	2940	2870	34400	2610	2230	5660	3970	8110	8430	1640	705
9	818	2620	3210	16700	2420	2110	5040	3700	6910	6540	1550	706
10	994	2380	2800	9570	2270	2160	6900	3470	7760	7080	1530	683
11	4360	2210	2480	6960	2440	5220	8070	3610	9770	7830	1530	661
12	3510	2160	2400	7090	2130	6830	12600	4350	12100	7440	1460	647
13	6650	2830	9250	6860	1950	5220	18200	6590	14900	6930	1420	639
14	6030	26100	11900	5340	1790	4410	28500	7490	16400	6420	1400	626
15	4060	19800	6650	4410	1680	3850	14400	6700	15500	5490	1370	614
16	2720	12400	15600	3780	1670	3390	9720	6040	13500	5020	1280	776
17	2520	8130	20100	3300	1650	2960	7480	6940	10600	4950	1230	1140
18	2080	6010	9330	2980	1790	2700	6130	7710	11700	4690	1150	891
19	5150	5420	6460	2940	2120	2770	5380	7470	10300	4400	1090	758
20	4940	7130	4960	3090	2370	2780	5050	10000	9190	3890	1040	751
21	3450	7570	4150	3000	7160	2460	4760	9750	10600	3720	1030	700
22	6920	7070	3480	2710	27300	2340	4660	9620	11900	3720	995	644
23	11300	8730	3020	2530	18900	2330	4850	8480	11500	3690	964	608
24	7580	6370	2670	4960	10900	2380	4280	7660	9830	3620	962	582
25	7500	4940	2470	7560	7310	2450	4010	7940	9930	3430	966	562
26	6870	4220	2240	4870	5650	2630	4000	8710	11600	3210	944	551
27	6500	3750	2130	3530	4660	2880	3940	9720	11800	2810	924	549
28	4990	3430	2210	2880	3980	3500	3940	14600	11000	2510	909	534
29	3880	3470	2090	2490	---	3510	4470	17800	17200	2580	897	570
30	3610	3210	1980	2320	---	3270	5530	14700	10200	2520	873	876
31	9420	---	1990	2350	---	3210	---	12500	---	2310	841	---
TOTAL	119459	194000	150910	190540	127060	97240	206670	245750	340580	160920	40865	21997
MEAN	3854	6467	4868	6146	4538	3137	6889	7927	11350	5191	1318	733.2
MAX	11300	26100	20100	34400	27300	6830	28500	17800	17200	8440	2100	1190
MIN	412	2160	1980	1800	1650	2110	3150	3470	6910	2310	841	534
AC-FT	236900	384800	299300	377900	252000	192900	409900	487400	675500	319200	81060	43630
CFSM	7.20	12.1	9.10	11.5	8.48	5.86	12.9	14.8	21.2	9.70	2.46	1.37
IN.	8.31	13.49	10.49	13.25	8.83	6.76	14.37	17.09	23.68	11.19	2.84	1.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	MEAN	2745	4812	4821	4095	3653	3226	4467	6746	6746	3555	1372	1333
MAX	6658	16370	14490	11030	8940	9565	7553	10860	13610	8413	3606	4942	
(WY)	1934	1991	1934	1953	1996	1972	1959	1972	1974	1974	1964	1959	
MIN	346	534	1231	945	791	1469	1908	3425	1955	971	589	465	
(WY)	1988	1937	1986	1937	1929	1955	1975	1941	1992	1941	1992	1998	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1929 - 2002

ANNUAL TOTAL		1248889		1895991									
ANNUAL MEAN		3422		5194						3962			
HIGHEST ANNUAL MEAN										5884		1972	
LOWEST ANNUAL MEAN										2210		1941	
HIGHEST DAILY MEAN				26100	Nov 14		34400	Jan 8		88400	Nov 24	1990	
LOWEST DAILY MEAN				412	Oct 7		412	Oct 7		303	Oct 29	1987	
ANNUAL SEVEN-DAY MINIMUM				444	Oct 1		444	Oct 1		310	Oct 25	1987	
ANNUAL RUNOFF (AC-FT)		2477000		3761000						2871000			
ANNUAL RUNOFF (CFSM)			6.40				9.71				7.41		
ANNUAL RUNOFF (INCHES)			86.84				131.83				100.63		
10 PERCENT EXCEEDS			7090				10800				8220		
50 PERCENT EXCEEDS			2480				3610				2810		
90 PERCENT EXCEEDS			734				875				862		

SNOHOMISH RIVER BASIN

12137290 SOUTH FORK SULTAN RIVER NEAR SULTAN, WA

LOCATION.--Lat 47°56'51", long 121°37'32", in NE ¼ NE ¼ sec.3, T.28 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 0.3 mi downstream from bridge, 14 mi northeast of Sultan, and 2 mi upstream from mouth.

DRAINAGE AREA.--11.6 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,450.53 ft above NGVD of 1929.

REMARKS.--Records fair except flows below 15 ft³/s and above 2,500 ft³/s, Nov. 16-29, and estimated discharges, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water years 1992-2002), 123 ft³/s, 144.22 in/yr, 89,200 acre-ft/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1990, reached a stage of 13.6 ft, from floodmark, discharge, 7,000 ft³/s (revised), from slope-area measurement of peak flow.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,750 ft³/s Dec. 29, 1998, gage height, 12.55 ft; minimum discharge, 4.6 ft³/s Oct. 9, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 7	2115	1,700	10.95	Apr. 14	0300	1,380	10.68
Feb. 22	1200	*2,730	*11.63				

Minimum discharge, 14 ft³/s Oct. 6, Aug. 31, Sep. 1, 2, 14-16, 27-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	209	124	62	36	64	89	246	269	184	37	15
2	19	261	123	124	34	57	82	268	272	151	34	41
3	17	135	72	103	36	53	74	268	267	137	30	52
4	16	133	61	96	34	51	86	177	276	125	34	28
5	16	146	53	85	33	52	123	158	459	129	43	21
6	15	91	63	198	43	46	243	122	382	141	63	18
7	15	71	60	1270	52	42	249	99	235	164	42	20
8	43	60	68	929	43	39	155	87	208	242	35	19
9	39	52	69	375	38	37	202	83	180	148	32	20
10	141	46	57	196	40	39	381	83	230	194	32	18
11	270	43	48	146	39	159	457	92	278	170	30	16
12	266	52	68	228	35	131	898	162	341	154	28	16
13	201	131	599	152	33	e100	790	269	416	146	28	15
14	368	e975	360	109	31	e75	843	314	379	116	27	14
15	130	e500	167	87	31	e60	317	213	305	96	25	14
16	93	e310	677	74	35	e50	207	176	251	99	23	73
17	85	179	538	63	38	e45	153	285	196	100	22	40
18	106	126	207	57	55	e42	123	255	314	93	21	27
19	407	132	134	53	88	e42	109	e225	200	82	20	23
20	176	245	104	54	69	e40	101	e300	206	72	19	27
21	239	245	80	50	377	e37	96	e280	261	75	18	20
22	438	248	67	44	1750	e37	115	e390	260	82	18	18
23	453	251	57	42	606	e40	116	e300	221	80	18	17
24	236	146	55	191	262	e45	97	e250	192	73	18	16
25	356	102	50	158	156	e55	92	e270	214	65	18	15
26	276	87	47	79	112	63	90	e290	255	56	17	15
27	273	79	47	60	89	67	87	e320	230	47	16	14
28	147	70	76	50	74	73	92	e660	359	44	16	14
29	104	72	64	44	---	69	119	691	673	50	16	23
30	163	63	56	42	---	67	179	389	212	57	16	60
31	302	---	62	40	---	64	---	307	---	43	15	---
TOTAL	5430	5260	4313	5261	4269	1841	6765	8029	8541	3415	811	729
MEAN	175	175	139	170	152	59.4	226	259	285	110	26.2	24.3
MAX	453	975	677	1270	1750	159	898	691	673	242	63	73
MIN	15	43	47	40	31	37	74	83	180	43	15	14
AC-FT	10770	10430	8550	10440	8470	3650	13420	15930	16940	6770	1610	1450
CFSM	15.1	15.1	12.0	14.6	13.1	5.12	19.4	22.3	24.5	9.50	2.26	2.09
IN.	17.41	16.87	13.83	16.87	13.69	5.90	21.69	25.75	27.39	10.95	2.60	2.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
MEAN	121	182	157	167	124	114	147	174	146	72.2	29.1	45.5
MAX	245	394	274	254	255	224	226	274	285	157	65.3	114
(WY)	1996	1996	2000	1997	1996	1997	2002	1997	2002	1999	1995	1997
MIN	17.1	60.1	64.6	65.5	41.2	43.8	82.2	90.4	34.6	27.9	9.57	7.83
(WY)	1992	1994	1993	2000	2001	1992	1995	1992	1992	1992	1998	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1992 - 2002

ANNUAL TOTAL	37949	54664										
ANNUAL MEAN	104	150								123		
HIGHEST ANNUAL MEAN										176		1997
LOWEST ANNUAL MEAN										81.2		2001
HIGHEST DAILY MEAN				975	Nov 14	1750	Feb 22	2190	Feb 8	1996		
LOWEST DAILY MEAN				12	Sep 23	14	Sep 14	5.2	Oct 10	1991		
ANNUAL SEVEN-DAY MINIMUM				13	Sep 19	16	Sep 22	5.5	Oct 9	1991		
ANNUAL RUNOFF (AC-FT)	75270					108400				89200		
ANNUAL RUNOFF (CFSM)		8.96				12.9				10.6		
ANNUAL RUNOFF (INCHES)		121.70				175.30				144.22		
10 PERCENT EXCEEDS		233				314				262		
50 PERCENT EXCEEDS		69				85				78		
90 PERCENT EXCEEDS		20				20				17		

e Estimated

12137300 SPADA LAKE NEAR STARTUP, WA

LOCATION.--Lat 47°58'28", long 121°41'10", in NW ¼ sec.29, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank at Culmback Dam on Sultan River, 1.7 mi downstream from South Fork, 7.8 mi north of Startup, and at mile 16.5.

DRAINAGE AREA.--68.3 mi².

PERIOD OF RECORD.--April 1965 to current year.

REVISED RECORDS.--WDR WA-79-1: 1975-76(M). WA-95-1: 1994.

GAGE.--Nonrecording gage. Datum of gage is NGVD of 1929 (levels by Snohomish County P.U.D. No. 1).

REMARKS.--Reservoir is formed by earthfill dam originally completed to elevation 1,408 ft in 1965. Storage began April 5, 1965 for water supply for the City of Everett. During 1983 the dam was raised to elevation 1,470 ft with storage beginning November 1983. Capacity was increased to 153,260 acre-feet at elevation 1,450 ft, crest of spillway. Normal operating pool is between elevations 1,420 ft and 1,450 ft. Figures given herein represent total contents. Spada Lake is used to provide water for the City of Everett, and since June 1, 1984, power generation for Snohomish County Public Utility District No. 1.

COOPERATION.--Elevation at 1200 and 2400 hours and capacity table furnished by Snohomish County Public Utility District No. 1.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 164,599 acre-ft Nov. 23, 1990, elevation, 1,455.8 ft; minimum contents observed since reservoir was first filled, 4,250 acre-ft Sept. 30, 1967, elevation, 1,301.28 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 149,979 acre-ft Jun. 29-30 elevation, 1,448.2 ft; minimum contents observed, 87,500 acre-ft Mar. 25-26, elevation, 1,409.8 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,418.0	99,333	-27,871
Oct. 31.....	1,428.3	115,331	+15,998
Nov. 30.....	1,420.7	103,330	-12,001
Dec. 31.....	1,423.6	107,909	+4,579
CAL YR 2001.....			+19,566
Jan. 31.....	1,426.8	112,962	+5,053
Feb. 28.....	1,435.3	127,034	+14,072
Mar. 31.....	1,411.4	89,789	-37,245
Apr. 30.....	1,429.6	117,383	+27,594
May 31.....	1,446.3	146,515	+29,132
June 30.....	1,448.2	149,979	+3,464
July 31.....	1,439.4	134,010	-15,969
Aug. 31.....	1,428.0	114,857	-19,153
Sept. 30.....	1,415.8	96,152	-18,705
WTR YR 2002.....	--	--	-3,181

SNOHOMISH RIVER BASIN

12137800 SULTAN RIVER BELOW DIVERSION DAM, NEAR SULTAN, WA

LOCATION.--Lat 47°57'34", long 121°47'46", in SE ¼ NE ¼ sec.32, T.29 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank 50 ft upstream from City of Everett diversion dam on Sultan River, 6.8 mi north of Sultan, and at mile 9.4.

DRAINAGE AREA.--77.1 mi².

PERIOD OF RECORD.--May 1983 to current year.

GAGE.--Water-stage recorder and square notch sharp-crested weir in gate of dam. Datum of gage is 600.00 ft above NGVD of 1929 (City of Everett). Prior to Oct. 1, 1989, recording gage at site 350 ft downstream at different datum, Mar. 16 to Sept. 21, 1993, Jan. 7-10, 1994, Feb. 18 to Sept. 21, 1995, Dec. 3-7, 1995, Mar. 14 to Sept. 3, 1996, Mar. 13 to June 24, 1997, recording gage at site 1,200 ft downstream, at different datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated at Spada Lake (station 12137300) since Apr. 5, 1965, unadjusted for storage. Since May 1984, water is diverted at Spada Lake through a 10-ft diameter pipeline for power generation at the Jackson Project, and for municipal water supply at Lake Chaplain. Since July 1984, undetermined flows are returned to river at diversion dam by pipeline from Lake Chaplain for maintenance of instream flow requirements. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--19 years (water years 1984-2002), 211 ft³/s, 152,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,000 ft³/s Nov. 24, 1990, gage height, 63.79 ft, from rating curve extended above 3,200 ft³/s; minimum recorded discharge, 23 ft³/s Oct. 30, 1988, result of regulation, but may have been lower Dec. 13, 14, 2001; minimum daily, 35 ft³/s Aug. 23-25, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,370 ft³/s Dec. 13, gage height, 56.68 ft; minimum daily discharge, 97 ft³/s July 17-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	127	258	98	155	177	175	175	175	99	98	98
2	164	135	237	101	155	173	175	175	175	98	98	99
3	163	115	157	98	155	171	175	175	175	98	98	98
4	163	120	136	98	155	174	175	175	175	98	98	98
5	164	156	126	98	155	175	175	175	175	98	98	98
6	164	109	181	112	164	175	175	175	175	98	98	99
7	164	99	181	372	162	175	175	175	175	98	98	98
8	164	99	215	382	155	175	175	175	175	98	98	98
9	164	99	274	186	155	175	175	175	175	98	98	98
10	164	99	167	119	155	175	184	175	175	98	98	98
11	163	99	142	98	155	175	187	175	175	98	98	98
12	164	99	173	156	155	175	305	175	175	98	98	98
13	163	100	654	116	155	175	257	175	175	98	98	98
14	191	406	497	98	155	175	299	177	175	98	98	98
15	163	305	229	98	155	175	179	175	175	98	98	144
16	163	212	369	155	155	175	194	175	128	98	98	149
17	163	155	310	155	156	175	176	175	98	97	98	151
18	163	124	170	155	157	175	175	175	98	97	98	151
19	370	122	155	155	170	175	175	175	98	99	98	152
20	215	147	127	184	156	175	175	175	98	232	98	152
21	202	157	108	156	279	175	175	175	98	224	98	152
22	300	182	101	155	822	175	175	175	98	207	98	162
23	284	277	99	155	304	175	175	175	98	207	98	162
24	279	162	100	293	173	175	175	175	98	207	98	162
25	353	133	100	442	152	175	175	175	98	208	98	162
26	205	143	99	179	152	175	175	175	98	196	98	162
27	198	140	98	155	152	175	175	175	98	116	98	162
28	164	131	99	155	152	219	175	175	98	98	98	162
29	162	256	98	155	---	175	175	175	132	98	98	162
30	167	210	98	155	---	175	175	175	98	98	98	162
31	170	---	98	155	---	175	---	175	---	98	98	---
TOTAL	6040	4718	5856	5189	5321	5464	5631	5427	4159	3851	3038	3883
MEAN	195	157	189	167	190	176	188	175	139	124	98.0	129
MAX	370	406	654	442	822	219	305	177	175	232	98	162
MIN	162	99	98	98	152	171	175	175	98	97	98	98
AC-FT	11980	9360	11620	10290	10550	10840	11170	10760	8250	7640	6030	7700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

	230	412	179	224	234	239	226	247	187	167	120	169
MEAN	230	412	179	224	234	239	226	247	187	167	120	169
MAX	726	1606	306	898	715	610	484	675	652	983	162	448
(WY)	1986	1996	1996	1984	1984	1984	1984	1984	1983	1983	1985	1983
MIN	159	91.9	93.8	117	163	176	179	175	118	104	60.6	129
(WY)	1988	1988	1988	1988	2001	2002	1987	2002	1996	2001	1983	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1983 - 2002
ANNUAL TOTAL	58259	58577	
ANNUAL MEAN	160	160	211
HIGHEST ANNUAL MEAN			433
LOWEST ANNUAL MEAN			144
HIGHEST DAILY MEAN	654	822	16600
LOWEST DAILY MEAN	98	97	35
ANNUAL SEVEN-DAY MINIMUM	99	98	42
ANNUAL RUNOFF (AC-FT)	115600	116200	152700
10 PERCENT EXCEEDS	195	207	250
50 PERCENT EXCEEDS	162	162	175
90 PERCENT EXCEEDS	100	98	112

SNOHOMISH RIVER BASIN

12138160 SULTAN RIVER BELOW POWERPLANT NEAR SULTAN, WA

LOCATION.--Lat 47°54'27", long 121°48'51", in SW ¼ SW ¼ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on left bank, just downstream from Henry M. Jackson powerplant, 3.2 mi north of Sultan, and at mile 4.5.

DRAINAGE AREA.--94.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 267.0 ft above NGVD of 1929 (levels by Snohomish County Public Utility District). Prior to Oct. 1, 1991, at site on right bank, 100 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated at Spada Lake (station 12137300) since April 5, 1965; unadjusted for storage. Since May 1984, water is diverted from Spada Lake through a 14 ft diameter, 4 mile long tunnel and a 10 ft diameter, 4 mi long pipeline for power production and returned to the river upstream from the station, at the powerplant. Since July 1984, an undetermined flow was returned to river at upstream diversion dam by pipeline from Lake Chaplain for instream flow requirement. Some flows diverted into Lake Chaplain from municipal use by City of Everett. U.S. Geological survey satellite telemeter at station.

AVERAGE DISCHARGE.--19 years (water years 1984-2002), 751 ft³/s, 544,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,300 ft³/s Nov. 24, 1990, gage height, 15.03 ft, from rating curve extended above 4,500 ft³/s; minimum discharge, 124 ft³/s July 14, 15, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,000 ft³/s Feb. 22, gage height, 8.53 ft; minimum discharge, 188 ft³/s July 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	490	1140	1730	441	1560	1480	459	660	1070	1460	284	269
2	490	1560	1730	446	1480	1440	438	885	1070	1460	283	272
3	490	1530	1620	355	1420	1430	429	972	1170	1450	282	270
4	490	1530	1360	272	1360	1360	423	860	1400	1450	282	270
5	489	1490	1190	269	1310	1300	518	871	1590	1450	280	270
6	489	1420	1060	281	1290	1300	622	927	1490	1460	276	270
7	486	1390	941	1100	1270	1480	627	908	1450	1450	276	270
8	490	1370	943	1910	867	1500	733	904	1450	1480	276	269
9	487	1280	1090	1680	612	1480	792	893	1450	1470	276	271
10	489	1240	876	1550	592	1490	841	798	1450	1270	275	297
11	513	1240	753	1470	606	1420	835	675	1380	954	276	311
12	451	1210	761	1550	578	1300	1020	674	1320	806	275	311
13	410	1180	1530	1580	561	1250	962	926	1300	806	275	312
14	462	1810	1480	1530	551	1230	1150	1620	1260	804	275	312
15	439	1970	980	1510	527	1200	1490	1430	1250	798	275	355
16	436	1760	1160	1520	513	1170	1740	1520	1210	790	274	368
17	438	1610	1740	1500	516	1540	1710	1160	1150	790	274	370
18	434	1550	1770	1500	540	1540	1630	895	1140	637	273	366
19	990	1500	1700	1560	633	1510	1590	883	1140	350	274	366
20	953	1590	1570	1670	698	1480	1580	855	1140	252	273	360
21	867	1600	1280	1650	823	1260	1570	743	1220	245	273	354
22	1040	1620	1120	1600	2100	1280	1580	528	1450	226	274	365
23	1230	1820	1110	1590	1940	1290	1600	434	1450	221	273	349
24	1630	1640	974	1760	1680	1280	1590	417	1320	218	272	331
25	1970	1570	801	2090	1580	993	1150	410	1220	216	271	331
26	1730	1580	796	1680	1540	612	871	408	1120	223	271	330
27	1710	1540	794	1600	1530	457	865	406	871	461	272	330
28	1660	1520	693	1580	1520	581	862	446	773	430	272	332
29	1620	1700	573	1540	---	531	860	945	1280	374	272	331
30	1610	1680	568	1550	---	498	742	1480	1460	318	270	347
31	1330	---	490	1590	---	479	---	1210	---	296	271	---
TOTAL	26813	45640	35183	41924	30197	37161	31279	26743	38044	24615	8525	9559
MEAN	865	1521	1135	1352	1078	1199	1043	863	1268	794	275	319
MAX	1970	1970	1770	2090	2100	1540	1740	1620	1590	1480	284	370
MIN	410	1140	490	269	513	457	423	406	773	216	270	269
AC-FT	53180	90530	69790	83160	59900	73710	62040	53040	75460	48820	16910	18960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
MEAN	634	1356	1063	1035	882	746	750	801	723	434	268	341								
MAX	1630	3080	1787	1766	1586	1223	1284	1257	1314	925	833	635								
(WY)	1998	1991	1996	1999	1996	1997	1988	1984	1999	1997	1999	1995								
MIN	227	246	261	396	310	335	276	305	256	198	167	203								
(WY)	1984	1988	1986	2001	1985	2001	1992	1995	1992	1987	1985	1985								

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1984 - 2002
ANNUAL TOTAL	225034	355683	
ANNUAL MEAN	617	974	751
HIGHEST ANNUAL MEAN			1065
LOWEST ANNUAL MEAN			464
HIGHEST DAILY MEAN	1970	Oct 25	2100
LOWEST DAILY MEAN	188	Aug 13	216
ANNUAL SEVEN-DAY MINIMUM	204	Aug 8	229
ANNUAL RUNOFF (AC-FT)	446400	705500	544200
10 PERCENT EXCEEDS	1530	1600	1560
50 PERCENT EXCEEDS	401	962	524
90 PERCENT EXCEEDS	293	275	212

12138160 SULTAN RIVER BELOW POWERPLANT, NEAR SULTAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1984 to current year.

INSTRUMENTATION.--Temperature recorder since June 1984.

REMARKS.--Record poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 17.5°C (rounded) Sept. 5-7, 1986; minimum, 1.0°C (rounded) Feb. 2-5, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.2°C Oct. 4; minimum, 1.7°C Jan. 28.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	13.9	13.6	13.7	8.5	8.0	8.2	5.7	5.6	5.6	3.1	2.8	3.0
2	13.9	13.6	13.7	8.4	8.0	8.2	5.7	5.5	5.6	3.4	3.1	3.2
3	13.9	13.5	13.7	8.4	8.1	8.2	5.6	5.1	5.4	3.8	3.2	3.5
4	14.2	13.5	13.8	8.2	7.9	8.1	5.2	4.8	5.0	3.9	3.7	3.8
5	14.0	13.7	13.8	8.0	7.6	7.8	4.9	4.5	4.7	3.8	3.6	3.6
6	13.8	13.5	13.6	8.0	7.6	7.8	4.7	4.5	4.6	4.0	3.7	3.8
7	13.7	13.4	13.6	7.8	7.6	7.6	4.8	4.5	4.7	4.9	3.9	4.4
8	13.6	13.0	13.4	7.8	7.6	7.7	4.9	4.7	4.8	5.0	3.8	4.3
9	13.3	12.9	13.1	7.7	7.3	7.5	4.8	4.4	4.5	3.9	3.5	3.7
10	13.2	12.5	12.9	7.6	7.3	7.5	4.4	4.1	4.2	3.5	3.2	3.4
11	12.6	11.3	11.8	7.7	7.4	7.6	4.3	4.2	4.3	3.4	3.2	3.3
12	11.7	11.3	11.6	7.7	7.5	7.6	4.3	4.1	4.2	3.8	3.3	3.5
13	11.3	10.5	10.8	7.7	7.5	7.6	4.8	4.1	4.4	3.7	3.4	3.5
14	10.9	10.0	10.4	8.3	7.6	7.9	4.9	4.1	4.4	3.5	3.3	3.4
15	10.7	10.0	10.3	8.1	7.8	8.0	4.1	4.0	4.0	3.4	3.1	3.3
16	10.9	10.3	10.6	7.8	7.5	7.6	4.8	4.0	4.5	3.3	3.1	3.2
17	10.3	9.9	10.1	7.6	7.0	7.3	4.8	3.6	3.9	3.3	3.1	3.2
18	10.3	10.0	10.1	7.1	6.8	6.9	3.8	3.6	3.7	3.2	3.0	3.1
19	10.2	9.3	9.7	7.0	6.8	6.9	3.7	3.5	3.6	3.2	3.0	3.1
20	10.1	9.8	10	7.1	7.0	7.0	3.6	3.5	3.6	3.2	3.0	3.1
21	10.0	9.7	9.8	7.2	6.9	7.0	3.7	3.5	3.6	3.4	3.0	3.3
22	9.7	9.2	9.4	7.0	6.8	6.9	3.6	3.1	3.4	3.1	2.5	2.9
23	9.3	8.8	9.0	6.8	6.5	6.7	3.3	3.0	3.1	3.1	2.9	3.0
24	9.1	8.7	8.9	6.6	6.4	6.5	3.0	2.7	2.8	3.1	2.1	2.9
25	9.1	8.7	8.8	6.4	6.3	6.4	2.7	2.6	2.7	3.1	2.8	2.9
26	9.3	8.9	9.2	6.4	6.2	6.3	2.7	2.6	2.6	2.8	2.5	2.7
27	9.0	8.6	8.7	6.3	6.1	6.2	2.6	2.4	2.5	2.5	1.9	2.2
28	8.7	8.5	8.6	6.2	5.7	5.9	3.0	2.5	2.8	2.3	1.7	1.9
29	8.6	8.4	8.5	5.8	5.5	5.6	3.0	2.7	2.8	2.4	2.2	2.3
30	8.9	8.5	8.7	5.7	5.6	5.6	2.9	2.6	2.7	2.4	1.8	2.1
31	8.6	8.0	8.2	---	---	---	3.1	2.7	2.9	2.2	1.9	2.1
MONTH	14.2	8.0	10.9	8.5	5.5	7.2	5.7	2.4	3.9	5.0	1.7	3.2

SNOHOMISH RIVER BASIN

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA

LOCATION.--Lat 47°29'10", long 121°38'48", in SW 1/4 SE 1/4 sec.10, T.23 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.7 mi downstream from Granite Creek, 6.4 mi east of North Bend, and at mile 55.6.

DRAINAGE AREA.--154 mi².

PERIOD OF RECORD.--February 1961 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 780 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair. No regulation or diversion upstream from station. Water temperatures June 1979 to September 1980. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1962-2002), 1,236 ft³/s, 109.08 in/yr, 895,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft³/s Dec. 2, 1977, gage height, 14.93 ft; maximum gage height, 14.97 ft Nov. 24, 1990; minimum discharge, 91 ft³/s Oct. 29-31, 1987, gage height, 0.61 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, reached a stage of 18.7 ft from floodmarks, discharge, 49,000 ft³/s by slope-area measurement at site 6 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1230	13,100	10.42	Jan. 8	0015	13,000	10.38
Dec. 17	0115	8,980	8.85	Apr. 14	0545	*14,200	*10.76

Minimum discharge, 124 ft³/s Oct. 6,7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	2820	1240	e540	677	805	1020	2050	2770	2060	535	222
2	147	2590	1530	717	624	714	1000	2220	2720	1830	493	235
3	142	1880	1090	775	634	655	894	1910	2700	1680	449	370
4	137	1450	954	743	609	632	951	1510	2800	1580	427	294
5	130	1620	844	672	575	681	1240	1400	3420	1460	434	234
6	127	1240	996	1150	630	629	1810	1250	3790	1490	548	209
7	126	1000	1110	9080	871	565	2700	1070	2530	1750	476	196
8	175	843	956	9160	1010	530	1750	946	1900	2350	406	194
9	267	733	1120	4340	884	504	1560	890	1610	1670	388	199
10	355	650	897	2350	757	535	2370	846	1930	1860	405	193
11	1860	599	777	1740	791	2440	2670	885	2600	2090	418	191
12	1340	599	765	2310	649	2200	4600	1220	3340	1910	378	189
13	2870	1060	4670	2060	568	1480	6330	1980	4150	1770	366	187
14	2270	10000	4190	1430	513	1200	10100	2400	4520	1600	372	182
15	1420	5670	1950	1150	491	1060	4260	1880	3890	1370	373	178
16	984	3670	5770	988	508	920	2770	1590	3220	1220	338	237
17	1050	2200	5480	856	518	782	1990	1920	2450	1240	323	388
18	783	1540	2410	779	706	698	1580	2080	3640	1190	293	273
19	2730	1440	1660	1050	847	819	1380	2060	3040	1150	277	220
20	2030	1850	1300	1180	867	955	1280	2900	2480	1020	284	222
21	1430	2340	1080	1060	2880	774	1180	2760	2960	970	289	205
22	2740	2480	930	849	6010	703	1240	2910	3210	988	272	187
23	3650	3370	802	755	4270	706	1280	2390	2960	993	260	175
24	2870	1830	717	1640	2790	727	1100	2100	2440	975	259	169
25	3230	1340	653	2280	1750	812	1040	2220	2550	940	261	165
26	2600	1190	598	1290	1330	841	1070	2510	3140	899	258	163
27	2140	1090	558	947	1090	899	1040	2910	3090	767	249	162
28	1540	1020	598	768	940	1390	1010	4850	3160	676	243	157
29	1180	1140	595	668	---	1220	1150	5370	5630	717	243	184
30	1230	1020	546	652	---	1120	1510	4010	2740	680	241	231
31	3260	---	552	708	---	1030	---	3270	---	617	231	---
TOTAL	44966	60274	47338	54687	34789	29026	63875	68307	91380	41512	10789	6411
MEAN	1451	2009	1527	1764	1242	936.3	2129	2203	3046	1339	348.0	213.7
MAX	3650	10000	5770	9160	6010	2440	10100	5370	5630	2350	548	388
MIN	126	599	546	540	491	504	894	846	1610	617	231	157
AC-FT	89190	119600	93890	108500	69000	57570	126700	135500	181300	82340	21400	12720
CFSM	9.42	13.0	9.92	11.5	8.07	6.08	13.8	14.3	19.8	8.70	2.26	1.39
IN.	10.86	14.56	11.43	13.21	8.40	7.01	15.43	16.50	22.07	10.03	2.61	1.55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

MEAN	863.2	1643	1616	1534	1314	1038	1341	1812	1834	980.3	416.7	483.8
MAX	1978	4534	3997	3070	2941	2836	2231	3060	4012	2370	1218	1241
(WY)	1991	1996	1976	1984	1982	1972	1989	1972	1974	1974	1964	1968
MIN	105	298	441	427	387	549	601	996	553	411	170	135
(WY)	1988	1980	1986	1979	1969	1962	1967	1992	1992	1987	1994	1998

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1961 - 2002

ANNUAL TOTAL		372185		553354								
ANNUAL MEAN		1020		1516						1236		
HIGHEST ANNUAL MEAN										1832		1972
LOWEST ANNUAL MEAN										774		2001
HIGHEST DAILY MEAN			10000	Nov 14		10100	Apr 14		23100		Nov 24 1990	
LOWEST DAILY MEAN			126	Oct 7		126	Oct 7		91		Oct 29 1987	
ANNUAL SEVEN-DAY MINIMUM			137	Oct 1		137	Oct 1		92		Oct 24 1987	
ANNUAL RUNOFF (AC-FT)			738200			1098000				895700		
ANNUAL RUNOFF (CFSM)			6.62			9.84				8.03		
ANNUAL RUNOFF (INCHES)			89.90			133.67				109.08		
10 PERCENT EXCEEDS			2150			3110				2440		
50 PERCENT EXCEEDS			740			1060				874		
90 PERCENT EXCEEDS			213			242				276		

e Estimated

SNOHOMISH RIVER BASIN

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA

LOCATION.--Lat 47°36'54", long 121°42'44", in NW 1/4 NW 1/4 sec.31, T.25 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi upstream from Calligan Creek, 7.0 mi northeast of town of Snoqualmie Falls, and at mile 9.2.

DRAINAGE AREA.--64.0 mi².

PERIOD OF RECORD.--August 1929 to October 1949, water years 1950-60 (annual maximum), February 1961 to current year.

REVISED RECORDS.--WSP 1346: 1930-31(M), 1932, 1935, 1936-37(M), 1938, 1939-42(M), 1944, 1945-46(P), 1947, 1948(P), 1949(M). WSP 1736: 1932-34(M), 1935, 1938(M), 1943-45(M), 1947(M), drainage area. WSP 1932: 1950-54(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,130 ft above NGVD of 1929, from topographic map. Prior to Oct. 19, 1949, water-stage recorder, and October 1949 to February 1961, crest-stage gage, at site 1,500 ft downstream at different datum.

EMARKS.--Records good. No regulation or diversion upstream from station. Daily water temperatures June 1979 to August 1980. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--61 years (water years 1930-49, 1962-2002), 502 ft³/s, 106.64 in/yr, 363,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 2,200 ft³/s on basis of slope-area measurement at gage height 16.47 ft; minimum discharge observed, 30 ft³/s Sept. 17-19, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1300	*6,240	*8.84	Feb. 22	1230	4,990	8.08
Dec. 17	0145	4,270	7.59	Apr. 14	0545	5,790	8.57
Jan. 8	0030	5,500	8.40				

Minimum discharge, 51 ft³/s Sept. 15, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	1060	618	e325	288	370	512	914	1080	799	153	54
2	73	1160	858	480	268	330	504	958	1070	680	141	66
3	69	755	517	510	269	304	431	871	1030	624	130	172
4	66	564	417	444	265	292	444	660	1080	558	126	104
5	62	708	360	380	253	318	613	577	1490	533	137	85
6	59	496	371	628	268	291	881	528	1640	572	195	77
7	56	395	441	4320	352	263	1220	448	1040	647	180	73
8	64	331	392	3680	372	249	768	400	810	855	142	74
9	142	290	481	1740	343	235	717	381	690	570	127	71
10	166	260	388	959	326	242	1330	363	840	656	120	68
11	1100	241	335	729	368	1090	1520	391	1040	675	115	62
12	699	242	322	1000	309	1080	2460	563	1270	620	108	59
13	1470	379	2390	910	277	641	2970	948	1530	587	103	55
14	879	4560	1910	633	253	500	4030	1170	1540	506	99	53
15	561	2270	873	505	239	440	1580	854	1290	412	95	52
16	384	1430	2650	434	246	382	1090	689	1080	381	90	89
17	402	848	2500	376	255	330	842	924	850	381	86	240
18	308	597	1020	342	339	297	687	954	1330	357	82	131
19	1570	621	715	382	432	315	605	859	1030	339	78	106
20	979	941	558	395	436	331	565	1130	854	293	78	101
21	638	1050	467	367	1740	300	520	1120	1060	278	80	91
22	1350	1070	403	323	3970	290	567	1250	1110	281	75	82
23	1190	1330	351	295	2130	296	619	1050	1000	273	72	76
24	952	809	316	559	1270	310	513	923	825	255	68	72
25	1680	591	290	933	793	350	475	972	879	236	66	68
26	1300	499	269	562	604	384	482	1060	1070	217	65	64
27	1080	442	254	416	494	395	470	1220	1010	200	63	61
28	721	415	323	343	427	566	440	2010	1210	178	61	57
29	537	511	350	303	---	572	498	2420	2500	198	59	83
30	532	460	299	295	---	553	679	1600	1020	191	56	120
31	1340	---	313	306	---	510	---	1280	---	176	55	---
TOTAL	20510	25325	21751	23874	17586	12826	29032	29487	34268	13528	3105	2566
MEAN	661.6	844.2	701.6	770.1	628.1	413.7	967.7	951.2	1142	436.4	100.2	85.53
MAX	1680	4560	2650	4320	3970	1090	4030	2420	2500	855	195	240
MIN	56	241	254	295	239	235	431	363	690	176	55	52
AC-FT	40680	50230	43140	47350	34880	25440	57580	58490	67970	26830	6160	5090
CFSM	10.3	13.2	11.0	12.0	9.81	6.46	15.1	14.9	17.8	6.82	1.57	1.34
IN.	11.92	14.72	12.64	13.88	10.22	7.46	16.87	17.14	19.92	7.86	1.80	1.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

	MEAN	393.3	680.5	713.0	646.6	526.8	472.1	592.0	718.9	641.3	306.3	131.8	206.2
MAX	906	1894	1856	1310	1295	1250	968	1248	1338	733	439	574	
(WY)	1935	1991	1934	1934	1982	1972	2002	1936	1974	1972	1964	1941	
MIN	38.3	85.4	209	124	201	225	279	327	145	70.3	45.0	44.2	
(WY)	1988	1937	1986	1937	1938	1992	1975	1992	1934	1940	1930	1938	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1930 - 2002
ANNUAL TOTAL	163575	233858	
ANNUAL MEAN	448.2	640.7	502.3
HIGHEST ANNUAL MEAN			736
LOWEST ANNUAL MEAN			335
HIGHEST DAILY MEAN	4560	Nov 14	9580
LOWEST DAILY MEAN	56	Oct 7	31
ANNUAL SEVEN-DAY MINIMUM	60	Sep 19	32
ANNUAL RUNOFF (AC-FT)	324500	463900	363900
ANNUAL RUNOFF (CFSM)	7.00	10.0	7.85
ANNUAL RUNOFF (INCHES)	95.08	135.93	106.64
10 PERCENT EXCEEDS	915	1280	1010
50 PERCENT EXCEEDS	334	442	356
90 PERCENT EXCEEDS	92	78	93

e Estimated

SNOHOMISH RIVER BASIN

12143600 SOUTH FORK SNOQUALMIE RIVER AT EDGEWICK, WA

LOCATION.--Lat 47°27'10", long 121°43'00", in NE ¼ NE ¼ sec.25, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank at upstream side of highway bridge in Edgewick, 3 mi downstream from Change Creek, and at mile 8.6.

DRAINAGE AREA.--65.9 mi².

PERIOD OF RECORD.--July to October 1962, March 1963 to September 1965, October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 571.24 ft above NGVD of 1929. Prior to August 3, 1983, gage at site 45 ft downstream at datum 5.90 ft higher.

REMARKS.--No estimated daily discharges. Records good. Minor regulation at Twin Falls and Weeks hydroelectric project, upstream from station. No diversions.

AVERAGE DISCHARGE.--21 years (water years 1964-65, 1984-2002), 442 ft³/s, 91.08 in/yr, 320,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s Nov. 24, 1990, gage height, 13.85 ft; minimum discharge, 23 ft³/s Sept. 28, 2001.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	0900	3,840	11.00	Jan. 08	0145	4,020	11.10
Dec. 13	2230	2,280	10.00	Apr. 14	0545	*5,460	*11.81
Dec. 17	0130	2,590	10.23				

Minimum discharge, 46 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	986	426	185	259	316	385	833	1140	632	146	75
2	52	821	453	215	240	284	386	914	1130	566	133	77
3	51	617	350	209	239	262	347	735	1130	526	126	96
4	51	485	307	211	221	250	357	590	1140	493	124	83
5	49	529	280	200	210	270	442	550	1300	448	126	76
6	49	416	299	280	218	245	638	483	1310	447	136	73
7	49	341	309	2260	273	223	904	422	968	487	125	72
8	61	295	286	2970	274	207	685	372	767	586	116	71
9	84	263	311	1650	251	196	628	347	677	428	113	73
10	88	236	275	969	236	208	937	329	833	460	112	71
11	362	215	247	719	233	802	1040	353	1030	486	110	69
12	278	207	239	805	206	881	1680	470	1220	447	110	67
13	707	309	1410	728	189	608	2390	781	1470	406	103	66
14	709	2910	1470	553	177	478	3680	845	1520	363	101	65
15	413	1630	742	450	172	405	1680	740	1300	318	98	64
16	266	1120	1760	389	169	351	1110	661	1090	293	94	73
17	279	732	1790	340	166	304	827	782	886	287	92	90
18	213	540	939	311	190	278	660	855	1250	269	90	75
19	482	505	659	332	225	304	570	842	1130	254	89	70
20	489	569	513	382	230	377	533	1140	933	228	91	71
21	364	774	422	358	740	293	489	1020	1010	222	91	68
22	652	951	361	301	1750	262	516	1080	1040	216	88	65
23	995	1110	315	274	1450	250	515	946	953	208	86	63
24	651	692	286	597	1070	250	447	862	803	200	85	62
25	776	516	263	1050	686	267	425	924	812	191	84	61
26	705	435	242	594	516	281	444	1050	919	183	84	60
27	586	381	227	413	420	282	433	1170	874	166	82	61
28	439	360	223	332	364	364	411	1810	837	158	80	60
29	344	359	206	288	---	394	477	1890	1530	155	79	64
30	337	319	194	277	---	386	606	1510	827	153	77	68
31	955	---	193	287	---	371	---	1310	---	148	76	---
TOTAL	11589	19623	15997	18929	11374	10649	24642	26616	31829	10424	3147	2109
MEAN	373.8	654.1	516.0	610.6	406.2	343.5	821.4	858.6	1061	336.3	101.5	70.30
MAX	995	2910	1790	2970	1750	881	3680	1890	1530	632	146	96
MIN	49	207	193	185	166	196	347	329	677	148	76	60
AC-FT	22990	38920	31730	37550	22560	21120	48880	52790	63130	20680	6240	4180
CFSM	5.67	9.93	7.83	9.27	6.16	5.21	12.5	13.0	16.1	5.10	1.54	1.07
IN.	6.54	11.08	9.03	10.69	6.42	6.01	13.91	15.02	17.97	5.88	1.78	1.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

	MEAN	278.2	687.4	500.6	545.5	490.4	429.0	610.4	710.8	566.5	236.3	104.6	109.1
MAX	610	1792	986	1137	1149	829	921	1196	1254	653	282	283	
(WY)	1986	1991	2000	1984	1996	1997	1989	1997	1964	1964	1964	1964	
MIN	44.1	99.2	138	180	179	255	357	321	132	99.4	62.8	50.9	
(WY)	1988	1988	1986	1985	2001	1985	1986	1992	1992	1992	1987	1998	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1962 - 2002

ANNUAL TOTAL		129477		186928								
ANNUAL MEAN		354.7		512.1						441.8		
HIGHEST ANNUAL MEAN										614		1997
LOWEST ANNUAL MEAN										276		2001
HIGHEST DAILY MEAN			2910	Nov 14		3680	Apr 14		9520	Nov 24		1990
LOWEST DAILY MEAN			49	Sep 24		49	Oct 5		42	Oct 21		1987
ANNUAL SEVEN-DAY MINIMUM			51	Oct 1		51	Oct 1		42	Oct 21		1987
ANNUAL RUNOFF (AC-FT)		256800		370800						320000		
ANNUAL RUNOFF (CFSM)			5.38			7.77				6.70		
ANNUAL RUNOFF (INCHES)			73.09			105.52				91.08		
10 PERCENT EXCEEDS			785			1110				912		
50 PERCENT EXCEEDS			259			358				310		
90 PERCENT EXCEEDS			65			77				76		

SNOHOMISH RIVER BASIN

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12143800 RATTLESNAKE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'39", long 121°46'29", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.34, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on southeast shore, and 0.6 mi northeast of town of Cedar Falls.

DRAINAGE AREA.--1.86 mi².

PERIOD OF RECORD.--November to December 1945 (fragmentary), January 1953 to current year. Extremes prior to October 1960 published in WSP 1932 and daily gage heights are available in files of the U.S. Geological Survey.

GAGE.--Nonrecording gage. Datum of gage is 7.25 ft above NGVD of 1929 (levels by City of Seattle).

REMARKS.--No diversions. Inflow is mostly seepage from Chester Morse Lake. Most outflow from lake is seepage; however, when the lake level exceeds 906 ft gage height, surface-water discharge flows through Rattlesnake Ditch toward Boxley Creek.

COOPERATION.--Gage readings furnished by City of Seattle Water Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 911.80 ft Nov. 25, 26, 1959; minimum observed, 852.80 ft Jan. 9, 1953, but may have been less during Dec. 13, 1965, to Jan. 3, 1966, and Nov. 10 to Dec. 23, 1970, when water was below gage.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 905.44 ft Jan. 28; minimum, 888.70 ft Nov. 13.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	899.46	892.38	895.16	904.47	905.38	903.73	901.66	900.26	896.70	903.88	903.58	901.44
2	899.22	892.10	895.64	904.50	905.36	903.56	901.55	900.00	896.71	904.00	903.55	901.38
3	899.03	891.82	896.09	904.52	905.31	903.40	901.46	899.76	896.78	904.08	903.49	901.20
4	898.77	891.52	896.48	904.52	905.27	903.22	901.32	899.49	896.84	904.16	903.46	901.28
5	898.55	891.30	896.86	904.50	905.18	903.06	901.20	899.31	896.97	904.18	903.45	901.18
6	898.30	891.00	897.22	904.42	905.18	902.90	901.13	899.12	897.08	904.19	903.46	901.09
7	898.15	890.66	897.56	904.52	905.15	902.73	901.06	898.98	897.24	904.18	903.42	900.90
8	897.95	890.30	897.88	904.64	905.15	902.52	901.00	898.79	897.47	904.19	903.38	900.90
9	897.79	890.08	898.20	904.76	905.15	902.32	900.80	898.62	897.79	904.16	903.33	900.80
10	897.68	889.63	898.48	904.86	905.00	902.20	900.68	898.50	898.10	904.12	903.30	900.71
11	897.40	889.32	898.78	904.92	904.94	902.14	900.67	898.35	898.48	904.08	903.21	900.60
12	897.13	889.04	899.04	904.95	904.85	902.16	900.65	898.20	898.79	904.03	903.13	900.54
13	896.96	888.70	899.46	905.08	904.75	902.08	900.68	898.04	899.15	903.98	903.06	900.44
14	896.78	888.80	900.05	905.14	904.66	902.01	900.94	897.94	899.39	903.94	902.98	900.36
15	896.48	888.90	900.68	905.08	904.46	902.01	901.41	897.80	899.67	903.90	902.87	900.28
16	896.30	889.26	901.30	905.02	904.42	901.95	901.79	897.66	899.91	903.87	902.58	900.23
17	896.14	889.55	901.86	905.02	904.19	901.88	902.04	897.52	900.21	903.83	902.75	900.18
18	895.87	889.80	902.35	904.98	904.06	901.79	902.15	897.37	900.46	903.81	902.65	900.10
19	895.62	890.00	902.70	905.02	903.90	901.72	902.18	897.22	900.86	903.78	902.55	900.04
20	895.36	890.30	903.15	905.00	903.74	901.84	902.18	897.10	901.18	903.77	902.49	899.98
21	895.14	890.54	903.40	905.01	903.66	901.80	902.14	897.00	901.49	903.76	902.40	899.86
22	894.90	890.82	903.56	904.98	903.66	901.92	902.08	896.87	901.76	903.75	902.32	899.80
23	894.80	891.34	903.78	904.96	903.72	902.14	902.05	896.79	902.08	903.74	902.24	899.70
24	894.36	891.77	903.80	904.96	903.88	902.18	901.89	896.67	902.34	903.72	902.16	899.64
25	894.14	892.32	904.05	905.08	903.92	902.18	901.69	896.60	902.58	903.70	902.07	899.55
26	893.87	892.84	904.16	905.21	904.03	902.14	901.47	896.54	902.84	903.69	901.99	899.45
27	893.66	893.28	904.20	905.38	903.92	902.10	901.28	896.52	903.00	903.68	901.92	899.38
28	893.46	893.65	904.39	905.44	903.84	902.03	901.16	896.59	903.26	903.68	901.82	899.30
29	893.18	894.26	904.40	905.42	---	901.95	900.77	896.66	903.43	903.65	901.72	899.27
30	892.90	894.68	904.46	905.42	---	901.86	900.62	896.67	903.69	903.65	901.64	899.25
31	892.70	---	904.47	905.42	---	901.76	---	896.68	---	903.61	901.56	---
MAX	899.46	894.68	904.47	905.44	905.38	903.73	902.18	900.26	903.69	904.19	903.58	901.44
MIN	892.70	888.70	895.16	904.42	903.66	901.72	900.62	896.52	896.70	903.61	901.56	899.25
CAL YR 2001	MAX 906.74	MIN 861.05										
WTR YR 2002	MAX 905.44	MIN 888.70										

SNOHOMISH RIVER BASIN

12143900 BOXLEY CREEK NEAR EDGEWICK, WA

LOCATION.--Lat 47°26'56", long 121°43'50", in SW ¼ SE ¼ NW ¼ sec.25, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 4.0 mi southeast of North Bend, and at mile 0.9.

DRAINAGE AREA.--3.64 mi².

PERIOD OF RECORD.--August 1981 to current year.

REVISED RECORDS.--WDR WA-90-1: 1982 (M), 1988 (M).

GAGE.--Water-stage recorder. Elevation of gage is 650 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Many small diversions for domestic use upstream from station. No regulation; flow is mostly seepage from Chester Morse Lake. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--21 years (water years 1982-2002), 41.3 ft³/s, 29,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 256 ft³/s Dec. 3, 1995, gage height, 5.20 ft; minimum discharge, 8.3 ft³/s Nov. 10, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 99 ft³/s June 29, gage height, 4.60 ft; minimum discharge, 16 ft³/s Nov. 8-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	20	27	42	41	33	31	29	28	69	65	41
2	27	21	27	42	39	33	31	29	28	68	64	41
3	26	19	27	41	40	33	31	29	27	67	64	41
4	26	19	26	40	38	34	32	29	27	66	63	37
5	26	20	27	40	38	34	32	30	31	65	62	36
6	26	18	29	41	39	34	32	30	43	65	60	35
7	27	17	26	44	42	33	32	30	44	66	56	34
8	26	17	27	45	44	33	32	29	48	66	54	33
9	26	17	27	44	41	33	32	28	60	65	53	33
10	26	17	27	42	40	34	31	28	66	65	52	31
11	26	16	27	41	37	41	30	28	68	65	51	30
12	26	17	28	41	35	34	31	28	70	66	52	29
13	25	19	41	36	33	33	33	28	71	65	51	28
14	25	26	39	32	32	32	46	29	71	66	51	28
15	26	25	40	30	33	32	36	28	71	66	51	28
16	25	23	40	29	34	32	30	28	72	66	49	29
17	25	21	39	29	34	32	30	28	73	66	47	29
18	23	21	41	32	34	32	30	28	76	67	46	29
19	24	21	40	36	34	42	31	28	77	67	46	28
20	23	21	38	40	35	49	32	28	78	66	46	29
21	24	21	37	37	41	43	32	28	79	65	46	29
22	24	24	36	34	46	37	32	28	80	66	46	29
23	23	26	36	34	48	33	32	28	80	65	46	29
24	24	26	37	42	43	33	32	28	80	65	46	29
25	23	26	38	46	37	32	30	28	79	65	46	29
26	23	26	40	47	34	32	30	28	76	64	46	28
27	23	26	40	44	33	32	30	29	75	63	45	28
28	21	25	41	41	33	31	30	29	78	64	45	28
29	20	25	41	38	---	31	29	28	78	64	45	29
30	21	25	42	40	---	31	29	29	71	64	43	29
31	22	---	43	44	---	31	---	28	---	65	42	---
TOTAL	759	645	1074	1214	1058	1059	951	883	1905	2032	1579	936
MEAN	24.5	21.5	34.6	39.2	37.8	34.2	31.7	28.5	63.5	65.5	50.9	31.2
MAX	27	26	43	47	48	49	46	30	80	69	65	41
MIN	20	16	26	29	32	31	29	28	27	63	42	28
AC-FT	1510	1280	2130	2410	2100	2100	1890	1750	3780	4030	3130	1860

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2002, BY WATER YEAR (WY)

MEAN	20.4	24.5	36.8	38.2	44.2	42.4	41.9	53.9	65.9	59.3	40.9	27.4
MAX	33.9	62.4	121	65.0	93.1	114	85.7	113	106	108	76.9	42.0
(WY)	1991	1991	1991	1991	1996	1982	1988	1988	1993	1993	1993	1997
MIN	11.0	11.9	12.9	11.4	15.0	13.0	13.6	20.9	29.8	22.9	16.4	12.2
(WY)	1988	1988	1988	1988	1988	2001	2001	1999	1992	1992	1992	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1982 - 2002
ANNUAL TOTAL	13675	14095	
ANNUAL MEAN	37.5	38.6	41.3
HIGHEST ANNUAL MEAN			66.6
LOWEST ANNUAL MEAN			28.1
HIGHEST DAILY MEAN	111	80	247
LOWEST DAILY MEAN	11	16	8.6
ANNUAL SEVEN-DAY MINIMUM	11	17	10
ANNUAL RUNOFF (AC-FT)	27120	27960	29930
10 PERCENT EXCEEDS	87	65	74
50 PERCENT EXCEEDS	27	33	35
90 PERCENT EXCEEDS	12	25	17

12144000 SOUTH FORK SNOQUALMIE RIVER AT NORTH BEND, WA

LOCATION.--Lat 47°29'35", long 121°47'20", in SW ¼ NE ¼ sec.9, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank on upstream side of Bendigo Street crossing at North Bend, and at mile 2.0.

DRAINAGE AREA.--81.7 mi².

PERIOD OF RECORD.--July 1907 to September 1926, February 1929 to September 1938, June 1945 to April 1950, October 1960 to August 1974, February 1984 to current year. Monthly and yearly discharge only for water years 1908, 1910 and 1913, published in WSP 1316.

REVISED RECORDS.--WSP 1316: 1918-19(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 423.01 ft above NGVD of 1929 (February 1984 through September 1996 incorrectly published as 439.33 ft). Prior to April 11, 1950, nonrecording gage or water-stage recorder at several sites within 0.5 mi upstream from present site at various datums. October 1, 1960 to March 10, 1965, at site 0.46 mi upstream at datum 1.86 ft lower. March 10, 1965 to August 31, 1974, at site 0.46 mi upstream at datum 6.86 ft lower.

REMARKS.--No estimated daily discharges. Records good. City of North Bend diverts about 0.8 ft³/s daily from Clough Creek for municipal use. Minor regulation at Twin Falls and Weeks Falls projects upstream from station.

AVERAGE DISCHARGE.--63 years (water years 1908-26, 1930-38, 1946-49, 1961-73, 1985-2002), 551 ft³/s, 91.57 in/yr, 398,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 10,900 ft³/s Nov. 24, 1990, gage height, 19.09 ft, from rating curve extended above 3,900 ft³/s; minimum discharge, 63 ft³/s Oct. 22, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 22, 1959, reached a stage of 14.49 ft, site and datum then in use, from floodmarks, discharge, 13,000 ft³/s, slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	1030	4,420	12.99	Feb 22	1515	2,360	10.94
Dec 13	1745	2,600	11.20	Apr 14	0645	*5,750	*14.32
Dec 17	0245	3,010	11.63	May 29	1045	2,220	10.67
Jan 08	0315	4,470	13.04				

Minimum discharge, 92 ft³/s Oct. 5-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	1160	597	314	466	489	534	982	1350	855	263	155
2	99	995	656	342	432	443	537	1080	1340	771	247	160
3	98	784	535	338	427	415	492	911	1340	720	240	184
4	97	625	481	336	404	398	493	752	1350	680	236	163
5	93	669	444	323	391	418	577	711	1490	626	237	156
6	93	545	470	383	392	392	762	646	1550	615	246	152
7	93	457	476	2390	456	364	1050	576	1220	653	236	148
8	106	401	444	3440	480	345	848	514	1010	763	224	147
9	128	363	480	1920	435	330	775	487	895	592	218	147
10	134	331	435	1210	414	341	1090	462	1040	611	215	144
11	398	304	401	932	411	920	1210	480	1250	647	212	142
12	320	295	389	997	379	1110	1810	578	1430	610	211	141
13	816	372	1650	944	355	813	2580	928	1660	563	202	139
14	802	3250	1840	748	337	673	4320	1010	1750	518	197	138
15	523	1890	1040	632	323	596	2050	910	1540	470	193	137
16	354	1370	2040	560	318	531	1430	814	1340	436	189	145
17	361	937	2190	503	313	475	1110	926	1130	429	185	163
18	293	703	1250	472	339	438	914	1020	1450	412	182	147
19	533	647	941	513	378	510	797	999	1380	398	180	141
20	606	699	758	588	386	640	744	1280	1170	369	182	141
21	445	931	639	571	892	503	685	1190	1230	360	181	138
22	704	1100	555	494	1950	451	704	1250	1270	351	177	135
23	1170	1370	494	452	1690	427	706	1120	1200	341	171	133
24	805	909	449	809	1340	418	624	1030	1040	332	169	131
25	928	697	418	1440	927	426	590	1080	1030	322	168	130
26	871	598	394	929	732	437	607	1200	1130	313	167	129
27	739	528	374	686	620	437	595	1330	1120	295	165	129
28	574	508	370	568	550	516	559	2030	1060	284	162	128
29	461	553	347	501	---	562	618	2110	1750	280	159	132
30	433	495	331	488	---	543	741	1730	1090	276	158	133
31	1060	---	329	512	---	526	---	1530	---	267	157	---
TOTAL	14238	24486	22217	25335	16537	15887	30552	31666	38605	15159	6129	4308
MEAN	459	816	717	817	591	512	1018	1021	1287	489	198	144
MAX	1170	3250	2190	3440	1950	1110	4320	2110	1750	855	263	184
MIN	93	295	329	314	313	330	492	462	895	267	157	128
AC-FT	28240	48570	44070	50250	32800	31510	60600	62810	76570	30070	12160	8540
CFSM	5.62	9.99	8.77	10.0	7.23	6.27	12.5	12.5	15.8	5.99	2.42	1.76
IN.	6.48	11.15	10.12	11.54	7.53	7.23	13.91	14.42	17.58	6.90	2.79	1.96

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 2002, BY WATER YEAR (WY)

	MEAN	333	649	702	711	628	596	703	857	749	359	172	172
MAX	843	2164	2267	1579	1398	1516	1171	1313	1763	940	405	421	
(WY)	1934	1991	1934	1934	1996	1972	1932	1997	1974	1974	1964	1933	
MIN	76.5	92.4	213	218	178	190	352	354	210	100	84.8	76.8	
(WY)	1988	1930	1931	1937	1922	1922	1967	1915	1992	1926	1910	1910	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1907 - 2002

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1907 - 2002
ANNUAL TOTAL	174102	245119	
ANNUAL MEAN	477	672	551
HIGHEST ANNUAL MEAN			809
LOWEST ANNUAL MEAN			334
HIGHEST DAILY MEAN	3250	Nov 14	4320
LOWEST DAILY MEAN	93	Oct 5	93
ANNUAL SEVEN-DAY MINIMUM	96	Oct 1	96
ANNUAL RUNOFF (AC-FT)	345300	486200	398900
ANNUAL RUNOFF (CFSM)	5.84	8.22	6.74
ANNUAL RUNOFF (INCHES)	79.27	111.61	91.57
10 PERCENT EXCEEDS	940	1340	1050
50 PERCENT EXCEEDS	366	514	438
90 PERCENT EXCEEDS	137	157	132

SNOHOMISH RIVER BASIN

12144500 SNOQUALMIE RIVER NEAR SNOQUALMIE, WA

LOCATION.--Lat 47°32'43", long 121°50'26", in SW ¼ SW ¼ sec.19, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 0.3 mi downstream from Snoqualmie Falls, 0.4 mi upstream from Tokul Creek, 1.5 mi northwest of Snoqualmie, and at mile 40.0.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--May 1898 to July 1899; August to September 1899 (monthly discharge only); January to July 1900, September 1902 to July 1904; August to September 1904 (monthly discharge only); October 1904 to September 1905 and November to December 1906 (gage heights only); August 1907 to May 1926 (monthly discharge only); June 1926 to September 1927; October 1927 to September 1932 (monthly discharge only); August 1958 to current year. Published as "near Snoqualmie Falls" 1904-06.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 120 ft above NGVD of 1929, from river-profile map. Prior to Nov. 3, 1902, and Nov. 1 to Dec. 31, 1906, nonrecording gages upstream and downstream from Snoqualmie Falls at different datum. Nov. 3, 1902, to Sept. 30, 1905, nonrecording gage at site 4 mi upstream and 300 ft downstream from South Fork, at different datum. Prior to Sept. 9, 1999, at site on opposite bank, at same datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Medium and low flows affected by powerplant 0.1 mi upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1899, 1903-04, 1908-32, 1959-2002), 2,602 ft³/s, 94.23 in/yr, 1,885,000 acre-ft/yr, includes monthly discharge figures, see PERIOD OF RECORD.
44 years (water years 1959-2002), 2,701 ft³/s, 97.85 in/yr, 1,956,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,800 ft³/s Nov. 24, 1990, gage height, 21.55 ft, from inside high-water mark; minimum discharge, 9.7 ft³/s Aug. 14, 27, 1958, gage height, -0.53 ft; minimum daily discharge, 88 ft³/s Aug. 8, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,800 ft³/s Apr. 14, gage height, 14.49 ft; minimum discharge, less than 100 ft³/s Aug. 13, gage height 1.16 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	410	e5370	3080	1580	1940	2160	2450	4220	5550	4130	1090	489
2	387	4970	3880	1830	1810	1960	2490	4660	5390	3660	1000	501
3	373	3930	2970	2070	1770	1810	2230	4230	5310	3350	940	787
4	357	2920	2550	1940	1720	1720	2220	3470	5410	3110	889	668
5	343	3290	2320	1780	1620	1800	2720	3130	6400	2900	909	559
6	333	2590	2370	2090	1670	1720	3580	2910	7450	2880	1100	513
7	328	2070	2640	14200	2080	1560	5260	2560	5370	3200	1070	486
8	362	1750	2280	17800	2350	1470	3970	2270	4180	4110	927	475
9	575	1520	2650	9600	2180	1400	3420	2140	3590	3160	864	481
10	589	1380	2280	5420	1930	1430	5050	2040	3950	3220	849	468
11	3160	1280	2060	4050	2030	4180	5930	2070	4960	3600	865	453
12	2200	1250	1930	4540	1770	5310	9020	2510	5980	3370	812	439
13	5470	e1980	8170	4680	1600	3590	11600	4070	7270	3140	e777	436
14	4040	e16200	9910	3420	1470	2960	19400	4920	8020	2890	763	423
15	2940	11900	4990	2820	1390	2610	9660	4210	7020	2490	756	411
16	1890	7890	10300	2470	1390	2340	6340	3550	5950	2220	711	458
17	2000	4900	12400	2190	1380	2080	4790	3990	4710	2230	683	853
18	1520	3580	6010	2010	1670	1890	3890	4500	6170	2140	649	660
19	4440	3210	4320	2440	1920	2060	3390	4250	5870	2070	618	549
20	4420	4040	3440	2660	2090	2610	3140	5460	4660	1870	622	540
21	2730	4890	2910	2610	4880	2180	2910	5390	5230	1760	633	514
22	e4540	5110	2540	2180	12200	1960	2980	5800	5650	1760	604	456
23	e6120	7250	2250	1960	9430	1890	3130	5090	5370	1750	580	443
24	e4900	4530	2050	3090	6470	1880	2770	4490	4460	1710	572	426
25	e5890	3400	1880	5490	4290	1970	2570	4610	4490	1630	567	412
26	e5240	2930	1740	3650	3330	2050	2590	5040	5240	1580	565	400
27	e4440	2630	1640	2720	2790	2110	2560	5590	5360	1420	550	393
28	e3340	2550	1670	2250	2450	2720	2420	8930	5380	1280	532	383
29	e2470	2900	1720	1980	---	2830	2600	10300	9980	1300	525	415
30	e2200	2740	1580	1920	---	2630	3170	8080	5530	1290	516	505
31	e5490	---	1580	2050	---	2510	---	6550	---	1200	509	---
TOTAL	83497	124950	112110	119490	81620	71390	138250	141030	169900	76420	23047	14996
MEAN	2693	4165	3616	3855	2915	2303	4608	4549	5663	2465	743.5	499.9
MAX	6120	16200	12400	17800	12200	5310	19400	10300	9980	4130	1100	853
MIN	328	1250	1580	1580	1380	1400	2220	2040	3590	1200	509	383
AC-FT	165600	247800	222400	237000	161900	141600	274200	279700	337000	151600	45710	29740
CFSM	7.18	11.1	9.64	10.3	7.77	6.14	12.3	12.1	15.1	6.57	1.98	1.33
IN.	8.28	12.40	11.12	11.85	8.10	7.08	13.71	13.99	16.85	7.58	2.29	1.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

MEAN	1846	3635	3693	3547	3053	2511	3060	3779	3538	1855	859.6	1079
MAX	3931	10100	8886	6414	6676	6735	4696	6055	7568	4393	2263	3937
(WY)	1960	1991	1976	1984	1982	1972	1989	1972	1974	1974	1964	1959
MIN	348	716	1211	1162	1215	1367	1478	1895	1077	815	451	342
(WY)	1988	1980	2001	1979	1969	1962	1967	1992	1992	1987	1998	1998

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1959 - 2002
ANNUAL TOTAL	827733	1156700	
ANNUAL MEAN	2268	3169	2701
HIGHEST ANNUAL MEAN			3939
LOWEST ANNUAL MEAN			1739
HIGHEST DAILY MEAN	16200	Nov 14	19400
LOWEST DAILY MEAN	328	Oct 7	328
ANNUAL SEVEN-DAY MINIMUM	355	Oct 2	355
ANNUAL RUNOFF (AC-FT)	1642000	2294000	1956000
ANNUAL RUNOFF (CFSM)	6.05	8.45	7.20
ANNUAL RUNOFF (INCHES)	82.11	114.74	97.85
10 PERCENT EXCEEDS	4530	5880	5050
50 PERCENT EXCEEDS	1810	2490	2090
90 PERCENT EXCEEDS	520	545	637

e Estimated

SNOHOMISH RIVER BASIN

12145500 RAGING RIVER NEAR FALL CITY, WA

LOCATION.--Lat 47°32'24", long 121°54'28", on west line sec.27, T.24 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank at highway bridge 2.0 mi southwest of Fall City, and 2.6 mi upstream from mouth.

DRAINAGE AREA.--30.6 mi².

PERIOD OF RECORD.--July 1945 to September 1950, water years 1951, and 1953-63 (annual maximum), December 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 250 ft above NGVD of 1929, from topographic map. Prior to Oct. 1, 1950, water-stage recorder on left bank at present site and datum. August 1951 and January 1953 to February 1963, crest-stage gage only on left bank at present site and datum.

REMARKS.--Records good. Some small diversions for irrigation and domestic use upstream from station. No regulation. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1946-50, 1965-72, 1975-2002), 132 ft³/s, 58.70 in/yr, 95,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,220 ft³/s Nov. 24, 1990, gage height, 6.56 ft; maximum gage height, 6.75 ft Feb. 9, 1951; minimum daily discharge, 4.4 ft³/s Aug. 21, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1345	*2,350	*5.41	Jan. 25	0800	1,740	4.97
Dec. 13	1615	1,860	5.00	Apr. 14	0345	1,470	4.69
Dec. 16	1100	1,330	4.54				

Minimum discharge, 12 ft³/s several days in Aug. and Sept.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	225	522	65	223	118	140	71	77	76	16	12
2	17	214	498	86	188	102	124	71	68	60	16	13
3	17	171	337	75	197	92	109	70	60	51	15	e31
4	16	145	280	74	175	83	100	65	56	46	16	16
5	15	196	242	67	179	94	100	79	73	41	17	14
6	15	147	324	92	202	85	120	79	95	37	16	13
7	15	120	276	499	242	75	111	85	76	36	16	13
8	28	100	252	609	316	69	98	82	75	44	15	13
9	32	87	315	351	248	65	123	74	68	36	15	13
10	29	75	255	234	218	71	236	68	59	32	14	13
11	76	65	219	180	202	335	301	62	54	28	15	13
12	50	65	218	187	157	322	377	58	49	27	14	13
13	88	136	1280	172	130	291	666	61	43	26	14	12
14	89	1480	791	139	112	252	1070	81	39	24	13	12
15	70	777	455	121	102	240	586	66	38	24	13	12
16	76	449	1030	109	97	215	441	60	36	23	13	14
17	109	280	746	104	95	168	319	65	35	22	13	17
18	72	201	439	109	132	145	238	59	42	21	13	13
19	124	205	344	260	154	299	186	55	54	21	13	13
20	125	218	249	389	140	606	154	60	38	21	14	13
21	112	253	194	359	445	297	132	59	34	19	14	13
22	183	435	156	224	695	218	132	69	31	19	13	13
23	157	552	129	170	545	189	126	72	29	18	13	12
24	186	308	112	463	410	172	111	61	29	18	13	12
25	341	219	99	1200	272	176	98	56	27	18	13	12
26	219	185	89	526	203	155	92	52	27	18	13	12
27	223	153	80	295	162	146	100	51	26	19	13	12
28	188	210	83	208	138	159	89	76	65	18	13	12
29	137	558	73	162	---	179	80	181	170	20	12	19
30	129	501	67	173	---	161	75	114	83	19	12	15
31	231	---	69	247	---	138	---	90	---	18	12	---
TOTAL	3187	8730	10223	7949	6379	5717	6634	2252	1656	900	432	415
MEAN	103	291	330	256	228	184	221	72.6	55.2	29.0	13.9	13.8
MAX	341	1480	1280	1200	695	606	1070	181	170	76	17	31
MIN	15	65	67	65	95	65	75	51	26	18	12	12
AC-FT	6320	17320	20280	15770	12650	11340	13160	4470	3280	1790	857	823
CFSM	3.36	9.51	10.8	8.38	7.45	6.03	7.23	2.37	1.80	0.95	0.46	0.45
IN.	3.87	10.61	12.43	9.66	7.75	6.95	8.06	2.74	2.01	1.09	0.53	0.50

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	MEAN	71.6	218	259	265	226	183	149	88.0	65.3	32.4	19.1	31.4
MAX	266	602	472	458	476	389	255	168	158	106	51.2	96.7	
(WY)	1948	1991	1976	1971	1972	1950	1997	1964	1997	1976	1964	1964	
MIN	7.77	23.7	10.2	94.7	53.7	58.4	60.8	38.0	19.0	13.2	7.04	9.71	
(WY)	1988	1988	2001	1985	1977	1992	1998	1947	1992	1967	1967	1987	

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1945 - 2002
ANNUAL TOTAL	45149	54474	
ANNUAL MEAN	124	149	132
HIGHEST ANNUAL MEAN			206
LOWEST ANNUAL MEAN			77.8
HIGHEST DAILY MEAN	1480	Nov 14	3340
LOWEST DAILY MEAN	14	Aug 20	4.4
ANNUAL SEVEN-DAY MINIMUM	15	Sep 12	4.9
ANNUAL RUNOFF (AC-FT)	89550	108000	95770
ANNUAL RUNOFF (CFSM)	4.04	4.88	4.32
ANNUAL RUNOFF (INCHES)	54.89	66.22	58.70
10 PERCENT EXCEEDS	252	336	297
50 PERCENT EXCEEDS	76	85	77
90 PERCENT EXCEEDS	18	13	14

e Estimated

SNOHOMISH RIVER BASIN

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°42'45", long 121°47'15", in SW ¼ NE ¼ sec.28, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi upstream from confluence with South Fork, 7.4 mi northeast of Carnation, and at mile 11.7.

DRAINAGE AREA.--39.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1952 to December 1963, November 1967 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 600 ft above NGVD of 1929, from river-profile map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1953-63, 1969-2002), 356 ft³/s, 121.29 in/yr, 258,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,560 ft³/s Dec. 15, 1959, gage height, 13.15 ft, from rating curve extended above 2,800 ft³/s; minimum discharge, 31 ft³/s Sept. 22, 23, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1300	*4,360	*9.84	Jan. 7	2300	3,600	9.21
Dec. 13	1015	3,320	8.96	Feb. 22	1100	3,920	9.48
Dec. 16	1045	3,350	8.98	Apr. 14	0345	3,230	8.87

Minimum discharge, 46 ft³/s Sept. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	523	522	320	271	316	404	556	536	481	116	62
2	66	645	599	465	259	296	380	584	534	347	111	69
3	63	410	401	393	270	281	340	591	522	309	107	123
4	62	351	348	371	260	273	354	437	538	279	106	84
5	61	455	321	322	251	293	421	398	857	276	106	69
6	59	325	341	528	280	266	580	364	768	271	119	64
7	59	280	348	2840	370	249	698	325	480	277	119	63
8	73	252	364	2090	326	239	461	309	424	393	106	62
9	97	232	420	939	300	230	506	299	393	282	101	63
10	155	216	339	556	296	243	991	291	453	286	99	62
11	576	207	309	453	310	868	1040	303	515	271	96	59
12	398	207	333	683	276	621	1720	398	600	248	93	56
13	462	299	2340	547	258	422	2040	558	683	236	92	55
14	710	2970	1260	411	243	362	2010	788	643	218	89	54
15	317	1190	641	354	236	331	863	506	532	197	87	52
16	228	763	2460	322	242	300	729	406	458	188	85	125
17	245	487	1630	298	251	274	581	609	388	186	83	133
18	203	385	730	285	351	259	496	546	581	179	80	82
19	1230	422	553	295	393	265	451	484	429	172	78	67
20	504	579	469	301	354	258	424	635	383	159	77	67
21	373	578	415	287	1660	243	404	557	444	153	77	62
22	707	661	377	268	2950	248	474	852	437	155	75	57
23	546	877	346	254	1280	250	523	614	389	152	73	54
24	540	545	324	643	745	254	425	510	339	146	72	51
25	1130	425	307	846	518	278	395	526	353	140	71	51
26	679	383	291	443	427	293	387	560	387	136	70	50
27	629	358	279	351	376	310	368	612	363	131	68	48
28	416	339	366	310	342	555	350	1160	553	125	66	47
29	327	460	337	286	---	457	385	1380	1260	132	65	70
30	367	397	295	280	---	442	474	769	429	133	63	76
31	696	---	318	287	---	393	---	621	---	126	63	---
TOTAL	12047	16221	18383	17028	14095	10369	19674	17548	15671	6784	2713	2037
MEAN	388.6	540.7	593.0	549.3	503.4	334.5	655.8	566.1	522.4	218.8	87.52	67.90
MAX	1230	2970	2460	2840	2950	868	2040	1380	1260	481	119	133
MIN	59	207	279	254	236	230	340	291	339	125	63	47
AC-FT	23900	32170	36460	33780	27960	20570	39020	34810	31080	13460	5380	4040
CFSM	9.74	13.6	14.9	13.8	12.6	8.38	16.4	14.2	13.1	5.48	2.19	1.70
IN.	11.23	15.12	17.14	15.88	13.14	9.67	18.34	16.36	14.61	6.32	2.53	1.90

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

	MEAN	258.1	489.6	533.9	526.3	448.7	369.4	431.6	423.0	346.9	197.8	114.1	152.7
MAX	536	1145	1065	1160	1008	898	709	646	731	496	222	563	
(WY)	1960	1991	1976	1953	1982	1972	1959	1972	1955	1955	1955	1959	
MIN	38.5	69.0	192	222	166	172	249	214	136	80.1	48.7	49.6	
(WY)	1988	1953	1986	1957	1969	1992	1992	1992	1992	1958	1958	1998	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1953 - 2002
ANNUAL TOTAL	116897	152570	
ANNUAL MEAN	320.3	418.0	356.2
HIGHEST ANNUAL MEAN			526
LOWEST ANNUAL MEAN			247
HIGHEST DAILY MEAN	2970	2970	5560
LOWEST DAILY MEAN	58	47	31
ANNUAL SEVEN-DAY MINIMUM	61	51	34
ANNUAL RUNOFF (AC-FT)	231900	302600	258000
ANNUAL RUNOFF (CFSM)	8.03	10.5	8.93
ANNUAL RUNOFF (INCHES)	108.99	142.25	121.29
10 PERCENT EXCEEDS	549	708	659
50 PERCENT EXCEEDS	261	339	278
90 PERCENT EXCEEDS	84	70	86

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: February 1995 to current year.

INSTRUMENTATION.--Temperature recorder since February 1995.

REMARKS.--Record good except for May 25 to Sept. 30, which is fair.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 16.0°C (rounded) July 18, 19, 1995, July 26-28, 1998; minimum, 2.0°C (rounded) Dec. 29, 1996.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.9°C July 24, minimum, 2.4°C Feb. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.3	8.6	9.5	7.2	6.9	7.1	5.7	5.4	5.6	5.9	4.8	5.4
2	10.1	8.3	9.2	7.7	7.0	7.3	5.6	4.9	5.3	6.0	5.1	5.6
3	10.0	8.2	9.0	7.8	6.8	7.2	5.4	4.7	5.1	5.8	5.0	5.4
4	9.5	7.8	8.7	7.7	7.1	7.4	5.3	5.0	5.1	5.7	5.3	5.5
5	9.5	7.5	8.5	7.4	6.4	6.9	5.2	4.5	4.9	5.9	5.2	5.6
6	9.3	8.2	8.7	6.8	5.9	6.3	5.5	5.0	5.2	6.0	5.5	5.8
7	8.9	7.9	8.4	6.8	5.9	6.2	5.7	5.0	5.3	5.7	4.8	5.2
8	9.2	8.6	8.8	7.2	5.5	6.2	5.9	5.1	5.6	5.5	5.0	5.2
9	9.6	8.3	8.8	7.0	5.8	6.4	5.2	4.7	4.9	5.5	5.1	5.3
10	8.9	7.7	8.2	7.5	6.0	6.7	5.4	4.6	5.0	5.7	5.0	5.4
11	8.8	8.0	8.3	7.8	6.7	7.2	5.7	4.8	5.2	6.4	5.5	5.9
12	8.6	7.9	8.1	7.9	7.3	7.6	5.5	4.8	5.2	5.9	4.6	5.4
13	8.5	8.1	8.3	7.9	7.5	7.7	5.1	3.7	4.3	5.4	4.5	4.9
14	9.2	8.1	8.5	8.2	7.7	8.0	4.9	3.2	4.2	5.0	4.6	4.8
15	9.3	7.4	8.2	8.3	7.6	8.0	5.2	4.5	4.9	4.9	4.3	4.6
16	8.5	7.6	8.1	7.7	7.3	7.6	5.1	4.2	4.7	4.8	4.3	4.7
17	8.3	7.2	7.7	7.3	6.2	6.9	4.8	3.6	4.3	4.9	4.3	4.6
18	7.9	7.0	7.5	7.0	5.9	6.4	4.9	4.3	4.6	5.0	4.1	4.8
19	8.4	7.7	8.0	7.6	6.7	7.2	5.1	4.5	4.8	4.7	3.5	4.1
20	8.1	6.9	7.6	7.5	7.1	7.3	5.5	4.9	5.2	5.0	4.0	4.6
21	7.9	7.4	7.6	7.3	6.8	7.1	5.8	5.0	5.4	4.9	4.4	4.7
22	7.9	7.5	7.7	6.9	6.3	6.8	5.6	4.8	5.2	4.5	3.6	4.1
23	7.6	6.8	7.3	6.4	5.3	5.9	5.6	4.8	5.1	4.8	4.0	4.4
24	6.9	6.1	6.6	6.4	5.7	6.0	5.4	4.6	5.0	4.8	3.3	3.9
25	7.1	6.4	6.7	6.1	5.8	5.9	5.3	4.5	4.9	4.1	3.5	3.7
26	8.0	6.6	7.3	6.1	5.7	5.9	5.3	4.5	4.9	4.4	3.4	4.0
27	7.5	6.3	6.8	6.0	5.5	5.8	6.1	5.1	5.6	4.3	3.8	4.1
28	6.8	5.5	6.2	5.6	4.8	5.3	5.8	4.8	5.5	4.4	3.5	4.0
29	7.2	5.8	6.5	5.6	4.2	5.0	5.7	4.7	5.1	4.5	3.9	4.2
30	7.7	6.9	7.3	5.6	4.8	5.2	5.5	4.7	5.1	4.1	3.0	3.7
31	7.4	6.7	7.0	---	---	---	5.9	4.8	5.5	4.4	4.0	4.3
MONTH	10.3	5.5	7.9	8.3	4.2	6.7	6.1	3.2	5.1	6.4	3.0	4.8

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA

LOCATION.--Lat 47°42'25", long 121°35'56", in NE 1/4 SW 1/4 sec.25, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi upstream from Phelps Creek, 8.1 mi south of Index, and at mile 12.9.

DRAINAGE AREA.--5.34 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1959 to December 1963, November 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,850 ft above NGVD of 1929, from topographic map. Prior to Oct. 1, 1961, at datum 0.85 ft higher. Oct. 1, 1961 to Sept. 30, 1992, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair except for those above 900 ft³/s and below 15 ft³/s, which are poor. No regulation or diversion upstream from station. A portion of flow is within the gravel streambed and is unmeasurable. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1961-63, 1969-2002), 54.8 ft³/s, 139.49 in/yr, 39,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,240 ft³/s Dec. 15, 1999; gage height 4.54 ft Possible result from debris dam breakup; maximum gage height, 8.13 ft, present datum, Dec. 14, 1959; minimum discharge, 2.2 ft³/s Oct. 9, 10, 1989, Sept. 9, 10, 1997, Sept. 14-17, 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 550 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	0930	924	3.58	Feb. 22	1000	*1,210	*3.84
Dec. 13	0830	799	3.44	Apr. 12	0600	615	3.19
Dec. 16	0930	833	3.48	Apr. 14	0400	825	3.46
Jan. 07	2200	1,190	3.83	Jun. 29	0545	718	3.33

Minimum discharge, 4.6 ft³/s Oct. 5-7.

REVISIONS.--The peak discharges greater than base discharge and annual maximum (*) reported for water years 1999 and 2000 have been revised as shown in the following table. They supersede figures published in WDR WA-99-1 and WDR WA-00-1.

Water Year 1999

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 13	1600	914	3.56	Dec. 29	1415	1,390	3.99
Nov. 20	1930	1,060	3.71	Jan. 10	1245	651	3.24
Nov. 25	2145	672	3.27	Jan. 14	1345	*1,550	*4.11
Dec. 27	2130	982	3.63				

Water Year 2000

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 8	0730	1,080	3.73	Dec. 15	1445	(a) *2,240	*4.54
Dec. 12	0115	629	3.21				

(a) Possible result from debris dam breakup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	142	43	21	17	23	39	95	99	96	15	5.1
2	5.6	129	57	36	15	20	39	105	101	69	13	8.7
3	5.2	68	29	35	16	19	32	107	98	59	12	22
4	5.0	52	23	37	14	19	38	68	105	50	11	11
5	4.7	72	20	31	13	23	58	56	200	48	12	7.5
6	4.6	44	30	76	17	19	111	45	169	53	19	6.3
7	4.7	32	29	801	24	17	129	36	89	63	17	6.6
8	7.7	25	29	553	19	16	68	32	72	87	13	7.0
9	19	21	32	183	17	15	83	31	64	57	12	7.0
10	58	19	22	77	17	16	168	30	83	67	11	6.4
11	166	17	18	58	17	222	192	33	107	65	11	5.7
12	136	17	33	96	15	113	448	59	140	58	11	5.5
13	144	65	548	68	13	55	529	96	182	55	9.9	5.4
14	153	694	208	44	12	37	497	129	175	44	9.8	5.0
15	65	250	68	34	13	30	127	85	132	34	9.2	4.9
16	40	129	621	28	14	25	78	69	103	33	8.6	36
17	38	66	306	24	15	21	57	97	82	34	7.8	25
18	34	43	81	22	24	19	46	94	157	33	7.3	12
19	248	43	52	22	36	19	40	86	103	32	6.9	9.4
20	97	67	38	25	30	18	39	115	86	27	7.7	9.6
21	88	98	31	21	415	16	38	109	111	26	7.2	7.9
22	200	124	25	18	806	16	63	161	112	28	6.7	6.8
23	131	98	22	18	255	16	65	109	94	27	6.5	6.3
24	91	57	20	104	100	17	47	87	78	26	6.5	5.8
25	208	39	18	103	56	21	41	91	87	23	6.5	5.6
26	119	34	16	35	39	23	40	103	106	21	6.4	5.5
27	94	30	15	24	31	25	38	123	99	19	5.9	5.3
28	58	26	26	19	27	42	37	285	152	16	5.8	5.0
29	40	30	25	17	---	34	50	357	368	26	5.8	9.5
30	57	25	20	16	---	36	73	171	94	23	5.6	13
31	173	---	21	21	---	33	---	120	---	19	5.3	---
TOTAL	2500.5	2556	2526	2667	2087	1025	3310	3184	3648	1318	292.4	276.8
MEAN	80.66	85.20	81.48	86.03	74.54	33.06	110.3	102.7	121.6	42.52	9.432	9.227
MAX	248	694	621	801	806	222	529	357	368	96	19	36
MIN	4.6	17	15	16	12	15	32	30	64	16	5.3	4.9
AC-FT	4960	5070	5010	5290	4140	2030	6570	6320	7240	2610	580	549
CFSM	15.1	16.0	15.3	16.1	14.0	6.19	20.7	19.2	22.8	7.96	1.77	1.73
IN.	17.42	17.81	17.60	18.58	14.54	7.14	23.06	22.18	25.41	9.18	2.04	1.93

SNOHOMISH RIVER BASIN

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	44.45	79.20	75.16	71.75	62.22	46.30	64.51	80.46	68.76	31.86	13.77	24.27
MAX	107	181	165	154	150	93.4	116	140	160	81.3	37.4	56.9
(WY)	1986	1991	1976	1990	1982	1972	1988	1972	1974	1974	1975	1969
MIN	6.24	14.0	20.0	19.8	9.41	18.6	28.6	26.0	13.1	13.3	3.89	3.56
(WY)	1988	1980	1986	1981	1969	1962	1975	1992	1992	1961	1998	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1960 - 2002

ANNUAL TOTAL	17333.8	25390.7	
ANNUAL MEAN	47.49	69.56	54.82
HIGHEST ANNUAL MEAN			77.8
LOWEST ANNUAL MEAN			34.3
HIGHEST DAILY MEAN	694	Nov 14	1160
LOWEST DAILY MEAN	4.5	Sep 23	2.2
ANNUAL SEVEN-DAY MINIMUM	4.6	Sep 19	2.2
ANNUAL RUNOFF (AC-FT)	34380		39720
ANNUAL RUNOFF (CFSM)	8.89		13.0
ANNUAL RUNOFF (INCHES)	120.75		176.88
10 PERCENT EXCEEDS	97		143
50 PERCENT EXCEEDS	28		34
90 PERCENT EXCEEDS	6.7		7.9

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1994 to current year.

INSTRUMENTATION.--Temperature recorder since October 1994.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 18.0°C (rounded) July 27-29, 1998; minimum recorded, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.0°C July 24; minimum, 0.0°C Jan. 20, 30, Feb. 8, Mar. 8, 18-20; minimum may also have occurred during period of missing record Jan. 31-Feb. 4.

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002											
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.7	9.3	9.9	5.6	5.4	5.5	3.2	2.4	2.9	2.7	2.0	2.4
2	9.8	8.5	9.2	6.2	5.6	5.9	3.6	3.0	3.3	3.0	2.6	2.8
3	9.3	8.1	8.7	6.1	5.4	5.7	3.3	2.5	3.0	3.3	2.8	3.0
4	9.4	8.3	8.7	6.2	5.5	5.9	2.7	2.1	2.5	3.1	2.7	2.9
5	9.1	8.0	8.5	5.8	4.7	5.3	2.5	1.7	2.2	3.1	2.7	2.9
6	8.7	7.7	8.1	5.0	4.4	4.7	2.5	1.3	1.9	3.7	2.9	3.2
7	8.3	7.3	7.8	4.7	4.2	4.5	3.0	2.5	2.9	3.7	2.9	3.3
8	8.5	7.9	8.1	5.2	4.1	4.6	3.5	2.1	3.1	3.5	3.1	3.4
9	8.5	7.5	8.0	5.1	4.4	4.7	3.1	2.3	2.9	3.4	3.1	3.3
10	7.9	7.1	7.4	6.1	4.8	5.5	2.8	2.2	2.6	3.5	3.2	3.3
11	7.5	7.0	7.1	6.1	5.4	5.7	2.8	2.2	2.6	4.0	3.3	3.7
12	7.5	6.8	7.1	6.3	5.8	6.0	2.7	2.2	2.4	3.5	1.9	2.9
13	7.4	7.0	7.2	6.2	5.8	6.0	3.0	1.5	2.2	3.1	2.3	2.7
14	7.9	7.0	7.4	6.9	6.1	6.7	2.7	1.4	2.2	2.6	2.2	2.4
15	7.7	6.9	7.3	6.9	6.2	6.6	2.4	1.8	2.2	2.5	1.8	2.2
16	7.5	6.7	7.2	6.3	5.8	6.1	3.0	2.2	2.6	2.3	1.5	2.0
17	7.1	6.2	6.7	5.8	4.8	5.2	2.8	2.1	2.5	2.1	1.5	1.8
18	6.8	6.0	6.5	5.2	4.5	4.8	2.1	1.0	1.8	2.3	0.7	1.9
19	7.2	6.7	7.0	5.5	4.8	5.2	2.2	1.2	2.0	1.5	0.3	0.8
20	6.9	6.0	6.5	5.7	5.4	5.6	2.6	2.0	2.3	1.8	0.0	1.1
21	6.7	6.2	6.4	5.6	5.2	5.4	2.9	2.3	2.5	1.9	1.3	1.7
22	6.8	6.3	6.5	5.2	4.0	4.9	2.3	1.8	2.0	1.5	0.1	0.8
23	6.3	5.4	5.8	4.3	2.7	3.8	2.1	1.7	1.9	1.3	0.7	1.0
24	5.6	4.7	5.2	4.4	3.9	4.1	1.8	1.4	1.6	1.9	1.1	1.4
25	5.6	5.2	5.4	4.1	3.4	3.9	1.5	1.1	1.3	2.3	1.1	1.9
26	6.3	5.5	5.9	3.9	3.4	3.7	1.5	0.9	1.3	1.9	1.3	1.6
27	5.9	4.6	5.2	4.0	3.4	3.7	2.1	1.4	1.7	1.4	1.1	1.3
28	4.8	4.2	4.5	3.4	0.6	1.8	2.2	1.1	1.8	1.2	0.7	0.9
29	5.3	4.2	4.8	2.6	1.5	2.1	2.3	1.5	1.9	1.1	0.5	0.9
30	5.9	5.2	5.5	2.8	2.3	2.6	2.2	1.9	2.0	---	0.0	---
31	5.8	5.2	5.4	---	---	---	2.7	2.0	2.3	---	---	---
MONTH	10.7	4.2	6.9	6.9	0.6	4.9	3.6	0.9	2.3	4.0	0.0	2.2

12147900 SOUTH FORK TOLT RESERVOIR NEAR CARNATION, WA

LOCATION.--Lat 47°41'38", long 121°47'10", in NW ¼ SW ¼ sec.32, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on top and near the center of the dam, 11.4 mi northeast of Carnation, and at mile 8.4.

DRAINAGE AREA.--18.8 mi².

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

REVISED RECORDS.--WA-98-1: 1997.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Seattle Water Department benchmark).

REMARKS.--Reservoir is formed by earthfill dam, with a concrete glory hole spillway, completed in 1962. Water used for municipal water supply by Seattle Water Department. Usable capacity, 15,600 acre-ft between elevations 1,749 ft (minimum pool) and 1,765 ft (maximum normal pool). Top of dam is at 1,775 ft with top of spillway at 1,757 ft. Flood control between elevations 1,749 and 1,757 ft. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Capacity table furnished by Seattle Water Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 59,500 acre-ft July 9, 1997, elevation, 1,766.53 ft; minimum contents, 25,980 acre-ft Nov. 4, 1991, elevation, 1,728.72ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 58,410 acre-ft June 29, elevation, 1,765.49 ft; minimum contents, 33,520 acre-ft Oct. 10, elevation, 1,738.84.

Capacity table (elevation, in feet, and usable contents, in acre-ft)

1,690	8,100	1,730	26,800	1,760	52,900
1,700	11,300	1,740	34,400	1,765	57,900
1,710	15,400	1,750	43,200	1,780	73,600
1,720	20,400				

RESERVOIR ELEVATION SURFACE WATER (FEET), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1740.95	1746.46	1755.19	1757.10	1755.41	1759.07	1749.98	1758.87	1763.41	1765.17	1759.59	1750.36
2	1740.69	1746.90	1755.37	1756.83	1755.09	1758.61	1749.79	1758.92	1763.44	1764.99	1759.33	1750.19
3	1740.44	1746.99	1755.35	1756.68	1754.75	1758.17	1749.55	1758.95	1763.47	1764.76	1759.07	1749.98
4	1740.20	1747.08	1755.36	1756.49	1754.35	1757.62	1749.50	1758.83	1763.54	1764.53	1758.85	1749.70
5	1739.90	1747.20	1755.29	1756.34	1754.03	1757.10	1749.59	1758.70	1764.08	1764.25	1758.58	1749.42
6	1739.64	1747.18	1755.37	1756.35	1754.02	1756.74	1749.99	1758.48	1764.31	1764.10	1758.35	1749.07
7	1739.36	1747.25	1755.33	1758.80	1754.04	1756.33	1750.54	1758.23	1764.28	1763.95	1758.11	1748.75
8	1739.15	1747.31	1755.44	1760.50	1754.08	1755.93	1750.67	1757.94	1764.28	1763.98	1757.84	1748.51
9	1738.96	1747.37	1755.46	1760.93	1754.03	1755.44	1751.07	1757.60	1764.13	1763.95	1757.58	1748.24
10	1738.96	1747.42	1755.39	1760.91	1754.00	1755.07	1752.00	1757.27	1764.03	1763.93	1757.33	1747.89
11	1739.46	1747.44	1755.30	1760.82	1753.94	1755.58	1752.96	1756.96	1764.03	1763.80	1757.05	1747.55
12	1739.82	1747.50	1755.40	1761.09	1753.87	1755.78	1754.78	1756.79	1764.12	1763.73	1756.76	1747.22
13	1740.20	1747.84	1757.90	1761.06	1753.74	1755.59	1756.90	1756.98	1764.27	1763.67	1756.46	1746.83
14	1740.59	1751.12	1758.92	1760.78	1753.63	1755.37	1758.73	1757.49	1764.37	1763.56	1756.11	1746.47
15	1740.59	1752.39	1759.21	1760.25	1753.55	1755.15	1759.33	1757.63	1764.43	1763.37	1755.78	1746.15
16	1740.55	1753.05	1761.44	1759.68	1753.43	1754.84	1759.67	1757.73	1764.32	1763.20	1755.49	1746.05
17	1740.44	1753.35	1762.47	1759.07	1753.39	1754.50	1759.82	1758.06	1764.18	1762.97	1755.18	1745.84
18	1740.41	1753.37	1762.56	1758.59	1753.45	1754.11	1759.90	1758.27	1764.35	1762.76	1754.90	1745.60
19	1741.61	1753.35	1762.44	1758.22	1753.57	1753.87	1759.93	1758.47	1764.38	1762.58	1754.57	1745.31
20	1741.89	1753.38	1762.20	1757.75	1753.59	1753.51	1759.95	1758.78	1764.32	1762.33	1754.29	1744.99
21	1742.16	1753.52	1761.74	1757.27	1755.45	1753.10	1759.96	1759.14	1764.31	1762.08	1754.01	1744.63
22	1742.78	1754.14	1761.18	1756.83	1758.65	1752.64	1760.11	1759.66	1764.29	1761.87	1753.72	1744.31
23	1743.19	1754.72	1760.60	1756.39	1759.71	1752.25	1760.26	1759.97	1764.22	1761.65	1753.35	1744.00
24	1743.71	1754.95	1760.08	1756.67	1760.12	1751.91	1760.24	1760.17	1764.17	1761.33	1753.12	1743.61
25	1744.77	1754.98	1759.63	1757.26	1760.25	1751.53	1760.00	1760.41	1764.14	1761.06	1752.77	1743.30
26	1745.20	1754.92	1759.22	1757.12	1760.10	1751.22	1759.77	1760.66	1764.20	1760.85	1752.44	1742.92
27	1745.54	1754.84	1758.79	1756.87	1759.83	1750.95	1759.55	1761.03	1764.35	1760.64	1752.12	1742.55
28	1745.62	1754.92	1758.50	1756.54	1759.49	1750.84	1759.25	1761.95	1764.68	1760.44	1751.83	1742.25
29	1745.57	1754.96	1758.10	1756.22	---	1750.63	1759.01	1762.98	1765.48	1760.24	1751.39	1742.08
30	1745.70	1754.97	1757.69	1755.98	---	1750.43	1758.89	1763.26	1765.31	1760.08	1751.07	1741.82
31	1746.14	---	1757.48	1755.74	---	1750.15	---	1763.38	---	1759.88	1750.72	---
MEAN	1741.75	1751.03	1758.21	1758.10	1755.48	1754.32	1756.06	1759.15	1764.23	1762.77	1755.41	1746.19
MAX	1746.14	1754.98	1762.56	1761.09	1760.25	1759.07	1760.26	1763.38	1765.48	1765.17	1759.59	1750.36
MIN	1738.96	1746.46	1755.19	1755.74	1753.39	1750.15	1749.50	1756.79	1763.41	1759.88	1750.72	1741.82
(†)	39800	48020	50460	48770	52400	43350	51820	56280	58220	52780	43900	36000
(‡)	+4340	+8220	+2440	-1690	+3630	-9050	+8470	+4460	+1940	-5440	-8880	-7900

CAL YR 2001 MEAN 1751.26 MAX 1762.56 MIN 1738.96 AC-FT† +13690

WTR YR 2002 MEAN 1755.23 MAX 1765.48 MIN 1738.96 AC-FT† +540

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

‡ Change in contents, in acre-feet.

SNOHOMISH RIVER BASIN

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'22", long 121°42'44", in SW ¼ SW ¼ sec.31, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.1 mi upstream from private road bridge, 1.6 mi downstream from South Fork Tolt Reservoir, 9.8 mi northeast of Carnation, and at mile 6.8.

DRAINAGE AREA.--19.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1952 to December 1963, June 1969 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,300 ft above NGVD of 1929, from river-profile map.

REMARKS.--No estimated daily discharges. Records good. Regulation by South Fork Tolt Reservoir since September 1963. During the current water year the Seattle Water Department diverted an average daily discharge of about 89 ft³/s upstream from the station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water years 1953-63), 198 ft³/s, 143,300 acre-ft/yr (unregulated).
33 years (water years 1970-2002), 104 ft³/s, 75,610 acre-ft/yr (regulated).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft³/s Dec. 15, 1959, gage height, 7.45 ft, from rating curve extended above 2,700 ft³/s; maximum gage height, 7.62 ft Nov. 20, 1958, backwater from debris; minimum discharge, 8.4 ft³/s Sept. 12, 1963, minimum gage height, 0.81 ft Aug. 23-27, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 310 ft³/s Dec. 20-22, gage height, 3.18 ft; minimum discharge, 59 ft³/s Oct. 4-6,

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	72	78	209	67	149	80	80	81	89	64	69
2	60	75	76	168	67	148	79	80	81	67	67	70
3	60	73	72	70	67	148	77	80	80	63	67	69
4	60	74	71	63	66	146	77	79	80	63	67	65
5	60	72	70	62	66	138	79	79	85	63	67	62
6	60	67	74	65	68	68	79	79	81	63	67	62
7	60	63	73	85	70	64	83	77	75	63	66	62
8	61	60	77	84	69	65	79	76	74	65	65	62
9	61	60	75	71	68	66	82	76	73	63	66	62
10	62	60	72	67	69	68	91	76	72	63	67	62
11	65	60	72	66	68	78	92	75	69	63	67	62
12	65	60	73	69	66	73	98	75	68	63	67	63
13	66	63	110	68	66	72	107	78	68	62	67	63
14	66	116	94	122	66	71	107	82	68	62	67	63
15	64	87	84	226	66	71	95	79	67	62	67	63
16	65	83	102	226	66	70	94	77	66	62	67	64
17	64	77	118	226	66	68	90	81	66	62	67	64
18	65	74	195	187	68	68	87	79	68	64	67	63
19	84	74	180	144	70	70	87	79	66	64	66	63
20	71	74	191	145	73	69	86	80	66	63	66	63
21	71	74	294	143	85	68	84	81	66	63	66	63
22	72	83	309	144	100	68	84	81	66	63	66	63
23	70	91	305	144	86	68	84	81	65	63	67	63
24	77	76	279	125	78	68	83	79	64	62	67	62
25	87	73	209	84	74	68	81	79	63	62	67	63
26	77	70	209	70	134	68	81	79	63	62	67	62
27	77	69	209	68	195	70	80	81	64	62	67	62
28	73	69	209	66	184	81	79	91	68	62	68	62
29	72	76	209	66	---	79	79	94	118	62	68	66
30	73	73	209	66	---	81	79	85	129	62	69	64
31	74	---	209	68	---	79	---	82	---	62	69	---
TOTAL	2102	2198	4607	3467	2288	2568	2563	2480	2220	1974	2072	1906
MEAN	67.8	73.3	149	112	81.7	82.8	85.4	80.0	74.0	63.7	66.8	63.5
MAX	87	116	309	226	195	149	107	94	129	89	69	70
MIN	60	60	70	62	66	64	77	75	63	62	64	62
AC-FT	4170	4360	9140	6880	4540	5090	5080	4920	4400	3920	4110	3780

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2002, BY WATER YEAR (WY)

MEAN	69.2	141	163	179	136	97.7	95.5	108	95.3	63.4	50.4	61.8
MAX	161	499	481	436	468	326	247	235	282	176	150	196
(WY)	1972	1991	1976	1984	1982	1972	1989	1974	1974	1969	1969	1972
MIN	32.9	35.1	43.7	42.3	34.9	33.5	31.1	47.3	37.8	29.7	29.5	33.0
(WY)	1988	1988	1988	1988	1977	1978	1978	1978	1973	1982	1977	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1969 - 2002	
ANNUAL TOTAL	26283		30445			
ANNUAL MEAN	72.0		83.4		104	
HIGHEST ANNUAL MEAN					195	
LOWEST ANNUAL MEAN					52.3	
HIGHEST DAILY MEAN	309	Dec 22	309	Dec 22	3500	Nov 24 1990
LOWEST DAILY MEAN	47	Jan 11	60	Oct 1	21	Sep 1 1977
ANNUAL SEVEN-DAY MINIMUM	48	Jan 11	60	Oct 1	25	Aug 27 1977
ANNUAL RUNOFF (AC-FT)	52130		60390		75610	
10 PERCENT EXCEEDS	77		120		196	
50 PERCENT EXCEEDS	64		70		64	
90 PERCENT EXCEEDS	58		62		40	

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1994 to current year.

INSTRUMENTATION.--Temperature recorder since October 1994.

REMARKS.--Record excellent except for period of Nov. 4 to Jan. 4, which is good.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum recorded, 14.5°C (rounded) Oct. 8, 1994; minimum, 1.0°C (rounded) Feb. 3, 1996, Dec. 29, 1996, Jan. 27, 1997.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 13.7°C Oct. 5; minimum, 2.3°C Feb. 8.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.6	11.5	12.0	9.1	8.9	9.0	6.4	5.9	6.2	3.5	3.2	3.4
2	12.5	11.4	11.9	9.1	8.5	8.9	6.3	5.7	6.1	3.9	3.4	3.6
3	12.3	11.4	11.9	9.0	8.3	8.6	6.0	5.5	5.8	4.6	3.9	4.3
4	13.1	11.3	12.2	8.8	8.2	8.5	5.8	5.7	5.7	4.7	4.3	4.4
5	13.7	12.3	12.9	8.3	7.7	8.0	5.8	5.3	5.6	4.6	4.3	4.5
6	13.4	12.3	12.7	8.2	7.7	7.9	5.9	5.3	5.6	5.5	4.4	4.8
7	13.2	12.4	12.7	8.1	7.6	7.8	5.9	5.6	5.7	5.7	5.4	5.5
8	13.1	12.5	12.7	8.5	7.6	7.9	6.1	5.3	5.8	5.5	5.0	5.2
9	13.2	12.4	12.7	8.4	7.7	8.0	5.6	5.2	5.4	5.0	4.7	4.9
10	12.7	12.1	12.5	8.7	7.9	8.3	5.6	5.2	5.4	5.1	4.7	4.9
11	12.5	11.7	12.1	8.5	8.0	8.2	5.6	5.1	5.4	5.4	4.8	5.1
12	12.1	11.2	11.8	8.6	8.2	8.4	5.8	5.1	5.5	5.0	4.2	4.8
13	11.7	11.2	11.5	8.5	8.2	8.3	5.9	5.1	5.6	4.9	4.3	4.6
14	11.9	11.2	11.6	8.7	8.4	8.6	5.5	3.9	4.9	4.6	3.8	4.2
15	12.3	11.1	11.6	8.5	8.0	8.3	5.5	5.0	5.2	4.0	3.7	3.8
16	11.8	11.0	11.5	8.2	7.8	8.0	5.9	5.5	5.7	3.9	3.7	3.9
17	11.4	10.7	11.0	7.8	7.2	7.6	5.6	4.4	4.9	3.9	3.7	3.8
18	11.2	10.6	10.9	7.8	7.2	7.4	4.6	4.2	4.5	4.0	3.6	3.9
19	10.9	10.2	10.6	8.0	7.4	7.8	4.6	4.1	4.5	4.1	3.4	3.9
20	10.5	9.8	10.2	8.0	7.6	7.8	4.8	4.3	4.5	4.3	3.7	4.1
21	10.3	9.9	10.1	7.9	7.5	7.7	4.5	4.2	4.4	4.1	3.7	3.9
22	10.4	9.9	10.1	7.5	6.8	7.3	4.3	4.1	4.2	3.9	3.5	3.8
23	10.0	9.5	9.8	7.2	6.2	6.8	4.1	3.9	4.1	3.9	3.6	3.8
24	9.7	9.0	9.3	7.1	6.7	6.9	3.9	3.7	3.8	4.3	3.9	4.1
25	9.5	8.8	9.1	7.0	6.7	6.8	3.8	3.6	3.7	4.4	3.2	4.0
26	10.1	9.1	9.6	6.9	6.7	6.8	3.6	3.4	3.5	4.1	3.5	3.9
27	9.4	8.4	8.8	6.9	6.4	6.6	3.6	3.4	3.5	4.0	3.5	3.8
28	8.9	8.1	8.5	6.4	5.3	5.9	3.8	3.4	3.5	3.9	3.3	3.6
29	9.3	8.5	8.9	6.1	5.4	5.9	3.6	3.3	3.4	4.0	3.5	3.7
30	9.4	9.0	9.2	6.3	5.9	6.1	3.5	3.3	3.4	4.1	3.1	3.6
31	9.3	8.8	9.0	---	---	---	3.5	3.2	3.4	4.1	3.6	3.9
MONTH	13.7	8.1	10.9	9.1	5.3	7.7	6.4	3.2	4.8	5.7	3.1	4.2

SNOHOMISH RIVER BASIN

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	4.5	3.9	4.1	4.0	3.4	3.6	5.4	4.2	4.8	7.5	5.8	6.4
2	4.3	3.8	4.0	4.0	3.4	3.6	5.6	4.0	4.7	6.4	5.6	6.1
3	4.2	3.7	3.9	4.2	3.4	3.7	6.1	4.2	4.9	6.8	5.6	6.1
4	4.3	3.6	3.8	4.3	3.5	3.8	6.5	4.4	5.2	6.2	5.7	5.9
5	4.0	3.6	3.8	4.0	3.5	3.8	5.3	4.7	5.0	6.4	4.8	5.8
6	4.1	3.7	3.9	4.3	3.9	4.1	5.6	5.1	5.3	6.6	4.8	5.7
7	4.3	2.7	3.9	4.4	3.3	4.0	5.8	4.8	5.2	6.5	5.3	5.9
8	3.9	2.3	3.4	4.4	2.8	3.9	6.7	4.6	5.4	7.5	5.5	6.3
9	4.3	3.7	3.9	4.7	3.8	4.2	6.0	5.2	5.5	6.9	5.6	6.2
10	4.5	3.2	3.9	4.4	4.0	4.2	6.1	5.3	5.6	7.5	5.8	6.4
11	4.0	2.6	3.5	4.8	4.2	4.5	6.3	5.3	5.7	8.6	5.8	6.8
12	4.1	3.3	3.6	4.6	4.1	4.3	6.1	5.7	5.8	9.3	6.1	7.3
13	4.1	3.3	3.7	4.8	4.1	4.3	6.2	5.7	6.0	6.8	6.3	6.5
14	4.2	3.5	3.8	4.4	3.5	4.1	6.1	5.0	5.3	7.6	6.2	6.7
15	4.6	3.6	4.0	4.3	3.7	3.9	5.7	5.2	5.5	7.7	5.8	6.6
16	4.7	3.8	4.2	4.6	3.7	4.0	6.1	5.1	5.5	8.6	6.0	7.0
17	4.5	4.0	4.2	4.5	3.6	3.9	6.4	5.4	5.8	8.5	6.5	7.1
18	4.7	4.1	4.3	4.1	3.5	3.9	6.8	5.6	5.9	7.7	6.5	6.9
19	4.5	4.1	4.3	4.2	3.4	3.8	6.2	5.4	5.8	8.0	6.5	7.1
20	4.6	3.6	4.1	4.1	3.3	3.7	6.2	5.7	5.9	7.3	6.6	7.0
21	5.1	4.2	4.7	4.6	3.3	3.8	6.0	5.7	5.8	7.4	6.6	6.8
22	5.0	4.7	4.9	4.8	3.7	4.1	5.9	5.0	5.7	7.4	6.6	6.9
23	4.7	4.0	4.6	5.0	3.8	4.2	6.7	4.8	5.6	7.9	6.6	7.0
24	4.7	3.2	4.0	4.3	4.0	4.1	7.3	5.1	5.9	8.9	6.4	7.3
25	4.5	3.6	3.9	5.1	4.0	4.4	7.2	5.4	6.1	7.9	6.8	7.3
26	4.0	3.3	3.6	4.5	2.9	4.2	6.6	5.5	5.9	7.9	6.9	7.4
27	3.7	3.3	3.4	4.6	3.1	4.1	6.1	5.7	5.9	8.4	7.0	7.5
28	3.8	3.4	3.5	4.5	4.0	4.2	7.9	5.7	6.5	8.2	6.9	7.4
29	---	---	---	4.7	4.1	4.4	8.2	5.7	6.6	7.9	7.2	7.5
30	---	---	---	5.2	4.3	4.6	8.3	5.8	6.6	8.4	7.0	7.6
31	---	---	---	5.1	4.4	4.6	---	---	---	8.5	7.1	7.6
MONTH	5.1	2.3	4.0	5.2	2.8	4.1	8.3	4.0	5.6	9.3	4.8	6.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.2	7.0	7.8	11.2	9.4	10.6	---	---	---	11.2	10.5	10.8
2	9.3	7.1	7.8	10.7	8.6	9.3	10.4	9.0	9.6	11.3	10.5	10.9
3	8.8	7.3	7.9	9.1	8.3	8.7	10.7	8.9	9.6	11.4	10.3	10.7
4	8.3	7.6	7.9	9.3	8.3	8.7	10.2	9.2	9.5	11.5	10.0	10.6
5	8.9	7.6	8.0	10.8	8.0	9.1	10.2	9.2	9.6	11.7	10.0	10.7
6	8.3	7.2	7.6	10.7	8.4	9.3	9.7	9.2	9.4	11.7	9.9	10.7
7	7.8	7.0	7.3	10.3	8.8	9.3	10.8	9.1	9.7	11.3	10.3	10.7
8	7.8	7.1	7.4	9.6	8.8	9.1	11.3	9.2	9.9	11.2	10.3	10.8
9	9.8	7.3	8.2	11.2	8.5	9.5	11.6	9.3	10.1	12.1	10.7	11.3
10	9.7	7.6	8.3	11.5	8.9	9.9	11.0	9.7	10.1	12.2	10.7	11.3
11	10.4	7.7	8.7	11.4	9.0	9.8	11.4	9.5	10.2	12.3	10.7	11.4
12	10.8	8.0	9.1	11.5	8.9	9.8	11.6	9.5	10.3	12.5	10.9	11.6
13	11.0	8.3	9.3	10.8	9.3	9.8	11.9	9.8	10.5	12.5	10.9	11.6
14	10.3	8.2	9.0	10.3	8.8	9.3	11.8	9.7	10.5	12.5	11.1	11.6
15	9.7	8.1	8.6	11.2	8.6	9.6	11.8	9.6	10.4	11.9	11.2	11.5
16	8.6	8.2	8.3	11.4	8.8	9.7	11.7	9.5	10.4	11.9	11.2	11.5
17	8.8	8.0	8.4	11.4	8.9	9.8	11.6	9.7	10.4	12.2	11.0	11.4
18	8.7	8.0	8.2	10.6	9.1	9.6	11.6	9.5	10.3	12.1	10.8	11.4
19	9.2	8.0	8.4	10.1	9.1	9.5	11.5	9.7	10.4	12.2	11.3	11.7
20	10.7	7.8	8.9	11.4	8.8	9.7	10.5	10.0	10.2	12.5	10.7	11.5
21	11.0	8.2	9.2	11.5	8.9	9.9	10.7	9.9	10.2	12.2	10.7	11.5
22	10.9	8.3	9.2	11.7	9.2	10.1	11.9	10.0	10.6	12.5	11.3	11.8
23	9.4	8.3	8.8	11.3	9.3	10.1	12.0	10.1	10.8	12.7	11.4	12.0
24	10.6	8.2	9.1	11.7	9.3	10.2	11.8	10.2	10.8	12.8	11.5	12.1
25	11.0	8.3	9.3	---	---	---	10.8	10.3	10.5	13.0	11.7	12.3
26	10.8	8.7	9.5	---	---	---	11.1	10.3	10.6	12.8	11.9	12.3
27	9.3	8.7	9.0	---	---	---	12.0	10.1	10.9	12.9	11.5	12.1
28	9.2	8.5	8.8	---	---	---	12.3	10.4	11.1	13.2	11.9	12.4
29	12.7	8.9	10.9	---	---	---	12.2	10.5	11.1	12.5	10.7	12.0
30	12.6	11.2	12.1	---	---	---	11.2	10.2	10.7	12.6	11.1	12.0
31	---	---	---	---	---	---	11.8	10.3	10.9	---	---	---
MONTH	12.7	7.0	8.7	---	---	---	---	---	---	13.2	9.9	11.5

12148300 SOUTH FORK TOLT RIVER BELOW REGULATING BASIN, NEAR CARNATION, WA

LOCATION.--Lat 47°41'49", long 121°47'10", in SW ¼ NE ¼ sec.33, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.3 mi upstream from mouth and 6.5 mi northeast of Carnation.

DRAINAGE AREA.--29.6 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1982 to current year. Published as "South Fork Tolt River below regulating pond, near Carnation" March 1982 through September 1983.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 670 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good, except estimated daily discharges, which are fair. Flow regulated by South Fork Tolt Reservoir 6.1 mi upstream. During the current water year the Seattle Water Department diverted an average daily discharge of 89 ft³/s. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1983-2002), 148 ft³/s, 107,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, Nov. 24, 1990; maximum daily discharge, 3,700 ft³/s Nov. 24, 1990; minimum discharge, 36 ft³/s on many days during July and August, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 586 ft³/s Nov. 14, gage height, 5.18 ft; minimum discharge, 65 ft³/s Oct. 5,

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	104	162	260	283	348	302	272	242	272	74	73
2	67	112	161	262	275	341	243	274	236	236	74	77
3	67	105	145	212	279	335	225	278	231	231	73	76
4	66	107	137	198	e275	388	124	273	229	229	73	72
5	66	113	129	196	246	414	122	271	254	192	73	68
6	67	100	133	203	127	301	123	274	266	154	74	68
7	68	93	131	286	e148	299	139	269	269	151	73	68
8	69	88	134	340	e142	305	126	263	266	131	73	68
9	69	86	145	293	133	304	129	261	257	81	73	68
10	70	83	135	266	132	278	159	261	252	78	74	68
11	79	81	129	253	137	325	173	259	248	77	74	68
12	76	81	127	263	127	322	199	257	246	76	73	70
13	83	88	278	267	121	319	241	168	248	75	73	69
14	88	375	288	315	116	317	285	126	247	75	73	69
15	82	265	217	469	112	321	224	117	243	74	72	70
16	81	205	286	464	110	315	213	110	240	73	72	72
17	81	162	304	457	110	306	191	118	237	73	72	71
18	79	139	354	414	120	303	171	114	245	74	72	70
19	155	133	313	386	122	313	158	111	207	74	72	70
20	129	130	298	385	130	322	149	115	167	73	72	70
21	112	128	434	374	177	311	142	117	167	72	72	70
22	108	157	443	369	271	310	141	125	167	72	72	69
23	100	273	429	364	229	307	142	123	167	71	73	69
24	116	190	393	361	194	306	173	116	148	71	74	69
25	162	157	282	369	164	307	286	113	82	71	73	69
26	136	140	277	331	241	305	282	112	82	71	73	68
27	137	126	271	304	287	306	279	115	83	72	73	69
28	121	125	276	286	322	324	274	167	125	72	73	68
29	111	152	267	275	---	319	272	252	285	72	74	75
30	108	149	262	276	---	323	270	272	334	73	74	74
31	112	---	263	288	---	311	---	255	---	73	74	---
TOTAL	2932	4247	7603	9786	5130	9905	5957	5958	6470	3289	2264	2105
MEAN	94.6	142	245	316	183	320	199	192	216	106	73.0	70.2
MAX	162	375	443	469	322	414	302	278	334	272	74	77
MIN	66	81	127	196	110	278	122	110	82	71	72	68
AC-FT	5820	8420	15080	19410	10180	19650	11820	11820	12830	6520	4490	4180

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
85.5	212	225	270	176	155
147	597	598	579	389	320
1986	1991	2000	1984	1996	2002
41.2	43.5	70.2	66.3	83.8	73.2
1988	1988	1988	1988	2001	1992
146	166	131	81.2	62.4	67.7
380	307	241	187	77.6	112
1989	1984	1990	1997	1993	1983
73.1	68.0	53.7	41.9	38.5	42.4
1992	1992	1992	1982	1982	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1982 - 2002
ANNUAL TOTAL	37966	65646	
ANNUAL MEAN	104	180	148
HIGHEST ANNUAL MEAN			225
LOWEST ANNUAL MEAN			84.7
HIGHEST DAILY MEAN	443	Dec 22	469
LOWEST DAILY MEAN	66	Oct 4	66
ANNUAL SEVEN-DAY MINIMUM	67	Sep 29	67
ANNUAL RUNOFF (AC-FT)	75310	130200	107500
10 PERCENT EXCEEDS	147	315	323
50 PERCENT EXCEEDS	82	142	89
90 PERCENT EXCEEDS	70	71	63

e Estimated

12148300 SOUTH FORK TOLT RIVER BELOW REGULATING BASIN, NEAR CARNATION, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1994 to current year.

INSTRUMENTATION.--Temperature recorder since October 1994.

REMARKS.--Records good except June 9 to Sept. 30, which are fair.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum recorded, 16.0°C (rounded) Aug. 11, 1995; minimum, 0.5°C, (rounded) Feb. 3, 1996, Dec. 29, 1996.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.0°C July 10; minimum, 2.4°C Feb. 8.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.3	10.3	11.3	8.9	8.6	8.7	6.6	6.0	6.3	4.5	3.9	4.2
2	12.0	9.9	10.9	9.2	8.2	8.8	6.4	5.8	6.1	4.7	3.7	4.2
3	11.7	9.9	10.8	9.1	7.9	8.3	5.8	5.2	5.5	4.2	3.7	4.0
4	12.0	9.6	10.7	8.9	8.3	8.6	5.7	5.4	5.6	4.2	4.0	4.1
5	12.7	10.8	11.7	8.4	7.2	7.9	5.6	5.0	5.3	4.2	3.9	4.1
6	12.3	10.6	11.4	7.8	6.7	7.2	6.1	5.3	5.7	4.9	4.0	4.3
7	12.0	10.3	11.2	7.7	6.7	7.2	6.2	5.7	5.9	5.7	4.9	5.4
8	11.9	11.3	11.6	8.3	6.8	7.5	6.6	6.0	6.3	5.7	4.9	5.2
9	11.9	11.0	11.4	8.0	6.6	7.3	6.0	5.2	5.5	5.0	4.5	4.8
10	11.5	10.3	10.9	8.9	6.9	7.9	5.7	5.0	5.4	4.7	4.4	4.5
11	11.3	10.4	10.8	8.9	8.0	8.4	5.8	5.0	5.5	5.0	4.4	4.7
12	11.2	10.3	10.7	8.9	8.3	8.6	6.2	4.9	5.5	4.8	4.3	4.7
13	11.1	10.3	10.6	8.9	8.5	8.6	6.4	5.8	6.2	4.5	4.1	4.3
14	11.3	10.3	10.9	9.2	8.6	9.0	6.1	4.5	5.2	4.3	3.9	4.0
15	11.5	9.2	10.4	9.1	8.3	8.8	5.9	4.9	5.3	4.0	3.7	3.9
16	11.0	9.8	10.6	8.5	8.0	8.3	6.6	5.9	6.3	4.0	3.7	3.9
17	10.5	9.4	9.9	8.0	6.7	7.6	6.4	4.7	5.4	4.0	3.6	3.8
18	10.2	9.0	9.6	7.8	6.6	7.1	5.0	4.6	4.8	4.0	3.8	3.9
19	10.2	9.4	9.9	8.2	7.3	7.9	5.0	4.5	4.8	4.0	3.4	3.8
20	9.4	8.1	8.9	8.4	7.8	8.1	5.3	4.8	5.0	4.3	3.7	4.1
21	9.5	8.9	9.1	8.2	7.7	7.9	5.1	4.5	4.8	4.1	3.7	3.9
22	9.7	9.3	9.5	7.7	7.1	7.5	4.8	4.4	4.6	3.7	3.5	3.6
23	9.3	8.5	9.0	7.3	6.6	7.0	4.6	4.3	4.5	3.9	3.5	3.6
24	8.5	8.1	8.3	7.1	6.5	6.8	4.4	4.1	4.3	4.1	3.8	4.0
25	9.0	8.1	8.4	6.9	6.5	6.6	4.3	3.9	4.1	4.0	3.2	3.8
26	9.8	8.5	9.1	6.9	6.6	6.7	4.2	3.7	3.9	3.6	3.3	3.4
27	9.1	7.7	8.3	6.9	6.2	6.5	4.5	4.0	4.2	3.4	3.0	3.2
28	8.1	6.8	7.5	6.2	5.0	5.6	4.8	3.9	4.3	3.3	2.8	3.1
29	8.8	7.4	8.1	6.2	5.2	5.7	4.5	3.9	4.1	3.4	3.0	3.2
30	9.1	8.4	8.8	6.3	5.6	5.9	4.3	3.8	4.0	3.3	2.6	3.0
31	9.1	8.4	8.7	---	---	---	4.5	3.8	4.2	3.4	3.3	3.4
MONTH	12.7	6.8	10.0	9.2	5.0	7.6	6.6	3.7	5.1	5.7	2.6	4.0

12148300 SOUTH FORK TOLT RIVER BELOW REGULATING BASIN, NEAR CARNATION, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	3.7	3.3	3.5	4.0	3.1	3.4	4.8	4.1	4.4	6.8	5.5	6.1
2	3.5	3.1	3.3	4.0	3.0	3.4	5.3	3.6	4.4	6.0	5.6	5.8
3	3.6	3.1	3.3	4.2	3.1	3.6	5.9	3.7	4.7	6.5	5.3	5.7
4	---	---	---	4.1	3.3	3.6	8.2	4.6	6.2	5.9	5.4	5.6
5	4.5	3.0	3.4	3.8	3.4	3.6	6.3	5.2	5.9	5.8	4.9	5.5
6	5.0	4.5	4.8	3.5	3.3	3.4	6.8	5.9	6.2	5.9	4.8	5.3
7	5.2	3.8	4.7	3.6	3.0	3.3	7.0	5.5	6.1	5.9	5.0	5.5
8	4.3	2.4	3.6	3.6	2.8	3.2	8.1	4.8	6.2	6.7	5.2	5.9
9	5.1	4.0	4.4	3.7	3.1	3.4	7.0	5.9	6.4	6.3	5.4	5.8
10	5.5	4.1	4.8	3.8	3.4	3.6	7.3	6.1	6.6	6.8	5.5	6.1
11	4.5	2.9	3.8	4.3	3.6	3.9	7.4	6.0	6.6	7.5	5.5	6.4
12	4.7	3.2	3.9	4.0	3.6	3.8	7.1	6.6	6.8	8.7	5.8	6.9
13	4.8	3.5	4.2	4.0	3.6	3.7	7.2	6.5	6.8	7.3	6.6	6.8
14	5.0	3.8	4.4	3.7	3.3	3.6	7.0	5.4	5.9	8.5	6.8	7.4
15	5.6	3.8	4.6	3.7	3.2	3.4	6.1	5.4	5.7	9.0	5.6	7.3
16	5.8	4.4	5.0	3.8	3.3	3.4	6.6	5.2	5.8	10.3	5.7	7.9
17	5.5	4.6	5.0	3.6	3.1	3.3	7.3	5.6	6.2	10.0	7.2	8.4
18	5.9	4.9	5.3	3.4	3.1	3.3	7.4	5.9	6.5	8.9	7.0	7.9
19	5.8	5.1	5.4	3.5	2.8	3.2	6.9	5.3	6.2	9.2	7.2	8.1
20	5.7	4.3	5.0	3.2	2.8	3.0	6.8	6.2	6.4	8.5	7.6	8.0
21	6.2	4.6	5.6	3.6	2.6	3.0	6.7	6.2	6.4	8.3	7.2	7.6
22	6.1	5.7	5.9	3.9	2.8	3.3	6.5	5.5	6.3	8.2	7.1	7.6
23	5.7	4.9	5.5	4.0	3.1	3.5	7.4	4.7	5.9	9.3	7.2	8.0
24	5.0	3.5	4.3	3.7	3.3	3.5	8.6	4.7	6.0	10.6	6.3	8.3
25	4.8	3.5	4.0	4.2	3.5	3.8	6.6	5.0	5.8	9.6	7.6	8.5
26	4.8	3.5	3.9	3.8	3.3	3.5	6.0	5.1	5.5	9.5	7.8	8.5
27	4.3	3.3	3.7	3.8	3.1	3.5	5.7	5.3	5.5	10.1	7.8	8.7
28	4.6	3.3	3.8	4.2	3.7	3.9	7.0	5.4	6.0	9.4	8.1	8.7
29	---	---	---	4.2	3.7	4.0	7.5	5.2	6.2	8.5	7.6	8.1
30	---	---	---	4.6	4.0	4.2	7.3	5.5	6.3	8.6	7.3	7.8
31	---	---	---	4.6	4.0	4.2	---	---	---	8.7	7.2	7.8
MONTH	---	---	---	4.6	2.6	3.5	8.6	3.6	6.0	10.6	4.8	7.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.0	7.0	7.9	10.1	9.2	9.6	12.4	9.1	10.6	11.8	11.0	11.4
2	9.0	7.2	8.0	9.9	8.5	9.1	11.7	9.5	10.5	11.8	10.9	11.4
3	8.8	7.2	8.0	9.1	8.5	8.8	11.7	8.8	10.2	12.0	10.6	11.2
4	8.2	7.7	7.9	9.1	8.5	8.7	11.1	9.8	10.3	11.9	9.3	10.6
5	9.1	7.8	8.3	10.5	8.3	9.2	11.6	9.6	10.4	11.9	9.2	10.5
6	8.2	7.5	7.8	10.6	8.6	9.5	10.4	9.7	10.1	12.0	9.2	10.5
7	7.7	7.0	7.4	10.1	9.0	9.5	11.8	9.2	10.4	11.6	10.1	10.7
8	7.7	7.2	7.4	10.8	9.3	9.8	12.6	9.1	10.7	11.5	9.9	10.8
9	9.3	7.2	8.1	13.2	8.9	10.8	13.1	9.7	11.2	12.8	10.8	11.6
10	9.0	7.7	8.3	14.0	9.9	11.7	11.8	10.5	11.1	12.8	10.5	11.6
11	9.6	7.7	8.6	13.7	10.1	11.7	13.0	9.8	11.2	12.9	10.5	11.7
12	10.0	8.0	8.9	13.7	9.8	11.5	13.2	9.9	11.3	13.1	10.8	11.9
13	10.3	8.4	9.2	12.7	10.5	11.5	13.6	10.2	11.7	13.1	10.7	11.9
14	9.6	8.4	9.0	11.6	10.0	10.8	13.4	10.3	11.6	13.1	10.9	12.0
15	9.1	8.2	8.6	13.2	9.1	10.9	13.2	10.0	11.4	12.3	11.4	11.7
16	8.6	8.2	8.4	13.4	9.4	11.2	13.1	10.2	11.4	12.2	11.4	11.8
17	8.7	8.1	8.3	13.5	9.9	11.4	12.9	9.9	11.3	12.3	10.9	11.5
18	8.6	8.2	8.3	12.4	10.1	11.1	12.7	9.5	11.0	12.3	9.8	11.1
19	9.3	8.1	8.6	11.7	10.2	10.8	12.6	9.8	11.1	12.4	11.4	11.8
20	10.6	8.0	9.1	13.3	9.3	11.1	11.3	10.5	10.8	12.0	10.1	11.2
21	10.8	8.4	9.4	13.6	9.5	11.4	11.5	10.4	10.9	12.1	9.4	10.7
22	10.7	8.6	9.5	13.8	10.1	11.7	12.9	10.3	11.4	12.5	10.0	11.2
23	9.8	8.6	9.2	13.5	10.3	11.8	13.2	10.2	11.6	12.8	10.4	11.5
24	11.3	8.5	9.6	13.9	10.2	11.9	13.0	10.5	11.7	12.8	10.7	11.7
25	13.4	9.1	11.0	11.9	10.3	10.9	11.7	10.9	11.1	13.0	10.8	11.8
26	13.0	9.8	11.3	10.7	10.2	10.4	11.9	10.8	11.3	12.9	11.2	12.0
27	11.3	9.9	10.4	11.8	10.0	10.6	13.1	10.2	11.5	12.4	10.5	11.4
28	10.2	9.1	9.5	10.6	9.7	10.2	13.6	10.7	12.0	13.0	10.6	11.7
29	10.7	9.3	9.8	11.3	10.0	10.5	13.5	10.9	12.0	12.2	9.9	11.5
30	10.5	9.8	10.3	11.5	10.1	10.6	12.1	10.6	11.3	11.7	9.7	10.7
31	---	---	---	12.5	9.7	10.8	12.8	10.2	11.4	---	---	---
MONTH	13.4	7.0	8.9	14.0	8.3	10.6	13.6	8.8	11.1	13.1	9.2	11.4

SNOHOMISH RIVER BASIN

12148500 TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'45", long 121°49'22", in SE ¼ NE ¼ sec.31, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 500 ft downstream from the forks, 0.4 mi upstream from Stossel Creek, 5.5 mi northeast of Carnation, and at mile 8.7.

DRAINAGE AREA.--81.4 mi².

PERIOD OF RECORD.--August 1928 to January 1932, September 1937 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1951(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 348 ft above NGVD of 1929 (river-profile survey). Prior to Oct. 31, 1928, nonrecording gage, and Oct. 31, 1928, to Jan. 3, 1932, water-stage recorder at site 350 ft upstream at datum 7.1 ft higher (river-profile survey). Sept. 1 to Oct. 6, 1937, nonrecording gage at present site at datum 1.64 ft higher.

REMARKS.--No estimated daily discharges. Records good. Some regulation by South Fork Reservoir, capacity, 57,830 acre-ft, and by Seattle City Light hydroelectric project, upstream from station. During the current water year City of Seattle Water Department diverted an average daily discharge of about 89 ft³/s upstream from station for municipal use. Chemical analyses July 1960 to September 1970. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--68 years (water years 1929-31, 1938-2002), 577 ft³/s, 418,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft³/s Dec. 15, 1959, gage height, 13.04 ft; minimum discharge, 53 ft³/s Sept. 22, 23, 1951, gage height, 3.84 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1345	*5,340	*9.24	Jan. 07	2345	4,090	8.67
Dec. 13	1145	3,670	8.45	Feb. 21	1745	3,840	8.54
Dec. 16	1130	3,580	8.40	Feb. 22	1015	4,460	8.85
Jan. 07	0800	3,750	8.49	Apr. 14	0430	3,670	8.45

Minimum discharge, 126 ft³/s Sept. 27-95.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	671	799	610	648	704	785	882	849	766	200	146
2	138	797	881	764	619	670	705	909	839	602	195	154
3	136	564	619	650	632	645	642	929	819	555	190	210
4	134	499	535	611	618	673	583	760	831	519	189	167
5	133	619	512	569	587	716	620	718	1160	488	189	150
6	133	480	530	737	527	600	782	694	1110	446	201	143
7	134	419	529	3050	638	583	935	647	809	449	203	141
8	146	379	550	2540	612	583	669	622	743	558	188	140
9	167	349	629	1360	589	581	703	608	704	391	183	140
10	199	327	522	928	587	572	1260	599	756	383	181	139
11	677	309	508	789	593	1230	1340	607	819	368	179	136
12	451	309	525	1030	574	1030	1940	706	904	342	176	136
13	567	408	2690	912	523	812	2250	803	987	327	174	135
14	790	3570	1810	784	472	743	2430	1010	951	309	173	132
15	414	1710	1070	844	444	726	1250	711	834	285	171	132
16	312	1120	2740	798	436	696	1110	590	753	273	168	195
17	338	729	2090	763	439	648	929	803	674	270	165	213
18	274	563	1210	718	563	617	800	748	888	269	163	161
19	1370	588	984	743	608	642	723	669	705	258	162	147
20	695	756	855	751	578	678	674	834	608	244	162	146
21	512	758	891	724	1880	635	635	757	670	237	161	142
22	845	900	853	693	3360	628	695	1070	665	238	157	136
23	677	1480	799	662	1670	620	764	834	618	235	157	133
24	690	912	743	1070	1100	622	675	710	548	229	155	131
25	1330	664	630	1390	815	643	735	721	484	223	155	128
26	894	569	603	921	758	656	723	748	521	220	153	128
27	846	516	585	756	737	673	702	805	498	216	153	127
28	614	507	675	676	716	968	674	1390	719	207	151	126
29	506	694	642	627	---	886	705	1650	1520	216	150	157
30	517	648	589	622	---	865	791	1120	760	219	148	165
31	860	---	612	663	---	791	---	948	---	212	147	---
TOTAL	15641	22814	28210	28755	22323	22136	28229	25602	23746	10554	5299	4436
MEAN	505	760	910	928	797	714	941	826	792	340	171	148
MAX	1370	3570	2740	3050	3360	1230	2430	1650	1520	766	203	213
MIN	133	309	508	569	436	572	583	590	484	207	147	126
AC-FT	31020	45250	55950	57040	44280	43910	55990	50780	47100	20930	10510	8800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

	441	785	886	852	737	604	669	682	555	299	181	244
MEAN	441	785	886	852	737	604	669	682	555	299	181	244
MAX	933	1965	1897	2058	1634	1472	1275	1208	802	485	954	954
(WY)	1960	1996	1976	1953	1982	1972	1959	1948	1964	1955	1964	1959
MIN	79.5	123	305	246	163	267	289	310	205	120	74.9	72.9
(WY)	1988	1953	1986	1929	1929	1992	1941	1992	1992	1958	1958	1940

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1928 - 2002

ANNUAL TOTAL		169331		237745								
ANNUAL MEAN		464		651						577		
HIGHEST ANNUAL MEAN										922		1959
LOWEST ANNUAL MEAN										365		1994
HIGHEST DAILY MEAN			3570	Nov 14		3570	Nov 14		11400		Feb 9	1951
LOWEST DAILY MEAN			133	Oct 5		126	Sep 28		53		Sep 22	1951
ANNUAL SEVEN-DAY MINIMUM			136	Oct 1		130	Sep 22		56		Sep 17	1951
ANNUAL RUNOFF (AC-FT)		335900		471600					418300			
10 PERCENT EXCEEDS		783		1050					1110			
50 PERCENT EXCEEDS		386		627					448			
90 PERCENT EXCEEDS		160		154					142			

SNOHOMISH RIVER BASIN

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°39'58", long 121°55'27", in NW ¼ SW ¼ sec.9, T.25 N., R.7 E., King County, Hydrologic Unit 17110010, on left bank 40 ft downstream from highway bridge, 1.3 mi northwest of Carnation, 1.9 mi downstream from Tolt River, and at mile 23.0.

DRAINAGE AREA.--603 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for October 1928 to February 1929, published in WSP 870. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1316: 1932-33(M). WSP 1446: 1934(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Dec. 20, 1933, nonrecording gage on old bridge, 100 ft upstream and Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site, at datum 42.96 ft higher.

REMARKS.--Records good. During the current water year, Seattle Water Department diverted an average daily discharge of 89 ft³/s upstream from station from South Fork Tolt River for municipal use. Several small diversions for irrigation and domestic use upstream from station. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to river upstream from station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant. Chemical analyses October 1966 to June 1969. Water temperatures October 1966 to June 1969. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--73 years (water years 1930-2002), 3,738 ft³/s, 84.23 in/yr, 2,708,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,200 ft³/s Nov. 24, 1990, gage height, 60.70 ft, from inside high-water mark; minimum discharge, 239 ft³/s Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum daily discharge, 341 ft³/s Sept. 15, 1973.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	0530	*26,000	*56.05	Jan. 08	1830	23,300	55.41
Dec. 14	0830	17,100	53.10	Feb. 22	2130	17,100	53.09
Dec. 17	1130	19,900	54.22	Apr. 14	2200	24,900	55.82

Minimum discharge, 535 ft³/s Oct. 5-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	654	6940	5190	2610	3710	3420	3660	5020	6730	5190	1530	771
2	612	6280	6300	2870	3470	3120	3660	5630	6400	4480	1450	762
3	593	5290	5120	3150	3360	2890	3300	5390	6290	4010	1390	1060
4	570	3990	4350	2950	3320	2770	3110	4450	6320	3710	1310	1060
5	557	4380	3960	2770	3150	2870	3500	3960	7350	3500	1300	872
6	535	3760	3870	2900	3120	2750	4280	3810	8890	3350	1400	800
7	535	3140	4170	13000	3680	2550	6340	3440	6820	3590	1500	751
8	538	2740	3690	21800	4340	2460	5200	3100	5230	4580	1340	739
9	635	2470	4190	16600	4160	2390	4300	2920	4500	3820	1240	740
10	772	2280	3760	8120	3480	2400	6370	2810	4630	3540	1200	727
11	3370	2120	3440	5850	3630	4890	7940	2790	5700	3960	1210	716
12	2860	2040	3190	5840	3240	7870	10600	3100	6750	3780	1170	695
13	5930	2300	9440	6740	2950	5350	13100	4600	8060	3490	1090	694
14	4810	14600	15500	4980	2730	4460	20900	5850	9130	3280	1110	685
15	3960	22200	8600	4360	2570	4070	18000	5220	8230	2890	1090	667
16	2630	13100	12500	3960	2510	3770	9580	4250	7020	2570	1050	719
17	2770	7510	18700	3550	2460	3390	7000	4580	5610	2530	1010	1120
18	2300	5320	10400	3250	2730	3080	5600	5350	6570	2460	964	1060
19	4890	4520	7140	3980	3050	3210	4770	4940	7200	2370	927	862
20	6080	5550	5660	4350	3350	4610	4350	6090	5420	2220	926	811
21	3690	6430	4870	4430	5760	4000	4050	6270	5820	2100	938	793
22	5170	6720	4290	3790	14700	3510	4010	6930	6380	2080	916	740
23	7150	11100	3810	3370	14100	3270	4280	6260	6180	2080	883	706
24	6200	7850	3460	4340	9640	3140	3860	5360	5150	2040	866	682
25	7500	5570	3120	8590	6460	3180	3640	5330	e4960	1980	851	656
26	7260	4600	2910	6350	4980	3170	3570	5740	5620	1930	849	648
27	6060	4030	2750	4610	4260	3230	3570	6310	6020	1830	838	624
28	4800	3870	2750	3890	3830	3850	3380	9640	6040	1670	815	624
29	3680	4760	2820	3400	---	4270	3460	11800	10800	1680	803	677
30	3180	4870	2610	3320	---	3980	3950	10100	7430	1710	795	784
31	6130	---	2570	3680	---	3840	---	8010	---	1630	778	---
TOTAL	106421	180330	175130	173400	128740	111760	183330	169050	197250	90050	33539	23245
MEAN	3433	6011	5649	5594	4598	3605	6111	5453	6575	2905	1082	775
MAX	7500	22200	18700	21800	14700	7870	20900	11800	10800	5190	1530	1120
MIN	535	2040	2570	2610	2460	2390	3110	2790	4500	1630	778	624
AC-FT	211100	357700	347400	343900	255400	221700	363600	335300	391200	178600	66520	46110
CFSM	5.69	9.97	9.37	9.28	7.62	5.98	10.1	9.04	10.9	4.82	1.79	1.28
IN.	6.57	11.12	10.80	10.70	7.94	6.89	11.31	10.43	12.17	5.56	2.07	1.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	2564	4896	5519	5089	4410	3804	4335	5006	4506	2335	1104	1359
MEAN	2564	4896	5519	5089	4410	3804	4335	5006	4506	2335	1104	1359
MAX	5811	12850	14530	11140	9743	9979	6797	7847	8983	5629	2992	5128
(WY)	1948	1991	1934	1953	1982	1932	1932	1936	1974	1955	1964	1959
MIN	407	619	1694	1291	1860	1933	2230	2434	1362	840	492	484
(WY)	1988	1953	1986	1937	1973	1941	1941	1992	1992	1940	1930	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1929 - 2002

ANNUAL TOTAL		1147491		1572245		
ANNUAL MEAN		3144		4308		3738
HIGHEST ANNUAL MEAN						5439
LOWEST ANNUAL MEAN						2314
HIGHEST DAILY MEAN		22200	Nov 15	22200	Nov 15	54500
LOWEST DAILY MEAN		524	Sep 25	535	Oct 6	341
ANNUAL SEVEN-DAY MINIMUM		552	Sep 19	563	Oct 2	359
ANNUAL RUNOFF (AC-FT)		2276000		3119000		2708000
ANNUAL RUNOFF (CFSM)		5.21		7.14		6.20
ANNUAL RUNOFF (INCHES)		70.79		96.99		84.23
10 PERCENT EXCEEDS		5990		7500		7000
50 PERCENT EXCEEDS		2640		3690		2970
90 PERCENT EXCEEDS		758		808		839

e Estimated

SNOHOMISH RIVER BASIN

12150800 SNOHOMISH RIVER NEAR MONROE, WA

LOCATION.--Lat 47°49'52", long 122°02'50", in NE 1/4 NW 1/4 sec.16, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on left bank 150 ft upstream from State Highway 522 bridge, 0.1 mi downstream from confluence of Snoqualmie and Skykomish Rivers, 3.6 mi southwest of Monroe, and 6.0 mi south of Snohomish.

DRAINAGE AREA.--1,537 mi².

PERIOD OF RECORD.--February 1963 to current year. Water years 1932, 1934, 1951, 1960, 1962-63 (annual maximum stage only) published in WSP 1932. Approximate annual maximum stages for water years 1921, 1949-50, 1952-59, and 1961 are on file in Washington office.

GAGE.--Water-stage recorder. Datum of gage is 13.25 ft above NGVD of 1929. Prior to February 1963, crest-stage gage only at site about 800 ft downstream and Feb. 8, 1963, to May 27, 1964, water-stage recorder at site 100 ft upstream, at NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Some regulation by powerplant at Snoqualmie Falls, 40 mi upstream, and by Spada Lake, 30 mi upstream. Minor diversions for irrigation returned to river upstream from gage. During the current water year, City of Seattle Water Department diverted an average daily discharge of about 89 ft³/s upstream from station from South Fork Tolt River for municipal use and the City of Everett diverted an undetermined amount of discharge upstream from the station from Sultan River for municipal use. Chemical analyses December 1974 to January 1976, July 1979 to September 1986. Unpublished records of water temperature and suspended-sediment concentration are available in the Tacoma office of the U.S. Geological Survey. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1964-2002), 9,621 ft³/s, 85.05 in/yr, 6,970,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 35.8 ft Feb. 10, 1951, datum then in use (discharge not determined); maximum discharge since February 1963, 150,000 ft³/s Nov. 25, 1990, gage height, 25.30 ft, from rating curve extended above 80,000 ft³/s; minimum discharge, 763 ft³/s Oct. 30, 31, 1987, gage height, 0.51 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1921 reached a discharge of approximately 180,000 ft³/s. Floods in November or December 1897 and November 1906 are believed to be higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 33,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	0100	51,100	13.65	Jan. 08	1030	*59,300	*15.33
Dec. 14	1000	35,700	10.36	Feb. 23	0030	51,500	13.73
Dec. 17	0830	48,800	13.18	Apr. 14	1430	51,100	13.65

Minimum discharge, 1,570 ft³/s Sept. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2080	19200	14200	5930	9840	10400	9170	13600	20100	17000	4080	2030
2	1980	17400	16800	6380	9140	9400	9320	15800	19000	14800	3810	2010
3	1910	15600	14600	6950	8690	8700	8530	16400	19000	13400	3610	2470
4	1850	12400	12300	6550	8500	8180	8050	13900	19200	12600	3430	2730
5	1790	12400	11000	6230	7960	8030	8710	12200	20900	12100	3430	2340
6	1750	11300	10400	6270	7970	7880	10600	12100	24600	11600	3750	2100
7	1740	9600	10800	32400	9220	7460	14500	10800	20700	12200	3890	1970
8	1820	8430	9850	55900	10600	7280	13900	9710	16900	14900	3530	1900
9	2290	7520	10900	42000	9990	6920	11700	9010	14700	13600	3330	1870
10	2590	6790	10000	27200	8850	6990	14800	8520	14600	12500	3230	1870
11	7310	6300	9080	19600	9290	10200	18300	8220	17100	13400	3220	1860
12	7910	5990	8360	17300	8390	18200	23500	8860	19800	12900	3160	1820
13	13000	6560	18500	18500	7480	14400	30800	12200	23500	12100	3040	1790
14	12600	30900	33500	15000	6770	12500	46100	16100	26500	11500	2990	1760
15	11100	45300	23600	12700	6190	11700	38100	15600	25800	10200	2940	1750
16	7370	35200	26800	11200	5880	10800	28200	13400	23000	9160	2870	1810
17	6830	24200	44500	10200	5740	10100	21500	13600	18900	8910	2750	2600
18	5860	17800	30500	9400	6180	9260	17600	15300	19000	8540	2650	2680
19	9770	14700	21400	10000	7140	9120	14900	14600	20300	7910	2550	2290
20	15200	16800	16700	11100	8080	11300	13500	17000	17000	7090	2470	2140
21	10100	18200	13700	11700	10900	10500	12500	18200	17600	6600	2460	2090
22	13100	18100	11600	10400	38900	9270	12000	18500	19900	6440	2420	1960
23	19800	25100	10200	9590	43000	8700	12800	17500	19900	6380	2350	1850
24	17900	21600	9160	11400	28300	8370	11900	15300	17400	6280	2310	1740
25	18500	16500	8100	20100	20100	8200	10700	14900	16600	5990	2290	1680
26	18900	13800	7460	17600	15600	7910	10100	15800	18100	5740	2280	1640
27	16900	12100	6970	13100	13200	8080	9950	17100	19400	5450	2240	1610
28	14700	11400	6830	11000	11600	9360	9660	23300	18300	4910	2200	1590
29	11700	13100	6780	9620	---	10800	9920	30000	27200	4720	2160	1650
30	10100	13900	6280	9050	---	9940	11000	28900	23000	4690	2120	2030
31	15800	---	5990	9550	---	9510	---	23700	---	4500	2090	---
TOTAL	284250	488190	446860	463920	343500	299460	472310	480120	598000	298110	89650	59630
MEAN	9169	16270	14410	14970	12270	9660	15740	15490	19930	9616	2892	1988
MAX	19800	45300	44500	55900	43000	18200	46100	30000	27200	17000	4080	2730
MIN	1740	5990	5990	5930	5740	6920	8050	8220	14600	4500	2090	1590
AC-FT	563800	968300	886300	920200	681300	594000	936800	952300	1186000	591300	177800	118300
CFSM	5.97	10.6	9.38	9.74	7.98	6.28	10.2	10.1	13.0	6.26	1.88	1.29
IN.	6.88	11.82	10.82	11.23	8.31	7.25	11.43	11.62	14.47	7.22	2.17	1.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2002, BY WATER YEAR (WY)

	MEAN	6097	12500	13460	12970	11120	9289	10430	13200	12760	7006	3074	3386
MAX	13340	34800	29580	22000	24300	25700	16050	20450	24730	15290	7885	7646	
(WY)	1996	1991	1976	1984	1982	1972	1989	1972	1974	1964	1964	1978	
MIN	894	2624	3966	4401	4606	4859	5340	7743	4070	2683	1413	1133	
(WY)	1988	1988	1986	1979	1973	1985	1975	1992	1992	1987	1987	1987	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1963 - 2002
ANNUAL TOTAL	2994880	4324000	
ANNUAL MEAN	8205	11850	9621
HIGHEST ANNUAL MEAN			13670
LOWEST ANNUAL MEAN			6308
HIGHEST DAILY MEAN	45300	Nov 15	55900
LOWEST DAILY MEAN	1670	Sep 25	1590
ANNUAL SEVEN-DAY MINIMUM	1750	Sep 19	1680
ANNUAL RUNOFF (AC-FT)	5940000	8577000	6970000
ANNUAL RUNOFF (CFSM)	5.34	7.71	6.26
ANNUAL RUNOFF (INCHES)	72.49	104.65	85.05
10 PERCENT EXCEEDS	16600	21100	18300
50 PERCENT EXCEEDS	6780	10200	7670
90 PERCENT EXCEEDS	2140	2220	2300

SNOHOMISH RIVER BASIN

12155300 PILCHUCK RIVER NEAR SNOHOMISH, WA

LOCATION.--Lat 47°56'06", long 122°04'19", in NW 1/4 NW 1/4 sec.8, T.28 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on right bank, 1.8 mi northeast of Snohomish, and at mile 3.6.

DRAINAGE AREA.--127 mi².

PERIOD OF RECORD.--May 1992 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 30.00 ft above NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--10 years (water years 1993-2002), 490 ft³/s, 52.44 in/yr, 355,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,480 Dec. 16, 1999, gage height, 19.16 ft; minimum discharge, 45 ft³/s Aug. 31, Sept. 1-3, 1994.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1990, reached a stage of 18.75 ft, from high-water mark at former bridge, discharge, 7,100 ft³/s (from slope-area measurement of peak flow).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2130	2,630	13.19	Jan. 08	0515	2,760	13.29
Dec. 14	0815	4,240	15.40	Jan. 25	1130	2,870	13.45
Dec. 17	0600	3,910	14.96	Feb. 22	2045	*4,470	*15.71

Minimum daily discharge, 48 ft³/s Sept. 15, 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e88	704	1740	516	977	546	834	375	336	266	89	52
2	86	670	1720	568	889	495	768	365	316	214	84	54
3	e77	526	1190	562	842	454	640	470	300	194	82	80
4	e74	417	983	494	822	425	587	361	287	178	80	74
5	69	705	947	475	734	416	611	475	525	175	85	61
6	e67	481	1010	505	910	401	668	853	568	171	88	56
7	e70	373	1060	1770	1200	373	778	747	361	179	83	56
8	70	315	882	2350	1230	360	616	597	338	368	79	63
9	95	274	1460	1460	1090	351	549	517	338	304	75	59
10	91	244	1090	912	929	405	1000	466	309	232	73	56
11	e113	224	960	714	1070	747	1050	423	308	212	72	54
12	e226	222	884	801	879	990	1580	405	312	187	69	55
13	461	263	2510	847	755	868	1360	456	335	171	73	51
14	622	1520	3550	657	662	993	1730	658	347	157	70	50
15	394	2130	2060	563	596	1060	1010	578	292	145	66	52
16	255	1480	2590	509	578	1060	1100	414	259	137	63	53
17	266	948	3080	471	571	899	998	478	225	131	62	98
18	214	705	1860	443	793	751	809	516	258	127	61	75
19	999	645	1430	699	883	850	669	404	252	121	61	62
20	780	942	1170	1100	900	1300	581	455	211	114	60	61
21	416	1050	987	1250	998	1070	518	458	227	109	60	61
22	1030	972	855	1060	3270	961	493	438	241	107	60	57
23	1220	1680	755	929	2340	871	574	439	225	107	59	54
24	848	1130	679	1490	1460	802	477	363	193	104	59	52
25	1420	842	616	2240	1040	818	412	351	187	100	56	51
26	981	842	567	1570	820	805	384	374	202	99	57	55
27	1180	740	527	1100	692	908	367	366	205	97	56	53
28	930	768	526	874	618	1220	335	691	279	94	55	49
29	610	1600	541	725	---	1090	318	785	817	97	58	57
30	466	1740	480	693	---	896	333	529	368	97	55	72
31	718	---	485	863	---	785	---	398	---	97	53	---
TOTAL	14936	25152	39194	29210	28548	23970	22149	15205	9421	4891	2103	1783
MEAN	482	838	1264	942	1020	773	738	490	314	158	67.8	59.4
MAX	1420	2130	3550	2350	3270	1300	1730	853	817	368	89	98
MIN	67	222	480	443	571	351	318	351	187	94	53	49
AC-FT	29630	49890	77740	57940	56620	47540	43930	30160	18690	9700	4170	3540
CFSM	3.79	6.60	9.96	7.42	8.03	6.09	5.81	3.86	2.47	1.24	0.53	0.47
IN.	4.37	7.37	11.48	8.56	8.36	7.02	6.49	4.45	2.76	1.43	0.62	0.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

	344	679	943	854	718	682	541	427	282	185	101	114
MEAN	344	679	943	854	718	682	541	427	282	185	101	114
MAX	697	1140	1467	1532	1110	1084	738	597	543	378	209	244
(WY)	1996	1996	2000	1997	1996	1997	2002	1999	1999	1997	1995	1997
MIN	116	179	379	434	264	418	375	208	118	105	57.8	52.8
(WY)	1993	1994	2001	2001	1993	1993	1995	1994	1992	1995	1994	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1992 - 2002

ANNUAL TOTAL		167569		216562								
ANNUAL MEAN		459		593						490		
HIGHEST ANNUAL MEAN										721		1997
LOWEST ANNUAL MEAN										314		2001
HIGHEST DAILY MEAN			3550	Dec 14		3550	Dec 14		5050	Jan 1	1997	
LOWEST DAILY MEAN			56	Sep 25		49	Sep 28		45	Sep 1	1994	
ANNUAL SEVEN-DAY MINIMUM			58	Sep 19		53	Sep 10		47	Aug 27	1994	
ANNUAL RUNOFF (AC-FT)			332400			429600				355100		
ANNUAL RUNOFF (CFSM)			3.61			4.67				3.86		
ANNUAL RUNOFF (INCHES)			49.08			63.43				52.44		
10 PERCENT EXCEEDS			980			1180				1040		
50 PERCENT EXCEEDS			310			475				342		
90 PERCENT EXCEEDS			73			61				74		

e Estimated

SNOHOMISH RIVER BASIN

12155500 SNOHOMISH RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'45", long 122°06'30", in NE ¼ SE ¼ sec.13, T.28 N., R.5 E., at right bank pier of bridge on State Highway 9 in Snohomish.

DRAINAGE AREA.--1,714 mi².

PERIOD OF RECORD.--February 1941 to September 1966 (high-water discharges only). High-water elevations prior to 1932 and high-water profiles on flood peaks since that time are available at the Seattle office of Corps of Engineers. October 1998 to current year (stage only).

REVISED RECORDS.--WDR WA-00-1: 1999 (m).

GAGE.--Water-stage recorder. Datum of gage is 9.86 ft below NGVD of 1929. Prior to February 3, 1960, at site half a mile upstream at datum 0.14 ft lower (corrected).

REMARKS.--Large diurnal fluctuation because of tides. Some regulation by powerplants above station. Minor diversions for irrigation returned to river above gage. A slight amount of storage in Lake Chaplain by the City of Everett.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height 30.12 ft, Feb. 10, 1951, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 35 ft at former site in 1906, from flood profile furnished by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded 27.01 ft, Jan. 8. Minimum unknown.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.11	15.46	15.80	13.27	13.21	12.99	12.71	13.63	15.57	14.32	11.35	10.81
2	10.99	14.96	16.07	13.41	12.88	12.60	12.46	14.19	14.95	13.60	11.28	10.88
3	10.97	14.52	15.12	12.99	12.62	12.37	12.16	14.21	14.88	13.16	11.44	11.04
4	11.05	13.71	14.46	12.45	12.37	12.42	11.97	13.26	14.86	12.91	11.41	11.19
5	11.30	13.46	13.91	12.35	12.57	12.58	12.23	12.88	15.51	12.94	11.40	11.30
6	11.29	13.24	13.41	12.52	12.78	12.54	12.70	12.89	16.80	13.00	11.55	11.46
7	11.16	12.41	12.91	18.71	13.46	12.32	14.00	12.50	15.68	13.36	11.60	11.50
8	11.10	12.01	12.90	25.86	13.73	12.15	13.62	12.21	14.45	14.02	11.53	11.35
9	10.83	11.79	12.91	23.17	13.19	12.33	13.16	12.13	13.90	13.89	11.53	11.27
10	11.09	11.73	12.97	18.77	13.24	12.76	13.90	12.00	13.95	13.69	11.59	11.34
11	11.38	11.94	12.91	16.22	12.80	13.74	15.13	12.08	14.70	13.99	11.49	11.37
12	11.90	12.26	12.88	15.70	12.65	15.57	16.60	12.31	15.48	13.85	11.34	11.28
13	13.04	12.82	15.99	15.64	12.47	14.50	18.98	13.16	16.59	13.58	11.34	11.17
14	13.27	18.27	21.02	14.67	11.98	13.65	23.23	14.26	17.67	13.20	11.53	11.12
15	13.20	23.72	17.98	13.76	11.98	13.58	21.86	14.26	17.47	12.79	11.58	11.05
16	12.49	21.26	18.40	13.29	11.98	13.35	18.95	13.61	16.54	12.49	11.46	11.07
17	12.12	17.82	23.55	12.74	12.04	12.94	16.47	13.50	15.18	12.36	11.40	11.25
18	12.08	15.67	20.27	12.39	12.08	12.48	14.86	14.03	15.00	12.41	11.26	11.06
19	12.68	14.83	16.96	12.55	12.54	12.43	13.77	13.75	15.54	12.40	11.43	11.21
20	14.34	15.29	15.30	13.23	12.25	12.90	13.30	14.40	14.60	12.32	11.34	11.04
21	13.09	15.72	14.02	13.35	13.09	12.66	13.03	14.85	14.88	12.25	11.28	10.93
22	13.50	15.77	13.31	12.89	21.04	12.52	13.01	14.97	15.71	12.43	11.35	10.98
23	15.34	17.44	12.62	12.49	23.44	12.45	13.19	14.85	15.81	12.56	11.28	11.10
24	14.81	16.74	12.38	13.51	19.04	12.37	12.92	14.36	15.15	12.48	11.25	11.25
25	14.76	14.90	12.24	16.46	16.15	12.48	12.90	14.42	14.85	12.25	11.08	11.15
26	15.15	13.72	12.40	15.91	14.75	12.72	13.03	14.73	15.22	12.16	10.89	11.25
27	14.43	13.27	12.83	14.63	13.99	12.74	13.21	15.15	15.63	11.87	10.95	11.22
28	13.71	13.98	13.03	13.98	13.48	13.09	13.04	16.71	15.22	11.53	11.11	11.25
29	12.91	14.94	13.20	13.49	---	13.32	12.99	18.80	17.64	11.37	11.15	11.20
30	12.94	15.11	13.17	13.23	---	12.95	13.18	18.72	16.72	11.41	10.94	10.90
31	14.46	---	13.12	13.31	---	12.85	---	16.91	---	11.25	10.88	---
MEAN	12.66	14.96	14.78	14.74	13.85	12.91	14.42	14.18	15.54	12.77	11.32	11.17
MAX	15.34	23.72	23.55	25.86	23.44	15.57	23.23	18.80	17.67	14.32	11.60	11.50
MIN	10.83	11.73	12.24	12.35	11.98	12.15	11.97	12.00	13.90	11.25	10.88	10.81

WTR YR 2002 MEAN 13.60 MAX 25.86 MIN 10.81

TULALIP AND MISSION CREEK BASINS

245

12157250 MISSION CREEK NEAR TULALIP, WA

LOCATION.--Lat 48°03'31", long 122°15'58", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.26, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, on left bank 100 ft upstream from highway crossing, 0.25 mi above mouth, and 0.9 mi east of Tulalip.

DRAINAGE AREA.--7.92 mi².

PERIOD OF RECORD.--October 1974 to September 1977, November 2000 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 20.3 ft below NGVD of 1929, from precision Global Positioning System (GPS). Oct. 1974 to Sept. 1977, water-stage recorder, at site downstream from highway crossing, at different datum.

REMARKS.--Records fair, except estimated daily discharges, which are poor. Some natural regulation in lakes and beaver ponds. Chemical analysis Nov. 1974 to March 1977, water temperatures Oct. 1974 to March 1977.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85 ft³/s Jan. 19, 1977, gage height, 4.11 ft, from rating curve extended above 20 ft³/s datum then in use, probably result of release of water from beaver ponds; minimum, 0.12 ft³/s June 29, 1977, probably result of beaver activity upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 67 ft³/s Dec. 17; gage height 57.60 ft; minimum discharge, 0.75 ft³/s, Aug. 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	5.4	19	7.0	20	6.7	8.7	4.3	3.0	2.1	1.2	e1.4
2	1.8	4.3	16	9.0	17	6.7	8.1	4.2	3.1	1.6	1.2	e1.5
3	1.6	3.6	14	7.6	15	6.4	7.3	4.3	2.8	1.4	1.1	e1.5
4	1.5	3.4	13	6.4	15	6.3	6.9	4.1	2.7	1.7	1.2	e1.5
5	1.6	3.5	11	5.9	14	5.7	6.4	6.5	3.1	1.8	1.4	e1.4
6	1.5	3.4	11	7.3	14	5.3	6.3	9.0	4.2	1.6	1.8	e1.4
7	1.4	3.1	9.4	11	14	5.3	6.4	6.9	4.2	1.5	1.7	e1.3
8	1.6	2.9	8.7	13	18	5.8	6.1	5.5	3.0	4.7	1.4	e1.2
9	1.6	2.8	10	9.3	15	6.7	6.4	4.7	2.6	5.2	1.3	e1.2
10	1.6	2.7	12	7.5	13	7.4	9.2	4.4	2.4	3.0	1.2	e1.2
11	1.9	2.7	14	6.8	14	8.1	8.8	3.8	2.2	2.2	1.1	e1.2
12	2.1	3.0	13	7.4	12	8.7	7.5	3.6	2.1	1.9	1.1	1.2
13	2.1	3.7	19	7.1	10	7.5	7.3	3.7	1.9	1.5	1.1	1.2
14	2.9	11	26	6.2	9.8	15	8.4	5.4	1.6	1.4	0.99	1.2
15	2.9	16	21	5.7	9.2	18	7.9	5.1	1.4	1.3	0.96	1.0
16	3.0	10	24	5.5	8.5	17	12	4.3	1.5	1.4	0.89	1.2
17	3.7	6.8	49	5.6	8.3	13	13	4.2	1.7	1.5	0.90	1.6
18	3.1	5.3	30	5.8	8.7	11	10	4.0	2.4	1.4	0.92	1.5
19	4.9	8.8	21	17	9.7	15	8.8	3.8	2.9	1.4	0.99	1.3
20	4.6	13	16	20	10	31	7.8	4.3	2.4	1.5	1.1	1.3
21	4.4	10	14	15	11	23	7.1	4.7	2.0	1.4	1.3	1.3
22	5.5	12	12	14	9.7	19	6.9	3.9	1.7	1.3	1.4	1.3
23	5.2	17	10	14	9.6	17	7.3	3.6	1.6	1.3	1.3	1.2
24	4.1	10	9.1	12	9.6	14	6.8	3.4	1.5	1.3	1.3	1.2
25	8.4	7.5	8.3	17	8.2	13	6.1	3.4	1.4	1.2	1.4	1.1
26	7.6	6.3	7.6	15	7.4	11	5.9	3.5	1.3	1.3	1.6	1.2
27	15	5.4	7.2	13	7.0	9.9	6.3	3.6	1.2	1.4	e1.5	1.2
28	11	11	7.4	14	7.0	11	5.7	3.7	1.6	1.4	e1.4	1.1
29	6.8	24	6.9	12	---	10	5.1	3.8	4.1	1.5	e1.4	1.6
30	4.7	22	6.2	14	---	9.2	4.6	4.2	3.3	1.5	e1.3	2.4
31	5.8	---	6.6	20	---	8.4	---	3.7	---	1.3	e1.4	---
TOTAL	125.7	240.6	452.4	331.1	324.7	352.1	225.1	137.6	70.9	55.0	38.85	39.9
MEAN	4.05	8.02	14.6	10.7	11.6	11.4	7.50	4.44	2.36	1.77	1.25	1.33
MAX	15	24	49	20	20	31	13	9.0	4.2	5.2	1.8	2.4
MIN	1.4	2.7	6.2	5.5	7.0	5.3	4.6	3.4	1.2	1.2	0.89	1.0
AC-FT	249	477	897	657	644	698	446	273	141	109	77	79
CFSM	0.51	1.01	1.84	1.35	1.46	1.43	0.95	0.56	0.30	0.22	0.16	0.17
IN.	0.59	1.13	2.12	1.56	1.53	1.65	1.06	0.65	0.33	0.26	0.18	0.19

e Estimated

TULALIP AND MISSION CREEK BASINS

12158010 TULALIP CREEK ABOVE EAST BRANCH NEAR TULALIP, WA

LOCATION.--Lat 48°05'52", long 122°17'13", in SE ¼ SW ¼ sec.10, T.30 N., R.4 E., Snohomish County Hydrologic Unit 17110019, Tulalip Indian Reservation, on left bank wing wall upstream side of diversion dam, 1.9 mi north of Tulalip and 2.0 mi above mouth.

DRAINAGE AREA.--9.74 mi².

PERIOD OF RECORD.--November 2000 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2.8 ft below NGVD of 1929, from precision Global Positioning System (GPS).

REMARKS.--Records fair except for discharges below 10 ft³/s and estimated daily discharges, which are poor. Some natural regulation in lakes and beaver ponds in basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61 ft³/s Dec. 16, 2001, gage height 123.91; minimum discharge, 2.6 ft³/s many day in Nov. 2001 and July and Aug. 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 61 ft³/s Dec. 16, gage height 123.91 ft; minimum discharge, 2.6 ft³/s many days in Nov., Jul. and Aug.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	4.2	19	12	19	12	15	8.7	5.8	4.3	3.4	e3.4
2	4.6	4.0	17	13	19	10	14	8.5	6.0	4.4	3.5	e3.5
3	4.6	3.7	16	12	18	9.6	14	9.0	5.6	4.3	3.5	e3.5
4	4.7	3.4	19	12	17	9.0	13	8.9	5.5	4.7	3.7	e3.4
5	4.4	3.5	20	12	17	9.0	13	9.7	5.8	4.4	4.3	e3.4
6	4.5	3.5	19	13	18	8.7	13	9.5	5.5	4.1	3.8	e3.5
7	4.6	3.5	17	14	19	8.8	13	9.0	5.2	4.7	3.7	e3.3
8	4.5	3.6	17	14	20	9.4	12	8.6	5.2	6.4	3.6	e3.5
9	4.6	3.7	17	13	18	9.6	13	8.4	5.1	4.2	3.5	e3.5
10	4.9	3.2	18	13	18	10	14	8.2	5.1	3.9	3.6	e3.5
11	4.8	3.1	19	12	17	9.9	14	7.9	5.0	3.7	3.5	e3.5
12	5.2	3.8	24	12	17	9.9	11	7.7	4.9	3.6	3.5	e3.5
13	5.6	5.1	28	12	16	10	10	8.0	4.7	3.7	3.4	e3.5
14	6.1	10	28	12	15	15	15	8.2	4.8	3.8	3.4	e3.5
15	5.1	6.9	26	11	14	13	10	7.5	4.7	3.6	3.5	e3.6
16	5.9	5.3	33	11	14	14	12	7.4	4.7	3.5	3.5	e4.1
17	5.6	4.6	43	11	14	13	11	8.1	4.8	3.5	3.6	e4.8
18	5.6	4.5	32	11	14	13	11	7.4	5.7	3.6	3.9	e4.1
19	6.8	7.6	30	16	15	17	11	7.3	4.9	3.5	4.0	e4.2
20	5.6	7.8	33	15	14	24	11	8.4	4.7	3.6	4.0	e4.3
21	6.5	7.2	29	19	14	23	10	7.8	4.6	3.5	4.0	e4.0
22	6.2	11	25	18	14	22	9.9	7.1	4.2	3.3	3.7	e3.9
23	8.0	12	23	17	15	20	9.5	6.7	4.3	3.1	3.5	e3.8
24	13	10	21	16	14	18	9.2	6.7	4.3	3.1	3.5	e3.9
25	12	9.8	19	19	13	17	9.1	6.7	4.2	3.4	e3.7	e4.1
26	6.7	9.4	17	17	13	17	9.0	6.9	4.1	3.5	e3.8	e3.9
27	9.2	8.6	13	17	13	15	9.1	7.6	4.3	3.5	e3.6	e4.5
28	4.5	12	11	17	12	17	9.3	6.7	4.9	3.7	e3.6	e3.9
29	4.3	18	10	17	---	16	9.5	6.5	4.9	3.6	e3.6	e4.5
30	4.4	17	11	17	---	15	9.2	6.2	4.5	3.5	e3.6	e5.1
31	5.9	---	12	19	---	14	---	5.9	---	3.4	e3.5	---
TOTAL	183.0	210.0	666	444	441	428.9	343.8	241.2	148.0	119.1	113.0	115.2
MEAN	5.90	7.00	21.5	14.3	15.8	13.8	11.5	7.78	4.93	3.84	3.65	3.84
MAX	13	18	43	19	20	24	15	9.7	6.0	6.4	4.3	5.1
MIN	4.3	3.1	10	11	12	8.7	9.0	5.9	4.1	3.1	3.4	3.3
AC-FT	363	417	1320	881	875	851	682	478	294	236	224	228
CFSM	0.61	0.72	2.21	1.47	1.62	1.42	1.18	0.80	0.51	0.39	0.37	0.39
IN.	0.70	0.80	2.54	1.70	1.68	1.64	1.31	0.92	0.57	0.45	0.43	0.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

MEAN	5.90	7.00	13.0	10.1	11.3	10.8	10.6	6.77	5.42	4.21	4.14	4.17
MAX	5.90	7.00	21.5	14.3	15.8	13.8	11.5	7.78	5.91	4.58	4.63	4.50
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2001	2001	2001	2001
MIN	5.90	7.00	4.43	5.97	6.78	7.83	9.66	5.75	4.93	3.84	3.65	3.84
(WY)	2002	2002	2001	2001	2001	2001	2001	2001	2002	2002	2002	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 2001 - 2002
ANNUAL TOTAL	2742.9	3453.2	
ANNUAL MEAN	7.51	9.46	9.46
HIGHEST ANNUAL MEAN			9.46
LOWEST ANNUAL MEAN			9.46
HIGHEST DAILY MEAN	43	43	43
LOWEST DAILY MEAN	3.1	3.1	3.1
ANNUAL SEVEN-DAY MINIMUM	3.4	3.3	3.3
ANNUAL RUNOFF (AC-FT)	5440	6850	6850
ANNUAL RUNOFF (CFSM)	0.77	0.97	0.97
ANNUAL RUNOFF (INCHES)	10.48	13.19	13.20
10 PERCENT EXCEEDS	12	18	18
50 PERCENT EXCEEDS	5.8	7.7	7.7
90 PERCENT EXCEEDS	4.4	3.5	3.5

e Estimated

TULALIP AND MISSION CREEK BASINS

12158032 EAST BRANCH TULALIP CREEK NEAR TULALIP, WA

LOCATION.--Lat 48°05'35", long 122°16'44", in NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.15, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, on left wing wall at diversion dam headworks pool, 200 ft upstream from highway crossing, 1.9 miles north of Tulalip and 0.6 mi above mouth.

DRAINAGE AREA.--1.75 mi².

PERIOD OF RECORD.--September 1960, October 1974 to August 1977 and November 2000 to May 2002 (discharge measurements). May 2002 to September 2002.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage 9.74 ft below NGVD of 1929, from precision Global Positioning System (GPS).

REMARKS.--Records poor. Some natural regulation from beaver ponds in basin. Minor diversions for domestic use.

EXTREMES FOR PERIOD MAY TO SEPTEMBER.--Maximum discharge, 5.6 ft³/s July 8, gage height 139.92 ft; minimum discharge, 1.0 ft³/s Aug. 15, 16, 20, Sept. 11-13.

DISCHARGE, CUBIC FEET PER SECOND, MAY TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	MAY	JUN	JUL	AUG	SEP
1	---	2.3	2.3	e2.6	1.8
2	---	2.2	2.2	e2.7	1.9
3	---	2.2	2.2	e2.8	2.1
4	---	2.4	2.4	2.9	2.1
5	---	2.6	2.3	3.1	2.2
6	---	2.4	2.3	2.9	2.2
7	---	2.4	2.9	2.7	2.2
8	---	2.4	3.9	2.7	2.2
9	---	2.3	2.8	2.6	2.1
10	---	2.3	2.5	2.5	2.2
11	---	2.2	2.6	2.3	2.0
12	---	2.3	2.5	2.2	2.0
13	---	2.2	2.6	2.2	2.1
14	---	2.1	2.5	2.1	2.5
15	---	2.1	2.5	2.0	2.7
16	---	2.3	2.6	1.9	2.6
17	---	2.3	2.7	1.9	2.6
18	---	2.8	2.6	1.9	2.6
19	---	2.3	e2.6	1.9	2.6
20	---	2.2	e2.6	1.6	2.8
21	---	2.2	e2.6	1.5	2.9
22	---	2.2	e2.5	1.6	3.0
23	e2.2	2.2	e2.4	1.9	3.3
24	2.2	2.3	e2.3	2.1	3.3
25	2.2	2.2	e2.4	2.1	3.5
26	2.4	2.1	e2.5	2.0	3.5
27	2.3	2.1	e2.5	2.1	2.6
28	2.4	2.4	e2.6	2.1	2.4
29	2.4	2.5	e2.6	1.8	2.8
30	2.3	2.3	e2.5	1.7	3.2
31	2.3	---	e2.5	1.8	---
TOTAL	---	68.8	79.0	68.2	76.0
MEAN	---	2.29	2.55	2.20	2.53
MAX	---	2.8	3.9	3.1	3.5
MIN	---	2.1	2.2	1.5	1.8
AC-FT	---	136	157	135	151

e Estimated

TULALIP AND MISSION CREEK BASINS

12158040 TULALIP CREEK NEAR TULALIP, WA

LOCATION.--Lat 48°04'07", long 122°17'10", in NW ¼ SW ¼ sec.22, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, on left bank 200 ft upstream from highway crossing, 0.15 mi east of Tulalip and 0.30 mi above mouth.

DRAINAGE AREA.--15.4 mi².

PERIOD OF RECORD.--October 1974 to September 1977, November 2000 to current year. Published as "at Tulalip" 1974-77.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 43.6 ft above NGVD of 1929, from precision Global Positioning System (GPS). October 1974 to September 1977, water-stage recorder, at site 600 ft upstream from highway crossing, at different datum.

REMARKS.--Records good except for estimated daily discharges, and discharges below 15 ft³/s, and above 80 ft³/s, which are fair. Some regulation at outlet of Lake Shoecraft, drainage area 6.12 mi², and natural regulation in lakes and ponds in basin. Minor diversions above station for domestic use from East Branch Tulalip Creek. Tulalip Fish Hatchery diverts entire flow at times from East Branch Tulalip Creek, and Tulalip Creek above East Branch for use in hatchery. Water is returned to creek above station. Chemical Analysis November 1974 to March 1977, water temperature October 1974 to March 1977.

AVERAGE DISCHARGE.--4 years (water years 1975-77, 2002), 13.0 ft³/s, 11.51 in/yr, 9,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 136 ft³/s Dec. 17, 2001, gage height, 97.81 ft; minimum discharge, 2.0 ft³/s Aug. 12, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 136 ft³/s Dec. 17, 2001, gage height 97.81 ft; minimum discharge, 4.4 ft³/s June 2, 3, 6, Sept. 1, 2002.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	11	34	e23	35	18	21	14	9.4	6.9	6.3	5.4
2	6.4	9.1	27	e27	32	17	19	14	9.2	7.0	6.2	5.6
3	6.4	8.2	24	e25	31	16	19	14	8.9	6.7	6.3	5.7
4	6.3	8.0	26	e22	29	16	18	14	9.1	8.3	6.4	5.5
5	6.1	8.1	28	e21	28	15	18	16	9.6	7.5	8.2	5.4
6	6.1	7.5	27	e23	30	14	18	16	10	6.9	7.1	5.5
7	6.4	6.9	23	e30	32	14	18	15	8.1	7.8	7.0	e5.2
8	6.2	6.8	23	e33	37	16	17	14	7.8	15	6.6	e5.4
9	6.2	6.6	26	e25	31	16	19	14	7.7	10	6.3	e5.4
10	7.0	6.4	27	e21	29	19	23	13	7.3	8.2	5.8	e5.4
11	7.1	6.5	29	e18	31	19	22	13	7.3	7.3	5.6	e5.4
12	7.2	7.1	33	e18	28	17	18	12	6.8	7.2	5.6	5.6
13	8.0	8.1	42	e17	26	16	17	13	6.4	7.0	5.6	5.5
14	11	24	52	e17	24	33	26	15	6.3	7.0	5.2	5.6
15	8.8	29	36	e17	23	27	21	13	6.4	7.1	5.4	5.8
16	11	15	51	e16	23	29	24	12	6.4	6.9	5.4	6.8
17	11	12	99	e15	23	24	22	13	6.4	7.0	5.5	8.0
18	9.3	12	55	e16	24	22	20	13	9.6	7.1	5.6	6.7
19	15	17	44	e35	25	28	19	12	7.2	6.6	5.9	6.8
20	12	23	e37	e42	25	48	19	14	6.8	6.2	6.0	6.5
21	14	19	e32	e37	24	35	18	13	6.3	6.2	6.1	5.9
22	15	23	e29	e34	23	32	18	12	6.0	5.8	6.0	5.7
23	14	29	e28	e31	23	28	17	11	5.9	5.8	5.8	5.5
24	15	20	e27	30	23	27	16	11	6.0	5.8	5.6	5.7
25	21	18	e26	38	21	24	16	11	6.1	6.1	5.9	6.1
26	13	18	e24	34	20	22	16	12	5.8	6.5	6.0	5.8
27	28	15	e22	32	19	21	16	12	6.0	6.4	5.7	6.8
28	14	26	e20	33	19	22	16	11	7.5	6.5	5.7	5.8
29	11	49	e20	30	---	22	15	11	8.5	6.8	5.6	6.8
30	11	34	e20	34	---	20	15	10	6.9	6.7	5.6	7.7
31	14	---	e21	37	---	20	---	9.8	---	6.4	5.6	---
TOTAL	334.0	483.3	1012	831	738	697	561	397.8	221.7	222.7	185.6	179.0
MEAN	10.8	16.1	32.6	26.8	26.4	22.5	18.7	12.8	7.39	7.18	5.99	5.97
MAX	28	49	99	42	37	48	26	16	10	15	8.2	8.0
MIN	6.1	6.4	20	15	19	14	15	9.8	5.8	5.8	5.2	5.2
AC-FT	662	959	2010	1650	1460	1380	1110	789	440	442	368	355
CFSM	0.70	1.05	2.12	1.74	1.71	1.46	1.21	0.83	0.48	0.47	0.39	0.39
IN.	0.81	1.17	2.44	2.01	1.78	1.68	1.36	0.96	0.54	0.54	0.45	0.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2002, BY WATER YEAR (WY)

	MEAN	1975	1977	1977	1977	1977	1977	1977	1976	2002	1976	2002
MEAN	8.76	12.0	19.1	18.6	17.9	18.4	17.0	10.9	8.33	6.38	7.04	6.55
MAX	10.8	16.1	32.6	26.8	26.4	23.3	27.0	12.8	10.5	7.18	9.18	7.27
(WY)	2002	2002	2002	2002	2002	1975	1976	2002	2001	2002	1976	1977
MIN	5.69	8.60	9.05	8.06	7.63	12.7	10.5	8.84	7.39	5.84	5.99	5.97
(WY)	1975	1977	1977	1977	1977	1977	1977	1976	2002	1976	2002	2002

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1975 - 2002

ANNUAL TOTAL	4730.8	5863.1	
ANNUAL MEAN	13.0	16.1	13.0
HIGHEST ANNUAL MEAN			16.1
LOWEST ANNUAL MEAN			8.75
HIGHEST DAILY MEAN	99	Dec 17	99
LOWEST DAILY MEAN	5.4	Aug 10	5.2
ANNUAL SEVEN-DAY MINIMUM	5.5	Aug 9	5.4
ANNUAL RUNOFF (AC-FT)	9380	11630	9450
ANNUAL RUNOFF (CFSM)	0.84	1.04	0.85
ANNUAL RUNOFF (INCHES)	11.43	14.16	11.51
10 PERCENT EXCEEDS	23	30	26
50 PERCENT EXCEEDS	11	14	9.4
90 PERCENT EXCEEDS	5.8	5.8	5.8

e Estimated

STILLAGUAMISH RIVER BASIN

12161000 SOUTH FORK STILLAGUAMISH RIVER NEAR GRANITE FALLS, WA

LOCATION.--Lat 48°06'13", long 121°56'37", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.8, T.30 N., R.7 E., Snohomish County, Hydrologic Unit 17110008, on right bank 0.3 mi upstream from county road bridge, 1.2 mi upstream from Canyon Creek, 1.6 mi northeast of Granite Falls, and at mile 34.9.

DRAINAGE AREA.--119 mi².

PERIOD OF RECORD.--December 1902 to July 1903 (gage heights only), July 1928 to September 1980, Nov. 1999 to current year (gage heights only). Published as "at Robe" 1902-03. Chemical analyses July 1959 to September 1966, October 1973 to September 1974.

REVISED RECORDS.--WSP 902: 1939. WSP 1286: 1929-31(M), 1932, 1935, 1937(M), 1939(P), 1940-41(M), 1943(P), 1947(P), WSP 1736: 1932-35(M), 1944(M), 1946-48(M), 1951(M), 1957(M). WSP 1932: 1938(P), 1945(P), 1950(P), 1956(P), 1959(P).

GAGE.--Water-stage recorder. Elevation of gage is 310 ft above NGVD of 1929, from river-profile map. Prior to Aug. 21, 1928, nonrecording gage at site 8 mi upstream at different datum. Aug. 31 to Sept. 30, 1928, nonrecording gage at present site and datum.

REMARKS.--Some small diversion for domestic use above station. No regulation. U.S. Geological Survey satellite telemeter and National Weather Service radio telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 19.7 ft Feb. 26, 1932, from graph based on gage readings; minimum gage height, 2.99 ft Aug. 19-21, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum gage height 16.26 ft Feb. 22; minimum gage height, 3.34 ft Oct. 6.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.54	7.51	6.33	---	4.77	4.81	5.36	5.85	5.96	5.57	4.04	3.69
2	3.48	6.76	6.40	---	4.67	4.68	5.23	5.94	5.92	5.28	3.96	3.75
3	3.43	5.81	5.37	---	4.89	4.58	5.01	6.07	5.94	5.16	3.90	4.42
4	3.40	5.52	5.08	---	4.94	4.52	5.00	5.53	5.98	5.09	3.86	3.97
5	3.36	6.03	4.90	---	4.77	4.61	5.28	5.72	6.81	5.07	3.96	3.77
6	3.35	5.27	5.23	---	5.29	4.52	6.14	5.51	6.67	5.02	4.06	3.66
7	3.38	4.93	5.30	---	5.72	4.42	6.55	5.20	5.84	5.18	4.04	3.62
8	3.53	4.71	5.22	11.89	5.31	4.37	5.73	5.01	5.70	5.91	3.91	3.60
9	3.85	4.55	5.74	7.82	5.10	4.32	5.62	4.95	5.44	5.33	3.86	3.59
10	3.83	4.41	5.09	6.17	4.94	4.47	6.75	4.93	5.63	5.26	3.86	3.57
11	5.64	4.32	4.85	5.59	5.02	6.61	7.00	4.94	5.90	5.37	3.86	3.55
12	5.61	4.34	4.88	6.20	4.77	6.46	9.20	5.19	6.23	5.27	3.83	3.54
13	6.06	4.78	8.70	5.91	4.63	5.81	8.97	5.88	6.52	5.21	3.83	3.54
14	6.29	10.80	8.50	5.34	4.52	5.49	9.89	6.40	6.53	5.02	3.86	3.52
15	5.27	9.01	6.18	5.04	4.44	5.24	7.10	5.81	6.26	4.84	3.85	3.52
16	4.81	7.11	10.38	4.85	4.49	5.05	6.42	5.43	5.99	4.75	3.81	4.10
17	4.85	5.94	9.61	4.70	4.59	4.79	5.94	6.07	5.60	4.78	3.80	4.50
18	4.55	5.34	6.48	4.59	5.11	4.65	5.57	6.03	5.93	4.75	3.81	3.95
19	6.43	5.33	5.75	4.72	5.69	4.82	5.37	5.76	5.64	4.68	3.82	3.76
20	5.56	6.68	5.34	5.01	5.58	4.79	5.25	6.16	5.40	4.53	3.79	3.85
21	5.12	6.90	5.08	4.97	7.57	4.62	5.16	6.01	5.70	4.49	3.77	3.75
22	7.33	6.43	4.89	4.71	14.36	4.68	5.20	5.85	5.88	4.52	3.74	3.64
23	8.13	6.93	4.73	4.61	9.27	4.69	5.35	5.68	5.79	4.54	3.73	3.56
24	6.62	5.74	---	6.68	6.92	4.76	5.06	5.53	5.52	4.53	3.75	3.52
25	7.18	5.28	---	6.99	5.95	4.84	4.94	5.74	5.50	4.47	3.77	3.49
26	6.34	5.16	---	5.47	5.49	4.95	4.93	5.98	5.75	4.41	3.78	3.46
27	6.76	5.06	---	4.98	5.22	5.19	4.89	6.14	5.84	4.27	3.75	3.46
28	5.77	4.99	---	4.72	5.03	5.42	4.89	7.49	6.38	4.16	3.73	3.44
29	5.22	5.99	---	4.70	---	5.18	5.03	8.19	8.70	4.15	3.74	3.49
30	5.16	5.47	---	4.65	---	5.06	5.36	6.83	6.19	4.23	3.73	3.94
31	7.71	---	---	4.88	---	5.00	---	6.28	---	4.20	3.72	---
MEAN	5.21	5.90	6.09	5.63	5.68	4.95	5.94	5.87	6.04	4.84	3.84	3.71
MAX	8.13	10.80	10.38	11.89	14.36	6.61	9.89	8.19	8.70	5.91	4.06	4.50
MIN	3.35	4.32	4.73	4.59	4.44	4.32	4.89	4.93	5.40	4.15	3.72	3.44

STILLAGUAMISH RIVER BASIN

12167000 NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WA

LOCATION.--(Revised)Lat 48°15'42", long 122°02'47", in SW 1/4 NW 1/4 sec.16, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, on right bank 5.7 mi northeast of Arlington, 7.8 mi downstream from Deer Creek, and at mile 6.5.

DRAINAGE AREA.--262 mi².

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

REVISED RECORDS.--WSP 1286: 1938-39. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 89.34 ft above NGVD of 1929.

REMARKS.--Records good below 2,500 ft³/s and fair to poor above 2,500 ft³/s. Estimated discharges are fair. No regulation. Small diversions for domestic use. National Weather Service radio telemeter and U.S. Geological Survey satellite telemeter at station. Chemical analyses November 1961 to September 1971, October 1973 to September 1974.

AVERAGE DISCHARGE.--74 years (water years 1929-2002), 1,897 ft³/s, 98.38 in/yr, 1,374,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,700 ft³/s Nov. 24, 1990, gage height, 15.20 ft; minimum discharge, 117 ft³/s Sept. 23, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2145	18,500	11.13	Jan. 08	0415	30,800	14.07
Dec. 14	0245	16,100	10.44	Feb. 22	1345	*33,500	*14.62
Dec. 17	0215	23,600	12.43	Apr. 14	0630	19,800	11.47

Minimum discharge, 221 ft³/s Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	296	4730	3460	1370	1460	1980	3030	2470	2290	1920	482	287
2	277	3480	4070	2490	1350	1820	2460	2590	2300	1560	457	302
3	260	2430	2460	2560	1620	1700	2080	2270	2290	1370	437	391
4	245	2070	2100	2220	1830	1620	2010	1900	2280	1260	e426	355
5	231	2640	1870	1900	1550	1600	2240	2020	3000	1150	e470	306
6	228	1810	2180	2320	2120	1500	3290	1930	3150	1090	e520	282
7	230	1450	2340	18200	2490	1430	4240	1650	2140	1150	e516	268
8	254	1230	2380	20400	2160	1370	2750	1470	1880	1760	474	262
9	305	1080	3300	7610	1900	1330	2480	1380	1770	1390	444	260
10	330	957	2240	3950	1720	1360	4440	1330	2000	1230	430	254
11	1030	883	1850	2930	1770	3200	3850	1340	2150	1240	422	248
12	1520	877	1730	3780	1520	3760	6970	1580	2420	1170	411	246
13	1720	1200	8090	3650	1360	2820	8250	2260	2680	1110	403	240
14	2190	13400	10600	2620	1230	2650	13100	2700	2720	1030	400	235
15	1310	10300	4380	2180	1140	2370	5380	2170	2470	911	394	234
16	960	5790	11100	1920	1160	2160	3920	1820	2180	841	379	681
17	1060	3520	12800	1730	1210	1880	3110	2410	1820	823	364	924
18	907	2520	4990	1590	1620	1740	2570	2320	2350	798	350	455
19	3120	2420	3420	1640	1880	1870	2280	2110	1850	764	340	370
20	1980	3770	2660	1840	2120	1870	2120	2510	1630	707	332	453
21	1430	4190	2220	2070	5870	1670	2000	2410	1810	666	327	358
22	4980	3790	1940	1780	30100	1710	2210	2160	1910	659	320	314
23	7740	4760	1710	1670	13200	1780	2260	2010	1820	660	314	288
24	4520	3040	1560	4490	5580	1890	1880	1900	1620	655	314	270
25	4990	2320	1430	5950	3670	2000	1710	2090	1550	630	315	258
26	3450	2000	1330	2860	2920	2050	1660	2320	1690	616	312	247
27	4750	1770	1250	2100	2470	2190	1570	2490	1740	576	303	246
28	2800	1690	1430	1730	2200	2530	1590	3830	2170	548	301	235
29	1930	2990	1520	1510	---	2250	1660	4520	6340	548	299	251
30	1710	2530	1340	1390	---	2120	1960	3210	2580	537	294	553
31	5730	---	1320	1550	---	2060	---	2620	---	515	289	---
TOTAL	62483	95637	105070	114000	99220	62280	99070	69790	68600	29884	11839	10073
MEAN	2016	3188	3389	3677	3544	2009	3302	2251	2287	964	382	336
MAX	7740	13400	12800	20400	30100	3760	13100	4520	6340	1920	520	924
MIN	228	877	1250	1370	1140	1330	1570	1330	1550	515	289	234
AC-FT	123900	189700	208400	226100	196800	123500	196500	138400	136100	59270	23480	19980
CFSM	7.69	12.2	12.9	14.0	13.5	7.67	12.6	8.59	8.73	3.68	1.46	1.28
IN.	8.87	13.58	14.92	16.19	14.09	8.84	14.07	9.91	9.74	4.24	1.68	1.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

MEAN	1518	2761	3059	2789	2462	2130	2218	2177	1671	878	462	673
MAX	3832	8008	6177	5852	5632	5814	4040	4371	3348	2165	1049	2418
(WY)	1968	1991	1980	1953	1982	1972	1959	1974	1972	1964	1959	1959
MIN	171	223	871	484	467	898	812	1091	510	290	166	140
(WY)	1988	1937	1986	1937	1929	1992	1941	1992	1992	1940	1938	1938

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1928 - 2002

ANNUAL TOTAL		591849			827946					1897		
ANNUAL MEAN		1622			2268					2883		1997
HIGHEST ANNUAL MEAN										1123		1930
LOWEST ANNUAL MEAN												
HIGHEST DAILY MEAN				13400	Nov 14		30100	Feb 22		34200	Nov 24 1990	
LOWEST DAILY MEAN				228	Oct 6		228	Oct 6		123	Sep 23 1938	
ANNUAL SEVEN-DAY MINIMUM				246	Oct 2		245	Sep 9		128	Sep 17 1938	
ANNUAL RUNOFF (AC-FT)				1174000			1642000			1374000		
ANNUAL RUNOFF (CFSM)				6.19			8.66			7.24		
ANNUAL RUNOFF (INCHES)				84.03			117.56			98.38		
10 PERCENT EXCEEDS				3340			4000			3720		
50 PERCENT EXCEEDS				1230			1810			1380		
90 PERCENT EXCEEDS				324			314			344		

e Estimated

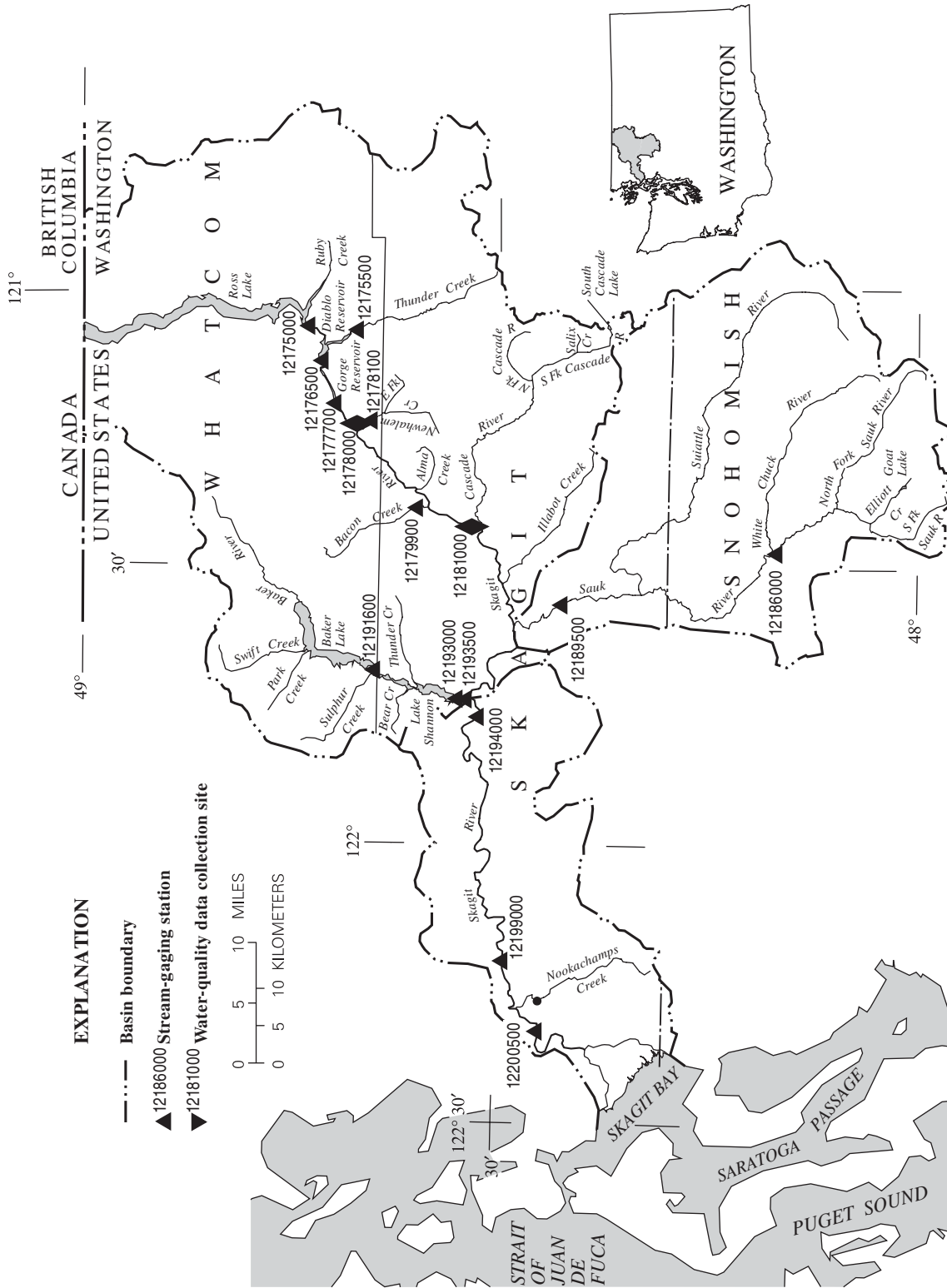


Figure 31. Location of surface-water and water-quality stations in the Skagit River Basin.

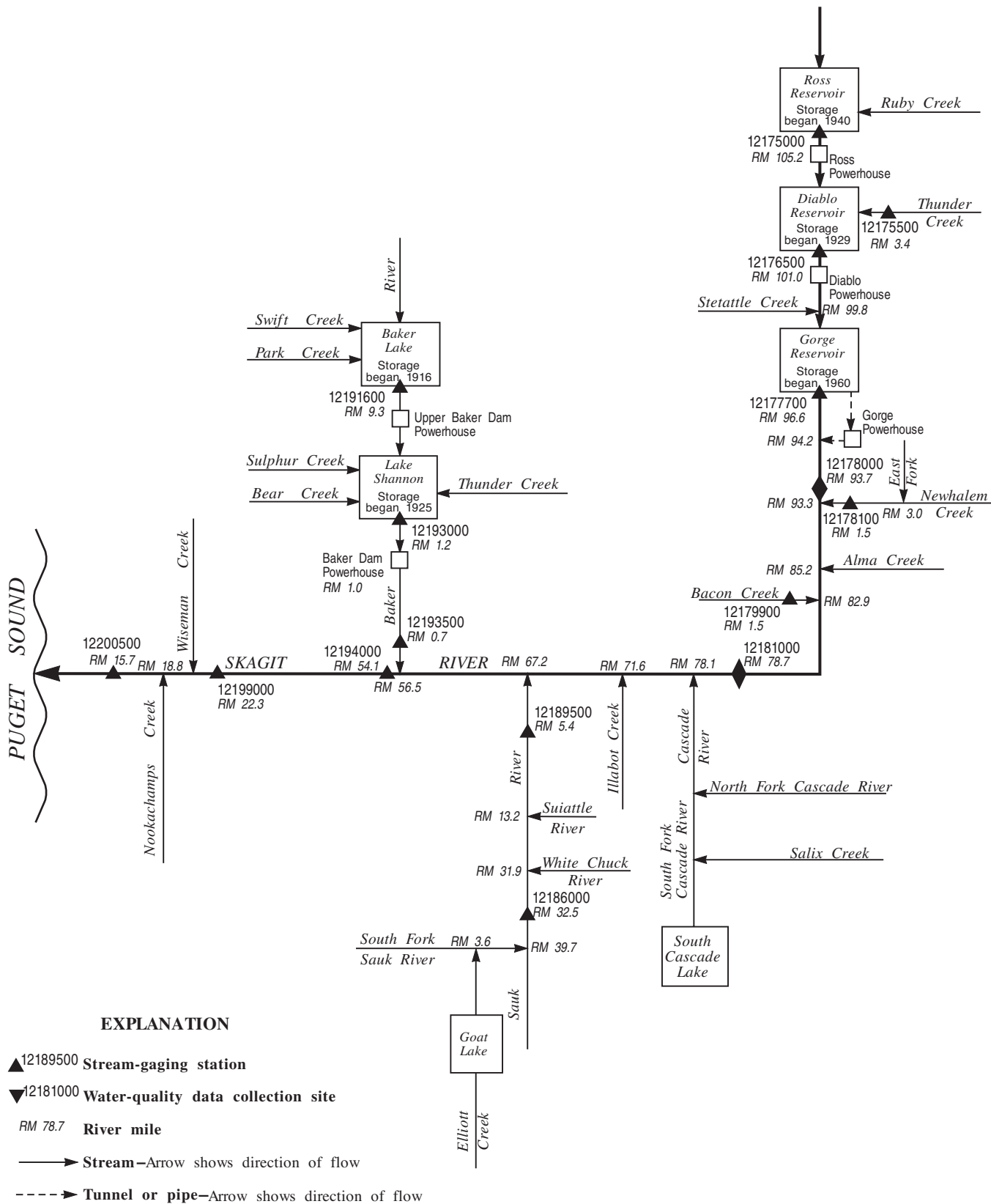


Figure 32. Schematic diagram showing surface-water and water-quality stations in the Skagit River Basin.

SKAGIT RIVER BASIN

12175000 ROSS RESERVOIR NEAR NEWHALEM, WA
(International gaging station)

LOCATION.--Lat 48°43'58", long 121°04'02", in SE $\frac{1}{4}$ sec.35, T.38 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Ross Dam on Skagit River, 1.0 mi downstream from Ruby Creek, 9.1 mi northeast of Newhalem, and at mile 105.2.

DRAINAGE AREA.--999 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--March 1940 to current year (monthend elevations and contents only prior to October 1946). Prior to October 1945, published as "Ruby Reservoir near Newhalem."

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is City of Seattle Ross Dam datum; 1.79 ft above NGVD of 1929, U.S. Coast and Geodetic Survey datum; and 0.88 ft above NGVD of 1929, Geodetic Survey of Canada 1959 datum (by water level transfer of elevation from the international boundary). Prior to Sept. 24, 1940, nonrecording gage on west shore at site upstream from Ross Dam at same datum. June 29, 1943, to Apr. 29, 1948, nonrecording gage on right bank at site 500 ft upstream from dam at present datum.

REMARKS.--Reservoir is formed by concrete-arch dam completed to elevation 1,615 ft in 1949, storage began Mar. 11, 1940. Starting about July 1, 1967, taintor gates were extended to elevation 1,602.50 ft. Usable storage, 1,052,300 acre-ft between elevations 1,475 ft, lower limit of operation, and 1,602.5 ft, top of taintor gates. An additional 95,000 acre-ft of storage may be obtained during major floods by surcharge of the reservoir to a maximum elevation of 1,610.5 ft. Dead storage below elevation 1,250 ft, 1,175 acre-ft. Water used by City of Seattle for power development. Figures given herein represent total contents. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Capacity table furnished by City of Seattle. This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,443,460 acre-ft July 20, 1981, elevation, 1,603.23 ft; minimum contents observed since dam was completed in 1949, 51,760 acre-ft Apr. 5, 1952, elevation, 1,348.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,433,917 acre-ft July. 31, elevation, 1,602.43 ft; minimum contents, 536,755 acre-ft Apr. 11, elevation, 1,504.61 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on 25-foot contour intervals furnished by city of Seattle in 1943)

1,490	454,480	1,550	888,320
1,500	509,240	1,575	1,130,200
1,525	678,950	1,603	1,440,700

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1577.81	1571.38	1578.88	1574.59	1563.18	1544.12	1510.49	1515.35	1543.93	1599.18	1602.25	1601.13
2	1577.50	1571.41	1578.74	1574.21	1562.15	1542.87	1509.67	1516.15	1546.24	1599.16	1602.24	1601.13
3	1577.22	1571.30	1578.36	1573.54	1560.98	1542.08	1508.79	1517.39	1548.93	1599.42	1602.17	1601.05
4	1576.95	1571.41	1578.07	1572.54	1559.88	1540.92	1507.95	1518.32	1551.47	1599.66	1602.24	1600.94
5	1576.66	1571.29	1577.73	1571.59	1558.73	1539.90	1507.10	1519.00	1554.25	1599.65	1602.11	1600.80
6	1576.45	1571.02	1577.56	1571.00	1557.69	1538.61	1506.73	1518.71	1557.07	1599.73	1602.04	1600.47
7	1576.17	1570.92	1577.24	1573.08	1556.87	1537.49	1506.45	1518.36	1558.89	1600.02	1602.03	1600.45
8	1575.78	1570.73	1577.13	1576.76	1556.21	1536.23	1505.98	1517.84	1559.91	1601.08	1602.01	1600.30
9	1575.44	1570.55	1576.78	1578.21	1555.30	1535.05	1505.36	1517.65	1560.87	1601.63	1601.96	1600.15
10	1575.08	1570.44	1576.43	1578.80	1554.26	1533.90	1504.93	1516.78	1562.04	1602.10	1602.00	1599.99
11	1574.86	1570.32	1575.98	1578.89	1553.45	1533.26	1504.67	1515.93	1563.58	1602.19	1602.02	1599.65
12	1574.57	1570.05	1575.43	1578.82	1552.62	1532.27	1505.42	1515.23	1565.59	1601.97	1602.03	1599.38
13	1574.33	1570.07	1575.28	1578.69	1551.64	1531.30	1507.38	1514.94	1568.20	1601.63	1601.98	1599.08
14	1574.16	1571.51	1575.39	1578.32	1550.88	1530.05	1511.29	1515.45	1571.43	1601.47	1601.96	1598.91
15	1573.85	1573.66	1575.13	1577.66	1549.89	1528.99	1513.82	1515.72	1574.70	1601.47	1601.91	1598.83
16	1573.67	1575.28	1575.52	1577.01	1549.03	1527.96	1515.37	1515.87	1577.59	1601.35	1601.83	1598.75
17	1573.44	1576.09	1576.17	1576.39	1548.12	1526.87	1516.65	1516.04	1579.86	1601.46	1601.67	1598.70
18	1573.18	1576.72	1576.37	1575.61	1547.17	1525.58	1517.06	1516.46	1581.82	1601.80	1601.63	1598.62
19	1573.03	1577.27	1576.51	1574.86	1546.20	1524.78	1517.32	1517.34	1583.00	1601.94	1601.72	1598.50
20	1572.86	1577.95	1576.52	1574.09	1545.31	1523.45	1517.19	1518.64	1583.91	1602.02	1601.50	1598.45
21	1572.69	1578.49	1576.50	1573.25	1545.05	1522.24	1517.34	1520.74	1585.11	1602.03	1601.43	1598.41
22	1572.58	1578.96	1576.42	1572.45	1547.08	1521.12	1517.21	1522.45	1586.65	1601.96	1601.29	1598.30
23	1572.48	1579.29	1576.29	1571.61	1547.65	1520.20	1517.44	1523.74	1588.32	1602.04	1601.24	1598.20
24	1572.28	1579.50	1576.15	1570.88	1547.75	1519.14	1517.41	1524.72	1589.75	1602.22	1601.24	1598.10
25	1572.08	1579.61	1576.19	1570.09	1547.29	1518.27	1517.05	1525.61	1591.03	1602.30	1601.44	1597.99
26	1571.77	1579.52	1575.72	1569.28	1546.56	1517.33	1516.53	1526.93	1592.74	1602.36	1601.49	1597.84
27	1571.81	1579.40	1575.50	1568.23	1545.62	1516.15	1515.81	1528.39	1594.63	1602.20	1601.42	1597.57
28	1571.73	1579.21	1575.31	1567.26	1544.83	1515.02	1515.39	1531.22	1596.38	1602.08	1601.37	1597.50
29	1571.47	1579.14	1575.18	1566.25	---	1513.45	1514.96	1534.98	1598.20	1601.94	1601.33	1597.39
30	1571.21	1578.95	1574.91	1565.27	---	1512.55	1515.12	1538.54	1599.08	1602.21	1601.33	1597.29
31	1571.34	---	1574.69	1564.29	---	1511.66	---	1541.53	---	1602.26	1601.18	---
MAX	1577.81	1579.61	1578.88	1578.89	1563.18	1544.12	1517.44	1541.53	1599.08	1602.36	1602.25	1601.13
MIN	1571.21	1570.05	1574.69	1564.29	1544.83	1511.66	1504.67	1514.94	1543.93	1599.16	1601.18	1597.29
(†)	1092468	1171670	1126976	1022042	842628	582218	606077	814028	1394628	1431894	1419124	1373935
(‡)	-70722	+79202	-44694	-104934	-179414	-260410	+23859	+207951	+580600	+37266	-12770	-45189

CAL YR 2001 MAX 1591.01 MIN 1527.56 AC-FT† +170540
WTR YR 2002 MAX 1602.36 MIN 1504.67 AC-FT† +210745

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

‡ Change in contents, in acre-feet.

SKAGIT RIVER BASIN

12175500 THUNDER CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°40'22", long 121°04'18", in SE 1/4 sec.23, T.37 N., R.13 E., (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi upstream from high-water line of Diablo Reservoir, 9.0 mi east of Newhalem, and at mile 3.4.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1930 to current year. Published as "above Colonial Creek, near Marblemount" 1930-31.

REVISED RECORDS.--WSP 1012: 1943. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-ft). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,220 ft above NGVD of 1929, from river-profile map.

REMARKS.--Records good except for discharges above 1,300 ft³/s, which are fair. No regulation or diversion upstream from station. Large diurnal fluctuations caused by snowmelt during summer months. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1931-2002), 618 ft³/s, 80.01 in/yr, 447,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s Dec. 26, 1980, gage height, 14.5 ft, from rating curve extended above 3,500 ft³/s; minimum discharge not determined, probably less than 50 ft³/s during period of ice effect or no gage-height record in February 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Records for floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	1715	3,270	7.68	May 29	0900	2,540	7.34
Jan. 08	0030	*5,760	*9.70	June 29	0945	4,140	8.85

Minimum discharge, 128 ft³/s Feb. 15-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	372	402	267	167	169	297	186	717	1450	1600	1010	1110
2	331	385	270	169	164	274	188	858	1470	1300	883	1070
3	288	348	244	166	161	261	186	758	1600	1180	758	1120
4	259	315	229	162	155	247	192	634	1630	1140	719	735
5	231	383	219	159	154	241	218	551	1910	1010	682	571
6	217	314	215	179	151	226	277	475	1900	1030	703	476
7	194	270	212	2540	150	212	322	418	1270	1370	660	442
8	191	245	219	3410	148	205	313	376	963	2080	706	386
9	181	229	216	1450	143	198	307	348	813	1640	836	415
10	197	218	202	908	143	190	336	329	932	1860	1040	504
11	251	217	193	684	142	235	373	335	1300	2400	1020	567
12	236	248	185	598	135	257	498	396	1720	2300	986	636
13	398	394	225	520	134	240	894	579	2090	2200	1140	626
14	278	2300	316	444	131	227	1870	665	2520	2340	1320	617
15	228	2820	275	389	128	214	1220	601	2540	1940	1310	607
16	223	1660	504	349	128	206	898	585	2340	1830	1110	770
17	236	940	881	319	128	192	745	704	1850	1900	870	725
18	195	661	554	293	128	184	623	769	1750	1850	781	495
19	274	673	420	274	135	181	534	755	1430	1780	763	573
20	252	858	352	265	138	174	499	1050	1370	1580	727	609
21	207	658	311	265	261	169	491	1240	1640	1490	739	437
22	293	536	278	245	1960	164	471	1050	1960	1600	822	411
23	381	459	249	230	1410	164	443	855	1980	1860	985	448
24	305	397	229	260	790	163	407	794	1830	1980	1190	436
25	264	361	220	325	557	167	381	834	1870	1990	1200	387
26	265	331	215	243	450	176	364	949	2370	1900	1090	350
27	454	308	202	211	381	178	356	1080	2650	1590	1060	331
28	330	292	190	195	332	178	355	1580	2540	1450	1200	318
29	270	292	184	180	---	176	387	2350	3530	1550	1210	369
30	266	274	178	179	---	175	510	2050	2250	1580	1130	313
31	525	---	172	175	---	178	---	1700	---	1270	1020	---
TOTAL	8592	17788	8626	15953	9006	6349	14844	26385	55468	52590	29670	16854
MEAN	277	593	278	515	322	205	495	851	1849	1696	957	562
MAX	525	2820	881	3410	1960	297	1870	2350	3530	2400	1320	1120
MIN	181	217	172	159	128	163	186	329	813	1010	660	313
AC-FT	17040	35280	17110	31640	17860	12590	29440	52330	110000	104300	58850	33430
CFSM	2.64	5.65	2.65	4.90	3.06	1.95	4.71	8.11	17.6	16.2	9.12	5.35
IN.	3.04	6.30	3.06	5.65	3.19	2.25	5.26	9.35	19.65	18.63	10.51	5.97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

	441	404	315	259	233	217	384	886	1319	1326	990	620
MEAN	441	404	315	259	233	217	384	886	1319	1326	990	620
MAX	917	1652	1023	842	683	663	1057	1601	2072	1935	1502	906
(WY)	1934	1996	1981	1984	1991	1972	1934	1993	1948	1975	1999	1997
MIN	200	110	95.2	78.4	57.3	91.1	172	432	837	784	704	367
(WY)	1978	1936	1931	1979	1936	1956	1975	1977	1981	1993	1993	1985

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1931 - 2002

ANNUAL TOTAL		192767		262125								
ANNUAL MEAN		528		718						618		
HIGHEST ANNUAL MEAN										863		1934
LOWEST ANNUAL MEAN										452		1944
HIGHEST DAILY MEAN			2820	Nov 15		3530	Jun 29		8950	Dec 26	1980	
LOWEST DAILY MEAN			79	Mar 4		128	Feb 15		50	Feb 7	1936	
ANNUAL SEVEN-DAY MINIMUM			80	Feb 28		130	Feb 12		52	Feb 15	1936	
ANNUAL RUNOFF (AC-FT)		382400		519900					447900			
ANNUAL RUNOFF (CFSM)		5.03		6.84					5.89			
ANNUAL RUNOFF (INCHES)		68.29		92.87					80.01			
10 PERCENT EXCEEDS		1170		1840					1360			
50 PERCENT EXCEEDS		352		411					421			
90 PERCENT EXCEEDS		107		177					135			

SKAGIT RIVER BASIN

12176500 DIABLO RESERVOIR NEAR NEHALEM, WA

LOCATION.--Lat 48°42'56", long 121°07'52", in SE ¼ sec.5, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Diablo Dam on Skagit River, 1.2 mi downstream from Thunder Creek, 6.0 mi northeast of Newhalem, and at mile 101.0.

DRAINAGE AREA.--1,125 mi², includes 400 mi² in Canada.

PERIOD OF RECORD.--October 1929 to current year. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem.

GAGE.--Water-stage recorder. Datum of gage is City of Seattle datum. Prior to Oct. 1, 1964, at datum 0.28 ft higher.

REMARKS.--Reservoir is formed by concrete-arch dam, completed in 1930; storage began in October 1929. Usable storage, 8,820 acre-ft between elevations 1,195 ft, normal lower limit of operation, and 1,205 ft, top of taintor gates. Dead storage, below elevation 1,040 ft, 12,900 acre-ft. Crest of spillway is at elevation 1,187 ft. Water used by City of Seattle for power development at Diablo and Gorge powerplants. Capacity table furnished by City of Seattle. Figures given herein represent total contents. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,600 acre-ft July 14, 1933, elevation, 1,206.5 ft; minimum contents not determined.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 88,820 acre-ft Mar. 18, July 12, elevation, 1,204.84 ft; minimum contents, 81,686 acre-ft Aug. 20, elevation, 1,196.71 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1203.46	87,752	--
Oct. 31.....	1202.86	87,036	-536
Nov. 30.....	1200.86	85,270	-1,766
Dec. 31.....	1202.41	86,636	+1,366
CAL YR 2001.....	--	--	+644
Jan. 31.....	1202.37	86,600	-36
Feb. 28.....	1203.24	87,374	+774
Mar. 31.....	1201.31	85,666	-1,708
Apr. 30.....	1202.25	86,494	+828
May 31.....	1199.61	84,177	-2,317
June 30.....	1203.85	87,923	+3,746
July 31.....	1202.96	87,125	-798
Aug. 31.....	1202.55	86,760	-365
Sept. 30.....	1201.62	85,939	-821
WTR YR 2002.....	--	--	-1,633

12177700 GORGE RESERVOIR NEAR NEWHALEM, WA

LOCATION.--Lat 48°41'53", long 121°12'25", in NW $\frac{1}{4}$ sec.14, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Gorge Dam on Skagit River, 2.4 mi upstream from Gorge powerplant at Newhalem, and at mile 96.6.

DRAINAGE AREA.--1,159 mi², includes 400 mi² in Canada.

PERIOD OF RECORD.--June 1960 to current year.

GAGE.--Water-stage recorder; prior to Apr. 1, 1962, reference point on Gorge Dam or water-stage indicator in powerhouse. Datum of gage is 0.00 ft City of Seattle Gorge High Dam datum, and 1.792 ft below NGVD of 1929 (Corps of Engineers' benchmark).

REMARKS.--Reservoir is formed by concrete-arch and gravity dam, completed Dec. 27, 1960; storage began June 27, 1960. Usable storage, 2,115 acre-ft between elevations 865 ft, normal lower limit of operation, and 875 ft, top of gates. Lowest outlet at elevation 760 ft. No dead storage. Crest of spillway is at elevation 825 ft. Water used by City of Seattle for power development at Gorge powerplant. Capacity table furnished by City of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 9,761 acre-ft June 1, 1982, elevation, 880.01 ft; minimum observed contents since normal low operating level was reached in December 1960, 172 acre-ft Aug. 13, 1997, elevation, 781.75 ft (City of Seattle).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,190 acre-ft Jan. 8, elevation, 877.83 ft; minimum recorded contents, 4,193 acre-ft Mar. 28, elevation, 849.36 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	869.68	7,281	--
Oct. 31.....	871.12	7,592	+311
Nov. 30.....	871.11	7,589	-3
Dec. 31.....	870.65	7,489	-100
CAL YR 2001.....	--	--	-226
Jan. 31.....	870.33	7,420	-69
Feb. 28.....	872.50	7,900	+480
Mar. 31.....	867.91	6,917	-983
Apr. 30.....	871.49	7,673	+756
May 31.....	870.49	7,454	-219
June 30.....	872.89	7,989	+535
July 31.....	874.18	8,290	+301
Aug. 31.....	873.09	8,035	-255
Sept. 30.....	871.70	7,720	-315
WTR YR 2002.....	--	--	+439

SKAGIT RIVER BASIN

12178000 SKAGIT RIVER AT NEWHALEM, WA

LOCATION.--Lat 48°40'19", long 121°14'48", in SW ¼ SE ¼ sec.21, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi upstream from Newhalem Creek, 0.5 mi downstream from City of Seattle powerplant at Newhalem, 10.8 mi upstream from Bacon Creek, and at mile 93.7.

DRAINAGE AREA.--1,175 mi², of which 400 mi² is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1908 to May 1914, October 1920 to current year. June 1914 to September 1920 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31.

REVISED RECORDS.--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401.5 ft above NGVD of 1929 (river-profile survey). Prior to May 24, 1914, nonrecording gages at site 0.5 mi upstream at datum 91 ft higher. Nov. 15, 1920, to June 4, 1923, nonrecording gage at site about 500 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Water is diverted 2.9 mi upstream from station and is returned to river at City of Seattle powerplant 0.5 mi upstream from station. Flow regulated by Gorge powerplant since August 1924 and by Ross Reservoir (station 12175000) since March 1940, Diablo Reservoir (station 12176500) since October 1929, and Gorge Reservoir (station 12177700) since June 1960, having a combined total capacity of 1,533,000 acre-ft. U.S. Geological Survey satellite telemeter at station. Chemical analyses October 1973 to September 1974.

AVERAGE DISCHARGE.--94 years (water years 1909-2002), 4,411 ft³/s, 3,196,000 acre-ft/yr, adjusted.
42 years (water years 1961-2002), 4,467 ft³/s, 3,236,000 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,500 ft³/s Nov. 29, 1909, gage height, 22.0 ft from floodmark, site and datum then in use; minimum discharge, 54 ft³/s Nov. 1, 1943, gage height, 78.15 ft; minimum daily discharge, 136 ft³/s Aug. 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1815 reached a stage of approximately 20.5 ft, discharge about 115,000 ft³/s. Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,700 ft³/s July 12, gage height, 87.53 ft; minimum discharge, 1,630 ft³/s Oct 1, gage height, 81.62 ft, result of regulation; minimum daily discharge, 1,760 ft³/s Oct. 7, Sept. 29-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2980	2840	3060	2700	7120	6940	5030	6440	3560	11200	4150	3300
2	2930	3030	3330	2630	7020	6910	4980	6600	3740	10400	4620	4100
3	2610	2380	3560	5760	6990	6940	4950	4450	4030	8300	3960	3580
4	2330	2030	3620	5900	7010	6940	4980	3840	4460	7310	3510	3300
5	2390	3290	3910	6260	6950	6900	4980	3920	4700	7310	3420	2960
6	1780	3260	3010	5930	6970	6960	4970	6320	4710	7380	3460	2570
7	1760	2150	3320	7050	6090	7160	4930	6600	5260	7320	3300	2000
8	3000	3080	2880	9460	5620	6870	5090	6450	4420	7290	3120	2680
9	2590	2220	3910	6020	5660	7090	5070	4800	4650	7200	3670	2990
10	2780	2480	3970	6090	5620	7020	5410	6900	4640	7110	3660	3150
11	2810	1870	3720	6270	5560	6970	4710	6920	6070	12600	3310	3180
12	2690	2780	4150	6290	5490	7010	3030	6780	6000	14400	3990	3190
13	2370	3080	4070	6310	5570	6980	3170	6810	6390	14300	4050	3140
14	1800	5510	3700	6190	5570	6970	4810	6860	6420	12900	4350	2870
15	2620	6050	3730	7100	5520	6510	4170	7000	6400	11700	3960	2710
16	1990	3780	3480	7040	5470	6460	3170	6600	6920	9880	3580	3090
17	2300	2220	4140	6990	5560	6400	3200	6650	6680	7880	3560	2900
18	2260	1900	3710	6940	5620	6450	3310	6440	6910	7110	3460	2490
19	2180	1880	3070	6960	5590	6510	4800	6060	6780	7440	3830	2060
20	2220	2980	2860	6920	5800	6490	5040	6580	7540	7370	3370	1820
21	2000	2800	2360	6940	5490	6450	5120	6510	7870	7380	3000	1830
22	2620	2510	2690	6920	7410	5680	5150	6260	7930	7390	2740	1830
23	3120	2500	2500	7120	6750	5480	4760	6140	7960	7210	2710	1870
24	3020	2300	2700	7160	5610	5520	4870	5820	7820	7290	2930	1880
25	2940	2030	2440	6970	6490	5550	5740	5410	7950	7170	3150	1870
26	3030	3280	3130	7130	6970	6060	6060	5610	8110	7380	3240	1880
27	2990	3280	3020	7140	6940	6650	5960	5430	8170	7300	3220	2790
28	2930	3440	2400	7000	6860	6190	5920	5510	8200	7250	3770	1770
29	3090	3480	2400	7020	---	5690	5840	5750	8770	6920	3630	1760
30	3050	3330	2350	7020	---	5520	5830	5640	9870	4510	3050	1760
31	3030	---	2450	7090	---	5040	---	4990	---	3530	2610	---
TOTAL	80210	87760	99640	202320	173320	200310	145050	186090	192930	259730	108380	77320
MEAN	2587	2925	3214	6526	6190	6462	4835	6003	6431	8378	3496	2577
MAX	3120	6050	4150	9460	7410	7160	6060	7000	9870	14400	4620	4100
MIN	1760	1870	2350	2630	5470	5040	3030	3840	3560	3530	2610	1760
AC-FT	159100	174100	197600	401300	343800	397300	287700	369100	382700	515200	215000	153400
MEAN†	1433	4228	2507	4818	2982	2182	5263	9341	16270	8976	3278	1800
CFSM†	1.22	3.60	2.13	4.10	2.54	1.86	4.48	7.94	13.85	7.64	2.79	1.53
IN. †	1.41	4.01	2.46	4.73	2.64	2.14	5.00	9.17	15.44	8.81	3.22	1.71
AC-FT†	88150	251500	154200	296300	165600	134200	313100	574500	967600	552000	201600	107100

CAL YR 2001 TOTAL 958750 MEAN 2627 MAX 6050 MIN 1600 AC-FT 1902000 MEAN† 2863 CFSM† 2.44 IN.† 33.08 AC-FT† 2073000
WTR YR 2002 TOTAL 1813060 MEAN 4967 MAX 14400 MIN 1760 AC-FT 3596000 MEAN† 5256 CFSM† 4.47 IN.† 60.73 AC-FT† 3806000

† Adjusted for change in contents in Ross, Diablo and Gorge Reservoirs.

SKAGIT RIVER BASIN

12178000 SKAGIT RIVER AT NEWHALEM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: January 1999 to current year.

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

REMARKS.--Records good except those from July 29 to September 5, which are fair, and those from September 6 to September 30, which are poor.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 11.9°C July 10, 2001; minimum, 2.2°C Feb. 21, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 10.9°C Aug. 27, 28; minimum recorded, 2.2°C Feb. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.7	10.5	10.6	9.0	8.8	8.9	7.3	7.1	7.2	5.4	5.3	5.4
2	10.7	10.4	10.5	8.9	8.8	8.9	7.3	7.1	7.2	5.5	5.4	5.4
3	10.7	10.4	10.5	9.0	8.8	8.9	7.1	7.0	7.0	5.7	5.5	5.6
4	10.6	10.4	10.5	8.9	8.8	8.9	7.1	6.9	7.0	5.7	5.5	5.6
5	10.5	10.3	10.4	8.8	8.7	8.8	7.1	6.9	7.0	5.8	5.6	5.7
6	10.4	10.3	10.4	8.8	8.6	8.7	7.1	6.9	7.0	5.8	5.5	5.7
7	10.4	10.3	10.4	8.8	8.7	8.8	7.0	6.8	6.9	5.6	4.7	5.2
8	10.4	10.3	10.4	8.8	8.6	8.7	7.0	6.8	6.9	5.2	4.5	4.8
9	10.5	10.3	10.4	8.8	8.5	8.7	7.0	6.8	6.9	5.3	5.2	5.2
10	10.3	10.1	10.2	8.8	8.6	8.7	6.9	6.7	6.8	5.4	5.2	5.3
11	10.2	10.1	10.1	8.8	8.6	8.7	6.9	6.8	6.8	5.4	5.2	5.3
12	10.2	10.0	10.1	8.9	8.8	8.8	6.8	6.8	6.8	5.4	5.1	5.3
13	10.0	9.9	10	9.0	8.7	8.9	6.8	6.5	6.7	5.2	4.9	5.0
14	10.1	9.9	9.9	8.7	7.7	8.3	6.6	6.3	6.5	5.0	5.0	5.0
15	10.0	9.8	9.9	8.1	7.7	7.8	6.3	6.2	6.3	5.1	4.9	5.0
16	10.1	9.9	10.0	8.1	7.9	7.9	6.3	6.0	6.1	5.0	4.9	5.0
17	10.0	9.8	9.9	8.0	7.9	7.9	6.1	5.7	5.9	5.0	4.9	5.0
18	9.9	9.7	9.8	7.9	7.6	7.8	6.0	5.7	5.8	5.0	4.8	4.9
19	9.8	9.6	9.7	7.7	7.5	7.6	6.0	5.9	6.0	5.0	4.8	4.9
20	9.8	9.7	9.8	7.6	7.5	7.5	6.0	5.9	6.0	4.9	4.8	4.9
21	9.8	9.7	9.8	7.6	7.5	7.6	6.0	5.9	6.0	5.0	4.8	4.9
22	9.7	9.5	9.6	7.6	7.5	7.6	6.0	5.9	5.9	4.9	4.7	4.8
23	9.5	9.3	9.4	7.6	7.4	7.6	5.9	5.7	5.8	4.8	4.6	4.7
24	9.3	9.1	9.2	7.4	7.3	7.4	5.7	5.5	5.6	4.7	4.5	4.6
25	9.4	9.2	9.3	7.4	7.3	7.3	5.5	5.3	5.4	4.7	4.4	4.5
26	9.4	9.3	9.4	7.5	7.4	7.4	5.4	5.3	5.3	4.6	4.5	4.5
27	9.3	9.1	9.2	7.5	7.4	7.5	5.4	5.3	5.3	4.6	4.4	4.5
28	9.1	8.8	8.9	7.4	7.3	7.4	5.5	5.4	5.5	4.5	4.2	4.3
29	9.2	8.8	9.0	7.4	7.2	7.3	5.5	5.4	5.5	4.4	4.2	4.3
30	9.3	9.1	9.2	7.3	7.1	7.2	5.5	5.3	5.4	4.4	4.2	4.3
31	9.2	9.0	9.2	---	---	---	5.4	5.3	5.4	4.4	4.2	4.3
MONTH	10.7	8.8	9.9	9.0	7.1	8.1	7.3	5.3	6.3	5.8	4.2	5.0

SKAGIT RIVER BASIN

12178100 NEWHALEM CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°39'22", long 121°14'14", in SE ¼ SE ¼ sec.28, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, North Cascades National Park, on left bank 1.2 mi south of Newhalem, 1.5 mi downstream from East Fork, and at mile 1.5.

DRAINAGE AREA.--27.9 mi².

PERIOD OF RECORD.--January 1961 to current year.

REVISED RECORDS.--WDR WA-84-1: 1983.

GAGE.--Water-stage recorder. Elevation of gage is 1,080 ft above NGVD of 1929, by barometer. Prior to October 1981, at datum 0.96 ft lower.

REMARKS.--Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1961-2002), 176 ft³/s, 85.54 in/yr, 127,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,430 ft³/s Dec. 26, 1980, gage height, 9.14 ft present datum, from floodmarks, from rating curve extended above 5,570 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 20 ft³/s Feb. 1, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1445	1,740	5.43	Apr. 14	0330	1,350	4.95
Nov. 15	1515	1,300	4.88	May 29	0915	867	4.20
Dec. 16	2345	781	4.04	June 05	2115	883	4.23
Jan. 07	2145	*2,580	*6.26	June 29	0530	1,090	4.58
Feb. 22	0715	1,370	4.97				

Minimum discharge, 33 ft³/s Oct. 5-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	275	103	73	55	110	94	290	406	362	164	94
2	38	268	106	93	53	98	91	311	448	305	149	102
3	36	213	95	101	54	91	86	250	477	291	127	110
4	35	181	90	96	52	88	93	205	470	282	124	81
5	33	209	85	92	51	91	126	182	608	262	136	68
6	34	156	84	180	53	80	192	158	576	294	166	61
7	33	126	79	1690	54	75	222	138	340	394	139	58
8	43	110	91	1270	53	70	175	124	259	566	138	56
9	42	99	94	544	50	66	161	115	238	395	148	55
10	68	94	85	335	52	64	201	109	323	473	162	54
11	91	97	80	253	53	127	219	114	452	552	154	55
12	96	122	77	248	50	146	358	153	588	516	148	55
13	142	262	132	220	48	111	590	230	697	476	161	55
14	120	1420	213	183	46	96	952	243	753	454	164	54
15	92	1030	140	157	46	87	440	206	723	367	161	54
16	92	518	395	137	49	80	301	195	606	371	137	101
17	100	302	455	120	49	72	242	250	452	381	113	97
18	82	219	230	108	53	68	211	253	514	364	103	65
19	195	276	171	101	67	66	197	263	383	335	98	77
20	142	378	141	96	71	61	191	388	378	290	94	75
21	112	292	123	89	312	60	186	383	489	297	89	58
22	226	234	111	83	1170	62	183	326	584	315	91	52
23	e350	203	101	78	610	71	172	269	540	336	99	50
24	e220	171	94	79	309	79	153	249	481	336	109	48
25	e185	150	88	76	216	87	141	279	521	322	110	46
26	e210	134	84	71	178	95	135	326	642	284	100	44
27	339	122	80	66	149	91	135	387	630	232	97	42
28	200	115	81	62	126	86	144	611	690	217	100	41
29	151	110	80	60	---	80	168	768	881	248	98	50
30	164	102	77	58	---	77	227	580	479	246	95	54
31	356	---	75	58	---	79	---	473	---	195	89	---
TOTAL	4067	7988	3940	6877	4129	2614	6786	8828	15628	10758	3863	1912
MEAN	131	266	127	222	147	84.3	226	285	521	347	125	63.7
MAX	356	1420	455	1690	1170	146	952	768	881	566	166	110
MIN	33	94	75	58	46	60	86	109	238	195	89	41
AC-FT	8070	15840	7810	13640	8190	5180	13460	17510	31000	21340	7660	3790
CFSM	4.70	9.54	4.56	7.95	5.29	3.02	8.11	10.2	18.7	12.4	4.47	2.28
IN.	5.42	10.65	5.25	9.17	5.51	3.49	9.05	11.77	20.84	14.34	5.15	2.55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

	125	186	164	135	124	109	150	280	364	265	123	88.3
MEAN	125	186	164	135	124	109	150	280	364	265	123	88.3
MAX	351	589	552	340	313	290	267	448	594	476	277	192
(WY)	1968	1996	1981	1984	1991	1972	1989	1972	1974	1972	1999	1978
MIN	28.2	43.4	44.7	29.2	39.9	48.7	68.7	145	211	110	53.6	32.2
(WY)	1988	1980	1979	1979	1969	1962	1975	1977	1992	1977	1998	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1961 - 2002	
ANNUAL TOTAL	51039		77390			
ANNUAL MEAN	140		212		176	
HIGHEST ANNUAL MEAN					244	
LOWEST ANNUAL MEAN					114	
HIGHEST DAILY MEAN	1420		Nov 14		5300	
LOWEST DAILY MEAN	33		Oct 5		20	
ANNUAL SEVEN-DAY MINIMUM	36		Oct 1		22	
ANNUAL RUNOFF (AC-FT)	101200		153500		127200	
ANNUAL RUNOFF (CFSM)	5.01		7.60		6.30	
ANNUAL RUNOFF (INCHES)	68.05		103.19		85.54	
10 PERCENT EXCEEDS	275		474		369	
50 PERCENT EXCEEDS	94		136		118	
90 PERCENT EXCEEDS	42		54		51	

e Estimated

SKAGIT RIVER BASIN

12179900 BACON CREEK BELOW OAKES CREEK NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'17", long 121°23'54", in SE 1/4 sec.17, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Mt. Baker Snoqualmie National Forest, on left bank 1.25 mile downstream from Oakes Creek, 5.5 miles northeast of Marblemount, and at mile 1.5.

DRAINAGE AREA.--49.7 mi².

PERIOD OF RECORD.--August 1943 to September 1950, October 1998 to current year. Published as Bacon Creek near Marblemount (station 12180000) 1942-1950.

GAGE.--Water-stage recorder. Elevation of gage is 410 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except those above 500 ft³/s, which are fair. No regulation or diversion upstream from station. Summer flows augmented by glacial melt. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water years 1944-50, 1999-2002), 427 ft³/s, 116.69 in/yr, 309,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,100 ft³/s Nov. 26, 1949, gage height, 7.13 ft at site and datum then in use, on basis of outside high-water mark on pier and by a slope-area determination; minimum discharge, 74 ft³/s Oct. 18, 1945 at site then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2200	4,820	9.06	Feb. 22	0630	3,530	8.15
Nov. 15	1415	3,920	8.44	Apr. 14	0315	3,370	8.02
Nov. 20	0545	1,740	6.44	May 29	0530	1,880	6.60
Dec. 17	0015	1,660	6.33	Jun. 14	2215	1,720	6.42
Jan. 07	2030	*7,850	*10.74	Jun. 29	0315	3,300	7.96

Minimum discharge, 90 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	666	363	178	186	312	314	803	931	815	330	201
2	108	623	437	260	179	281	295	821	965	648	300	260
3	105	499	351	315	180	261	273	640	996	598	266	275
4	100	507	308	296	178	245	282	505	977	584	264	211
5	96	604	274	272	175	241	342	450	1240	533	330	175
6	94	423	263	559	204	223	495	387	1120	594	370	153
7	92	348	248	4590	235	208	578	336	738	735	307	140
8	100	302	276	3290	228	197	446	303	568	1010	288	131
9	110	271	290	1410	210	188	422	281	537	751	286	133
10	138	255	255	919	207	187	651	271	757	877	297	130
11	189	267	233	692	207	392	650	291	973	996	294	135
12	234	353	226	680	195	476	1000	407	1200	971	289	136
13	301	634	421	594	185	366	1500	626	1410	908	303	138
14	290	3000	635	491	177	317	2300	623	1520	810	309	137
15	244	2800	433	421	172	284	1160	497	1420	690	308	138
16	255	1470	1000	373	174	259	818	471	1220	697	288	254
17	285	857	1080	334	173	235	651	677	968	705	252	258
18	243	603	630	304	183	220	552	649	1250	671	227	186
19	374	764	477	286	220	211	510	645	910	622	214	196
20	317	1300	389	276	235	196	495	910	867	550	203	195
21	268	968	333	260	931	187	484	839	1050	554	192	159
22	436	727	292	243	2770	186	497	739	1200	581	194	139
23	711	646	262	232	1520	196	460	645	1090	616	205	128
24	543	517	239	265	914	209	401	619	973	624	225	124
25	486	435	222	312	638	229	370	697	1030	607	235	119
26	514	379	206	266	502	251	355	760	1220	552	224	115
27	781	342	196	243	416	260	355	898	1190	459	215	111
28	496	318	197	226	356	263	386	1360	1460	420	219	106
29	387	316	193	211	---	254	448	1670	2260	507	220	118
30	447	296	186	202	---	257	632	1330	1130	472	214	142
31	893	---	181	194	---	265	---	1100	---	393	204	---
TOTAL	9748	21490	11096	19194	11950	7856	18122	21250	33170	20550	8072	4843
MEAN	314	716	358	619	427	253	604	685	1106	663	260	161
MAX	893	3000	1080	4590	2770	476	2300	1670	2260	1010	370	275
MIN	92	255	181	178	172	186	273	271	537	393	192	106
AC-FT	19340	42630	22010	38070	23700	15580	35940	42150	65790	40760	16010	9610
CFSM	6.33	14.4	7.20	12.5	8.59	5.10	12.2	13.8	22.2	13.3	5.24	3.25
IN.	7.30	16.09	8.31	14.37	8.94	5.88	13.56	15.91	24.83	15.38	6.04	3.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	338	431	364	320	287	283	398	712	824	579	323	241
MEAN	338	431	364	320	287	283	398	712	824	579	323	241
MAX	574	954	511	619	432	445	604	1030	1267	917	644	350
(WY)	1948	1950	1950	2002	1947	1950	2002	1949	1950	1950	1999	1948
MIN	181	166	172	113	160	177	260	527	518	233	150	146
(WY)	1999	2001	1949	1949	2001	1948	1945	1944	2001	1944	1944	1943

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1943 - 2002

ANNUAL TOTAL		128163		187341								
ANNUAL MEAN		351		513						427		
HIGHEST ANNUAL MEAN										578		1950
LOWEST ANNUAL MEAN										290		1944
HIGHEST DAILY MEAN			3000	Nov 14		4590	Jan 7		6200		Nov 27	1949
LOWEST DAILY MEAN			92	Oct 7		92	Oct 7		74		Oct 18	1945
ANNUAL SEVEN-DAY MINIMUM			99	Oct 2		99	Oct 2		80		Oct 12	1945
ANNUAL RUNOFF (AC-FT)		254200		371600						309200		
ANNUAL RUNOFF (CFSM)		7.07		10.3						8.59		
ANNUAL RUNOFF (INCHES)		95.93		140.22						116.69		
10 PERCENT EXCEEDS		613		1000						823		
50 PERCENT EXCEEDS		267		334						318		
90 PERCENT EXCEEDS		135		178						142		

SKAGIT RIVER BASIN

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°32'02", long 121°25'43", in NE ¼ SW ¼ sec.7, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on right bank 0.5 mi north of Marblemount, 0.6 mi upstream from Cascade River, and at mile 78.7.

DRAINAGE AREA.--1,381 mi², of which 400 mi² is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1943 to July 1944, October 1946 to September 1951, May 1976 to current year.

REVISED RECORDS.--WDR WA-76-1: Drainage area. WDR WA-90-1: 1983, 1976-87 (M).

GAGE.--Water-stage recorder. Datum of gage is 305.1 ft above NGVD of 1929 (river-profile survey).

REMARKS.--Records good. All diversions returned to river upstream from gage. Flow regulated by Ross Reservoir (station 12175000), Diablo Reservoir (station 12176500), and Gorge Reservoir (station 12177700) since 1960. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--31 years (water years 1947-51, 1977-2002), 6,068 ft³/s, 4,396,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,300 ft³/s Nov. 29, 1995, gage height, 13.73 ft, from rating curve extended above 30,000 ft³/s; minimum discharge, 620 ft³/s Mar. 6, 1944, gage height, 0.55 ft; minimum daily discharge, 1,190 ft³/s Feb. 25, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,000 ft³/s Jan. 7, gage height, 9.55 ft; minimum discharge, 1,650 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3060	5560	4190	3070	7710	8620	6620	9440	7270	14400	5630	4200
2	3210	5380	4530	3150	7570	8470	6480	9800	7530	13300	6180	5270
3	2890	4510	4640	6240	7560	8390	6360	7420	8050	11100	5390	5050
4	2560	3860	4520	6730	7570	8340	6410	6060	8360	9930	4830	4380
5	2530	5460	4760	6840	7500	8280	6650	5890	9620	9720	4890	3860
6	1840	4860	3960	7480	7590	8230	7140	7880	9400	9940	5050	3450
7	1760	e3740	4050	21400	6980	8480	7490	8180	8390	10400	4760	2610
8	3100	4110	3820	22800	6250	7990	7120	8260	6990	11600	4480	3230
9	2930	3370	4800	11600	6280	8260	7010	6020	6970	10500	4940	3690
10	3150	3330	4810	9390	6240	8180	7950	8290	7670	10400	5170	3910
11	3520	2870	4650	8660	6240	8810	7600	8380	9640	15900	4750	3970
12	3600	3760	4820	8960	6050	9250	6960	8580	10800	17700	5310	4010
13	3480	5160	5610	8630	6110	8770	8810	9340	11700	17600	5570	3990
14	2780	16000	e5250	7840	6060	8650	13800	9470	12200	16000	5890	3670
15	3380	16500	e5250	8630	6040	8040	9060	9180	11900	14700	5600	3470
16	2770	9400	e5100	8340	5960	7920	6690	8710	11700	13000	4990	4240
17	3180	5360	e6250	8190	6020	7660	6060	9260	10400	11100	4840	4200
18	3080	4070	6160	8040	6150	7760	5720	9160	11500	10000	4620	3420
19	3640	4220	5050	7990	6270	7750	6960	8650	10300	10200	4970	2890
20	3440	7030	4330	7940	6530	7680	7290	10100	10700	9850	4530	2670
21	2860	6060	3530	7880	8430	7600	7280	9990	11800	9870	4050	2480
22	4350	4980	3670	7780	18700	6920	7330	9280	12400	10000	3780	2390
23	6070	4670	3340	7970	13700	6670	6830	8830	12100	9940	3710	2390
24	5240	4010	3420	e8000	9700	6750	6720	8330	11600	10000	4030	2400
25	4940	3400	3100	e7800	9310	6820	7370	8160	11800	9830	4350	2370
26	4920	4410	3640	8030	9390	7400	7780	8710	12700	9850	4370	2360
27	6460	4500	3630	7970	9020	7960	7660	8800	12700	9400	4320	3340
28	4940	4440	2930	7780	8700	7720	7620	10600	13300	9220	4870	2270
29	4590	4460	2880	7720	---	6990	7800	12100	16600	9330	4910	2250
30	4710	4290	2750	7670	---	6970	8260	10800	13900	6830	4130	2330
31	6470	---	2830	7710	---	6420	---	9460	---	5430	3650	---
TOTAL	115450	163770	132270	268230	219630	243750	222830	273130	319990	347040	148560	100760
MEAN	3724	5459	4267	8653	7844	7863	7428	8811	10670	11190	4792	3359
MAX	6470	16500	6250	22800	18700	9250	13800	12100	16600	17700	6180	5270
MIN	1760	2870	2750	3070	5960	6420	5720	5890	6970	5430	3650	2250
AC-FT	229000	324800	262400	532000	435600	483500	442000	541800	634700	688400	294700	199900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

MEAN	4199	6588	6216	6618	6773	5908	5642	6518	7518	7768	4937	3885
MAX	7258	22270	12120	8719	13830	9415	9534	10690	13590	14730	9214	5240
(WY)	1948	1991	1996	1980	1991	1997	1951	1997	1997	1950	1999	1978
MIN	2071	1864	2609	2450	2115	2222	3035	3680	3492	2891	2884	2144
(WY)	1978	1944	1944	1944	1944	1948	2001	1977	2001	1977	1977	1977

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1943 - 2002	
ANNUAL TOTAL	1382470		2553490			
ANNUAL MEAN	3788		6996		6068	
HIGHEST ANNUAL MEAN					9617	
LOWEST ANNUAL MEAN					3710	
HIGHEST DAILY MEAN	16500		22800		50000	
LOWEST DAILY MEAN	1760		1760		1190	
ANNUAL SEVEN-DAY MINIMUM	2250		2390		1520	
ANNUAL RUNOFF (AC-FT)	2742000		5065000		4396000	
10 PERCENT EXCEEDS	4940		10800		9220	
50 PERCENT EXCEEDS	3490		6820		5460	
90 PERCENT EXCEEDS	2750		3250		3210	

e Estimated

SKAGIT RIVER BASIN

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1986 to current year.

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

REMARKS.--Records excellent.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 15.0°C (rounded) Aug. 13, 1998; minimum, 0.5°C (rounded) Dec. 27, 1996.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 13.1°C Aug. 23, 24, 27; minimum, 2.3°C Feb. 21, 22.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.8	10.0	10.9	8.2	7.6	7.9	6.8	6.4	6.6	5.8	5.1	5.4
2	11.7	10.0	10.8	8.5	7.8	8.1	6.9	6.4	6.6	5.8	5.4	5.6
3	11.6	9.8	10.7	8.5	7.6	8.1	6.8	6.5	6.6	5.9	5.4	5.6
4	11.5	9.7	10.5	8.2	7.7	7.9	6.6	6.1	6.4	5.9	5.6	5.7
5	11.3	9.3	10.3	8.2	7.5	7.8	6.8	6.3	6.5	5.9	5.6	5.8
6	10.9	9.3	10.0	8.2	7.2	7.7	6.7	5.7	6.2	5.8	4.7	5.7
7	10.3	9.6	10	8.0	7.2	7.6	6.9	6.3	6.5	4.7	4.0	4.2
8	11.0	10.1	10.5	8.3	7.1	7.7	6.6	6.4	6.5	---	---	---
9	10.9	10.0	10.4	8.4	7.2	7.8	6.8	6.2	6.5	5.6	5.2	5.4
10	10.2	9.5	9.8	8.5	7.4	8.0	6.7	6.2	6.5	5.6	5.3	5.4
11	10.4	9.4	9.8	8.6	7.9	8.3	6.9	6.4	6.6	5.7	5.4	5.6
12	9.9	9.2	9.6	8.8	8.4	8.6	6.5	6.2	6.3	5.7	5.3	5.5
13	10.0	9.1	9.5	8.7	7.6	8.4	6.4	5.8	6.1	5.4	5.2	5.3
14	10.1	9.0	9.5	7.6	6.9	7.2	---	---	---	5.3	4.9	5.1
15	10.3	8.7	9.5	7.7	7.3	7.5	6.0	5.7	5.8	5.2	4.8	5.0
16	9.7	9.3	9.5	7.8	7.4	7.6	5.8	4.6	5.1	5.2	5.0	5.0
17	9.6	8.9	9.3	7.6	6.9	7.4	5.7	4.7	5.2	5.2	5.0	5.0
18	9.5	8.9	9.2	7.2	6.6	6.9	5.5	5.2	5.4	5.1	4.8	5.0
19	9.1	8.6	8.9	7.4	6.9	7.2	5.9	5.3	5.6	5.1	4.8	4.9
20	9.5	8.6	9.1	7.3	7.0	7.2	6.0	5.6	5.8	5.0	4.5	4.8
21	9.1	8.7	8.9	7.3	7.0	7.2	6.1	5.7	5.9	5.2	4.7	4.9
22	8.8	8.2	8.6	7.4	7.1	7.2	5.9	5.4	5.7	4.9	4.4	4.7
23	8.2	7.6	7.9	7.4	6.9	7.1	5.7	5.3	5.5	4.8	4.3	4.6
24	8.2	7.7	7.9	7.0	6.4	6.7	5.5	5.1	5.3	4.6	4.3	4.4
25	8.6	7.9	8.2	7.0	6.6	6.8	5.4	5.0	5.1	---	---	---
26	8.7	8.0	8.4	7.4	6.7	7.0	5.3	4.8	5.0	4.9	4.5	4.7
27	8.2	7.2	7.7	7.2	7.0	7.1	5.6	5.0	5.3	4.8	4.4	4.6
28	8.1	7.4	7.8	7.0	6.4	6.7	6.1	5.3	5.7	4.4	4.1	4.2
29	8.6	7.3	8.0	6.8	6.2	6.6	5.8	5.2	5.5	4.4	4.1	4.2
30	8.8	8.1	8.5	6.9	6.3	6.7	5.5	5.1	5.3	4.4	4.1	4.3
31	8.4	7.2	7.7	---	---	---	5.8	5.1	5.4	4.4	4.2	4.3
MONTH	11.8	7.2	9.3	8.8	6.2	7.5	6.9	4.6	5.9	5.9	4.0	5.0

SKAGIT RIVER BASIN

12186000 SAUK RIVER ABOVE WHITE CHUCK RIVER, NEAR DARRINGTON, WA

LOCATION.--Lat 48°10'08", long 121°28'10", on north line NE ¼ NE ¼ sec.23, T.31 N., R.10 E., Snohomish County, Hydrologic Unit 17110006, Mount Baker National Forest, on right bank 0.6 mi upstream from White Chuck River, 8.4 mi southeast of Darrington, and at mile 32.5.

DRAINAGE AREA.--152 mi².

PERIOD OF RECORD.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to current year. Monthly discharge only for April and May 1921, published in WSP 1316.

REVISED RECORDS.--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

GAGE.--Water-stage recorder. Elevation of gage is 930 ft above NGVD of 1929, from river-profile map. Prior to Nov. 18, 1910, nonrecording gage 0.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--78 years (water years 1918-20, 1922, 1929-2002), 1,128 ft³/s, 100.81 in/yr, 817,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,100 ft³/s Dec. 26, 1980, gage height, 16.03 ft, from rating curve extended above 15,000 ft³/s; minimum discharge, 94 ft³/s Oct. 27-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2245	9,610	8.07	Apr. 14	0715	8,390	7.61
Dec. 17	0130	6,840	7.03	May 29	1145	5,220	6.34
Jan. 07	2315	*13,500	*9.34	June 29	0730	6,350	6.83
Feb. 22	1345	9,250	7.94				

Minimum discharge, 127 ft³/s Oct. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	1950	922	449	485	865	593	1640	2810	2350	761	374
2	159	1620	1130	543	454	769	592	1930	2800	2020	696	375
3	151	1280	832	586	467	698	559	1790	2950	1880	609	559
4	144	1050	717	575	457	656	574	1480	3020	1840	583	392
5	136	1100	638	538	438	650	681	1360	3350	1730	592	320
6	132	899	645	807	472	594	901	1200	3520	1700	667	280
7	128	765	630	9420	569	556	1100	1070	2640	2040	592	256
8	148	672	628	9600	540	528	948	963	2130	2860	553	245
9	177	605	682	4500	484	495	882	912	1800	2190	577	242
10	199	556	585	2630	477	493	1140	859	2000	2390	642	241
11	612	528	528	1890	508	1050	1370	860	2580	2790	645	252
12	526	546	514	1820	444	1190	2470	973	3380	2650	605	256
13	971	765	1500	1570	413	972	3780	1450	4220	2450	611	265
14	875	7260	2090	1280	386	824	6750	1600	4780	2370	633	259
15	672	6370	1220	1090	371	721	3640	1460	4690	1970	613	260
16	512	3620	3440	958	375	648	2380	1370	4180	1830	556	311
17	510	2210	4510	852	380	583	1840	1640	3270	1830	514	426
18	432	1580	2140	773	399	543	1490	1810	3220	1740	464	307
19	817	1570	1450	738	526	531	1330	1790	2710	1650	434	261
20	808	2300	1140	756	584	508	1220	2410	2490	1460	425	283
21	599	2230	952	714	1950	468	1150	2480	2910	1420	403	244
22	1180	1900	824	660	7810	471	1090	2200	3450	1470	389	219
23	2110	1770	723	615	5120	493	1070	1940	3460	1510	404	207
24	1320	1400	652	1090	2710	513	957	1810	3030	1540	440	200
25	1190	1160	597	1460	1790	528	901	1900	3020	1510	457	194
26	1100	1040	553	954	1370	559	879	2150	3570	1390	438	191
27	1310	929	520	732	1150	590	852	2430	3720	1150	412	194
28	987	849	538	625	991	620	863	3600	3500	1010	421	182
29	780	832	516	556	---	591	940	4830	5420	1000	431	190
30	804	757	484	519	---	555	1160	3950	3200	994	418	259
31	2480	---	462	527	---	551	---	3300	---	891	389	---
TOTAL	22136	50113	32762	49827	32120	19813	44102	59157	97820	55625	16374	8244
MEAN	714	1670	1057	1607	1147	639	1470	1908	3261	1794	528	275
MAX	2480	7260	4510	9600	7810	1190	6750	4830	5420	2860	761	559
MIN	128	528	462	449	371	468	559	859	1800	891	389	182
AC-FT	43910	99400	64980	98830	63710	39300	87480	117300	194000	110300	32480	16350
CFSM	4.70	11.0	6.95	10.6	7.55	4.20	9.67	12.6	21.5	11.8	3.47	1.81
IN.	5.42	12.26	8.02	12.19	7.86	4.85	10.79	14.48	23.94	13.61	4.01	2.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 2002, BY WATER YEAR (WY)

	MEAN	805	1205	1235	1014	903	771	1080	1882	2186	1409	598	482
MAX	2174	4117	3512	2584	2369	2442	1991	2965	3648	2875	1393	1504	
(WY)	1968	1991	1918	1953	1951	1972	1934	1949	1974	1954	1954	1920	
MIN	119	137	347	224	167	293	458	1119	895	396	215	177	
(WY)	1988	1937	1986	1979	1929	1955	1975	1977	1941	1941	1941	1942	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1918 - 2002

ANNUAL TOTAL		293022		488093								
ANNUAL MEAN		803		1337						1128		
HIGHEST ANNUAL MEAN										1557		1950
LOWEST ANNUAL MEAN										631		2001
HIGHEST DAILY MEAN			7260	Nov 14		9600	Jan 8		27000		Dec 26	1980
LOWEST DAILY MEAN			128	Oct 7		128	Oct 7		94		Oct 28	1987
ANNUAL SEVEN-DAY MINIMUM			143	Oct 2		143	Oct 2		96		Oct 24	1987
ANNUAL RUNOFF (AC-FT)		581200		968100					817000			
ANNUAL RUNOFF (CFSM)		5.28		8.80					7.42			
ANNUAL RUNOFF (INCHES)		71.71		119.45					100.81			
10 PERCENT EXCEEDS		1550		2980					2340			
50 PERCENT EXCEEDS		592		852					812			
90 PERCENT EXCEEDS		219		373					295			

SKAGIT RIVER BASIN

12189500 SAUK RIVER NEAR SAUK, WA

LOCATION.--Lat 48°25'29", long 121°34'02", in NW ¼ NW ¼ sec.19, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on left bank, 4.4 mi southeast of Rockport, 7.6 mi southeast of Sauk, 7.8 mi downstream from Suiattle River, and at mile 5.4.

DRAINAGE AREA.--714 mi².

PERIOD OF RECORD.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to current year. Published as "near Suiattle Crossing, near Sauk" 1910-12.

REVISED RECORDS.--WSP 1286: 1929, 1937, 1939.

GAGE.--Water-stage recorder. Datum of gage is 266 ft above NGVD of 1929 (from river-profile survey). Prior to Aug. 4, 1912, nonrecording gages at several sites 1.0 mi downstream to 5.0 mi upstream from present site at various datums. July 24, 1928, to Sept. 16, 1929, nonrecording gage at present site and datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Records good. No regulation. Small diversion for millpond at Darrington and for domestic use.

AVERAGE DISCHARGE.--74 years (water years 1929-2002), 4,352 ft³/s, 82.81 in/yr, 3,153,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,600 ft³/s Dec. 26, 1980, gage height, 18.24 ft, from rating extended above 50,000 ft³/s; minimum discharge, 572 ft³/s Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1900	34,400	11.48	Apr. 14	0900	25,400	10.11
Dec. 17	0300	26,500	10.28	May 29	1215	16,200	8.42
Jan. 08	0300	*48,400	*13.32	June 29	1000	21,100	9.37
Feb. 22	1500	38,600	12.07				

Minimum discharge, 775 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	988	6820	3690	2200	2320	3560	2790	5150	9260	8810	3530	2060
2	962	5330	4750	2720	2210	3230	2780	6050	e9200	7550	3220	2010
3	904	4380	3560	2900	2230	2980	2610	5550	e9950	7020	2860	2460
4	882	3640	3140	2740	2270	2820	2610	4650	e10000	6870	2720	1970
5	839	3940	2860	2540	2170	2790	2940	4350	10700	6210	2670	1660
6	820	3310	2830	3040	2340	2600	3710	3950	11800	6070	2810	1500
7	794	2860	2950	29500	2780	2470	4380	3530	8820	7310	2640	1440
8	795	2570	2860	36600	2660	2370	3660	3240	7240	10700	2520	1380
9	908	2380	3310	16700	2470	2250	3410	3110	6170	8700	2610	1330
10	916	2230	2830	9730	2360	2230	4390	2950	6580	8850	2900	1350
11	2050	2160	2570	7120	2510	4470	4970	2940	8260	10700	3020	1420
12	1870	2200	2440	6900	2280	5210	8370	3280	10700	10400	2810	1430
13	3270	2880	5900	6340	2150	4050	11100	4590	13300	9820	2830	1470
14	2930	22500	9320	5100	2020	3500	20400	5170	e15000	9730	2990	1430
15	2480	22200	5300	4370	1940	3110	11300	4700	e14900	8180	3040	1450
16	1930	12900	12300	3900	1950	2840	7800	4360	e13500	7330	2780	1480
17	2040	7900	17900	3520	1950	2600	6310	5160	e10900	7490	2550	1830
18	1770	5730	8340	3240	2020	2460	5210	5690	e10800	7170	2320	1470
19	2850	5250	5920	3110	2420	2450	4630	5510	9240	6920	2200	1330
20	3140	7700	4710	3130	2760	2440	4290	7430	8300	6070	2130	1520
21	2300	7740	4000	3140	8130	2290	4060	7970	9630	5760	2040	1330
22	3980	6550	3530	2880	33100	2300	3860	7160	11500	6040	2050	1220
23	7120	6620	3160	2730	20500	2390	3780	6450	11800	6280	2110	1200
24	4900	5220	2890	4050	10800	2480	3420	5890	10500	6440	2260	1180
25	4410	4350	2710	6460	7210	2550	3230	6150	10300	6230	2350	1150
26	4110	3830	2560	4270	5570	2670	3140	7030	12200	5970	2210	1120
27	5180	3470	2440	3340	4620	2740	3040	7730	13400	5140	2150	1120
28	3970	3240	2490	2890	4030	2780	3050	11100	12200	4500	2220	1060
29	3120	3370	2470	2620	---	2690	3260	15100	18200	4750	2250	1070
30	2910	3190	2320	2480	---	2560	3850	12700	11700	4590	2200	1250
31	7510	---	2250	2460	---	2550	---	10900	---	4170	2080	---
TOTAL	82648	176460	138300	192720	139770	88430	152350	189540	326050	221770	79070	43690
MEAN	2666	5882	4461	6217	4992	2853	5078	6114	10870	7154	2551	1456
MAX	7510	22500	17900	36600	33100	5210	20400	15100	18200	10700	3530	2460
MIN	794	2160	2250	2200	1940	2230	2610	2940	6170	4170	2040	1060
AC-FT	163900	350000	274300	382300	277200	175400	302200	376000	646700	439900	156800	86660
CFSM	3.73	8.24	6.25	8.71	6.99	4.00	7.11	8.56	15.2	10.0	3.57	2.04
IN.	4.31	9.19	7.21	10.04	7.28	4.61	7.94	9.88	16.99	11.55	4.12	2.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	MEAN	2857	4456	4665	4147	3801	3252	3997	6503	7925	5691	2825	2087
MAX	6770	14690	11580	8615	9062	9443	7375	10570	13520	10610	5529	4941	
(WY)	1968	1996	1934	1974	1951	1972	1934	1949	1974	1972	1974	1959	
MIN	751	724	1457	1199	793	1523	2039	4061	3715	2515	1625	1089	
(WY)	1988	1930	1953	1979	1929	1955	1975	1977	1941	1941	1994	1942	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1929 - 2002
ANNUAL TOTAL	1190378	1830798	
ANNUAL MEAN	3261	5016	4352
HIGHEST ANNUAL MEAN			6048
LOWEST ANNUAL MEAN			2662
HIGHEST DAILY MEAN	22500	Nov 14	69900
LOWEST DAILY MEAN	794	Oct 7	578
ANNUAL SEVEN-DAY MINIMUM	849	Oct 3	604
ANNUAL RUNOFF (AC-FT)	2361000	3631000	3153000
ANNUAL RUNOFF (CFSM)	4.57	7.03	6.10
ANNUAL RUNOFF (INCHES)	62.02	95.39	82.81
10 PERCENT EXCEEDS	5940	10600	8340
50 PERCENT EXCEEDS	2480	3240	3340
90 PERCENT EXCEEDS	1230	1810	1530

e Estimated

SKAGIT RIVER BASIN

12191600 BAKER LAKE AT UPPER BAKER DAM NEAR CONCRETE, WA

LOCATION.--Lat 48°38'58", long 121°41'22", in SW $\frac{1}{4}$ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi upstream from Sulphur Creek, 8.0 mi north of Concrete, and at mile 9.3.

DRAINAGE AREA.--215 mi².

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

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929.

REMARKS.--Reservoir is formed by concrete gravity dam, completed in June 1959; storage began July 9, 1959. Usable storage, 220,630 acre-ft between elevations 655 ft, minimum operating pool, and 724 ft, normal full pool. Dead storage below elevation 655 ft, 64,840 acre-ft. Crest of spillway is at elevation 694 ft. Water used by Puget Sound Energy for power generation. Capacity table furnished by Puget Sound Energy. Figures given herein represent total contents. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,930 acre-ft July 12, 1972, elevation, 724.49 ft; minimum contents since normal operating level was reached in August 1960, 102,621 acre-ft May 8, 1977, elevation, 674.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 281,750 acre-ft July 12, elevation, 723.25 ft; minimum contents, 105,555 acre-ft Mar. 8, elevation, 676.01 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	719.65	264,231	--
Oct. 31.....	714.07	238,303	-25,928
Nov. 30.....	701.95	187,455	-50,848
Dec. 31.....	696.17	166,076	-21,379
CAL YR 2001.....	--	--	+16,802
Jan. 31.....	691.12	148,913	-17,163
Feb. 28.....	684.91	129,681	-19,232
Mar. 31.....	682.99	124,132	-5,549
Apr. 30.....	684.63	128,864	+4,732
May 31.....	706.11	203,997	+75,133
June 30.....	721.23	271,844	+67,847
July 31.....	721.13	271,357	-487
Aug. 31.....	719.24	262,274	-9,083
Sept. 30.....	709.23	217,055	-45,219
WTR YR 2002.....	--	--	-47,176

12193000 LAKE SHANNON AT CONCRETE, WA

LOCATION.--Lat 48°32'53", long 121°44'22", in SW ¼ sec.2, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, at Baker Dam on Baker River near left bank, 0.7 mi north of Concrete, and at mile 1.2.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--November 1925 to current year.

GAGE.--Water-stage recorder; prior to Nov. 11, 1959, water-stage indicator in powerplant. Datum of gage is NGVD of 1929. Prior to March 1959, at datum 1.72 ft lower. Period August 31, 1961, to September 30, 1991, at datum 0.15 ft higher.

REMARKS.--Reservoir is formed by concrete-arch and gravity dam, completed in June 1927; storage began in November 1925. Usable storage, 142,400 acre-ft between elevations 355 ft, minimum operating pool, and 438.6 ft, normal full pool. Dead storage unknown. Spillway crest is at elevation 424.9 ft. Water used by Puget Sound Energy for power generation. Capacity table furnished by Puget Sound Energy. Prior to Nov. 11, 1959, gage-height record furnished by Puget Sound Energy from powerplant log. Figures given herein represent contents above elevation 341.7 ft, center line of outlet tunnel. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 161,470 acre-ft Sept. 17, 1968, elevation, 439.50 ft; minimum contents since October 1953, 28,260 acre-ft Mar. 6, 1969, elevation, 363.7 ft, not determined prior to October 1953 because of incomplete records.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 157,852 acre-ft Nov. 18, elevation, 437.87 ft; minimum contents, 54,490 acre-ft Sept. 27, 29, elevation, 381.91 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	425.19	131,294	--
Oct. 31.....	437.01	155,962	+24,668
Nov. 30.....	436.19	154,174	-1,788
Dec. 31.....	427.95	136,831	-17,343
CAL YR 2001.....	--	--	+84,705
Jan. 31.....	424.45	129,830	-7,001
Feb. 28.....	431.80	144,789	+14,959
Mar. 31.....	422.23	125,476	-19,313
Apr. 30.....	424.01	128,961	+3,485
May 31.....	413.26	108,566	-20,395
June 30.....	437.17	156,314	+47,748
July 31.....	428.02	136,973	-19,341
Aug. 31.....	406.29	95,613	-41,360
Sept. 30.....	382.89	56,010	-39,603
WTR YR 2002.....	--	--	-75,284

SKAGIT RIVER BASIN

12193500 BAKER RIVER AT CONCRETE, WA

LOCATION.--Lat 48°32'24", long 121°44'31", in NW ¼ NW ¼ sec.11, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank at upstream side of fish barrier, 0.2 mi northeast of Concrete, 0.3 mi downstream from Baker River powerplant, and at mile 0.7.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--September 1910 to March 1915, September 1943 to current year.

REVISED RECORDS.--WSP 1286: 1911-13(M), 1945-46, drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Mar. 5, 1915, nonrecording gage at site 0.2 mi downstream at different datum. Sept. 1, 1943, to Jan. 22, 1958, water-stage recorder at site 700 ft upstream at datum 172.6 ft above NGVD of 1929 (from river-profile survey). Jan. 23 to June 11, 1958, powerplant record. Supplementary water-stage recorder on left bank about 40 ft downstream from fish barrier and on tailrace of powerhouse at same datum.

REMARKS.--No estimated daily discharges. Records good except those below 200 ft³/s, which are poor. Flows on occasion may be affected by backwater from Skagit River during high flows. All diversions returned to river upstream from gage; at times, power generation is shut down for maintenance at Baker River or the fish-barrier dam causing the stage to drop below the control. Water is released through a valve-controlled pipe to the fish ladder located on the left bank just downstream from the gage and control. Flow regulated by Baker Lake (station 12191600) since July 1959 and Shannon Lake (station 12193000) since November 1925. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1911-14, 1944-2002), 2,660 ft³/s, 121.63 in/yr, 1,927,000 acre-ft/yr, adjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s Nov. 19, 1962, elevation, 186.6 ft, computation of peak flow over dam; minimum daily discharge, 30 ft³/s Mar. 21-26, 1973, Apr. 26-28, May 7-9, 11, 1983, Apr. 20, 24-28, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,800 ft³/s June 29, elevation, 181.59 ft; minimum daily discharge, 74 ft³/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2460	4020	3950	1710	4120	3970	2910	4030	4430	4020	2730	1460
2	1550	4020	3940	1610	4120	3980	3070	4000	4320	4010	1680	2000
3	1500	4010	3950	1010	4100	3980	3270	3980	1720	4000	2730	1260
4	1140	4370	3940	2900	4180	3770	2890	3930	308	3990	2630	1920
5	748	4720	3960	3210	4220	3640	1890	3910	343	4010	2930	1910
6	769	3990	3980	2590	2900	2640	85	3900	675	4050	3890	2450
7	692	3980	4010	2960	1580	3210	922	2690	630	4050	2200	2430
8	800	4020	4000	5340	1620	3570	2460	2700	91	4050	2530	1210
9	1520	4030	3980	9740	1590	1060	507	2630	92	4050	2590	1210
10	1630	4050	3880	9300	1780	81	2830	118	2180	4040	2570	2460
11	1170	2790	2660	5190	2430	1210	3970	118	3980	3990	2590	2760
12	1430	4070	2530	4000	3070	3990	3980	1050	3980	3980	2570	2620
13	916	4060	1940	3980	2530	4030	3960	223	3970	3970	2480	2720
14	981	8260	3090	4010	80	3980	3890	100	3970	3960	2460	2540
15	1520	13900	4000	3930	80	947	3930	107	3870	3940	2500	2230
16	3110	10600	3900	3920	80	84	3970	112	3830	3930	2450	2700
17	3270	6880	3840	3970	2450	762	4020	120	3010	3920	2630	3900
18	3140	5630	3860	3960	2700	1710	4020	2790	3980	3950	2030	3920
19	3090	6230	3850	3950	3090	2490	4000	2670	3970	3950	1720	3910
20	1840	8360	3860	3950	3180	2860	3950	2940	1950	3920	2660	3980
21	775	6320	3760	3950	3380	2710	3960	2840	4000	3980	2540	4020
22	3200	5900	104	3980	306	1150	4000	3030	3940	3980	2470	3700
23	4070	3960	1180	3990	2570	83	4020	4030	3940	3970	2810	3910
24	4070	3940	1180	4010	3950	85	4020	2430	4770	3980	1060	3950
25	4080	3930	86	3980	3940	86	4010	4000	5360	3970	2320	3810
26	4090	3930	2750	3990	3980	1380	4000	4050	5310	3990	2830	2820
27	4080	3900	2560	4040	3840	952	3990	4080	8560	3980	2470	2580
28	4040	3900	2360	4100	2290	85	3980	4100	9650	4000	3210	116
29	4050	3920	2420	4120	---	85	3970	4390	13500	4010	3990	2390
30	4010	3940	2190	4020	---	85	3980	4410	7000	4030	2980	74
31	4040	---	2370	4110	---	86	---	4440	---	4060	1870	---
TOTAL	73781	155630	94080	125520	74156	58751	100454	83918	117329	123730	79120	76960
MEAN	2380	5188	3035	4049	2648	1895	3348	2707	3911	3991	2552	2565
MAX	4090	13900	4010	9740	4220	4030	4020	4440	13500	4060	3990	4020
MIN	692	2790	86	1010	80	81	85	100	91	3920	1060	74
AC-FT	146300	308700	186600	249000	147100	116500	199300	166500	232700	245400	156900	152700
MEAN†	2358	4305	2405	3655	2572	1490	3488	3597	5855	3668	1732	1141
CFSM†	7.94	14.49	8.10	12.31	8.66	5.02	11.74	12.11	19.71	12.35	5.83	3.84
IN.†	9.15	16.17	9.33	14.19	9.02	5.79	13.10	13.96	21.99	14.24	6.72	4.29
AC-FT†	145000	256100	147900	224800	142800	91640	207500	221200	348300	225600	106500	67880

CAL YR 2001 TOTAL 768630 MEAN 2106 MAX 13900 MIN 47 AC-FT 1525000 MEAN† 2247 CFSM† 7.57 IN.† 102.71 AC-FT† 1627000
WTR YR 2002 TOTAL 1163429 MEAN 3187 MAX 13900 MIN 74 AC-FT 2308000 MEAN† 3019 CFSM† 10.16 IN.† 138.01 AC-FT† 2186000

† Adjusted for change in contents in Baker Lake and Lake Shannon.

SKAGIT RIVER BASIN

12199000 SKAGIT RIVER NEAR SEDRO WOOLEY, WA

LOCATION.--Lat 48°29'03", long 122°14'31", in NW ¼ NW ¼ sec.36, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on left bank pier of bridge on State Highway No. 9, 1.0 mi south of Sedro Wooley, and at mile 22.3.

DRAINAGE AREA.--3,015 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--May 1908 to December 1923, February 1975 to June 1980 (discharge). December 1998 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Washington State Department of Transportation benchmark). January 21, 1975, to June 1980 at datum 15.46 ft lower. May 1, 1908, to December 31, 1923, nonrecording gage at site 200 ft upstream (datum uncertain).

REMARKS.--Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs (see sta 12176500 and 12177700), Baker Lake (12191600) and Lake Shannon (12193000). Small diversions for domestic and municipal use. Chemical analyses October 1975 to September 1979. U.S. Geological Survey satellite and telephone telemeters at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation since February 1975, 41.56 ft Dec. 4, 1975; maximum gage height, 56.5 ft Nov. 30, 1909, datum then in use. Minimum observed, 32.3 ft Sept. 29-30, Oct. 10-15, 1915, datum then in use.

EXTREMES FOR PERIOD OF RECORD (SINCE 1998).--Maximum elevation 39.21 ft Nov. 13, 1999; minimum elevation 22.28 ft, Oct. 7, 8, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached an elevation of approximately 54.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 38.99 ft Jan. 8; minimum, 22.28 ft Oct. 7, 8.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.86	27.63	25.99	24.12	26.14	26.72	25.71	27.20	28.52	29.77	25.63	23.92
2	23.22	26.71	26.67	24.42	26.06	26.53	25.90	27.73	28.25	29.06	25.30	24.26
3	23.16	26.31	26.09	24.76	26.07	26.37	25.77	27.47	28.14	28.40	25.42	24.62
4	23.16	25.63	25.78	25.63	26.15	26.24	25.68	26.60	27.74	27.93	25.11	24.39
5	22.78	26.04	25.60	25.59	26.09	26.22	25.58	26.40	28.05	27.69	25.14	24.08
6	22.73	25.77	25.55	25.70	26.07	25.84	25.81	26.38	28.97	27.54	25.40	24.00
7	22.33	25.34	25.52	30.95	26.19	25.83	26.58	26.27	27.91	27.81	25.04	23.81
8	22.69	24.91	25.49	38.02	25.47	25.91	26.25	26.10	26.91	28.70	24.77	23.48
9	23.06	24.92	25.89	35.65	25.44	25.50	25.87	25.62	26.35	28.78	24.83	23.55
10	23.07	24.57	25.70	31.28	25.34	25.04	27.13	25.37	26.69	28.22	25.02	23.85
11	23.49	24.46	25.29	28.87	25.57	25.72	27.40	25.39	27.94	29.24	25.05	23.97
12	23.70	24.19	25.06	28.31	25.49	27.91	28.10	25.55	28.93	30.06	24.98	24.05
13	24.07	25.03	26.26	28.39	25.40	27.10	29.35	26.34	29.73	30.02	25.07	24.05
14	23.86	29.65	29.25	27.59	24.85	26.76	32.43	26.59	30.60	29.84	25.17	24.06
15	24.21	36.43	27.44	27.28	24.58	26.06	31.12	26.41	30.78	29.28	25.21	23.83
16	23.92	33.93	28.98	27.00	24.52	25.41	28.69	26.11	30.53	28.65	25.00	23.93
17	24.10	29.37	32.49	26.78	24.87	25.32	27.69	26.33	29.38	28.31	24.84	24.70
18	24.15	27.34	28.98	26.58	25.25	25.34	27.15	27.09	29.33	27.89	24.64	24.48
19	24.48	26.68	27.45	26.51	25.45	25.61	26.87	27.03	29.07	27.83	24.62	24.24
20	24.98	28.54	26.56	26.49	25.75	25.67	26.97	27.46	28.09	27.58	24.45	24.22
21	23.95	28.34	26.06	26.53	26.48	25.60	26.74	28.16	28.84	27.39	24.49	24.11
22	24.83	27.89	25.05	26.41	33.74	25.36	26.77	27.73	29.49	27.45	24.36	23.95
23	27.43	27.35	24.72	26.33	35.72	24.81	26.74	27.70	29.74	27.50	24.33	23.93
24	27.09	26.64	24.60	26.73	30.92	24.86	26.44	27.03	29.29	27.56	24.37	23.94
25	26.44	26.09	24.37	28.02	28.59	24.93	26.37	27.22	29.35	27.51	24.21	23.93
26	26.16	25.74	24.43	27.32	27.92	25.20	26.50	27.63	29.67	27.44	24.59	23.62
27	27.03	25.80	24.69	26.82	27.39	25.41	26.41	27.86	30.68	27.19	24.56	23.44
28	26.43	25.59	24.66	26.52	26.65	25.54	26.32	28.84	30.95	26.94	24.55	23.27
29	25.65	25.81	24.52	26.33	---	25.18	26.40	30.44	33.47	26.97	25.01	22.96
30	25.36	25.77	24.33	26.21	---	25.14	26.56	30.34	32.05	26.74	24.91	23.11
31	26.97	---	24.32	26.20	---	24.92	---	29.45	---	26.30	24.22	---
MEAN	24.43	26.95	26.06	27.53	26.72	25.74	27.04	27.16	29.18	28.12	24.85	23.93
MAX	27.43	36.43	32.49	38.02	35.72	27.91	32.43	30.44	33.47	30.06	25.63	24.70
MIN	22.33	24.19	24.32	24.12	24.52	24.81	25.58	25.37	26.35	26.30	24.21	22.96

WTR YR 2002 MEAN 26.47 MAX 38.02 MIN 22.33

SKAGIT RIVER BASIN

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12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA

LOCATION.--Lat 48°26'42", long 122°20'03", in SE ¼ SE ¼ sec.7, T.34 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on right bank 220 ft downstream of bridge on U.S. Highway 99, 1.5 mi north of Skagit Valley Junior College in Mount Vernon, and at mile 15.7.

DRAINAGE AREA.--3,093 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only October 1940, published in WSP 1316.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Supplementary water-stage recorder in bridge pier 0.2 mi downstream from base gage from Dec. 3, 1957, to Oct. 15, 1964. Water-stage recorder located on downstream pier of the Highway 99 bridge from Oct. 15, 1964, to Jan. 6, 1993.

REMARKS.--No estimated daily discharge. Records good. Flow regulated by Ross Reservoir (station 12175000) and Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (stations 12176500, 12177700, 12191600, 12193000). Small diversions for domestic and municipal use. Chemical analyses July 1959 to September 1971, October 1973 to September 1994. Prior to November 1962, published as "at Lawrence." U.S. Geological Survey satellite telemeter at station. Specific conductance February 1974 to November 1981. Water temperature July 1962 to August 1970, February 1974 to November 1981.

AVERAGE DISCHARGE.--62 years (water years 1941-2002), 16,640 ft³/s, 12,060,000 acre-ft, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 152,000 ft³/s Nov. 25, 1990, elevation, 37.37 ft, from floodmarks; minimum discharge, 2,740 ft³/s Oct. 26, 1942, elevation, 7.37 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1906 reached a stage of 37 ft, from Great Northern Railway high-water profile, discharge 180,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	1445	69,000	27.83	Feb. 23	0730	71,200	28.21
Dec. 17	1345	52,700	24.70	Apr. 14	2115	53,600	24.88
Jan. 09	0015	*80,800	*29.78	Jun. 29	1900	59,000	25.98

Minimum discharge, 4,530 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5740	23600	17400	10300	17800	20400	15100	22500	29100	34600	14800	8310
2	7200	19800	20900	10900	17400	19700	16600	25100	27100	30800	13300	9370
3	7040	18200	18500	12200	17300	18900	15800	24500	26900	27700	13800	10700
4	6980	15500	17000	15500	17700	18300	15200	20500	24800	25400	12500	10100
5	6070	16600	16100	15800	17400	18100	14900	19000	25800	24300	12700	8940
6	5680	16100	15900	16000	17200	16500	15500	18900	30200	23500	13800	8650
7	4740	14300	15700	35700	18000	16400	18900	18800	26300	24600	12400	8110
8	5470	12600	15500	73700	15300	16700	17900	17500	21600	28500	11200	7050
9	6290	12600	17200	69500	14800	15300	16400	16100	18600	30200	11400	7120
10	6510	11500	16800	44500	14200	13000	21000	14500	19500	26800	12200	8030
11	7790	11300	14800	31400	14900	14800	23200	14200	25000	30900	12400	8490
12	8350	9840	13800	27200	14900	25600	25500	14700	29400	35700	12100	8780
13	9720	12600	17800	28100	14500	22300	31100	18000	33300	35800	12400	8800
14	9140	28000	32300	24400	12500	20700	45400	19500	37600	35000	12900	8860
15	10100	63800	25600	22900	11100	18000	42600	19000	39000	32300	13100	8130
16	9160	56900	29700	21600	10800	14800	29700	17700	37800	29100	12300	8370
17	9670	34800	48400	20500	11800	14300	24800	18300	32800	27300	11600	11100
18	9940	24200	33200	19700	13700	14200	22200	21400	31600	25400	10800	10400
19	10900	20800	25200	19300	14600	15300	20900	21700	31000	24900	10700	9530
20	12900	27800	21000	19200	16000	16000	21200	23300	26200	23900	10000	9360
21	9740	28100	18500	19400	18000	15600	20400	26800	29000	23000	10300	9050
22	11400	26300	14300	19000	49700	14800	20400	25300	32100	23200	9750	8490
23	21500	23900	12400	18600	66600	12200	20300	24900	33700	23500	9640	8350
24	21800	21000	11900	20000	42800	12200	19100	22400	32100	23700	10100	8380
25	18600	18300	11000	26100	30000	12400	18500	22700	32300	23600	8830	8350
26	17600	16500	10700	23700	26200	13400	18900	24300	33400	23200	10700	7410
27	20400	16700	12100	21200	23600	14300	18600	25500	38300	22200	10600	6890
28	19100	15900	12000	19700	20500	15100	18400	29200	40700	20900	10400	6870
29	15700	16800	11400	18800	---	13600	18800	37100	51300	20800	12300	5400
30	14400	16900	10700	18200	---	13300	19700	38200	48000	20100	12000	6270
31	19300	---	10600	18000	---	12400	---	33400	---	17900	9350	---
TOTAL	348930	651240	568400	761100	579300	498600	647000	695000	944500	818800	360370	253660
MEAN	11260	21710	18340	24550	20690	16080	21570	22420	31480	26410	11620	8455
MAX	21800	63800	48400	73700	66600	25600	45400	38200	51300	35800	14800	11100
MIN	4740	9840	10600	10300	10800	12200	14900	14200	18600	17900	8830	5400
AC-FT	692100	1292000	1127000	1510000	1149000	989000	1283000	1379000	1873000	1624000	714800	503100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	MEAN	12290	18160	18780	17580	16750	14280	15060	20540	24750	20380	11780	9369
MAX	23710	52550	37930	27220	31140	27010	23360	36530	43460	37650	21890	17540	
(WY)	1968	1991	1976	1974	1951	1972	1943	1946	1972	1972	1999	1959	
MIN	4323	6592	8358	7636	7626	6856	8857	12460	13430	9310	6441	5023	
(WY)	1943	1944	2001	1942	1942	1942	1973	1970	1992	1977	1941	1942	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1941 - 2002
ANNUAL TOTAL	4475180	7126900	
ANNUAL MEAN	12260	19530	16640
HIGHEST ANNUAL MEAN			23140
LOWEST ANNUAL MEAN			10500
HIGHEST DAILY MEAN	63800	Nov 15	73700
LOWEST DAILY MEAN	4740	Oct 7	4740
ANNUAL SEVEN-DAY MINIMUM	5710	Mar 1	5960
ANNUAL RUNOFF (AC-FT)	8877000	14140000	12060000
10 PERCENT EXCEEDS	19200	32100	27400
50 PERCENT EXCEEDS	10300	17900	14600
90 PERCENT EXCEEDS	6850	9100	7910

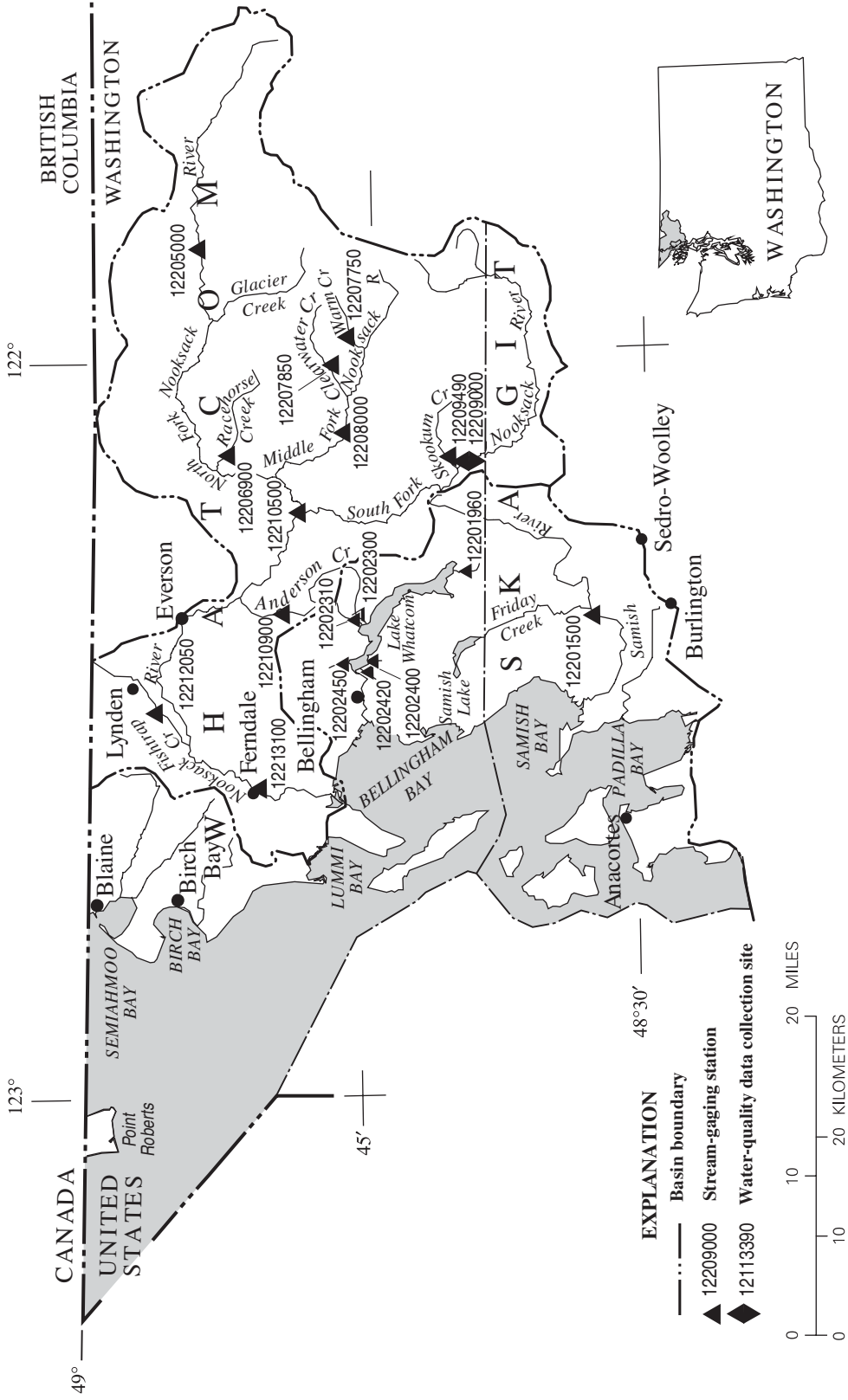


Figure 33. Location of surface-water stations in the Nooksack River and Samish River Basins.

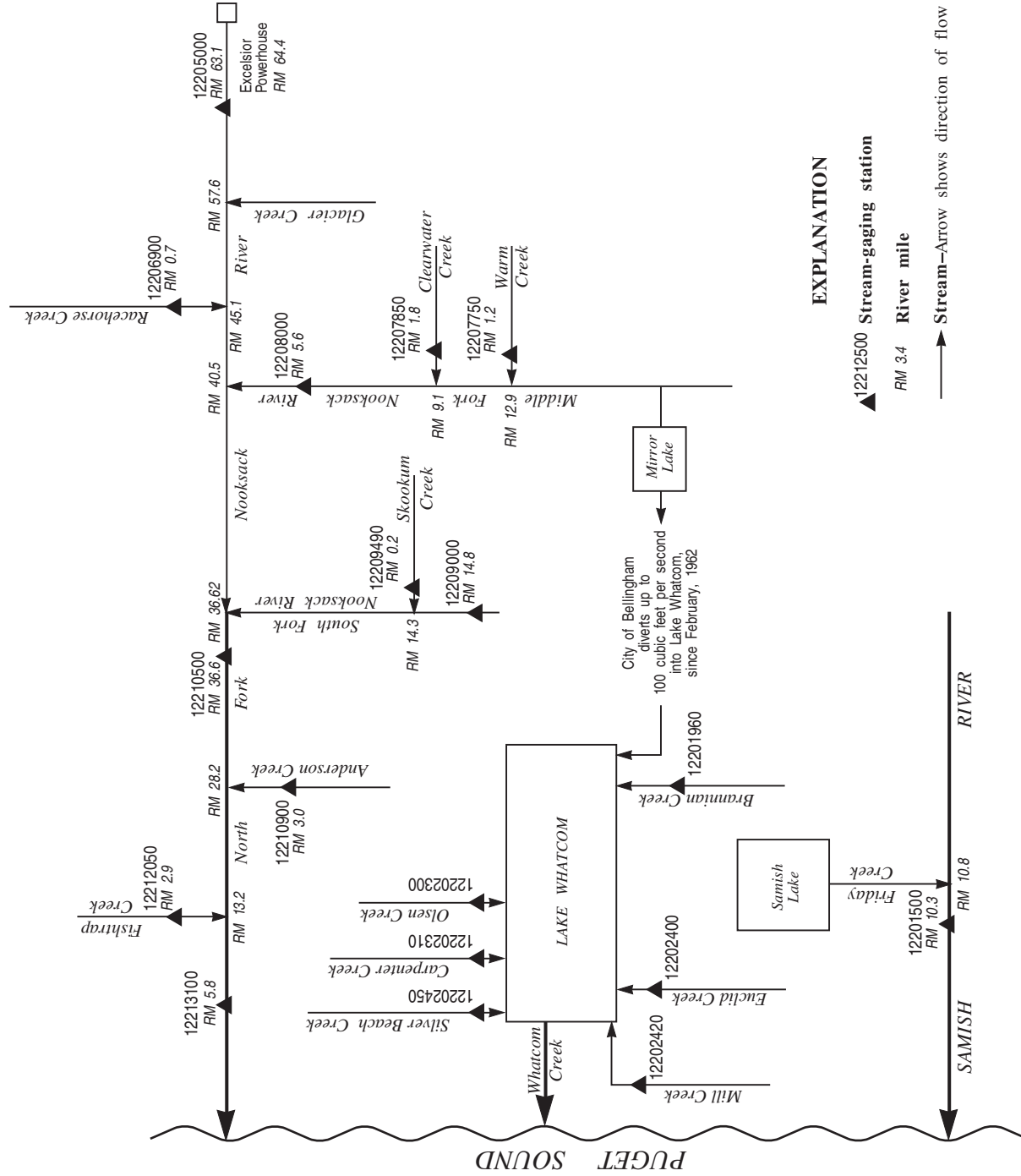


Figure 34. Schematic diagram showing surface-water stations in the Nooksack River and Samish River Basins.

WHATCOM CREEK BASIN

12201960 BRANNIAN CREEK AT SOUTH BAY DRIVE NEAR WICKERSHAM, WA

LOCATION.--Lat 48°40'08", long 122°16'48", in SE 1/4 NW 1/4 sec.27, T.37 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, on right bank 200 ft downstream from South Bay Road on the southeast shore of Lake Whatcom, 11 mi southeast of Bellingham and at mile 0.3.

DRAINAGE AREA.--3.36 mi².

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder. Elevation of gage is 330 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair, except for discharges below 3 ft³/s and above 100 ft³/s, and estimated discharges, which are poor.

AVERAGE DISCHARGE.--1 year (water year 2002) 12.1 ft³/s, 48.72 in/yr, 8,730 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 307 ft³/s Dec. 13, gage height 6.62 ft, from rating curve extended above 38 ft³/s; minimum daily discharge, 0.12 ft³/s Aug. 30-31, Sept. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.1	13	30	6.6	16	13	19	4.8	2.9	3.8	0.41	0.14
2	e1.0	10	49	8.0	15	11	15	4.6	2.6	2.7	0.40	0.44
3	e0.95	8.3	30	7.0	21	10	13	4.5	2.4	2.1	0.38	0.54
4	e0.94	8.2	27	6.2	24	8.9	11	4.2	2.3	2.1	0.83	0.23
5	e0.83	9.1	24	5.7	21	8.8	11	7.4	2.7	1.8	0.88	0.16
6	e0.89	7.5	36	6.0	27	7.6	16	7.2	2.2	1.6	0.67	0.13
7	e0.94	6.3	33	9.3	27	6.8	26	6.1	1.9	1.7	0.52	e0.12
8	e1.2	5.6	37	16	26	6.3	17	5.1	1.8	4.0	0.47	e0.13
9	e1.3	5.1	40	15	23	6.1	18	4.7	1.6	2.9	0.43	0.19
10	e1.8	4.6	29	12	20	6.2	28	4.2	1.5	2.1	0.46	e0.17
11	e2.0	4.3	23	10	17	12	20	3.8	1.4	1.7	0.45	e0.14
12	2.3	4.4	24	19	14	12	20	3.5	1.3	1.4	0.43	e0.14
13	2.3	5.2	e130	19	13	15	26	4.0	1.2	1.3	0.44	e0.13
14	3.1	25	e170	14	11	16	42	7.5	1.2	1.3	0.40	e0.13
15	2.3	27	64	12	9.8	17	36	5.6	1.1	1.2	0.40	e0.14
16	3.2	24	e114	11	8.8	18	35	4.6	1.0	1.0	0.38	e0.80
17	2.8	20	59	9.4	8.4	14	31	8.6	1.0	0.89	0.37	e0.59
18	3.9	15	39	8.5	11	13	25	6.8	5.3	0.83	0.35	0.36
19	9.0	13	35	11	12	23	20	5.9	2.5	0.79	0.35	0.55
20	6.2	13	26	15	13	24	17	7.2	1.7	0.75	0.27	e0.70
21	5.9	12	20	14	41	20	14	6.6	1.4	0.70	0.21	e0.25
22	14	15	16	13	e105	20	13	5.7	1.3	0.65	0.19	e0.19
23	14	23	13	14	80	20	11	5.0	1.1	0.60	0.18	e0.19
24	14	17	11	41	48	20	9.6	4.8	1.1	0.59	0.17	e0.18
25	28	13	9.9	e130	34	21	8.5	4.5	0.95	0.58	0.18	e0.17
26	20	13	8.7	51	26	21	7.8	3.9	0.95	0.56	0.18	e0.14
27	38	17	8.0	35	21	23	7.3	3.6	0.90	0.52	0.16	e0.14
28	18	17	7.8	25	16	36	6.4	3.5	1.7	0.55	0.14	e0.15
29	12	26	7.1	20	---	26	5.8	3.6	11	0.54	0.13	e1.2
30	8.6	26	6.5	16	---	21	5.2	3.9	6.3	0.48	0.12	0.84
31	13	---	6.8	19	---	19	---	3.1	---	0.42	0.12	---
TOTAL	233.55	407.6	1133.8	598.7	709.0	495.7	534.6	158.5	66.30	42.15	11.07	9.38
MEAN	7.53	13.6	36.6	19.3	25.3	16.0	17.8	5.11	2.21	1.36	0.36	0.31
MAX	38	27	170	130	105	36	42	8.6	11	4.0	0.88	1.2
MIN	0.83	4.3	6.5	5.7	8.4	6.1	5.2	3.1	0.90	0.42	0.12	0.12
AC-FT	463	808	2250	1190	1410	983	1060	314	132	84	22	19
CFSM	2.24	4.04	10.9	5.75	7.54	4.76	5.30	1.52	0.66	0.40	0.11	0.09
IN.	2.59	4.51	12.55	6.63	7.85	5.49	5.92	1.75	0.73	0.47	0.12	0.10

WTR YR 2002 TOTAL 4400.35 MEAN 12.1 MAX 170 MIN 0.12 AC-FT 8730 CFSM 3.59 IN. 48.72

e Estimated

WHATCOM CREEK BASIN

12202300 OLSEN CREEK NEAR BELLINGHAM, WA

LOCATION.--Lat 48°45'05", long 122°21'08", in NW ¼ SW ¼ sec.30, T.38 N., R.4 E., Whatcom County, Hydrologic Unit 17110002, on left bank at downstream side of bridge on North Shore Road, 500 ft upstream from mouth and Lake Whatcom, and 5.8 mi east of Court House in Bellingham.

DRAINAGE AREA.--3.78 mi².

PERIOD OF RECORD.--November 1967 to September 1969, annual maximum, water years 1970-1974. October 2001 to September 2002.

GAGE.--Water-stage recorder. Elevation of gage is 311.8 ft above NGVD of 1929, from survey to Lake Whatcom, City of Bellingham Lake elevation. Prior to 1975 gage at elevation 5.49 ft lower.

REMARKS.--Records good except estimated discharges and flows above 150 ft³/s, which are poor. No known regulation. Diversion rights above station for irrigation and domestic use.

AVERAGE DISCHARGE.--2 years (Water years 1969, 2002) 11.3 ft³/s, 40.47 in/yr, 8,160 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 226 ft³/s Dec. 25, 1967, gage height 3.11 ft, at site and datum then in use, from rating curve extended above 42 ft³/s; minimum discharge, 0.25 ft³/s Aug. 28-30, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum gage height 6.03 ft, Dec. 14, discharge not determined; minimum discharge 0.25 ft³/s Aug. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.70	13	27	8.7	11	9.8	16	4.4	2.3	3.6	0.52	0.29
2	e0.65	11	e60	14	11	8.5	14	4.3	2.1	2.8	0.51	0.54
3	e0.60	8.4	e30	11	16	7.7	11	4.4	2.0	2.4	0.51	0.79
4	e0.55	14	18	8.8	17	7.0	9.9	4.2	1.9	2.1	0.54	0.44
5	e0.50	18	15	7.5	17	6.6	13	5.7	2.5	1.8	0.59	0.38
6	e0.55	e13	15	7.8	20	5.7	22	5.5	1.9	1.6	0.64	0.36
7	e0.55	9.5	16	15	22	5.3	31	4.9	1.7	1.9	0.55	0.34
8	e0.80	7.3	23	71	20	5.0	17	4.6	1.6	3.9	0.50	0.37
9	e0.90	6.1	30	45	17	5.0	19	4.3	1.5	2.4	0.45	0.49
10	e1.2	e5.3	20	25	16	5.2	33	4.0	1.4	1.8	0.46	0.40
11	e2.2	e4.6	16	18	16	16	23	3.7	1.3	1.5	0.43	0.36
12	1.8	e4.0	16	20	13	16	22	3.5	1.3	1.3	0.40	0.35
13	2.0	e5.0	143	21	11	15	29	3.6	1.2	1.2	0.38	0.32
14	3.2	e20	234	18	9.9	15	48	4.8	1.1	1.1	0.36	0.31
15	2.2	e30	56	14	8.8	15	28	3.9	1.0	1.1	0.36	0.31
16	2.6	e20	302	12	8.5	13	25	3.6	0.99	0.95	0.34	0.92
17	2.8	e15	139	10	9.2	11	22	5.7	1.0	0.89	0.32	0.93
18	5.5	e10	43	9.2	13	9.6	19	4.9	5.6	0.86	0.32	0.54
19	13	e15	25	11	15	11	15	4.6	2.7	0.81	0.33	0.47
20	6.5	e22	18	12	15	9.9	13	5.6	2.1	0.75	0.33	0.57
21	e7.0	e20	14	11	100	9.2	11	4.9	1.7	0.71	0.34	0.46
22	e11	e32	12	9.5	271	11	9.9	4.4	1.4	0.67	0.33	0.40
23	e9.0	e40	9.8	9.1	165	13	8.9	4.0	1.3	0.62	0.32	0.38
24	e12	22	8.6	23	46	16	7.8	3.6	1.2	0.57	0.29	0.38
25	e24	14	7.5	69	26	18	7.0	3.5	1.1	0.57	0.29	0.36
26	e21	11	6.6	33	18	18	6.7	3.4	1.0	0.57	0.29	0.34
27	37	9.1	6.6	21	14	17	6.2	3.2	1.1	0.55	0.29	0.33
28	17	11	7.3	16	12	17	5.5	3.1	2.6	0.57	0.29	0.32
29	10	22	6.7	13	---	16	5.0	3.0	9.1	0.62	0.27	0.79
30	7.7	19	6.5	12	---	15	4.7	3.0	5.2	0.57	0.28	0.84
31	15	---	7.6	12	---	14	---	2.6	---	0.53	0.29	---
TOTAL	219.50	451.3	1339.2	587.6	938.4	361.5	502.6	128.9	62.89	41.31	12.12	14.08
MEAN	7.08	15.0	43.2	19.0	33.5	11.7	16.8	4.16	2.10	1.33	0.39	0.47
MAX	37	40	302	71	271	18	48	5.7	9.1	3.9	0.64	0.93
MIN	0.50	4.0	6.5	7.5	8.5	5.0	4.7	2.6	0.99	0.53	0.27	0.29
AC-FT	435	895	2660	1170	1860	717	997	256	125	82	24	28
CFSM	1.87	3.98	11.4	5.01	8.87	3.08	4.43	1.10	0.55	0.35	0.10	0.12
IN.	2.16	4.44	13.18	5.78	9.24	3.56	4.95	1.27	0.62	0.41	0.12	0.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

	7.40	12.6	31.3	17.0	21.9	13.8	14.1	4.58	2.98	1.59	1.32	3.71
MEAN	7.40	12.6	31.3	17.0	21.9	13.8	14.1	4.58	2.98	1.59	1.32	3.71
MAX	7.71	15.3	43.2	19.0	33.5	15.6	17.3	5.37	5.34	2.20	2.95	5.37
(WY)	1969	1969	2002	2002	2002	1969	1969	1969	1968	1968	1968	1968
MIN	7.08	7.61	20.8	14.9	11.6	11.7	8.35	4.16	1.51	1.24	0.39	0.47
(WY)	2002	1968	1969	1969	1969	2002	1968	2002	1969	1969	2002	2002

SUMMARY STATISTICS

FOR 2002 WATER YEAR

WATER YEARS 1968 - 2002

ANNUAL TOTAL	4659.40		
ANNUAL MEAN	12.8	11.3	
HIGHEST ANNUAL MEAN		12.8	2002
LOWEST ANNUAL MEAN		9.75	1969
HIGHEST DAILY MEAN	302	302	Dec 16 2001
LOWEST DAILY MEAN	0.27	0.27	Aug 29 2002
ANNUAL SEVEN-DAY MINIMUM	0.29	0.29	Aug 24 2002
ANNUAL RUNOFF (AC-FT)	9240	8160	
ANNUAL RUNOFF (CFSM)	3.38	2.98	
ANNUAL RUNOFF (INCHES)	45.85	40.47	
10 PERCENT EXCEEDS	22	22	
50 PERCENT EXCEEDS	6.1	6.3	
90 PERCENT EXCEEDS	0.40	0.53	

e Estimated

WHATCOM CREEK BASIN

279

12202310 CARPENTER CREEK NEAR BELLINGHAM, WA

LOCATION.--Lat 48°45'15", long 122°21'10", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.30, T.38 N., R.4 E., Whatcom County, Hydrologic Unit 17110002, on left bank 60 ft upstream from North Shore Drive, 8.2 mi east of Bellingham, and 0.1 mi upstream from Lake Whatcom.

DRAINAGE AREA.--1.17 mi².

PERIOD OF RECORD.--May to September, 2002.

GAGE.--Water-stage recorder. Elevation of gage is 320 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records poor.

EXTREMES FOR PERIOD MAY TO SEPTEMBER.--Maximum daily discharge, 0.73 ft³/s May 22, June 29; minimum daily discharge, no flow on many days in August, September.

DISCHARGE, CUBIC FEET PER SECOND, MAY TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	MAY	JUN	JUL	AUG	SEP
1	---	0.37	0.14	0.02	0.00
2	---	0.33	0.10	0.02	0.02
3	---	0.29	0.08	0.02	0.01
4	---	0.29	0.07	0.02	0.01
5	---	0.40	0.07	0.02	0.01
6	---	0.30	0.05	0.04	0.01
7	---	0.24	0.09	0.02	0.00
8	---	0.22	0.36	0.02	0.00
9	---	0.20	0.14	0.02	0.01
10	---	0.17	0.08	0.02	0.01
11	---	0.17	0.04	0.02	0.01
12	---	0.14	0.03	0.02	0.01
13	---	0.11	0.04	0.01	0.00
14	---	0.09	0.03	0.01	0.00
15	---	0.08	0.03	0.01	0.00
16	---	0.08	0.03	0.01	0.04
17	---	0.08	0.03	0.01	0.02
18	---	0.22	0.03	0.01	0.01
19	---	0.13	0.02	0.01	0.01
20	---	0.10	0.02	0.01	0.02
21	---	0.08	0.02	0.01	0.01
22	0.73	0.05	0.02	0.01	0.01
23	0.63	0.05	0.02	0.00	0.01
24	0.55	0.04	0.02	0.00	0.01
25	0.57	0.05	0.02	0.00	0.01
26	0.60	0.04	0.02	0.00	0.01
27	0.51	0.05	0.02	0.00	0.01
28	0.50	0.22	0.02	0.00	0.00
29	0.47	0.73	0.02	0.00	0.04
30	0.46	0.26	0.02	0.00	0.04
31	0.38	---	0.01	0.00	---
TOTAL	---	5.58	1.69	0.36	0.35
MEAN	---	0.19	0.055	0.012	0.012
MAX	---	0.73	0.36	0.04	0.04
MIN	---	0.04	0.01	0.00	0.00
AC-FT	---	11	3.4	0.7	0.7
CFSM	---	0.16	0.05	0.01	0.01
IN.	---	0.18	0.05	0.01	0.01

12202400 EUCLID CREEK AT EUCLID AVENUE AT BELLINGHAM, WA

LOCATION.--Lat 48°44'56", long 122°24'29", in SW ¼ SW ¼ sec.27, T.38 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, on left bank 50 ft upstream from Euclid Avenue, 3.2 mi east of the City of Bellingham, and 320 ft upstream from mouth at Lake Whatcom.

DRAINAGE AREA.--0.54 mi².

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder. Elevation of gage is 320 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair except those for the period October 1 to Dec. 14, those above 30 ft³/s, those below 0.3 ft³/s, and estimated discharges, which are poor. Natural flow may be affected by upstream urbanization.

AVERAGE DISCHARGE.--1 year (water year 2002) 0.61 ft³/s, 15.31 in/yr, 441 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum gage height 4.86 feet Dec. 14, discharge not determined; minimum discharge, no flow many days during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.02	0.46	1.5	0.35	1.4	0.45	0.55	e0.16	e0.09	0.00	0.00	0.00
2	e0.02	0.31	3.2	0.47	1.4	0.38	0.46	e0.16	e0.09	0.00	0.00	0.00
3	e0.02	e0.25	1.6	0.38	1.9	0.34	0.41	e0.15	e0.08	0.00	0.00	0.00
4	e0.02	0.53	1.7	0.33	1.6	0.32	0.36	e0.16	e0.08	0.00	0.00	0.00
5	e0.02	0.44	1.9	0.34	1.4	0.31	0.34	e0.24	e0.08	0.00	0.00	0.00
6	e0.02	0.34	2.3	0.39	1.6	e0.26	0.50	e0.19	e0.05	0.00	0.00	0.00
7	e0.02	e0.29	1.7	0.92	1.4	e0.25	0.55	e0.17	e0.05	0.00	0.00	0.00
8	e0.02	e0.26	1.7	2.4	1.2	e0.24	0.41	e0.15	e0.05	e0.11	0.00	0.00
9	e0.02	e0.29	1.5	1.5	0.97	e0.26	0.86	e0.14	e0.05	e0.04	0.00	0.00
10	e0.02	e0.21	1.3	1.1	0.90	e0.29	1.1	e0.13	e0.04	0.00	0.00	0.00
11	e0.02	e0.22	0.99	0.79	0.73	0.86	0.81	e0.12	e0.04	0.00	0.00	0.00
12	e0.04	0.32	1.4	1.1	0.64	0.84	0.74	e0.12	e0.03	0.00	0.00	0.00
13	e0.04	0.59	11	0.91	0.58	1.0	1.1	e0.16	e0.03	0.00	0.00	0.00
14	e0.04	2.2	15	0.72	0.52	1.2	2.0	e0.20	e0.03	0.00	0.00	0.00
15	e0.02	1.5	3.2	0.57	0.47	1.2	1.3	e0.14	e0.03	0.00	0.00	0.00
16	e0.05	e0.78	7.2	0.49	0.41	1.2	1.5	e0.13	e0.03	0.00	0.00	0.00
17	e0.03	e0.46	3.3	0.42	0.42	0.87	1.0	e0.22	e0.03	0.00	0.00	0.00
18	e0.17	e0.35	1.9	0.41	0.45	0.80	0.78	e0.14	e0.07	0.00	0.00	0.00
19	0.07	e0.75	1.6	0.77	0.43	1.3	0.65	e0.13	e0.05	0.00	0.00	0.00
20	e0.03	e1.6	1.2	1.1	0.36	1.4	0.54	e0.18	e0.04	0.00	0.00	0.00
21	e0.11	e1.0	0.89	1.0	2.4	1.1	0.46	e0.14	e0.04	0.00	0.00	0.00
22	e0.24	e0.75	0.70	0.93	5.8	1.1	0.41	e0.12	e0.03	0.00	0.00	0.00
23	e0.08	e3.0	0.56	0.92	4.7	1.1	0.34	e0.11	e0.03	0.00	0.00	0.00
24	e0.21	e1.8	0.47	1.8	1.9	0.94	e0.30	e0.10	e0.03	0.00	0.00	0.00
25	0.30	e1.0	0.41	6.4	1.1	0.80	e0.27	e0.11	e0.03	0.00	0.00	0.00
26	0.62	e0.76	0.36	2.9	0.84	0.70	e0.29	e0.11	e0.03	0.00	0.00	0.00
27	1.5	e0.67	0.32	1.8	0.66	0.84	e0.26	e0.10	e0.03	0.00	0.00	0.00
28	0.52	e0.95	0.30	1.3	0.54	1.1	e0.22	e0.11	e0.16	0.00	0.00	0.00
29	e0.27	1.8	e0.26	0.96	---	0.84	e0.20	e0.11	e0.10	0.00	0.00	0.00
30	e0.23	1.5	e0.24	0.93	---	0.69	e0.18	e0.11	e0.04	0.00	0.00	0.00
31	0.88	---	0.31	1.4	---	0.60	---	e0.10	---	0.00	0.00	---
TOTAL	5.67	25.38	70.01	35.80	36.72	23.58	18.89	4.41	1.56	0.15	0.00	0.00
MEAN	0.18	0.85	2.26	1.15	1.31	0.76	0.63	0.14	0.052	0.005	0.000	0.000
MAX	1.5	3.0	15	6.4	5.8	1.4	2.0	0.24	0.16	0.11	0.00	0.00
MIN	0.02	0.21	0.24	0.33	0.36	0.24	0.18	0.10	0.03	0.00	0.00	0.00
AC-FT	11	50	139	71	73	47	37	8.7	3.1	0.3	0.00	0.00
CFSM	0.34	1.57	4.18	2.14	2.43	1.41	1.17	0.26	0.10	0.01	0.00	0.00
IN.	0.39	1.75	4.82	2.47	2.53	1.62	1.30	0.30	0.11	0.01	0.00	0.00

WTR YR 2002 TOTAL 222.17 MEAN 0.61 MAX 15 MIN 0.00 AC-FT 441 CFSM 1.13 IN. 15.31

e Estimated

12202420 MILL CREEK NEAR BELLINGHAM, WA

LOCATION.--Lat 48°45'19", long 122°24'55", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.27, T.38 N., R.4 E., Whatcom County, Hydrologic Unit 17110002, on left bank 30 ft upstream from Lakeview Avenue, 50 ft downstream from small dam and pond, 3.0 mi from City of Bellingham and 0.2 mi upstream from mouth at Lake Whatcom.

DRAINAGE AREA.--0.79 mi².

PERIOD OF RECORD.--June to September 2002.

GAGE.--Water-stage recorder. Elevation of gage is 320 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor except for period of no flow, which is good. Regulation and diversion at the upstream dam and pond during summer months. Basin affected by urbanization.

EXTREMES FOR PERIOD JUNE TO SEPTEMBER.--Maximum estimated daily discharge 0.30 ft³/s June 29; minimum discharge, no flow July 13 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, JUNE TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	JUN	JUL	AUG	SEP
1	---	e0.06	0.00	0.00
2	---	e0.05	0.00	0.00
3	---	e0.04	0.00	0.00
4	---	e0.04	0.00	0.00
5	---	e0.03	0.00	0.00
6	---	e0.02	0.00	0.00
7	---	e0.03	0.00	0.00
8	---	e0.04	0.00	0.00
9	---	e0.03	0.00	0.00
10	---	e0.02	0.00	0.00
11	---	e0.01	0.00	0.00
12	---	e0.01	0.00	0.00
13	---	e0.00	0.00	0.00
14	e0.03	e0.00	0.00	0.00
15	e0.03	e0.00	0.00	0.00
16	e0.02	0.00	0.00	0.00
17	e0.02	0.00	0.00	0.00
18	e0.06	0.00	0.00	0.00
19	e0.06	0.00	0.00	0.00
20	e0.05	0.00	0.00	0.00
21	e0.05	0.00	0.00	0.00
22	e0.04	0.00	0.00	0.00
23	e0.03	0.00	0.00	0.00
24	e0.02	0.00	0.00	0.00
25	e0.02	0.00	0.00	0.00
26	e0.01	0.00	0.00	0.00
27	e0.01	0.00	0.00	0.00
28	e0.04	0.00	0.00	0.00
29	e0.30	0.00	0.00	0.00
30	e0.20	0.00	0.00	0.00
31	---	0.00	0.00	---
TOTAL	---	0.38	0.00	0.00
MEAN	---	0.012	0.000	0.000
MAX	---	0.06	0.00	0.00
MIN	---	0.00	0.00	0.00
AC-FT	---	0.8	0.00	0.00

e Estimated

WHATCOM CREEK BASIN

12202450 SILVER BEACH CREEK AT MAYNARD PLACE AT BELLINGHAM, WA

LOCATION.--Lat 48°46'10", long 122°24'19", in SW ¼ NE ¼ sec.22, T.38 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, on left bank at Maynard Place subdivision, 3.5 mi east of Post Office in Bellingham and 0.1 m upstream from Lake Whatcom.

DRAINAGE AREA.--1.20 mi².

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder. Elevation of gage is 320 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. Probably some diversion upstream for domestic use, and other effects from urbanization.

AVERAGE DISCHARGE.--1 year (water year 2002) 1.97 ft³/s, 22.27 in/yr, 1,420 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.93 ft Feb. 22, maximum discharge not determined; minimum daily discharge, 0.04 ft³/s Oct. 4-7, June 23-26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.05	0.68	4.6	1.1	4.7	4.0	1.4	0.41	0.14	0.14	0.06	0.06
2	e0.05	0.45	7.1	1.6	4.1	3.0	1.2	0.40	0.12	0.10	0.06	0.12
3	e0.05	0.36	3.3	0.90	4.5	2.3	1.2	0.41	0.11	0.09	0.06	0.10
4	e0.04	1.7	3.6	0.71	3.5	1.7	1.1	0.44	0.12	0.08	0.07	0.08
5	e0.04	1.2	4.2	0.67	3.6	1.6	1.1	0.66	0.18	0.07	0.08	0.08
6	e0.04	0.71	3.9	0.85	3.8	1.1	1.9	0.50	0.11	0.07	0.10	0.06
7	e0.04	0.50	2.6	5.0	3.1	0.99	2.2	0.40	0.09	0.28	0.06	0.06
8	e0.05	0.41	3.8	13	3.1	0.99	1.5	0.44	0.09	0.52	0.06	0.07
9	e0.06	0.36	3.4	5.7	2.4	1.2	2.0	0.50	0.08	0.22	0.05	0.08
10	e0.08	0.32	3.3	3.4	2.6	1.3	2.1	0.30	0.07	0.16	0.06	0.07
11	e0.15	0.32	2.7	2.2	2.1	3.0	1.7	0.24	0.07	0.11	0.06	0.07
12	e0.12	0.44	2.5	4.2	1.9	2.4	1.9	0.22	0.07	0.09	0.06	0.07
13	0.09	0.75	21	3.3	1.6	2.1	3.2	0.34	0.06	0.09	0.06	0.06
14	0.19	3.3	17	2.3	1.4	2.1	4.9	0.60	0.06	0.09	0.06	0.07
15	0.06	2.6	6.9	1.7	1.4	2.2	2.3	0.32	0.06	0.08	0.06	0.07
16	0.16	1.5	18	1.6	1.2	2.3	3.3	0.27	0.06	0.07	0.05	0.14
17	0.10	0.97	8.3	1.3	1.4	1.9	2.1	0.68	0.06	0.07	0.05	0.09
18	0.43	0.77	4.6	1.5	1.9	1.9	1.6	0.36	0.12	0.07	0.05	0.08
19	0.25	1.5	4.1	4.1	1.6	3.0	1.4	0.32	0.08	0.07	0.05	0.07
20	0.12	2.7	2.8	3.3	1.3	2.7	1.3	0.62	0.06	0.07	0.05	0.07
21	0.23	1.8	2.0	2.1	14	2.6	1.2	0.38	0.06	0.07	0.05	0.06
22	0.57	3.5	1.6	1.9	68	2.9	0.97	0.32	0.05	0.06	0.05	0.06
23	0.23	5.3	1.2	2.1	60	2.6	0.86	0.27	0.04	0.06	0.05	0.06
24	0.47	2.7	0.99	4.5	27	2.1	0.78	0.24	0.04	0.06	0.05	0.06
25	1.0	2.0	0.86	22	17	1.9	0.73	0.26	0.04	0.06	0.05	0.06
26	1.2	1.7	0.75	8.3	12	1.8	0.95	0.25	0.04	0.07	0.05	0.06
27	2.3	1.7	0.69	4.9	8.5	1.9	0.85	0.23	0.05	0.07	0.06	0.06
28	0.68	3.3	0.71	3.6	5.4	2.0	0.67	0.24	0.49	0.07	0.06	0.06
29	0.43	5.1	0.60	2.8	---	1.7	0.62	0.22	0.43	0.07	0.06	0.13
30	0.41	3.6	0.51	3.2	---	1.6	0.52	0.22	0.20	0.07	0.06	0.19
31	1.2	---	0.87	5.9	---	1.5	---	0.16	---	0.06	0.06	---
TOTAL	10.89	52.24	138.48	119.73	263.1	64.38	47.55	11.22	3.25	3.26	1.81	2.37
MEAN	0.35	1.74	4.47	3.86	9.40	2.08	1.58	0.36	0.11	0.11	0.058	0.079
MAX	2.3	5.3	21	22	68	4.0	4.9	0.68	0.49	0.52	0.10	0.19
MIN	0.04	0.32	0.51	0.67	1.2	0.99	0.52	0.16	0.04	0.06	0.05	0.06
AC-FT	22	104	275	237	522	128	94	22	6.4	6.5	3.6	4.7
CFSM	0.29	1.45	3.72	3.22	7.83	1.73	1.32	0.30	0.09	0.09	0.05	0.07
IN.	0.34	1.62	4.29	3.71	8.16	2.00	1.47	0.35	0.10	0.10	0.06	0.07

WTR YR 2002 TOTAL 718.28 MEAN 1.97 MAX 68 MIN 0.04 AC-FT 1420 CFSM 1.64 IN. 22.27

e Estimated

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

LOCATION.--Lat 48°54'22", long 121°50'35", in SE 1/4 SW 1/4 sec.36, T.40 N., R.7 E., Whatcom County, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi downstream from Cascade Creek, 0.3 mi downstream from Deadhorse Creek, 4.8 mi east of Glacier, 5.5 mi upstream from Glacier Creek, and at mile 63.1.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1937 to current year. Published as "Nooksack River above Cascade Creek, near Glacier" 1937-58 and as "Nooksack River below Cascade Creek, near Glacier" 1958-66.

REVISED RECORDS.--WSP 1092: 1946.

GAGE.--Water-stage recorder. Elevation of gage is 1,245 ft above NGVD of 1929, from river-profile map. Supplementary gage on left bank, at datum 1.19 ft lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Records fair. No diversion upstream from station. Some regulation at low flow by powerplant at Excelsior. Summer flows augmented by glacier melt. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--65 years (water years 1938-2002), 782 ft³/s, 101.24 in/yr, 566,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s Nov. 10, 1989, gage height, 9.56 ft; minimum discharge, 60 ft³/s Mar. 12, 1969; minimum daily, 98 ft³/s Jan. 8, 1979, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Table with columns: Date, Time, Discharge (ft³/s), Gage height (ft), Date, Time, Discharge (ft³/s), Gage height (ft). Rows include data for Nov 15, Nov 19, Jan 07, Apr 14, May 29, June 29.

Minimum discharge, 216 ft³/s Feb. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

Large table with columns: DAY, OCT, NOV, DEC, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP. Rows show daily discharge values from day 1 to 31, followed by summary statistics (TOTAL, MEAN, MAX, MIN, AC-FT, CFSM, IN.).

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

Table with columns: MEAN, MAX (WY), MIN (WY). Rows show monthly mean data for years 1938, 1953, 1958, 1974, 1979, 1988, 1995, 1997, 1998, 1999, 2000, 2001.

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR, FOR 2002 WATER YEAR, WATER YEARS 1938 - 2002

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

e Estimated

NOOKSACK RIVER BASIN

12206900 RACEHORSE CREEK AT NORTH FORK ROAD NEAR KENDALL, WA

LOCATION.--Lat 48°53'07", long 122°07'56", in SW ¼ NW ¼ sec.11, T.39 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on right bank on the downstream side of North Fork Road bridge, 2.2 mi south of Kendall, and at mile 0.7.

DRAINAGE AREA.--10.5 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 410 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those below 4 ft³/s and those above 300 ft³/s, which are fair. No known diversions or regulation upstream of station.

AVERAGE DISCHARGE.--4 years (water year 1999-2002), 60.3 ft³/s, 78.00 in/yr, 43,670 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,370 ft³/s Dec. 29, 1998, gage height, 6.92 ft from rating curve extended above 189 ft³/s; minimum discharge, 1.3 ft³/s, Oct. 1, 1998.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,500 ft³/s Jan. 8, gage height 7.05 ft from rating curve extended above 189 ft³/s; minimum discharge, 2.9 ft³/s, Aug. 29-Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	122	66	45	25	37	72	108	89	71	6.5	2.9
2	8.9	99	110	259	24	33	53	98	92	53	6.2	18
3	8.4	69	55	112	34	31	42	69	91	44	6.1	18
4	7.8	109	43	70	34	29	47	53	92	41	7.3	7.3
5	7.4	113	35	56	34	28	68	53	128	36	11	5.4
6	7.2	67	46	131	54	23	157	44	93	33	12	4.6
7	7.1	49	42	632	64	21	171	38	64	37	8.5	7.3
8	8.9	39	108	746	43	20	82	35	51	70	6.9	7.6
9	12	33	93	255	35	20	132	33	66	45	6.2	7.0
10	42	29	53	124	37	19	222	32	82	39	5.9	5.4
11	40	27	40	90	38	115	151	39	88	35	5.5	4.6
12	67	34	41	133	30	79	219	63	101	30	5.2	4.1
13	47	74	286	102	26	50	346	99	111	27	4.8	3.7
14	46	475	258	73	23	41	467	124	105	22	4.6	3.5
15	33	284	97	57	22	36	146	77	90	19	4.4	3.3
16	42	181	607	49	26	31	103	64	72	18	4.2	24
17	41	106	353	41	26	26	82	153	59	16	4.0	24
18	81	69	118	37	40	24	68	103	157	15	3.9	9.8
19	205	129	79	35	53	25	64	87	71	14	3.8	11
20	76	149	60	35	47	25	60	133	62	13	3.8	15
21	68	135	49	31	499	20	55	106	69	12	3.9	9.0
22	199	108	41	28	948	22	57	91	64	11	3.9	7.2
23	214	155	36	27	417	30	50	81	56	10	3.7	6.2
24	115	91	32	76	140	38	44	77	48	9.3	3.6	5.5
25	119	63	30	104	86	44	41	90	50	8.6	3.4	4.9
26	210	50	27	52	65	50	41	99	54	8.0	3.4	4.5
27	240	44	26	39	53	45	38	123	50	7.4	3.4	4.3
28	94	40	32	32	44	49	43	188	101	7.4	3.2	4.1
29	62	67	31	29	---	46	50	197	247	8.5	3.0	7.5
30	89	48	28	27	---	42	77	167	104	7.6	3.0	10
31	205	---	28	26	---	41	---	100	---	7.0	3.0	---
TOTAL	2412.5	3058	2950	3553	2967	1140	3248	2824	2607	774.8	158.3	249.7
MEAN	77.8	102	95.2	115	106	36.8	108	91.1	86.9	25.0	5.11	8.32
MAX	240	475	607	746	948	115	467	197	247	71	12	24
MIN	7.1	27	26	26	22	19	38	32	48	7.0	3.0	2.9
AC-FT	4790	6070	5850	7050	5890	2260	6440	5600	5170	1540	314	495
CFSM	7.41	9.71	9.06	10.9	10.1	3.50	10.3	8.68	8.28	2.38	0.49	0.79
IN.	8.55	10.83	10.45	12.59	10.51	4.04	11.51	10.01	9.24	2.75	0.56	0.88
CAL YR 2001	TOTAL 19502.8	MEAN 53.4	MAX 607	MIN 4.1	AC-FT 38680	CFSM 5.09	IN. 69.10					
WTR YR 2002	TOTAL 25942.3	MEAN 71.1	MAX 948	MIN 2.9	AC-FT 51460	CFSM 6.77	IN. 91.91					

NOOKSACK RIVER BASIN

12207750 WARM CREEK NEAR WELCOME, WA

LOCATION.--Lat 48°46'03", long 121°57'48", in NE 1/4 SE 1/4 sec.24, T.38 N., R.6 E., Whatcom County, Hydrologic Unit 17110004, on right bank, 10 mi southeast of Welcome, and at mile 1.2.

DRAINAGE AREA.--4.13 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No diversions or regulation upstream of station. Records for water years 1991-1998 available in the files of Duke Engineering, Bellingham, Washington.

AVERAGE DISCHARGE.--4 years (water year 1999-2002), 29.0 ft³/s, 95.37 in/yr, 21,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 444 ft³/s Dec. 13, 1998, gage height 3.72 ft; maximum gage height, 3.81 ft Jan. 7, 2002; minimum discharge, 3.3 ft³/s Oct. 1, 1998.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 401 ft³/s, Jan. 7, gage height 3.81 ft from rating curve extended above 104 ft³/s; minimum discharge, 4.8 ft³/s Sept. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	45	28	14	9.7	17	18	46	76	72	19	7.5
2	5.7	44	26	41	9.3	15	14	50	74	59	18	14
3	5.5	37	20	32	9.4	14	13	39	76	54	16	10
4	5.3	39	18	24	8.9	13	13	33	78	47	19	7.3
5	5.2	40	17	21	8.6	13	17	29	98	42	20	6.6
6	5.2	31	16	42	9.3	12	25	26	88	45	19	6.1
7	5.1	27	14	234	9.5	12	28	23	67	53	17	5.9
8	5.6	23	19	219	8.5	11	22	21	55	73	16	6.0
9	6.1	21	17	114	8.0	11	22	19	51	58	17	6.7
10	11	21	15	67	8.0	10	34	19	61	62	17	6.6
11	13	21	13	49	7.7	15	32	19	73	68	16	6.5
12	22	32	13	52	7.3	14	42	28	90	65	16	6.1
13	18	50	28	41	7.3	12	68	42	112	63	17	6.0
14	19	136	33	33	7.0	12	127	47	124	56	17	5.9
15	15	174	22	28	7.0	11	68	39	118	48	15	6.1
16	16	98	69	24	7.0	10	47	35	101	47	13	13
17	15	59	77	22	7.1	9.7	37	51	79	48	12	9.4
18	24	43	38	20	7.4	9.4	31	47	113	45	11	6.7
19	52	102	28	18	9.6	9.4	29	46	80	43	10	7.9
20	31	116	23	17	8.7	9.1	28	65	70	37	9.8	7.5
21	26	83	20	16	31	9.3	26	63	79	37	9.4	6.5
22	43	63	17	15	108	9.8	26	55	86	40	9.4	5.9
23	85	53	16	14	94	9.8	23	48	81	41	10	5.7
24	50	41	14	15	48	10	21	45	73	40	10	5.6
25	43	34	13	15	32	10	21	51	75	39	9.8	5.4
26	56	29	13	13	25	11	20	59	87	35	9.0	5.3
27	68	25	12	12	21	11	19	71	89	29	8.6	5.2
28	42	23	13	12	18	11	19	108	106	26	8.6	5.0
29	32	24	13	11	---	10	22	139	165	27	8.2	7.1
30	33	21	12	10	---	10	31	130	99	25	8.1	7.2
31	57	---	13	10	---	11	---	93	---	22	7.8	---
TOTAL	820.5	1555	690	1255	542.3	352.5	943	1586	2624	1446	413.7	210.7
MEAN	26.5	51.8	22.3	40.5	19.4	11.4	31.4	51.2	87.5	46.6	13.3	7.02
MAX	85	174	77	234	108	17	127	139	165	73	20	14
MIN	5.1	21	12	10	7.0	9.1	13	19	51	22	7.8	5.0
AC-FT	1630	3080	1370	2490	1080	699	1870	3150	5200	2870	821	418
CFSM	6.41	12.6	5.39	9.80	4.69	2.75	7.61	12.4	21.2	11.3	3.23	1.70
IN.	7.39	14.01	6.22	11.30	4.88	3.18	8.49	14.29	23.64	13.02	3.73	1.90

CAL YR 2001	TOTAL	8401.6	MEAN	23.0	MAX	174	MIN	5.1	AC-FT	16660	CFSM	5.57	IN.	75.68
WTR YR 2002	TOTAL	12438.7	MEAN	34.1	MAX	234	MIN	5.0	AC-FT	24670	CFSM	8.25	IN.	112.04

12207850 CLEARWATER CREEK NEAR WELCOME, WA

LOCATION.--Lat 48°47'19", long 122°01'18", in NW ¼ NW ¼ sec.15, T.38 N., R.6 E., Whatcom County, Hydrologic Unit 17110004, on left bank, 7 mi southeast of Welcome, and at mile 1.8.

DRAINAGE AREA.--18.5 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,650 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except estimated daily discharges and those above 400 ft³/s, which are fair. No diversions or regulation upstream of station. Records for water years 1992-1998 are available in the files of Duke Engineering, Bellingham, Washington.

AVERAGE DISCHARGE.--4 years (water years 1999-2002) 129 ft³/s, 94.95 in/yr, 93,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,090 ft³/s Dec. 29, 1998, gage height 6.14 ft; minimum discharge, 7.4 ft³/s Oct. 1, 1998.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge 1,980 ft³/s, Jan. 7, gage height 6.05 ft from rating curve extended above 315 ft³/s; minimum discharge, 14 ft³/s Oct. 5, 6, 7, Aug. 31, Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	252	102	68	41	76	170	300	311	230	32	15
2	16	249	121	283	39	70	103	281	328	180	31	66
3	15	174	81	177	43	66	83	189	333	156	29	48
4	15	287	69	115	42	64	91	140	342	158	37	24
5	14	247	61	94	41	61	128	122	497	142	52	20
6	14	141	58	188	46	e54	279	103	365	138	62	18
7	15	107	57	1160	49	e51	260	91	253	156	38	18
8	19	90	91	1180	44	e49	151	84	203	269	31	19
9	32	81	87	535	40	e47	162	79	244	171	29	23
10	103	80	65	252	41	46	326	79	317	167	28	18
11	99	88	56	184	41	150	261	96	361	160	26	17
12	210	128	53	260	38	137	373	173	437	144	24	16
13	124	205	208	205	36	87	547	269	509	129	23	15
14	141	872	244	145	34	72	825	291	500	107	23	15
15	79	651	114	116	34	64	303	195	439	91	22	15
16	83	322	694	101	35	57	202	168	350	87	21	100
17	98	196	517	87	36	51	157	352	279	82	20	61
18	229	138	187	80	48	47	132	264	588	74	19	29
19	649	271	124	75	62	47	133	241	291	68	19	63
20	180	309	97	70	57	46	135	376	267	61	18	50
21	157	249	83	64	389	45	126	298	321	58	18	29
22	409	207	73	59	1520	49	134	252	320	57	18	24
23	722	217	65	57	846	51	120	226	279	56	17	22
24	262	152	60	73	291	55	102	219	243	52	17	20
25	234	116	56	89	170	63	97	271	260	48	16	19
26	430	98	53	64	126	72	97	298	288	44	16	18
27	380	89	51	56	102	69	93	372	269	39	16	17
28	179	82	61	e51	87	72	106	613	376	39	15	17
29	127	89	62	e47	---	70	130	634	650	45	15	32
30	149	75	56	e45	---	67	214	634	314	40	15	37
31	362	---	58	43	---	71	---	362	---	35	15	---
TOTAL	5563	6262	3764	6023	4378	2026	6040	8072	10534	3283	762	885
MEAN	179	209	121	194	156	65.4	201	260	351	106	24.6	29.5
MAX	722	872	694	1180	1520	150	825	634	650	269	62	100
MIN	14	75	51	43	34	45	83	79	203	35	15	15
AC-FT	11030	12420	7470	11950	8680	4020	11980	16010	20890	6510	1510	1760
CFSM	9.68	11.3	6.55	10.5	8.44	3.53	10.9	14.1	18.9	5.72	1.33	1.59
IN.	11.17	12.57	7.56	12.09	8.79	4.07	12.13	16.20	21.15	6.59	1.53	1.78

CAL YR 2001 TOTAL 38840 MEAN 106 MAX 872 MIN 12 AC-FT 77040 CFSM 5.74 IN. 77.97
WTR YR 2002 TOTAL 57592 MEAN 158 MAX 1520 MIN 14 AC-FT 114200 CFSM 8.52 IN. 115.62

e Estimated

NOOKSACK RIVER BASIN

12208000 MIDDLE FORK NOOKSACK RIVER NEAR DEMING, WA

LOCATION.--Lat 48°46'46", long 122°06'19", in lot 7 or 8, in SW ¼ sec.13, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 0.5 mi upstream from Heislars Creek, 6.0 mi southeast of Deming, and at mile 5.6.

DRAINAGE AREA.--73.3 mi². Area at site 1910-11, 1920-21, 1954, 75.4 mi².

PERIOD OF RECORD.--October 1910 to March 1911 (fragmentary gage heights and discharge measurements only), August 1920 to September 1921, February 1934 to September 1935, June to October 1954, October 1964 to November 1968, July 1969 to July 1970, January 1992 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 580 ft above NGVD of 1929, from river-profile map. Oct. 11, 1910, to Mar. 14, 1911, Aug. 28, 1920, to Sept. 30, 1921, June 3 to Oct. 31, 1954, nonrecording gages at site 0.8 mi downstream at different datums. Feb. 18 to Apr. 6, 1934, Nov. 16, 1934, to Sept. 30, 1935, nonrecording gage at present site and datum. Prior to January 1992 at same site, different datum.

REMARKS.--No estimated daily discharges. Records good. Since February 1962, the City of Bellingham sometimes diverts up to about 100 ft³/s for municipal use at dam 1.8 mi upstream. No regulation. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Records for the 1992-97 water years were provided by the City of Bellingham and were reviewed by the U.S. Geological Survey.

AVERAGE DISCHARGE.--16 years (water years 1921, 1935, 1965-68, 1993-2002), 501 ft³/s, 92.92 in/yr, 363,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined, probably occurred Nov. 5, 1934, gage height, 15.0 ft, from floodmarks, present site at different datum; minimum discharge, 30 ft³/s Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 16	2145	4,080	6.06	Jan. 07	2115	*6,810	*7.27

Minimum discharge, 118 ft³/s Oct. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	874	661	323	195	311	569	779	901	855	346	297
2	162	780	702	1220	185	285	383	758	912	680	321	440
3	153	545	402	786	224	265	316	535	934	602	288	377
4	150	739	309	523	224	257	329	444	965	551	339	252
5	142	726	319	435	218	257	448	452	1320	527	383	208
6	138	450	321	985	357	232	823	400	1020	606	313	184
7	121	377	305	4030	383	224	861	351	708	712	263	175
8	130	343	547	3300	289	205	480	326	567	1100	278	170
9	149	309	527	1660	249	201	464	306	615	742	308	218
10	306	294	361	992	250	205	960	301	816	830	329	229
11	332	316	302	751	250	693	779	339	970	902	324	238
12	550	528	298	1040	211	564	1190	525	1170	848	337	237
13	425	898	1030	838	190	377	1610	790	1420	793	372	235
14	462	2660	1140	608	173	323	2400	894	1470	707	368	248
15	311	2450	566	497	166	287	1110	615	1340	591	353	239
16	344	1390	2340	433	172	258	741	539	1130	621	310	527
17	353	788	1910	380	176	231	539	1090	891	625	258	379
18	583	559	798	347	238	215	445	816	1740	587	296	216
19	1240	1450	560	333	364	222	452	734	954	551	287	295
20	530	1760	439	323	306	210	475	1070	846	478	258	292
21	460	1340	373	296	1270	199	453	892	1010	481	255	221
22	1120	962	328	270	3310	215	465	730	1070	556	278	210
23	1760	1110	291	257	2120	234	427	633	939	614	331	220
24	831	666	266	406	995	262	373	605	831	599	377	211
25	805	479	246	561	628	310	352	733	920	589	333	192
26	1120	390	231	353	487	343	353	833	1090	547	301	179
27	1300	389	223	292	405	320	344	1010	1110	436	329	164
28	623	399	267	253	351	350	374	1630	1500	440	341	159
29	429	506	273	227	---	325	431	1880	2210	469	325	215
30	636	373	246	217	---	298	582	1660	1220	387	320	216
31	1380	---	263	207	---	297	---	1080	---	360	304	---
TOTAL	17226	24850	16844	23143	14386	8975	19528	23750	32589	19386	9825	7443
MEAN	556	828	543	747	514	290	651	766	1086	625	317	248
MAX	1760	2660	2340	4030	3310	693	2400	1880	2210	1100	383	527
MIN	121	294	223	207	166	199	316	301	567	360	255	159
AC-FT	34170	49290	33410	45900	28530	17800	38730	47110	64640	38450	19490	14760
CFSM	7.58	11.3	7.41	10.2	7.01	3.95	8.88	10.5	14.8	8.53	4.32	3.38
IN.	8.74	12.61	8.55	11.75	7.30	4.55	9.91	12.05	16.54	9.84	4.99	3.78

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 2002, BY WATER YEAR (WY)

MEAN	507	593	579	566	470	375	436	619	684	487	318	337
MAX	1272	1154	940	965	855	698	739	1039	1202	839	573	796
(WY)	1921	1996	1999	1997	1921	1997	1966	1997	1921	1954	1954	1920
MIN	229	215	237	271	175	237	127	385	327	311	174	120
(WY)	1994	1994	1993	1993	2001	1992	1967	1992	1996	1970	1994	1965

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1920 - 2002

ANNUAL TOTAL		164040		217945								
ANNUAL MEAN		449		597						501		
HIGHEST ANNUAL MEAN										665		1921
LOWEST ANNUAL MEAN										362		1994
HIGHEST DAILY MEAN										7500		Oct 4 1920
LOWEST DAILY MEAN										32		Sep 29 1965
ANNUAL SEVEN-DAY MINIMUM										36		Sep 27 1965
ANNUAL RUNOFF (AC-FT)			325400				432300			363200		
ANNUAL RUNOFF (CFSM)			6.13				8.15			6.84		
ANNUAL RUNOFF (INCHES)			83.25				110.61			92.92		
10 PERCENT EXCEEDS			815				1120			962		
50 PERCENT EXCEEDS			356				406			373		
90 PERCENT EXCEEDS			166				216			168		

NOOKSACK RIVER BASIN

12209000 SOUTH FORK NOOKSACK RIVER NEAR WICKERSHAM, WA

LOCATION.--Lat 48°39'52", long 122°07'56", in lot 2, SW ¼ SW ¼ sec.26, T.37 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 0.5 mi upstream from Skookum Creek, 3.7 mi east of Wickersham, and at mile 14.8.

DRAINAGE AREA.--103 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1933 to October 1977, June to September 1978, October 1980 to September 1995 (seasonal records), October 1995 to current year.

REVISED RECORDS.--WSP 832: 1935-36.

GAGE.--Water-stage recorder. Elevation of gage is 385 ft above NGVD of 1929, from river-profile map. Prior to July 9, 1934, nonrecording gage, at same site and datum.

REMARKS.--Records good except estimated discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--51 years (water years 1934-77, 1996-2002), 750 ft³/s, 98.88 in/yr, 543,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 ft³/s Nov. 23, 1990, gage height, 13.20 ft, from rating curve extended above 11,000 ft³/s; minimum discharge, 59 ft³/s Oct. 20-25, 30, 31, 1987, gage height, 1.79 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2245	7,350	7.70	Feb. 22	0530	11,100	9.35
Dec. 17	0100	6,610	7.32	Apr. 14	0415	7,270	7.66
Jan. 07	2145	*13,000	*10.35				

Minimum discharge, 94 ft³/s Sept. 28-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	1820	1080	493	374	557	1200	1300	1330	985	230	120
2	127	1420	1640	1480	356	499	764	1310	1360	804	217	132
3	121	1030	891	1260	451	461	614	1010	1400	717	210	211
4	116	1050	722	925	466	437	608	801	1390	664	218	142
5	111	1140	605	755	462	432	748	798	1680	e600	372	123
6	108	765	653	1210	728	384	1450	681	1590	608	254	115
7	110	613	621	7720	780	360	1810	574	1080	689	230	111
8	118	522	923	7210	624	336	980	512	887	1140	209	112
9	145	461	1050	3150	538	324	1010	477	904	775	201	131
10	231	417	729	1710	509	321	2190	499	1220	753	201	120
11	505	408	591	1270	509	1760	1580	537	1310	775	199	111
12	719	533	615	1920	427	1410	2850	781	1570	723	189	107
13	669	1070	2310	1590	381	887	3730	1190	1790	671	187	103
14	759	5080	2900	1080	341	732	4790	1380	1780	596	192	101
15	456	3700	1310	841	318	632	2010	970	1540	512	189	99
16	358	2140	5160	707	323	558	1420	830	1320	495	174	252
17	391	1310	3730	604	320	475	1120	1520	1080	496	160	384
18	483	932	1570	544	438	434	e930	1260	2040	467	152	174
19	1660	1100	1150	531	604	453	e830	1090	1200	441	147	150
20	743	1890	891	540	569	419	816	1430	1060	388	144	240
21	571	2150	737	502	3700	378	795	1280	1220	378	141	157
22	1730	1740	633	461	9240	391	880	1180	1280	385	137	131
23	3400	1890	555	442	4580	434	833	1060	1120	390	135	117
24	1530	1240	500	1100	2010	499	687	1010	985	381	137	111
25	1490	923	459	1670	1220	566	623	1160	976	362	138	105
26	1340	749	427	831	930	628	625	1260	1080	340	136	101
27	1910	678	403	616	753	622	594	1420	1070	294	131	99
28	1040	637	460	510	640	759	654	2270	1530	277	128	96
29	763	827	468	448	---	657	746	2500	3120	302	126	122
30	881	720	425	416	---	616	991	1970	1310	297	125	200
31	2740	---	444	400	---	623	---	1500	---	263	121	---
TOTAL	25460	38955	34652	42936	32591	18044	38878	35560	41222	16968	5530	4277
MEAN	821	1298	1118	1385	1164	582	1296	1147	1374	547	178	143
MAX	3400	5080	5160	7720	9240	1760	4790	2500	3120	1140	372	384
MIN	108	408	403	400	318	321	594	477	887	263	121	96
AC-FT	50500	77270	68730	85160	64640	35790	77110	70530	81760	33660	10970	8480
CFSM	7.97	12.6	10.9	13.4	11.3	5.65	12.6	11.1	13.3	5.31	1.73	1.38
IN.	9.20	14.07	12.52	15.51	11.77	6.52	14.04	12.84	14.89	6.13	2.00	1.54

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)
1934	630	1806	1968	68.6	1015	3341	1991	1988	1059	2164	1976	1953
1935	940	2092	1953	1937	794	1847	1951	1956	696	1745	1972	1955
1936	840	1456	1936	1994	1071	1666	1936	1994	880	1740	1937	1992
1937	450	1075	1999	1958	209	501	1954	1958	209	501	1954	1998
1938	270	791	1959	79.7	791	1954	1959	1998	270	791	1959	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1934 - 2002

ANNUAL TOTAL	246417	335073	750
ANNUAL MEAN	675	918	1001
HIGHEST ANNUAL MEAN			488
LOWEST ANNUAL MEAN			1944
HIGHEST DAILY MEAN	5160	9240	14000
LOWEST DAILY MEAN	107	96	59
ANNUAL SEVEN-DAY MINIMUM	116	107	60
ANNUAL RUNOFF (AC-FT)	488800	664600	543100
ANNUAL RUNOFF (CFSM)	6.55	8.91	7.28
ANNUAL RUNOFF (INCHES)	89.00	121.02	98.88
10 PERCENT EXCEEDS	1400	1750	1480
50 PERCENT EXCEEDS	496	633	562
90 PERCENT EXCEEDS	146	137	150

e Estimated

12209000 SOUTH FORK NOOKSACK RIVER NEAR WICKERSHAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 2001 to current year.

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

REMARKS.--Records excellent except those for July 25 to September 30, which are good.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 21.5°C, Aug. 12, 2001; minimum, 0.1°C, Mar. 20, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 20.4°C Aug. 28; minimum, 0.1°C Mar. 20.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.9	10.8	11.6	6.8	6.1	6.5	5.0	4.4	4.8	4.8	3.0	3.8
2	12.5	9.3	10.8	7.5	6.7	7.0	4.8	4.0	4.5	4.9	4.4	4.7
3	11.8	8.9	10.3	7.5	6.5	7.0	4.7	3.7	4.4	4.6	4.3	4.4
4	11.2	8.2	9.7	7.2	6.6	6.9	3.7	3.2	3.4	4.9	4.4	4.6
5	10.5	7.3	8.9	6.8	5.6	6.2	4.0	3.2	3.6	5.1	4.3	4.7
6	10.0	7.8	8.9	5.8	4.9	5.3	3.9	3.5	3.7	5.5	4.7	5.0
7	9.5	8.2	8.9	5.9	4.9	5.3	4.4	3.5	3.9	4.8	3.5	4.2
8	10.4	8.9	9.6	5.8	4.5	5.2	4.8	4.4	4.6	4.9	4.0	4.5
9	10.0	8.7	9.5	5.9	4.8	5.3	4.4	4.0	4.2	4.9	4.5	4.7
10	8.7	7.6	8.1	6.5	4.6	5.5	4.0	3.5	3.8	4.9	4.3	4.6
11	8.8	7.4	8.0	7.0	6.3	6.7	4.3	3.3	3.9	5.5	4.4	4.9
12	8.3	7.4	7.8	8.0	7.0	7.5	4.1	3.1	3.6	5.4	4.3	5.0
13	8.6	7.5	8.0	7.6	7.0	7.3	4.8	4.1	4.5	4.5	4.1	4.3
14	9.0	7.5	8.1	7.9	6.8	7.3	4.7	3.3	3.8	4.2	3.2	3.8
15	8.8	7.0	8.0	8.1	7.3	7.9	4.4	3.7	3.9	3.2	2.3	2.7
16	8.9	8.3	8.6	7.3	6.7	7.2	4.6	3.8	4.2	3.4	3.0	3.2
17	8.3	7.3	7.9	6.7	5.0	5.7	4.0	3.1	3.6	3.0	2.2	2.5
18	7.4	7.0	7.2	5.5	4.2	4.8	4.0	3.6	3.8	3.0	2.4	2.7
19	8.4	7.0	7.6	7.2	5.5	6.4	3.6	3.0	3.4	2.9	2.4	2.6
20	7.9	6.7	7.3	7.2	6.6	6.9	4.0	3.2	3.6	2.9	2.6	2.8
21	7.4	6.9	7.2	6.7	6.2	6.4	4.2	3.8	4.0	2.9	2.4	2.7
22	7.1	6.7	6.9	6.3	6.2	6.2	3.9	2.9	3.3	2.4	1.0	1.7
23	6.8	6.2	6.5	6.2	5.4	5.9	3.6	2.6	3.1	1.9	1.2	1.6
24	6.4	5.8	6.0	5.4	4.7	5.0	2.6	1.9	2.3	3.0	1.9	2.4
25	6.7	5.8	6.2	5.1	4.3	4.7	2.0	1.4	1.7	3.4	2.9	3.2
26	7.3	6.6	6.9	5.4	4.6	5.0	2.1	1.3	1.6	3.1	2.3	2.7
27	6.8	5.8	6.1	5.0	4.4	4.7	3.3	1.9	2.7	2.5	1.3	1.9
28	5.8	4.7	5.3	4.6	3.8	4.1	4.5	3.3	3.9	1.5	0.7	1.0
29	6.2	4.8	5.6	4.4	4.0	4.2	3.7	3.0	3.3	1.9	0.9	1.3
30	7.2	6.2	6.6	4.5	3.9	4.2	3.1	2.3	2.5	2.2	1.0	1.6
31	6.9	5.6	6.2	---	---	---	3.8	2.3	3.2	3.1	2.2	2.6
MONTH	12.9	4.7	7.9	8.1	3.8	5.9	5.0	1.3	3.6	5.5	0.7	3.3

12209490 SKOOKUM CREEK ABOVE DIVERSION NEAR WICKERSHAM, WA

LOCATION.--Lat 48°40'18", long 122°08'18", in NE ¼ NE ¼ sec.27, T.37 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on right bank, 200 ft upstream of hatchery diversion, 3.6 mi northeast of Wickersham, and at mile 0.25.

DRAINAGE AREA.--23.0 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 410 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. Records for water years 1992-1998 are available in the files of Duke Engineering, Bellingham, Washington.

AVERAGE DISCHARGE.--4 years (water years 1999-2002) 146 ft³/s, 86.48 in/yr, 106,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,570 ft³/s Jan. 7, 2002, gage height 7.21 ft, from rating curve extended above 1,360 ft³/s; minimum discharge, 14 ft³/s, Oct. 1, 1998.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,570 ft³/s Jan. 7, gage height, 7.21 ft, from rating curve extended above 1,360 ft³/s; minimum discharge, 20 ft³/s Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	226	194	75	88	99	159	250	216	162	48	27
2	e24	162	242	364	84	90	117	220	217	134	46	40
3	e23	121	125	191	107	85	106	159	214	122	44	41
4	e22	130	104	118	102	82	114	132	214	113	55	31
5	22	132	89	102	106	81	140	127	283	102	68	28
6	22	98	88	346	160	71	245	112	203	103	50	26
7	22	82	86	1840	138	66	231	98	157	113	46	26
8	23	71	157	1470	107	61	144	91	145	227	42	26
9	25	63	149	494	95	60	177	87	164	141	41	28
10	50	57	103	255	91	62	291	89	186	133	41	25
11	52	55	86	195	89	249	258	105	193	127	40	24
12	91	83	86	338	77	162	408	172	220	122	39	24
13	69	174	430	242	70	121	730	226	250	118	39	23
14	94	844	459	169	64	107	1000	233	242	105	41	22
15	55	619	186	142	61	98	295	160	210	93	41	22
16	62	303	1410	126	63	87	211	149	178	91	38	71
17	60	178	766	114	62	77	173	317	152	92	36	60
18	108	129	233	105	82	70	153	204	525	89	34	34
19	196	285	155	99	107	73	148	186	195	85	33	37
20	91	446	119	97	92	68	143	250	173	74	32	39
21	79	396	101	88	532	65	137	204	181	70	31	30
22	225	273	90	82	1520	70	141	200	172	74	30	27
23	374	325	81	77	784	80	129	177	153	76	30	26
24	167	186	74	123	267	92	114	177	140	74	30	25
25	187	137	67	170	178	115	111	211	146	72	30	24
26	299	114	62	118	144	119	114	216	155	69	29	23
27	317	104	59	99	124	108	113	260	158	62	28	22
28	142	100	68	107	111	118	122	443	306	60	28	21
29	107	143	68	99	---	111	142	522	537	63	28	38
30	158	112	60	98	---	101	203	401	218	60	27	41
31	496	---	61	94	---	99	---	245	---	52	27	---
TOTAL	3687	6148	6058	8037	5505	2947	6569	6423	6503	3078	1172	931
MEAN	119	205	195	259	197	95.1	219	207	217	99.3	37.8	31.0
MAX	496	844	1410	1840	1520	249	1000	522	537	227	68	71
MIN	22	55	59	75	61	60	106	87	140	52	27	21
AC-FT	7310	12190	12020	15940	10920	5850	13030	12740	12900	6110	2320	1850
CFSM	5.17	8.91	8.50	11.3	8.55	4.13	9.52	9.01	9.42	4.32	1.64	1.35
IN.	5.96	9.94	9.80	13.00	8.90	4.77	10.62	10.39	10.52	4.98	1.90	1.51

CAL YR 2001 TOTAL 39569 MEAN 108 MAX 1410 MIN 22 AC-FT 78490 CFSM 4.71 IN. 64.00
WTR YR 2002 TOTAL 57058 MEAN 156 MAX 1840 MIN 21 AC-FT 113200 CFSM 6.80 IN. 92.29

e Estimated

NOOKSACK RIVER BASIN

12210500 NOOKSACK RIVER AT DEMING, WA

LOCATION.--Lat 48°48'38", long 122°12'13", in lot 12, NE ¼ SE ¼ sec.6, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 800 ft downstream from South Fork, 1.1 mi southeast of Deming, and at mile 36.6.

DRAINAGE AREA.--584 mi², includes 5 mi² in Canada.

PERIOD OF RECORD.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1964 (discharges above 3,500 ft³/s only), October 1964 to current year. Published as "near Deming" 1910-11.

REVISED RECORDS.--WSP 1286: 1951. WSP 1736: 1937(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 204.2 ft above NGVD of 1929. Prior to Dec. 5, 1910, nonrecording gage at site 1.1 mi downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, nonrecording gage at site 5 mi downstream at different datum. July 20 to Sept. 19, 1935, nonrecording gage at same site and datum.

REMARKS.--Records poor. Slight regulation by powerplant at Excelsior. Since February 1962, City of Bellingham diverts at times up to about 100 ft³/s from the Middle Fork for municipal use. Summer flows augmented by glacier melt at source. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1936-57, 1965-2002), 3,349 ft³/s, 77.91 in/yr, 2,426,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,900 ft³/s Nov. 29, 1995, gage height, 14.80 ft; maximum gage height, 15.89 ft Dec. 3, 1975; minimum daily discharge, 430 ft³/s Oct. 29, Nov. 9, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Mar. 15, 1908, reportedly reached a stage of 20 ft. Peak of Feb. 27, 1932, reached a stage of 16.8 ft, from floodmarks, discharge, 49,300 ft³/s. Peak of November 1909 reached a stage about equal to that of the 1932 peak.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	0130	27,000	10.57	Feb. 22	0900	33,900	11.60
Dec. 14	0515	17,300	8.52	Apr. 14	0730	24,100	10.01
Dec. 17	0100	27,600	10.67	Jun. 29	1015	16,000	9.01
Jan. 08	0345	*47,400	*13.80				

Minimum discharge, 686 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1110	6160	4180	2540	2170	3710	3890	4790	6040	6490	2380	1720
2	1010	5000	6680	6540	2060	3390	3260	5150	5770	5420	2180	1920
3	920	3770	4190	5910	2270	3150	2810	4290	5880	4840	2000	2350
4	854	3820	3440	4360	2380	2980	2720	3620	5890	4570	2000	1580
5	794	4830	2980	3590	2270	2930	3090	3540	6940	4260	2480	1300
6	754	3170	3050	4710	2900	2660	4520	3230	6910	4140	2380	1230
7	713	2510	2990	22300	3380	2520	6170	2880	5080	4520	2070	1120
8	686	2140	3910	32300	2880	2430	3980	2640	4110	5830	1930	1080
9	693	1880	5130	15700	2560	2360	3660	2480	3840	4960	2010	1190
10	899	1700	3560	10300	2420	2340	6950	2420	4650	4780	2180	1270
11	1730	1670	2890	8080	2490	4570	5510	2450	5410	5180	2150	1310
12	1950	2250	2650	8410	2170	5050	7520	2960	6490	5040	2100	1310
13	2560	3580	7470	7920	1980	3730	10300	4300	7660	4800	2320	1300
14	2250	17900	13200	6050	1830	3350	17700	5090	8470	4570	2460	1300
15	1740	22600	6950	4980	1720	3040	10000	4110	8310	4080	2400	1300
16	1530	14700	17200	4310	1700	2840	7240	3590	7530	3970	2160	1740
17	1820	8890	19100	3760	1680	2540	5750	5420	6160	4050	1810	2680
18	1920	6170	9760	3390	1960	2390	4810	4960	9360	3900	1740	1470
19	5440	8340	7230	3280	2330	2540	4350	4420	7420	3760	1700	1400
20	2940	12900	5650	3240	2440	2460	4160	5560	6140	3450	1610	1780
21	2110	10100	4690	3050	6920	2250	3960	5510	6330	3350	1520	1280
22	4750	7910	4020	2840	e29300	2290	3960	4920	6790	3530	1590	1150
23	9840	8860	3520	2720	e20100	2450	3810	4470	6490	3730	1780	1150
24	5410	6330	3160	3880	10900	2640	3390	4200	5860	3780	2070	1130
25	5030	4720	2880	6680	7490	2850	3130	4500	5840	3710	2100	1070
26	5110	3850	2660	4300	5840	3050	3050	4930	6570	3610	1900	999
27	8830	3470	2510	3390	4770	3000	2900	5560	6980	3190	1860	977
28	4680	3250	2610	2870	4180	3250	2960	8090	7670	2960	1990	967
29	3230	4040	2630	2560	---	3120	3120	10300	14300	3090	1980	1080
30	3020	3520	2440	2400	---	2930	3730	9820	8560	2910	1910	1200
31	8420	---	2410	2300	---	2830	---	7450	---	2660	1760	---
TOTAL	92743	190030	165740	198660	135090	91640	152400	147650	203450	129130	62520	41353
MEAN	2992	6334	5346	6408	4825	2956	5080	4763	6782	4165	2017	1378
MAX	9840	22600	19100	32300	29300	5050	17700	10300	14300	6490	2480	2680
MIN	686	1670	2410	2300	1680	2250	2720	2420	3840	2660	1520	967
AC-FT	184000	376900	328700	394000	268000	181800	302300	292900	403500	256100	124000	82020
CFSM	5.12	10.8	9.15	11.0	8.26	5.06	8.70	8.16	11.6	7.13	3.45	2.36
IN.	5.91	12.10	10.56	12.65	8.61	5.84	9.71	9.41	12.96	8.23	3.98	2.63

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)

	MEAN	4023	4253	3672	3346	2939	3322	4434	4643	3330	1984	1722
MEAN	2655	4023	4253	3672	3346	2939	3322	4434	4643	3330	1984	1722
MAX	7237	10030	9668	7767	7208	7347	5323	6750	7815	6180	3609	3888
(WY)	1968	1991	1976	1997	1961	1972	1988	1936	1937	1974	1999	1978
MIN	595	672	1265	957	1349	1585	1584	2669	2368	1652	1159	941
(WY)	1988	1937	1986	1937	1936	1985	1975	1978	1940	1940	1994	1989

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1935 - 2002

ANNUAL TOTAL		1131413		1610406								
ANNUAL MEAN		3100		4412						3349		
HIGHEST ANNUAL MEAN										4964		1997
LOWEST ANNUAL MEAN										2227		1944
HIGHEST DAILY MEAN			22600	Nov 15		32300	Jan 8		41500		Nov 29	1995
LOWEST DAILY MEAN			686	Oct 8		686	Oct 8		430		Oct 29	1987
ANNUAL SEVEN-DAY MINIMUM			770	Oct 4		770	Oct 4		441		Oct 20	1987
ANNUAL RUNOFF (AC-FT)			2244000			3194000			2426000			
ANNUAL RUNOFF (CFSM)			5.31			7.55			5.73			
ANNUAL RUNOFF (INCHES)			72.07			102.58			77.91			
10 PERCENT EXCEEDS			5410			7910			6000			
50 PERCENT EXCEEDS			2410			3390			2700			
90 PERCENT EXCEEDS			1260			1590			1270			

e Estimated

12210900 ANDERSON CREEK AT SMITH ROAD NEAR GOSHEN, WA

LOCATION.--Lat 48°49'58", long 122°20'16", in SW 1/4 SE 1/4 sec.30, T.39 N., R.4 E., Whatcom County, Hydrologic Unit 17110004, on left bank on the downstream side of Smith Road bridge, 1.5 mi south of Goshen and at mile 3.0.

DRAINAGE AREA.--8.96 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 200 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No known diversions or regulation upstream of station.

AVERAGE DISCHARGE.--4 years (water years 1999-2002) 21.7 ft³/s, 32.91 in/yr, 15,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 595 ft³/s Dec. 14, 2001, gage height, 10.22 ft; no flow Aug. 15 to Sept. 2, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 595 ft³/s Dec. 14, gage height 10.22 ft; no flow Aug. 15 to Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	17	72	e30	37	15	21	5.2	2.5	3.7	0.31	e0.00
2	1.0	12	190	e70	36	13	18	4.9	2.2	2.7	0.34	e0.00
3	0.95	9.0	63	e54	76	12	15	4.6	2.0	2.3	0.26	e0.23
4	0.94	23	47	e40	52	11	13	4.5	1.9	2.0	0.27	0.28
5	0.83	26	42	e30	41	12	15	11	2.6	1.8	0.37	0.13
6	0.89	15	79	e70	58	9.1	34	9.3	2.0	1.5	0.44	0.09
7	0.94	9.9	50	e200	51	8.2	71	7.9	1.7	1.9	0.34	0.06
8	1.2	7.5	73	e250	42	7.7	32	e6.3	1.5	4.5	0.20	0.06
9	1.3	6.1	82	e140	29	8.6	43	e5.0	1.4	2.6	0.15	0.41
10	1.8	5.0	51	e90	28	13	84	e4.0	1.2	1.9	0.16	0.31
11	3.1	4.4	35	e50	25	40	50	e5.6	1.2	1.6	0.14	0.20
12	2.4	4.4	40	e80	19	40	45	e8.0	1.1	1.3	0.10	0.15
13	2.8	5.3	292	e56	16	46	55	e11	0.96	1.3	0.07	0.11
14	4.0	53	320	e38	13	43	98	e12	0.83	1.2	e0.04	0.09
15	3.4	66	100	e27	11	40	55	6.8	0.78	1.0	e0.00	0.06
16	3.4	38	222	20	9.9	38	64	5.3	0.76	0.88	e0.00	0.28
17	3.9	19	160	16	9.9	23	43	11	0.77	0.80	e0.00	1.2
18	4.6	13	65	15	14	20	31	7.8	2.3	0.82	e0.00	0.66
19	11	21	49	41	17	55	24	6.8	1.7	0.69	e0.00	0.51
20	6.7	37	33	48	16	45	20	12	1.3	0.59	e0.00	0.65
21	8.3	33	e23	34	141	32	17	8.7	1.1	0.56	e0.00	0.58
22	14	54	e18	32	381	37	14	7.0	0.86	0.47	e0.00	0.40
23	12	128	14	36	226	37	12	5.6	0.74	0.38	e0.00	0.38
24	18	52	11	59	79	31	10	4.8	0.79	0.33	e0.00	0.38
25	47	25	9.0	219	46	28	8.9	4.6	0.81	0.31	e0.00	0.34
26	43	17	e7.4	89	31	26	8.7	4.4	0.75	0.30	e0.00	0.29
27	102	18	e7.1	46	23	29	8.8	4.0	0.83	0.27	e0.00	0.26
28	29	67	8.7	29	19	37	7.0	4.0	2.6	0.28	e0.00	0.28
29	13	108	7.6	22	---	26	6.2	3.5	10	0.34	e0.00	0.83
30	9.3	65	6.5	20	---	22	5.6	3.6	5.6	0.34	e0.00	1.2
31	23	---	10	35	---	19	---	2.9	---	0.30	e0.00	---
TOTAL	374.85	958.6	2187.3	1986	1546.8	823.6	929.2	202.1	54.78	38.96	3.19	10.42
MEAN	12.1	32.0	70.6	64.1	55.2	26.6	31.0	6.52	1.83	1.26	0.10	0.35
MAX	102	128	320	250	381	55	98	12	10	4.5	0.44	1.2
MIN	0.83	4.4	6.5	15	9.9	7.7	5.6	2.9	0.74	0.27	0.00	0.00
AC-FT	744	1900	4340	3940	3070	1630	1840	401	109	77	6.3	21
CFSM	1.35	3.57	7.87	7.15	6.17	2.97	3.46	0.73	0.20	0.14	0.01	0.04
IN.	1.56	3.98	9.08	8.25	6.42	3.42	3.86	0.84	0.23	0.16	0.01	0.04

CAL YR 2001 TOTAL 7282.07 MEAN 20.0 MAX 320 MIN 0.26 AC-FT 14440 CFSM 2.23 IN. 30.23
WTR YR 2002 TOTAL 9115.80 MEAN 25.0 MAX 381 MIN 0.00 AC-FT 18080 CFSM 2.79 IN. 37.85

e Estimated

NOOKSACK RIVER BASIN

12212050 FISHTRAP CREEK AT FRONT STREET AT LYNDEN, WA

LOCATION.--Lat 48°56'22", long 122°28'46", in SW ¼ SW ¼ sec.19, T.40 N., R.3 E., Whatcom County, Hydrologic Unit 17110004, on right bank on downstream side of Front Street bridge, and at mile 2.9.

DRAINAGE AREA.--37.8 mi².

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 54 feet above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--4 years (water years 1999-2002) 68.3 ft³/s, 24.54 in/yr, 49,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 701 ft³/s Dec. 14, 2001, gage height, 7.71 ft from rating extended above 510 ft³/s; minimum discharge, 3.1 ft³/s Aug. 27-28, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 701 ft³/s Dec. 14, gage height, 7.71 ft; minimum discharge, 3.1 ft³/s Aug. 27-28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	72	157	78	115	95	58	46	29	25	8.7	3.7
2	9.6	64	183	89	136	88	54	45	28	21	7.8	6.4
3	9.3	59	127	83	168	82	51	44	26	19	8.1	8.4
4	9.0	65	105	77	152	80	50	42	25	18	7.7	8.5
5	8.6	114	99	76	124	77	49	44	28	17	7.7	6.8
6	8.1	90	126	86	139	72	54	43	28	16	8.1	6.0
7	8.1	63	118	179	128	66	69	40	25	17	8.1	5.2
8	8.5	50	146	323	117	62	58	39	26	23	7.3	5.3
9	8.1	44	196	253	100	63	57	37	25	21	6.7	5.6
10	13	40	147	163	94	65	71	35	24	17	6.0	6.1
11	18	37	127	130	90	105	88	34	23	15	6.1	5.4
12	24	38	128	121	84	100	107	33	22	14	5.9	5.0
13	37	44	444	107	78	90	195	36	20	13	5.7	4.7
14	32	172	669	94	70	83	323	44	19	13	5.2	4.6
15	28	218	509	83	68	84	199	38	20	13	4.6	4.5
16	24	159	442	82	65	113	185	35	20	12	4.9	7.3
17	23	116	312	80	65	81	156	53	23	12	4.7	7.5
18	25	83	219	77	66	71	116	45	29	12	4.8	7.2
19	36	82	177	118	67	75	91	39	25	11	4.9	6.3
20	31	126	153	161	68	53	82	44	23	11	4.7	5.6
21	34	126	134	127	219	57	76	41	20	11	4.8	5.1
22	54	113	117	105	546	84	70	37	18	10	4.7	5.4
23	49	112	107	115	497	102	63	35	16	8.4	4.6	4.6
24	45	86	100	169	254	86	60	33	15	8.5	4.6	4.5
25	72	67	90	383	167	75	58	32	14	8.7	4.3	4.4
26	61	61	86	249	137	70	57	33	14	8.3	3.7	4.6
27	130	57	84	178	119	71	55	32	21	8.1	3.6	4.9
28	83	87	87	134	104	81	50	33	28	8.1	3.4	4.7
29	59	166	85	111	---	70	47	37	47	8.6	3.5	4.6
30	51	143	80	101	---	64	46	38	34	8.8	3.7	4.9
31	86	---	78	104	---	61	---	32	---	8.2	3.6	---
TOTAL	1094.3	2754	5632	4236	4037	2426	2695	1199	715	416.7	172.2	167.8
MEAN	35.3	91.8	182	137	144	78.3	89.8	38.7	23.8	13.4	5.55	5.59
MAX	130	218	669	383	546	113	323	53	47	25	8.7	8.5
MIN	8.1	37	78	76	65	53	46	32	14	8.1	3.4	3.7
AC-FT	2170	5460	11170	8400	8010	4810	5350	2380	1420	827	342	333
CFSM	0.93	2.43	4.81	3.61	3.81	2.07	2.38	1.02	0.63	0.36	0.15	0.15
IN.	1.08	2.71	5.54	4.17	3.97	2.39	2.65	1.18	0.70	0.41	0.17	0.17
CAL YR 2001	TOTAL 20290.3	MEAN 55.6	MAX 669	MIN 7.5	AC-FT 40250	CFSM 1.47	IN. 19.97					
WTR YR 2002	TOTAL 25545.0	MEAN 70.0	MAX 669	MIN 3.4	AC-FT 50670	CFSM 1.85	IN. 25.14					

NOOKSACK RIVER BASIN

12213100 NOOKSACK RIVER AT FERNDALE, WA

LOCATION.--Lat 48°50'42", long 122°35'17", in NE 1/4 NW 1/4 sec.29, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, on right bank 300 ft downstream from Main Street bridge at Ferndale, and at mile 5.8.

DRAINAGE AREA.--786 mi², of which 48.9 mi² is in Canada.

PERIOD OF RECORD.--Annual maximum stage only, water years 1918, 1922, 1932, 1935. Annual maximum, water years 1946, 1950-66. October 1966 to current year.

REVISED RECORDS.--WDR WA-83-1: 1971(M), 1976(M), WDR WA-94-1: 1976(M), 1980(M), 1984(M), 1990(M), 1991, 1991(M).

GAGE.--Water-stage recorder. Datum of gage is 4.61 ft above NGVD of 1929. Prior to July 18, 1968, at site 220 ft upstream at datum 4.21 ft higher.

REMARKS.--No estimated daily discharges. Records good. City of Bellingham diverts up to about 100 ft³/s at times from Middle Fork Nooksack River for municipal use. Cities of Ferndale and Lynden divert about 10 ft³/s for municipal use. Numerous small diversions located upstream for irrigation. Chemical analyses October 1961 to September 1970. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--36 years (water years 1967-2002), 3,821 ft³/s, 66.05 in/yr, 2,768,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 57,000 ft³/s Nov. 10, 1990, gage height, 23.56 ft; minimum discharge, 463 ft³/s Oct. 26, Nov. 9, 10, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 15	0915	19,800	15.63	Feb. 23	1045	*30,300	*18.94
Dec. 14	1230	17,200	14.41	Apr. 14	1515	19,600	15.53
Dec. 17	0945	21,700	16.37	Jun. 29	1445	16,500	14.07
Jan. 09	0315	28,100	18.40				

Minimum discharge, 712 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	993	7060	4480	2560	3210	4160	3560	4280	6300	6800	2370	1650
2	947	5510	7210	4220	3180	3760	3550	4910	6040	5570	2180	1630
3	875	4640	5410	5390	3350	3460	3060	4420	6150	4830	2050	2230
4	821	3970	4380	4190	3680	3250	2880	3750	6070	4490	1950	1740
5	785	5690	3990	3520	3300	3140	3030	3540	6660	4150	2280	1430
6	752	4270	3840	3630	3580	2930	3750	3400	7600	3910	2250	1310
7	743	3470	4070	11600	4260	2760	5930	3060	5820	4200	2080	1220
8	719	3000	3900	24100	3840	2650	4490	2800	4790	5420	1940	1160
9	725	2670	6200	23300	3530	2570	3700	2630	4280	5730	1920	1170
10	755	2420	4670	12100	3260	2540	6230	2530	4830	4840	2020	1250
11	1480	2290	4020	8520	3360	3060	5870	2500	5490	5410	2070	1320
12	1340	2390	3550	7640	3080	5760	6930	2710	6360	5450	2000	1310
13	2560	3550	6210	8330	2900	4090	9470	3720	7500	5140	2090	1310
14	1940	11100	14900	6340	2720	3690	15700	4650	8450	4920	2200	1280
15	1970	17700	9150	5300	2590	3420	11500	4280	8510	4370	2250	1320
16	1470	14600	12900	4680	2520	3320	8120	3600	7800	4040	2100	1320
17	1770	8780	19300	4240	2470	2990	6500	4540	6470	4110	1850	2490
18	1550	6120	10800	3870	2620	2790	5420	5190	8300	3970	1720	1680
19	4020	5530	7790	3860	2850	2810	4790	4440	7480	3830	1700	1370
20	3600	12200	6180	3980	3210	2920	4490	4890	5730	3520	1640	1660
21	2300	9510	5170	3830	4130	2660	4220	5810	5860	3300	1560	1410
22	3240	7890	4490	3550	20500	2680	4090	5030	6510	3370	1560	1210
23	8290	8790	3960	3410	27500	2850	4030	4740	6500	3590	1640	1170
24	6130	7160	3560	3860	15300	2950	3620	4330	5800	3720	1840	1160
25	5110	5450	3250	7570	8790	3040	3330	4430	5570	3660	1970	1120
26	4710	4630	2990	6170	6730	3200	3190	4890	6130	3580	1840	1050
27	8790	4140	2800	4820	5550	3230	3070	5330	6710	3260	1750	1010
28	5830	3990	2730	4050	4760	3340	3020	7060	7070	2860	1810	980
29	4100	4670	2780	3600	---	3380	3080	9850	13100	2950	1850	981
30	3370	4620	2620	3360	---	3170	3410	9860	9710	2830	1800	1030
31	7080	---	2520	3250	---	3050	---	7690	---	2620	1720	---
TOTAL	88765	187810	179820	198840	156770	99620	154030	144860	203590	130440	60000	40971
MEAN	2863	6260	5801	6414	5599	3214	5134	4673	6786	4208	1935	1366
MAX	8790	17700	19300	24100	27500	5760	15700	9860	13100	6800	2370	2490
MIN	719	2290	2520	2560	2470	2540	2880	2500	4280	2620	1560	980
AC-FT	176100	372500	356700	394400	311000	197600	305500	287300	403800	258700	119000	81270
CFSM	3.64	7.96	7.38	8.16	7.12	4.09	6.53	5.95	8.63	5.35	2.46	1.74
IN.	4.20	8.89	8.51	9.41	7.42	4.71	7.29	6.86	9.64	6.17	2.84	1.94

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

	MEAN	2642	4964	5202	4770	4322	3715	3696	4567	4905	3533	2109	1830
MAX	6815	13980	9992	8720	8197	9339	5723	6526	8285	6218	4006	4074	
(WY)	1968	1991	1976	1984	1982	1972	1988	1969	1974	1999	1999	1978	
MIN	629	1276	1539	1149	1719	1864	1746	2998	2411	1988	1338	917	
(WY)	1988	1988	1986	1979	2001	1985	1975	1978	1992	1977	1987	1989	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1967 - 2002
ANNUAL TOTAL	1177878	1645516	
ANNUAL MEAN	3227	4508	3821
HIGHEST ANNUAL MEAN			5152
LOWEST ANNUAL MEAN			2536
HIGHEST DAILY MEAN	19300	Dec 17	27500
LOWEST DAILY MEAN	719	Oct 8	719
ANNUAL SEVEN-DAY MINIMUM	757	Oct 4	757
ANNUAL RUNOFF (AC-FT)	23360000	32640000	27680000
ANNUAL RUNOFF (CFSM)	4.11	5.74	4.86
ANNUAL RUNOFF (INCHES)	55.75	77.88	66.05
10 PERCENT EXCEEDS	5870	7840	6770
50 PERCENT EXCEEDS	2500	3680	3100
90 PERCENT EXCEEDS	1280	1520	1380

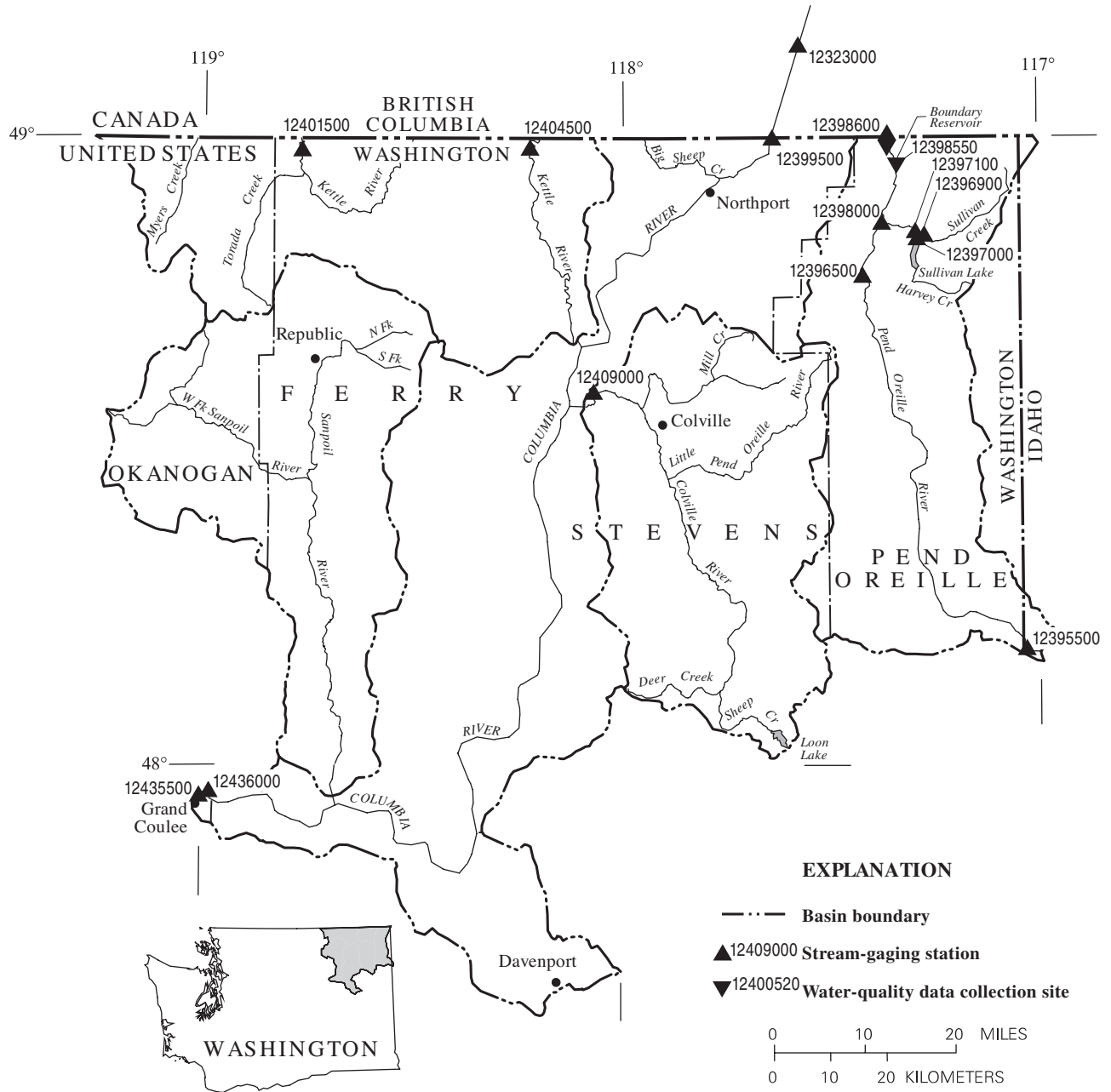


Figure 35. Location of surface-water and water-quality stations in the Columbia River Basin above Franklin D. Roosevelt Lake and including Colville, Kettle, and Pend Oreille River Basins.

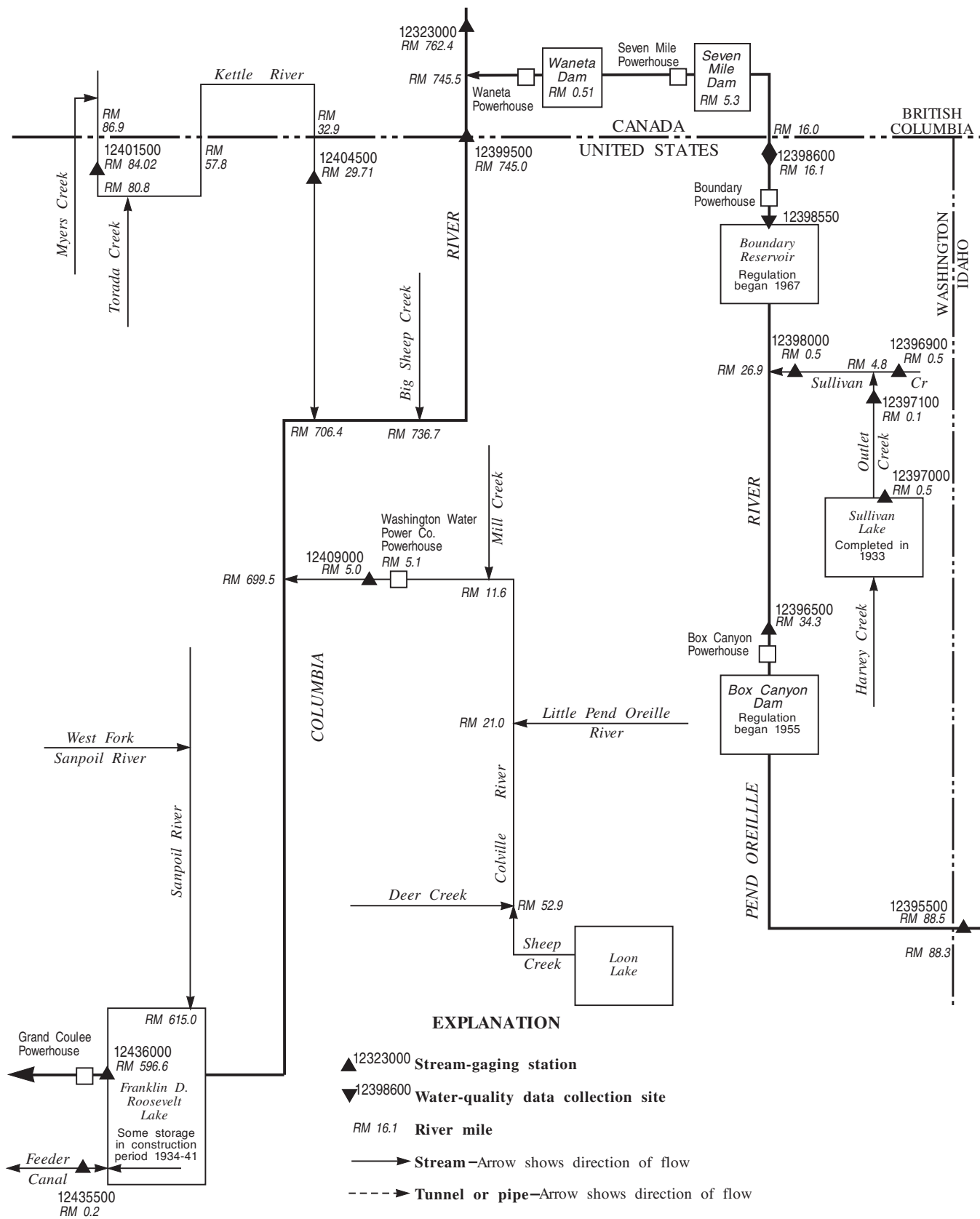


Figure 36. Schematic diagram showing surface-water and water-quality stations in the Columbia River Basin above Franklin D. Roosevelt Lake and including Colville, Kettle, and Pend Oreille River Basins.

COLUMBIA RIVER MAIN STEM

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 mi², 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.--89 years (water years 1914-2002), 71,240 ft³/s, 51,610,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 377,000 ft³/s June 9, 1961, gage height, 50.05 ft; maximum gage height, 50.62 ft June 11, 1948; minimum discharge observed, 8,940 ft³/s Feb. 3, 1937, gage height, 6.27 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 143,000 ft³/s July 13; minimum daily discharge, 26,900 ft³/s Apr. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56900	43800	71700	52300	49400	46600	27100	46600	102000	138000	97800	96100
2	52600	43800	75600	52300	54000	48000	27400	50500	103000	136000	96100	93600
3	52600	43400	86900	52600	48400	48400	27300	51600	104000	136000	94300	86900
4	52600	43400	83000	52600	45900	49800	27200	51900	103000	136000	95300	80500
5	50100	43400	77700	52600	51900	47300	26900	51200	101000	133000	94600	80900
6	47700	42000	81200	52600	52600	44500	28600	53000	104000	130000	95300	72700
7	47700	39900	75600	52600	53000	43800	31000	51600	101000	127000	93900	73100
8	47700	39900	66000	53000	48700	44100	30400	51900	98200	131000	93200	69600
9	47300	39900	65700	53000	43400	44100	30800	51200	102000	138000	90800	72400
10	48000	39900	67500	53300	42700	44100	32600	49400	94600	136000	91100	72000
11	47300	39600	69600	53000	42700	44100	32400	50100	89300	136000	94300	74500
12	47300	39600	69600	53000	42400	44100	34700	50100	86500	140000	94300	75600
13	47000	39900	68500	53000	42400	44500	36700	51200	91500	143000	94300	76600
14	47000	39900	68900	53000	42700	44500	39600	50900	90100	142000	94300	77000
15	45200	39900	68200	53000	42700	44500	39900	52600	94300	142000	93900	77000
16	42000	40300	68200	53000	44800	44500	42000	51900	98900	141000	89300	76300
17	40300	44500	68200	52600	44500	44500	42700	54000	102000	141000	91500	73100
18	40300	57900	68200	53000	45900	44800	45200	53700	102000	140000	91800	73500
19	40300	65300	65000	53000	44100	44800	39200	53700	103000	138000	91800	75200
20	40300	62900	57200	53000	44100	44800	44100	56500	98900	130000	88300	72400
21	40300	57200	53000	48000	44800	44800	44100	63600	95000	127000	85800	71000
22	40300	54700	53000	44100	44800	43100	47000	73100	95000	125000	90400	68500
23	39600	54000	53000	44100	46600	42000	45600	75200	95700	120000	90400	70300
24	38800	54400	53000	44100	44100	42400	45900	74200	96400	116000	93200	69600
25	37800	54700	52600	44100	46300	41000	46600	71700	102000	110000	94300	68200
26	37800	55100	52600	44100	46300	40600	45600	71700	118000	104000	95300	67500
27	39200	56500	52600	44100	45900	38500	44800	73500	119000	102000	96400	71700
28	41000	56500	52600	48700	47300	33700	44800	79100	130000	102000	96400	67500
29	43100	55100	52600	49100	---	30400	44500	83000	139000	102000	95700	66400
30	44100	62500	52600	52600	---	28400	43800	87900	142000	99600	96400	66000
31	43800	---	52600	52600	---	27300	---	101000	---	98900	95000	---
TOTAL	1386000	1449900	2002700	1572100	1292400	1318000	1138500	1887600	3101400	3940500	2895500	2235700
MEAN	44710	48330	64600	50710	46160	42520	37950	60890	103400	127100	93400	74520
MAX	56900	65300	86900	53300	54000	49800	47000	101000	142000	143000	97800	96100
MIN	37800	39600	52600	44100	42400	27300	26900	46600	86500	98900	85800	66000
AC-FT	2749000	2876000	3972000	3118000	2563000	2614000	2258000	3744000	6152000	7816000	5743000	4435000
CAL YR 2001	TOTAL 20342200	MEAN 55730	MAX 86900	MIN 31600	AC-FT 40350000							
WTR YR 2002	TOTAL 24220300	MEAN 66360	MAX 143000	MIN 26900	AC-FT 48040000							

PEND OREILLE RIVER BASIN

12395500 PEND OREILLE RIVER AT NEWPORT, WA

LOCATION.--Lat 48°10'56", long 117°02'00", in SE 1/4 SE 1/4 SW 1/4 sec.24, T.56 N., R.6 W. (Boise Meridian), Bonner County, 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 mi², 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 ft³/s June 15, 1933, June 21, 1933, June 12, 1972; minimum, 1,280 ft³/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 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 95,400 ft³/s June 9; maximum gage height, 46.75 ft, June 9; minimum daily, 7,670 ft³/s Dec. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15800	19000	8810	10200	17000	13200	14800	31100	78700	79700	16100	9150
2	15700	18900	8020	10000	17600	13300	14500	31300	82000	72700	15300	9390
3	15900	18800	9040	10200	17100	13300	14800	31500	85800	62500	14000	10100
4	15800	19100	9460	9360	17400	13800	14600	31500	88700	54800	12800	10900
5	15900	18800	10200	10600	17700	14700	14700	31500	90900	49000	12700	10700
6	16100	19200	11000	11500	17500	14800	14700	35800	92800	40200	12700	12000
7	16100	20800	10800	12300	17300	14700	14600	39600	94300	42800	12700	12900
8	16000	22700	9340	16600	19100	14700	14600	39600	95100	44300	17100	12900
9	19200	21700	8240	23600	20300	14700	15000	39800	95400	44900	19300	12200
10	19500	21800	9020	26500	20200	15300	18900	37000	94700	40700	16300	12100
11	19700	21700	9580	25700	18300	16400	22100	31500	94100	35200	16300	12200
12	19500	16400	8680	22300	15000	17900	25400	31000	93200	34600	16400	12200
13	19400	11800	7670	22400	14000	17500	28400	29500	92200	35400	16300	12400
14	19400	12200	8890	19100	15400	17900	30100	28400	89800	35900	16500	12800
15	19600	13200	11100	16900	16100	21300	34700	29400	88700	37100	16300	12800
16	19500	16200	13600	19400	15900	23100	36200	31900	88500	34600	15300	13600
17	19700	17800	14700	19300	15000	22500	36600	32100	86000	32400	14500	14100
18	19700	14300	15700	17800	14600	23100	36900	32300	83700	34200	14100	14100
19	19700	9660	17400	16600	16900	22300	35800	32300	78100	35600	13900	13600
20	20000	8550	17600	15800	17100	20700	34400	37800	69400	29600	12900	14200
21	19900	8040	15100	15400	14100	17500	33800	47600	67000	25400	12500	14000
22	19900	8290	13200	16800	13200	14200	36000	57100	66900	24000	12200	13800
23	19700	9420	13000	17700	13200	13300	38400	68100	66000	22200	11800	13600
24	19700	9870	13000	17400	13100	14100	38100	74800	66300	22100	12000	13500
25	19200	9800	13000	16000	13700	18300	36500	74500	72200	22300	13400	13500
26	18600	9800	12900	14600	14700	21300	33500	69600	78000	21300	13800	13000
27	18400	11400	12900	14600	16300	21500	31200	64600	77100	20800	13800	11700
28	18600	12400	14600	16400	14600	19900	31100	65600	77200	20700	13900	10800
29	19200	12400	15500	17900	---	18000	31000	69500	79500	20800	14200	10400
30	19000	10500	13800	17700	---	17200	31000	73900	81500	18200	13200	10200
31	19000	---	11600	17300	---	16700	---	75700	---	16800	10800	---
TOTAL	573400	444530	367450	517960	452400	537200	812400	1405900	2493800	1110800	443100	368840
MEAN	18500	14820	11850	16710	16160	17330	27080	45350	83130	35830	14290	12290
MAX	20000	22700	17600	26500	20300	23100	38400	75700	95400	79700	19300	14200
MIN	15700	8040	7670	9360	13100	13200	14500	28400	66000	16800	10800	9150
AC-FT	1137000	881700	728800	1027000	897300	1066000	1611000	2789000	4946000	2203000	878900	731600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

MEAN	17650	18400	16300	15580	16400	19070	27360	49620	62020	32230	14180	13480
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 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1903 - 2002
ANNUAL TOTAL	4888340	9527780	
ANNUAL MEAN	13390	26100	25140
HIGHEST ANNUAL MEAN			38600
LOWEST ANNUAL MEAN			12920
HIGHEST DAILY MEAN	29500	May 3	95400
LOWEST DAILY MEAN	5680	Mar 5	7670
ANNUAL SEVEN-DAY MINIMUM	5990	Mar 3	8770
ANNUAL RUNOFF (AC-FT)	9696000		18900000
10 PERCENT EXCEEDS	22900		66900
50 PERCENT EXCEEDS	10700		17500
90 PERCENT EXCEEDS	6310		11000

PEND OREILLE RIVER BASIN

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 mi², 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 ft³/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.--50 years (water years 1953-2002), 26,590 ft³/s, 19,264,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 136,000 ft³/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 ft³/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 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 100,000 ft³/s June 10; maximum elevation, 2,007.47 ft June 10, (backwater from Boundary Dam); minimum daily discharge, 7,770 ft³/s Nov. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12800	18200	10300	10900	17300	14700	16600	32400	77000	77100	16200	9210
2	14500	18500	8380	10200	16900	14800	16100	32700	80500	74100	15300	9440
3	14900	18600	9010	10300	17100	13800	15400	32300	83200	67400	14800	9630
4	15300	18200	9880	9930	16700	13500	15400	32900	82300	59400	13400	10200
5	15300	18700	9680	9770	17200	14300	15500	32100	83400	53100	12500	11000
6	15400	18200	10600	11100	17000	16000	16500	32800	85000	46900	12100	11000
7	15300	19100	10700	12000	17300	16000	15400	37500	88100	40600	11900	12200
8	15400	21000	10500	13600	17400	15900	15800	39100	89900	44800	13500	12300
9	16700	21900	8690	18700	19600	15200	16000	39800	93200	43500	18600	12000
10	18600	21700	8710	25800	20100	15000	17500	39300	93700	44500	16600	11400
11	18600	21200	9230	26300	19200	15900	21200	34500	93400	38400	15900	11600
12	19200	19200	9460	24900	16800	17400	23700	32400	91900	35000	16000	11800
13	18900	14500	8730	23700	14300	17600	29100	31500	88800	34800	16200	11800
14	18600	12000	8950	22000	14800	17700	32700	30200	87800	34600	15800	12200
15	19100	11200	9530	18300	16100	19200	40200	29100	85300	35800	15800	11800
16	19100	13500	12400	18000	16100	22500	48000	30800	83800	35700	15300	12600
17	18900	16800	14000	19800	15800	23000	42500	32100	83300	33700	14500	13100
18	19300	16200	14600	18400	15000	23700	44900	32200	75400	33200	13900	13400
19	19300	12500	16000	17100	15200	23900	39800	32600	73400	34000	14000	13400
20	19500	9670	17300	16300	17000	22500	37200	33800	68900	33100	12400	12900
21	19700	8640	16800	15600	16100	21100	38500	42800	66000	28100	12000	13300
22	19800	7770	13900	15800	14400	17300	37400	50700	68800	26000	11900	13600
23	19200	9330	12800	17100	14700	14800	31300	61200	67300	23600	11700	13000
24	19800	9330	12700	17600	14500	14200	28100	73600	67600	22300	11400	13200
25	20500	9560	12400	16600	13500	15300	36300	76200	71100	22400	11900	13100
26	19700	9940	12700	15100	14200	20100	36100	74700	76600	21900	13400	12900
27	19000	10200	12800	14300	15500	21500	33900	66100	75400	21100	13300	12300
28	18200	11500	13200	14500	16200	21000	32400	65800	75000	20600	13300	11100
29	18300	12500	14700	16900	---	19400	32100	67400	77400	20800	13400	10600
30	19200	11100	15300	17600	---	18100	31900	77200	80500	19800	13200	10100
31	18900	---	13500	17400	---	17000	---	76900	---	17000	12000	---
TOTAL	557000	440740	367450	515600	456000	552400	857500	1402700	2414000	1143300	432200	356180
MEAN	17970	14690	11850	16630	16290	17820	28580	45250	80470	36880	13940	11870
MAX	20500	21900	17300	26300	20100	23900	48000	77200	93700	77100	18600	13600
MIN	12800	7770	8380	9770	13500	13500	15400	29100	66000	17000	11400	9210
AC-FT	1105000	874200	728800	1023000	904500	1096000	1701000	2782000	4788000	2268000	857300	706500
CAL YR 2001	TOTAL 4895970	MEAN 13410	MAX 30200	MIN 5690	AC-FT 9711000							
WTR YR 2002	TOTAL 9495070	MEAN 26010	MAX 93700	MIN 7770	AC-FT 18830000							

PEND OREILLE RIVER BASIN

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

LOCATION.--Lat 48°50'44", long 117°17'08", in SW 1/4 SE 1/4 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 mi².

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.--21 years (water years 1960-72, 1995-2002), 124 ft³/s, 23.91 in/yr, 89,510 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft³/s June 1, 1997, May 25, 1999, maximum gage height, 5.57 ft June 1, 1997; minimum discharge, 6.5 ft³/s Feb. 23, 24, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 22	1300	831	4.36	May 29	1715	*1,160	*4.70

Minimum daily discharge, 16 ft³/s Dec. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	27	31	e18	e35	e36	56	235	921	143	49	33
2	19	25	31	e22	35	e34	56	271	870	129	48	31
3	18	25	30	e25	34	e38	56	305	830	117	47	34
4	18	25	30	e26	33	e39	57	298	804	108	46	33
5	18	25	30	26	33	e39	60	281	798	99	45	33
6	18	25	29	26	32	e37	69	260	759	91	45	35
7	18	24	29	41	33	e36	72	239	640	84	44	35
8	19	23	29	93	34	e34	73	222	568	120	43	34
9	20	24	29	64	e33	e37	75	209	504	106	42	34
10	20	23	27	52	e33	e42	85	199	463	93	42	33
11	22	22	29	47	34	e42	92	193	463	95	42	32
12	22	22	26	46	29	e43	124	196	473	104	41	32
13	22	22	29	44	35	e40	176	221	501	99	41	32
14	24	35	30	42	33	e39	339	277	535	94	40	32
15	22	44	27	34	33	e40	318	283	542	90	40	32
16	21	57	30	e32	35	e41	262	280	530	85	39	32
17	21	50	33	e36	36	e39	228	295	480	82	39	35
18	21	42	28	e35	35	e38	203	320	460	78	38	38
19	21	39	30	41	35	e41	187	392	428	75	38	35
20	21	39	28	43	35	e41	179	659	365	72	37	35
21	21	39	28	44	35	e35	183	746	325	69	38	34
22	23	39	28	40	46	e43	195	806	302	67	37	34
23	25	38	22	39	53	e43	189	709	286	64	37	32
24	23	36	28	39	e44	e45	181	584	259	65	36	31
25	22	34	e20	39	e24	e46	176	530	232	62	36	31
26	22	33	e16	37	e31	e49	173	534	212	60	35	30
27	24	32	e18	35	e36	e49	169	634	197	58	36	31
28	26	32	e22	31	e37	51	167	909	179	56	35	31
29	23	32	e27	e28	---	51	173	1130	189	54	37	30
30	23	31	e25	e32	---	52	198	1080	162	52	37	35
31	32	---	e22	e35	---	53	---	998	---	51	35	---
TOTAL	668	964	841	1192	981	1293	4571	14295	14277	2622	1245	989
MEAN	21.55	32.13	27.13	38.45	35.04	41.71	152.4	461.1	475.9	84.58	40.16	32.97
MAX	32	57	33	93	53	53	339	1130	921	143	49	38
MIN	18	22	16	18	24	34	56	193	162	51	35	30
AC-FT	1320	1910	1670	2360	1950	2560	9070	28350	28320	5200	2470	1960
CFSM	0.31	0.46	0.39	0.55	0.50	0.59	2.17	6.57	6.78	1.20	0.57	0.47
IN.	0.35	0.51	0.45	0.63	0.52	0.69	2.42	7.58	7.57	1.39	0.66	0.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	MEAN	38.56	42.78	38.18	32.24	33.48	47.01	130.4	483.4	422.4	109.1	48.44	38.61
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	1994	1994	2001	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1959 - 2002
ANNUAL TOTAL	19875	43938	
ANNUAL MEAN	54.45	120.4	123.6
HIGHEST ANNUAL MEAN			179
LOWEST ANNUAL MEAN			54.5
HIGHEST DAILY MEAN	445	May 25	1450
LOWEST DAILY MEAN	16	Jan 28	10
ANNUAL SEVEN-DAY MINIMUM	16	Feb 4	13
ANNUAL RUNOFF (AC-FT)	39420	87150	89510
ANNUAL RUNOFF (CFSM)	0.78	1.71	1.76
ANNUAL RUNOFF (INCHES)	10.53	23.28	23.91
10 PERCENT EXCEEDS	134	319	358
50 PERCENT EXCEEDS	28	39	44
90 PERCENT EXCEEDS	19	23	25

e Estimated

PEND OREILLE RIVER BASIN

12397000 SULLIVAN LAKE NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'21", long 117°17'15", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ 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 mi².

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, 2,588.10 ft July 9; minimum elevation observed, 2,564.00 ft Feb. 11.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	2578.30	---	---	---	---	---	2571.37	---	2587.91	2587.55	---
2	2581.02	2577.78	---	2564.70	---	---	2564.75	---	---	2587.92	---	---
3	---	---	2566.02	---	---	---	2565.72	2571.85	2586.95	2587.92	---	2586.88
4	2580.95	---	---	---	---	---	---	---	2587.27	---	---	---
5	---	2576.80	---	---	---	2564.80	---	---	2587.43	---	2587.50	---
6	---	---	2565.62	---	2564.05	---	---	2572.90	2587.52	---	---	---
7	---	2575.88	2565.52	2564.71	2564.95	---	---	---	2587.58	---	---	---
8	---	2575.50	---	---	---	---	2565.85	---	---	2588.02	---	---
9	---	2574.98	---	---	---	---	---	---	---	2588.10	2587.40	---
10	---	---	2565.30	---	---	---	2566.08	2573.75	2587.45	2588.08	---	2586.75
11	---	---	---	2564.90	2564.00	---	---	---	2587.50	---	---	---
12	2581.01	---	---	---	---	---	2566.27	---	2587.56	2588.08	2587.36	---
13	---	2573.30	---	---	---	2564.87	2567.70	2574.35	2587.62	---	2587.35	2586.00
14	---	2572.80	---	---	---	---	---	---	2587.71	---	---	---
15	---	2572.49	---	---	---	---	---	2575.05	---	2587.95	---	---
16	---	2572.25	---	---	---	---	2568.00	---	---	2587.88	---	---
17	2580.95	---	2565.05	---	---	---	2568.48	---	2587.91	---	---	---
18	---	---	---	2565.20	---	---	2568.72	---	2587.96	2587.85	---	---
19	---	2571.10	---	---	---	---	---	---	2588.02	2587.74	---	2586.55
20	---	2570.00	---	---	2564.25	---	---	2577.23	---	---	2587.16	---
21	---	2570.09	---	---	---	2564.84	---	2578.02	2587.85	---	---	---
22	2580.86	---	---	---	---	---	2569.57	2578.90	---	2587.63	---	---
23	2580.80	---	---	---	---	---	---	2579.85	---	---	---	2586.46
24	2580.55	---	---	2564.05	---	---	---	---	2587.70	2587.64	---	---
25	2580.30	---	---	---	2564.80	---	2570.05	---	2587.70	---	---	---
26	2579.95	2568.03	2564.70	---	---	2564.90	2570.23	2584.05	2587.68	---	2587.07	---
27	---	2567.60	---	---	---	---	---	---	2587.70	---	---	---
28	---	2567.12	---	---	---	---	---	---	2587.73	---	2587.00	---
29	2578.98	2566.85	---	---	---	---	---	---	---	2587.60	---	---
30	---	2566.57	---	---	---	---	2571.00	2584.80	---	---	2587.00	2586.35
31	2578.42	---	---	---	---	---	---	2585.65	---	---	---	---

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 mi².

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.--Records good except for estimated daily discharges, which are fair. Flow regulated by Sullivan Lake 0.4 mi upstream (station 12397000). No diversions upstream from station.

AVERAGE DISCHARGE.--43 years (water years 1960-2002), 74.5 ft³/s, 53,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 924 ft³/s May 31, 1969, gage height, 12.26 ft; minimum discharge, 1.5 ft³/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, 308 ft³/s Nov. 16, gage height, 10.77 ft, result of regulation; minimum discharge, 10 ft³/s May 3, result of regulation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	203	137	30	34	29	26	12	143	102	22	21
2	12	202	119	30	33	28	22	12	169	98	22	21
3	12	200	108	29	32	28	21	16	213	88	22	21
4	12	197	98	26	32	27	21	20	244	79	22	21
5	12	218	89	24	31	27	21	19	263	79	22	20
6	12	235	80	23	31	27	22	19	283	78	22	20
7	12	238	72	26	31	27	22	18	298	76	22	20
8	12	252	67	37	32	27	17	17	306	83	22	20
9	12	252	62	48	31	27	14	16	306	85	22	20
10	12	247	58	54	30	28	15	15	257	85	22	20
11	12	244	54	57	30	30	15	15	232	84	22	20
12	12	239	50	61	29	31	16	15	232	84	22	20
13	12	250	51	61	29	31	16	16	232	81	22	20
14	12	269	48	59	27	31	18	16	233	81	22	20
15	12	278	45	57	27	31	19	16	233	74	21	20
16	12	292	44	55	26	31	24	16	233	67	21	19
17	12	300	42	53	25	31	22	16	237	66	21	19
18	12	290	39	52	25	30	23	17	255	64	21	19
19	12	293	38	51	25	30	24	e18	263	58	21	19
20	12	289	37	51	26	30	24	e20	261	52	21	19
21	12	284	37	50	26	29	25	e22	241	51	21	19
22	54	278	35	50	24	28	25	e24	217	38	21	19
23	110	263	33	48	26	28	25	e25	213	22	21	19
24	139	249	32	45	28	27	25	25	190	22	21	19
25	171	236	32	36	29	27	23	25	168	22	21	19
26	179	227	31	36	29	27	18	26	149	22	21	19
27	179	217	31	36	29	28	15	26	135	22	21	19
28	177	193	31	35	29	28	14	27	127	22	21	19
29	183	174	31	34	---	28	12	28	124	22	21	19
30	191	154	30	34	---	27	12	21	106	22	21	19
31	197	---	30	34	---	27	---	79	---	22	21	---
TOTAL	1832	7263	1691	1322	806	885	596	657	6563	1851	665	589
MEAN	59.10	242.1	54.55	42.65	28.79	28.55	19.87	21.19	218.8	59.71	21.45	19.63
MAX	197	300	137	61	34	31	26	79	306	102	22	21
MIN	12	154	30	23	24	27	12	12	106	22	21	19
AC-FT	3630	14410	3350	2620	1600	1760	1180	1300	13020	3670	1320	1170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	204.5	204.3	83.85	43.22	30.76	31.34	24.01	38.57	146.3	45.68	24.03	26.98
MEAN	204.5	204.3	83.85	43.22	30.76	31.34	24.01	38.57	146.3	45.68	24.03	26.98
MAX (WY)	1991	1985	1960	1984	1984	1959	1974	1961	1974	1999	1999	1965
MIN (WY)	1974	1962	1976	1979	1981	1990	1973	1977	1977	1977	1977	1977

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1959 - 2002

ANNUAL TOTAL	14069.6	24720	
ANNUAL MEAN	38.55	67.73	74.50
HIGHEST ANNUAL MEAN			132 1974
LOWEST ANNUAL MEAN			42.7 1993
HIGHEST DAILY MEAN	300 Nov 17	306 Jun 8	842 Jun 2 1997
LOWEST DAILY MEAN	6.3 Jun 1	12 Oct 1	1.5 Mar 5 1990
ANNUAL SEVEN-DAY MINIMUM	7.9 May 31	12 Oct 1	1.5 Mar 4 1990
ANNUAL RUNOFF (AC-FT)	27910	49030	53970
10 PERCENT EXCEEDS	161	232	244
50 PERCENT EXCEEDS	12	28	25
90 PERCENT EXCEEDS	9.7	16	5.8

e Estimated

PEND OREILLE RIVER BASIN

12398000 SULLIVAN CREEK AT METALINE FALLS, WA

LOCATION.--Lat 48°51'37", long 117°21'47", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.22, T.39 N., R.43 E., Pend Oreille County, Hydrologic Unit 7010216, 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 mi².

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.--Records fair except for those above 1,000 ft³/s, which are poor. Some regulation by storage in Sullivan Lake. Small diversions upstream from station for municipal water supply.

AVERAGE DISCHARGE.--23 years (water years 1954-68, 1995-2002), 240 ft³/s, 174,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 4,350 ft³/s June 1, 1997, gage height, 4.38 ft; minimum discharge, 7.3 ft³/s Jan. 1, 1958, result of freezeup; minimum daily discharge, 27 ft³/s Jan. 1, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,670 ft³/s May 28, gage height, 2.21 ft, minimum discharge, 39 ft³/s Oct. 4, 5 and 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	256	178	52	85	86	93	302	1240	310	92	67
2	41	248	159	57	84	83	90	360	1170	287	91	65
3	40	246	148	59	81	86	87	424	1190	263	89	69
4	40	243	137	57	80	86	88	430	1140	238	87	67
5	39	262	128	55	79	86	91	404	1160	225	86	64
6	39	286	124	57	79	83	100	372	1200	212	85	64
7	39	283	119	75	81	81	112	331	1100	201	84	63
8	40	296	110	171	81	79	110	300	988	271	82	62
9	41	299	104	156	78	82	107	278	883	278	81	62
10	42	295	94	140	78	87	119	261	739	244	80	61
11	46	291	93	135	78	89	128	251	694	232	79	61
12	45	287	85	137	69	90	151	252	728	218	77	60
13	45	293	91	135	75	87	227	277	793	208	76	59
14	47	324	95	128	72	85	481	361	894	202	75	59
15	45	357	83	111	70	86	520	380	924	191	75	59
16	43	380	86	107	72	87	418	375	913	174	73	59
17	43	385	96	109	74	84	347	393	834	167	72	61
18	42	368	79	101	72	82	310	439	831	161	71	64
19	42	359	79	108	72	84	284	514	826	152	70	61
20	42	353	74	110	72	83	267	836	711	142	70	59
21	43	346	73	109	71	76	265	988	656	138	70	59
22	72	342	70	102	81	83	285	1090	607	131	69	59
23	141	327	61	98	102	83	275	943	602	112	69	59
24	169	312	64	99	94	83	259	750	554	112	68	58
25	204	296	61	93	74	84	250	649	486	109	68	57
26	223	286	53	89	81	86	239	639	437	106	68	58
27	223	273	53	84	86	87	225	736	399	103	68	58
28	225	248	60	78	87	88	217	1150	372	100	67	57
29	224	222	63	70	---	87	220	1410	391	98	68	58
30	233	196	61	81	---	87	247	1340	343	97	71	64
31	249	---	59	85	---	90	---	1260	---	95	68	---
TOTAL	2848	8959	2840	3048	2208	2630	6612	18495	23805	5577	2349	1833
MEAN	91.87	298.6	91.61	98.32	78.86	84.84	220.4	596.6	793.5	179.9	75.77	61.10
MAX	249	385	178	171	102	90	520	1410	1240	310	92	69
MIN	39	196	53	52	69	76	87	251	343	95	67	57
AC-FT	5650	17770	5630	6050	4380	5220	13110	36680	47220	11060	4660	3640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2002, BY WATER YEAR (WY)

MEAN	223.2	213.5	147.3	94.37	79.86	112.3	216.5	670.1	721.6	197.0	86.65	87.39
MAX	370	460	465	230	147	360	463	1398	1590	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 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1954 - 2002

ANNUAL TOTAL	40053	81204	
ANNUAL MEAN	109.7	222.5	240.2
HIGHEST ANNUAL MEAN			386
LOWEST ANNUAL MEAN			121
HIGHEST DAILY MEAN	449	May 25	4020
LOWEST DAILY MEAN	30	Feb 7	27
ANNUAL SEVEN-DAY MINIMUM	31	Feb 5	30
ANNUAL RUNOFF (AC-FT)	79450	161100	174000
10 PERCENT EXCEEDS	273	534	557
50 PERCENT EXCEEDS	57	96	115
90 PERCENT EXCEEDS	38	59	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 mi², 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. Total dissolved gas record rated good.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum recorded, 24.0°C (rounded) on several days during August, 2000, 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 92 percent, Dec. 28, 2000, but may have been lower during periods of missing record.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 23.5°C on July 29; minimum, 0.1°C Jan. 7-9.

TOTAL DISSOLVED GAS: Maximum, 137 percent, June 22; minimum, 95 percent, Dec. 23-26, Feb. 2, but may have been lower during periods of missing record.

PRESSURE, TOTAL PARTIAL, DISSOLVED GASSES, UNFILTERED, PERCENT SATURATION, OCTOBER 2001 TO SEPTEMBER 2002

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

PEND OREILLE RIVER BASIN

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA--Continued

PRESSURE, TOTAL PARTIAL, DISSOLVED GASSES, WATER, UNFILTERED, PERCENT SATURATION, WATER YEAR OCTOBER 2001 T

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	96	96	96	97	96	97	103	104	104	109	110	109
2	96	95	95	96	96	96	103	103	103	111	111	111
3	96	96	96	96	96	96	104	104	104	112	109	110
4	96	96	96	97	99	98	104	104	104	111	108	109
5	97	97	97	99	99	99	105	105	105	110	108	109
6	97	98	98	99	100	99	105	105	106	110	106	107
7	99	99	99	100	100	100	105	106	105	106	104	105
8	97	100	98	99	99	99	105	105	105	111	107	109
9	96	96	96	99	99	99	105	105	105	112	111	112
10	97	98	97	99	99	99	105	105	105	115	113	114
11	97	98	97	99	100	99	105	104	104	115	114	114
12	97	97	97	99	100	99	104	105	104	113	110	112
13	98	99	98	98	99	99	105	106	105	111	110	111
14	97	97	97	99	99	99	107	107	106	111	109	110
15	97	97	97	100	100	100	111	107	109	109	106	108
16	98	98	98	100	100	100	118	111	114	106	106	106
17	99	99	99	100	100	100	117	113	117	109	106	107
18	99	99	99	99	99	99	113	112	113	110	107	109
19	99	99	99	99	99	99	112	110	111	110	109	109
20	98	98	98	98	99	99	113	111	112	110	109	109
21	97	99	98	97	98	98	114	113	113	113	109	111
22	100	100	100	99	100	99	114	114	114	116	113	115
23	100	101	100	100	100	100	112	113	112	123	116	119
24	98	100	98	99	100	100	112	108	111	128	124	126
25	97	98	97	100	99	99	108	106	107	128	123	125
26	97	98	98	100	101	101	112	109	111	126	123	125
27	97	98	98	102	102	102	113	112	113	128	126	127
28	98	98	98	102	102	102	112	111	111	128	128	128
29	---	---	---	103	101	102	111	110	110	130	129	129
30	---	---	---	103	103	103	110	109	109	130	129	129
31	---	---	---	103	104	104	---	---	---	128	123	124
MONTH	100	95	98	103	96	100	118	103	108	130	104	114
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	123	123	123	127	127	127	102	102	102	102	102	102
2	124	123	124	128	128	128	102	100	102	102	102	102
3	124	115	120	134	130	133	102	100	101	103	102	102
4	115	113	114	134	131	132	102	99	101	101	100	101
5	114	114	114	130	128	129	102	100	101	101	100	100
6	113	113	113	127	127	127	100	100	100	100	100	100
7	113	113	113	127	123	126	101	99	100	100	100	100
8	113	112	112	120	122	121	101	100	100	99	98	99
9	112	112	112	122	121	122	101	100	101	99	98	99
10	113	113	113	124	122	123	102	101	102	99	98	99
11	113	113	113	125	121	124	103	102	102	101	99	99
12	114	113	113	122	118	121	103	102	102	100	99	100
13	114	114	114	119	118	119	104	103	103	101	99	100
14	115	115	115	119	117	118	105	103	104	102	100	101
15	116	116	116	117	116	117	105	104	104	101	101	101
16	117	116	117	117	116	116	103	103	103	101	101	101
17	117	117	117	118	116	117	103	103	103	101	101	101
18	119	116	116	116	114	115	103	102	102	100	100	100
19	122	119	121	114	113	113	103	102	102	100	100	100
20	129	123	127	114	113	113	103	101	102	100	100	99
21	136	130	135	114	112	113	103	101	101	99	98	99
22	137	134	136	112	108	110	102	100	101	99	98	98
23	134	134	134	108	106	108	103	99	101	98	98	98
24	133	133	133	108	107	108	103	100	101	99	99	99
25	135	133	134	107	106	107	103	100	101	99	99	99
26	135	132	133	107	107	107	102	100	101	99	99	100
27	131	129	129	107	106	107	103	100	101	100	100	100
28	130	129	129	107	105	106	103	102	102	100	100	100
29	130	129	129	107	105	105	104	103	103	100	100	100
30	128	127	128	104	104	104	103	102	103	99	100	99
31	---	---	---	102	102	102	103	102	102	---	---	---
MONTH	137	112	122	134	102	117	105	99	102	103	98	100

PEND OREILLE RIVER BASIN

12398550 BOUNDARY DAM RESERVOIR NEAR METALINE FALLS, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	17.9	17.6	17.7	9.2	9.0	9.1	5.8	5.5	5.7	0.7	0.5	0.6
2	17.7	17.2	17.4	9.0	9.0	9.0	5.7	5.3	5.5	0.6	0.4	0.5
3	17.3	16.9	17.1	9.2	9.0	9.1	5.3	4.9	5.1	0.5	0.3	0.4
4	17.0	16.5	16.7	9.1	9.0	9.1	5.0	4.6	4.8	0.4	0.3	0.3
5	16.5	16.2	16.3	9.2	9.1	9.2	4.6	4.2	4.4	0.3	0.3	0.3
6	16.2	15.8	16.1	9.1	9.0	9.1	4.3	3.9	4.2	0.3	0.2	0.2
7	15.9	15.6	15.8	9.0	8.8	9.0	3.9	3.5	3.8	0.2	0.1	0.2
8	15.6	15.2	15.4	8.8	8.7	8.8	3.5	3.2	3.3	0.2	0.1	0.2
9	15.2	14.7	15.1	8.7	8.2	8.5	3.2	2.9	3.1	0.4	0.1	0.2
10	14.8	14.2	14.5	8.2	7.7	7.9	3.0	2.7	2.8	1.1	0.4	0.7
11	14.2	13.8	14.0	7.7	7.5	7.6	2.8	2.6	2.8	1.6	1.1	1.4
12	13.8	13.4	13.6	7.5	7.4	7.4	2.7	2.5	2.6	1.7	1.4	1.5
13	13.4	13.0	13.2	7.4	7.3	7.3	2.6	2.5	2.6	2.2	1.7	1.9
14	13.1	12.7	12.9	7.3	7.3	7.3	2.5	2.3	2.4	2.6	2.2	2.4
15	12.7	12.5	12.6	7.4	7.2	7.3	2.4	2.0	2.3	2.6	2.5	2.6
16	12.6	12.1	12.4	7.4	7.3	7.3	2.3	2.2	2.3	2.6	2.3	2.5
17	12.3	12.0	12.1	7.5	7.3	7.4	2.4	2.2	2.3	2.4	2.1	2.3
18	12.0	11.8	11.9	7.6	7.5	7.5	2.3	2.1	2.2	2.2	1.7	1.9
19	11.8	11.5	11.7	7.7	7.6	7.6	2.3	2.3	2.3	1.8	1.5	1.6
20	11.5	11.4	11.5	7.7	7.6	7.7	2.3	2.2	2.2	1.5	1.4	1.4
21	11.4	11.0	11.2	7.7	7.6	7.7	2.2	2.1	2.2	1.4	1.2	1.4
22	11.1	10.8	11.0	7.6	7.6	7.6	2.1	1.9	2.1	1.3	1.2	1.3
23	10.8	10.7	10.8	7.6	7.5	7.6	2.0	1.7	1.8	1.4	1.2	1.3
24	10.7	10.4	10.6	7.5	7.4	7.5	1.7	1.6	1.7	1.3	1.2	1.2
25	10.4	10.0	10.2	7.4	7.2	7.3	1.6	1.5	1.5	1.2	1.1	1.2
26	10.0	9.8	9.9	7.2	6.9	7.1	1.6	1.5	1.6	1.1	1.0	1.1
27	9.8	9.6	9.7	7.0	6.7	6.8	1.7	1.6	1.6	1.2	1.1	1.2
28	9.7	9.6	9.6	6.7	6.5	6.6	1.6	1.4	1.5	1.3	1.2	1.3
29	9.6	9.6	9.6	6.5	6.2	6.4	1.4	1.2	1.3	1.5	1.3	1.4
30	9.6	9.4	9.5	6.2	5.8	6.0	1.2	0.9	1.1	1.6	1.5	1.5
31	9.4	9.2	9.4	---	---	---	1.0	0.6	0.8	1.5	1.3	1.4
MONTH	17.9	9.2	12.9	9.2	5.8	7.8	5.8	0.6	2.7	2.6	0.1	1.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1.3	1.0	1.2	2.5	1.8	2.2	4.7	3.5	4.2	9.5	8.6	9.0
2	1.2	1.0	1.1	2.0	1.6	1.8	5.7	4.6	5.0	9.6	9.0	9.4
3	1.6	1.1	1.3	1.7	1.6	1.7	5.9	5.2	5.4	10.2	9.6	9.9
4	1.7	1.5	1.6	1.7	1.4	1.6	6.1	5.4	5.7	10.0	9.9	10.0
5	1.8	1.5	1.7	1.8	1.6	1.7	6.6	5.7	5.9	10.0	9.8	9.8
6	1.7	1.6	1.6	1.8	1.6	1.7	6.3	6.0	6.1	9.9	9.7	9.8
7	1.7	1.6	1.7	1.7	1.5	1.6	6.5	6.2	6.4	9.7	9.3	9.6
8	1.9	1.7	1.8	1.6	1.4	1.5	7.0	6.3	6.6	9.3	8.3	8.9
9	2.1	1.9	2.0	1.4	1.2	1.4	7.1	6.6	6.8	8.3	7.8	8.1
10	2.3	1.9	2.1	1.4	1.3	1.4	7.1	6.8	7.0	8.3	7.8	8.1
11	2.4	2.3	2.4	1.6	1.4	1.5	7.1	6.9	7.0	8.9	8.1	8.6
12	2.4	2.0	2.3	1.7	1.6	1.6	7.1	7.0	7.0	9.5	8.7	9.1
13	2.3	2.2	2.3	1.7	1.6	1.6	7.4	7.0	7.2	10.1	9.3	9.7
14	2.3	2.2	2.3	2.1	1.7	1.8	7.7	7.4	7.5	10.6	9.8	10.2
15	2.3	2.1	2.3	2.1	2.0	2.0	7.8	7.6	7.7	10.8	10.4	10.6
16	2.3	2.0	2.2	2.0	1.9	1.9	8.1	7.7	7.9	11.0	10.6	10.8
17	2.2	2.1	2.1	2.1	1.7	1.9	7.7	7.1	7.4	11.0	10.7	10.8
18	2.1	1.9	2.0	2.6	2.0	2.3	7.2	6.9	7.1	11.5	11.0	11.3
19	2.2	2.0	2.1	2.8	2.6	2.7	6.9	6.7	6.8	11.5	11.3	11.4
20	2.4	2.2	2.3	3.0	2.8	2.9	7.4	6.7	7.0	11.3	10.4	10.8
21	2.5	2.2	2.4	3.0	2.8	3.0	7.6	7.1	7.4	10.8	10.3	10.5
22	2.7	2.5	2.6	3.0	2.7	2.8	7.9	7.6	7.8	11.2	10.8	11.1
23	2.8	2.7	2.7	2.8	2.6	2.7	8.2	7.9	8.0	11.2	11.0	11.1
24	2.9	2.8	2.9	2.7	2.5	2.7	8.1	7.8	8.0	11.3	9.9	10.7
25	2.9	2.7	2.8	2.7	2.5	2.6	8.1	7.7	7.8	9.9	9.6	9.7
26	2.8	2.6	2.7	3.1	2.5	2.8	8.0	7.6	7.8	10.1	9.6	9.8
27	2.7	2.4	2.6	3.4	3.0	3.2	8.4	7.8	8.0	10.5	10.1	10.2
28	2.7	2.4	2.6	3.7	3.3	3.5	8.1	7.7	7.8	11.2	10.5	10.9
29	---	---	---	3.7	3.3	3.5	8.2	7.6	7.9	11.6	11.1	11.3
30	---	---	---	3.3	3.0	3.1	8.8	8.0	8.4	11.9	11.6	11.7
31	---	---	---	3.6	2.9	3.2	---	---	---	11.9	11.7	11.8
MONTH	2.9	1.0	2.1	3.7	1.2	2.3	8.8	3.5	7.0	11.9	7.8	10.2

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 mi², 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.--89 years (water years 1913-95, 1997-2002), 26,620 ft³/s, 19,290,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 171,300 ft³/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, 96,900 ft³/s June 10; minimum daily discharge, 2,040 ft³/s Nov. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12400	18800	10700	8280	20800	19900	21500	37600	77700	80400	16100	9880
2	16400	20100	7630	10700	15000	13600	15600	35300	82500	74900	16500	8630
3	14800	21300	9530	10600	17000	9400	13900	29900	91700	65800	17700	10900
4	15700	17000	10600	13600	17900	15600	17500	36600	90700	59100	11800	9700
5	16000	20200	10500	10800	17700	17700	18200	28600	91000	53700	13100	11500
6	17200	18900	10300	7000	18400	15800	15900	32000	92800	48100	13800	12100
7	15100	20400	11500	14900	18400	14700	13100	42300	94100	42800	11800	13500
8	16200	22800	12000	14500	17600	16600	17800	37200	94000	45000	15100	12700
9	16600	22400	8200	23400	20900	13000	17600	41900	95600	42900	18800	12600
10	19600	24600	8440	25200	20200	14200	14700	40000	96900	45500	15800	11700
11	19400	19900	10200	25300	19400	15800	20300	37300	96600	39400	17600	12000
12	19900	20600	10400	27400	17300	19200	27700	35000	95200	35900	18300	12600
13	19400	15400	8940	22300	16800	18700	33400	34900	95300	34900	17000	14900
14	18800	13000	10600	21700	14600	18800	33600	29700	94700	35300	16100	11500
15	20400	11900	10400	20000	17400	19800	35900	30800	92600	35900	16300	10400
16	19700	16300	11800	18900	16200	23800	47900	31900	90400	36000	16900	14100
17	19600	18500	16500	19000	14800	23200	46500	32100	89900	36000	14700	13200
18	20000	15900	15600	18800	15100	25300	44800	33000	84500	33800	13500	14200
19	19600	15300	16000	17600	15000	23100	42300	30800	82300	31900	15000	14600
20	19900	11900	19500	17300	17500	22200	29900	40300	70700	34800	13700	15400
21	20400	11600	16800	17200	19200	21400	39600	41300	66000	28100	12000	10100
22	20600	2040	15200	17300	16500	16700	39000	49800	68300	29600	12300	16000
23	21100	10800	13600	16200	14000	17500	32900	60900	66700	23400	14000	13200
24	22300	10500	14500	17800	11200	10200	27300	72200	65500	23200	12500	14700
25	19900	8310	10900	18100	12500	15500	33900	77100	69400	22500	10700	13200
26	19900	11100	16000	15800	14500	22900	37600	74800	78200	22500	15400	13800
27	18100	12700	12000	13800	18800	20300	35200	67800	77300	22400	15000	13200
28	15000	10800	14500	16400	13900	21400	30700	66600	77500	19500	13100	11400
29	18500	14300	16500	18900	---	21300	34600	69400	79100	21800	13800	10600
30	21500	12100	17100	16000	---	18400	30100	77600	82600	20000	13900	11000
31	19600	---	10400	18100	---	16500	---	80000	---	17400	13700	---
TOTAL	573600	469450	386840	532880	468600	562500	869000	1434700	2529800	1162500	456000	373310
MEAN	18500	15650	12480	17190	16740	18150	28970	46280	84330	37500	14710	12440
MAX	22300	24600	19500	27400	20900	25300	47900	80000	96900	80400	18800	16000
MIN	12400	2040	7630	7000	11200	9400	13100	28600	65500	17400	10700	8630
AC-FT	1138000	931200	767300	1057000	929500	1116000	1724000	2846000	5018000	2306000	904500	740500
CAL YR 2001	TOTAL 5072450	MEAN 13900	MAX 32400	MIN 2040	AC-FT 10060000							
WTR YR 2002	TOTAL 9819180	MEAN 26900	MAX 96900	MIN 2040	AC-FT 19480000							

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 which are considered good: Dec. 2, 3, Jan. 1, 2, 3, 5, 7, 8, 13-15, 17-19, 29-31, Feb. 1-6, 28, Mar. 1, 8, 15, 16, 18, 19, 21-23, Apr. 3, 4, 24, 25, 30, May 2, 14-17, July 13, 23, 24, 27. Total dissolved gas record good except Dec. 2, Jan. 1, 7, 8, 13-15, 17, 29, 30, Feb. 1, 6, Mar. 1, 8, 15, 16, 18, 19, 21, 22, Apr. 4, 24, 25, 30, May 2, 14-17, June 13, which are fair, and Dec. 3, Jan. 3, 13, 19, 31, Feb. 3, 5, Mar. 23, Apr. 3, and July 23-25 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; 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, 22.9°C July 27-29, but may have been higher during periods of missing record; minimum, 0.2°C on Jan. 8 and 9, but may have been lower during periods of missing record.

TOTAL DISSOLVED GAS: Maximum, 141 percent saturation June 9, but may have been higher during periods of missing record; minimum, 94 percent saturation Nov. 18 and Dec. 7, but may have been lower during periods of missing record.

PRESSURE, TOTAL PARTIAL, DISSOLVED GASSES, UNFILTERED, PERCENT SATURATION, OCTOBER 2001 TO SEPTEMBER 2002

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

PEND OREILLE RIVER BASIN

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	17.7	17.2	17.6	9.2	9.0	9.1	5.9	5.6	5.7	0.7	---	0.6
2	17.5	17.0	17.3	9.0	9.0	9.0	5.6	5.3	5.5	0.7	0.6	0.6
3	17.1	16.7	16.9	9.1	9.0	9.0	---	5.0	---	0.6	0.5	0.5
4	16.7	16.3	16.5	9.1	9.0	9.1	4.9	4.7	4.8	0.5	0.4	0.4
5	16.4	16.1	16.3	9.2	9.1	9.1	4.7	4.3	4.5	0.6	0.4	0.4
6	16.1	15.8	16.0	9.1	8.9	9.0	4.4	4.0	4.2	---	---	---
7	15.8	15.5	15.7	9.0	8.8	8.9	4.1	3.6	3.8	0.4	0.3	0.3
8	15.5	15.1	15.3	8.8	8.7	8.8	3.7	3.3	3.5	0.4	0.2	0.3
9	15.1	14.6	14.9	8.7	8.2	8.5	3.3	3.1	3.2	0.5	0.2	0.3
10	14.6	14.1	14.4	8.2	7.7	7.9	3.1	2.9	3.0	1.2	0.5	0.8
11	14.1	13.8	14.0	7.7	7.5	7.6	3.2	2.8	2.9	1.6	1.2	1.4
12	13.8	13.4	13.6	7.6	7.3	7.5	3.0	2.7	2.8	1.8	1.5	1.6
13	13.4	13.0	13.2	7.4	7.2	7.3	2.7	2.6	2.7	2.3	1.7	2.0
14	13.0	12.7	12.8	7.4	7.3	7.3	3.0	2.5	2.6	2.6	---	---
15	12.7	12.5	12.6	7.3	7.3	7.3	2.5	2.4	2.4	2.7	---	---
16	12.5	12.1	12.3	7.4	7.3	7.3	2.6	2.4	2.4	2.6	2.3	2.5
17	12.1	11.9	12.0	7.5	7.4	7.4	2.4	2.3	2.4	2.5	---	---
18	12.0	11.7	11.9	7.6	7.4	7.5	2.4	2.3	2.3	2.2	1.9	2.1
19	11.7	11.5	11.7	7.7	7.5	7.6	2.4	2.3	2.4	---	1.6	---
20	11.5	11.3	11.5	7.7	7.6	7.7	2.3	2.2	2.3	1.6	1.5	1.5
21	11.3	11.1	11.2	7.7	7.6	7.7	2.3	2.2	2.3	1.5	1.4	1.4
22	11.1	10.8	11.0	7.7	7.6	7.6	2.2	2.0	2.2	1.4	1.3	1.4
23	10.8	10.7	10.8	7.6	7.5	7.6	2.0	1.8	1.9	1.4	1.3	1.4
24	10.7	10.3	10.5	7.5	7.4	7.5	1.8	1.7	1.8	1.3	1.2	1.3
25	10.3	10.0	10.2	7.4	7.2	7.3	1.7	1.6	1.6	1.3	1.1	1.2
26	10.0	9.8	9.9	7.2	7.0	7.1	1.7	1.6	1.6	1.1	1.0	1.1
27	9.8	9.6	9.7	7.0	6.7	6.9	1.7	1.6	1.7	1.2	1.0	1.1
28	9.6	9.5	9.6	6.7	6.5	6.6	1.7	1.5	1.6	1.3	1.0	1.2
29	9.6	9.4	9.6	6.5	6.2	6.4	1.5	1.3	1.4	1.5	---	---
30	9.6	9.4	9.5	6.3	5.9	6.1	1.3	1.1	1.2	1.6	1.4	1.5
31	9.4	9.2	9.4	---	---	---	1.1	0.7	0.9	1.5	1.3	1.4
MONTH	17.7	9.2	12.8	9.2	5.9	7.8	---	0.7	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1.3	1.1	1.2	---	2.0	---	4.6	3.7	4.2	9.1	8.7	8.9
2	1.2	1.1	1.1	2.0	1.4	1.8	5.2	4.5	4.9	9.6	---	---
3	1.5	---	---	1.8	1.5	1.7	5.6	---	---	10.0	9.4	9.8
4	1.7	1.4	1.6	1.7	1.6	1.6	5.8	---	---	10.0	9.8	9.9
5	1.8	---	---	1.8	1.6	1.7	6.0	5.4	5.8	9.9	9.8	9.8
6	1.7	---	---	1.8	1.6	1.7	6.3	6.0	6.1	9.9	9.7	9.8
7	1.8	1.6	1.7	1.7	1.4	1.6	6.5	6.0	6.3	9.7	9.3	9.6
8	1.9	1.7	1.8	1.6	---	---	6.7	6.1	6.5	9.3	8.4	9.0
9	2.1	1.9	2.0	1.5	1.1	1.4	6.9	6.4	6.7	8.4	7.8	8.1
10	2.3	2.0	2.2	1.4	1.4	1.4	7.1	6.8	7.0	8.2	7.7	8.0
11	2.4	2.3	2.4	1.6	1.4	1.5	7.1	6.9	7.0	8.7	8.1	8.5
12	2.4	2.2	2.3	1.7	1.5	1.6	7.1	7.0	7.0	9.3	8.7	9.0
13	2.3	2.1	2.3	1.7	1.6	1.6	7.4	7.1	7.2	9.8	9.2	9.5
14	2.3	2.1	2.2	2.0	1.6	1.8	7.6	7.4	7.5	10.3	---	---
15	2.3	2.2	2.2	2.1	---	---	7.8	7.6	7.7	10.7	---	---
16	2.2	2.1	2.2	2.0	---	---	8.1	7.8	7.9	10.9	---	---
17	2.2	2.1	2.1	2.1	1.8	1.9	7.8	7.2	7.5	11.0	---	---
18	2.1	2.0	2.1	2.5	---	---	7.3	7.0	7.2	11.4	10.9	11.2
19	2.2	2.1	2.1	2.8	---	---	7.0	6.8	6.9	11.5	11.3	11.4
20	2.3	2.2	2.3	3.0	2.6	2.8	7.2	6.8	7.0	11.3	10.4	10.9
21	2.5	2.3	2.4	3.1	---	---	7.6	7.2	7.4	10.8	10.3	10.4
22	2.7	2.5	2.6	2.9	---	---	8.0	7.6	7.8	11.2	10.8	11.0
23	2.8	2.7	2.7	2.8	---	---	8.2	8.0	8.1	11.2	11.0	11.1
24	2.9	2.7	2.8	3.1	2.6	2.7	8.1	---	---	11.3	9.9	10.8
25	3.0	2.6	2.8	2.7	2.6	2.6	7.9	---	---	9.9	9.6	9.8
26	2.7	2.5	2.7	3.1	2.6	2.8	8.0	7.7	7.8	10.1	9.6	9.8
27	2.7	2.3	2.6	3.4	3.0	3.2	8.2	7.8	8.0	10.4	10.1	10.2
28	2.8	2.3	2.6	3.7	3.4	3.5	7.9	7.8	7.8	11.1	10.4	10.9
29	---	---	---	3.7	3.4	3.6	8.1	7.7	7.8	11.6	11.1	11.3
30	---	---	---	3.4	3.1	3.2	8.7	---	---	11.9	11.6	11.7
31	---	---	---	3.7	3.0	3.3	---	---	---	11.9	11.8	11.8
MONTH	3.0	---	---	---	---	---	8.7	---	---	11.9	---	---

COLUMBIA RIVER MAIN STEM

12399500 COLUMBIA RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 49°00'03", long 117°37'42", in NE $\frac{1}{4}$ SE $\frac{1}{4}$ 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 mi², 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.--Records good except for estimated daily discharges and periods when the base gage height drops below 1,298 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.--65 years (water years 1938-2002), 99,630 ft³/s, 72,182,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 550,100 ft³/s June 12, 1948, elevation, 1,338.13 ft; minimum discharge, 18,000 ft³/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 ft³/s.

A discharge of about 12,900 ft³/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 sometime in January 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 236,000 ft³/s June 30, elevation, 1,316.58 ft; minimum daily discharge, 40,000 ft³/s April 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71300	62800	82900	63000	66900	65900	e50000	79100	184000	224000	115000	110000
2	68100	64200	89300	67000	73400	65200	e40000	90800	188000	217000	113000	106000
3	70400	63800	96500	60600	66700	59700	e43800	92100	199000	207000	112000	102000
4	69700	63100	96000	66600	65600	63500	e43800	86800	197000	200000	110000	94200
5	66900	63400	90800	72300	68200	64600	e46500	90400	195000	192000	113000	91500
6	66400	63000	93100	59400	69500	65300	e47500	92700	201000	184000	112000	88100
7	66200	60300	90800	64900	72100	62500	e43400	91600	199000	174000	109000	84100
8	63200	61900	78700	66600	68000	60500	e51500	92500	195000	182000	107000	81300
9	68100	61900	75500	72800	63400	57800	e51000	95400	200000	189000	111000	85800
10	67600	64900	81200	81100	64100	57900	e52800	92700	194000	188000	108000	88300
11	68600	65500	79300	82500	64300	62800	e54000	90900	188000	180000	114000	88300
12	67800	63100	76900	83300	63300	63600	67800	90400	185000	181000	115000	91700
13	67800	56600	81300	81400	59200	63600	69500	90100	189000	182000	113000	92500
14	66900	52100	80600	80300	57200	64700	76100	89500	189000	180000	112000	96000
15	67400	48900	78600	72200	59600	68400	82400	87100	191000	183000	111000	88300
16	64500	58300	74200	76300	62200	65500	94300	87200	195000	183000	106000	88100
17	61500	62300	88400	75300	60700	71100	94500	90200	198000	182000	109000	91400
18	60700	78800	87100	76000	64100	67900	93800	e91600	193000	180000	107000	87700
19	61700	86600	85900	70400	60900	70800	89200	e92000	190000	178000	109000	90400
20	62200	78400	78000	66400	61100	70300	84100	e102000	177000	167000	106000	92000
21	59600	71700	73100	69100	64600	66300	83300	e115000	165000	165000	99300	86400
22	63700	57700	67900	63800	62500	64800	88200	e131000	168000	154000	104000	84400
23	59500	62600	68900	63600	64200	52800	87800	e141000	168000	148000	104000	87600
24	61300	66900	70300	61200	58800	53700	84400	e147000	168000	145000	105000	84400
25	63000	63600	63200	63500	62100	53500	76000	e148000	174000	137000	106000	82900
26	57800	68700	69300	62100	58400	62800	84800	e147000	198000	130000	108000	84000
27	57400	69500	68700	59700	63600	63200	83300	e143000	203000	128000	112000	88600
28	57900	70900	66900	64200	68100	56200	86100	e150000	210000	125000	112000	81400
29	62900	65500	67400	69700	---	51900	82600	160000	223000	128000	109000	78000
30	63500	79500	72700	72800	---	49000	81700	168000	231000	123000	109000	82700
31	64300	---	69100	71200	---	45100	---	187000	---	120000	110000	---
TOTAL	1997900	1956500	2442600	2159300	1792800	1910900	2114200	3452100	5755000	5256000	3390300	2678100
MEAN	64450	65220	78790	69650	64030	61640	70470	111400	191800	169500	109400	89270
MAX	71300	86600	96500	83300	73400	71100	94500	187000	231000	224000	115000	110000
MIN	57400	48900	63200	59400	57200	45100	40000	79100	165000	120000	99300	78000
AC-FT	3963000	3881000	4845000	4283000	3556000	3790000	4194000	6847000	11420000	10430000	6725000	5312000
CAL YR 2001	TOTAL 25865300	MEAN 70860	MAX 115000	MIN 40300	AC-FT 51300000							
WTR YR 2002	TOTAL 34905700	MEAN 95630	MAX 231000	MIN 40000	AC-FT 69240000							

e Estimated

KETTLE RIVER BASIN

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

LOCATION.--Lat 48°58'53", long 118°45'55", in SE 1/4 NW 1/4 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 mi², 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.--74 years (water years 1929-2002), 1,545 ft³/s, 1,120,000 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 ft³/s May 29, 1948, gage height, 21.15 ft; minimum discharge, 14 ft³/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 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	1530	*12,100	17.81	May 29	1730		*17.83

Minimum discharge, 91 ft³/s Sept. 15,16, gage height 9.26 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	222	338	274	289	254	379	4440	9500	2800	292	115
2	142	250	347	273	320	272	409	5190	8530	2350	284	127
3	135	253	375	272	333	286	413	5550	7970	2050	273	123
4	130	246	357	273	321	278	448	4980	7390	1840	263	114
5	125	246	331	269	317	262	483	4300	7640	1710	251	112
6	122	255	323	273	291	198	576	3850	8090	1600	246	114
7	120	262	297	282	304	226	748	3500	6660	1450	242	113
8	120	244	291	298	312	227	900	3200	5390	1430	236	110
9	120	228	249	331	291	223	969	2970	4570	1650	244	109
10	120	228	267	438	290	258	1040	2780	4300	1480	233	112
11	124	218	289	504	269	255	1230	2640	4590	1310	213	113
12	134	202	192	508	230	263	1660	2670	5350	e1180	198	111
13	142	210	233	478	262	264	2530	3030	5850	e1060	184	104
14	148	237	330	394	270	259	4870	3990	6480	e1000	173	98
15	151	259	210	320	247	255	5810	4730	6670	e900	163	94
16	153	614	236	314	243	256	4720	4280	6710	822	155	93
17	152	871	302	318	263	245	3920	4160	6000	753	152	100
18	150	737	244	287	279	225	3400	4760	5440	690	149	100
19	164	566	273	309	284	215	3090	5020	6240	605	150	100
20	172	538	218	353	274	219	3040	6040	5300	569	144	114
21	176	565	174	332	277	216	3160	7690	4530	524	139	119
22	183	542	136	321	280	239	3360	8590	4390	485	136	115
23	195	513	153	268	283	239	3480	9020	4480	453	129	115
24	196	484	223	248	242	244	3260	7950	4290	424	124	113
25	206	452	255	349	203	269	3010	7240	3990	397	121	107
26	206	406	220	343	209	303	2850	7630	3750	388	125	103
27	201	401	146	e300	216	321	2780	8390	3670	404	125	102
28	201	393	118	e230	248	327	2780	9600	3390	382	120	101
29	207	383	170	e170	---	337	2980	11600	3530	348	119	102
30	209	359	223	200	---	340	3530	11800	3710	325	117	103
31	214	---	266	241	---	351	---	10800	---	307	115	---
TOTAL	4968	11384	7786	9770	7647	8126	71825	182390	168400	31686	5615	3256
MEAN	160	379	251	315	273	262	2394	5884	5613	1022	181	109
MAX	214	871	375	508	333	351	5810	11800	9500	2800	292	127
MIN	120	202	118	170	203	198	379	2640	3390	307	115	93
AC-FT	9850	22580	15440	19380	15170	16120	142500	361800	334000	62850	11140	6460

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	379	381	270	221	230	422	2492	6711	5106	1500	437	347
MEAN	379	381	270	221	230	422	2492	6711	5106	1500	437	347
MAX (WY)	2085	1280	1161	640	626	1811	6351	10440	9924	4380	1987	1941
MIN (WY)	1942	1942	1942	1942	1935	1983	1934	1957	1974	1982	1948	1941
MIN (WY)	90.9	84.3	78.2	40.3	72.5	110	300	2222	1338	346	104	86.7
MIN (WY)	1988	1930	1930	1930	1930	1930	1929	1930	1987	1934	1973	1929

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1929 - 2002
ANNUAL TOTAL	332348	512853	
ANNUAL MEAN	911	1405	1545
HIGHEST ANNUAL MEAN			2543
LOWEST ANNUAL MEAN			659
HIGHEST DAILY MEAN	8280	May 25	20300
LOWEST DAILY MEAN	74	Feb 7	15
ANNUAL SEVEN-DAY MINIMUM	93	Sep 18	15
ANNUAL RUNOFF (AC-FT)	659200	1017000	1120000
10 PERCENT EXCEEDS	3330	4740	5220
50 PERCENT EXCEEDS	244	287	379
90 PERCENT EXCEEDS	120	120	130

e Estimated

KETTLE RIVER BASIN

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 mi², 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.--Records excellent except for estimated daily discharges, which are fair. 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.--73 years (water years 1930-2002), 2,930 ft³/s, 2,123,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s May 29, 1948, gage height, 17.25 ft; minimum daily discharge, 70 ft³/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 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0829	*20,400	*12.85	No other peak greater than base discharge.			

Minimum discharge, 177 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	301	673	537	e560	623	929	7370	16900	5920	645	230
2	230	319	648	532	e660	671	1070	8700	15200	4880	615	220
3	220	332	668	540	747	680	1140	9580	14300	4280	585	221
4	212	340	679	544	756	677	1180	9210	13500	3830	559	222
5	205	334	652	541	745	663	1270	8110	13600	3530	534	215
6	200	333	625	545	737	631	1460	7340	14900	3280	510	210
7	197	337	599	560	714	e520	1830	6680	13200	3030	498	208
8	195	345	581	593	730	e540	2220	6110	10600	2920	484	210
9	195	337	570	723	707	e530	2360	5660	8970	3130	474	208
10	198	322	503	1000	693	590	2460	5330	8100	3090	466	204
11	202	314	529	1050	671	627	2750	5030	8290	2740	446	201
12	210	308	508	1060	607	622	3410	4930	9300	2510	417	198
13	220	295	490	1050	e540	632	4970	5220	10700	2300	397	196
14	225	304	505	987	628	629	8230	6310	11900	2120	378	192
15	229	334	535	e740	624	621	11100	7910	12700	1950	356	186
16	232	483	506	e680	580	622	9180	7590	12700	1780	341	181
17	232	1020	538	e700	612	621	7670	7250	12100	1630	325	187
18	233	1180	493	e630	631	597	6680	7820	10500	1490	317	194
19	240	1020	602	e680	649	562	6010	8360	10700	1370	306	194
20	240	876	541	e750	647	558	5730	9430	9870	1260	296	198
21	250	873	e380	e720	646	556	5840	12200	8610	1170	290	197
22	258	917	e280	e680	636	544	6110	13600	8210	1090	281	204
23	265	906	e300	e600	668	575	6350	14800	8490	1020	276	205
24	272	863	e350	e560	686	587	6170	13300	8380	963	267	201
25	282	821	470	e660	597	602	5730	12100	7750	912	258	199
26	287	775	438	778	e480	658	5430	12100	7320	867	250	193
27	290	723	e300	791	e500	725	5260	13400	7130	856	249	190
28	282	710	e250	743	586	769	5220	15100	6780	823	247	187
29	279	709	e350	e500	---	797	5370	18800	6780	779	237	191
30	286	692	446	e400	---	827	6020	20100	7410	731	233	200
31	299	---	495	e470	---	856	---	18800	---	686	240	---
TOTAL	7399	17423	15504	21344	18037	19712	139149	308240	314890	66937	11777	6042
MEAN	239	581	500	689	644	636	4638	9943	10500	2159	380	201
MAX	299	1180	679	1060	756	856	11100	20100	16900	5920	645	230
MIN	195	295	250	400	480	520	929	4930	6780	686	233	181
AC-FT	14680	34560	30750	42340	35780	39100	276000	611400	624600	132800	23360	11980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	678	757	609	518	562	1080	5194	12150	9246	2819	835	624
MEAN	678	757	609	518	562	1080	5194	12150	9246	2819	835	624
MAX	3815	2600	2652	1450	1407	4247	12170	18620	17650	6928	3140	3773
(WY)	1942	1942	1942	1942	1935	1983	1934	1997	1974	1982	1976	1941
MIN	176	202	154	76.5	97.9	212	1478	4246	2888	759	250	157
(WY)	1988	1930	1930	1930	1930	1930	1937	1930	1987	1934	1973	1967

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1929 - 2002

ANNUAL TOTAL		576917		946454								
ANNUAL MEAN		1581		2593						2930		
HIGHEST ANNUAL MEAN										4725		1997
LOWEST ANNUAL MEAN										1251		1930
HIGHEST DAILY MEAN			14200	May 25		20100	May 30		34200	May 29	1948	
LOWEST DAILY MEAN			151	Sep 21		181	Sep 16		70	Jan 11	1930	
ANNUAL SEVEN-DAY MINIMUM			154	Sep 19		190	Sep 13		70	Jan 11	1930	
ANNUAL RUNOFF (AC-FT)		1144000		1877000					2123000			
10 PERCENT EXCEEDS		5800		8540					9630			
50 PERCENT EXCEEDS		413		646					800			
90 PERCENT EXCEEDS		223		220					294			

e Estimated

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 mi².

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.--80 years (water years 1923-2002), 309 ft³/s, 224,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,440 ft³/s Jan. 21, 1974, gage height, 9.84 ft; maximum gage height, 10.17 ft Apr. 23, 1956; minimum discharge observed, 0.5 ft³/s Aug. 15, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,720 ft³/s Apr. 15, gage height, 7.95 ft; minimum discharge, 17 ft³/s Oct. 30, result of regulation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	120	183	133	238	e300	443	929	515	219	77	73
2	65	116	195	172	233	e290	466	933	492	201	77	69
3	65	104	203	170	228	e290	473	944	461	192	77	65
4	64	99	199	163	224	e275	481	928	446	181	77	64
5	63	99	185	162	221	287	494	897	426	181	77	58
6	63	91	171	165	219	285	546	890	403	169	77	69
7	66	92	160	198	221	280	630	859	386	165	74	70
8	70	96	146	389	241	269	701	800	381	170	73	70
9	70	92	147	485	259	258	736	761	386	195	73	70
10	71	91	148	501	256	268	815	710	384	196	69	70
11	82	92	135	492	245	279	935	657	374	161	64	65
12	84	93	137	472	223	332	990	619	359	159	61	63
13	88	94	143	442	e205	368	1100	593	346	147	61	66
14	93	100	199	406	e200	373	1280	580	333	139	59	65
15	88	112	295	356	e195	357	1560	571	315	134	51	65
16	85	124	255	307	e190	342	1630	562	299	124	59	65
17	79	128	330	272	211	337	1570	544	282	116	52	68
18	83	152	385	273	212	335	1510	566	290	108	57	75
19	79	137	308	302	214	324	1450	576	324	108	63	77
20	81	125	261	314	239	316	1390	597	322	97	58	78
21	81	124	235	284	253	304	1330	604	290	99	53	76
22	96	126	220	247	278	295	1280	661	267	93	55	75
23	96	143	192	234	404	296	1230	799	259	86	58	74
24	105	161	150	238	427	301	1180	788	252	89	61	74
25	97	153	e135	251	e390	322	1110	741	241	87	63	76
26	95	136	e120	281	e370	353	1050	702	227	83	61	77
27	95	131	e110	292	e325	371	1030	657	219	83	61	77
28	95	131	e120	250	e305	375	991	636	207	83	65	81
29	93	132	e155	e170	---	381	937	642	209	83	66	84
30	95	147	161	e185	---	400	926	607	229	77	58	91
31	97	---	165	e230	---	422	---	548	---	76	61	---
TOTAL	2547	3541	5948	8836	7226	9985	30264	21901	9924	4101	1998	2150
MEAN	82.2	118	192	285	258	322	1009	706	331	132	64.5	71.7
MAX	105	161	385	501	427	422	1630	944	515	219	77	91
MIN	63	91	110	133	190	258	443	544	207	76	51	58
AC-FT	5050	7020	11800	17530	14330	19810	60030	43440	19680	8130	3960	4260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2002, BY WATER YEAR (WY)

	MEAN	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928	1928
MEAN	119	155	185	211	286	503	847	697	358	159	89.3	97.2
MAX	301	401	783	1374	970	1410	2168	1744	1035	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 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1923 - 2002
ANNUAL TOTAL	56648	108421	
ANNUAL MEAN	155	297	309
HIGHEST ANNUAL MEAN			768 1974
LOWEST ANNUAL MEAN			70.5 1930
HIGHEST DAILY MEAN	425	1630	3360
LOWEST DAILY MEAN	32	51	0.50
ANNUAL SEVEN-DAY MINIMUM	37	56	5.3
ANNUAL RUNOFF (AC-FT)	112400	215100	224100
10 PERCENT EXCEEDS	279	701	728
50 PERCENT EXCEEDS	153	199	176
90 PERCENT EXCEEDS	49	66	65

e Estimated

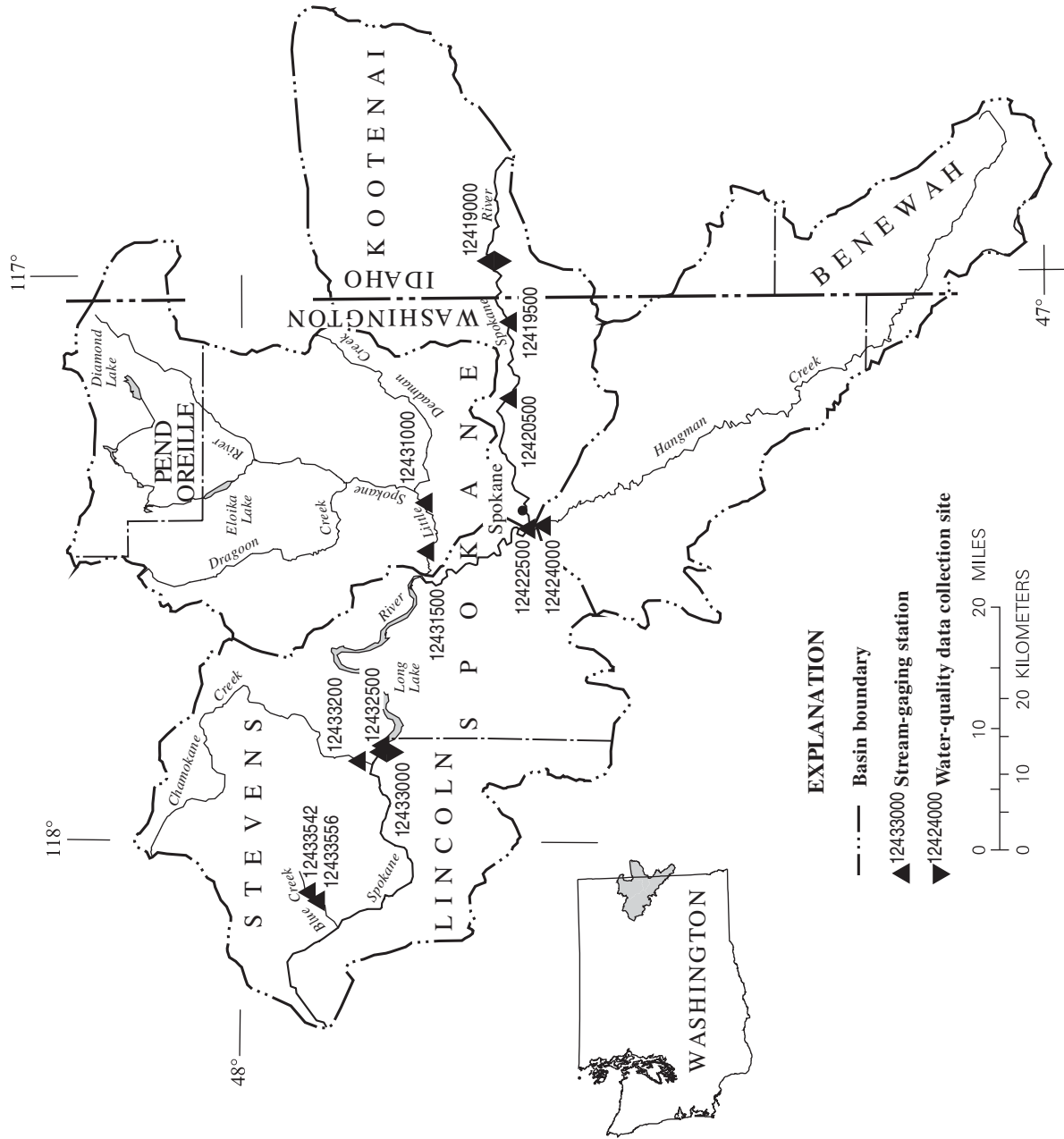


Figure 37. Location of surface-water and water-quality stations in the Spokane River Basin.

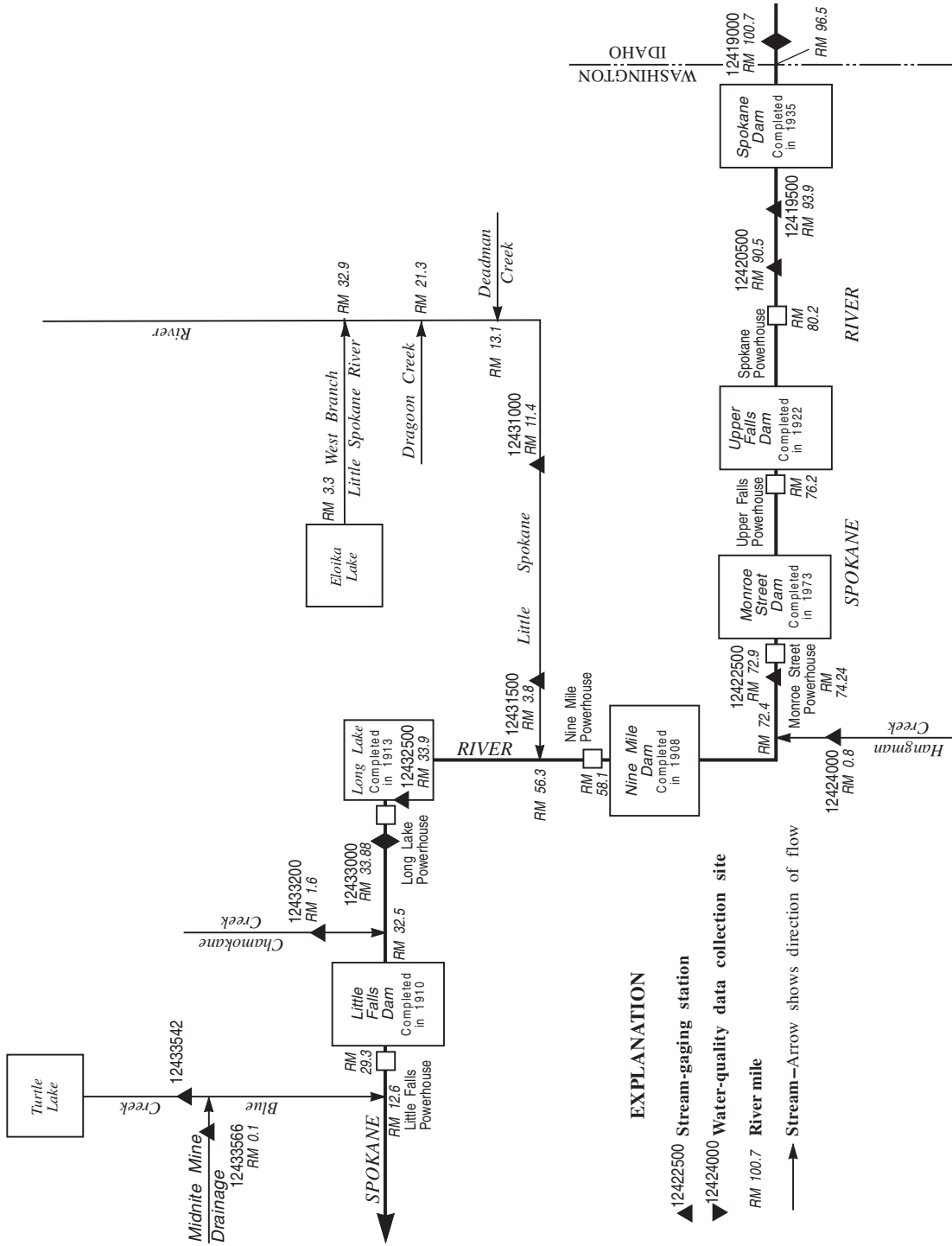


Figure 38. Schematic diagram showing surface-water and water-quality stations in the Spokane River Basin.

SPOKANE RIVER BASIN

12419000 SPOKANE RIVER NEAR POST FALLS, ID

LOCATION.--Lat 47°42'11", long 116°58'37", in SW¹/₄SW¹/₄SW¹/₄ sec.4, T.50 N., R.5 W., Kootenai County, Hydrologic Unit 17010305, on right bank, 1 mi downstream from powerplant of Avista Utilities, 1.5 mi southwest of Post Falls, and at mile 100.7.

DRAINAGE AREA.--3,840 mi², approximately, of which about 122 mi² in the vicinity of Hayden Lake is noncontributing to this station.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1912 to current year (prior to January 1913, monthly discharge only, published in WSP 870 and 1736). Prior to October 1949, published as "at Post Falls."

GAGE.--Water-stage recorder. Datum of gage is 2,050 ft, referred to originally accepted elevation of 2,157.40 ft for the U.S. Geological Survey bench mark in southeast corner of Idaho First National Bank Building (see WSP 882). Gage datum is 2,047.00 ft above NGVD of 1929. Jan. 1, 1913, to Nov. 21, 1920, nonrecording gage, and Nov. 22, 1920, to Sept. 15, 1934, recording gage 0.6 mi upstream. From Sept. 16, 1934, to Nov. 15, 1949, recording gage 0.8 mi upstream. From Nov. 16, 1949, at present site. Datum of all gages prior to Sept. 30, 1964, 50 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by dam at Post Falls and affected by storage in Coeur d'Alene Lake (sta 12415500).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,100 ft³/s, when recorder was not operating, Dec. 25, 1933, (determined from unpublished records collected by Washington Water Power Co. for station at Liberty Bridge); minimum, 65 ft³/s July 25, 30, 1973; minimum gage height, 4.68 ft, July 20, 21, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 30,500 ft³/s Apr. 17; minimum daily, 569 ft³/s Aug. 29.

DAY	DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1600	2350	3450	3540	7040	8760	9940	19300	28600	9610	910	691
2	e1800	2350	3460	3270	6790	8510	10000	19500	28800	8620	767	727
3	e1800	2360	3460	3190	6280	8210	10300	19700	28500	6880	762	727
4	e1800	2350	3470	3020	6070	7630	10500	20100	28000	6160	761	734
5	e1800	2350	3470	2920	5940	7470	10600	20500	27500	5380	750	732
6	e1800	2350	3470	2920	5710	7060	11100	20600	26800	4270	952	730
7	e1800	2370	3460	2920	5480	6900	11600	20300	26000	3970	1100	731
8	e1800	2340	3460	3510	5390	6560	12300	19900	25200	3980	1100	731
9	e1800	2250	3450	4930	5020	6380	12200	19100	24300	3970	1100	1250
10	e1800	2240	3630	5470	4880	6060	13800	18300	23300	3510	1100	1690
11	e1800	2240	4160	6200	4770	6010	15900	17500	22200	3240	1100	1690
12	e1800	2230	4430	6350	4620	6840	17300	16700	21100	2810	1090	1680
13	e1800	2220	4450	6440	4470	8010	18700	15900	20000	2550	1090	1680
14	e1800	2220	5060	7630	4310	8880	20700	16000	19200	2540	1090	1720
15	e1800	2220	5430	8150	4260	9200	24400	16500	18800	2550	1090	1720
16	e1800	2220	5430	8650	4110	9280	28700	17000	18500	2550	979	1720
17	e1800	2220	5430	8490	4010	9160	30500	17300	18400	2540	913	1710
18	e1800	2220	5730	8350	3930	9090	30300	17400	18300	2830	911	1720
19	e1800	2210	5920	8190	3910	8690	29200	17700	17700	3000	844	1720
20	1800	2220	5860	8020	4010	8600	28000	18500	17300	2990	694	1720
21	1800	2220	5830	7820	3970	8750	26600	20000	16100	2890	626	1730
22	1790	2220	5750	7610	3990	8740	25600	21700	14800	2240	623	1730
23	1810	2230	5670	7410	4590	8710	24600	23400	14300	1870	656	1730
24	2110	2230	5430	7120	5890	8660	23800	25000	13300	1870	675	1720
25	2290	2230	5110	6920	7610	8650	23100	25600	12100	1870	672	1720
26	2350	2530	4580	7290	8450	8690	22300	25700	11000	1790	673	1720
27	2360	2700	4340	7540	8850	8750	21500	25500	9850	1660	670	1720
28	2350	2730	4200	7550	8830	8910	20900	25800	8590	1650	607	1720
29	2340	2830	4110	7460	---	9230	20200	26300	8750	1480	569	1720
30	2350	3140	3700	7330	---	9390	19600	27300	9630	1340	631	1720
31	2360	---	3700	7190	---	9520	---	28100	---	1190	676	---
TOTAL	59710	70590	139100	193400	153180	255300	584240	642200	576920	103800	26181	43053
MEAN	1926	2353	4487	6239	5471	8235	19470	20720	19230	3348	844.5	1435
MAX	2360	3140	5920	8650	8850	9520	30500	28100	28800	9610	1100	1730
MIN	1600	2210	3450	2920	3910	6010	9940	15900	8590	1190	569	691
AC-FT	118400	140000	275900	383600	303800	506400	1159000	1274000	1144000	205900	51930	85400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2002, BY WATER YEAR (WY)

	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	1744	2878	4894	5205	6240	8185	14410	17540	9700	2108	937.1	1180																																																																														
MAX	5460	13130	23660	24930	23280	25440	26050	34930	26710	10720	2133	1849																																																																														
(WY)	1928	1928	1934	1934	1996	1972	1943	1997	1974	1916	1917	1985																																																																														
MIN	782	627	784	903	1025	1751	3558	5141	1584	851	185	188																																																																														
(WY)	1964	1936	1936	2001	1929	1929	1977	1992	1926	1994	1958	1949																																																																														

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1913 - 2002	
ANNUAL TOTAL	1061520		2847674			
ANNUAL MEAN	2908		7802			
HIGHEST ANNUAL MEAN					11600	1974
LOWEST ANNUAL MEAN					2143	1977
HIGHEST DAILY MEAN	16400	May 3	30500	Apr 17	49800	Dec 25 1933
LOWEST DAILY MEAN	224	Aug 21	569	Aug 29	67	Jul 24 1973
ANNUAL SEVEN-DAY MINIMUM	250	Aug 31	642	Aug 24	108	Aug 10 1966
ANNUAL RUNOFF (AC-FT)	2106000		5648000		4509000	
10 PERCENT EXCEEDS	5780		20800		17200	
50 PERCENT EXCEEDS	1800		4450		2990	
90 PERCENT EXCEEDS	592		1100		900	

e Estimated

12419000 SPOKANE RIVER NEAR POST FALLS, ID--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973-1981, July 1989 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May to September 1998, May to September 1999, May to September 2000, November 2001 to October 2002 (discontinued).

SPECIFIC CONDUCTANCE: February 1999 to September 2001 (discontinued).

INSTRUMENTATION.--Water-quality data logger.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.1 °C July 29, 1998; minimum, 1.4 °C Feb. 17, 18, 2001.

SPECIFIC CONDUCTANCE: Maximum recorded daily mean, 57 microsiemens/cm Aug. 30 to Sept. 4, 2000; minimum recorded daily mean, 42 microsiemens/cm May 6-8, June 14-15, 2000.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 24.2 °C July 26-27; minimum, 2.0 °C Mar. 7-8.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-A-TURE AIR (DEG C) (00020)	TEMPER-A-TURE WATER (DEG C) (00010)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	
OCT														
24...	0930	2290	54	7.4	3.5	10.0	--	--	--	--	22	6.03	1.79	
JAN														
08...	0915	3510	60	7.3	8.5	5.2	--	--	--	--	23	6.00	1.88	
FEB														
06...	0845	5730	58	7.1	1.5	3.2	--	--	--	--	22	5.78	1.86	
APR														
02...	1330	10100	61	7.4	6.0	3.7	3.8	13.3	108	S1	--	--	--	
17...	1215	30800	53	7.2	10.0	4.2	--	--	--	--	22	5.79	1.90	
22...	1200	25700	53	7.4	13.5	4.9	--	--	--	--	21	5.55	1.83	
MAY														
01...	1545	19300	53	7.0	17.0	8.2	6.2	11.6	106	S1	--	--	--	
22...	1245	22000	43	7.0	7.0	8.9	--	--	--	--	18	4.62	1.46	
JUN														
13...	1250	2020	42	7.2	29.5	14.0	4.0	9.3	97	S3	16	4.28	1.27	
JUL														
08...	0930	3980	40	7.1	14.0	18.0	--	--	--	--	16	4.21	1.23	
AUG														
26...	0920	675	47	7.7	18.0	20.9	--	--	--	--	17	4.64	1.39	
Date		NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
OCT														
24...	--	.16	--	E.003	--	.007	.10	.15	E7	30	.16	1	1.6	
JAN														
08...	.019	.20	.079	.005	--	.008	.14	.16	<10	30	E.07	<1	1.1	
FEB														
06...	E.009	.12	.055	.004	--	.006	.17	.19	<10	30	.10	<1	.9	
APR														
02...	<.015	.12	.083	--	<.007	.008	--	--	--	--	--	--	--	--
17...	<.015	.13	.117	E.003	--	.010	.24	.39	25	130	.77	5	.8	
22...	<.015	.15	.098	.008	--	.010	.23	.42	21	110	.66	4	.7	
MAY														
01...	<.015	.17	.066	--	<.007	.021	--	--	--	--	--	--	--	--
22...	<.015	.14	.027	<.004	--	.011	.23	.28	23	110	1.11	8	.6	
JUN														
13...	<.015	.11	<.013	<.004	--	.006	.21	.23	19	80	1.07	5	1.1	
JUL														
08...	<.015	.10	.025	E.004	--	.009	.16	.23	13	50	.42	2	.5	
AUG														
26...	<.015	.12	.131	.007	--	.011	.14	.14	E8	20	.38	<1	1.0	

SPOKANE RIVER BASIN

12419000 SPOKANE RIVER NEAR POST FALLS, ID--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT 24...	4	41	45	--	--
JAN 08...	4	55	60	--	--
FEB 06...	3	65	60	--	--
APR 02...	--	--	--	2.0	54.5
17...	9	72	91	--	--
22...	8	69	89	--	--
MAY 01...	--	--	--	5.0	261
22...	9	59	63	--	--
JUN 13...	9	41	48	4.0	21.8
JUL 08...	7	48	51	--	--
AUG 26...	3	32	34	--	--

< Less than
E Estimated value
S Most probable value

WATER TEMPERATURE, DEGREES CELSIUS, NOVEMBER 2001 TO OCTOBER 2002

DAY	NOVEMBER			DECEMBER			JANUARY			FEBRUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	6.6	6.1	6.3	4.5	4.2	4.4	3.8	3.4	3.6
2	---	---	---	6.6	5.9	6.2	4.2	4.1	4.2	3.9	3.6	3.7
3	---	---	---	6.7	6.6	6.7	4.5	4.2	4.4	3.8	3.4	3.6
4	---	---	---	6.6	6.4	6.5	4.7	4.5	4.7	3.8	3.4	3.5
5	---	---	---	6.4	6.1	6.2	4.7	4.7	4.7	3.9	3.4	3.7
6	---	---	---	6.2	6.1	6.1	4.8	4.7	4.8	3.9	3.6	3.7
7	---	---	---	6.4	6.1	6.2	5.3	4.8	5.1	3.8	3.4	3.6
8	---	---	---	6.6	6.2	6.5	5.5	5.3	5.5	3.6	3.3	3.4
9	---	---	---	6.6	6.4	6.6	5.5	5.0	5.2	3.6	3.3	3.5
10	---	---	---	6.4	6.2	6.3	5.0	4.8	4.9	3.6	3.3	3.5
11	---	---	---	6.2	6.1	6.2	5.0	4.8	4.8	3.8	3.3	3.5
12	---	---	---	6.2	6.2	6.2	5.0	4.8	4.8	3.4	3.0	3.1
13	---	---	---	6.2	6.1	6.2	4.8	4.7	4.7	3.3	3.0	3.1
14	---	---	---	6.1	5.9	6.0	4.8	4.5	4.7	3.3	3.0	3.1
15	---	---	---	6.1	5.6	5.8	4.7	4.2	4.4	3.3	3.0	3.1
16	---	---	---	5.8	5.6	5.7	4.4	4.2	4.3	3.3	3.1	3.2
17	---	---	---	5.9	5.8	5.9	4.4	4.2	4.3	3.6	3.3	3.4
18	---	---	---	5.9	5.3	5.5	4.4	4.1	4.2	3.8	3.6	3.7
19	---	---	---	5.6	5.3	5.4	4.2	3.9	4.0	3.6	3.6	3.6
20	---	---	---	5.6	5.5	5.6	4.1	4.1	4.1	3.6	3.3	3.4
21	---	---	---	5.6	5.6	5.6	4.1	3.8	4.0	3.8	3.3	3.5
22	---	---	---	5.6	5.5	5.6	4.1	3.9	4.0	4.1	3.6	3.9
23	---	---	---	5.5	5.3	5.3	3.9	3.8	3.8	3.9	3.3	3.6
24	---	---	---	5.3	5.2	5.3	4.2	3.8	4.0	3.3	2.8	2.9
25	---	---	---	5.2	4.8	4.9	4.2	4.1	4.1	2.8	2.5	2.7
26	---	---	---	4.8	4.5	4.7	4.1	3.8	3.9	2.8	2.5	2.7
27	7.6	7.5	7.6	4.5	4.2	4.4	3.8	3.4	3.7	3.0	2.5	2.7
28	7.5	6.7	7.1	4.4	4.1	4.2	3.8	3.4	3.5	3.3	2.7	3.0
29	6.7	6.2	6.6	4.5	4.4	4.5	3.6	3.3	3.4	---	---	---
30	6.6	6.2	6.5	4.5	4.4	4.4	3.6	3.3	3.4	---	---	---
31	---	---	---	4.5	4.4	4.5	3.6	3.4	3.5	---	---	---
MONTH	---	---	---	6.7	4.1	5.7	5.5	3.3	4.3	4.1	2.5	3.4

SPOKANE RIVER BASIN

12419000 SPOKANE RIVER NEAR POST FALLS, ID--Continued

WATER TEMPERATURE, DEGREES CELSIUS, NOVEMBER 2001 TO OCTOBER 2002

DAY	MARCH			APRIL			MAY			JUNE		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	3.3	2.7	3.0	4.4	3.3	3.7	8.6	7.3	7.8	13.2	12.3	12.7
2	3.3	2.7	3.0	4.2	3.1	3.7	8.9	7.8	8.3	13.8	12.8	13.2
3	3.4	2.8	3.1	4.5	3.1	3.8	8.6	7.2	7.6	13.4	12.4	12.9
4	3.4	3.0	3.1	4.5	3.4	4.0	7.2	6.7	6.9	14.0	12.6	13.3
5	3.4	3.0	3.2	4.5	3.6	4.1	7.2	6.9	7.0	13.8	13.2	13.6
6	3.3	2.2	2.7	4.5	3.9	4.2	7.5	6.7	7.0	13.5	12.6	12.9
7	2.5	2.0	2.3	4.4	3.9	4.1	7.5	7.0	7.2	12.9	12.1	12.4
8	2.7	2.0	2.3	4.5	3.6	4.0	8.1	7.2	7.6	13.1	12.8	12.9
9	2.8	2.2	2.5	4.4	3.9	4.1	8.4	7.5	7.9	13.4	12.8	13.0
10	3.3	2.8	3.0	4.4	3.8	4.0	9.0	7.6	8.2	12.9	12.3	12.6
11	3.4	3.1	3.3	4.4	3.9	4.1	9.3	8.1	8.7	13.7	12.3	12.9
12	3.4	3.1	3.3	4.5	4.1	4.3	9.8	8.7	9.2	14.1	13.1	13.5
13	3.3	2.8	3.0	4.8	3.9	4.3	10.0	8.9	9.4	14.8	13.1	13.8
14	3.0	2.7	2.8	4.8	4.4	4.6	9.8	9.2	9.5	15.6	13.8	14.6
15	3.1	2.8	2.9	4.5	3.9	4.2	9.5	8.7	9.1	15.9	13.2	14.6
16	3.1	2.8	2.9	4.5	4.1	4.2	10.0	8.4	9.1	16.3	13.7	14.9
17	3.1	2.5	2.8	4.7	4.1	4.3	10.4	9.2	9.7	15.9	14.5	15.0
18	3.0	2.5	2.7	4.8	4.1	4.5	10.4	9.7	10.1	14.8	14.1	14.4
19	3.0	2.5	2.8	5.2	4.4	4.7	10.0	9.0	9.5	14.8	14.0	14.3
20	3.0	2.5	2.7	5.3	4.7	5.0	9.7	9.0	9.3	15.9	14.1	14.8
21	3.0	2.0	2.5	5.5	5.0	5.2	9.7	9.5	9.7	16.7	14.9	15.7
22	3.1	2.5	2.8	5.3	4.7	5.1	9.5	8.7	9.1	17.1	15.4	16.0
23	3.6	2.8	3.1	5.5	4.5	4.9	9.5	8.6	9.0	17.3	16.3	16.7
24	3.4	3.1	3.2	6.2	4.8	5.4	10.6	9.3	9.8	17.3	15.2	16.2
25	3.4	3.1	3.2	6.4	5.5	6.0	10.7	10.0	10.3	18.1	16.7	17.3
26	3.6	2.8	3.2	6.4	5.6	6.0	10.6	10.0	10.2	18.6	17.6	18.1
27	3.6	3.1	3.4	6.7	5.8	6.1	11.7	10.3	10.7	19.9	18.1	18.7
28	3.8	3.1	3.5	7.0	6.2	6.6	12.4	11.2	11.8	20.2	19.7	19.9
29	3.8	3.1	3.5	7.5	6.1	6.7	12.0	10.9	11.2	19.7	18.4	19.0
30	3.9	3.3	3.6	7.6	6.9	7.2	12.4	11.4	11.8	18.8	18.1	18.4
31	3.6	3.3	3.5	---	---	---	12.9	11.7	12.3	---	---	---
MONTH	3.9	2.0	3.0	7.6	3.1	4.8	12.9	6.7	9.2	20.2	12.1	14.9

DAY	JULY			AUGUST			SEPTEMBER			OCTOBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	18.3	17.8	18.0	22.5	21.2	21.8	21.8	21.2	21.5	15.5	15.1	15.3
2	18.4	17.6	17.9	22.2	21.3	21.7	21.8	20.8	21.3	15.1	14.6	14.7
3	18.4	18.3	18.4	22.2	21.0	21.6	21.3	20.8	21.1	14.6	14.4	14.5
4	18.4	18.1	18.4	22.0	21.2	21.5	21.2	20.3	20.7	14.9	14.4	14.6
5	18.4	17.9	18.2	21.5	20.7	21.1	20.7	20.2	20.4	14.9	14.4	14.7
6	18.9	17.9	18.4	21.2	20.5	20.8	20.5	19.9	20.1	15.1	14.6	14.8
7	19.1	18.4	18.8	21.3	20.3	20.8	20.0	19.4	19.7	15.1	14.7	14.9
8	19.1	17.9	18.7	21.2	20.3	20.7	19.7	19.1	19.3	---	---	---
9	19.4	18.4	18.9	21.2	20.2	20.7	19.4	18.7	19.1	---	---	---
10	20.0	18.9	19.4	21.3	20.5	20.9	19.4	18.7	19.0	---	---	---
11	20.2	19.2	19.7	21.5	20.7	21.0	19.2	18.6	18.9	---	---	---
12	21.0	19.9	20.3	21.7	20.5	21.1	19.5	18.7	19.1	---	---	---
13	22.3	21.0	21.6	21.8	20.8	21.3	19.7	19.1	19.4	---	---	---
14	22.8	22.3	22.5	21.8	21.0	21.4	20.0	19.2	19.6	---	---	---
15	23.2	22.2	22.7	22.0	21.0	21.4	19.9	19.4	19.7	---	---	---
16	23.3	22.8	23.1	22.0	21.0	21.4	19.7	19.4	19.4	---	---	---
17	23.5	22.7	23.1	22.0	20.8	21.4	19.4	18.7	19.1	---	---	---
18	23.7	23.0	23.3	21.8	20.8	21.3	18.7	18.2	18.5	---	---	---
19	24.0	23.2	23.6	21.7	20.8	21.2	18.2	17.8	18.0	---	---	---
20	23.7	23.3	23.5	21.8	20.7	21.1	17.9	17.4	17.7	---	---	---
21	23.5	23.0	23.3	21.5	20.7	21.0	17.6	17.0	17.3	---	---	---
22	23.7	22.8	23.3	21.7	20.5	21.0	17.4	16.8	17.1	---	---	---
23	23.7	23.2	23.4	21.8	20.5	21.1	17.4	16.8	17.1	---	---	---
24	24.0	23.2	23.6	21.5	20.8	21.1	17.4	16.8	17.1	---	---	---
25	24.0	23.5	23.8	21.8	20.7	21.2	17.4	16.8	17.1	---	---	---
26	24.2	23.5	23.8	21.8	20.7	21.2	17.1	16.8	17.0	---	---	---
27	24.2	23.5	23.8	22.0	20.8	21.4	17.0	16.6	16.8	---	---	---
28	23.9	23.3	23.6	22.5	21.2	21.8	17.0	16.3	16.6	---	---	---
29	23.3	22.8	23.1	22.0	21.3	21.6	16.5	15.9	16.2	---	---	---
30	22.8	22.3	22.6	22.3	21.0	21.6	15.9	15.4	15.7	---	---	---
31	22.3	21.7	22.0	22.2	21.2	21.6	---	---	---	---	---	---
MONTH	24.2	17.6	21.4	22.5	20.2	21.3	21.8	15.4	18.7	---	---	---

SPOKANE RIVER BASIN

12419500 SPOKANE RIVER ABOVE LIBERTY BRIDGE, NEAR OTIS ORCHARDS, WA

LOCATION.--Lat 47°40'56", long 117°05'05", in NW 1/4 sec.11, T.25 N., R.45 E., Spokane County, Hydrologic Unit 17010305, on left bank 1.2 mi upstream from Liberty Bridge, 1.8 mi southeast of Otis Orchards, 3.3 mi northeast of Greenacres, and at mile 93.9.

DRAINAGE AREA.--3,880 mi², approximately.

PERIOD OF RECORD.--January 1929 to December 1936, March 1937, August 1937 to August 1941, October 1941 to October 1942, February to May 1943, August 1943 to November 1946, February to July 1947, September 1947 to February 1948; May to November 1948, March to November 1949, and April to September 1950 (monthly discharge only); October 1950 to September 1983, April 1999 to current year.

REVISED RECORD.--None.

GAGE.--Water-stage recorder. Datum of gage is 2,000 ft above NGVD of 1929, (levels by Avista Corporation).

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow partly regulated by dam at Post Falls, Idaho, 8.2 mi upstream and affected by storage in Coeur d'Alene Lake. Chemical analysis July 1959 to September 1971, April to September 1999. Water temperature December 1963 to September 1965.

AVERAGE DISCHARGE.-- 50 years (water years 1930-36, 1938-40, 1942, 1944-46, 1951-83, 2000-02), 6,097 ft³/s, 4,417,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,100 ft³/s Dec. 25, 1933, gage height, 22.24 ft; minimum daily discharge, 38 ft³/s July 20, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 31,400 ft³/s Apr. 17, gage height, 19.11 ft, from inside high water mark; minimum discharge, 427 ft³/s Aug. 28-30, gage height 8.37 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	2110	3190	3370	6510	8140	9290	18600	e29000	8930	754	519
2	1350	2110	3190	3120	6300	7900	9410	18900	e29300	8080	596	555
3	1370	2110	3210	3030	5870	7620	9710	19100	e29000	6490	589	559
4	1410	2110	3220	2870	5650	7100	9890	19600	e28300	5720	578	565
5	1420	2110	3220	2750	5540	6930	10100	20000	e27700	5100	571	566
6	1430	2110	3220	2750	5340	6560	10500	20100	e26500	4030	701	562
7	1430	2130	3220	2750	5130	6380	11000	19700	e25900	3690	864	566
8	1430	2110	3220	3250	5030	6110	11700	19200	e24900	3690	865	567
9	1430	2010	3220	4590	4700	5950	11700	18500	23800	3680	866	906
10	1440	1990	3360	5140	4580	5690	13100	17600	22900	3290	866	1370
11	1440	1990	3820	5760	4430	5600	15300	16800	21800	2980	864	1370
12	1470	1980	4100	5920	4330	6310	16800	16000	20600	2600	862	1360
13	1470	1980	4140	6000	4170	7390	18100	15200	19500	2290	860	1360
14	1470	1980	4650	6990	4030	8230	20100	15300	18500	2280	858	1390
15	1460	1980	5040	7490	3990	8570	23700	15700	18100	2280	859	1390
16	1450	1980	5060	8020	3850	8640	e27600	16200	17800	2280	782	1400
17	1470	1980	5060	7890	3730	8540	e30200	16600	17700	2280	716	1410
18	1470	1970	5310	7750	3680	8490	e30600	16700	17600	2520	716	1410
19	1470	1970	5520	7630	3630	8110	e29900	17000	17000	2700	670	1420
20	1470	1980	5470	7470	3750	8020	e28200	17800	16600	2700	554	1430
21	1480	1980	5450	7270	3720	8120	e26800	19300	15400	2610	474	1430
22	1470	1990	5390	7060	3730	8130	e25400	21100	14100	2040	474	1430
23	1490	1990	5310	6890	4210	8100	24100	22900	13600	1590	491	1430
24	1760	1990	5120	6640	5400	8050	23300	e24600	12700	1590	511	1430
25	2000	2000	4830	6440	6970	8040	22600	e25800	11400	1580	510	1430
26	2060	2270	4370	6750	7750	8080	21800	e25800	10500	1520	510	1430
27	2080	2470	4130	6990	8160	8140	21000	e25700	9270	1360	506	1430
28	2080	2500	4000	6990	8190	8290	20400	e25800	8030	1350	467	1440
29	2090	2600	3930	6910	---	8580	19600	e26600	8050	1250	427	1440
30	2100	2840	3510	6780	---	8750	19000	e27500	8960	1080	463	1450
31	2110	---	3520	6660	---	8870	---	e28500	---	999	510	---
TOTAL	49150	63320	130000	179920	142370	237430	570900	628200	564510	94579	20334	35015
MEAN	1585	2111	4194	5804	5085	7659	19030	20260	18820	3051	656	1167
MAX	2110	2840	5520	8020	8190	8870	30600	28500	29300	8930	866	1450
MIN	1080	1970	3190	2750	3630	5600	9290	15200	8030	999	427	519
AC-FT	97490	125600	257900	356900	282400	470900	1132000	1246000	1120000	187600	40330	69450
CFSM	0.41	0.54	1.08	1.50	1.31	1.97	4.90	5.22	4.85	0.79	0.17	0.30
IN.	0.47	0.61	1.25	1.73	1.36	2.28	5.47	6.02	5.41	0.91	0.19	0.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	(WY)	(WY)	(WY)
MEAN	1629	2665	4721	5273	6131	7519	14090
MAX	3281	7913	23660	24980	16050	24440	25150
(WY)	1969	1960	1934	1934	1961	1972	1943
MIN	748	597	726	834	1010	1673	3605
(WY)	1964	1936	1936	2001	2001	1929	1977

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1929 - 2002
ANNUAL TOTAL	972977	2715728	
ANNUAL MEAN	2666	7440	6104
HIGHEST ANNUAL MEAN			11260
LOWEST ANNUAL MEAN			2077
HIGHEST DAILY MEAN	16200	May 3	30600
LOWEST DAILY MEAN	66	Aug 21	427
ANNUAL SEVEN-DAY MINIMUM	71	Aug 21	485
ANNUAL RUNOFF (AC-FT)	1930000	5387000	4422000
ANNUAL RUNOFF (CFSM)	0.69	1.92	1.57
ANNUAL RUNOFF (INCHES)	9.33	26.04	21.38
10 PERCENT EXCEEDS	5410	20200	17100
50 PERCENT EXCEEDS	1490	4140	3030
90 PERCENT EXCEEDS	278	865	784

e Estimated

SPOKANE RIVER BASIN

12420500 SPOKANE RIVER AT GREENACRES, WA

LOCATION.--Lat 47°40'39", long 117°09'04", in SW ¼ of NW ¼ sec.8, T.25 N., R.45 E., Spokane County, Hydrologic Unit 17010305, on left bank 600 ft upstream from Barker Road Bridge, 0.5 mi north of Greenacres, and at mile 90.5.

DRAINAGE AREA.--4,150 mi², approximately

PERIOD OF RECORD.--March 1948 to July 1952, August 1999 to current year.

REVISED RECORDS.--None

GAGE.--Water-stage recorder. Elevation of gage is 1,980 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges and discharges below 600 ft³/s, which are poor. Flow partly regulated by dam at Post Falls, Idaho, 11.6 mi upstream and affected by storage in Coeur d'Alene Lake.

AVERAGE DISCHARGE.--6 years (water years 1949-51, 2000-02) 6,508 ft³/s, 4,715,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, probably occurred May 30, 1948, during period of no gage-height record (comparison with other stations on this stream indicates a discharge of about 40,000 ft³/s); minimum discharge, 22 ft³/s August 21, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 32,200 ft³/s, Apr. 17, gage height 13.46 ft; minimum discharge, 280 ft³/s, Aug. 30, gage height 3.50 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	2050	e3150	3440	6660	8330	9480	19000	29100	9200	651	372
2	1320	2060	e3150	3210	6450	8110	9600	19200	29400	8340	481	408
3	1330	2060	e3160	3100	5970	7830	9840	19500	29100	6660	466	410
4	1370	2060	e3160	2950	5730	7300	10000	19900	28600	5780	453	417
5	1390	2070	e3160	2840	5630	7120	10200	20300	28000	5150	446	419
6	1390	2070	e3160	2840	5430	6770	10600	20500	27300	4040	548	416
7	1400	2090	e3160	2840	5220	6570	11100	20100	26400	3690	731	416
8	1420	2080	e3150	3280	5110	6280	11800	19600	25500	3680	733	421
9	1420	2000	e3160	4590	4790	6080	11800	18900	24600	3670	732	713
10	1430	1990	e3500	5170	4670	5810	13100	18000	23500	3300	733	1210
11	1440	1990	e3820	5780	4510	5680	15200	17200	22300	2950	722	1210
12	1450	1980	e4100	5960	4420	6450	16700	16400	21100	2600	717	1210
13	1440	1970	e4140	6040	4260	7570	18100	15600	19900	2280	715	1210
14	1450	1970	e4650	7060	4110	8420	20100	15600	19000	2270	715	1250
15	1450	1970	e5040	7560	4060	8780	23900	16100	18500	2270	715	1250
16	1450	1980	e5060	8120	3940	8850	28600	16500	18300	2260	648	1250
17	1450	1990	e5060	7990	3810	8770	31100	16900	18100	2250	575	1260
18	1450	1980	e5310	7870	3770	8710	31000	17100	18000	2470	574	1260
19	1450	1980	e5520	7760	3710	8340	30000	17300	17500	2660	529	1270
20	1460	1990	e5470	7600	3840	8250	28500	18100	17100	2660	422	1280
21	1460	e1990	e5450	7410	3800	8380	27100	19600	15900	2580	339	1290
22	1470	e2000	e5380	7210	3820	8380	25900	21400	14500	2060	336	1300
23	1480	e2010	e5320	7030	4260	8330	24700	23200	13900	1580	350	1300
24	1720	e2000	e5130	6780	5450	8290	23900	25000	13000	1560	373	1300
25	1940	e2010	e4830	6570	7120	8280	23100	26000	11700	1550	371	1300
26	1990	e2200	e4370	6880	7940	8310	22200	26000	10700	1480	370	1310
27	2020	e2400	e4130	7140	8350	8370	21300	25800	9550	1290	365	1310
28	2010	e2510	e4000	7160	8380	8510	20700	26000	8300	1280	332	1310
29	2020	e2680	e3930	7060	---	8790	20000	26700	8250	1170	287	1320
30	2040	e2950	e3510	6930	---	8970	19300	27600	9220	979	316	1330
31	2050	---	e3520	6810	---	9100	---	28600	---	912	367	---
TOTAL	48190	63080	129650	182980	145210	243730	578920	637700	576320	94621	16112	30722
MEAN	1555	2103	4182	5903	5186	7862	19300	20570	19210	3052	520	1024
MAX	2050	2950	5520	8120	8380	9100	31100	28600	29400	9200	733	1330
MIN	1030	1970	3150	2840	3710	5680	9480	15600	8250	912	287	372
AC-FT	95580	125100	257200	362900	288000	483400	1148000	1265000	1143000	187700	31960	60940
CFSM	0.37	0.51	1.01	1.42	1.25	1.89	4.65	4.96	4.63	0.74	0.13	0.25
IN.	0.43	0.57	1.16	1.64	1.30	2.18	5.19	5.72	5.17	0.85	0.14	0.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

MEAN	1812	2722	4761	4317	6077	8054	16430	20900	11610	2296	599	673
MAX	2788	4435	9128	7735	15440	16490	20030	29510	22900	6216	1391	1185
(WY)	1952	1951	1951	1951	1951	1950	2000	1948	1948	1950	1948	1999
MIN	865	1499	1591	945	1118	2075	4593	10830	3124	780	150	132
(WY)	1950	1949	2001	2001	2001	2001	2001	2001	2001	2001	2001	1949

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1948 - 2002

ANNUAL TOTAL	976684	2747235	
ANNUAL MEAN	2676	7527	6508
HIGHEST ANNUAL MEAN			9028
LOWEST ANNUAL MEAN			2498
HIGHEST DAILY MEAN	15900	31100	40000
LOWEST DAILY MEAN	47	287	47
ANNUAL SEVEN-DAY MINIMUM	59	344	57
ANNUAL RUNOFF (AC-FT)	1937000	5449000	4715000
ANNUAL RUNOFF (CFSM)	0.64	1.81	1.57
ANNUAL RUNOFF (INCHES)	8.75	24.63	21.31
10 PERCENT EXCEEDS	5410	20600	18400
50 PERCENT EXCEEDS	1490	4140	3160
90 PERCENT EXCEEDS	318	727	407

e Estimated

SPOKANE RIVER BASIN

12422500 SPOKANE RIVER AT SPOKANE, WA

LOCATION.--Lat 47°39'34", long 117°26'53", in SW ¼ SW ¼ sec.13, T.25 N., R.42 E., Spokane County, Hydrologic Unit 17010305, on right bank at Cochran Street in Spokane, 0.5 mi upstream from Hangman Creek, and at mile 72.9.

DRAINAGE AREA.--4,290 mi², approximately, of which about 122 mi² in the vicinity of Hayden Lake is noncontributing to this station.

PERIOD OF RECORD.--April 1891 to current year.

REVISED RECORDS.--WSP 532: 1891-1904. WSP 1246: Drainage area. WSP 1286: 1907-09.

GAGE.--Water-stage recorder. Elevation of gage is 1,697 ft above NGVD of 1929 (river-profile survey). Prior to July 1, 1921, water-stage recorders and nonrecording gages at several sites within 4 mi of present site at various datums.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by powerplants of Avista Corp. at Post Falls, Idaho, 28.8 mi upstream and at Spokane, 1.3 mi upstream, and by Coeur d'Alene Lake, Idaho. Rathdrum Prairie Canal diverts water upstream from station for irrigation. In 1946, approximately 22,600 acres, of which about 15,000 acres utilized surface water, were under irrigation upstream from Spokane. Since 1966 irrigation has been from many wells in the valley near the river with only about 3,000 acres irrigated from the river. Chemical analyses October 1972 to September 1973. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Discharge figures for July 16-19 and 23 provided by Avista Corporation.

AVERAGE DISCHARGE.--111 years (water years 1892-2002), 6,742 ft³/s, 4,884,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,000 ft³/s, estimated, May 31, 1894 (see WSP 532); minimum, 49.7 ft³/s Aug. 26, 1991, due to regulation for construction at Post Street Dam, but may have been lower during periods of missing record in 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31,400 ft³/s Apr. 18, gage height, 26.88 ft; minimum discharge, 860 ft³/s Aug. 26, gage height, 17.31 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	2470	3440	3950	7010	8360	9560	19300	29400	9620	1510	1010
2	1660	2480	3460	3740	6820	8240	9690	19400	29600	9050	1320	1020
3	1670	2490	3480	3610	6440	8000	9910	19600	29500	7610	1300	1050
4	1710	2500	3490	3500	6180	7610	10100	20000	29000	6590	1290	1020
5	1760	2490	3530	3350	6100	7400	10300	20500	28400	6170	1260	1060
6	1770	2490	3530	3350	5920	7130	10600	20600	27800	5090	1260	1050
7	1790	2500	3530	3390	5720	6930	11000	20400	27100	4630	1460	1040
8	1800	2530	3540	3600	5610	6680	11700	19900	26300	4520	1410	1050
9	1780	2470	3540	4560	5350	6510	11800	19200	25300	4490	1410	1120
10	1800	2410	3640	5270	5250	6340	12700	18400	24100	4200	1420	1610
11	1830	2440	3910	5770	5020	5980	14800	17600	23000	3780	1390	1620
12	1820	2430	4240	6010	4990	6670	16200	16700	21800	3520	1390	1640
13	1860	2450	4380	6130	4830	7560	17500	16000	20700	3120	1390	1640
14	1860	2410	4620	6850	4680	8390	19400	15800	19600	3020	1360	1670
15	1870	2430	5080	7360	4650	8780	22900	16200	19100	3000	1380	1700
16	1890	2430	5160	8010	4540	8940	27700	16700	18700	3060	1350	1700
17	1870	2500	5180	7960	4330	8890	30400	17000	18500	3020	1240	1730
18	1870	2420	5360	7880	4370	8850	30800	17200	18400	3150	1240	1740
19	1910	2440	5600	7820	4210	8550	30000	17400	17900	3280	1250	1760
20	1940	2440	5610	7680	4380	8500	28700	18100	17500	3200	1150	1770
21	1950	2460	5600	7540	4290	8560	27400	19400	16500	3160	1040	1750
22	1950	2470	5590	7410	4290	8580	26200	21300	15100	2770	1060	1800
23	1960	2470	5530	7240	4550	8530	25100	23000	14400	2410	1010	1770
24	2090	2470	5470	7030	5540	8510	24300	24900	13600	2280	1040	1770
25	2300	2490	5190	6850	6990	8510	23400	26000	12400	2240	1040	1810
26	2340	2610	4860	7070	7800	8510	22600	26200	11500	2190	1030	1800
27	2390	2800	4610	7320	8260	8540	21800	26100	10400	2010	1020	1830
28	2390	2870	4510	7400	8360	8650	21100	26300	9190	1990	999	1830
29	2430	2960	4380	7300	---	8920	20400	26800	8740	1960	965	1800
30	2450	3060	4100	7190	---	9120	19700	27800	9640	1720	945	1840
31	2490	---	4070	7090	---	9230	---	28700	---	1720	989	---
TOTAL	60570	75880	138230	189230	156480	249970	577760	642500	593170	118570	37918	46000
MEAN	1954	2529	4459	6104	5589	8064	19260	20730	19770	3825	1223	1533
MAX	2490	3060	5610	8010	8360	9230	30800	28700	29600	9620	1510	1840
MIN	1370	2410	3440	3350	4210	5980	9560	15800	8740	1720	945	1010
AC-FT	120100	150500	274200	375300	310400	495800	1146000	1274000	1177000	235200	75210	91240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1891 - 2002, BY WATER YEAR (WY)

	1891	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2002
MEAN	2157	3291	5176	5521	6284	8316	14180	17900	11050	3420	1756	1740
MAX	5643	13050	22910	25430	22060	25380	25030	34390	29850	11910	4744	3302
(WY)	1928	1928	1934	1934	1996	1972	1943	1997	1894	1899	1899	1912
MIN	1300	1151	1233	1339	1489	2047	3865	5214	2141	1050	531	932
(WY)	1893	1940	1932	1931	1929	1929	1977	1992	1994	1994	1994	1966

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1891 - 2002

ANNUAL TOTAL	1142158	2886278	
ANNUAL MEAN	3129	7908	6742
HIGHEST ANNUAL MEAN			12310
LOWEST ANNUAL MEAN			2508
HIGHEST DAILY MEAN	15600	May 4	30800
LOWEST DAILY MEAN	550	Sep 7	945
ANNUAL SEVEN-DAY MINIMUM	578	Sep 1	993
ANNUAL RUNOFF (AC-FT)	2265000	5725000	4884000
10 PERCENT EXCEEDS	5600	20900	17200
50 PERCENT EXCEEDS	1980	4630	3720
90 PERCENT EXCEEDS	907	1400	1510

SPOKANE RIVER BASIN

12424000 HANGMAN CREEK AT SPOKANE, WA

LOCATION.--Lat 47°39'10", long 117°26'55", in NW 1/4 sec.24, T.25 N., R.42 E., Spokane County, Hydrologic Unit 17010306, on left bank 0.3 mi downstream from bridge on Interstate 90 in Spokane, and at mile 0.8.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--April 1948 to September 1977; October 1977 to September 1978 (discharges above 20 ft³/s only), October 1978 to current year. Prior to October 1958, published as Latah Creek at Spokane.

REVISED RECORDS.--WSP 1933: Drainage area. WSP 2133: 1965(P).

GAGE.--Water-stage recorder. Datum of gage is 1,717.42 ft above NGVD of 1929 (levels by Corps of Engineers). Prior to Nov. 22, 1948, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--Records fair. No regulation. Some diversions for irrigation upstream from station. Suspended sediment October 1997 to September 2001. U.S Geological Survey satellite telemeter and National Weather Service telemeter at station.

AVERAGE DISCHARGE.--53 years (water years 1949-77, 1979-2002), 235 ft³/s, 4.64 in/yr, 170,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft³/s Jan. 1, 1997 (measured), gage height, 14.31 ft (from outside high-water mark); minimum discharge, 0.74 ft³/s Sept. 5, 14, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 08	0100	3,260	6.59	Feb. 24	0400	3,570	6.86
Jan. 26	0230	4,060	7.25	Mar. 12	0530	*4,570	*7.65
Feb. 22	2300	3,100	6.45	Mar. 20	1400	2,610	5.93

Minimum discharge, 4.5 ft³/s Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	20	60	e60	224	e270	465	152	78	23	11	8.5
2	5.3	18	62	e58	195	e200	458	147	72	23	9.6	7.5
3	5.2	16	67	e58	170	e200	426	149	67	21	9.7	8.5
4	5.0	15	82	70	163	258	392	146	63	19	9.5	9.7
5	5.5	15	101	88	151	261	370	145	60	18	9.6	9.0
6	5.4	15	104	121	146	390	385	148	54	18	11	9.0
7	5.2	15	89	1340	150	258	432	155	50	17	9.9	9.9
8	6.3	15	74	2770	239	258	455	149	50	18	10	9.2
9	6.3	14	70	1590	418	236	424	135	52	24	9.4	8.5
10	7.1	14	74	764	453	235	407	125	54	21	8.5	10
11	7.7	13	82	476	379	1340	439	114	55	17	8.5	9.5
12	9.4	13	86	358	315	3830	473	107	55	16	7.5	9.4
13	9.0	13	99	318	253	2060	472	99	53	15	6.8	9.1
14	9.9	15	764	258	204	1070	708	92	50	15	7.3	8.9
15	9.8	15	1300	197	170	787	1150	87	46	14	7.8	8.9
16	10	18	537	155	151	624	738	86	42	14	6.7	7.6
17	10	24	671	120	156	537	534	91	38	14	6.8	15
18	9.7	25	726	101	179	446	435	94	41	14	7.4	14
19	8.9	24	392	104	317	378	350	92	42	13	6.4	14
20	9.5	23	266	93	969	1710	299	91	41	12	6.5	15
21	11	22	213	84	1070	1040	272	88	40	13	6.9	15
22	11	25	179	80	2650	818	249	92	38	11	e12	11
23	12	28	136	88	2540	930	235	108	41	12	9.9	6.7
24	12	35	122	87	3320	767	230	157	38	11	9.2	8.3
25	12	40	e100	842	e1330	894	220	158	35	13	8.2	8.2
26	11	59	e85	3190	e520	831	206	124	30	11	e8.3	8.4
27	11	65	e70	1490	e360	743	193	106	28	12	8.1	8.7
28	11	51	e65	639	e320	657	182	97	27	13	8.8	7.7
29	12	51	e60	386	---	575	170	94	29	13	9.4	7.8
30	16	49	e55	313	---	526	160	94	27	12	8.5	9.9
31	17	---	e58	264	---	478	---	91	---	12	8.0	---
TOTAL	286.8	765	6849	16562	17512	23607	11929	3613	1396	479	267.2	292.9
MEAN	9.25	25.5	221	534	625	762	398	117	46.5	15.5	8.62	9.76
MAX	17	65	1300	3190	3320	3830	1150	158	78	24	12	15
MIN	5.0	13	55	58	146	200	160	86	27	11	6.4	6.7
AC-FT	569	1520	13580	32850	34740	46820	23660	7170	2770	950	530	581
CFSM	0.01	0.04	0.32	0.78	0.91	1.11	0.58	0.17	0.07	0.02	0.01	0.01
IN.	0.02	0.04	0.37	0.89	0.95	1.27	0.64	0.20	0.08	0.03	0.01	0.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

	MEAN	MAX (WY)	MIN (WY)
1948	18.2	48.5	2.30
1949	45.1	216	10.4
1950	203	1251	10.9
1951	472	2097	24.0
1952	738	1776	39.5
1953	744	1914	44.1
1954	351	928	27.0
1955	195	1925	15.1
1956	76.5	434	6.21
1957	22.9	77.7	2.43
1958	13.7	47.3	1.29
1959	13.7	46.2	1.01
1960	13.7	46.2	1.01

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1948 - 2002

ANNUAL TOTAL	35844.2	83593.9	
ANNUAL MEAN	98.2	229	235
HIGHEST ANNUAL MEAN			629
LOWEST ANNUAL MEAN			27.3
HIGHEST DAILY MEAN	1300	Dec 15	18000
LOWEST DAILY MEAN	3.5	Sep 18	0.81
ANNUAL SEVEN-DAY MINIMUM	3.8	Sep 13	0.92
ANNUAL RUNOFF (AC-FT)	71100		170500
ANNUAL RUNOFF (CFSM)	0.14		0.34
ANNUAL RUNOFF (INCHES)	1.94		4.64
10 PERCENT EXCEEDS	258		584
50 PERCENT EXCEEDS	41		43
90 PERCENT EXCEEDS	5.3		9.0

e Estimated

SPOKANE RIVER BASIN

12431000 LITTLE SPOKANE RIVER AT DARTFORD, WA

LOCATION.--Lat 47°47'05", long 117°24'12", in NE 1/4 NW 1/4 sec.5, T.26 N., R.43 E., Spokane County, Hydrologic Unit 17010308, on left bank 50 ft upstream from county bridge, 0.5 mi east of Dartford, 1.7 mi downstream from Deadman Creek, 7.5 mi north of Spokane, and at mile 11.4.

DRAINAGE AREA.--665 mi².

PERIOD OF RECORD.--April 1929 to September 1932, December 1946 to current year.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1930, 1932(M), 1947-49(M). WSP1446: 1951(M).

GAGE.--Water-stage recorder. Datum of gage is 1,585.62 ft above NGVD of 1929 (levels by Washington State Department of Transportation). Prior to 1996 an arbitrary datum of 1,590 ft was used, from topographic map. Prior to Mar. 16, 1951, nonrecording gage and Mar. 16, 1951, to July 5, 1961, water-stage recorder, at site 0.5 mi downstream at different datum.

REMARKS.--Records good. No regulation. Small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Chemical analyses, July 1960 to September 1970, water temperatures, July 1968 to September 1970.

AVERAGE DISCHARGE.--58 years (water years 1930-32, 1948-2002), 304 ft³/s, 6.21 in/yr, 220,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,110 ft³/s Mar. 21, 1997, gage height, 8.27 ft; minimum discharge, 62 ft³/s Aug. 8, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 940 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1230	946	4.66	Apr. 15	0800	*1,360	*5.43

Minimum discharge, 104 ft³/s Aug. 11, 15, 16, 18, 19, gage height, 2.23 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	181	260	e211	364	486	662	579	348	187	125	114
2	108	167	279	e210	359	455	657	570	334	182	125	113
3	108	158	281	e212	345	439	653	556	321	176	124	112
4	109	154	271	e217	341	436	653	545	307	173	120	112
5	108	151	256	e220	327	428	663	538	293	168	121	113
6	110	151	247	247	324	441	689	547	278	166	121	115
7	110	151	238	357	342	412	710	528	267	167	124	116
8	113	150	230	689	400	392	738	523	266	169	120	115
9	115	149	227	912	406	390	751	499	278	175	119	115
10	116	148	225	823	382	395	793	473	276	167	118	114
11	121	148	220	680	362	466	830	448	269	165	116	113
12	124	148	217	611	332	723	848	429	255	158	115	113
13	128	147	237	597	324	701	879	417	243	153	114	112
14	127	161	393	563	316	603	1010	409	234	150	110	111
15	126	181	407	507	304	557	1270	398	223	144	107	113
16	126	182	337	475	302	542	1170	388	214	144	109	113
17	126	209	399	454	306	538	1150	382	212	142	111	119
18	127	213	392	423	306	515	1080	390	215	142	107	123
19	128	196	365	417	322	504	978	389	243	139	106	122
20	130	189	341	419	372	514	906	392	234	137	106	120
21	134	191	323	412	375	476	855	395	217	132	108	119
22	140	202	310	381	519	466	813	418	208	130	112	118
23	148	237	284	379	811	492	779	493	204	130	111	119
24	152	235	275	378	764	545	744	450	200	127	112	119
25	151	211	264	428	603	553	712	422	195	129	111	118
26	149	204	e210	521	545	574	687	405	190	129	110	119
27	147	199	e212	470	508	576	663	389	179	128	111	121
28	147	195	e233	396	514	588	637	394	179	128	113	121
29	146	210	e225	351	---	612	614	403	194	129	110	121
30	152	238	e220	362	---	633	593	386	198	128	113	125
31	179	---	e216	364	---	644	---	366	---	127	116	---
TOTAL	4013	5456	8594	13686	11475	16096	24187	13921	7274	4621	3545	3498
MEAN	129.5	181.9	277.2	441.5	409.8	519.2	806.2	449.1	242.5	149.1	114.4	116.6
MAX	179	238	407	912	811	723	1270	579	348	187	125	125
MIN	108	147	210	210	302	390	593	366	179	127	106	111
AC-FT	7960	10820	17050	27150	22760	31930	47970	27610	14430	9170	7030	6940
CFSM	0.19	0.27	0.42	0.66	0.62	0.78	1.21	0.68	0.36	0.22	0.17	0.18
IN.	0.22	0.31	0.48	0.77	0.64	0.90	1.35	0.78	0.41	0.26	0.20	0.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
MEAN	156.6	190.8	239.5	288.4	412.2	588.0	633.0	421.1	263.5	167.0	133.7	138.4
MAX	244	357	824	1204	1108	1629	1469	1176	710	331	217	227
(WY)	1998	1984	1974	1974	1961	1997	1997	1948	1948	1948	1997	1997
MIN	87.9	113	114	99.6	143	167	168	132	98.2	80.3	67.8	80.3
(WY)	1932	1930	1993	1930	1993	1930	1977	1930	1931	1931	1931	1931

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1929 - 2002
ANNUAL TOTAL	71968	116366	
ANNUAL MEAN	197.2	318.8	303.9
HIGHEST ANNUAL MEAN			626 1997
LOWEST ANNUAL MEAN			128 1931
HIGHEST DAILY MEAN	407	1270	3710
LOWEST DAILY MEAN	98	106	63
ANNUAL SEVEN-DAY MINIMUM	99	108	65
ANNUAL RUNOFF (AC-FT)	142700	230800	220200
ANNUAL RUNOFF (CFSM)	0.30	0.48	0.46
ANNUAL RUNOFF (INCHES)	4.03	6.51	6.21
10 PERCENT EXCEEDS	311	640	612
50 PERCENT EXCEEDS	200	235	204
90 PERCENT EXCEEDS	103	114	122

e Estimated

SPOKANE RIVER BASIN

12431500 LITTLE SPOKANE RIVER NEAR DARTFORD, WA

LOCATION.--Lat 47°46'52", long 117°29'43", in NW 1/4 sec.3, T.26 N., R.42 E., Spokane County, Hydrologic Unit 17010308, on right bank on downstream side of county bridge, 4 mi west of Dartford, 1.5 mi north of Spokane city limits, and at mile 3.9.

DRAINAGE AREA.--698 mi².

PERIOD OF RECORD.--April 1948 to March 1952, October 1997 to current year.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,550 ft above NGVD of 1929, from topographic map. Prior to October 1997, in center of stream on downstream side of highway bridge, at unknown datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Many small diversions for irrigation and domestic use upstream from station.

AVERAGE DISCHARGE.--8 years (water years 1949-51, 1998-2002), 599 ft³/s, 11.66 in/yr, 434,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,260 ft³/s Apr. 15, 2000, gage height, 10.01 ft, minimum discharge, 315 ft³/s Aug. 16, 17, 2001, gage height, 4.72 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 22-23, 1997, reached a discharge of 4,380 ft³/s based on comparison with records for Little Spokane River at Dartford (12431000), stage not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 15	1430	*1,520	*9.13	No other peak greater than base discharge.			

Minimum discharge, 333 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	335	426	492	473	589	741	940	865	605	435	360	344
2	335	412	507	472	585	709	942	848	593	429	359	342
3	339	402	510	476	576	690	942	831	581	422	357	342
4	337	396	504	478	570	685	940	817	567	419	356	343
5	337	393	493	478	564	680	946	806	554	416	355	343
6	340	390	485	480	559	687	966	811	539	412	355	345
7	341	388	475	532	567	672	990	795	526	409	358	346
8	344	386	468	767	611	650	1020	785	522	414	354	345
9	346	386	463	1010	632	644	1040	764	531	419	352	345
10	349	385	461	1080	613	651	1070	733	532	412	349	344
11	354	384	456	964	598	692	1120	706	525	406	348	343
12	361	382	453	854	573	858	1150	684	512	401	346	343
13	363	383	468	818	560	1010	1180	669	500	396	345	342
14	361	391	562	794	558	918	1240	656	490	395	343	342
15	359	416	650	740	547	840	1440	646	478	388	340	343
16	359	419	577	696	545	813	1440	634	468	387	339	344
17	359	445	597	675	546	807	1420	628	462	385	343	350
18	359	454	627	649	549	789	1380	632	464	382	340	354
19	362	436	595	640	557	773	1320	632	488	378	339	354
20	365	427	576	636	600	780	1260	635	485	376	339	351
21	367	426	560	633	606	761	1210	637	469	372	339	349
22	374	437	546	610	678	732	1160	652	458	370	342	349
23	383	470	525	601	924	747	1110	715	453	370	342	349
24	387	477	508	596	1040	796	1080	699	449	366	343	349
25	388	455	503	619	929	816	1040	670	443	369	342	349
26	388	445	470	705	803	840	1010	654	437	367	341	351
27	386	438	471	696	758	846	977	639	428	366	343	353
28	386	436	497	628	756	856	946	635	425	365	344	353
29	383	448	484	582	---	875	915	650	440	365	341	353
30	392	472	477	580	---	908	886	635	446	362	343	355
31	418	---	477	586	---	918	---	620	---	362	345	---
TOTAL	11257	12605	15937	20548	17993	24184	33080	21783	14870	12115	10742	10415
MEAN	363.1	420.2	514.1	662.8	642.6	780.1	1103	702.7	495.7	390.8	346.5	347.2
MAX	418	477	650	1080	1040	1010	1440	865	605	435	360	355
MIN	335	382	453	472	545	644	886	620	425	362	339	342
AC-FT	22330	25000	31610	40760	35690	47970	65610	43210	29490	24030	21310	20660
CFSM	0.52	0.60	0.74	0.95	0.92	1.12	1.58	1.01	0.71	0.56	0.50	0.50
IN.	0.60	0.67	0.85	1.10	0.96	1.29	1.76	1.16	0.79	0.65	0.57	0.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

	MEAN	441.7	474.5	533.5	561.1	699.7	997.4	1028	800.0	586.6	446.0	395.2	393.0
MAX	525	555	622	707	912	1301	1211	1381	945	573	436	421	
(WY)	1998	1998	1999	1999	1999	1999	2000	1948	1948	1948	1948	1999	
MIN	363	420	435	433	443	513	532	491	399	342	323	327	
(WY)	2002	2002	1950	1950	2001	2001	2001	2001	2001	2001	2001	2001	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1948 - 2002	
ANNUAL TOTAL	155557		205529			
ANNUAL MEAN	426.2		563.1		599.0	
HIGHEST ANNUAL MEAN					686	
LOWEST ANNUAL MEAN					432	
HIGHEST DAILY MEAN	650		1440		2130	
LOWEST DAILY MEAN	318		335		318	
ANNUAL SEVEN-DAY MINIMUM	319		338		319	
ANNUAL RUNOFF (AC-FT)	308500		407700		434000	
ANNUAL RUNOFF (CFSM)	0.61		0.81		0.86	
ANNUAL RUNOFF (INCHES)	8.29		10.95		11.66	
10 PERCENT EXCEEDS	534		918		1010	
50 PERCENT EXCEEDS	437		478		488	
90 PERCENT EXCEEDS	325		344		393	

SPOKANE RIVER BASIN

12432500 LONG LAKE AT LONG LAKE, WA

LOCATION.--Lat 47°50'12", long 117°50'20", in NW ¼ SW ¼ sec.13, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, at left end of spillway at Long Lake Dam on Spokane River, 12.0 mi north of Reardan, and at mile 33.9.

DRAINAGE AREA.--6,020 mi², approximately, of which about 122 mi² in the vicinity of Hayden Lake is noncontributing to this station.

PERIOD OF RECORD.--October 1913 to current year. Prior to October 1950 monthend contents only, published in WSP 1316. October 1950 to September 1977 monthend stage and contents only.

REVISED RECORDS.--WSP 1736: Monthend contents for 1916-33 corrected. WSP 1933: Drainage area. WDR WA-01-1: Calendar year change in contents for 1998-99 corrected.

GAGE.--Water-stage recorder with remote indicator in powerhouse. Datum of gage is NGVD of 1929 (levels by Avista Corporation).

REMARKS.--Reservoir is formed by concrete dam, completed in 1913 and raised in 1950. Capacity, 104,200 acre-ft between elevations 1,512 ft and 1,536 ft, normal limits of operation. Contents at elevation 1,512 ft by capacity table used prior to October 1915, 148,600 acre-ft. Records given herein represent usable contents. Water used for power. About 25,000 acres irrigated upstream from station, largely from wells in the Spokane Valley. Flow regulated by Coeur d'Alene Lake and powerplants along Spokane River.

COOPERATION.--Lake elevations and capacity table furnished by Avista Corporation. Records not reviewed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 107,600 acre-ft Jan. 16, 1974, elevation, 1,536.67 ft; minimum contents, since filling reservoir in 1920, 214 acre-ft Feb. 16, 1985, elevation, 1,512.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 104,000 acre-ft Nov. 24, elevation, 1,535.96 ft; minimum contents, 75,930 acre-ft Feb. 22, elevation, 1,530.20 ft.

Capacity table (elevation, in feet and usable contents, in acre-feet)
(Based on data furnished by Avista Corporation)

1,512	0	1,526	56,330	1,534	94,240
1,513	3,570	1,528	65,460	1,535	99,190
1,517	18,640	1,531	79,740	1,536	104,200
1,520	30,550	1,532	84,540	1,537	109,300
1,522	38,880	1,533	89,360		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1535.42	1535.33	1535.40	1533.20	1535.59	1535.64	1535.54	1535.05	1534.58	1535.68	1535.18	1535.70
2	1535.39	1535.07	1535.45	1532.90	1535.60	1535.72	1535.53	1535.30	1534.50	1535.52	1535.12	1535.61
3	1535.38	1535.42	1535.35	1532.70	1535.63	1535.68	1535.50	1535.10	1534.36	1535.75	1535.22	1535.60
4	1535.27	1535.51	1535.41	1532.50	1535.60	1535.78	1535.43	1535.12	1534.20	1535.80	1535.30	1535.50
5	1535.33	1535.40	1535.39	1532.12	1535.60	1535.78	1535.48	1534.87	1534.32	1535.70	1535.63	1535.38
6	1535.53	1535.28	1535.30	1531.85	1535.58	1535.78	1535.50	1534.98	1534.25	1535.55	1535.27	1535.35
7	1535.60	1535.17	1535.38	1531.95	1535.43	1535.74	1535.53	1535.09	1534.23	1535.41	1535.22	1535.44
8	1535.58	1535.16	1535.53	1532.85	1535.27	1535.68	1535.45	1535.10	1534.25	1535.46	1535.25	1535.50
9	1535.60	1535.20	1535.43	1533.20	1535.16	1535.70	1535.55	1535.00	1534.25	1535.40	1535.30	1535.47
10	1535.50	1535.56	1535.45	1533.43	1534.96	1535.80	1535.59	1535.00	1534.50	1535.50	1535.48	1535.32
11	1535.33	1535.62	1535.10	1533.60	1534.68	1535.80	1535.19	1535.25	1534.90	1535.49	1535.60	1535.31
12	1535.07	1535.57	1535.10	1533.62	1534.34	1535.20	1534.72	1535.20	1534.92	1535.15	1535.50	1535.18
13	1535.56	1535.45	1534.88	1533.78	1533.95	1534.97	1534.40	1535.25	1535.15	1535.35	1535.54	1535.23
14	1535.70	1535.42	1534.94	1533.85	1533.50	1535.65	1534.50	1535.30	1535.13	1535.35	1535.42	1535.37
15	1535.73	1535.20	1535.08	1534.38	1532.97	1535.53	1534.65	1535.32	1535.10	1535.41	1535.33	1535.60
16	1535.55	1534.90	1534.95	1535.00	1532.43	1535.50	1534.38	1535.30	1535.39	1535.35	1535.35	1535.53
17	1535.41	1535.48	1534.80	1535.59	1531.81	1535.45	1534.38	1535.35	1535.40	1535.19	1535.34	1535.44
18	1535.32	1535.55	1534.75	1535.75	1531.26	1535.50	1534.48	1535.22	1535.28	1535.25	1535.45	1535.38
19	1535.32	1535.45	1534.67	1535.71	1530.62	1535.42	1534.43	1535.32	1535.36	1535.33	1535.48	1535.38
20	1535.57	1535.30	1534.49	1535.72	1530.48	1535.45	1534.40	1535.00	1535.28	1535.40	1535.31	1535.22
21	1535.52	1535.41	1534.39	1535.68	1530.25	1535.50	1534.62	1535.05	1535.28	1535.40	1535.40	1535.42
22	1535.52	1535.54	1534.37	1535.62	1530.50	1535.46	1534.77	1534.90	1535.25	1535.40	1535.38	1535.48
23	1535.57	1535.59	1534.21	1535.60	1531.08	1535.49	1534.90	1534.92	1535.35	1535.14	1535.46	1535.37
24	1535.50	1535.46	1534.03	1535.62	1532.20	1535.40	1534.80	1534.85	1535.45	1534.83	1535.36	1535.50
25	1535.35	1535.52	1533.68	1535.75	1533.23	1535.53	1534.97	1534.78	1535.48	1534.96	1535.47	1535.50
26	1535.20	1535.35	1533.30	1535.49	1534.08	1535.50	1534.88	1534.77	1535.51	1535.30	1535.47	1535.35
27	1535.50	1535.15	1533.18	1535.58	1534.97	1535.48	1534.88	1534.75	1535.50	1535.36	1535.28	1535.15
28	1535.52	1535.10	1532.98	1535.68	1535.55	1535.52	1535.00	1534.78	1535.59	1535.34	1535.12	1535.50
29	1535.50	1534.99	1532.93	1535.61	---	1535.47	1535.15	1534.79	1535.78	1535.05	1535.16	1535.56
30	1535.55	1535.08	1532.97	1535.68	---	1535.45	1535.09	1534.60	1535.48	1535.28	1535.13	1535.45
31	1535.33	---	1532.92	1535.63	---	1535.52	---	1534.60	---	1535.38	1535.59	---
MAX	1535.73	1535.62	1535.53	1535.75	1535.63	1535.80	1535.59	1535.35	1535.78	1535.80	1535.63	1535.70
MIN	1535.07	1534.90	1532.92	1531.85	1530.25	1534.97	1534.38	1534.60	1534.20	1534.83	1535.12	1535.15
(†)	100900	99600	88970	102400	102000	101800	99650	97210	101600	101100	102200	101500
(‡)	-1300	-1300	-10630	+13430	-400	-200	-2150	-2440	+4390	-500	+1100	-700

CAL YR 2001 MAX 1535.82 MIN 1522.55 AC-FT(†) -7890

WTR YR 2002 MAX 1535.80 MIN 1530.25 AC-FT(†) -700

† Contents, in acre-feet, on last day of month.

‡ Change in Contents, in acre-feet.

12433000 SPOKANE RIVER AT LONG LAKE, WA

LOCATION.--Lat 47°50'12", long 117°50'25", in NW ¼ SW ¼ sec.13, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, on left bank at Long Lake powerhouse, 1.4 mi upstream from Chamokane Creek, 12.0 mi north of Reardan, and at mile 33.88.

DRAINAGE AREA.--6,020 mi², approximately, of which about 122 mi² in the vicinity of Hayden Lake is noncontributing to this station.

PERIOD OF RECORD.--April 1939 to current year.

REVISED RECORDS.--WSP 1933: Drainage area. WDR WA-01-1: Calendar year adjusted mean discharge, runoff in inches, and acre-feet for 1998, and adjusted mean discharge, cubic feet per square mile, runoff in inches, and acre-feet for 1999 corrected.

GAGE.--Water-stage recorder. Datum of gage is 1,299.00 ft above NGVD of 1929 (levels by Avista Corporation). Oct. 1, 1978, to Sept. 30, 1981, incorrectly published at datum 1,300 ft.

REMARKS.--Flow regulated by Coeur d'Alene Lake and Long Lake (station 12432500) for powerplants of Avista Corporation. About 25,000 acres irrigated upstream from station, largely from wells in the Spokane Valley. Chemical analyses October 1958 to September 1986, November 1999 to April 2000. Specific conductance records March 1973 to September 1981. Water temperature July 1959 to September 1962, October 1966 to September 1970, March 1973 to September 1981.

COOPERATION.--Discharge records furnished by Avista Corporation; three discharge measurements made by U.S. Geological Survey.

AVERAGE DISCHARGE.--63 years (water years 1940-2002), 7,777 ft³/s, 5,634,000 acre-ft/yr, adjusted for storage in Long Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,700 ft³/s Jan. 19, 1974, gage height, 78.40 ft; maximum recorded gage height, 78.66 ft May 24, 1948; minimum daily discharge, 90 ft³/s Oct. 23, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31,700 ft³/s April 15, gage height, 72.64 ft; minimum discharge, 150 ft³/s Aug. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2360	3060	3600	4310	7980	9140	10900	20900	29500	9890	2660	1210
2	2320	3920	4200	5180	7560	9070	11100	20100	29800	10600	2170	1830
3	2280	2260	4560	5080	7260	9110	11400	21400	29900	7950	1630	1580
4	2610	3050	4460	5000	6900	8360	11700	21300	29500	7020	1820	1860
5	2250	3460	4380	5030	6880	8300	11500	22400	28200	7290	1080	1870
6	1770	3620	4660	5270	6880	8360	11700	21600	28200	6400	2890	1700
7	2260	3450	4170	5320	6880	7940	12400	21400	27200	5560	2110	1490
8	2510	3320	3920	5300	6880	7800	13500	21200	26500	5320	2090	1460
9	2410	3140	4580	6790	6880	7150	13600	21200	25500	5540	1940	1600
10	2760	2080	4350	6700	6840	7010	13900	19900	24100	4660	1540	2600
11	2830	2920	5470	6700	6780	7330	17300	18400	22900	4670	1690	2210
12	3270	3330	5210	6700	6780	13400	19000	18300	22800	5270	2220	2540
13	1370	3530	5900	6700	6680	11900	20000	17400	21100	3320	1820	2130
14	2220	3240	6000	6700	6780	8640	20800	17200	20900	3800	2240	1860
15	2390	3760	7000	6720	6780	10800	25000	17400	20400	3600	2210	1680
16	3020	4080	7000	6730	6780	10700	29400	18100	19000	3910	1570	2360
17	2940	1950	7070	6780	6700	10400	31400	18300	19600	4000	1100	2580
18	2900	2980	7080	8070	6700	10100	31500	18900	19900	3620	1310	2520
19	2440	3520	7060	8560	6720	10100	31200	18600	19300	3860	1620	2080
20	2030	3500	7010	8360	6710	11000	29900	20000	19000	3880	2060	2740
21	2730	3020	6840	8300	6690	10500	27700	20200	17900	3890	1360	1860
22	2630	3100	6740	8240	6670	10400	26700	22600	16200	3680	1710	2130
23	2520	3070	6870	7860	6680	10300	25700	23700	15300	3790	1350	2670
24	3000	3680	6840	7490	6720	10400	25600	25600	14700	3660	1820	2050
25	3260	3240	6880	7300	6810	10100	24300	26900	13600	2810	1320	2410
26	3530	3750	6660	12300	6760	10400	24200	27100	12700	1940	1590	2700
27	2280	4380	5920	9610	6780	10300	23300	26900	11900	2520	1980	2920
28	3000	3920	5940	8600	7720	10100	22000	26900	10100	2780	1970	1500
29	3300	4050	5490	8450	---	10700	21100	27300	8880	3430	1600	2280
30	3380	3670	4820	8100	---	10700	21400	28600	11400	1880	1590	2690
31	3820	---	5100	8180	---	10600	---	29100	---	2130	389	---
TOTAL	82390	100050	175780	220430	193180	301110	619200	678900	615980	142670	54449	63110
MEAN	2658	3335	5670	7111	6899	9713	20640	21900	20530	4602	1756	2104
MAX	3820	4380	7080	12300	7980	13400	31500	29100	29900	10600	2890	2920
MIN	1370	1950	3600	4310	6670	7010	10900	17200	8880	1880	389	1210
AC-FT	163400	198400	348700	437200	383200	597300	1228000	1347000	1222000	283000	108000	125200
MEAN†	2636	3313	5497	7327	6894	9709	20607	21863	20616	4593	1774	2093
CFSM†	0.44	0.55	0.91	1.22	1.15	1.61	3.42	3.63	3.42	0.76	0.29	0.35
IN.†	0.50	0.61	1.05	1.40	1.19	1.86	3.82	4.19	3.82	0.88	0.34	0.39
AC-FT†	162100	197100	338100	450600	382800	597100	1226000	1345000	1226000	282500	109100	124500

CAL YR 2001 TOTAL 1459831 MEAN 4000 MAX 16700 MIN 305 AC-FT 2896000 MEAN† 3988 CFSM† 0.66 IN.† 9.00 AC-FT† 2888000
WTR YR 2002 TOTAL 3247249 MEAN 8897 MAX 31500 MIN 389 AC-FT 6441000 MEAN† 8894 CFSM† 1.48 IN.† 20.06 AC-FT† 6440000

† Adjusted for change in contents in Long Lake.

SPOKANE RIVER BASIN

12433000 SPOKANE RIVER AT LONG LAKE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1959 to September 1986, October 1998 to April 2002, November 2001 to September 2002.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1973 to September 1981.

WATER TEMPERATURE: July 1959 to September 1962, October 1966 to September 1970, March 1973 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 235 microsiemens Sept. 8, 1973; minimum, 50 microsiemens May 19, 1976.

WATER TEMPERATURE: Maximum, 24.5 °C (rounded) Aug. 8, 1959; minimum, 0.0 °C (rounded) Jan. 21, Feb. 26, 1960.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOSPHORUS DIS-SOLVED (MG/L AS P) (00666)
NOV 08...	1600	3340	222	8.0	9.8	10.7	96	23.0	9.47	--	.22	--	.018
JAN 30...	1500	7980	111	7.5	.7	3.6	44	11.0	4.08	E.009	.17	.669	.026
APR 03...	1420	11100	110	7.9	7.2	6.0	43	10.7	3.87	<.015	.19	.916	.024
APR 26...	1530	24600	73	7.7	9.1	6.9	28	7.14	2.44	<.015	.27	.200	.009
JUL 15...	1230	4640	100	7.9	27.1	19.1	41	10.2	3.79	E.013	E.09	.328	<.004
SEP 11...	1140	3160	215	8.0	27.0	18.4	98	23.8	9.46	<.015	.13	.976	.006

Date	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
NOV 08...	.023	<.04	E.03	40	<10	.27	<1	30	16.6	5	8
JAN 30...	E.039	.06	.08	100	<10	<.08	<1	7	2.4	37	36
APR 03...	.044	.06	.10	230	11	.11	1	13	5.9	35	41
APR 26...	.024	.10	.19	150	23	.49	3	34	2.1	46	64
JUL 15...	.007	.04	.06	40	E5	.10	<1	8	.4	14	19
SEP 11...	.011	E.03	.06	40	E6	E.08	<1	24	1.7	6	6

12433200 CHAMOKANE CREEK BELOW FALLS, NEAR LONG LAKE, WA

LOCATION.--Lat 47°51'42", long 117°51'28", in SE ¼ SW ¼ sec.2, T.27 N., R.39 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank 800 ft downstream from Chamokane Falls, 1.4 mi upstream from mouth, 1.8 mi north of town of Long Lake, and at mile 1.6.

DRAINAGE AREA.--179 mi².

PERIOD OF RECORD.--February 1971 to September 1978, April 1984 to September 1987 (seasonal records), October 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,420 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges and discharges from June 21 to Aug. 19, which are fair. No known regulation. Diversions upstream for irrigation, domestic use, and fish hatchery. Pumpage from ground-water wells can cause small fluctuations in discharge. Water temperature records April 1984 to September 1987 (seasonal records); October 1987 to September 1989. U. S. Geological Survey Satellite telemeter at site.

AVERAGE DISCHARGE.--22 years (water years 1972-78, 1988-2002), 64.6 ft³/s, 4.90 in/yr, 46,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,200 ft³/s Apr. 25, 1975, gage height, 5.06 ft, from rating curve extended above 500 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.37 ft Mar. 20, 1997; minimum discharge, 9.4 ft³/s Dec. 30, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 743 ft³/s Jan. 9, gage height, 3.65 ft; minimum discharge, 21 ft³/s July 22, but may have been lower during periods of estimated record.

DISCHARGE PUBLISHED, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	26	33	e28	64	137	339	109	e38	30	e26	29
2	24	26	32	e29	62	114	321	107	e36	29	27	29
3	24	26	31	e32	59	110	294	101	e35	30	27	29
4	24	25	29	e30	56	108	283	96	e35	30	28	29
5	25	25	28	e31	53	95	291	90	e35	29	28	30
6	25	25	27	36	49	96	306	89	e33	29	28	30
7	25	25	26	56	52	84	349	89	e32	31	28	30
8	25	24	25	259	63	78	356	86	e33	36	28	30
9	25	24	25	689	57	69	325	80	e37	e34	27	30
10	26	25	25	518	56	82	332	73	e37	e31	27	30
11	26	24	25	359	54	92	345	68	35	e30	28	29
12	27	25	25	279	51	203	329	65	32	e29	27	29
13	27	25	31	237	49	209	335	61	30	e29	27	29
14	27	31	36	203	48	191	433	60	27	e29	e27	29
15	27	27	33	172	46	171	525	58	26	e28	e27	29
16	26	28	60	141	45	163	388	56	25	e28	e27	29
17	26	31	64	129	47	149	329	56	24	e28	e28	31
18	26	27	77	109	49	132	271	62	28	e27	e28	31
19	25	25	83	111	52	126	232	62	27	e27	e28	30
20	25	25	60	115	54	115	210	59	25	26	29	29
21	27	27	50	112	63	101	195	58	27	25	29	30
22	26	30	44	90	95	104	181	61	34	24	30	30
23	26	29	e35	78	327	105	170	61	35	24	29	30
24	26	27	e28	82	337	126	159	60	33	e25	29	30
25	26	26	e26	92	228	180	150	57	33	e26	30	30
26	25	26	e25	98	187	239	143	55	33	e26	30	30
27	25	25	e25	89	168	259	137	53	33	e25	29	31
28	25	26	e26	74	160	287	128	53	32	e24	29	30
29	25	28	e28	63	---	341	118	53	36	e24	29	30
30	29	28	e28	63	---	354	112	51	31	e25	29	31
31	30	---	e28	66	---	375	---	43	---	e26	29	---
TOTAL	799	791	1118	4470	2631	4995	8086	2132	957	864	872	893
MEAN	25.77	26.37	36.06	144.2	93.96	161.1	269.5	68.77	31.90	27.87	28.13	29.77
MAX	30	31	83	689	337	375	525	109	38	36	30	31
MIN	24	24	25	28	45	69	112	43	24	24	26	29
AC-FT	1580	1570	2220	8870	5220	9910	16040	4230	1900	1710	1730	1770
CFSM	0.14	0.15	0.20	0.81	0.52	0.90	1.51	0.38	0.18	0.16	0.16	0.17
IN.	0.17	0.16	0.23	0.93	0.55	1.04	1.68	0.44	0.20	0.18	0.18	0.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2002, BY WATER YEAR (WY)

	MEAN	28.39	29.82	45.51	60.55	78.22	174.9	164.7	67.55	39.85	29.71	27.01	27.08
MAX	41.5	47.5	236	239	232	626	564	257	115	59.5	47.2	43.0	
(WY)	1998	1974	1974	1997	1995	1997	1975	1997	1997	1997	1997	1997	
MIN	18.9	19.1	17.1	17.4	21.2	29.9	22.6	19.6	19.4	18.2	18.4	18.1	
(WY)	1993	1993	1993	1993	1994	1977	1992	1994	1994	1994	1994	1990	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1971 - 2002
ANNUAL TOTAL	11761	28608	
ANNUAL MEAN	32.22	78.38	64.59
HIGHEST ANNUAL MEAN			170
LOWEST ANNUAL MEAN			25.8
HIGHEST DAILY MEAN	83	Dec 19	689
LOWEST DAILY MEAN	20	Aug 21	24
ANNUAL SEVEN-DAY MINIMUM	20	Sep 5	24
ANNUAL RUNOFF (AC-FT)	23330	56740	46790
ANNUAL RUNOFF (CFSM)	0.18	0.44	0.36
ANNUAL RUNOFF (INCHES)	2.44	5.95	4.90
10 PERCENT EXCEEDS	47	205	136
50 PERCENT EXCEEDS	30	31	31
90 PERCENT EXCEEDS	22	25	20

e Estimated

SPOKANE RIVER BASIN

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA

LOCATION.--Lat 47°55'28", long 118°05'18", in NW ¼ SE ¼ sec.13, T.28 N., R.37 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank, 2.4 mi downstream from Turtle Lake, and 5.4 mi northwest of Wellpinit.

DRAINAGE AREA.--6.0 mi².

PERIOD OF RECORD.--June 1984 to October 1998, January 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,070 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1985-98, 2001-2002), 1.24 ft³/s, 2.80 in/yr, 895 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65 ft³/s Mar. 22, 1997, gage height, 3.22 ft, minimum discharge, 0.01 ft³/s Aug. 12, 13, 1992, gage height, 0.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 17 ft³/s Apr. 3, gage height 1.81 ft; minimum discharge 0.04 ft³/s Oct. 1-4 and 11, but may have been lower during periods of ice effect or missing record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.06	0.06	e0.18	e0.18	e0.50	e0.75	15	4.3	1.2	0.64	0.30	0.14
2	0.06	0.06	0.28	e0.18	e0.50	e0.75	15	4.0	1.2	0.64	0.30	0.14
3	0.06	0.06	0.28	e0.20	e0.50	e0.80	15	3.9	1.1	0.61	0.30	0.14
4	0.06	0.06	0.24	e0.20	e0.50	e0.84	15	3.7	1.1	0.58	0.30	0.14
5	0.06	0.07	0.24	e0.20	e0.50	e0.84	15	3.7	1.1	0.56	0.30	0.14
6	0.06	0.06	0.24	e0.25	e0.50	e0.84	15	3.5	1.0	0.56	0.29	0.12
7	0.06	0.07	0.22	0.75	e0.50	e0.80	14	3.6	1.0	0.55	0.27	0.12
8	0.06	0.07	0.21	0.78	e0.50	e0.80	14	3.4	1.0	0.60	0.26	0.12
9	0.06	0.07	0.21	0.96	e0.52	e0.90	14	3.3	1.0	0.55	0.26	0.12
10	0.06	0.07	0.27	0.81	e0.52	1.2	14	3.1	0.99	0.54	0.26	0.11
11	0.07	0.07	0.27	0.81	e0.50	1.7	13	3.0	0.97	0.53	0.25	0.10
12	0.07	0.08	e0.22	0.81	e0.48	1.7	12	2.9	0.95	0.50	0.25	0.10
13	0.07	0.08	e0.35	0.81	e0.48	1.7	12	2.8	0.91	0.50	0.25	0.10
14	0.07	0.13	e0.34	0.81	e0.48	1.9	12	2.7	0.89	0.49	0.23	0.08
15	0.07	0.11	e0.25	e0.80	e0.50	2.1	11	2.5	0.87	0.47	0.20	0.09
16	0.07	0.12	e0.28	e0.75	e0.54	2.1	11	2.3	0.87	0.44	0.21	0.12
17	0.07	0.18	e0.28	e0.70	e0.56	2.0	11	2.3	0.87	0.39	0.22	0.10
18	0.06	0.11	e0.24	e0.75	e0.58	2.0	9.6	2.2	0.87	0.39	0.23	0.09
19	0.06	0.11	0.26	e0.80	e0.58	2.0	9.0	2.2	0.87	0.38	0.23	0.09
20	0.06	0.11	0.24	e0.78	e0.58	1.9	8.6	2.1	0.85	0.38	0.21	0.09
21	0.06	0.12	0.24	e0.75	0.69	2.0	7.9	2.0	0.78	0.37	0.20	0.08
22	0.06	0.15	e0.22	e0.75	0.95	2.0	7.5	2.0	0.73	0.37	0.19	0.07
23	0.06	0.15	e0.20	e0.75	1.3	2.1	6.9	1.9	0.71	0.37	0.18	0.07
24	0.06	e0.13	e0.18	0.73	1.2	2.2	6.7	1.8	0.71	0.35	0.18	0.07
25	0.06	e0.12	e0.15	0.71	e0.80	2.7	6.3	1.8	0.70	0.35	0.19	0.07
26	0.06	0.11	e0.15	0.60	e0.70	3.2	5.9	1.6	0.69	0.34	0.18	0.08
27	0.06	0.10	e0.15	0.56	e0.70	4.3	5.6	1.6	0.66	0.33	0.19	0.09
28	0.06	0.11	e0.15	e0.50	e0.75	6.0	5.1	1.5	0.67	0.31	0.18	0.09
29	0.06	0.13	e0.18	e0.48	---	7.9	4.9	1.5	0.69	0.30	0.15	0.09
30	0.10	0.12	e0.18	e0.50	---	10	4.6	1.4	0.65	0.30	0.14	0.09
31	0.11	---	e0.18	e0.50	---	13	---	1.3	---	0.30	0.14	---
TOTAL	2.02	2.99	7.08	19.16	17.41	83.02	316.6	79.9	26.60	13.99	7.04	3.05
MEAN	0.065	0.100	0.228	0.618	0.622	2.678	10.55	2.577	0.887	0.451	0.227	0.102
MAX	0.11	0.18	0.35	0.96	1.3	13	15	4.3	1.2	0.64	0.30	0.14
MIN	0.06	0.06	0.15	0.18	0.48	0.75	4.6	1.3	0.65	0.30	0.14	0.07
AC-FT	4.0	5.9	14	38	35	165	628	158	53	28	14	6.0
CFSM	0.01	0.02	0.04	0.10	0.10	0.45	1.76	0.43	0.15	0.08	0.04	0.02
IN.	0.01	0.02	0.04	0.12	0.11	0.51	1.96	0.50	0.16	0.09	0.04	0.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	0.160	0.200	0.219	0.756	1.718	5.564	4.020	1.407	0.754	0.366	0.194	0.142							
MAX	0.25	0.37	0.47	5.61	12.4	25.7	14.1	3.40	1.85	0.76	0.36	0.24							
(WY)	1998	1985	1997	1997	1995	1997	1997	1996	1997	1997	1984	1984							
MIN	0.062	0.10	0.13	0.094	0.16	0.34	0.34	0.30	0.17	0.10	0.067	0.054							
(WY)	2002	2002	2001	2001	1990	1990	1990	1992	1992	1994	2001	2001							

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1984 - 2002

ANNUAL TOTAL	84.81	578.86		
ANNUAL MEAN	0.232	1.586		
HIGHEST ANNUAL MEAN			4.69	1997
LOWEST ANNUAL MEAN			0.19	1994
HIGHEST DAILY MEAN	0.74	May 24	15	Apr 1
LOWEST DAILY MEAN	0.04	Sep 16	0.06	Oct 1
ANNUAL SEVEN-DAY MINIMUM	0.04	Sep 16	0.06	Oct 1
ANNUAL RUNOFF (AC-FT)	168	1150		895
ANNUAL RUNOFF (CFSM)	0.039	0.26		0.21
ANNUAL RUNOFF (INCHES)	0.53	3.59		2.80
10 PERCENT EXCEEDS	0.56	4.1		2.9
50 PERCENT EXCEEDS	0.15	0.50		0.25
90 PERCENT EXCEEDS	0.06	0.07		0.12

e Estimated

12433556 MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA

LOCATION.--Lat 47°55'27", long 118°05'20", in NW ¼ SE ¼ sec.13, T.28 N., R.37 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank, 2.4 mi downstream from Turtle Lake, and 0.1 mi upstream from confluence with Blue Creek, and 5.4 mi northwest of Wellpinit.

DRAINAGE AREA.--1.3 mi².

PERIOD OF RECORD.--June 1984 to October 1998, January 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,070 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. Three ponds upstream from gage exist for mine surface-water retention; June 1987, three diversions from the upstream channels were added to retain and treat contaminated water for mixing and later release. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1985-98, 2001-02), 0.39 ft³/s, 285 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5.9 ft³/s Mar. 19, 1997, gage height, 1.78 ft; no flow during part of water years 1986 to 1992 and 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge .96 ft³/s Apr. 16, gage height 1.31 ft; minimum discharge, .03 ft³/s Oct. 1-3, 16 and 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.04	0.11	0.07	e0.10	e0.18	e0.28	0.33	0.74	0.30	0.25	0.79	0.09
2	0.04	0.10	0.07	e0.10	e0.18	e0.28	0.33	0.76	0.18	0.54	0.67	0.07
3	0.04	0.10	0.06	e0.12	e0.18	e0.29	0.30	0.68	0.27	0.71	0.30	0.17
4	0.05	0.10	0.06	e0.12	e0.18	e0.30	0.29	0.29	0.59	0.57	0.13	0.47
5	0.05	0.10	0.07	e0.13	e0.18	e0.32	0.28	0.19	0.76	0.25	0.26	0.61
6	0.05	0.10	0.06	0.15	e0.20	e0.29	0.25	0.28	0.76	0.15	0.63	0.53
7	0.06	0.08	0.06	0.26	e0.20	e0.26	0.23	0.59	0.65	0.14	0.80	0.24
8	0.05	0.08	0.06	0.37	e0.20	e0.27	0.21	0.72	0.31	0.30	0.77	0.08
9	0.05	0.08	0.06	0.38	e0.20	e0.30	0.21	0.80	0.18	0.64	0.63	0.17
10	0.05	0.08	0.06	0.27	e0.20	e0.34	0.21	0.68	0.28	0.79	0.29	0.47
11	0.06	0.08	0.06	0.23	e0.19	e0.36	0.19	0.29	0.59	0.78	0.11	0.61
12	0.06	0.08	0.06	0.22	e0.18	e0.34	0.20	0.17	0.76	0.67	0.22	0.62
13	0.06	0.09	0.12	0.19	e0.18	e0.33	0.20	0.27	0.74	0.30	0.57	0.53
14	0.05	0.12	0.13	0.19	e0.18	0.33	0.26	0.60	0.61	0.13	0.74	0.24
15	0.04	0.10	0.09	e0.17	e0.20	0.32	0.31	0.75	0.29	0.25	0.72	0.08
16	0.04	0.11	0.08	e0.16	e0.20	0.30	0.85	0.76	0.15	0.57	0.61	0.15
17	0.05	0.13	0.09	e0.14	e0.22	0.30	0.92	0.67	0.25	0.76	0.27	0.42
18	0.06	0.07	0.08	e0.15	e0.22	0.30	0.86	0.29	0.55	0.79	0.10	0.57
19	0.06	0.07	0.10	e0.16	e0.22	0.30	0.72	0.18	0.67	0.67	0.21	0.60
20	0.06	0.07	e0.08	e0.20	e0.20	0.28	0.29	0.27	0.70	0.30	0.54	0.49
21	0.08	0.07	e0.08	e0.18	0.18	0.27	0.19	0.58	0.59	0.13	0.69	0.22
22	0.08	0.10	e0.08	e0.16	0.30	0.26	0.28	0.79	0.28	0.25	0.67	0.07
23	0.08	0.07	e0.07	e0.16	0.34	0.25	0.52	0.76	0.15	0.62	0.57	0.14
24	0.08	0.05	e0.07	e0.18	e0.30	0.24	0.76	0.69	0.24	0.79	0.26	0.40
25	0.12	0.06	e0.07	e0.20	e0.25	0.26	0.86	0.33	0.52	0.80	0.10	0.55
26	0.11	0.06	e0.08	e0.18	e0.26	0.30	0.72	0.19	0.65	0.67	0.19	0.58
27	0.11	0.05	e0.08	e0.18	e0.26	0.34	0.29	0.18	0.66	0.30	0.50	0.51
28	0.13	0.05	e0.09	e0.18	e0.28	0.37	0.19	0.23	0.59	0.13	0.65	0.25
29	0.16	0.06	e0.10	e0.16	--	0.39	0.30	0.55	0.31	0.26	0.66	0.08
30	0.18	0.05	e0.10	e0.17	--	0.39	0.60	0.74	0.15	0.63	0.56	0.15
31	0.13	--	e0.10	e0.18	--	0.37	--	0.65	--	0.78	0.26	--
TOTAL	2.28	2.47	2.44	5.74	6.06	9.53	12.15	15.67	13.73	14.92	14.47	10.16
MEAN	0.074	0.082	0.079	0.185	0.216	0.307	0.405	0.505	0.458	0.481	0.467	0.339
MAX	0.18	0.13	0.13	0.38	0.34	0.39	0.92	0.80	0.76	0.80	0.80	0.62
MIN	0.04	0.05	0.06	0.10	0.18	0.24	0.19	0.17	0.15	0.13	0.10	0.07
AC-FT	4.5	4.9	4.8	11	12	19	24	31	27	30	29	20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

MEAN	0.435	0.380	0.172	0.183	0.244	0.567	0.549	0.550	0.498	0.421	0.394	0.407
MAX	1.27	1.11	0.51	0.73	0.65	1.69	1.31	1.29	1.12	1.05	1.06	1.11
(WY)	1997	1996	1996	1997	1997	1997	1995	1995	1996	1996	1996	1997
MIN	0.051	0.076	0.068	0.075	0.088	0.13	0.098	0.064	0.046	0.026	0.008	0.019
(WY)	1992	1991	1993	1989	1993	1992	1992	1992	1992	1988	1992	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1984 - 2002

ANNUAL TOTAL	94.63	109.62	
ANNUAL MEAN	0.259	0.300	0.394
HIGHEST ANNUAL MEAN			1.00 1997
LOWEST ANNUAL MEAN			0.076 1992
HIGHEST DAILY MEAN	0.90 Apr 28	0.92 Apr 17	5.3 Mar 20 1997
LOWEST DAILY MEAN	0.00 Aug 7	0.04 Oct 1	0.00 Jun 22 1986
ANNUAL SEVEN-DAY MINIMUM	0.00 Aug 7	0.05 Oct 1	0.00 Aug 8 1990
ANNUAL RUNOFF (AC-FT)	188	217	285
10 PERCENT EXCEEDS	0.84	0.68	1.1
50 PERCENT EXCEEDS	0.10	0.23	0.17
90 PERCENT EXCEEDS	0.01	0.07	0.05

e Estimated

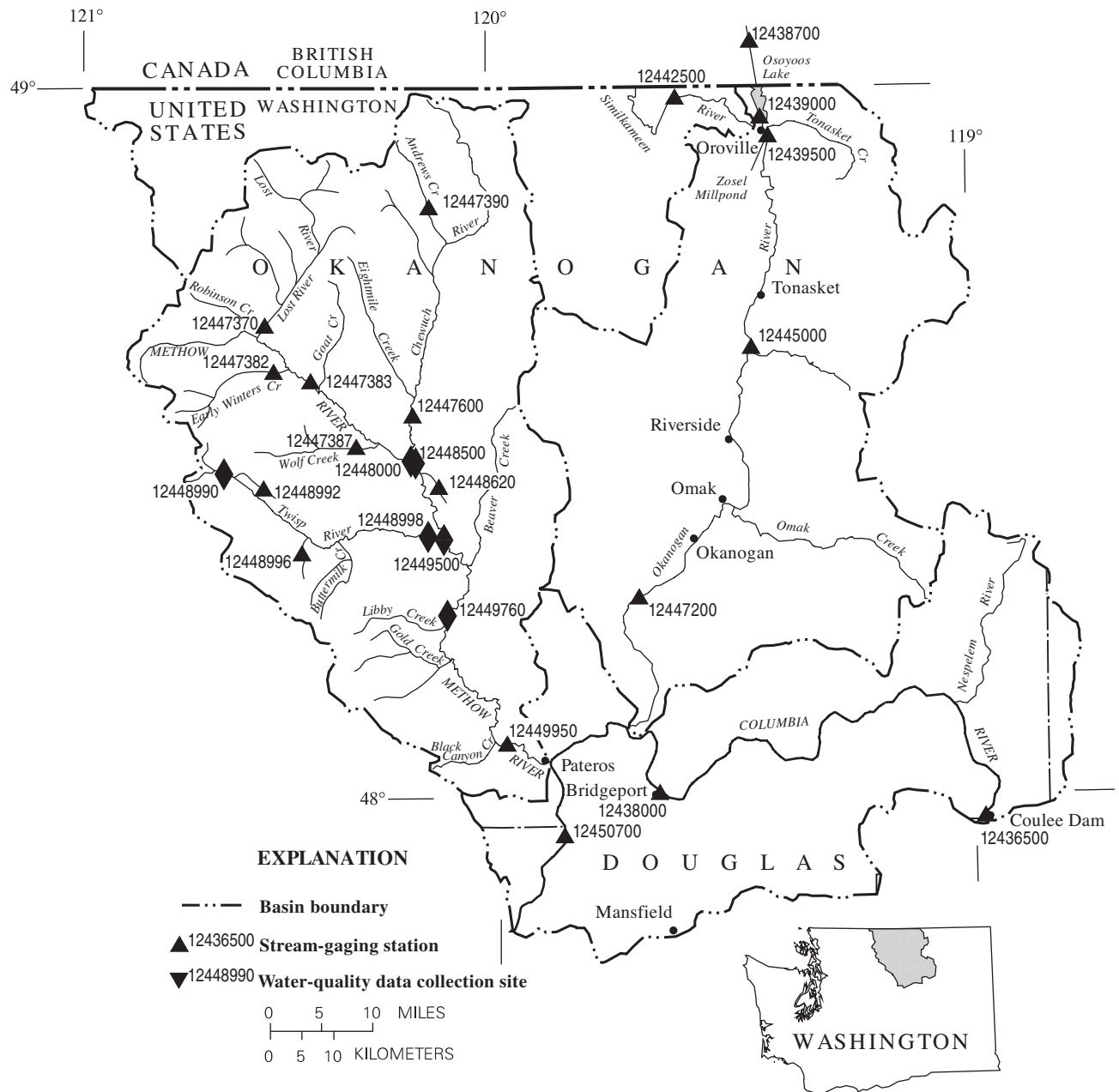


Figure 39. Location of surface-water stations in the Columbia River Basin from Coulee Dam to Wells Dam including Okanogan and Methow River Basins.

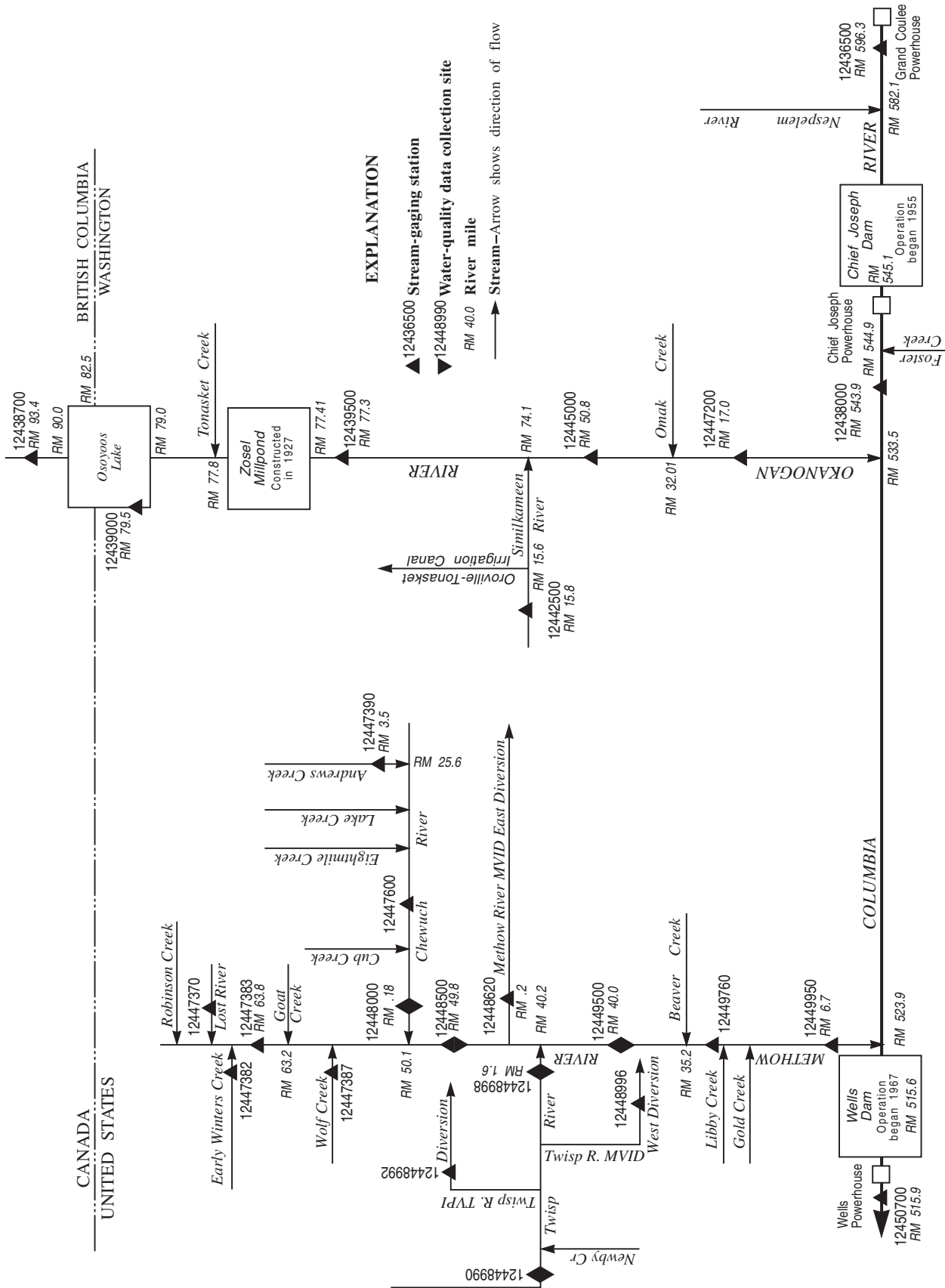


Figure 40. Schematic diagram showing surface-water stations in the Columbia River Basin from Coulee Dam to Wells Dam including Okanogan and Methow River Basins.

DIVERSION AT GRAND COULEE DAM

12435500 FEEDER CANAL AT GRAND COULEE, WA

LOCATION.--Lat 47°57'05", long 118°59'40", on line between secs.1 and 2, T.28 N., R.30 E., Grant County, Hydrologic Unit 17020001, on left bank at Grand Coulee, 0.2 mi downstream from headworks structure, and 0.5 mi southwest of Grand Coulee Dam.

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

GAGE.--Daily discharge determined from flow through pumps or reverse flow through generators. Datum of gage is 1,500.00 ft above NGVD of 1929 (Bureau of Reclamation datum), adjustment of 1937. May 1, 1952, to Jan. 10, 1978, at datum 50.00 ft higher. Jan. 11, 1978, to Feb. 22, 1981, nonrecording gage at datum 1,500.00 ft lower. May 1, 1952, to Oct. 13, 1960, auxiliary gage 0.6 mi downstream from base gage at same datum.

REMARKS.--Since 1951, water has been pumped (lift about 280 ft) from Franklin D. Roosevelt Lake into the two-mile long Feeder Canal, which empties into Banks Lake. From Banks Lake, it is distributed through a system of canals to the Columbia Basin Project for irrigation. Between May 1951, and December 1974, six pumps were used. Since December 1974, six pump generators, which can also generate power during peak demand periods by returning water from Banks Lake, via the Feeder Canal, to Franklin D. Roosevelt Lake have been added; two in December 1974 and one each in April, June, and November 1983 and April 1984. Discharge is computed from relations between pump operation and head.

COOPERATION.--Discharge records furnished by Bureau of Reclamation; three discharge measurements made by U.S. Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 20,000 ft³/s July 5, 1997; minimum daily discharge, -7,900 ft³/s Nov. 16, 2001, reverse flow from Banks Lake.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 16,100 ft³/s Sept. 15; minimum daily discharge, -7,900 ft³/s Nov. 16, reverse flow from Banks Lake.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3640	1450	7570	0.00	0.00	8.1	2000	6380	9650	6160	8120	9920
2	3620	767	7580	0.00	0.00	0.00	4070	6310	9750	6130	9180	9890
3	3630	9300	1860	0.00	0.00	0.00	4040	6670	7170	6390	9240	5560
4	3660	10300	-5400	0.00	0.00	-288	4220	12000	6300	6450	9440	7280
5	3910	1640	-1400	0.00	0.00	0.00	6210	12000	6660	6460	5740	5070
6	5450	-33	-1160	0.00	0.00	0.00	6220	7820	7700	11400	5060	5450
7	5350	-3180	0.00	4.0	0.00	0.00	5940	7780	7730	4800	5070	8090
8	5230	-4360	0.00	0.00	0.00	0.00	6210	7680	6400	3970	5100	8040
9	5440	-3880	0.00	0.00	0.00	0.00	6290	7830	6400	11200	5060	5300
10	5530	1980	0.00	0.00	0.00	0.00	6270	7770	92	7010	7690	4810
11	5420	5800	-5440	33	0.00	2910	6250	11800	-1540	6130	9400	4840
12	5540	1390	0.00	8.1	-3600	979	7880	11800	3290	6480	5710	4840
13	5500	-3110	0.00	0.00	0.00	2040	12900	7090	3890	11400	5200	5430
14	9240	-4360	0.00	0.00	0.00	1620	12800	5640	4230	11400	5150	9700
15	4380	-7790	0.00	0.00	0.00	80	9930	5570	14500	6450	5280	16100
16	3490	-7900	0.00	0.00	0.00	0.00	5000	5630	14600	6290	5200	5160
17	3660	0.00	113	0.00	0.00	0.00	3040	6040	6930	5620	6160	4450
18	3690	0.00	1290	0.00	0.00	0.00	3670	9960	6450	8600	9390	4460
19	3670	-700	1930	0.00	0.00	0.00	458	10200	8770	11100	5570	4260
20	3680	-7.6	0.00	0.00	0.00	819	7880	6540	7250	11000	4980	4810
21	7450	808	0.00	0.00	0.00	1270	9800	5630	7380	11000	5080	5290
22	3390	5780	858	0.00	0.00	1850	-366	5670	14700	4420	5140	4680
23	2410	5760	3130	8.1	0.00	6090	8820	5710	13600	6620	5140	3740
24	1850	-438	2590	0.00	0.00	6100	7920	6200	5170	6430	5320	3450
25	1710	-1380	3830	0.00	0.00	2100	7460	10400	6060	5060	9600	3690
26	1700	-2320	1860	0.00	-3660	1840	7560	10500	6100	6410	5700	3990
27	1950	-2580	0.00	0.00	-2380	1380	10500	10600	6090	6280	5190	3970
28	6040	-1780	33	0.00	0.00	2100	10500	7100	6150	11200	4310	4410
29	1430	315	0.00	0.00	---	2110	6820	5990	11100	4430	3300	6290
30	517	0.00	0.00	-1810	---	6190	6490	6340	11200	5980	7870	4300
31	2070	---	0.00	0.00	---	6200	---	6400	---	5230	2780	---
TOTAL	124247	1471.40	19244.00	-1756.80	-9640.00	45398.10	196782	243050	223772	227500	191170	177270
MEAN	4008	49.05	620.8	-56.67	-344.3	1464	6559	7840	7459	7339	6167	5909
MAX	9240	10300	7580	33	0.00	6200	12900	12000	14700	11400	9600	16100
MIN	517	-7900	-5440	-1810	-3660	-288	-366	5570	-1540	3970	2780	3450
AC-FT	246400	2920	38170	-3480	-19120	90050	390300	482100	443900	451200	379200	351600
CAL YR 2001	TOTAL	1259712.40	MEAN	3451	MAX	10800	MIN	-7900	AC-FT	2499000		
WTR YR 2002	TOTAL	1438507.70	MEAN	3941	MAX	16100	MIN	-7900	AC-FT	2853000		

12436000 FRANKLIN D. ROOSEVELT LAKE AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'20", long 118°59'02", near center of sec.1, T.28 N., R.30 E., Grant County, Hydrologic Unit 17020001, in block 12 of Grand Coulee Dam on Columbia River, and at mile 596.6.

DRAINAGE AREA.--74,700 mi², approximately.

PERIOD OF RECORD.--April 1938 to current year. Prior to October 1943, published as Columbia River Reservoir at Grand Coulee Dam.

REVISED RECORDS.--WSP 1286: 1942, 1945(M). WSP 1316: 1942 (May monthend contents). WSP 1933: Drainage area. WDR WA-73-1: 1965, 1967. WDR WA-75-1: 1974 monthend contents.

GAGE.--U.S. Geological Survey water-stage recorder. Datum of gage is NGVD of 1929, adjustment of 1937 (Bureau of Reclamation datum), or 1.425 ft above NGVD of 1929 (levels by Bureau of Reclamation). Prior to Apr. 24, 1942, nonrecording gage at site 2,000 ft upstream at same datum.

REMARKS.--Reservoir is formed by concrete dam; construction of dam began in 1934; completed in 1941; storage began early in construction period. Capacity, 5,022,000 acre-ft between elevations 1,208 ft, proposed lower limit of operation, and 1,288 ft, top of gates. Capacity increased to 5,185,000 acre-ft by use of 2-ft flashboards installed after high-water period each year beginning August 1961. Storage below 1,208 ft, 4,209,000 acre-ft. Figures given herein represent total contents. Water is used for power generation and irrigation. Flow is regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversion by Feeder Canal (station 12435500) for irrigation of about 600,000 acres in the United States plus additional diversions in Canada for irrigation of about 66,500 acres. Maximum and minimum midnight contents were published as EXTREMES FOR CURRENT YEAR for 1997 to 2001.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 9,586,000 acre-ft July 17, 1942, June 3, 1945, elevation, 1,290.3 ft; maximum elevation, 1,290.36 ft Aug. 6, 1976; minimum contents observed, 16,200 acre-ft Aug. 29, 1938, elevation, 956.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,387,000 acre-ft July 9, elevation, 1,289.91 ft; minimum contents, 5,875,000 acre-ft May 19, elevation, 1,239.87 ft.

Capacity table dated October 24, 1975 (elevation, in feet, and contents, in acre-ft)
(Prepared by U.S. Geological Survey from data furnished by Bureau of Reclamation)

1,210.0	4,301,000	1,270.0	7,864,000
1,230.0	5,309,000	1,291.0	9,477,000
1,250.0	6,502,000		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1283.45	1286.62	1283.74	1283.96	1271.45	1256.83	1262.50	1244.69	1264.33	1287.35	1286.41	1281.97
2	1283.53	1286.90	1284.82	1283.30	1271.28	1256.81	1262.23	1244.35	1266.69	1286.92	1285.62	1282.65
3	1283.70	1287.11	1284.87	1282.32	1271.46	1257.67	1262.17	1244.58	1268.35	1286.50	1285.40	1282.88
4	1283.98	1287.34	1285.08	1281.37	1270.53	1257.62	1262.21	1244.32	1269.21	1286.65	1285.59	1283.37
5	1284.18	1287.10	1285.13	1280.88	1269.49	1257.80	1261.90	1244.62	1270.03	1287.13	1285.31	1283.72
6	1284.60	1286.87	1285.51	1281.14	1268.72	1257.56	1262.40	1243.75	1271.17	1287.25	1284.96	1284.08
7	1285.19	1286.59	1285.95	1280.69	1268.29	1256.93	1263.04	1243.09	1271.65	1288.69	1284.16	1284.51
8	1285.33	1286.42	1286.67	1280.65	1267.90	1256.24	1263.68	1242.78	1272.57	1289.45	1283.12	1285.05
9	1285.33	1286.40	1287.35	1281.30	1267.37	1256.16	1264.16	1242.32	1273.62	1289.26	1282.32	1284.88
10	1285.23	1286.53	1286.84	1282.06	1266.68	1256.49	1264.18	1242.05	1274.11	1289.05	1282.09	1285.23
11	1285.54	1286.78	1286.75	1282.35	1265.48	1255.84	1262.84	1242.29	1275.20	1289.00	1282.33	1285.87
12	1285.39	1286.71	1286.25	1282.97	1264.64	1255.47	1261.93	1242.64	1276.08	1288.38	1282.02	1285.87
13	1285.88	1286.78	1286.24	1283.74	1263.52	1255.63	1261.78	1241.75	1277.58	1288.14	1281.51	1286.01
14	1286.23	1286.58	1286.27	1283.11	1262.98	1255.87	1261.53	1241.42	1278.78	1289.23	1281.19	1287.20
15	1286.06	1286.40	1286.82	1282.33	1261.44	1256.05	1260.88	1241.07	1280.34	1289.07	1280.89	1287.61
16	1285.73	1286.17	1287.40	1281.83	1260.85	1256.08	1260.12	1240.37	1282.18	1288.88	1281.13	1287.77
17	1285.63	1286.29	1287.54	1281.17	1260.72	1257.23	1258.83	1240.16	1283.15	1288.93	1281.66	1288.16
18	1285.50	1286.91	1287.24	1280.57	1260.12	1256.91	1257.36	1239.93	1284.00	1288.82	1281.98	1287.89
19	1285.23	1287.04	1287.20	1280.34	1259.21	1256.98	1256.18	1240.25	1283.83	1288.39	1281.75	1287.85
20	1285.64	1286.77	1286.49	1280.71	1258.67	1256.47	1254.96	1240.42	1283.35	1288.30	1281.54	1287.51
21	1285.81	1286.32	1285.96	1279.97	1258.30	1256.53	1253.46	1241.29	1283.21	1288.64	1280.81	1287.44
22	1285.64	1286.37	1285.85	1278.92	1258.34	1257.27	1252.22	1242.63	1283.79	1288.05	1280.14	1287.76
23	1285.59	1286.23	1286.21	1278.21	1258.27	1258.07	1250.98	1244.18	1285.15	1287.64	1279.89	1287.41
24	1285.49	1286.01	1285.78	1277.39	1258.53	1258.85	1249.91	1246.14	1284.99	1287.50	1279.98	1286.85
25	1285.48	1285.72	1286.11	1276.58	1258.04	1259.41	1248.61	1248.43	1284.84	1287.37	1280.66	1286.52
26	1285.56	1285.16	1285.06	1276.38	1257.57	1259.55	1247.79	1250.01	1285.22	1287.63	1280.39	1286.49
27	1285.99	1284.55	1284.53	1276.51	1257.08	1260.05	1247.69	1251.12	1285.30	1288.22	1280.45	1287.05
28	1286.11	1284.01	1284.09	1275.40	1257.01	1260.51	1247.54	1252.71	1285.05	1288.57	1280.14	1287.14
29	1285.84	1283.30	1284.18	1274.27	---	1260.71	1246.37	1255.13	1286.03	1288.12	1280.08	1287.70
30	1285.78	1283.28	1284.70	1273.07	---	1261.58	1244.89	1257.92	1287.15	1287.39	1279.93	1287.84
31	1286.34	---	1284.14	1272.12	---	1262.21	---	1260.81	---	1286.98	1280.39	---
MAX	1286.34	1287.34	1287.54	1283.96	1271.46	1262.21	1264.18	1260.81	1287.15	1289.45	1286.41	1288.16
MIN	1283.45	1283.28	1283.74	1272.12	1257.01	1255.47	1244.89	1239.93	1264.33	1286.50	1279.89	1281.97
(†)	9098000	8856000	8923000	8018000	6961000	7315000	6180000	7218000	9163000	9149000	8633000	9218000
(‡)	+246000	-242000	+67000	-905000	-1057000	+354000	-1135000	+1038000	+1945000	-14000	-516000	+585000

CAL YR 2001 MAX 1287.54 MIN 1216.94 AC-FT† +1221000
WTR YR 2002 MAX 1289.45 MIN 1239.93 AC-FT† +366000

† Total Contents, in acre-feet, at end of month.
‡ Change in contents, in acre-feet.

COLUMBIA RIVER MAIN STEM

12436500 COLUMBIA RIVER AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'56", long 118°58'54", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.36, T.29 N., R.30 E., Douglas County, Hydrologic Unit 17020005, in pier 3 on west side of bridge on State Highway 155, 3,200 ft downstream from Grand Coulee Dam, 14.2 mi upstream from Nespelem River, and at mile 596.3.

DRAINAGE AREA.--74,700 mi², approximately.

PERIOD OF RECORD.--April 1913 to June 1923 (monthly discharge only), July to December 1923, January 1924 to May 1928 (monthly discharge only), June 1928 to current year. Published as "at Grand Coulee near Nespelem" prior to 1936 and as "at Grand Coulee" 1936-42.

REVISED RECORDS.--WSP 1286: 1942, 1947. WSP 1933: Drainage area.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929, adjustment of 1937 (Bureau of Reclamation datum). June 27 to Dec. 31, 1923, June 12, 1928, to Mar. 31, 1931, nonrecording gage at site 0.5 mi upstream at datum 2.4 ft lower. Apr. 1, 1931, to Dec. 31, 1935, water-stage recorder 850 ft downstream at present datum. Jan. 1, 1936, to June 11, 1955, water-stage recorder at present site and datum. June 12, 1955, to July 18, 1988, water-stage recorder at present site and datum with auxiliary water-stage recorder 5.3 mi downstream at datum 1.42 ft lower.

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

COOPERATION.--Discharge records provided by Bureau of Reclamation at Grand Coulee Dam through the Corps of Engineers, Northwestern Division, Reservoir Control Center. The U.S. Geological Survey made 2 discharge measurements at this site during the year.

AVERAGE DISCHARGE.--89 years (water years 1914-2002), 108,700 ft³/s, 78,750,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 637,800 ft³/s June 12, 1948, elevation, 987.90 ft; minimum discharge, 14,900 ft³/s Dec. 17, 1956, elevation, 934.37 ft; minimum daily discharge, 15,300 ft³/s Feb. 1, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 725,000 ft³/s, estimated.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 238,000 ft³/s July 2; minimum daily discharge, 24,000 ft³/s March 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57900	52500	55400	71100	97800	84500	57000	111000	94800	221000	127000	36000
2	59200	53200	47400	99900	80600	66800	66400	128000	135000	238000	134000	67800
3	58800	43600	93800	101000	77100	46800	55000	110000	171000	221000	109000	84300
4	56500	46500	97700	107000	107000	79000	52200	115000	196000	192000	94800	70100
5	48900	72300	89600	94100	111000	56700	59300	102000	203000	177000	112000	69200
6	38600	73300	81100	60100	110000	86100	31200	144000	188000	171000	120000	63900
7	41800	76200	70400	83700	91100	94500	28200	134000	205000	111000	136000	54700
8	52800	73100	48900	74800	96800	90900	42900	125000	193000	148000	140000	52000
9	62800	67100	55900	56200	91100	64000	42800	128000	190000	189000	139000	84500
10	61600	56700	102000	61300	87000	51300	68100	118000	205000	189000	105000	64700
11	55900	51800	95700	81600	121000	91400	112000	91400	179000	186000	95400	58900
12	64500	64600	99600	52400	108000	84900	116000	91600	178000	199000	122000	81100
13	41400	61700	86500	62200	102000	65000	89000	134000	157000	178000	126000	75000
14	43800	62300	78900	115000	91400	67000	110000	125000	163000	123000	120000	40600
15	73400	68900	67300	101000	119000	75700	134000	116000	148000	187000	115000	51100
16	68200	75900	49300	106000	84600	68100	165000	128000	133000	184000	89700	77500
17	61200	60200	91700	111000	67400	47900	171000	114000	175000	168000	84100	69000
18	64700	54700	98200	105000	97600	89100	181000	111000	186000	174000	83000	87800
19	65000	86600	95800	85300	102000	78900	173000	101000	211000	183000	112000	92400
20	39800	93000	108000	60900	87000	99800	155000	114000	219000	158000	109000	95200
21	44900	82600	100000	108000	81400	70400	157000	111000	183000	140000	117000	81200
22	64200	55700	76500	114000	71100	47200	169000	119000	149000	174000	126000	64000
23	62500	66900	57600	100000	69600	28500	158000	124000	124000	156000	110000	95700
24	66100	74500	90300	101000	59900	29300	149000	120000	184000	142000	90300	107000
25	62800	68400	54500	102000	95800	48300	143000	103000	189000	131000	70700	92900
26	49300	105000	111000	78300	74900	61700	132000	124000	191000	112000	113000	76900
27	40500	104000	94000	69000	96700	54500	109000	139000	206000	94500	105000	62800
28	46400	109000	94000	113000	74300	49400	112000	132000	221000	97000	120000	66700
29	76600	96900	66800	117000	---	47400	140000	117000	182000	136000	107000	45200
30	60400	83200	52700	130000	---	31700	149000	109000	187000	143000	112000	79800
31	44100	---	95800	121000	---	24000	---	126000	---	133000	77500	---
TOTAL	1734600	2140400	2506400	2842900	2553200	1980800	3327100	3665000	5345800	5055500	3421500	2148000
MEAN	55950	71350	80850	91710	91190	63900	110900	118200	178200	163100	110400	71600
MAX	76600	109000	111000	130000	121000	99800	181000	144000	221000	238000	140000	107000
MIN	38600	43600	47400	52400	59900	24000	28200	91400	94800	94500	70700	36000
AC-FT	3441000	4245000	4971000	5639000	5064000	3929000	6599000	7270000	10600000	10030000	6787000	4261000
CAL YR 2001	TOTAL 25299800	MEAN 69310	MAX 127000	MIN 20900	AC-FT 50180000							
WTR YR 2002	TOTAL 36721200	MEAN 100600	MAX 238000	MIN 24000	AC-FT 72840000							

COLUMBIA RIVER MAIN STEM

12438000 COLUMBIA RIVER AT BRIDGEPORT, WA

LOCATION.--Lat 48°00'24", long 119°39'51", in SW ¼ SW ¼ sec.14, T.29 N., R.25 E., Douglas County, Hydrologic Unit 17020005, on left bank at Bridgeport, 1.0 mi downstream from Foster Creek, 1.6 mi downstream from Chief Joseph Dam, and at mile 543.9.

DRAINAGE AREA.--75,700 mi², approximately.

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

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929 (levels by Corps of Engineers). Apr. 4, 1952, to Aug. 4, 1988, water-stage recorder; May 26, 1967, to Aug. 4, 1988, auxiliary water-stage recorder 4,800 ft upstream from base gage at same datum.

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

COOPERATION.--Discharge records provided by Corps of Engineers at Chief Joseph Dam through the Corps of Engineers, Northwestern Division, Reservoir Control Center. The U.S. Geological Survey made 6 discharge measurements at this site during the year.

AVERAGE DISCHARGE.--50 years (water years 1953-2002), 110,100 ft³/s, 79,770,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 495,800 ft³/s June 11, 1961; maximum elevation, 792.20 ft June 7, 1956; minimum observed discharge, 4,220 ft³/s Mar. 22, 1966, elevation, 746.91 ft; minimum daily discharge, 22,300 ft³/s Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 229,000 ft³/s July 2; minimum daily discharge, 28,400 ft³/s March 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59700	54400	52300	72300	99300	87100	53500	117000	97800	221000	128000	43700
2	59400	52800	48800	99800	84700	71300	66100	124000	138000	229000	141000	63700
3	61000	46500	95700	104000	75700	52100	61300	118000	169000	225000	112000	91600
4	56000	44500	99100	112000	115000	75200	51800	112000	211000	199000	91000	68300
5	50500	75100	91100	94600	112000	58600	56200	103000	200000	174000	115000	64900
6	40100	77000	78400	64000	109000	87800	35500	147000	186000	174000	123000	66500
7	43700	77300	75900	84100	92900	96300	32900	143000	209000	116000	141000	52900
8	55100	76100	50900	77700	100000	93800	38900	122000	198000	148000	136000	50800
9	61000	67800	55500	60100	92800	65700	49900	135000	193000	178000	138000	84000
10	60600	54700	97700	60600	85800	53700	66500	122000	203000	190000	111000	70000
11	57900	55500	100000	79500	125000	91600	113000	98000	182000	188000	95000	60200
12	65800	67600	99900	58800	110000	86000	115000	91600	181000	201000	122000	77800
13	42300	62400	88000	64500	102000	68400	92100	133000	159000	182000	128000	78900
14	46900	65500	81300	111000	94100	68300	111000	126000	170000	123000	122000	42300
15	71900	73900	69100	105000	118000	78800	135000	122000	145000	171000	120000	47400
16	72700	73500	48400	107000	93600	67900	164000	129000	140000	192000	94600	78300
17	66200	60300	91800	112000	69600	52500	178000	120000	170000	168000	80800	69400
18	63800	60500	98300	109000	98900	92800	182000	109000	186000	174000	79900	84400
19	64200	83100	101000	89500	99400	77900	173000	106000	200000	185000	117000	98200
20	43700	92400	111000	61700	92000	99900	168000	116000	222000	164000	111000	94400
21	47200	88800	100000	112000	82300	76200	156000	112000	201000	146000	115000	76300
22	65800	55000	79300	110000	72900	50600	174000	118000	151000	171000	127000	68800
23	59700	69000	63000	105000	74600	33500	156000	129000	116000	162000	114000	101000
24	69100	75100	90700	99200	63300	33900	154000	124000	181000	144000	95400	100000
25	64600	67800	54200	106000	91400	45400	148000	105000	193000	132000	70000	93000
26	53700	106000	109000	80700	79400	61900	136000	130000	192000	114000	111000	80600
27	43400	101000	101000	69100	98900	57700	113000	136000	211000	99400	109000	64100
28	46000	109000	91700	113000	76400	52100	111000	131000	222000	98800	116000	62800
29	75300	98800	70800	118000	---	46000	143000	126000	188000	128000	108000	43600
30	60500	85400	55600	130000	---	33300	146000	114000	180000	144000	112000	80000
31	44900	---	95000	126000	---	28400	---	125000	---	140000	82500	---
TOTAL	1772700	2176800	2544500	2896200	2609000	2044700	3380700	3743600	5394800	5081200	3466200	2157900
MEAN	57180	72560	82080	93430	93180	65960	112700	120800	179800	163900	111800	71930
MAX	75300	109000	111000	130000	125000	99900	182000	147000	222000	229000	141000	101000
MIN	40100	44500	48400	58800	63300	28400	32900	91600	97800	98800	70000	42300
AC-FT	3516000	4318000	5047000	5745000	5175000	4056000	6706000	7425000	10700000	10080000	6875000	4280000
CAL YR 2001	TOTAL 25820300	MEAN 70740	MAX 129000	MIN 23200	AC-FT 51210000							
WTR YR 2002	TOTAL 37268300	MEAN 102100	MAX 229000	MIN 28400	AC-FT 73920000							

12439000 OSOYOOS LAKE NEAR OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°57'24", long 119°26'18", in NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.21, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on west shore 1.0 mi north of Oroville, 3.0 mi south of international boundary, and at mile 79.5.

DRAINAGE AREA.--3,132 mi².

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

REVISED RECORDS.--WSP 1346: Drainage area. WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Sept. 2, 1928, nonrecording gage, and Sept. 2, 1928, to Nov. 9, 1929, water-stage recorder, 100 ft south of international boundary. Nov. 10, 1929, to Sept. 7, 1930, Mar. 22, 1952, to Sept. 23, 1953, June 25, 1955, to Apr. 11, 1956, nonrecording gage, and Sept. 8, 1930, to Mar. 21, 1952, Sept. 24, 1953, to June 24, 1955, Apr. 12, 1956, to Feb. 7, 1969, water-stage recorder, at site 1.0 mi south of international boundary. All elevations prior to Oct. 1, 1944, at datum 2.39 ft lower. To convert from present datum to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert from present datum to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

REMARKS.--Approximately 44,000 acres are irrigated upstream from station in Canada. Elevation may occasionally be affected by dam at Zosel's Mill in Oroville and by backwater from the Similkameen River during extreme high water. U.S. Geological Survey satellite telemeter at station.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 917.11 ft June 2, 3, 1972; minimum elevation, 908.82 ft, present datum, Oct. 14, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 29, 1894, reached an elevation of 918.8 ft plus or minus 0.5 ft, present datum, 1.0 mi downstream from present lake outlet, from floodmark on old Okanogan Hotel Building, documented in 1930 from the diary of Mr. and Mrs. Stansbury, operators of the hotel in 1894.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 912.54 ft June 1; minimum elevation, 909.48 ft Feb. 25,26.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	912.33	911.40	910.52	909.65	909.56	909.74	911.14	911.20	912.50	911.28	911.36	911.19
2	912.29	911.38	910.51	909.64	909.56	909.77	911.17	911.26	912.50	911.28	911.41	911.20
3	912.24	911.36	910.48	909.65	909.56	909.81	911.22	911.31	912.41	911.27	911.39	911.32
4	912.18	911.35	910.43	909.64	909.55	909.84	911.26	911.36	912.36	911.22	911.38	911.33
5	912.11	911.36	910.39	909.64	909.54	909.90	911.27	911.40	912.37	911.21	911.38	911.35
6	912.05	911.33	910.35	909.65	909.55	909.90	911.24	911.39	912.39	911.21	911.39	911.34
7	911.99	911.27	910.29	909.67	909.55	909.87	911.22	911.36	912.39	911.25	911.38	911.27
8	911.93	911.21	910.24	909.67	909.56	909.87	911.20	911.32	912.32	911.31	911.38	911.22
9	911.88	911.17	910.21	909.68	909.54	909.89	911.20	911.29	912.14	911.35	911.38	911.20
10	911.82	911.14	910.17	909.67	909.53	909.92	911.20	911.26	911.98	911.36	911.40	911.20
11	---	911.09	910.14	909.67	909.54	909.95	911.20	911.23	911.78	911.33	911.39	911.20
12	---	911.05	910.11	909.67	909.54	909.98	911.21	911.20	911.63	911.30	911.37	911.19
13	---	911.01	910.08	909.68	909.53	910.02	911.21	911.17	911.59	911.31	911.35	911.14
14	---	910.99	910.07	909.68	909.53	910.05	911.27	911.17	911.60	911.33	911.35	911.07
15	---	910.96	910.02	909.67	909.53	910.12	911.34	911.19	911.63	911.31	911.32	911.04
16	---	910.93	910.00	909.66	909.52	910.24	911.35	911.18	911.71	911.30	911.32	911.13
17	911.52	910.91	909.98	909.66	909.52	910.31	911.33	911.18	911.75	911.30	911.30	911.23
18	911.49	910.85	909.94	909.65	909.52	910.34	911.32	911.21	911.70	911.29	911.29	911.29
19	911.49	910.80	909.92	909.66	909.51	910.40	911.30	911.24	911.58	911.30	911.31	911.30
20	911.51	910.78	909.90	909.65	909.52	910.46	911.28	911.28	911.51	911.26	911.32	911.27
21	911.51	910.76	909.88	909.65	909.52	910.46	911.28	911.39	911.46	911.24	911.32	911.24
22	911.51	910.75	909.85	909.64	909.54	910.49	911.27	911.42	911.41	911.22	911.33	911.22
23	911.53	910.72	909.82	909.62	909.57	910.56	911.30	911.42	911.38	911.25	911.36	911.21
24	911.52	910.70	909.80	909.60	909.52	910.63	911.37	911.42	911.41	911.28	911.36	911.20
25	911.51	910.66	909.77	909.60	909.49	910.70	911.42	911.42	911.47	911.31	911.37	911.16
26	911.48	910.62	909.75	909.60	909.54	910.76	911.33	911.39	911.46	911.35	911.39	911.13
27	911.48	910.58	909.73	909.60	909.64	910.83	911.22	911.37	911.40	911.36	911.42	911.12
28	911.45	910.54	909.72	909.60	909.70	910.89	911.13	911.41	911.26	911.38	911.38	911.08
29	911.44	910.54	909.71	909.57	---	910.94	911.12	911.60	911.25	911.37	911.33	911.09
30	911.43	910.51	909.69	909.57	---	911.00	911.17	911.93	911.27	911.36	911.28	911.08
31	911.41	---	909.68	909.57	---	911.06	---	912.29	---	911.35	911.22	---
MEAN	---	910.96	910.04	909.64	909.55	910.28	911.25	911.36	911.79	911.30	911.35	911.20
MAX	---	911.40	910.52	909.68	909.70	911.06	911.42	912.29	912.50	911.38	911.42	911.35
MIN	---	910.51	909.68	909.57	909.49	909.74	911.12	911.17	911.25	911.21	911.22	911.04

OKANOGAN RIVER BASIN

12439500 OKANOGAN RIVER AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°55'51", long 119°25'09", in SE ¼ SW ¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank in Oroville, 20 ft downstream from Burlington Northern trestle, 0.5 mi downstream from Tonasket Creek, 1.7 mi downstream from Osyoos Lake, 3.2 mi upstream from Similkameen River, and at mile 77.3.

DRAINAGE AREA.--3,195 mi².

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Oct. 26, 1944, nonrecording gage at Zosel Mill dam 200 ft upstream, Oct. 26, 1944, to Mar. 6, 1948, water-stage recorder on railroad trestle 20 ft upstream, both at same datum. Auxiliary water-stage recorder 0.5 mi downstream used during high-water periods; May 15, 1946, to Apr. 9, 1948, nonrecording gage at same site, both at datum 900.00 ft above NGVD of 1929. To convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

REMARKS.--Records good except for estimated daily discharges and backwater periods, May 18 to July 19 which are fair. Diversions made to irrigate approximately 44,000 acres in Canada and minor diversions in the United States upstream from station. Natural regulation in several large lakes and artificial regulation in Okanogan Lake 46.7 mi upstream for flood control and irrigation; also regulated by Zosel dam at Oroville, 500 ft upstream from gage. Water temperature April 1986 to September 1987. U.S. Geological Survey satellite telemeter at station.

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

AVERAGE DISCHARGE.--60 years (water years 1943-2002), 698 ft³/s, 505,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,770 ft³/s June 7, 1997; maximum elevation, 916.89 ft June 2, 1972, at datum then in use, backwater from Similkameen River; minimum daily discharge, -2,270 ft³/s reverse flow May 29, 1948; minimum elevation, 903.98 ft Mar. 1, 1948, at datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,570 ft³/s June 9; maximum elevation, 912.20 ft May 31, result of backwater from Similkameen River and result of regulation at Zosel Dam; minimum discharge, 186 ft³/s Sept. 15,16; minimum elevation, 905.95 ft, result of regulation at Zosel Dam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	444	432	367	e353	311	423	385	1020	1480	939	205	787
2	461	430	365	e326	311	427	384	1050	2000	930	262	407
3	463	429	401	e311	311	432	386	1090	2060	940	364	496
4	468	427	423	e311	311	437	436	1090	2050	783	363	583
5	463	428	419	e311	309	505	573	1180	2050	653	365	648
6	459	424	414	e311	311	530	629	1270	1990	457	367	802
7	458	423	406	e311	311	518	627	1250	2110	380	364	877
8	458	419	402	e311	311	477	573	1230	2450	383	364	790
9	458	419	401	311	309	450	546	1220	2520	381	369	737
10	456	417	397	311	306	455	544	1200	2460	494	375	737
11	458	411	397	311	309	458	545	1190	2310	551	375	736
12	458	408	395	311	307	464	549	1180	1810	431	375	734
13	458	404	391	311	305	467	548	1170	1520	369	375	662
14	460	402	390	313	305	397	547	1120	1400	372	375	618
15	458	401	386	311	305	337	644	1100	1280	369	369	379
16	490	397	385	311	305	347	709	1090	1150	369	374	188
17	515	397	381	311	305	353	706	1100	1360	368	369	191
18	419	395	380	311	305	389	707	1120	1710	367	369	288
19	364	391	380	311	305	415	706	1120	1790	368	328	349
20	364	391	374	311	305	422	701	1160	1960	369	305	348
21	364	391	369	323	305	419	700	1260	2040	368	305	343
22	367	389	369	342	308	376	720	1420	1990	306	305	342
23	372	386	369	338	317	355	755	1560	1920	261	339	342
24	403	382	364	322	310	358	818	1670	1740	264	360	342
25	444	378	360	311	266	361	1160	1740	1770	264	363	341
26	441	374	358	311	244	365	1410	1710	1880	264	406	337
27	441	369	e358	313	308	369	1360	1600	1740	265	624	337
28	441	369	e358	314	399	372	1220	1480	1440	270	842	332
29	440	369	e358	311	---	375	1050	1140	922	363	835	332
30	435	365	e353	311	---	377	1010	855	930	375	825	332
31	435	---	e353	311	---	380	---	952	---	282	815	---
TOTAL	13615	12017	11823	9786	8614	12810	21648	38337	53832	13555	13031	14737
MEAN	439.2	400.6	381.4	315.7	307.6	413.2	721.6	1237	1794	437.3	420.4	491.2
MAX	515	432	423	353	399	530	1410	1740	2520	940	842	877
MIN	364	365	353	311	244	337	384	855	922	261	205	188
AC-FT	27010	23840	23450	19410	17090	25410	42940	76040	106800	26890	25850	29230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	MEAN	510.2	479.3	467.9	487.2	579.1	655.3	778.8	1173	1170	827.8	666.2	572.3
MAX	1430	1551	1404	1190	1214	1918	2475	2870	3165	2598	2570	2279	
(WY)	1949	1949	1949	1949	1997	1983	1983	1997	1997	1997	1997	1997	
MIN	179	148	149	162	140	74.1	115	180	111	126	150	81.7	
(WY)	1989	1971	1971	1968	1971	1977	1968	1992	1992	1947	1963	1944	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1943 - 2002

ANNUAL TOTAL		97300		223805								
ANNUAL MEAN		266.6		613.2						697.6		
HIGHEST ANNUAL MEAN										1691		1997
LOWEST ANNUAL MEAN										213		1988
HIGHEST DAILY MEAN			724		May 15		2520	Jun 9		3680		Jun 14 1972
LOWEST DAILY MEAN			91		May 2		188	Sep 16		-2270		May 29 1948
ANNUAL SEVEN-DAY MINIMUM			93		Apr 27		271	Jul 22		-1080		May 24 1948
ANNUAL RUNOFF (AC-FT)			193000				443900			505400		
10 PERCENT EXCEEDS			427				1270			1510		
50 PERCENT EXCEEDS			244				397			506		
90 PERCENT EXCEEDS			139				311			205		

e Estimated

OKANOGAN RIVER BASIN

12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA
(International gaging station)

LOCATION.--Lat 48°59'05", long 119°37'02", in NW ¼ sec.7, T.40 N., R.26 E., Okanogan County, Hydrologic Unit 17020007, on left bank 1,000 ft upstream from Oroville-Tonasket Irrigation District canal intake, 1.6 mi northeast of Nighthawk, 3.8 mi downstream from Palmer Creek, and at mile 15.8.

DRAINAGE AREA.--3,550 mi², approximately.

PERIOD OF RECORD.--May 1911 to current year (prior to September 1928, mean monthly discharge included Oroville-Tonasket Irrigation District canal). Published as "near Oroville" 1911-28.

REVISED RECORDS.--WSP 1183: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,137.70 ft NGVD of 1929. Prior to Sept. 11, 1928, staff gages at sites 7 mi downstream (below Oroville-Tonasket Irrigation District canal) at various datums.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow at high stages regulated by natural diversion into and release from Palmer Lake of about 6,000 acre-feet. Several small diversions upstream from station for irrigation of about 2,900 acres in the United States in 1946 and approximately 10,500 acres in Canada in 1957. National Weather Service satellite telemeter at station. Water temperature April 1986 to September 1987.

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

AVERAGE DISCHARGE.--91 years (water years 1912-2002), 2,291 ft³/s, 1,660,000 acre-ft/yr.
74 years (water years 1929-2002), 2,319 ft³/s, 1,680,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,800 ft³/s June 1, 1972; maximum gage height, 18.78 ft May 31, 1972; minimum discharge, 65 ft³/s Jan. 3, 1974; minimum gage height, 1.55 ft Jan. 31, 1988, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,900 ft³/s May 30, gage height, 12.23 ft; minimum daily discharge, 211 ft³/s Oct. 3,6,10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	238	356	458	411	567	835	569	3940	16500	7290	1260	426
2	230	376	442	410	602	778	599	5130	14900	6470	1180	414
3	223	394	505	408	604	738	584	6040	14500	5790	1090	405
4	217	400	496	395	597	713	578	5750	14400	5380	1040	400
5	214	404	456	380	567	700	599	5180	14400	5070	1020	410
6	215	391	433	379	530	639	653	4790	14900	4640	981	413
7	215	390	418	376	525	590	787	4420	13700	4370	985	419
8	218	372	428	388	550	570	925	4100	11500	4640	1000	435
9	220	342	442	2230	529	604	924	3820	10200	6100	949	439
10	219	331	444	2030	507	604	932	3590	9650	5180	889	428
11	224	338	433	1660	484	610	967	3440	10000	4840	837	409
12	235	337	423	1460	476	639	1110	3530	11100	4760	808	393
13	243	351	404	1310	445	641	1310	4000	12400	4470	773	378
14	258	360	400	1170	430	606	2190	4890	13900	4130	723	365
15	300	516	400	1030	463	592	3890	5370	15100	3890	683	353
16	308	1360	393	882	463	584	3780	5260	15900	3560	657	345
17	296	1660	425	815	444	556	3400	5370	15200	3240	634	340
18	290	1240	449	817	450	535	3030	6160	13500	3040	608	333
19	307	941	440	762	455	519	2780	6460	12400	2820	585	333
20	308	829	404	765	447	509	2680	7020	10900	2630	566	336
21	325	837	373	777	442	505	2750	11000	10200	2420	554	328
22	367	829	e340	725	438	495	2910	11800	10400	2220	550	328
23	348	762	e330	658	612	500	3010	12000	10700	2070	541	329
24	342	709	357	661	1080	508	2990	11700	10400	1950	510	324
25	376	648	337	709	1050	521	2870	11200	9780	1850	486	315
26	363	588	320	695	940	545	2800	11300	9500	1770	504	308
27	348	577	e305	635	893	563	2750	12300	9650	1680	544	309
28	339	553	327	521	884	568	2710	13900	9440	1580	518	312
29	376	543	359	e420	---	549	2760	16100	8690	1460	485	320
30	381	495	386	438	---	554	3070	17400	8180	1390	463	322
31	365	---	407	505	---	549	---	17600	---	1330	440	---
TOTAL	8908	18229	12534	24822	16474	18419	60907	244560	361990	112030	22863	10969
MEAN	287	608	404	801	588	594	2030	7889	12070	3614	738	366
MAX	381	1660	505	2230	1080	835	3890	17600	16500	7290	1260	439
MIN	214	331	305	376	430	495	569	3440	8180	1330	440	308
AC-FT	17670	36160	24860	49230	32680	36530	120800	485100	718000	222200	45350	21760

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	689	936	794	645	672	735	2065	7921	8760	3029	936	600
MEAN	689	936	794	645	672	735	2065	7921	8760	3029	936	600
MAX	2265	4531	3480	2067	2235	2206	13510	15360	24910	8495	2625	1614
(WY)	1960	1991	1996	1981	1935	1934	1934	1972	1972	1972	1948	1954
MIN	239	254	231	215	217	341	427	2788	2508	665	295	216
(WY)	1988	1988	1988	1930	1929	1988	1929	1984	1992	1940	1940	2001

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1929 - 2002
ANNUAL TOTAL	375985	912705	
ANNUAL MEAN	1030	2501	2319
HIGHEST ANNUAL MEAN			4831
LOWEST ANNUAL MEAN			1038
HIGHEST DAILY MEAN	8110	May 25	17600
LOWEST DAILY MEAN	186	Sep 20	214
ANNUAL SEVEN-DAY MINIMUM	188	Sep 19	217
ANNUAL RUNOFF (AC-FT)	745800	1810000	1680000
10 PERCENT EXCEEDS	3150	9650	6800
50 PERCENT EXCEEDS	401	604	794
90 PERCENT EXCEEDS	239	332	371

e Estimated

OKANOGAN RIVER BASIN

12445000 OKANOGAN RIVER NEAR TONASKET, WA

LOCATION.--Lat 48°37'57", long 119°27'38", in lot 3, sec.8, T.36 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on right bank 1,000 ft upstream from Chewiliken Creek, 5.2 mi south of Tonasket, and at mile 50.8.

DRAINAGE AREA.--7,260 mi², approximately.

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

REVISED RECORDS.--WSP 862: 1937. WSP 1316: 1934(M), 1938(M). WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 860.78 ft above NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair, and period from Oct. 1-Jan. 15, which is poor. Diversions upstream from station for irrigation of about 10,700 acres in the United States and 55,000 acres in Canada. Flow affected by regulation of Okanogan and Skaha Lakes and by natural storage in other lakes. U.S. Geological Survey satellite telemeter at station. Water temperature April 1986 to September 1987.

AVERAGE DISCHARGE.--73 years (water years 1930-2002), 2,964 ft³/s, 2,147,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,700 ft³/s June 2, 1972, gage height, 22.54 ft; minimum discharge recorded, 126 ft³/s Sept. 5, 1931, gage height, 3.43 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,100 ft³/s June 1, gage height, 14.89 ft; minimum discharge, 525 ft³/s Sept. 18, gage height 4.11 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	669	831	990	832	949	1360	1010	4300	18900	8580	1520	1280
2	724	822	964	841	947	1330	1030	5400	18100	7680	1440	1140
3	716	847	924	808	958	1280	1060	6600	17100	6920	1470	736
4	707	864	1010	795	957	1250	1050	6910	16700	6320	1440	956
5	698	874	1010	774	939	1240	1140	6430	16600	5790	1400	976
6	694	858	966	765	916	1280	1330	6130	16800	5320	1370	1100
7	690	843	937	772	884	1310	1420	5810	17000	4790	1340	1320
8	691	842	925	788	891	1130	1540	5480	15600	4740	1360	1300
9	689	822	955	1110	893	1090	1570	5170	13800	5870	1350	1240
10	686	790	941	2660	870	1130	1570	4910	12500	5840	1290	1200
11	698	776	943	2410	856	1140	1590	4710	12100	5360	1230	1190
12	700	782	919	2210	836	1160	1640	4640	12600	5170	1170	1170
13	715	795	920	1910	830	1200	1790	4860	13300	4900	1140	1150
14	720	836	921	1790	802	1190	2070	5530	14400	4560	1090	1020
15	727	845	865	1560	788	1040	3520	6250	15600	4270	1030	967
16	768	1100	908	1420	819	1020	4500	6320	16600	4030	1030	647
17	819	1910	906	1280	819	991	4280	6210	17100	3690	998	544
18	809	1880	866	1230	804	968	3910	6830	16400	3450	977	529
19	683	1580	882	1230	812	1020	3610	7470	15200	3260	945	658
20	692	1360	860	1160	818	1010	3430	7680	13800	3090	851	692
21	694	1300	821	1170	812	998	3410	10200	12600	2910	826	692
22	718	1300	790	1190	810	999	3510	12900	12200	2700	813	682
23	766	1280	768	1130	808	938	3670	13600	12500	2440	810	679
24	735	1190	777	1090	1010	941	3750	13800	12500	2300	846	670
25	796	1130	769	1060	1410	952	3850	13400	11700	2180	830	655
26	848	1070	742	1110	1280	957	4240	13200	11300	2090	834	651
27	833	1020	719	1070	1190	997	4180	13600	11300	2000	922	660
28	815	1020	729	e920	1310	1000	4070	14500	11200	1910	1300	645
29	808	1010	744	e800	---	1010	3860	15900	10200	1820	1360	650
30	854	978	780	e820	---	1010	3850	17300	9280	1860	1320	671
31	861	---	807	875	---	1010	---	18500	---	1710	1290	---
TOTAL	23023	31555	27058	37580	26018	33951	81450	274540	424980	127550	35592	26470
MEAN	743	1052	873	1212	929	1095	2715	8856	14170	4115	1148	882
MAX	861	1910	1010	2660	1410	1360	4500	18500	18900	8580	1520	1320
MIN	669	776	719	765	788	938	1010	4300	9280	1710	810	529
AC-FT	45670	62590	53670	74540	51610	67340	161600	544600	842900	253000	70600	52500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

	1205	1463	1331	1181	1293	1425	2754	8591	9777	3748	1480	1094
MEAN	1205	1463	1331	1181	1293	1425	2754	8591	9777	3748	1480	1094
MAX	2849	4618	4252	2564	2964	3131	13220	16190	27720	10210	4095	3039
(WY)	1960	1991	1996	1981	1991	1991	1934	1972	1972	1972	1993	1948
MIN	403	413	399	360	532	525	770	3790	2650	605	231	231
(WY)	1932	1930	1930	1930	1937	1931	1931	1941	1992	1940	1931	1940

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1929 - 2002

ANNUAL TOTAL	478582	1149767		
ANNUAL MEAN	1311	3150	2964	
HIGHEST ANNUAL MEAN			6019	1972
LOWEST ANNUAL MEAN			1142	1931
HIGHEST DAILY MEAN	8230	May 25	18900	Jun 1
LOWEST DAILY MEAN	422	Aug 23	529	Sep 18
ANNUAL SEVEN-DAY MINIMUM	435	Sep 8	635	Sep 16
ANNUAL RUNOFF (AC-FT)	949300		2281000	2147000
10 PERCENT EXCEEDS	3170		11300	7670
50 PERCENT EXCEEDS	760		1130	1460
90 PERCENT EXCEEDS	485		733	654

e Estimated

OKANOGAN RIVER BASIN

12447200 OKANOGAN RIVER AT MALOTT, WA

LOCATION.--Lat 48°16'53", long 119°42'12", in SW 1/4 sec.9, T.32 N., R.25 E., Okanogan County, Hydrologic Unit 17020006, on right bank 75 ft upstream from highway bridge at Malott, 0.1 mi upstream from Loup Loup Creek, and at mile 17.0.

DRAINAGE AREA.--8,080 mi², approximately.

PERIOD OF RECORD.--April 1958 to current year. April 1958 to September 1965, published as "near Malott." Records published for both sites December 1965 to July 1967.

REVISED RECORDS.--WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 783.55 ft above NGVD of 1929. April 1958 to November 1965, water-stage recorder at site 3.9 mi downstream at NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 22,000 acres in the United States and 55,000 acres in Canada. Flow regulated by Okanogan and Skaha Lakes and by natural storage in other lakes. U.S. Geological Survey satellite telemeter at station. Daily water temperature records November 1969 to June 1971. Chemical analyses 1959-62, 1963-70 (partial record station), 1972, 1975-94. Published as "near Brewster" prior to 1964 and as "near Malott" 1963-66 (station 12447300).

AVERAGE DISCHARGE.--44 years (water years 1959-2002), 3,100 ft³/s, 2,246,000 acre-ft/yr, includes records for "near Malott" site located 3.9 miles downstream, water years 1959-65.
37 years (water years 1966-2002), 3,117 ft³/s, 2,258,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft³/s June 3, 1972, gage height, 22.16 ft; minimum observed, 288 ft³/s Sept. 4, 1970, gage height, 2.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,600 ft³/s June 1, gage height, 13.36 ft; minimum discharge, 516 ft³/s Sept. 19, gage height, 2.66 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	687	938	982	802	e940	1330	1080	3990	18500	9280	1650	1240
2	721	920	945	834	929	1350	1080	4850	18200	8370	1530	1200
3	764	916	907	830	938	1310	1100	6130	17200	7560	1480	999
4	761	941	891	795	940	1270	1120	7040	16600	6860	1550	742
5	755	952	976	786	939	1250	1130	6750	16500	6190	1500	906
6	755	960	964	789	931	1220	1240	6320	16500	5760	1460	943
7	755	950	915	786	908	1240	1390	6010	16800	5110	1420	1090
8	758	936	898	790	904	1180	1470	5620	16100	4860	1360	1290
9	758	934	879	785	894	1160	1570	5310	14400	5270	1400	1240
10	758	909	897	1610	892	1120	1580	5000	13100	6400	1390	1160
11	765	884	909	2330	876	1160	1590	4750	12400	5670	1330	1140
12	771	874	903	2060	855	1170	1620	4590	12600	5370	1260	1120
13	784	884	904	1880	840	1190	1710	4670	13100	5140	1210	1090
14	790	900	887	1750	833	1210	1910	5180	13900	4810	1170	1060
15	793	912	861	1620	817	1180	2460	6010	15000	4470	1100	947
16	809	912	865	1500	808	1060	4120	6440	16000	4200	1040	861
17	855	1320	873	1370	833	1030	4290	6310	16800	3870	1020	625
18	892	1940	864	1240	826	1000	3980	6580	16700	3560	998	548
19	875	1760	e890	1220	819	1010	3670	7450	15500	3370	968	535
20	773	1530	895	1200	829	1030	3440	7750	14500	3140	912	639
21	782	1360	866	1150	846	1030	3370	8910	13300	2950	835	658
22	786	1330	834	1160	836	1030	3390	12200	12600	2740	814	663
23	818	1310	799	1170	829	1020	3550	13300	e12500	2480	798	650
24	849	1250	795	1190	826	985	3640	13700	e12800	2260	792	642
25	838	1180	795	1090	1110	986	3740	13500	e12100	2120	820	633
26	891	1120	784	1040	1380	992	4020	13300	11800	2040	803	629
27	926	1040	758	1090	1240	1010	4200	13400	11600	1960	788	634
28	909	1020	749	1020	1220	1060	4100	14100	11600	1880	913	638
29	898	1020	750	e900	---	1060	3920	15000	11000	1800	1280	632
30	911	987	758	e830	---	1060	3780	16400	9900	1790	1280	638
31	948	---	781	e880	---	1070	---	17700	---	1780	1250	---
TOTAL	25135	32889	26774	36497	25838	34773	79260	268260	429600	133060	36121	25792
MEAN	811	1096	864	1177	923	1122	2642	8654	14320	4292	1165	860
MAX	948	1940	982	2330	1380	1350	4290	17700	18500	9280	1650	1290
MIN	687	874	749	785	808	985	1080	3990	9900	1780	788	535
AC-FT	49860	65240	53110	72390	51250	68970	157200	532100	852100	263900	71650	51160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2002, BY WATER YEAR (WY)

	1146	1464	1302	1242	1415	1710	2869	8644	10210	4157	1681	1169
MEAN	1146	1464	1302	1242	1415	1710	2869	8644	10210	4157	1681	1169
MAX	1847	4747	4402	2970	2979	3946	7015	16420	29290	10990	4150	2963
(WY)	1998	1991	1996	1984	1991	1983	1996	1972	1972	1972	1993	1997
MIN	605	574	565	540	569	601	928	4319	2625	938	434	372
(WY)	1988	1988	1971	1988	2001	1988	2001	1977	1992	1977	1977	1988

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1966 - 2002

ANNUAL TOTAL	477900	1153999	
ANNUAL MEAN	1309	3162	3117
HIGHEST ANNUAL MEAN			6312
LOWEST ANNUAL MEAN			1334
HIGHEST DAILY MEAN	8480	May 26	18500
LOWEST DAILY MEAN	429	Sep 12	535
ANNUAL SEVEN-DAY MINIMUM	439	Sep 9	617
ANNUAL RUNOFF (AC-FT)	947900	2289000	2258000
10 PERCENT EXCEEDS	3160	11700	8140
50 PERCENT EXCEEDS	786	1120	1510
90 PERCENT EXCEEDS	488	785	700

e Estimated

METHOW RIVER BASIN

12447370 LOST RIVER NEAR MAZAMA, WA

LOCATION.--Lat 48°39'19", long 120°30'18", in SE ¼ NW ¼ sec.5 T.36 N., R.19 E., Okanogan County, Hydrologic Unit 17020008, on right bank at Lost River Rd., 0.5 mi upstream from mouth, and 6.5 mi northwest of Mazama.

DRAINAGE AREA.--146 mi².

PERIOD OF RECORD.--Oct. 1, 2000 to current year. Miscellaneous discharge measurements 1926, 1970-71, 1990.

GAGE.--Water-stage recorder. Elevation of gage is 2,370 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good, except for estimated daily discharges, which are fair. No known diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--2 years (water years 2001-2002), 178 ft³/s, 16.54 in/yr, 128,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,040 ft³/s June 16, 2002, gage height 9.58 ft; minimum discharge 6.6 ft³/s Feb. 27, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,040 ft³/s June 16, gage height 9.58 ft; minimum discharge, 18 ft³/s Feb. 12 and 13, gage height 5.55 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	26	36	25	22	49	76	465	1510	827	169	69
2	25	24	34	26	22	47	70	587	1500	709	157	69
3	24	25	33	25	22	46	69	571	1470	657	146	67
4	24	24	32	24	21	47	81	515	1550	658	139	64
5	24	24	32	24	21	50	106	460	1660	575	133	63
6	23	24	31	25	21	48	138	399	1620	553	128	61
7	23	22	30	27	21	46	152	354	1290	591	123	60
8	23	23	31	31	20	44	146	319	1050	949	119	58
9	23	21	30	30	19	43	139	293	893	782	117	56
10	23	21	30	30	19	42	139	275	856	739	119	55
11	24	21	29	30	19	44	158	276	1070	803	116	53
12	23	21	28	30	19	41	187	325	1370	762	110	52
13	24	23	30	29	19	39	284	477	1640	698	107	51
14	23	52	29	29	19	38	473	616	1760	690	108	50
15	23	76	28	28	19	37	369	614	1740	595	105	48
16	22	85	e27	28	19	37	283	594	1820	538	101	48
17	22	62	e28	27	19	35	233	654	1550	511	96	47
18	22	53	29	27	19	34	202	721	1360	475	92	46
19	21	49	28	27	20	34	187	726	1140	440	89	46
20	21	48	27	27	20	33	189	1080	1080	394	87	45
21	21	49	27	26	24	31	204	1340	1220	353	87	44
22	22	49	27	25	113	31	214	1110	1390	328	85	43
23	26	47	27	25	133	33	211	932	1460	316	83	42
24	23	44	27	25	87	39	200	866	1350	312	82	41
25	23	42	26	26	73	46	193	893	1310	297	84	40
26	23	40	25	24	65	56	188	982	1450	292	83	39
27	23	38	26	24	58	53	184	1130	1500	261	80	38
28	24	37	26	23	53	51	184	1470	1300	232	78	38
29	22	37	26	22	---	52	209	1710	1230	219	75	37
30	22	35	25	23	---	57	308	1760	1040	202	74	36
31	28	---	25	23	---	68	---	1670	---	187	72	---
TOTAL	720	1142	889	815	1006	1351	5776	24184	41179	15945	3244	1506
MEAN	23.23	38.07	28.68	26.29	35.93	43.58	192.5	780.1	1373	514.4	104.6	50.20
MAX	28	85	36	31	133	68	473	1760	1820	949	169	69
MIN	21	21	25	22	19	31	69	275	856	187	72	36
AC-FT	1430	2270	1760	1620	2000	2680	11460	47970	81680	31630	6430	2990
CFSM	0.16	0.26	0.20	0.18	0.25	0.30	1.32	5.34	9.40	3.52	0.72	0.34
IN.	0.18	0.29	0.23	0.21	0.26	0.34	1.47	6.16	10.49	4.06	0.83	0.38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MEAN	27.76	31.08	22.39	18.95	22.09	32.34	122.0	573.8	834.9	320.9	80.63	40.62
MAX	32.3	38.1	28.7	26.3	35.9	43.6	193	780	1373	514	105	50.2
(WY)	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	23.2	24.1	16.1	11.6	8.25	21.1	51.5	367	297	127	56.6	31.0
(WY)	2002	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 2001 - 2002

ANNUAL TOTAL	32484.0	97757	
ANNUAL MEAN	89.00	267.8	177.7
HIGHEST ANNUAL MEAN			268
LOWEST ANNUAL MEAN			87.6
HIGHEST DAILY MEAN	945	May 25	1820
LOWEST DAILY MEAN	7.2	Feb 20	19
ANNUAL SEVEN-DAY MINIMUM	7.4	Feb 16	19
ANNUAL RUNOFF (AC-FT)	64430	193900	128700
ANNUAL RUNOFF (CFSM)	0.61	1.83	1.22
ANNUAL RUNOFF (INCHES)	8.28	24.91	16.54
10 PERCENT EXCEEDS	249	1010	552
50 PERCENT EXCEEDS	30	51	37
90 PERCENT EXCEEDS	10	23	15

e Estimated

METHOW RIVER BASIN

12447382 EARLY WINTERS CREEK NEAR MAZAMA, WA

LOCATION.--Lat 48°35'55", long 120°26'31", in NE ¼ NE ¼ sec.26, T.10 N., R.19 E., Okanogan County, Hydrologic Unit 17020008, on left bank 80 ft downstream from Hwy 20 bridge crossing, 0.3 mi upstream from mouth, and 1.7 mi northwest of Mazama.

DRAINAGE AREA.--80.15 mi².

PERIOD OF RECORD.--October 2000 to current year. Miscellaneous discharge measurements 1975-89, 1990.

GAGE.--Water-stage recorder. Elevation of gage is 2,180 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair, except for estimated daily discharges, which are poor. No regulation. Several diversions upstream for irrigation.

AVERAGE DISCHARGE.--2 years (water years 2001-2002), 124 ft³/s, 89,520 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,420 ft³/s May 28, 2002, gage height, 14.66 ft; maximum gage height, 14.82 ft May 28, 2002, from outside high water mark; minimum daily discharge 9.0 ft³/s Feb. 20-22, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,420 ft³/s May 28, gage height, 14.66 ft; maximum gage height, 14.82 ft May 28, from outside high water mark; minimum discharge 15 ft³/s Oct. 5-10, Nov. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	22	e29	21	e23	64	50	365	940	461	99	36
2	17	21	30	21	e23	61	50	477	910	414	84	36
3	17	21	29	21	23	59	51	492	925	391	79	35
4	16	20	e27	20	22	57	53	453	971	393	74	33
5	16	21	e27	20	22	56	60	412	1150	345	71	31
6	16	20	e26	21	22	54	71	361	1000	326	69	30
7	15	18	27	23	22	54	83	315	861	359	65	29
8	16	21	26	32	22	53	90	280	715	548	56	27
9	15	19	e24	32	22	50	95	251	601	453	53	26
10	16	19	e24	28	21	49	98	234	586	433	58	29
11	18	19	e24	27	e21	50	105	230	718	470	59	31
12	17	19	e23	28	e21	49	119	251	883	454	55	30
13	19	22	e24	27	e21	46	170	324	1060	436	53	29
14	18	40	e24	27	e21	44	333	415	1290	451	55	28
15	18	49	e23	e26	e21	43	335	427	1390	392	56	28
16	17	47	e24	e25	e21	42	293	422	1260	343	52	28
17	17	41	e23	e25	21	40	259	463	842	332	48	28
18	16	39	e24	e24	21	43	232	511	709	311	45	27
19	17	41	e22	e24	21	39	215	522	629	293	42	27
20	17	42	e22	e24	21	41	206	648	624	257	41	27
21	17	41	e22	e24	24	38	208	773	713	220	41	26
22	19	41	e21	e23	114	36	212	722	776	202	40	26
23	23	38	e21	e22	112	36	208	625	763	200	39	25
24	21	35	e21	e22	e82	36	201	587	765	209	40	24
25	20	35	e21	e25	e78	36	196	586	734	206	45	24
26	19	33	e20	e24	e76	37	192	608	774	204	48	23
27	20	31	e22	e23	e72	38	187	688	798	184	44	23
28	20	31	e22	e22	68	39	186	946	704	155	42	22
29	18	e28	e21	e21	---	41	197	1440	691	142	41	22
30	19	e29	21	e24	---	43	245	1420	588	129	40	22
31	25	---	21	e24	---	46	---	1100	---	117	38	---
TOTAL	557	903	735	750	1058	1420	5000	17348	25370	9830	1672	832
MEAN	17.97	30.10	23.71	24.19	37.79	45.81	166.7	559.6	845.7	317.1	53.94	27.73
MAX	25	49	30	32	114	64	335	1440	1390	548	99	36
MIN	15	18	20	20	21	36	50	230	586	117	38	22
AC-FT	1100	1790	1460	1490	2100	2820	9920	34410	50320	19500	3320	1650
CFSM	0.22	0.38	0.30	0.30	0.47	0.57	2.08	6.98	10.5	3.95	0.67	0.35
IN.	0.26	0.42	0.34	0.35	0.49	0.66	2.32	8.05	11.77	4.56	0.78	0.39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MEAN	20.66	24.77	19.06	18.29	24.44	31.82	107.8	435.6	534.6	194.5	43.50	24.60
MAX	23.4	30.1	23.7	24.2	37.8	45.8	167	560	846	317	53.9	27.7
(WY)	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	18.0	19.4	14.4	12.4	11.1	17.8	49.0	312	224	71.8	33.1	21.5
(WY)	2002	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 2001 - 2002

ANNUAL TOTAL	25171.9	65475	
ANNUAL MEAN	68.96	179.4	123.6
HIGHEST ANNUAL MEAN			179
LOWEST ANNUAL MEAN			67.8
HIGHEST DAILY MEAN	831	May 24	1440
LOWEST DAILY MEAN	9.0	Feb 20	15
ANNUAL SEVEN-DAY MINIMUM	9.3	Feb 17	16
ANNUAL RUNOFF (AC-FT)	49930		129900
ANNUAL RUNOFF (CFSM)	0.86		2.24
ANNUAL RUNOFF (INCHES)	11.68		30.37
10 PERCENT EXCEEDS	179		614
50 PERCENT EXCEEDS	26		41
90 PERCENT EXCEEDS	12		20

e Estimated

METHOW RIVER BASIN

12447383 METHOW RIVER ABOVE GOAT CREEK NEAR MAZAMA, WA

LOCATION.--Lat 48°34'32", long 120°23'05", in NE ¼ SE ¼ sec.31, T.36 N., R.20 E., Okanogan County, Hydrologic Unit 17020008, on left bank, 0.6 mi upstream from Goat Creek, and 1.5 mi southeast of Mazama, and at mile 63.8.

DRAINAGE AREA.--373 mi².

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

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

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

AVERAGE DISCHARGE.--11 years (water years 1992-2002), 512 ft³/s, 370,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,440 ft³/s June 17, 1999, gage height, 20.56 ft; minimum discharge, no flow for all or part of many days during most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,500 ft³/s and minimum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	0330	3,170	17.63	June 16	--	--	(a) *20.26
May 30	0000	5,240	18.99	June 23	0130	4,370	18.83
June 6	0730	4,490	19.06	June 27	0030	5,090	18.91
June 16	0200	*6,230	20.04				

Minimum discharge, no flow many days Oct.-Feb.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	e25	e97	1100	3500	1660	353	71
2	0.00	0.00	0.00	0.00	0.00	e26	e93	1410	3380	1420	316	69
3	0.00	0.00	0.00	0.00	0.00	e26	e89	1440	3340	1290	292	65
4	0.00	0.00	0.00	0.00	0.00	e27	e105	1300	3470	1310	264	59
5	0.00	0.00	0.00	0.00	0.00	e27	169	1140	3870	1160	246	55
6	0.00	0.00	0.00	0.00	0.00	e26	221	1010	4040	1060	233	51
7	0.00	0.00	0.00	0.00	0.00	e25	286	921	3090	1120	215	47
8	0.00	0.00	0.00	0.00	0.00	e25	311	882	2390	1840	193	42
9	0.00	0.00	0.00	0.00	0.00	e28	323	763	1890	1590	181	37
10	0.00	0.00	0.00	0.00	0.00	e30	329	704	1770	1470	188	35
11	0.00	0.00	0.00	0.00	0.00	e33	355	677	2220	1640	191	34
12	0.00	0.00	0.00	0.00	0.00	e33	377	800	3050	1650	177	30
13	0.00	0.00	0.00	0.00	0.00	e33	528	1040	3810	1510	167	27
14	0.00	0.00	0.00	0.00	0.00	e32	953	1270	4750	1470	166	25
15	0.00	0.00	0.00	0.00	0.00	e32	920	1320	5350	1300	165	22
16	0.00	0.00	0.00	0.00	0.00	e32	812	1280	5310	1120	153	21
17	0.00	0.00	0.00	0.00	0.00	e31	769	1430	3930	1060	142	19
18	0.00	0.00	0.00	0.00	0.00	e31	678	1640	3290	994	128	18
19	0.00	0.00	0.00	0.00	0.00	e30	629	1650	2560	932	117	17
20	0.00	0.00	0.00	0.00	0.00	e30	594	2300	2360	845	108	15
21	0.00	0.00	0.00	0.00	0.00	e30	621	2970	2610	754	105	14
22	0.00	0.00	0.00	0.00	e10	e29	644	2530	3530	711	100	13
23	0.00	0.00	0.00	0.00	e20	e40	641	2100	4090	682	94	12
24	0.00	0.00	0.00	0.00	e25	e49	606	1890	3490	675	92	10
25	0.00	0.00	0.00	0.00	e23	e60	591	1930	3360	652	96	8.8
26	0.00	0.00	0.00	0.00	e23	e70	568	2130	4090	642	110	8.2
27	0.00	0.00	0.00	0.00	e24	e69	534	2540	3950	596	102	7.0
28	0.00	0.00	0.00	0.00	e25	e68	519	3250	3070	533	94	6.0
29	0.00	0.00	0.00	0.00	---	e68	540	4400	2730	494	88	4.9
30	0.00	0.00	0.00	0.00	---	e70	719	4580	2200	451	82	4.9
31	0.00	---	0.00	0.00	---	e83	---	4120	---	413	76	---
TOTAL	0.00	0.00	0.00	0.00	150.00	1218	14621	56517	100490	33044	5034	847.8
MEAN	0.000	0.000	0.000	0.000	5.357	39.29	487.4	1823	3350	1066	162.4	28.26
MAX	0.00	0.00	0.00	0.00	25	83	953	4580	5350	1840	353	71
MIN	0.00	0.00	0.00	0.00	0.00	25	89	677	1770	413	76	4.9
AC-FT	0.00	0.00	0.00	0.00	298	2420	29000	112100	199300	65540	9980	1680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	27.90	97.33	71.93	22.42	14.51	102.4	578.9	2028	2191	956.1	200.6	39.89
MAX	214	452	523	124	93.3	405	1080	3297	3907	2527	610	102
(WY)	1998	2000	1996	1996	1996	1992	1996	1998	1999	1999	1999	1999
MIN	0.000	0.000	0.000	0.000	0.000	0.000	10.0	937	642	191	29.0	0.65
(WY)	1995	1993	1993	1992	1993	1993	2001	2001	2001	2001	2001	1994

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1991 - 2002
ANNUAL TOTAL	55479.27	211921.80	
ANNUAL MEAN	152.0	580.6	511.7
HIGHEST ANNUAL MEAN			798
LOWEST ANNUAL MEAN			153
HIGHEST DAILY MEAN	2530	5350	8460
LOWEST DAILY MEAN	0.00	0.00	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	0.00	0.00
ANNUAL RUNOFF (AC-FT)	110000	420300	370700
10 PERCENT EXCEEDS	549	2160	1700
50 PERCENT EXCEEDS	0.00	30	62
90 PERCENT EXCEEDS	0.00	0.00	0.00

e Estimated

12447387 WOLF CREEK BELOW DIVERSION NEAR WINTHROP, WA

LOCATION.--Lat 48°29'00", long 120°18'24", in NE ¼ NW ¼ sec.2 T.34 N., R.20 E., Okanogan County, Hydrologic Unit 17020008, on left bank approximately 400 ft downstream from Wolf Creek diversion, 6.0 mi northwest of Winthrop, and at mi 4.2.

DRAINAGE AREA.--32.5 mi².

PERIOD OF RECORD.--Oct. 1, 2000 to current year. Miscellaneous discharge measurements made at location 250 ft upstream 1972-73 and 1976.

GAGE.--Water-stage recorder. Elevation of gage is 2,660 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges and those discharges above 100 ft³/s which are fair. No known regulation. Wolf Creek Reclamation District irrigation diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--2 years (water years 2001-2002), 26.4 ft³/s, 19,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 454 ft³/s May 29, 2002, gage height 8.15 ft; maximum gage height, 8.45 ft May 29, 2002, from outside high water mark; minimum discharge, .80 ft³/s Nov. 11, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 454 ft³/s May 29, gage height, 8.15 ft; maximum gage height, 8.45 ft from outside high-water mark; minimum discharge, 1.3 ft³/s Nov. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	4.6	7.0	5.1	5.5	e30	21	142	229	74	18	6.0
2	3.3	4.5	6.6	5.1	5.3	27	21	169	223	63	17	5.9
3	3.2	4.5	6.1	5.0	5.2	19	21	169	214	56	16	6.1
4	3.1	4.3	5.2	e4.8	5.1	14	24	139	226	55	15	5.9
5	3.1	4.8	6.0	5.0	5.1	16	28	112	263	49	14	5.8
6	3.1	4.2	6.8	5.1	5.2	16	31	95	236	45	14	6.1
7	3.2	3.0	6.6	6.6	4.9	16	32	81	179	45	14	6.5
8	3.4	4.9	6.5	11	4.9	15	30	70	140	69	12	5.9
9	3.3	4.1	5.7	9.1	4.6	14	30	61	113	60	11	5.0
10	3.5	4.3	e5.6	8.2	4.7	14	29	57	108	52	11	5.1
11	3.9	4.4	5.9	7.9	4.6	14	31	60	126	56	10	5.2
12	3.8	4.3	5.7	7.9	e4.2	13	36	75	161	57	10	5.1
13	4.2	5.3	5.9	7.8	e4.5	12	63	109	200	51	9.9	4.8
14	4.0	10	e5.9	e6.8	4.8	12	125	128	232	52	9.7	4.6
15	3.9	11	5.9	e5.6	4.8	11	99	125	242	44	9.6	4.5
16	3.8	10	6.3	e6.4	4.8	11	74	119	246	37	9.1	4.4
17	3.8	8.3	6.1	e6.2	4.8	11	60	133	180	35	8.7	4.5
18	3.7	6.3	6.0	e6.2	4.8	e10	51	143	147	32	8.4	4.5
19	3.8	8.4	5.8	e6.8	5.0	10	46	143	114	30	7.9	4.5
20	3.7	8.3	e5.6	e6.8	4.8	9.9	46	193	102	26	7.7	4.4
21	3.8	7.9	5.9	e7.4	5.3	9.6	51	232	112	22	7.5	4.3
22	4.4	8.0	5.4	e5.6	90	9.6	60	196	134	19	7.3	4.3
23	5.2	6.9	5.3	e5.6	185	9.9	61	167	153	17	6.9	4.3
24	4.2	6.3	5.2	e6.0	64	11	57	157	131	16	7.0	4.3
25	4.5	6.4	5.1	6.7	e30	12	55	169	122	16	8.5	4.3
26	4.3	e4.8	e4.8	6.1	e32	15	54	179	133	15	8.3	4.3
27	4.5	e4.5	e5.0	e5.6	e34	16	51	197	147	14	7.4	4.3
28	4.2	e7.0	5.5	e5.2	e36	16	50	301	130	11	7.0	4.3
29	4.0	e6.4	5.3	e4.7	---	16	59	338	109	13	6.7	4.2
30	4.4	e6.0	5.1	e5.0	---	17	88	313	94	18	6.4	4.0
31	5.5	---	5.1	e6.0	---	19	---	267	---	20	6.6	---
TOTAL	120.3	183.7	178.9	197.3	573.9	446.0	1484	4839	4946	1169	312.6	147.4
MEAN	3.881	6.123	5.771	6.365	20.50	14.39	49.47	156.1	164.9	37.71	10.08	4.913
MAX	5.5	11	7.0	11	185	30	125	338	263	74	18	6.5
MIN	3.1	3.0	4.8	4.7	4.2	9.6	21	57	94	11	6.4	4.0
AC-FT	239	364	355	391	1140	885	2940	9600	9810	2320	620	292
CFSM	0.12	0.19	0.18	0.20	0.63	0.44	1.52	4.80	5.07	1.16	0.31	0.15
IN.	0.14	0.21	0.20	0.23	0.66	0.51	1.70	5.54	5.66	1.34	0.36	0.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
MEAN	4.521	5.070	4.629	4.895	11.96	10.80	31.25	110.7	97.10	24.01	7.619	4.053
MAX	5.16	6.12	5.77	6.36	20.5	14.4	49.5	156	165	37.7	10.1	4.91
(WY)	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	3.88	4.02	3.49	3.43	3.41	7.22	13.0	65.4	29.3	10.3	5.15	3.19
(WY)	2002	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 2001 - 2002

ANNUAL TOTAL	4780.5	14598.1		
ANNUAL MEAN	13.10	39.99	26.42	
HIGHEST ANNUAL MEAN			40.0	2002
LOWEST ANNUAL MEAN			12.8	2001
HIGHEST DAILY MEAN	152	May 24	338	May 29 2002
LOWEST DAILY MEAN	2.7	Sep 18	3.0	Nov 7
ANNUAL SEVEN-DAY MINIMUM	2.8	Sep 18	3.2	Oct 2
ANNUAL RUNOFF (AC-FT)	9480	28960	19140	
ANNUAL RUNOFF (CFSM)	0.40	1.23	0.81	
ANNUAL RUNOFF (INCHES)	5.47	16.71	11.04	
10 PERCENT EXCEEDS	34	136	75	
50 PERCENT EXCEEDS	5.9	8.5	6.4	
90 PERCENT EXCEEDS	3.3	4.3	3.4	

e Estimated

METHOW RIVER BASIN

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

LOCATION.--Lat 48°49'23", long 120°08'41", in NE 1/4 sec.1, T.38 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, Okanogan National Forest, on left bank 50 ft upstream from Blizzard Creek, 3.5 mi upstream from mouth, and 20 mi northeast of Mazama.

DRAINAGE AREA.--22.1 mi².

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

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

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

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

AVERAGE DISCHARGE.--34 years (water years 1969-2002), 31.3 ft³/s, 19.26 in/yr, 22,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft³/s June 10, 1972, gage height, 4.00 ft, from rating curve extended above 440 ft³/s; minimum discharge, 1.2 ft³/s Nov. 4, Dec. 30, 1968, Nov. 20, 1970, Apr. 7, 1975, Nov. 7, 2001.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	--	(a)*403	(a)*2.99	June 14	1930	360	2.88

Minimum discharge, 1.2 ft³/s Nov. 7.
(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	3.4	4.1	3.5	3.3	3.6	3.6	27	e230	81	e14	5.9
2	3.1	3.4	4.2	3.5	3.3	3.6	3.5	39	e200	73	e13	5.7
3	2.9	3.5	4.1	3.5	3.3	3.6	3.6	42	e190	66	e12	5.8
4	2.9	3.3	4.1	3.5	3.2	3.6	3.7	38	e205	60	e12	5.6
5	2.9	3.4	4.2	3.4	3.3	3.6	4.0	36	e230	54	e11	5.5
6	2.9	2.9	4.1	3.5	3.3	3.5	4.5	32	e215	49	e11	5.8
7	2.9	2.3	4.1	3.8	3.4	3.5	4.6	30	183	45	e13	6.5
8	2.9	3.4	4.0	4.1	3.3	3.3	4.5	27	153	61	e12	7.0
9	2.9	2.8	4.0	3.6	3.3	3.3	4.6	25	134	48	11	6.1
10	2.8	2.9	3.9	3.5	3.3	3.3	4.7	24	146	43	11	5.7
11	2.9	3.0	3.9	3.5	3.3	3.4	5.0	25	174	40	10	5.5
12	2.9	3.0	3.7	3.5	3.2	3.3	5.7	32	207	e35	10	5.2
13	3.2	4.4	3.7	3.6	3.3	3.3	7.3	e44	239	e33	9.7	5.0
14	3.2	6.7	3.8	3.6	3.3	3.3	13	e50	269	e30	9.3	4.8
15	2.8	10	3.7	3.6	3.2	3.3	11	e58	293	e28	8.9	4.7
16	3.1	13	3.8	3.6	3.2	3.3	e10	e55	256	e26	8.6	4.5
17	3.0	7.4	3.8	3.5	3.2	3.3	e9.8	e62	210	e24	8.4	4.6
18	3.0	4.8	3.7	3.5	3.2	3.2	e9.4	e73	181	e23	8.5	4.5
19	3.0	6.5	3.7	3.5	3.2	3.2	e9.2	e76	150	e22	8.1	4.4
20	2.9	5.9	3.7	3.5	3.2	3.2	e10	e138	141	e21	8.1	4.4
21	3.0	5.7	3.7	3.5	3.2	3.2	e12	e173	145	e20	8.0	4.2
22	3.1	5.2	3.6	3.3	3.8	3.2	e14	e150	152	e19	7.7	4.2
23	3.2	4.8	3.6	3.3	4.4	3.4	e13	e130	141	e18	7.4	4.1
24	3.0	3.9	3.5	3.4	3.9	3.5	12	e120	133	e16	7.1	3.9
25	3.2	4.8	3.5	3.5	3.6	3.4	12	e135	125	e19	7.3	3.8
26	3.1	4.2	3.4	3.5	3.6	3.4	12	e160	121	e18	7.5	3.8
27	3.3	4.1	3.4	3.4	3.6	3.4	12	e200	115	e17	7.0	4.0
28	2.8	3.4	3.4	3.3	3.6	3.4	12	e250	109	e17	6.6	3.8
29	3.2	4.2	3.4	3.3	---	3.3	14	e300	119	e16	6.4	3.7
30	3.5	4.1	3.4	3.3	---	3.5	19	e320	93	e16	6.2	3.8
31	3.9	---	3.5	3.3	---	3.6	---	e260	---	e15	6.0	---
TOTAL	94.7	140.4	116.7	108.4	95.0	105.0	263.7	3131	5259	1053	286.8	146.5
MEAN	3.055	4.680	3.765	3.497	3.393	3.387	8.790	101.0	175.3	33.97	9.252	4.883
MAX	3.9	13	4.2	4.1	4.4	3.6	19	320	293	81	14	7.0
MIN	2.8	2.3	3.4	3.3	3.2	3.2	3.5	24	93	15	6.0	3.7
AC-FT	188	278	231	215	188	208	523	6210	10430	2090	569	291
CFSM	0.14	0.21	0.17	0.16	0.15	0.15	0.40	4.57	7.93	1.54	0.42	0.22
IN.	0.16	0.24	0.20	0.18	0.16	0.18	0.44	5.27	8.85	1.77	0.48	0.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

	6.605	6.474	4.973	4.097	3.617	3.812	14.98	110.2	152.2	46.12	13.76	8.374
MEAN	6.605	6.474	4.973	4.097	3.617	3.812	14.98	110.2	152.2	46.12	13.76	8.374
MAX	19.1	22.1	13.4	10.3	6.53	6.85	49.9	205	419	125	34.7	40.8
(WY)	1979	2000	2000	1984	1982	1992	1994	1998	1974	1999	1976	1978
MIN	2.58	2.72	2.17	1.69	1.71	1.81	2.95	36.4	34.9	13.6	5.36	3.28
(WY)	1971	1971	1971	1971	2001	2001	1975	1984	2001	2001	1973	1970

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1968 - 2002
ANNUAL TOTAL	3945.7	10800.2	
ANNUAL MEAN	10.81	29.59	31.33
HIGHEST ANNUAL MEAN			59.1
LOWEST ANNUAL MEAN			10.7
HIGHEST DAILY MEAN	150	320	874
LOWEST DAILY MEAN	1.5	2.3	1.2
ANNUAL SEVEN-DAY MINIMUM	1.6	2.9	1.4
ANNUAL RUNOFF (AC-FT)	7830	21420	22700
ANNUAL RUNOFF (CFSM)	0.49	1.34	1.42
ANNUAL RUNOFF (INCHES)	6.64	18.18	19.26
10 PERCENT EXCEEDS	32	123	98
50 PERCENT EXCEEDS	3.6	4.2	6.4
90 PERCENT EXCEEDS	1.8	3.2	2.9

e Estimated

METHOW RIVER BASIN

12447600 CHEWUCH RIVER ABOVE CUB CREEK NEAR WINTHROP, WA

LOCATION.--Lat 48°33'53", long 120°10'35", in SE ¼ NW ¼ sec.2 T.35 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on left bank at Frank MacPherson bridge at junction of East and West Chewack Rd., 0.9 mi below Boulder Creek, at mile 7.6 and 7.2 mi northeast of Winthrop.

DRAINAGE AREA.--466 mi².

PERIOD OF RECORD.--October 2000 to current year. Miscellaneous discharge measurements 1978-84.

REVISED RECORD.--Miscellaneous discharge measurements 1978-84 incorrectly published as at station 12447500 Chewack River below Boulder Creek near Winthrop, WA.

GAGE.--Water-stage recorder. Elevation of gage is 1,980 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good, except for estimated daily discharges, which are fair. Several diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--2 years (water years 2001-2002) 187 ft³/s, 135,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 2,930 ft³/s May 30, 2002, gage height 12.86 ft; maximum gage height 13.17 ft, May 30, 2002, from outside high water mark; minimum discharge, 20 ft³/s Sept. 18, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,930 ft³/s May 30, gage height 12.86 ft; maximum gage height 13.17 ft, May 30, from outside high-water mark; minimum discharge, 21 ft³/s Feb. 12, but may have been less during periods of ice effect or missing record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	54	e58	49	e49	49	70	411	2100	651	109	48
2	46	51	58	50	e49	49	68	527	1980	571	102	46
3	45	49	57	48	e48	48	68	570	1950	512	99	45
4	43	49	54	47	47	48	72	536	2010	466	95	44
5	42	48	e49	48	45	48	78	494	2160	429	92	44
6	42	47	e52	49	45	47	88	444	2140	394	91	45
7	42	46	e49	51	45	47	97	434	1750	367	97	45
8	42	44	e52	57	45	46	100	383	1520	464	95	50
9	42	45	e46	56	45	e43	102	355	1390	453	87	52
10	43	45	e48	53	44	48	106	335	1380	376	82	54
11	46	45	e49	52	44	50	114	330	1420	345	78	53
12	45	45	e50	52	e41	49	126	360	1590	323	74	50
13	45	48	e52	50	e43	47	150	467	1770	302	71	47
14	45	64	53	e50	e48	47	233	611	1950	290	67	45
15	46	73	e48	e44	e47	46	257	631	2020	270	64	43
16	45	93	e50	e48	e44	48	246	599	1980	252	66	42
17	45	91	e54	e47	44	46	228	678	1690	237	60	42
18	44	72	e50	e47	43	45	210	791	1490	222	59	42
19	45	68	e48	e48	45	47	208	818	1300	208	59	42
20	45	73	e45	e50	45	47	211	1450	1160	196	61	41
21	44	74	e48	e48	46	46	219	1830	1100	186	64	41
22	46	74	e52	e45	48	46	240	1570	1100	174	62	41
23	49	68	e52	e45	54	48	242	1350	1080	163	59	41
24	47	62	e51	e47	50	51	234	1250	1010	156	57	40
25	49	61	e49	e50	e39	55	235	1330	947	146	58	40
26	48	59	e47	e49	e44	57	235	1470	900	156	74	39
27	48	56	e46	e46	e56	57	233	1630	868	147	65	38
28	47	58	e53	e44	e56	56	229	2130	831	136	60	38
29	46	57	e53	e43	---	58	249	2520	876	129	57	38
30	49	e55	50	e46	---	59	303	2570	750	122	53	37
31	54	---	50	e50	---	65	---	2380	---	116	51	---
TOTAL	1412	1774	1573	1509	1299	1543	5251	31254	44212	8959	2268	1313
MEAN	45.55	59.13	50.74	48.68	46.39	49.77	175.0	1008	1474	289.0	73.16	43.77
MAX	54	93	58	57	56	65	303	2570	2160	651	109	54
MIN	42	44	45	43	39	43	68	330	750	116	51	37
AC-FT	2800	3520	3120	2990	2580	3060	10420	61990	87690	17770	4500	2600
CFSM	0.10	0.13	0.11	0.10	0.10	0.11	0.38	2.16	3.16	0.62	0.16	0.09
IN.	0.11	0.14	0.13	0.12	0.10	0.12	0.42	2.49	3.53	0.72	0.18	0.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
MEAN	53.24	58.03	49.39	47.48	45.79	48.13	112.3	668.0	868.2	202.0	58.19	35.08
MAX	60.9	59.1	50.7	48.7	46.4	49.8	175	1008	1474	289	73.2	43.8
(WY)	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	45.5	56.9	48.0	46.3	45.2	46.5	49.6	328	263	115	43.2	26.4
(WY)	2002	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 2001 - 2002

ANNUAL TOTAL	34129	102367		
ANNUAL MEAN	93.50	280.5		
HIGHEST ANNUAL MEAN			187.4	
LOWEST ANNUAL MEAN			280	2002
HIGHEST DAILY MEAN	863	May 25	2570	May 30
LOWEST DAILY MEAN	21	Sep 18	37	Sep 30
ANNUAL SEVEN-DAY MINIMUM	22	Sep 15	39	Sep 24
ANNUAL RUNOFF (AC-FT)	67690	203000	135800	
ANNUAL RUNOFF (CFSM)	0.20	0.60	0.40	
ANNUAL RUNOFF (INCHES)	2.72	8.17	5.46	
10 PERCENT EXCEEDS	235	972	394	
50 PERCENT EXCEEDS	48	54	52	
90 PERCENT EXCEEDS	31	44	41	

e Estimated

METHOW RIVER BASIN

12448000 CHEWUCH RIVER AT WINTHROP, WA

LOCATION.--Lat 48°28'38", long 120°11'07", SW ¼ NW ¼ sec.2, T.34 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on right bank, 80 ft downstream from State Road 20 bridge crossing, at northwest end of Winthrop, WA, and at mile 0.18.

DRAINAGE AREA.--525 mi².

WATER-DISCHARGE RECORDS

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

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

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

AVERAGE DISCHARGE.--11 years (water years 1992-2002), 392 ft³/s, 283,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,480 ft³/s June 16, 1999, gage height, 8.92 ft; maximum gage height, 9.79 ft June 16, 1999, from outside high-water mark; minimum discharge, 20 ft³/s Sept. 18 and 19, 2001, gage height, 2.24 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	(ft ³ /s)	(ft)	Date	Time	(ft ³ /s)	(ft)
May 21	0730	2,110	6.01	June 6	0530	2,690	6.51
May 30	0500	*3,010	6.77	June 16	0430	2,680	6.50
May 30	0500	--	(a) *7.02				

Minimum discharge, 30 ft³/s Feb. 12, but may have been less during periods of ice effect, gage height 2.48 ft.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	63	e67	55	e51	53	79	448	2410	748	112	51
2	58	59	66	57	51	54	77	575	2280	660	106	50
3	54	56	64	54	50	52	78	626	2230	583	103	48
4	51	55	62	52	48	52	81	597	2320	532	100	47
5	50	55	e55	53	48	52	87	552	2470	493	99	47
6	49	54	e59	55	47	51	95	503	2470	450	97	47
7	49	52	e56	58	48	51	105	498	2040	418	101	48
8	48	49	e58	62	48	50	111	444	1760	510	100	51
9	48	50	e53	64	47	48	115	403	1610	536	90	56
10	49	50	e54	60	46	53	118	380	1590	462	85	57
11	53	50	e55	58	46	54	128	372	1620	413	81	57
12	52	50	e55	58	e44	54	141	397	1810	388	76	54
13	51	52	56	56	e46	51	168	496	2040	358	72	51
14	51	68	60	e55	e50	50	265	635	2280	339	69	49
15	51	79	e53	e48	e49	50	304	671	2420	311	66	47
16	51	95	e57	e52	e46	52	281	637	2390	284	67	46
17	51	101	e60	e50	e48	48	261	706	2000	267	61	46
18	51	85	e56	e50	46	48	244	828	1770	249	60	46
19	50	76	e54	e51	47	50	235	853	1510	229	60	45
20	50	83	e50	e54	47	50	239	1480	1340	217	62	45
21	49	84	e54	e53	49	50	249	2010	1270	205	64	45
22	51	84	e57	e49	51	49	271	1720	1260	191	63	45
23	57	79	e54	e49	58	50	279	1500	1250	177	60	44
24	57	72	e56	e52	e54	55	267	1380	1170	166	57	44
25	58	69	e54	e55	e41	60	266	1460	1090	155	58	42
26	57	67	e53	e53	e46	62	264	1600	1020	160	74	43
27	56	63	e51	e50	59	63	260	1760	1000	155	68	42
28	55	68	e60	e48	59	63	255	2260	956	142	63	42
29	53	65	60	e47	---	65	273	2690	996	133	59	41
30	55	e62	57	e50	---	67	336	2760	860	125	56	41
31	61	---	56	e53	---	72	---	2630	---	118	54	---
TOTAL	1632	1995	1762	1661	1370	1679	5932	33871	51232	10174	2343	1417
MEAN	52.65	66.50	56.84	53.58	48.93	54.16	197.7	1093	1708	328.2	75.58	47.23
MAX	61	101	67	64	59	72	336	2760	2470	748	112	57
MIN	48	49	50	47	41	48	77	372	860	118	54	41
AC-FT	3240	3960	3490	3290	2720	3330	11770	67180	101600	20180	4650	2810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
MEAN	92.36	98.33	82.08	70.36	72.17	103.9	387.9	1454	1568	530.3	157.0	72.98
MAX	176	210	148	111	102	169	761	2671	3348	1414	349	130
(WY)	1998	2000	2000	2000	2000	1996	1996	1998	1999	1999	1999	1999
MIN	52.6	63.4	44.1	40.2	48.9	48.5	59.9	348	278	115	40.2	26.2
(WY)	2002	1995	1993	1993	2002	1993	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1992 - 2002
ANNUAL TOTAL	36600	115068	
ANNUAL MEAN	100.3	315.3	391.7
HIGHEST ANNUAL MEAN			630
LOWEST ANNUAL MEAN			101
HIGHEST DAILY MEAN	930	2760	6010
LOWEST DAILY MEAN	20	41	20
ANNUAL SEVEN-DAY MINIMUM	22	42	22
ANNUAL RUNOFF (AC-FT)	72600	228200	283700
10 PERCENT EXCEEDS	247	1120	1080
50 PERCENT EXCEEDS	55	60	103
90 PERCENT EXCEEDS	30	48	50

e Estimated

METHOW RIVER BASIN

12448000 CHEWUCH RIVER AT WINTHROP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 16, 2002 to September 30, 2002 (discontinued).

INSTRUMENTATION.--Electronic thermister/data logger with fifteen-minute punch interval.

REMARKS.--Records excellent.

EXTREMES FOR PERIOD.--

WATER TEMPERATURE: Maximum 20.8°C July 24, 25; minimum, 3.4°C April 24.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	11.3	6.7	9.2
2	---	---	---	---	---	---	---	---	---	9.7	6.5	8.1
3	---	---	---	---	---	---	---	---	---	8.2	4.7	6.6
4	---	---	---	---	---	---	---	---	---	7.5	4.0	5.9
5	---	---	---	---	---	---	---	---	---	8.5	4.7	6.5
6	---	---	---	---	---	---	---	---	---	7.5	3.6	5.5
7	---	---	---	---	---	---	---	---	---	7.3	3.7	5.3
8	---	---	---	---	---	---	---	---	---	7.5	3.6	5.7
9	---	---	---	---	---	---	---	---	---	8.2	4.2	6.3
10	---	---	---	---	---	---	---	---	---	10.4	4.8	7.5
11	---	---	---	---	---	---	---	---	---	11.5	5.8	8.6
12	---	---	---	---	---	---	---	---	---	11.6	7.2	9.4
13	---	---	---	---	---	---	---	---	---	10.2	7.6	8.9
14	---	---	---	---	---	---	---	---	---	10.2	6.4	8.3
15	---	---	---	---	---	---	---	---	---	9.5	5.3	7.5
16	---	---	---	---	---	---	---	---	---	10.6	5.4	8.0
17	---	---	---	---	---	---	8.7	4.8	6.7	11.3	7.5	9.4
18	---	---	---	---	---	---	8.5	4.2	6.3	9.7	6.8	7.9
19	---	---	---	---	---	---	10.2	4.7	7.2	9.6	6.5	7.9
20	---	---	---	---	---	---	9.9	6.1	7.9	9.1	6.7	7.8
21	---	---	---	---	---	---	11.2	6.2	8.6	6.8	5.6	6.2
22	---	---	---	---	---	---	9.9	5.9	7.8	7.0	5.4	6.1
23	---	---	---	---	---	---	8.8	5.4	7.0	9.2	5.6	7.0
24	---	---	---	---	---	---	8.4	3.4	6.0	9.8	5.0	7.3
25	---	---	---	---	---	---	10.1	5.9	7.8	8.8	6.8	7.7
26	---	---	---	---	---	---	9.8	5.9	7.5	8.8	6.1	7.5
27	---	---	---	---	---	---	9.5	6.4	7.6	10.4	6.2	8.2
28	---	---	---	---	---	---	10.9	5.3	7.9	9.6	7.2	8.3
29	---	---	---	---	---	---	11.6	6.2	8.9	9.2	6.4	7.7
30	---	---	---	---	---	---	12.6	7.8	10.1	9.3	5.6	7.3
31	---	---	---	---	---	---	---	---	---	9.2	5.9	7.6
MONTH	---	---	---	---	---	---	---	---	---	11.6	3.6	7.5

METHOW RIVER BASIN

12448000 CHEWUCH RIVER AT WINTHROP, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.6	6.2	7.8	13.8	9.2	11.4	17.9	11.8	14.9	17.7	14.7	16.4
2	8.5	6.2	7.4	13.6	9.0	11.4	17.4	12.1	14.8	16.5	12.7	14.8
3	9.6	6.1	7.8	15.4	10.6	12.9	15.2	11.2	13.5	16.5	12.9	14.6
4	10.1	6.7	8.3	13.3	10.4	12.0	15.7	11.5	13.6	15.4	11.0	13.3
5	10.6	7.2	8.7	13.6	8.7	11.2	16.0	10.6	13.3	14.1	10.4	12.5
6	8.8	5.9	7.4	13.5	9.8	11.7	14.4	10.7	12.7	14.4	9.5	12.1
7	8.5	4.8	6.4	14.7	10.6	12.6	16.9	10.1	13.3	13.8	10.2	12.2
8	6.2	4.2	5.4	14.9	12.2	13.4	17.9	11.3	14.6	13.8	9.3	11.7
9	9.5	5.6	7.3	15.8	10.4	13.1	19.4	12.9	16.1	15.4	10.2	12.8
10	10.2	7.0	8.5	17.4	11.8	14.6	19.4	13.8	16.6	16.1	11.0	13.7
11	11.6	7.3	9.3	19.0	13.5	16.2	18.9	13.3	16.1	16.6	11.5	14.2
12	10.9	7.6	9.3	19.0	13.9	16.6	19.4	12.9	16.3	16.8	11.8	14.4
13	11.9	7.5	9.6	17.0	14.3	15.6	20.2	13.9	17.2	16.5	12.1	14.4
14	12.2	8.1	10.0	19.4	14.3	16.6	20.2	14.4	17.5	15.5	11.3	13.7
15	12.7	8.4	10.4	18.9	13.6	16.3	19.8	13.9	17.0	15.4	12.2	13.9
16	10.6	8.2	9.4	19.2	13.9	16.6	18.4	13.3	16.1	14.7	11.8	13.3
17	10.6	7.8	9.2	19.7	14.6	17.0	16.8	11.9	14.8	14.7	11.8	13.3
18	9.6	8.1	8.8	19.8	14.7	17.3	18.1	12.1	15.2	14.6	10.4	12.6
19	11.8	7.0	9.1	19.7	14.6	17.0	17.4	12.4	15.1	14.7	10.4	12.5
20	12.7	7.8	10.1	19.4	13.8	16.5	18.1	12.4	15.2	12.7	9.5	11.3
21	13.6	8.5	11.0	19.7	14.3	16.9	17.7	12.7	15.3	12.2	8.2	10.4
22	14.1	9.6	11.9	20.3	14.3	17.2	18.1	12.2	15.2	12.6	8.1	10.4
23	12.9	9.9	11.4	19.7	14.7	17.2	19.5	13.8	16.7	13.0	8.7	10.9
24	13.2	9.5	11.4	20.8	15.2	17.9	19.2	13.6	16.7	13.3	9.6	11.5
25	14.7	9.8	12.3	20.8	15.5	18.1	17.7	14.7	16.1	12.7	9.3	11.1
26	16.1	10.9	13.4	19.5	15.0	17.2	16.8	12.7	15.0	11.3	9.0	9.8
27	14.8	12.2	13.4	19.4	13.9	16.6	19.2	13.2	16.1	12.9	8.4	10.4
28	13.3	11.6	12.1	19.5	14.3	16.5	19.5	14.1	17.0	11.9	8.2	10.1
29	14.7	10.6	12.5	18.5	14.4	16.3	19.2	14.3	16.9	11.5	9.3	10.4
30	13.3	10.1	11.5	19.0	13.8	16.2	19.0	14.7	17.0	10.6	8.2	9.4
31	---	---	---	18.1	12.2	15.1	18.9	14.3	16.8	---	---	---
MONTH	16.1	4.2	9.7	20.8	8.7	15.3	20.2	10.1	15.6	17.7	8.1	12.4

METHOW RIVER BASIN

12448500 METHOW RIVER AT WINTHROP, WA

LOCATION.--Lat 48°28'25", long 120°10'34", in NE ¼ SW ¼ sec.2, T.34 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on left bank at Winthrop, 0.3 mi downstream from Chewuch River, and at mile 49.8.

DRAINAGE AREA.--1,007 mi².

WATER DISCHARGE RECORDS

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

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

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

AVERAGE DISCHARGE.--12 years (water years 1991-2002), 1,197 ft³/s, 867,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,400 ft³/s May 31, 1972, gage height, 20.90 ft, from outside high-water mark; minimum discharge, 115 ft³/s Nov. 28, 2000, gage height, 9.44 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	1200	5,890	14.66	June 16	0430	--	(a) *16.56
May 30	0600	9,010	16.07	June 23	0545	5,550	14.48
June 16	0430	*9,190	16.15				

Minimum discharge, 149 ft³/s Jan. 29, but may have been less during periods of ice effect, gage height 9.61 ft.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	193	199	210	188	189	244	471	2020	7040	3060	698	260
2	195	194	205	192	189	247	477	2550	6680	2640	646	257
3	193	191	204	187	189	247	466	2690	6560	2390	610	253
4	190	191	196	184	186	250	476	2470	6840	2320	579	248
5	190	189	189	186	186	254	525	2230	7390	2120	546	244
6	191	188	198	191	187	250	592	1990	7510	1970	528	242
7	191	186	192	196	188	251	666	1820	5980	1970	518	240
8	190	183	196	205	187	250	696	1640	4800	2700	490	238
9	189	184	186	206	184	246	707	1510	4040	2610	455	235
10	192	181	189	198	184	256	707	1380	3820	2320	445	230
11	196	181	191	196	183	263	749	1360	4290	2440	442	228
12	193	182	191	197	176	264	831	1460	5390	2480	427	217
13	191	185	192	193	179	257	1040	1840	6490	2250	408	208
14	191	215	195	192	187	255	1770	2360	7750	2210	399	203
15	192	220	181	e170	182	257	1840	2500	8290	2030	395	197
16	190	235	198	e160	182	262	1590	2420	8400	1780	383	193
17	188	238	206	e170	186	256	1400	2640	6790	1680	367	189
18	188	218	188	180	182	254	1250	2970	5620	1580	353	188
19	186	214	180	193	185	259	1160	2980	4600	1490	338	191
20	185	224	e170	195	185	257	1140	4120	4170	1370	326	190
21	186	226	e175	193	191	253	1190	5640	4310	1240	324	190
22	189	231	e185	173	195	252	1280	4950	4820	1160	317	189
23	195	225	194	173	243	255	1290	4140	5200	1100	304	189
24	193	213	194	194	242	268	1230	3760	4830	1070	290	e192
25	196	210	e185	201	210	291	1200	3820	4490	1040	294	e191
26	193	206	e180	191	224	304	1170	4130	4710	1030	330	e191
27	191	200	e170	e180	238	314	1130	4680	5150	981	315	e191
28	191	212	195	e170	252	321	1100	6340	4590	896	298	e191
29	187	205	192	e160	---	344	1170	8140	4220	839	288	e190
30	191	198	188	189	---	361	1450	8430	3720	799	277	e188
31	199	---	188	193	---	419	---	7880	---	755	271	---
TOTAL	5925	6124	5903	5796	5491	8461	30763	106860	168490	54320	12661	6353
MEAN	191	204	190	187	196	273	1025	3447	5616	1752	408	212
MAX	199	238	210	206	252	419	1840	8430	8400	3060	698	260
MIN	185	181	170	160	176	244	466	1360	3720	755	271	188
AC-FT	11750	12150	11710	11500	10890	16780	61020	212000	334200	107700	25110	12600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2002, BY WATER YEAR (WY)

	280	409	334	255	251	423	1375	4242	4568	1661	541	275
MEAN	280	409	334	255	251	423	1375	4242	4568	1661	541	275
MAX	575	915	957	459	452	878	2475	7125	10110	3832	1208	418
(WY)	1998	1991	1996	1996	1996	1992	1996	1998	1972	1999	1999	1999
MIN	181	188	189	181	173	177	194	1629	1257	501	204	150
(WY)	1995	1995	1995	1995	1912	1912	2001	2001	2001	2001	2001	1994

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1912 - 2002
ANNUAL TOTAL	154851	417147	
ANNUAL MEAN	424	1143	1197
HIGHEST ANNUAL MEAN			1729
LOWEST ANNUAL MEAN			430
HIGHEST DAILY MEAN	3950	May 25	8430
LOWEST DAILY MEAN	138	Sep 18	160
ANNUAL SEVEN-DAY MINIMUM	142	Sep 13	180
ANNUAL RUNOFF (AC-FT)	307100	827400	867000
10 PERCENT EXCEEDS	1100	4120	3320
50 PERCENT EXCEEDS	191	250	354
90 PERCENT EXCEEDS	167	186	190

e Estimated

METHOW RIVER BASIN

12448500 METHOW RIVER AT WINTHROP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 18, 2002 to September 30, 2002 (discontinued).

INSTRUMENTATION.--Electronic thermister/data logger with fifteen-minute punch interval.

REMARKS.--Records good, except mid-July to Sept., which are fair.

EXTREMES FOR PERIOD.--

WATER TEMPERATURE: Maximum 18.6°C Aug. 14; minimum, 3.6°C April 24 and May 6.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	---	---	---	10.8	6.0	8.4
2	---	---	---	---	---	---	---	---	---	9.0	6.1	7.6
3	---	---	---	---	---	---	---	---	---	8.1	4.6	6.4
4	---	---	---	---	---	---	---	---	---	7.5	4.1	5.8
5	---	---	---	---	---	---	---	---	---	8.1	4.7	6.4
6	---	---	---	---	---	---	---	---	---	7.4	3.6	5.4
7	---	---	---	---	---	---	---	---	---	7.8	3.9	5.6
8	---	---	---	---	---	---	---	---	---	7.0	3.8	5.6
9	---	---	---	---	---	---	---	---	---	8.0	4.2	6.2
10	---	---	---	---	---	---	---	---	---	10.3	4.9	7.5
11	---	---	---	---	---	---	---	---	---	11.4	5.6	8.4
12	---	---	---	---	---	---	---	---	---	11.2	6.6	8.9
13	---	---	---	---	---	---	---	---	---	9.7	6.9	8.3
14	---	---	---	---	---	---	---	---	---	10.1	6.0	8.0
15	---	---	---	---	---	---	---	---	---	9.2	5.0	7.2
16	---	---	---	---	---	---	---	---	---	10.3	5.3	7.8
17	---	---	---	---	---	---	---	---	---	10.9	6.9	8.9
18	---	---	---	---	---	---	8.9	4.2	6.4	8.9	6.3	7.5
19	---	---	---	---	---	---	9.7	4.6	6.9	9.0	6.3	7.5
20	---	---	---	---	---	---	9.5	5.5	7.4	8.4	6.6	7.5
21	---	---	---	---	---	---	10.8	6.0	8.1	6.9	5.5	6.3
22	---	---	---	---	---	---	9.8	5.5	7.3	7.0	5.3	6.2
23	---	---	---	---	---	---	8.4	4.9	6.6	8.9	5.5	6.9
24	---	---	---	---	---	---	8.4	3.6	6.0	9.7	5.0	7.2
25	---	---	---	---	---	---	9.3	5.5	7.3	8.5	6.6	7.6
26	---	---	---	---	---	---	8.9	5.5	7.1	8.7	6.0	7.4
27	---	---	---	---	---	---	9.0	6.0	7.3	10.0	6.1	8.0
28	---	---	---	---	---	---	10.8	5.0	7.7	9.3	6.9	8.1
29	---	---	---	---	---	---	11.4	5.8	8.5	8.9	6.1	7.5
30	---	---	---	---	---	---	11.4	7.0	9.2	9.2	5.5	7.2
31	---	---	---	---	---	---	---	---	---	9.0	5.8	7.4
MONTH	---	---	---	---	---	---	---	---	---	11.4	3.6	7.2

METHOW RIVER BASIN

12448500 METHOW RIVER AT WINTHROP, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.5	6.1	7.6	12.6	8.0	10.1	15.9	10.3	13.1	16.7	12.8	14.5
2	8.7	6.1	7.5	12.4	8.0	10.1	16.2	10.6	13.3	15.1	11.1	13.2
3	9.3	6.0	7.6	13.8	9.2	11.4	14.1	10.1	12.3	15.6	11.4	13.3
4	10.0	6.4	8.1	11.5	8.9	10.4	14.1	10.4	12.4	14.9	9.7	12.2
5	10.0	6.9	8.3	12.6	7.7	10.2	14.9	9.7	12.2	13.5	9.3	11.6
6	8.6	5.6	7.1	12.8	8.6	10.7	13.8	9.8	11.8	14.1	8.9	11.4
7	8.4	4.9	6.4	13.2	9.3	11.2	15.9	9.3	12.4	13.5	9.3	11.3
8	6.3	4.4	5.6	12.8	10.1	11.4	16.8	10.4	13.5	13.1	8.6	11.0
9	9.2	5.6	7.3	13.7	8.6	11.0	18.1	11.7	14.7	15.1	9.7	12.2
10	10.1	6.9	8.4	15.1	9.8	12.3	17.8	12.3	14.9	15.6	10.1	12.8
11	11.5	7.0	9.2	15.7	10.8	13.1	17.3	11.8	14.5	15.7	10.4	13.1
12	10.4	7.2	8.9	15.4	10.8	13.1	17.9	11.5	14.7	15.9	10.6	13.3
13	11.5	7.0	9.1	13.5	11.1	12.4	18.4	12.1	15.3	15.9	10.9	13.3
14	11.4	7.2	9.2	15.9	11.7	13.5	18.6	12.8	15.6	14.9	10.3	12.7
15	11.7	7.5	9.5	15.6	10.8	13.1	18.1	12.1	15.1	14.6	10.9	12.7
16	9.7	7.2	8.6	16.2	11.2	13.6	17.1	11.8	14.4	13.7	10.9	12.3
17	9.5	7.2	8.4	16.4	11.7	13.8	15.9	10.6	13.3	14.3	10.8	12.3
18	8.9	7.4	8.1	16.7	12.0	14.2	16.7	10.8	13.7	14.1	9.5	11.8
19	11.2	6.6	8.6	16.8	12.0	14.2	16.2	11.1	13.7	13.8	9.5	11.8
20	12.0	7.4	9.5	16.5	11.2	13.8	17.0	11.4	14.1	12.8	8.7	10.9
21	12.6	7.8	10.1	17.0	11.5	14.1	16.5	11.5	14.0	12.4	7.8	10.2
22	12.4	8.3	10.4	17.5	11.5	14.4	16.8	11.2	14.1	12.8	7.8	10.3
23	11.4	8.3	9.8	16.8	11.8	14.3	18.1	12.1	15.0	13.1	8.3	10.7
24	11.8	8.0	9.9	17.8	12.3	14.9	17.6	11.8	14.8	13.2	8.9	11.0
25	13.1	8.3	10.6	17.8	12.9	15.2	15.6	12.8	14.1	12.6	8.6	10.7
26	13.7	8.7	11.2	17.5	12.8	15.0	15.7	11.2	13.5	10.6	8.7	9.5
27	12.0	9.7	10.8	17.1	12.0	14.4	17.8	11.8	14.7	13.2	8.4	10.5
28	10.8	9.2	9.8	17.3	12.0	14.3	17.9	12.3	15.1	11.8	8.0	10.1
29	12.6	8.9	10.5	16.8	12.1	14.1	17.1	12.3	14.9	11.8	8.9	10.2
30	11.4	8.3	9.7	17.0	11.7	14.0	17.3	12.8	14.9	10.9	8.1	9.4
31	---	---	---	16.4	10.6	13.4	17.3	12.1	14.8	---	---	---
MONTH	13.7	4.4	8.9	17.8	7.7	13.0	18.6	9.3	14.0	16.7	7.8	11.7

METHOW RIVER BASIN

12448620 METHOW RIVER/MVID EAST DIVERSION NEAR WINTHROP, WA

LOCATION.--Lat 48°25'08", long 120°08'24", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.30, T.34 N., R.22 E., Okanogan County, Hydrologic Unit 17020008, at diversion structure 3.8 mi southeast of Winthrop city limits.

PERIOD OF RECORD.--May 2001 to current year (irrigation season only).

GAGE.--Water-stage recorder. Elevation of gage is 1,640 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Methow Valley Irrigation District personnel via diversion and headgate. Canal diverts water from the Methow River at river mile 44.8 in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.30, T.34 N., R.22 E., for irrigation and water supply in the Methow River Basin. Figures herein represent water diverted from the main stem, some of which may return to the Methow River through seepage.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 30 ft³/s May 13, 2001; minimum discharge, no flow preceding and succeeding irrigation periods.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27 ft³/s June 13, gage height, 2.34 ft; minimum discharge, no flow preceding and succeeding irrigation period.

DISCHARGE, CUBIC FEET PER SECOND, APRIL TO OCTOBER 2002
DAILY MEAN VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	9.9	13	15	17	18	11
2	---	16	13	15	17	17	12
3	---	15	15	14	16	17	12
4	---	15	14	16	18	17	11
5	---	15	15	16	20	16	11
6	---	15	15	16	19	16	7.6
7	---	15	12	17	19	16	1.5
8	---	13	13	22	18	16	0.38
9	---	0.93	12	19	16	16	0.00
10	---	0.43	16	17	19	15	0.00
11	0.00	10	16	21	21	14	0.00
12	0.00	16	21	20	20	10	0.00
13	0.00	16	19	18	19	8.2	---
14	0.00	16	20	18	18	5.7	---
15	0.00	15	18	17	18	4.4	---
16	0.00	14	17	15	18	8.3	---
17	0.00	15	14	14	18	12	---
18	0.00	16	16	17	17	11	---
19	0.00	15	16	18	16	11	---
20	0.00	17	15	17	15	11	---
21	0.00	16	16	15	15	11	---
22	0.00	15	17	14	15	11	---
23	0.00	15	18	17	15	11	---
24	3.6	15	17	20	14	11	---
25	9.9	15	16	19	14	11	---
26	11	15	17	19	16	12	---
27	11	17	18	17	16	12	---
28	11	18	17	17	14	11	---
29	13	19	16	18	16	11	---
30	11	13	16	19	19	11	---
31	---	13	---	18	19	---	---
TOTAL	---	436.26	478	535	532	371.6	---
MEAN	---	14.1	15.9	17.3	17.2	12.4	---
MAX	---	19	21	22	21	18	---
MIN	---	0.43	12	14	14	4.4	---

12448990 TWISP RIVER ABOVE NEWBY CREEK NEAR TWISP, WA

LOCATION.--Lat 48°22'51", long 120°15'38", in NW ¼ NE ¼ sec.7, T.33 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on right bank at county road bridge 6.0 mi west of Twisp city limits and at mile 8.1.

DRAINAGE AREA.--207 mi².

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,040 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good, except for estimated daily discharges and discharges above 800 ft³/s, which are fair. Several small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--2 year (water years 2001-2002), 192 ft³/s, 139,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,690 ft³/s June 16, 2002, gage height, 10.77 ft; maximum gage height, 10.94 ft June 16, 2002, from outside high water mark; minimum daily discharge, 24 ft³/s Sept. 23-25, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,690 ft³/s June 16, gage height, 10.77 ft; maximum gage height 10.94 ft June 16, from outside high-water mark; minimum discharge, 25 ft³/s Oct. 3-5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	33	48	37	e41	e75	123	508	1380	816	150	57
2	26	32	48	37	42	79	123	659	1330	718	137	56
3	26	31	47	37	42	75	122	696	1360	670	129	55
4	25	31	45	36	41	75	129	633	1460	681	121	54
5	26	30	e39	35	40	76	146	569	1710	598	115	53
6	26	31	e42	36	40	75	170	516	1650	557	113	53
7	26	29	e40	40	41	e73	192	467	1230	567	112	52
8	26	29	e42	53	41	e72	200	431	1100	828	103	51
9	26	30	e38	59	40	e72	202	402	991	709	98	49
10	27	30	e39	55	39	73	207	381	981	634	98	47
11	32	30	e40	52	39	76	223	374	1100	687	100	46
12	29	30	41	52	e36	76	247	406	1230	688	94	44
13	30	33	42	50	e40	73	323	499	1390	622	90	42
14	30	48	42	49	e45	71	515	613	1770	622	86	41
15	29	60	e40	e37	e40	69	496	641	2060	548	87	40
16	29	59	e42	e41	e35	70	436	651	1920	472	84	39
17	28	51	42	e40	37	67	393	734	1370	450	79	39
18	28	45	e39	e40	36	e63	360	823	1290	424	75	39
19	28	52	e36	e43	37	66	340	834	1130	401	71	39
20	28	57	e33	e44	37	66	332	984	1130	369	68	38
21	28	59	e36	e45	38	64	339	1090	1190	322	68	38
22	30	59	e40	e41	56	63	353	1030	1250	301	66	38
23	39	55	38	e41	127	64	355	957	1280	290	64	37
24	33	49	37	e44	105	68	343	927	1240	290	63	37
25	33	52	37	e45	e78	72	336	953	1200	282	65	36
26	32	48	e35	e43	e79	76	334	1020	1250	275	76	37
27	32	46	e33	e41	e81	79	329	1090	1310	252	70	37
28	32	47	e37	e39	e78	82	320	1350	1220	221	65	36
29	30	46	e36	e37	---	86	332	1670	1140	203	62	35
30	31	47	37	e42	---	92	387	1710	1000	187	60	35
31	34	---	37	e44	---	108	---	1530	---	170	61	---
TOTAL	906	1279	1228	1335	1431	2296	8707	25148	39662	14854	2730	1300
MEAN	29.2	42.6	39.6	43.1	51.1	74.1	290	811	1322	479	88.1	43.3
MAX	39	60	48	59	127	108	515	1710	2060	828	150	57
MIN	25	29	33	35	35	63	122	374	981	170	60	35
AC-FT	1800	2540	2440	2650	2840	4550	17270	49880	78670	29460	5410	2580
CFSM	0.14	0.21	0.19	0.21	0.25	0.36	1.40	3.92	6.39	2.31	0.43	0.21
IN.	0.16	0.23	0.22	0.24	0.26	0.41	1.56	4.52	7.13	2.67	0.49	0.23

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
MEAN	37.6	42.2	37.2	36.9	39.8	54.7	185	639	818	310	66.3	35.3
MAX	46.0	42.6	39.6	43.1	51.1	74.1	290	811	1322	479	88.1	43.3
(WY)	2001	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	29.2	41.7	34.9	30.8	28.4	35.3	80.3	467	313	141	44.6	27.2
(WY)	2002	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 2001 - 2002

ANNUAL TOTAL	39085	100876										
ANNUAL MEAN	107	276								192		
HIGHEST ANNUAL MEAN										276		2002
LOWEST ANNUAL MEAN										108		2001
HIGHEST DAILY MEAN	1110	May 24	2060	Jun 15	2060	Jun 15	2002					
LOWEST DAILY MEAN	24	Sep 23	25	Oct 4	24	Sep 23	2001					
ANNUAL SEVEN-DAY MINIMUM	25	Sep 19	26	Oct 2	25	Sep 19	2001					
ANNUAL RUNOFF (AC-FT)	77530	200100								139200		
ANNUAL RUNOFF (CFSM)	0.52	1.34								0.93		
ANNUAL RUNOFF (INCHES)	7.02	18.13								12.62		
10 PERCENT EXCEEDS	287	995								573		
50 PERCENT EXCEEDS	39	64								46		
90 PERCENT EXCEEDS	27	32								29		

e Estimated

12448990 TWISP RIVER ABOVE NEWBY CREEK NEAR TWISP, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	2.7	0.0	0.8	8.3	3.5	5.4	---	---	---
2	---	---	---	3.3	0.0	1.2	7.3	2.7	4.7	---	---	---
3	---	---	---	4.1	0.1	1.8	8.4	2.2	4.8	---	---	---
4	---	---	---	4.1	0.1	1.9	9.0	2.2	5.1	---	---	---
5	---	---	---	5.2	1.4	2.8	7.3	2.8	5.0	---	---	---
6	---	---	---	2.8	0.3	1.5	7.2	3.6	4.9	---	---	---
7	---	---	---	1.9	0.0	0.7	8.3	3.1	5.3	---	---	---
8	---	---	---	2.0	0.0	0.7	8.0	2.2	4.7	---	---	---
9	---	---	---	2.4	0.0	0.9	7.0	3.6	5.1	---	---	---
10	---	---	---	2.8	0.9	1.8	8.1	3.5	5.4	---	---	---
11	---	---	---	2.7	0.9	1.8	7.5	4.1	5.7	---	---	---
12	---	---	---	5.8	0.9	2.9	8.3	3.8	5.8	---	---	---
13	---	---	---	3.9	0.8	2.3	9.7	4.2	6.5	---	---	---
14	---	---	---	4.9	0.0	2.2	5.8	3.3	4.6	---	---	---
15	---	---	---	4.4	1.6	2.9	---	2.7	---	---	---	---
16	---	---	---	2.8	0.9	1.9	---	---	---	---	---	---
17	---	---	---	4.4	0.0	1.9	---	---	---	---	---	---
18	---	---	---	1.7	0.0	0.8	---	---	---	---	---	---
19	---	---	---	2.7	0.0	1.3	---	---	---	---	---	---
20	---	---	---	2.2	0.0	1.0	---	---	---	---	---	---
21	---	---	---	4.2	0.1	2.0	---	---	---	---	---	---
22	3.8	0.1	1.7	5.5	0.8	3.0	---	---	---	---	---	---
23	2.7	0.9	1.9	6.9	1.6	4.0	---	---	---	---	---	---
24	2.7	0.3	1.3	8.6	2.2	4.9	---	---	---	---	---	---
25	0.8	0.0	0	7.7	1.6	4.3	---	---	---	---	---	---
26	2.4	0.0	0.4	5.8	2.0	3.7	---	---	---	---	---	---
27	2.0	0.0	0.5	6.0	1.7	3.7	---	---	---	---	---	---
28	3.0	0.0	1.1	7.3	2.7	4.7	---	---	---	---	---	---
29	---	---	---	7.2	1.9	4.4	---	---	---	---	---	---
30	---	---	---	8.6	2.8	5.4	---	---	---	---	---	---
31	---	---	---	8.9	2.8	5.4	---	---	---	---	---	---
MONTH	---	---	---	8.9	0.0	2.5	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	---	---	---	17.1	12.7	14.6
2	---	---	---	---	---	---	---	---	---	16.1	10.5	13.2
3	---	---	---	---	---	---	---	---	---	15.8	10.5	12.8
4	---	---	---	---	---	---	---	---	---	14.5	8.2	11.1
5	---	---	---	---	---	---	---	---	---	13.0	7.8	10.5
6	---	---	---	---	---	---	---	---	---	13.8	7.6	10.4
7	---	---	---	---	---	---	---	---	---	12.4	7.9	10
8	---	---	---	---	---	---	---	---	---	13.2	7.0	10
9	---	---	---	---	---	---	---	---	---	15.5	9.0	11.8
10	---	---	---	---	---	---	---	---	---	15.8	8.8	12.1
11	---	---	---	---	---	---	---	---	---	16.1	9.0	12.3
12	---	---	---	---	---	---	---	---	---	16.1	9.1	12.5
13	---	---	---	---	---	---	---	---	---	15.8	9.1	12.3
14	---	---	---	---	---	---	---	---	---	15.3	8.8	12.0
15	---	---	---	---	---	---	18.8	---	---	15.0	10.1	12.4
16	---	---	---	---	---	---	17.9	11.3	14.1	14.1	10.5	12.1
17	---	---	---	---	---	---	16.9	9.6	13.0	14.5	10.1	12.0
18	---	---	---	---	---	---	17.2	9.6	13.2	13.6	8.1	10.8
19	---	---	---	---	---	---	16.4	10.1	13.0	13.8	8.4	10.9
20	---	---	---	---	---	---	16.4	10.8	13.4	12.7	7.6	10
21	---	---	---	---	---	---	16.8	10.2	13.3	12.1	6.2	9.1
22	---	---	---	---	---	---	17.7	10.4	13.9	12.7	6.2	9.2
23	---	---	---	---	---	---	18.5	11.4	14.6	12.8	6.8	9.7
24	---	---	---	---	---	---	18.0	10.7	14.0	12.5	7.6	10
25	---	---	---	---	---	---	14.7	11.6	13.2	12.4	6.7	9.4
26	---	---	---	---	---	---	16.4	10.2	13.2	9.6	7.1	8.6
27	---	---	---	---	---	---	18.2	10.8	14.2	12.1	7.3	9.4
28	---	---	---	---	---	---	18.5	11.1	14.5	11.8	6.4	9.1
29	---	---	---	---	---	---	18.0	11.3	14.3	10.5	7.9	9.1
30	---	---	---	---	---	---	17.4	11.6	14.3	10.1	7.1	8.5
31	---	---	---	---	---	---	17.9	11.3	14.4	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	17.1	6.2	10.9

METHOW RIVER BASIN

12448992 TWISP RIVER TVPI DIVERSION NEAR TWISP, WA

LOCATION.--Lat 48°22'50", long 120°14'31", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.8, T.33 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on right bank approximately 80 ft downstream from fish screen and 5.2 mi west of Twisp city limits.

PERIOD OF RECORD.--April 2001 to October 2002 (irrigation season only). Discontinued at end of 2002 irrigation season.

GAGE.--Water-stage recorder. Elevation of gage is 1,980 ft above NGVD of 1929, from topographic map.

REMARKS.-- No estimated daily discharges. Records good. Flow regulated by Twisp Valley Power and Irrigation Co. personnel via diversion and head gate. Canal diverts water from the Twisp River in NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.8 T.33 N., R.21 E. for irrigation and water supply in the Twisp River Basin. Figures given herein represent water diverted from main stem of the Twisp River, some of which may return to the Twisp River through seepage.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 13 ft³/s, May 21-27, 2001; minimum discharge, no flow preceding and succeeding irrigation periods.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12 ft³/s, July 12, gage height 2.60 ft; minimum discharge, no flow preceding and succeeding irrigation period.

DISCHARGE, CUBIC FEET PER SECOND, APRIL 2002 TO OCTOBER 2002
DAILY MEAN VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	3.5	9.9	10	9.8	8.9	7.1
2	---	3.8	9.8	10	9.3	9.0	7.1
3	---	3.9	9.9	11	9.3	9.0	7.0
4	---	4.5	9.9	11	9.8	9.0	6.9
5	---	4.5	9.9	11	9.6	8.9	6.6
6	---	4.3	9.7	10	9.5	8.8	6.5
7	---	5.0	9.4	11	9.5	8.7	6.5
8	---	6.8	9.6	11	9.3	8.5	6.5
9	---	7.6	9.5	11	9.2	8.4	6.4
10	---	8.0	9.6	11	9.2	8.4	6.1
11	---	8.4	9.7	11	9.2	8.4	5.1
12	---	9.0	10	12	9.1	8.3	4.0
13	---	9.7	10	12	9.0	8.1	3.4
14	---	9.7	9.9	12	8.9	7.9	1.7
15	---	9.7	9.8	11	8.8	7.5	0.00
16	---	9.6	9.7	11	8.7	7.5	---
17	---	9.6	9.3	11	8.6	7.5	---
18	---	9.7	9.2	11	8.5	7.5	---
19	---	9.7	9.3	11	8.4	7.5	---
20	---	9.7	9.8	11	8.2	7.5	---
21	---	9.7	9.9	11	8.1	7.5	---
22	---	9.7	10	11	8.2	7.4	---
23	---	9.7	10	11	8.7	7.2	---
24	0.00	9.7	10	11	8.8	7.2	---
25	0.00	9.7	10	11	8.8	7.2	---
26	0.00	9.9	10	11	9.1	7.2	---
27	0.00	9.9	11	11	9.0	7.2	---
28	0.00	9.5	10	11	8.9	7.1	---
29	0.00	9.4	10	11	8.8	7.1	---
30	1.3	9.6	10	11	9.0	7.1	---
31	---	9.7	---	10	9.0	---	---
TOTAL	---	253.2	294.8	340	278.3	237.5	---
MEAN	---	8.17	9.83	11.0	8.98	7.92	---
MAX	---	9.9	11	12	9.8	9.0	---
MIN	---	3.5	9.2	10	8.1	7.1	---
AC-FT	---	502	585	674	552	471	---

12448996 TWISP RIVER/MVID WEST DIVERSION NEAR TWISP, WA

LOCATION.--Lat 48°22'12", long 120°11'31", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.10, T.33 N., R.21 E., Okanogan County Hydrologic Unit 17020008, at diversion structure 3.1 mi west of Twisp city limits.

PERIOD OF RECORD.--May 2001 to current year (irrigation season only).

GAGE.--Water stage recorder. Elevation of gage is 1,780 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good, except for estimated daily discharges and August 24 to September 9 which are fair. Flow regulated by Methow Valley Irrigation District personnel via diversion and head gate. Canal diverts water from the Twisp River in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.10, T.33 N., R.21 E. for irrigation and water supply in the Methow River Basin. Figures herein represent water diverted from the Twisp River, some of which may return to the Twisp River and Methow River through seepage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41 ft³/s May 28, 2002, gage height 1.89 ft; minimum discharge, no flow when diversion shut off each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s May 28, gage height, 1.89 ft; minimum discharge, no flow when diversion shut off.

DISCHARGE, CUBIC FEET PER SECOND, APRIL TO OCTOBER 2002
DAILY MEAN VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	20	21	18	17	21	12
2	---	19	22	17	20	20	12
3	---	18	21	19	22	20	12
4	---	18	21	21	21	20	4.4
5	---	19	21	20	19	20	0.78
6	---	19	18	20	19	20	0.59
7	---	18	18	21	19	19	0.34
8	---	18	17	18	17	19	0.15
9	---	19	18	19	14	19	0.02
10	0.00	18	18	20	19	18	---
11	0.00	18	18	20	23	17	---
12	0.00	19	19	20	22	16	---
13	0.00	19	19	19	21	15	---
14	0.00	19	19	20	20	15	---
15	0.00	19	17	21	21	14	---
16	0.00	19	14	22	22	14	---
17	0.00	17	16	22	21	14	---
18	0.00	16	18	21	20	13	---
19	0.00	22	19	21	19	13	---
20	0.00	20	20	21	19	12	---
21	0.00	16	21	22	18	12	---
22	0.00	24	22	21	18	12	---
23	0.00	24	21	21	18	12	---
24	0.00	24	21	21	20	11	---
25	0.00	24	21	20	19	11	---
26	0.00	23	22	20	22	12	---
27	0.00	24	21	19	23	13	---
28	0.00	27	20	19	21	12	---
29	10	23	19	18	22	12	---
30	18	22	18	17	22	11	---
31	---	21	---	15	22	---	---
TOTAL	---	626	580	613	620	457	---
MEAN	---	20.2	19.3	19.8	20.0	15.2	---
MAX	---	27	22	22	23	21	---
MIN	---	16	14	15	14	11	---

METHOW RIVER BASIN

12448998 TWISP RIVER NEAR TWISP, WA

LOCATION.--Lat 48°22'12", long 120°08'51", in SE ¼ SE ¼ sec.12, T.33 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, on left bank, 20 ft downstream from county road bridge, 0.8 mi west of the Twisp city limits, and at mile 1.6.

DRAINAGE AREA.--245 mi².

WATER DISCHARGE RECORDS

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

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

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

AVERAGE DISCHARGE.--17 years (water years 1976-79, 1990-2002), 262 ft³/s, 189,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,540 ft³/s June 17, 1999, gage height, 11.83 ft; maximum gage height, 12.42 ft June 17, 1999, from crest-stage gage; minimum daily discharge, 15 ft³/s Oct. 2-4, 1989, Sept. 28-30, Oct. 1-3, 1994, Sept. 19-20 and 22-24, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 29, 1948, had a discharge of 9,440 ft³/s, by slope-area measurement made about 1,000 ft upstream from mouth.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0430	1,970	10.51	June 16	--	--	(a) *11.02
June 5	2245	1,920	10.47	June 23	0115	1,350	9.88
June 16	0115	*2,220	10.79	June 27	0345	1,370	9.92

Minimum discharge, 18 ft³/s Oct.1 and 3-6.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	41	54	41	e44	e74	117	489	1480	690	135	38
2	20	39	53	43	e44	75	117	640	1460	600	121	38
3	19	39	53	41	e44	73	115	687	1530	547	111	38
4	18	38	e50	40	e43	73	119	631	1580	541	105	37
5	18	38	e45	39	44	74	133	572	1780	480	100	37
6	23	38	e47	40	43	73	149	515	1730	443	98	37
7	30	38	e45	42	44	74	165	464	1290	449	98	36
8	35	36	e47	51	44	e73	172	423	1030	686	91	36
9	37	37	e43	59	43	73	176	389	865	614	87	35
10	38	37	e44	56	42	73	180	362	808	542	82	34
11	43	37	e45	54	41	74	200	353	977	590	80	35
12	40	37	46	53	e39	75	233	375	1250	605	76	34
13	39	38	46	52	e42	72	308	460	1480	550	72	33
14	40	51	e44	51	e47	70	541	561	1800	549	69	32
15	40	63	e46	e40	e42	68	536	584	1970	484	69	32
16	40	63	48	e44	e38	69	467	586	1880	406	64	32
17	40	56	49	e43	e40	67	417	652	1450	381	62	31
18	39	53	e46	e43	38	65	380	744	1210	358	59	32
19	38	56	e42	e46	39	67	356	743	995	339	56	32
20	38	61	e39	e47	39	67	344	916	947	312	53	32
21	37	63	e42	e48	40	64	348	1070	1020	265	53	32
22	39	62	e45	e44	50	63	363	971	1170	247	53	32
23	e48	60	44	e44	112	64	367	853	1250	239	49	31
24	e43	55	42	e47	100	67	353	803	1170	239	45	31
25	43	56	41	e48	e77	71	345	820	1090	233	49	29
26	42	53	38	e46	e79	75	342	889	1170	231	57	29
27	40	51	e37	e44	e81	78	338	1010	1260	213	50	29
28	41	54	e42	e42	e78	81	328	1370	1140	187	47	29
29	40	51	e41	e40	---	86	327	1760	1020	173	43	28
30	40	53	40	e45	---	90	366	1810	886	163	40	27
31	42	---	41	e47	---	103	---	1650	---	154	41	---
TOTAL	1109	1454	1385	1420	1457	2271	8702	24152	38688	12510	2215	988
MEAN	35.8	48.5	44.7	45.8	52.0	73.3	290	779	1290	404	71.5	32.9
MAX	48	63	54	59	112	103	541	1810	1970	690	135	38
MIN	18	36	37	39	38	63	115	353	808	154	40	27
AC-FT	2200	2880	2750	2820	2890	4500	17260	47910	76740	24810	4390	1960

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2002, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	63.0	108	97.2	67.5	71.3	114	338	839	933	412	103	47.8																
MAX	144	350	323	152	168	270	723	1455	1517	859	302	110																
(WY)	1998	1991	1996	1976	1996	1996	1996	1997	1999	1991	1976	1978																
MIN	34.2	44.8	36.3	31.6	29.2	39.6	80.1	201	282	56.9	23.7	16.4																
(WY)	1990	1978	1994	1993	1994	1977	2001	1977	1977	1977	1977	1994																

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1975 - 2002

ANNUAL TOTAL	36436	96351																											
ANNUAL MEAN	99.8	264																											
HIGHEST ANNUAL MEAN																													
LOWEST ANNUAL MEAN																													
HIGHEST DAILY MEAN				1180	May 24	1970	Jun 15	3200	May 19 1991																				
LOWEST DAILY MEAN				15	Sep 19	18	Oct 4	15	Sep 28 1994																				
ANNUAL SEVEN-DAY MINIMUM				17	Sep 17	21	Oct 1	15	Sep 26 1994																				
ANNUAL RUNOFF (AC-FT)	72270	191100																											
10 PERCENT EXCEEDS	254	887																											
50 PERCENT EXCEEDS	42	59																											
90 PERCENT EXCEEDS	23	37																											

e Estimated

METHOW RIVER BASIN

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12448998 TWISP RIVER NEAR TWISP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1, 2001 to September 30, 2002 (discontinued).

INSTRUMENTATION.--Electronic thermister/data logger with fifteen-minute punch interval. Thirty-minute punch interval used October 26 to July 29.

REMARKS.--Records excellent.

EXTREMES FOR PERIOD.--

WATER TEMPERATURE: Maximum 19.6°C Aug. 14; minimum, 0.0°C on many days November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.6	8.8	11.4	6.8	4.8	5.8	2.3	0.0	1.3	2.9	2.0	2.3
2	13.8	8.7	11.0	7.9	5.6	6.6	2.1	0.9	1.5	2.5	1.2	1.9
3	13.2	8.2	10.5	7.0	4.8	5.9	2.0	0.6	1.5	2.8	1.7	2.1
4	12.1	7.3	9.6	7.8	5.8	6.7	0.9	0.0	0.5	2.5	1.0	1.6
5	11.5	6.4	8.8	6.3	4.3	5.6	0.0	0.0	0.0	2.3	0.9	1.5
6	11.2	6.5	8.6	5.0	2.6	3.9	0.9	0.0	0.3	2.1	0.9	1.4
7	9.0	6.7	8.0	3.7	1.4	2.4	0.7	0.0	0.2	2.8	1.4	2.2
8	10.2	6.5	8.1	5.0	2.3	3.4	1.7	0.7	1.2	3.9	2.1	2.9
9	9.8	5.9	7.6	4.5	2.1	3.0	0.9	0.0	0.2	2.8	0.2	1.4
10	7.6	5.9	6.7	3.9	1.5	2.5	0.2	0.0	0.1	1.8	0.2	1.1
11	9.8	5.4	7.2	4.3	1.5	2.9	0.4	0.0	0.1	2.1	0.6	1.4
12	9.5	6.7	7.9	5.0	2.9	4.0	0.7	0.0	0.3	3.1	1.8	2.4
13	10.2	7.0	8.6	6.2	4.8	5.6	0.7	0.0	0.4	1.8	0.6	1.2
14	10.6	7.5	8.7	7.2	5.9	6.4	2.1	0.0	0.9	1.2	0.0	0.5
15	9.0	5.6	7.2	7.3	6.2	6.7	0.0	0.0	0.0	0.0	0.0	0.0
16	9.5	6.4	7.7	6.2	4.8	5.4	1.4	0.0	0.7	0.0	0.0	0.0
17	9.0	5.3	6.9	5.3	2.6	4.3	1.0	0.0	0.6	0.0	0.0	0.0
18	8.5	5.3	6.7	3.4	1.5	2.6	0.0	0.0	0.0	0.0	0.0	0.0
19	9.6	5.9	7.3	4.0	2.6	3.5	0.0	0.0	0.0	0.0	0.0	0.0
20	7.9	4.8	6.3	5.0	3.9	4.4	0.0	0.0	0.0	0.0	0.0	0.0
21	7.6	5.3	6.3	5.6	4.7	5.1	0.0	0.0	0.0	0.0	0.0	0.0
22	6.8	4.8	5.8	5.4	4.6	5.1	0.6	0.0	0.3	0.0	0.0	0.0
23	8.2	5.8	6.7	5.1	2.8	4.1	1.2	0.0	0.6	0.0	0.0	0.0
24	7.3	4.5	5.8	3.6	2.5	2.9	2.0	0.7	1.3	0.0	0.0	0.0
25	7.5	5.9	6.6	4.2	3.1	3.6	1.7	0.9	1.3	0.0	0.0	0.0
26	---	6.7	---	4.2	2.8	3.5	0.9	0.0	0.5	0.0	0.0	0.0
27	7.9	5.6	6.6	3.2	2.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0
28	5.9	3.6	4.6	2.9	0.0	1.2	0.6	0.0	0.3	0.0	0.0	0.0
29	5.8	3.1	4.3	2.3	0.4	1.2	1.8	0.6	1.2	0.0	0.0	0.0
30	6.1	5.0	5.6	1.2	0.0	0.5	2.6	1.7	2.0	0.0	0.0	0.0
31	7.9	5.3	6.4	---	---	---	2.9	2.0	2.2	0.0	0.0	0.0
MONTH	---	3.1	---	7.9	0.0	4.1	2.9	0.0	0.6	3.9	0.0	0.8

METHOW RIVER BASIN

12448998 TWISP RIVER NEAR TWISP, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	0.0	0.0	0.0	2.5	0.0	0.9	8.4	4.0	6.2	11.0	4.8	7.9
2	0.0	0.0	0.0	2.8	0.0	1.1	7.3	3.6	5.6	9.8	5.1	7.4
3	0.4	0.0	0.2	3.7	0.4	1.9	8.2	2.9	5.6	8.5	3.9	6.2
4	1.5	0.2	0.9	3.4	0.7	1.9	8.7	3.2	6.2	8.7	3.4	5.9
5	2.0	0.7	1.4	3.7	0.6	2.2	7.2	3.9	5.9	8.1	4.0	5.9
6	1.7	0.6	1.1	2.7	0.7	1.7	6.8	4.3	5.6	6.7	2.8	4.6
7	2.1	0.4	1.3	2.3	0.0	0.9	8.5	3.6	6.0	6.4	3.2	4.7
8	2.0	0.4	0.9	1.5	0.0	0.5	7.9	2.8	5.4	6.8	2.9	5.0
9	1.5	0.0	0.7	2.5	0.0	0.9	7.3	4.3	5.8	7.2	3.4	5.4
10	2.6	0.6	1.4	2.8	1.2	2.0	8.1	4.2	6.4	9.8	3.7	6.8
11	2.1	0.0	0.9	3.4	1.8	2.4	8.1	5.0	6.7	11.3	4.7	7.9
12	0.0	0.0	0.0	4.7	1.0	2.8	8.7	4.7	6.7	11.2	5.4	8.4
13	0.0	0.0	0.0	4.3	1.7	3.0	10.4	5.0	7.7	9.7	5.8	7.8
14	0.0	0.0	0.0	4.8	0.4	2.6	8.3	4.2	5.7	10.2	5.0	7.5
15	0.0	0.0	0.0	5.0	2.1	3.4	6.7	2.8	4.4	9.2	4.0	6.6
16	0.0	0.0	0.0	3.4	1.7	2.4	6.1	3.7	5.0	10.4	4.7	7.4
17	1.5	0.0	0.6	4.3	0.2	2.0	7.5	3.6	5.4	10.9	6.1	8.3
18	2.6	0.2	1.2	2.0	0.0	0.9	7.5	3.2	5.4	8.3	5.3	6.8
19	3.2	1.2	2.1	3.9	0.4	2.0	8.7	3.2	6.0	8.7	5.8	7.0
20	3.1	0.7	1.7	2.6	0.0	1.3	8.7	4.0	6.4	7.6	6.2	6.9
21	2.8	0.2	1.5	4.2	0.4	2.1	10.2	4.5	7.4	7.5	5.4	6.3
22	3.9	1.7	2.4	5.3	1.2	3.2	9.6	4.2	6.8	7.2	5.3	6.2
23	2.8	0.7	1.8	7.2	2.5	4.6	8.1	3.9	5.9	9.0	5.1	6.8
24	2.3	0.4	1.3	8.2	3.4	5.6	7.9	2.5	5.3	10.2	4.3	7.0
25	1.2	0.0	0.3	8.1	3.1	5.4	8.2	4.5	6.5	8.4	5.8	7.1
26	0.9	0.0	0.2	6.4	3.4	4.7	7.9	4.3	6.3	9.0	5.1	7.0
27	1.2	0.0	0.3	6.1	2.3	4.3	8.2	5.3	6.8	9.6	5.3	7.4
28	2.8	0.0	1.0	8.2	3.2	5.4	10.4	3.9	7.1	9.0	5.9	7.3
29	---	---	---	7.2	2.9	5.0	11.0	4.5	7.8	8.8	5.0	6.7
30	---	---	---	9.0	3.6	6.2	11.3	5.9	8.4	9.2	4.7	6.6
31	---	---	---	9.6	4.2	6.4	---	---	---	9.0	5.0	6.8
MONTH	3.9	0.0	0.8	9.6	0.0	2.9	11.3	2.5	6.2	11.3	2.8	6.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.3	5.1	6.9	12.2	6.8	9.3	---	---	---	17.8	14.2	15.7
2	8.7	5.4	7.0	12.2	6.8	9.3	15.3	10.6	13.2	17.2	12.3	14.7
3	8.8	5.1	6.9	13.8	8.4	10.6	14.3	10.0	12.5	17.3	12.6	14.6
4	9.9	5.6	7.5	10.9	7.9	9.5	13.7	10.4	12.2	15.9	10.4	12.7
5	9.6	5.8	7.6	12.7	6.7	9.5	14.0	9.5	12.0	14.5	9.8	12.1
6	8.2	4.7	6.3	13.2	7.8	10.1	13.2	9.4	11.5	14.9	9.5	11.9
7	8.4	4.0	6.0	13.3	8.7	10.9	15.9	9.0	12.3	14.6	9.7	11.8
8	5.9	4.2	5.3	12.7	9.8	11.3	16.5	10.3	13.6	14.3	8.9	11.5
9	7.9	5.4	6.5	13.5	7.8	10.5	18.0	11.8	15.0	16.1	10.4	13.0
10	10.2	5.9	7.8	15.2	9.2	11.9	18.3	12.9	15.6	16.7	10.9	13.7
11	11.5	6.2	8.6	15.8	10.2	12.8	17.5	12.0	14.9	17.0	11.2	13.8
12	10.2	5.9	8.1	15.5	10.1	12.7	18.1	12.0	15.2	17.3	11.4	14.0
13	10.9	5.9	8.2	13.9	10.6	12.1	18.9	12.9	16.0	17.0	11.4	13.9
14	10.4	5.9	8.0	16.0	11.6	13.5	19.6	13.7	16.6	16.2	10.9	13.5
15	10.7	6.1	8.1	15.4	9.8	12.5	18.8	13.2	16.0	16.4	11.8	13.8
16	8.8	5.8	7.4	16.0	10.6	13.2	18.0	12.9	15.3	15.7	12.0	13.5
17	8.7	6.2	7.5	16.6	11.0	13.7	17.0	11.4	14.3	16.1	11.7	13.4
18	8.2	6.5	7.3	17.1	11.6	14.3	17.3	11.5	14.4	15.4	10.1	12.4
19	10.2	5.8	7.7	17.1	11.5	14.3	17.0	11.8	14.3	15.6	10.0	12.5
20	11.5	6.4	8.7	16.1	10.4	13.5	18.1	12.3	14.8	13.8	9.4	11.5
21	11.8	6.5	9.0	16.8	10.9	13.9	17.5	11.8	14.5	13.2	8.3	10.5
22	11.6	7.0	9.2	17.4	11.2	14.4	18.1	12.2	15.0	13.5	8.1	10.6
23	10.2	7.3	8.7	17.3	11.8	14.5	19.3	13.4	16.1	14.2	8.6	11.1
24	11.3	7.0	9.0	17.9	12.2	15.1	18.9	12.8	15.6	14.2	9.2	11.4
25	12.4	7.2	9.6	17.4	12.6	15.3	17.5	13.7	15.0	13.4	8.7	11.0
26	13.0	7.8	10.1	18.1	12.9	15.6	16.8	12.0	14.5	11.1	9.0	10
27	10.9	8.8	9.9	17.4	11.8	14.8	18.8	13.1	15.7	13.5	8.7	10.8
28	10.0	8.1	8.8	---	---	---	19.1	13.4	16.0	13.1	8.3	10.6
29	11.9	7.9	9.5	---	---	---	18.5	13.5	16.0	12.9	9.2	10.4
30	11.2	7.0	8.9	---	---	---	18.8	13.8	15.8	11.7	8.1	9.6
31	---	---	---	---	---	---	18.8	13.5	15.9	---	---	---
MONTH	13.0	4.0	8.0	---	---	---	---	---	---	17.8	8.1	12.3

METHOW RIVER BASIN

12449500 METHOW RIVER AT TWISP, WA

LOCATION.--Lat 48°21'55", long 120°06'54", in NE 1/4 NW 1/4 sec.17, T.33 N., R.22 E., Okanogan County, Hydrologic Unit 17020008, on left bank, 0.25 mi downstream from Twisp River, 0.3 mi east of center of Twisp, and at mile 40.

DRAINAGE AREA.--1,301 mi².

WATER DISCHARGE RECORDS

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

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

REMARKS.--Records good except for estimated daily discharges, which are fair. No known regulation. Numerous diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--54 years (water years 1920-62, 1992-2002), 1,340 ft³/s, 970,800 acre-ft/yr. Includes discharge for water years 1930-34, which were estimated for WSP 1316.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,800 ft³/s May 29, 1948, gage height, 12.94 ft, in gage well, from rating curve extended above 18,000 ft³/s on basis of slope-area measurement of peak flow; minimum observed, 134 ft³/s Sept. 4, 5, 1926, Sept. 9, 10, 1929, but may have been less during period of ice effect Jan. 6 to Mar. 4, 1937.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	1000	6,440	4.02	June 16	0500	*10,300	*5.51
May 30	0630	9,790	5.32	June 23	0630	6,590	4.08
June 6	0630	9,080	5.06				

Minimum daily discharge, 197 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	233	271	228	228	313	579	2290	7840	3750	811	314
2	202	233	271	230	229	314	595	2990	7550	3210	741	310
3	202	228	267	228	231	310	591	3230	7550	2890	691	307
4	202	228	259	225	226	313	603	2980	7800	2800	656	299
5	202	228	259	224	228	319	651	2690	8390	2560	622	296
6	206	228	259	225	226	316	734	2420	8580	2350	605	295
7	212	226	254	230	228	318	826	2210	6950	2330	598	296
8	217	224	254	243	229	315	877	2020	5720	3220	568	294
9	235	222	252	264	223	310	899	1890	4860	3200	533	289
10	254	217	248	260	224	324	912	1750	4560	2790	511	280
11	254	215	248	251	223	328	958	1680	5100	2920	501	272
12	254	215	248	248	210	332	1040	1770	6290	3020	487	263
13	251	215	248	245	209	324	1260	2160	7380	2740	470	257
14	248	234	242	242	224	317	2060	2730	8730	2700	462	254
15	248	261	242	227	220	315	2230	2930	9410	2470	457	252
16	242	272	242	224	218	324	1960	2870	9590	2130	445	243
17	240	284	247	221	224	317	1740	3100	7820	2010	432	237
18	237	284	248	215	220	311	1570	3530	6680	1870	416	237
19	237	277	241	230	222	315	1470	3620	5560	1760	401	236
20	236	277	e220	237	222	318	1440	4660	5060	1630	388	236
21	233	277	e225	241	228	309	1470	6270	5210	1460	384	236
22	233	280	e235	226	237	309	1560	5640	5780	1350	380	237
23	234	284	248	221	336	310	1590	4850	6270	1280	365	237
24	237	284	248	234	341	323	1520	4440	5900	1260	352	235
25	236	278	244	e245	292	350	1480	4480	5470	1220	355	235
26	233	277	e230	e235	300	370	1460	4830	5700	1200	396	238
27	233	277	e215	e225	315	387	1430	5410	6250	1160	386	227
28	233	277	233	e215	327	407	1390	6980	5650	1050	367	224
29	233	274	233	e205	---	435	1440	8960	5160	981	348	224
30	229	271	233	224	---	452	1680	9380	4600	928	332	223
31	228	---	228	235	---	516	---	8770	---	875	325	---
TOTAL	7138	7580	7592	7203	6840	10521	38015	123530	197410	65114	14785	7783
MEAN	230	253	245	232	244	339	1267	3985	6580	2100	477	259
MAX	254	284	271	264	341	516	2230	9380	9590	3750	811	314
MIN	197	215	215	205	209	309	579	1680	4560	875	325	223
AC-FT	14160	15030	15060	14290	13570	20870	75400	245000	391600	129200	29330	15440

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2002, BY WATER YEAR (WY)

	415	471	402	314	318	434	1589	4952	4946	1766	502	308
MEAN	415	471	402	314	318	434	1589	4952	4946	1766	502	308
MAX	1383	1183	1205	578	958	1773	7692	9515	11030	4392	1280	727
(WY)	1960	1934	1996	1935	1935	1934	1934	1957	1950	1954	1999	1959
MIN	189	234	222	178	183	204	180	1546	846	289	162	148
(WY)	1937	1940	1926	1937	1929	1936	1929	1920	1926	1926	1926	1929

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1919 - 2002
ANNUAL TOTAL	183365	493511	
ANNUAL MEAN	502	1352	1360
HIGHEST ANNUAL MEAN			2231
LOWEST ANNUAL MEAN			467
HIGHEST DAILY MEAN	4800	May 25	9590
LOWEST DAILY MEAN	177	Sep 15	197
ANNUAL SEVEN-DAY MINIMUM	181	Sep 13	203
ANNUAL RUNOFF (AC-FT)	363700	978900	985400
10 PERCENT EXCEEDS	1270	4840	3980
50 PERCENT EXCEEDS	233	313	420
90 PERCENT EXCEEDS	198	224	224

e Estimated

METHOW RIVER BASIN

12449500 METHOW RIVER AT TWISP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 18, 2002 to September 30, 2002 (discontinued).

INSTRUMENTATION.--Electronic thermister/data logger with fifteen-minute punch interval.

REMARKS.--Records excellent.

EXTREMES FOR PERIOD.--

WATER TEMPERATURE: Maximum 19.1°C Aug. 14; minimum, 4.4°C May 6.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	10.9	6.9	9.1
2	---	---	---	---	---	---	---	---	---	9.8	6.7	8.3
3	---	---	---	---	---	---	---	---	---	8.7	5.1	7.1
4	---	---	---	---	---	---	---	---	---	8.1	4.8	6.5
5	---	---	---	---	---	---	---	---	---	8.7	5.3	6.8
6	---	---	---	---	---	---	---	---	---	7.9	4.4	6.1
7	---	---	---	---	---	---	---	---	---	7.9	4.7	6.3
8	---	---	---	---	---	---	---	---	---	8.1	4.5	6.4
9	---	---	---	---	---	---	---	---	---	8.1	5.1	6.8
10	---	---	---	---	---	---	---	---	---	10.7	5.8	8.2
11	---	---	---	---	---	---	---	---	---	11.5	6.9	9.3
12	---	---	---	---	---	---	---	---	---	11.3	7.6	9.7
13	---	---	---	---	---	---	---	---	---	10.6	7.8	9.0
14	---	---	---	---	---	---	---	---	---	10.4	6.6	8.5
15	---	---	---	---	---	---	---	---	---	9.6	5.8	7.8
16	---	---	---	---	---	---	---	---	---	10.6	6.1	8.4
17	---	---	---	---	---	---	---	---	---	11.2	7.6	9.4
18	---	---	---	---	---	---	9.5	4.8	7.2	9.7	6.7	8.0
19	---	---	---	---	---	---	9.6	5.3	7.7	9.0	6.9	7.9
20	---	---	---	---	---	---	9.5	6.2	8.0	8.7	7.5	7.9
21	---	---	---	---	---	---	10.9	6.9	8.9	7.5	6.1	6.9
22	---	---	---	---	---	---	9.6	6.2	8.2	7.5	5.9	6.7
23	---	---	---	---	---	---	8.6	5.8	7.3	9.0	6.1	7.4
24	---	---	---	---	---	---	8.6	4.5	6.8	9.9	5.6	7.8
25	---	---	---	---	---	---	9.8	6.2	8.0	9.3	7.0	8.0
26	---	---	---	---	---	---	9.3	6.2	7.8	9.2	6.6	7.8
27	---	---	---	---	---	---	9.2	6.9	8.1	9.9	6.7	8.4
28	---	---	---	---	---	---	10.9	5.9	8.5	9.5	7.3	8.5
29	---	---	---	---	---	---	11.5	6.7	9.3	9.6	6.4	7.9
30	---	---	---	---	---	---	11.8	8.1	9.9	9.5	5.9	7.7
31	---	---	---	---	---	---	---	---	---	9.3	6.2	7.8
MONTH	---	---	---	---	---	---	---	---	---	11.5	4.4	7.8

METHOW RIVER BASIN

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12449500 METHOW RIVER AT TWISP, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.6	6.4	8.1	12.6	7.9	10.3	16.0	11.7	14.0	17.4	14.4	15.9
2	9.9	6.7	8.2	12.6	8.4	10.5	16.2	12.0	14.2	15.7	12.7	14.5
3	9.8	6.4	8.1	14.0	9.6	11.6	14.4	11.5	13.2	16.8	12.9	14.7
4	10.3	6.9	8.6	12.3	9.3	10.7	14.0	11.5	13.0	15.6	11.0	13.3
5	10.3	7.2	8.7	12.6	8.2	10.5	15.2	10.7	13.0	14.1	10.9	12.7
6	8.6	6.1	7.4	12.9	9.2	11.2	14.9	11.0	13.0	14.6	10.3	12.4
7	8.6	5.3	6.9	13.2	9.9	11.7	16.0	10.6	13.4	14.1	10.6	12.4
8	7.2	5.3	6.3	12.7	10.7	11.8	17.0	12.0	14.6	13.7	9.8	11.9
9	9.3	6.2	7.6	13.7	8.9	11.2	18.3	13.0	15.7	15.7	11.0	13.2
10	10.9	7.5	9.1	14.9	10.3	12.5	18.3	14.0	16.1	16.3	11.8	14.0
11	12.0	7.6	9.7	15.4	11.2	13.4	17.8	13.4	15.6	16.7	12.0	14.3
12	10.6	7.6	9.2	15.2	11.2	13.3	18.1	13.0	15.7	16.8	12.1	14.4
13	11.5	7.3	9.3	14.0	11.2	12.5	18.9	14.0	16.4	16.7	12.3	14.5
14	11.2	7.3	9.3	15.9	12.0	13.8	19.1	14.3	16.7	15.7	11.8	13.9
15	11.5	7.5	9.5	15.4	11.0	13.4	18.4	13.8	16.3	15.7	12.4	13.9
16	10.3	7.3	8.6	16.0	11.7	13.9	17.6	13.2	15.5	15.1	12.3	13.4
17	9.6	7.3	8.5	16.3	12.0	14.2	16.7	12.3	14.6	15.6	12.0	13.4
18	9.0	7.6	8.3	16.8	12.3	14.6	17.0	12.3	14.7	14.9	10.7	12.7
19	11.2	6.9	8.8	17.0	12.4	14.8	16.2	12.7	14.7	14.9	10.9	12.9
20	12.0	7.8	9.8	16.5	11.8	14.3	17.6	12.7	15.1	13.8	10.3	12.1
21	12.3	8.1	10.3	16.8	12.1	14.6	17.0	13.0	15.2	13.2	9.2	11.2
22	12.0	8.6	10.4	17.3	12.4	14.9	17.8	12.9	15.3	13.4	9.0	11.2
23	11.2	8.4	9.9	17.1	12.7	14.9	18.6	13.8	16.2	13.8	9.6	11.7
24	11.5	8.2	10	17.6	13.2	15.5	18.1	13.7	16.0	13.8	10.1	12.0
25	12.7	8.6	10.6	17.6	13.7	15.8	16.8	14.4	15.5	13.4	9.8	11.7
26	13.4	9.0	11.2	17.8	14.0	15.8	16.8	12.3	14.6	11.7	9.9	10.4
27	12.4	9.8	10.8	17.3	12.7	15.1	18.3	13.2	15.7	12.9	8.9	10.8
28	10.8	9.2	9.8	17.0	12.9	14.9	18.6	14.0	16.3	13.2	9.5	11.4
29	12.4	8.9	10.5	17.3	12.7	15.1	17.8	14.0	16.1	12.3	10.1	11.0
30	10.9	8.4	9.7	17.1	12.4	14.8	17.6	14.1	16.0	11.7	9.2	10.3
31	---	---	---	16.3	11.7	14.2	18.1	14.0	16.0	---	---	---
MONTH	13.4	5.3	9.1	17.8	7.9	13.4	19.1	10.6	15.1	17.4	8.9	12.7

METHOW RIVER BASIN

12449760 METHOW RIVER AT CARLTON, WA

LOCATION.--Lat 48°14'11", long 120°06'43", in NE ¼ NW ¼ sec.32, T.32 N., R.22 E., Okanogan County, Hydrologic Unit 17020008, on left bank approximately 0.5 mile downstream from Methow Valley Irrigation District diversion return, and 1.0 mile south of Carlton, WA city limits.

DRAINAGE AREA.--1,531 mi².

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder. Elevation of gage is 1,450 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good, except for estimated daily discharges, which are poor, and discharges above 7,000 ft³/s, which are poor. Several small diversions for irrigation upstream from station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,000 ft³/s June 16, 2002 gage height, 9.08 ft; maximum gage height 9.48 ft June 16, 2002, from outside high-water mark; minimum discharge, 244 ft³/s Dec. 27, 2001, but may have been lower during periods of ice effect.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e246	e264	305	273	281	365	611	2340	8060	3850	873	352
2	e251	e264	300	283	282	364	643	3080	7680	3280	804	345
3	e251	e259	299	275	283	361	636	3420	7630	2900	749	341
4	e251	e259	292	270	278	363	643	3190	7820	2790	713	334
5	e251	e259	282	271	277	368	689	2900	8360	2560	679	332
6	e254	e259	289	280	277	369	767	2610	8680	2340	654	334
7	e259	e256	284	284	280	368	866	2390	7260	2290	644	334
8	e262	e254	288	293	283	367	928	2190	6030	3040	616	333
9	e270	e252	280	311	274	361	961	2030	5070	3230	581	330
10	e289	e247	276	305	272	371	978	1890	4650	2770	556	322
11	e289	e245	279	299	272	374	1010	1800	5090	2840	545	314
12	e289	e245	280	298	262	382	1100	1860	6250	2990	536	307
13	e285	e245	283	296	e254	375	1280	2210	7340	2700	514	298
14	e282	e264	286	291	e272	369	2030	2810	8610	2650	499	295
15	e282	e291	274	e277	e269	369	2370	3090	9290	2460	489	293
16	e276	e303	e274	e274	267	375	2110	3030	9620	2130	476	288
17	e274	e315	e278	e271	272	372	1880	3220	8010	2000	464	283
18	e271	e315	e281	e265	268	363	1700	3680	6870	1880	449	282
19	e271	e309	e274	280	269	367	1580	3800	5740	1760	435	281
20	e269	e309	e262	289	270	373	1530	4670	5130	1650	422	279
21	e266	e309	e276	291	278	363	1560	6570	5210	1490	415	279
22	e266	e312	287	273	280	359	1650	6160	5730	1380	411	282
23	e267	e316	282	e268	354	361	1690	5280	6250	1300	400	280
24	e270	e316	280	e282	389	372	1630	4800	5960	1270	386	277
25	e269	e310	276	e296	348	399	1590	4790	5530	1240	385	274
26	e265	e309	273	e285	344	419	1560	5130	5670	1220	422	281
27	e265	e309	253	e275	361	435	1530	5710	6260	1180	421	277
28	e265	e309	277	e265	376	446	1490	7100	5770	1090	402	274
29	e265	e307	280	e250	---	468	1520	8960	5210	1030	385	272
30	e261	e305	276	e266	---	489	1740	9530	4720	982	369	270
31	e260	---	274	286	---	540	---	8940	---	933	362	---
TOTAL	8291	8516	8700	8722	8192	12027	40272	129180	199500	65225	16056	9043
MEAN	267	284	281	281	293	388	1342	4167	6650	2104	518	301
MAX	289	316	305	311	389	540	2370	9530	9620	3850	873	352
MIN	246	245	253	250	254	359	611	1800	4650	933	362	270
AC-FT	16450	16890	17260	17300	16250	23860	79880	256200	395700	129400	31850	17940

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2002, BY WATER YEAR (WY)

	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MEAN	267	284	281	281	293	388	1342	4167	6650	2104	518	301
MAX	267	284	281	281	293	388	1342	4167	6650	2104	518	301
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	267	284	281	281	293	388	1342	4167	6650	2104	518	301
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

SUMMARY STATISTICS

FOR 2002 WATER YEAR

ANNUAL TOTAL	513724
ANNUAL MEAN	1407
HIGHEST DAILY MEAN	9620 Jun 16
LOWEST DAILY MEAN	245 Nov 11
ANNUAL SEVEN-DAY MINIMUM	249 Nov 7
ANNUAL RUNOFF (AC-FT)	1019000
10 PERCENT EXCEEDS	5080
50 PERCENT EXCEEDS	361
90 PERCENT EXCEEDS	266

e Estimated

12449760 METHOW RIVER AT CARLTON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 11, 2002 to September 30, 2002 (discontinued).

INSTRUMENTATION.--Electronic thermister/data logger with fifteen-minute punch interval.

REMARKS.--Records excellent.

EXTREMES FOR PERIOD.--

WATER TEMPERATURE: Maximum 21.0°C Aug. 14; minimum, 4.3°C April 15.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	11.2	8.2	9.9
2	---	---	---	---	---	---	---	---	---	10.6	7.8	9.1
3	---	---	---	---	---	---	---	---	---	8.8	6.1	7.7
4	---	---	---	---	---	---	---	---	---	8.5	5.4	7.1
5	---	---	---	---	---	---	---	---	---	8.5	5.7	7.1
6	---	---	---	---	---	---	---	---	---	7.6	5.1	6.3
7	---	---	---	---	---	---	---	---	---	7.5	5.3	6.3
8	---	---	---	---	---	---	---	---	---	8.2	5.4	6.9
9	---	---	---	---	---	---	---	---	---	8.5	5.7	7.1
10	---	---	---	---	---	---	---	---	---	10.4	6.4	8.3
11	---	---	---	---	---	---	10.4	---	---	11.6	7.9	9.9
12	---	---	---	---	---	---	10.2	7.8	9.0	11.6	9.0	10.4
13	---	---	---	---	---	---	11.6	8.2	9.8	10.9	9.0	9.8
14	---	---	---	---	---	---	10.9	6.8	8.8	10.6	7.5	9.1
15	---	---	---	---	---	---	6.8	4.3	5.6	9.8	6.7	8.4
16	---	---	---	---	---	---	7.1	5.6	6.4	10.6	6.8	8.9
17	---	---	---	---	---	---	9.0	5.6	7.2	11.3	8.7	10.1
18	---	---	---	---	---	---	9.6	5.7	7.6	10.7	7.6	8.6
19	---	---	---	---	---	---	9.3	6.4	7.8	9.0	7.3	8.3
20	---	---	---	---	---	---	9.6	7.3	8.4	9.0	8.1	8.4
21	---	---	---	---	---	---	11.2	7.8	9.4	8.1	6.4	7.2
22	---	---	---	---	---	---	10.2	7.5	8.9	7.8	6.2	7.0
23	---	---	---	---	---	---	9.6	6.7	7.9	9.5	6.4	7.7
24	---	---	---	---	---	---	8.5	5.4	7.1	9.9	6.4	8.2
25	---	---	---	---	---	---	9.9	7.0	8.4	9.8	7.6	8.5
26	---	---	---	---	---	---	9.3	7.3	8.4	9.5	7.0	8.2
27	---	---	---	---	---	---	9.5	7.6	8.5	10.1	7.3	8.7
28	---	---	---	---	---	---	10.9	7.0	8.8	9.8	7.9	9.1
29	---	---	---	---	---	---	11.5	8.1	9.8	9.8	6.7	8.2
30	---	---	---	---	---	---	11.8	9.5	10.7	9.6	6.2	7.9
31	---	---	---	---	---	---	---	---	---	9.6	6.5	8.1
MONTH	---	---	---	---	---	---	---	---	---	11.6	5.1	8.3

METHOW RIVER BASIN

12449760 METHOW RIVER AT CARLTON, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.8	6.8	8.3	12.7	8.7	10.7	16.3	13.3	15.0	18.9	15.8	17.2
2	10.1	7.1	8.5	12.7	9.2	11.0	17.4	13.3	15.3	17.1	14.3	16.0
3	9.8	6.8	8.4	13.6	10.6	12.1	15.7	12.9	14.5	18.1	14.1	16.1
4	10.6	7.3	8.8	13.2	10.4	11.4	15.0	12.4	13.9	16.6	12.4	14.6
5	10.4	7.6	9.1	12.9	9.2	11.0	15.8	11.8	13.6	14.6	11.8	13.5
6	9.3	6.4	7.8	13.2	10.4	11.7	15.4	12.2	13.8	15.5	11.2	13.4
7	8.7	5.6	7.2	13.9	11.0	12.4	16.5	11.9	14.3	15.0	11.5	13.5
8	8.1	5.6	6.5	13.6	11.6	12.7	18.2	13.3	15.7	14.7	10.7	12.8
9	9.0	6.5	7.5	13.6	9.8	11.9	19.7	14.4	16.9	16.6	11.6	13.9
10	11.0	8.1	9.5	15.2	11.2	13.2	20.0	15.4	17.5	17.4	12.7	15.1
11	12.1	8.4	10.1	15.8	12.4	14.2	19.4	14.7	17.1	17.7	13.2	15.5
12	11.5	8.4	9.7	15.5	12.4	14.2	19.7	14.4	17.1	18.1	13.5	15.7
13	11.5	7.8	9.6	15.0	12.2	13.4	20.8	15.4	17.9	17.9	13.5	15.7
14	11.2	7.8	9.6	16.5	12.9	14.5	21.0	16.0	18.4	16.9	13.0	15.1
15	11.6	7.9	9.8	15.7	12.2	14.2	20.3	15.4	17.8	16.9	13.6	15.2
16	10.9	7.6	8.9	16.2	12.9	14.6	19.0	14.6	16.9	16.3	13.3	14.6
17	9.8	7.8	8.8	16.8	13.3	15.1	18.1	13.6	16.0	16.6	13.3	14.7
18	9.3	7.9	8.6	17.3	13.6	15.6	18.2	13.5	15.9	15.8	11.9	13.8
19	11.2	7.1	9.0	17.4	14.1	15.9	17.9	13.9	16.1	15.4	11.6	13.7
20	11.9	8.2	10.1	16.6	13.5	15.3	18.7	13.8	16.3	14.7	11.2	13.0
21	12.4	8.8	10.7	17.1	13.8	15.6	19.2	14.4	16.7	13.8	10.1	12.0
22	12.1	9.3	10.8	17.7	14.3	16.0	19.4	14.1	16.8	13.8	9.6	11.8
23	11.6	9.0	10.3	16.9	14.7	16.0	20.3	15.4	17.8	14.3	10.2	12.3
24	11.6	8.8	10.3	17.9	14.9	16.4	19.8	15.2	17.6	14.3	10.9	12.6
25	12.9	9.3	11.0	18.2	15.4	16.9	18.1	15.9	17.0	13.9	10.6	12.4
26	13.5	9.8	11.7	18.7	15.5	17.1	18.4	14.1	16.2	12.6	10.7	11.1
27	13.2	10.6	11.4	18.1	14.6	16.4	19.8	14.9	17.2	13.3	9.3	11.3
28	11.2	9.6	10.2	18.2	14.7	16.3	20.3	15.4	17.8	13.5	9.8	11.8
29	12.7	9.3	10.8	18.6	14.7	16.3	19.8	15.7	17.8	12.6	10.4	11.5
30	11.6	9.0	10.2	17.7	14.6	16.1	19.8	15.4	17.6	11.6	9.0	10.4
31	---	---	---	17.1	13.3	15.4	19.7	15.2	17.5	---	---	---
MONTH	13.5	5.6	9.4	18.7	8.7	14.3	21.0	11.8	16.5	18.9	9.0	13.7

METHOW RIVER BASIN

12449950 METHOW RIVER NEAR PATEROS, WA

LOCATION.--Lat 48°04'39", long 119°59'02", in SE 1/4 SW 1/4 sec.20, T.30 N., R.23 E., Okanogan County, Hydrologic Unit 17020008, on right bank 1.4 mi downstream from Black Canyon Creek, 4.3 mi northwest of Pateros, and at mile 6.7.

DRAINAGE AREA.--1,772 mi².

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

REVISED RECORDS.--WSP 1933: Drainage area.

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

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

AVERAGE DISCHARGE.--43 years (water years 1960-2002), 1,550 ft³/s, 1,123,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,800 ft³/s May 31, 1972, gage height, 12.25 ft; minimum daily discharge, 150 ft³/s Jan. 8-10, 1974, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1894, 46,700 ft³/s May 29, 1948, determined by slope-area measurement of peak flow at site 1 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	1115	9,870	7.70	June 16	1115	*10,400	*7.89

Minimum discharge, 270 ft³/s Oct. 1 and 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	270	310	335	297	299	378	536	2160	8150	4040	917	385
2	275	312	339	300	297	378	586	2850	7600	3460	856	373
3	285	307	338	305	297	378	614	3290	7540	3080	797	364
4	285	304	333	302	297	378	627	3150	7740	2920	762	357
5	282	301	326	298	297	378	640	2890	8340	2730	722	353
6	283	298	319	299	294	378	676	2630	8790	2500	692	351
7	288	297	318	304	294	378	743	2410	7410	2410	680	351
8	295	294	318	311	297	378	821	2220	6140	2930	658	351
9	297	290	317	324	297	378	918	2050	5260	3390	625	351
10	302	290	310	333	294	379	946	1930	4810	2920	595	349
11	307	288	309	334	290	386	971	1820	5090	2900	577	339
12	309	286	305	330	288	390	1040	1840	6080	3070	569	332
13	309	289	309	326	282	392	1190	2110	7160	2840	549	324
14	309	296	310	323	275	392	1780	2660	8410	2750	530	317
15	309	317	311	315	283	387	2310	3000	9270	2610	516	311
16	309	342	306	301	285	387	2090	2990	9780	2290	506	307
17	307	354	319	298	283	392	1880	3110	8150	2120	495	302
18	305	356	325	291	286	387	1700	3530	6860	1990	480	297
19	305	350	e310	294	286	383	1580	3710	5870	1880	465	297
20	301	354	e280	299	286	385	1520	4280	5210	1760	452	296
21	301	362	e290	306	288	386	1530	6120	5220	1610	440	294
22	301	370	e295	310	293	381	1600	5920	5670	1480	436	294
23	302	373	e300	293	303	378	1660	5140	6180	1390	428	297
24	308	363	308	316	357	380	1610	4680	5990	1350	415	295
25	309	350	305	349	374	390	1570	4600	5570	1310	409	294
26	312	341	301	337	363	407	1550	4890	5640	1280	433	294
27	310	334	297	326	362	425	1530	5360	6140	1250	451	294
28	306	332	288	e300	371	439	1490	6580	5840	1160	432	294
29	304	340	294	e280	---	453	1500	8770	5270	1080	417	294
30	302	335	297	e285	---	473	1660	9510	4850	1020	404	291
31	308	---	297	295	---	495	---	9080	---	968	394	---
TOTAL	9295	9735	9609	9581	8518	12269	38868	125280	200030	68488	17102	9648
MEAN	300	324	310	309	304	396	1296	4041	6668	2209	552	322
MAX	312	373	339	349	374	495	2310	9510	9780	4040	917	385
MIN	270	286	280	280	275	378	536	1820	4810	968	394	291
AC-FT	18440	19310	19060	19000	16900	24340	77090	248500	396800	135800	33920	19140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	478	538	481	423	420	601	1583	4932	5915	2167	703	444
MEAN	478	538	481	423	420	601	1583	4932	5915	2167	703	444
MAX	1458	1327	1361	938	803	1407	3364	9768	13150	4960	1860	1196
(WY)	1960	1991	1996	1981	1968	1968	1996	1972	1972	1999	1976	1978
MIN	294	294	270	248	262	237	309	1415	1583	471	284	238
(WY)	1988	1988	1995	1995	2001	1977	2001	1977	2001	1977	1977	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1959 - 2002

ANNUAL TOTAL	207201	518423	
ANNUAL MEAN	568	1420	1550
HIGHEST ANNUAL MEAN			2963
LOWEST ANNUAL MEAN			565
HIGHEST DAILY MEAN	4870	May 25	9780
LOWEST DAILY MEAN	226	Sep 24	270
ANNUAL SEVEN-DAY MINIMUM	228	Sep 19	281
ANNUAL RUNOFF (AC-FT)	411000	1028000	1123000
10 PERCENT EXCEEDS	1370	4970	4320
50 PERCENT EXCEEDS	303	378	542
90 PERCENT EXCEEDS	257	294	304

e Estimated

COLUMBIA RIVER MAIN STEM

12450700 COLUMBIA RIVER BELOW WELLS DAM, WA

LOCATION.--Lat 47°56'48", long 119°51'56", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.6, T.28 N., R.24 E., Chelan County, Hydrologic Unit 17020005, at powerhouse of Wells Dam, 0.7 mi northeast of Azwell, and at mile 515.9.

DRAINAGE AREA.--86,100 mi², approximately.

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

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

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

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

AVERAGE DISCHARGE.--49 years (water years 1954-2002), 115,300 ft³/s, 83,530,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 402,000 ft³/s June 15, 1972; maximum elevation, 731.92 ft June 16, 1972; minimum discharge, 17,900 ft³/s Oct. 5, 1970 (from powerplant records); minimum elevation, 703.55 ft Sept. 28, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 251,000 ft³/s July 2; minimum daily discharge, 28,500 ft³/s Mar. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65400	53700	47800	67500	98500	88000	56700	124000	132000	241000	137000	46100
2	50500	51200	49500	93900	85700	72200	66100	133000	161000	251000	145000	64900
3	58900	46600	92400	101000	72300	52200	59700	128000	194000	249000	116000	92500
4	58800	44500	95800	112000	117000	73700	52900	120000	238000	219000	93500	68100
5	45300	74800	89800	91700	105000	60200	58900	111000	233000	187000	114000	69900
6	38500	74800	75000	59700	107000	87200	38300	158000	220000	190000	123000	67400
7	43100	75400	75300	81200	91800	94500	33400	156000	235000	143000	144000	54800
8	59600	75100	48000	76200	100000	93200	51700	128000	221000	152000	147000	52500
9	53500	65800	52400	59800	91000	65400	59600	145000	208000	184000	138000	86800
10	57400	54000	93700	60400	83500	55500	51100	130000	230000	207000	116000	73500
11	57800	56200	99900	75700	122000	88200	115000	107000	204000	204000	98300	62600
12	64200	65900	93700	63300	106000	84300	116000	101000	209000	218000	125000	78800
13	42500	60000	86400	65300	101000	70600	94700	137000	189000	200000	131000	77800
14	44700	65200	79100	105000	91700	70200	113000	134000	199000	142000	126000	46400
15	68600	70700	66300	110000	114000	79800	141000	131000	176000	175000	123000	46700
16	74000	74800	46700	100000	95900	67700	177000	140000	170000	208000	98300	80300
17	64500	57200	84200	107000	69600	54400	186000	129000	193000	185000	81400	71000
18	61400	62000	94500	103000	97300	88200	189000	119000	214000	183000	81300	82500
19	64400	82300	96300	90400	96400	78300	180000	117000	231000	199000	121000	99500
20	45700	87500	107000	62200	92900	97800	179000	130000	248000	180000	118000	94200
21	44500	86600	96000	110000	83000	79700	155000	125000	229000	156000	117000	81000
22	62900	55200	76400	105000	73400	49300	176000	136000	185000	176000	132000	73500
23	58500	69600	63100	105000	77400	31800	159000	147000	147000	173000	120000	100000
24	66100	73100	87000	91000	61300	35800	157000	146000	186000	154000	96800	101000
25	63700	66600	53300	107000	84200	47500	152000	124000	216000	139000	73500	97000
26	54000	100000	100000	78200	82600	63600	145000	144000	209000	119000	116000	85100
27	44500	97700	97600	68200	95700	57300	124000	156000	233000	104000	110000	61600
28	43900	102000	89300	111000	76700	52100	114000	155000	245000	106000	118000	65200
29	72900	95400	68800	117000	---	47800	152000	160000	218000	129000	107000	43300
30	60200	83400	53800	120000	---	34700	152000	151000	197000	148000	111000	85700
31	46100	---	92100	122000	---	28500	---	162000	---	152000	89500	---
TOTAL	1736100	2127300	2451200	2819700	2572900	2049700	3505100	4184000	6170000	5473000	3567600	2209700
MEAN	56000	70910	79070	90960	91890	66120	116800	135000	205700	176500	115100	73660
MAX	74000	102000	107000	122000	122000	97800	189000	162000	248000	251000	147000	101000
MIN	38500	44500	46700	59700	61300	28500	33400	101000	132000	104000	73500	43300
AC-FT	3444000	4220000	4862000	5593000	5103000	4066000	6952000	8299000	12240000	10860000	7076000	4383000
CAL YR 2001	TOTAL 25912300	MEAN 70990	MAX 123000	MIN 29500	AC-FT 51400000							
WTR YR 2002	TOTAL 38866300	MEAN 106500	MAX 251000	MIN 28500	AC-FT 77090000							

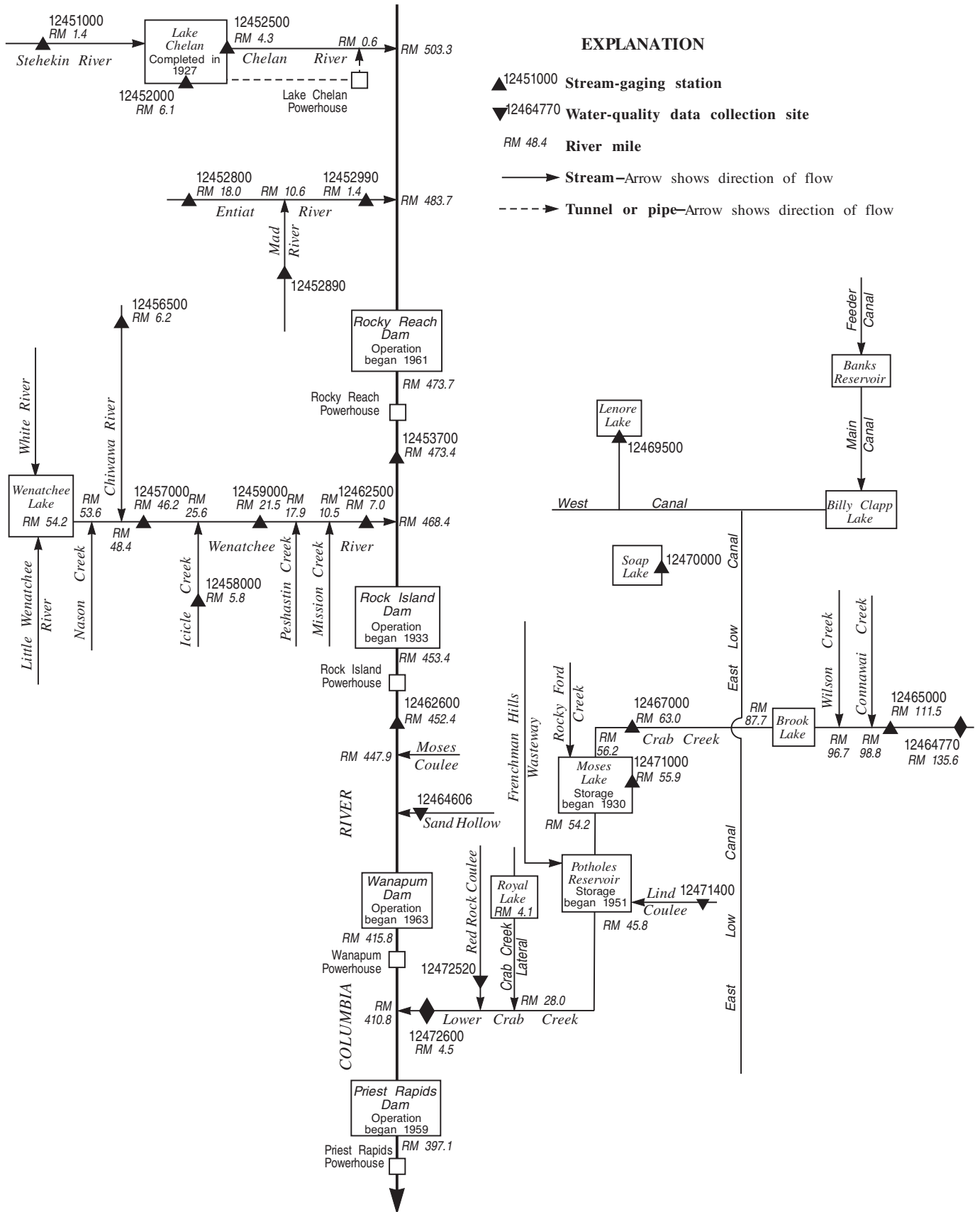


Figure 42. Schematic diagram showing surface-water and water-quality stations in the Columbia River Basin from Chelan to Priest Rapids Dam including Chelan River, Entiat River, Wenatchee River, and Crab Creek Basins.

CHELAN RIVER BASIN

12451000 STEHEKIN RIVER AT STEHEKIN, WA

LOCATION.--Lat 48°19'47", long 120°41'26", in NE ¼ SE ¼ sec.26, T.33 N., R.17 E., Chelan County, Hydrologic Unit 17020009, Lake Chelan National Recreation Area, on left bank 1,100 ft upstream from Boulder Creek, 1.4 mi upstream from Lake Chelan, and 2.1 mi northwest of Stehekin.

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--October 1910 to October 1915, October 1926 to current year. Monthly discharge only for some periods, published in WSP 1316.

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

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

REMARKS.--Records good, except for estimated daily discharges and the period July 14 to Aug. 28, which are fair. No known regulation or diversion. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--81 years (water years 1911-14, 1927-2002), 1,413 ft³/s, 59.78 in/yr, 1,024,000 acre-ft/yr, includes monthly discharge values published in WSP 1316.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,900 ft³/s Nov. 29, 1995, gage height, 29.58 ft, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement at 18,800 ft³/s; minimum discharge, 56 ft³/s Jan. 12, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	2215	7,220	23.95	June 16	0130	*8,960	*24.92
June 6	0200	6,840	23.66	June 27	0200	7,820	24.26

Minimum discharge 211 ft³/s Oct. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339	440	523	277	396	788	608	2920	5300	4990	2050	e980
2	323	433	493	282	387	731	627	3550	5390	4540	1880	e970
3	289	449	467	270	382	688	617	3330	5850	4350	1690	e930
4	272	414	452	267	361	664	651	2820	6010	4320	1550	e870
5	255	451	435	264	351	654	753	2450	6340	4010	1490	e800
6	245	441	436	273	352	623	917	2150	6270	3900	1460	e770
7	232	424	413	369	346	599	1100	1920	4850	4290	1380	e720
8	226	415	408	1140	339	573	1110	1740	3980	5600	1350	e690
9	221	407	394	908	326	547	1100	1630	3470	4980	1400	e670
10	223	399	381	738	321	539	1160	1560	3600	4840	1600	e640
11	272	394	370	663	316	545	1280	1590	4590	5780	1620	e620
12	241	373	364	648	304	531	1480	1800	5820	5940	1530	e600
13	382	408	381	632	302	500	2220	2320	6760	5680	1550	e590
14	327	996	388	588	295	480	3980	2710	7710	5980	1640	e585
15	309	1950	377	554	290	467	3140	2640	8190	5260	1650	e580
16	279	1780	362	531	287	456	2460	2640	7950	4810	1470	e570
17	289	1280	408	508	285	439	2100	3030	6710	4800	1270	e560
18	266	1010	414	486	283	429	1860	3370	6250	4640	1160	e550
19	312	883	389	475	294	423	1740	3270	5560	4490	1110	e530
20	338	848	368	468	291	417	1720	4010	5480	4110	1080	e515
21	300	833	354	463	319	401	1790	4400	5880	3880	1080	e510
22	366	820	340	444	1320	390	1820	3940	6480	3750	1080	e495
23	466	773	328	430	1940	387	1760	3490	6670	3760	1100	e480
24	404	714	319	450	1540	395	1640	3300	6470	3820	1140	e470
25	394	664	311	530	1240	408	1560	3360	6320	3750	1220	e465
26	364	623	302	504	1090	431	1530	3670	6810	3700	1170	e460
27	385	590	296	466	948	439	1530	3980	7330	3250	1130	e455
28	390	581	295	443	854	451	1540	5200	6710	2920	1140	e445
29	365	546	289	427	---	463	1680	6800	7080	2890	e1160	e440
30	351	508	286	416	---	487	2110	6710	6050	2690	e1130	e435
31	461	---	283	407	---	535	---	6090	---	2380	e990	---
TOTAL	9886	20847	11626	15321	15759	15880	47583	102390	181880	134100	42270	18395
MEAN	319	695	375	494	563	512	1586	3303	6063	4326	1364	613
MAX	466	1950	523	1140	1940	788	3980	6800	8190	5980	2050	980
MIN	221	373	283	264	283	387	608	1560	3470	2380	990	435
AC-FT	19610	41350	23060	30390	31260	31500	94380	203100	360800	266000	83840	36490
CFSM	0.99	2.16	1.17	1.54	1.75	1.60	4.94	10.3	18.9	13.5	4.25	1.91
IN.	1.15	2.42	1.35	1.78	1.83	1.84	5.51	11.87	21.08	15.54	4.90	2.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2002, BY WATER YEAR (WY)

	605	696	525	404	398	525	1443	3542	4167	2642	1258	697
MEAN	605	696	525	404	398	525	1443	3542	4167	2642	1258	697
MAX	1869	3192	1896	1577	1209	1546	4644	5810	7738	5479	2716	1399
(WY)	1960	1991	1976	1984	1971	1934	1934	1958	1950	1950	1974	1959
MIN	230	148	125	86.0	115	194	549	1475	1680	1157	681	409
(WY)	1988	1930	1930	1930	1937	1937	1955	1977	1915	1977	1944	1942

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1911 - 2002

ANNUAL TOTAL		329314		615937								
ANNUAL MEAN		902		1687						1409		
HIGHEST ANNUAL MEAN										2008		1950
LOWEST ANNUAL MEAN										864		2001
HIGHEST DAILY MEAN			6360	May 24		8190	Jun 15		18000		Nov 29	1995
LOWEST DAILY MEAN			115	Feb 7		221	Oct 9		58		Jan 12	1930
ANNUAL SEVEN-DAY MINIMUM			124	Feb 21		237	Oct 6		67		Jan 9	1930
ANNUAL RUNOFF (AC-FT)		653200		1222000						1021000		
ANNUAL RUNOFF (CFSM)			2.81			5.26				4.39		
ANNUAL RUNOFF (INCHES)			38.16			71.38				59.66		
10 PERCENT EXCEEDS			2260			4980				3620		
50 PERCENT EXCEEDS			436			664				740		
90 PERCENT EXCEEDS			142			310				246		

e Estimated

12452000 LAKE CHELAN AT CHELAN, WA

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

DRAINAGE AREA.--924 mi².

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 676,700 acre-ft July 24, elevation, 1,099.98 ft; minimum contents, 172,000 acre-ft Apr. 12, 13, elevation, 1,084.43.

Capacity table (elevation, in feet, and usable contents, in acre-feet)
(Based on data by the Pacific Northwest Coordination Agreement)

1,080	31,540	1,090	350,900	1,100	677,400
1,085	190,200	1,095	513,300		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1098.09	1094.72	1094.29	1091.88	1089.52	1087.34	1084.89	1085.24	1090.37	1098.52	1099.58	1099.63
2	1097.98	1094.61	1094.37	1091.81	1089.41	1087.27	1084.81	1085.37	1090.80	1098.53	1099.59	1099.57
3	1097.86	1094.51	1094.43	1091.71	1089.31	1087.20	1084.75	1085.55	1091.11	1098.60	1099.51	1099.52
4	1097.74	1094.41	1094.45	1091.60	1089.22	1087.13	1084.69	1085.68	1091.48	1098.67	1099.45	1099.44
5	1097.63	1094.31	1094.43	1091.50	1089.12	1087.07	1084.63	1085.79	1091.92	1098.69	1099.39	1099.32
6	1097.54	1094.20	1094.36	1091.43	1089.02	1086.97	1084.59	1085.88	1092.39	1098.76	1099.40	1099.25
7	1097.41	1094.08	1094.26	1091.41	1088.95	1086.89	1084.56	1085.91	1092.74	1098.89	1099.38	1099.19
8	1097.29	1093.97	1094.17	1091.40	1088.90	1086.82	1084.53	1085.94	1092.99	1099.11	1099.40	1099.06
9	1097.19	1093.87	1094.07	1091.37	1088.80	1086.74	1084.50	1085.96	1093.17	1099.21	1099.45	1098.96
10	1097.04	1093.76	1093.96	1091.33	1088.69	1086.66	1084.47	1085.98	1093.29	1099.28	1099.52	1098.88
11	1096.96	1093.65	1093.86	1091.28	1088.59	1086.60	1084.45	1085.99	1093.50	1099.45	1099.59	1098.78
12	1096.85	1093.55	1093.75	1091.27	1088.47	1086.56	1084.43	1085.99	1093.81	1099.67	1099.65	1098.70
13	1096.73	1093.44	1093.67	1091.17	1088.36	1086.49	1084.44	1086.01	1094.22	1099.75	1099.71	1098.66
14	1096.58	1093.45	1093.63	1091.10	1088.25	1086.41	1084.55	1086.09	1094.74	1099.86	1099.78	1098.61
15	1096.45	1093.44	1093.50	1091.01	1088.14	1086.33	1084.73	1086.18	1095.34	1099.81	1099.85	1098.59
16	1096.37	1093.47	1093.46	1090.94	1088.04	1086.24	1084.87	1086.24	1095.98	1099.81	1099.88	1098.56
17	1096.26	1093.44	1093.41	1090.85	1087.93	1086.15	1084.95	1086.33	1096.46	1099.86	1099.90	1098.52
18	1096.12	1093.40	1093.30	1090.76	1087.83	1086.05	1085.02	1086.46	1096.79	1099.89	1099.90	1098.48
19	1095.99	1093.48	1093.21	1090.68	1087.72	1085.97	1085.06	1086.61	1096.83	1099.89	1099.90	1098.41
20	1095.89	1093.59	1093.13	1090.67	1087.63	1085.88	1085.08	1086.79	1096.75	1099.80	1099.89	1098.35
21	1095.76	1093.69	1093.04	1090.53	1087.55	1085.81	1085.11	1087.02	1096.66	1099.69	1099.86	1098.29
22	1095.65	1093.78	1092.94	1090.41	1087.53	1085.73	1085.13	1087.29	1096.66	1099.74	1099.80	1098.24
23	1095.67	1093.87	1092.84	1090.32	1087.52	1085.65	1085.16	1087.47	1096.70	1099.85	1099.79	1098.21
24	1095.54	1093.92	1092.74	1090.25	1087.52	1085.57	1085.17	1087.64	1096.73	1099.94	1099.79	1098.19
25	1095.41	1093.95	1092.63	1090.18	1087.52	1085.48	1085.17	1087.80	1096.82	1099.90	1099.82	1098.21
26	1095.30	1094.00	1092.51	1090.08	1087.49	1085.39	1085.16	1087.97	1097.05	1099.75	1099.85	1098.22
27	1095.22	1094.03	1092.40	1089.98	1087.46	1085.32	1085.16	1088.17	1097.46	1099.71	1099.83	1098.24
28	1095.10	1094.10	1092.31	1089.89	1087.41	1085.23	1085.17	1088.40	1097.80	1099.69	1099.78	1098.26
29	1094.97	1094.18	1092.21	1089.79	---	1085.14	1085.17	1088.78	1098.18	1099.66	1099.75	1098.29
30	1094.88	1094.22	1092.10	1089.70	---	1085.05	1085.18	1089.33	1098.49	1099.64	1099.72	1098.25
31	1094.82	---	1091.99	1089.61	---	1084.98	---	1089.90	---	1099.62	1099.67	---
MEAN	1096.40	1093.90	1093.40	1090.84	1088.28	1086.20	1084.85	1086.77	1094.91	1099.46	1099.69	1098.70
MAX	1098.09	1094.72	1094.45	1091.88	1089.52	1087.34	1085.18	1089.90	1098.49	1099.94	1099.90	1099.63
MIN	1094.82	1093.40	1091.99	1089.61	1087.41	1084.98	1084.43	1085.24	1090.37	1098.52	1099.38	1098.19
(†)	505800	489600	412800	337000	266200	188300	196300	357000	629600	663900	665800	617100
(‡)	-111000	-16200	-76800	-75800	-20800	-77900	+8100	+160700	+272600	+34300	+1900	-48700

CAL YR 2001 MEAN 1094.73 MAX 1099.71 MIN 1090.03 AC-FT(†) +60900
WTR YR 2002 MEAN 1092.82 MAX 1099.94 MIN 1084.43 AC-FT(†) +300

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

‡ Change in contents, in acre-feet.

CHELAN RIVER BASIN

12452500 CHELAN RIVER AT CHELAN, WA

LOCATION.--Lat 47°50'05", long 120°00'43", in SE ¼ NE ¼ sec.30, T.27 N., R.23 E., Chelan County, Hydrologic Unit 17020009, at Chelan River powerplant tailrace, 4.3 mi downstream from control dam at outlet of Lake Chelan, and 3.0 mi southeast of Chelan.

DRAINAGE AREA.--924 mi².

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

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

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

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

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

AVERAGE DISCHARGE.--98 years (water years 1905-2002), 2,050 ft³/s, 30.13 in/yr, 1,485,000 acre-ft/yr, adjusted for storage since October 1911.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18,400 ft³/s June 3, 1968; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at other times owing to artificial regulation.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 8,740 ft³/s June 20; minimum daily discharge, 6.5 ft³/s Nov. 22-30 and Dec. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2210	2210	6.6	2210	2210	2210	2210	2220	2220	6280	2570	2220
2	2210	2160	6.6	2210	2210	2210	2210	2220	2220	3960	2570	2220
3	2210	2210	6.6	2210	2210	2210	2210	2220	2220	3450	2450	2220
4	2210	2210	6.5	2210	2210	2210	2210	2220	2220	3460	2330	2220
5	1910	2210	1880	2120	2210	2210	2210	2220	2220	3010	2080	2040
6	2190	2210	2120	2210	2210	2210	2210	2220	2220	2460	1450	2220
7	2200	2210	2210	2210	1990	1960	2210	2220	2220	2410	1540	2220
8	2210	2210	2210	2210	2210	2210	2210	2220	2220	4140	507	2220
9	2210	2210	2210	2210	2210	2210	2210	2220	2130	4200	591	2170
10	2190	2210	2210	1930	2210	2210	2210	2220	2220	3760	621	2220
11	2010	2210	2210	2210	2210	2210	2210	2220	2220	3500	226	2130
12	2210	2210	2210	2210	2210	2210	2210	2220	2220	4730	629	1990
13	2210	2210	2210	2210	2210	2210	2210	2220	2280	5760	514	1420
14	2210	2210	2210	2210	2210	2210	2210	2220	2340	6350	697	1350
15	2210	2210	2210	2210	2210	2210	2210	2220	2340	6020	608	1310
16	2210	2210	2210	2210	2210	2210	2210	2220	2340	4760	1410	1240
17	2210	2210	2210	2210	2210	2210	2120	2220	2350	4160	1580	1350
18	2210	607	2210	2210	2210	2210	2210	2220	5210	5350	1100	1340
19	2120	47	2210	2210	2210	2210	2210	2220	6310	5460	1660	1340
20	2210	6.6	2050	2210	2210	2210	2210	2220	8740	5400	1630	1340
21	2120	6.6	2210	2210	2030	2100	2210	2220	8630	3830	1520	1170
22	2210	6.5	2210	2210	2210	2210	2210	2220	8620	2500	1520	1340
23	2210	6.5	2210	2210	2210	2210	2210	2220	8660	2510	1520	322
24	2210	6.5	2210	2010	2210	2210	2210	2220	7620	3630	1500	410
25	2210	6.5	2210	2210	2210	2210	2210	2220	5620	7170	1450	122
26	2210	6.5	2210	2210	2210	2210	2210	2220	4100	6770	1230	122
27	2210	6.5	2010	2210	2210	2210	2210	2220	3470	3360	1490	122
28	2210	6.5	2210	2210	2210	2210	2210	2220	3550	3410	2220	122
29	2120	6.5	2210	2210	---	2210	2210	2220	3580	3410	2220	826
30	2210	6.5	2210	2210	---	2210	2210	2220	4360	3120	2220	1340
31	2210	---	2210	2210	---	2210	---	2220	---	2570	2220	---
TOTAL	67690	38245.7	58916.3	67940	61480	68150	66210	68820	116670	130900	45873	42676
MEAN	2184	1275	1901	2192	2196	2198	2207	2220	3889	4223	1480	1423
MAX	2210	2210	2210	2210	2210	2210	2210	2220	8740	7170	2570	2220
MIN	1910	6.5	6.5	1930	1990	1960	2120	2220	2130	2410	226	122
AC-FT	134300	75860	116900	134800	121900	135200	131300	136500	231400	259600	90990	84650
MEAN†	379	1003	652	959	920	932	2342	4832	8472	4779	1510	604
CFSM.†	0.41	1.09	0.71	1.04	1.00	1.01	2.53	5.23	9.17	5.17	1.63	0.65
IN.†	0.47	1.21	0.81	1.20	1.04	1.16	2.83	6.03	10.23	5.96	1.88	0.73
AC-FT†	23300	59660	40100	59000	51100	57300	139300	297200	504000	293900	92890	35950

CAL YR 2001 TOTAL 393656.1 MEAN 1079 MAX 2220 MIN 6.5 AC-FT 780800 MEAN† 1162 CFSM† 1.26 IN.† 17.08 AC-FT† 841700
WTR YR 2002 TOTAL 833571.0 MEAN 2284 MAX 8740 MIN 6.5 AC-FT 1653000 MEAN† 2283 CFSM† 2.47 IN.† 33.54 AC-FT† 1653000

† Adjusted for change in contents in Lake Chelan.

ENTIAT RIVER BASIN

12452890 MAD RIVER AT ARDENVOIR, WA

LOCATION.--Lat 47°44'13", long 120°22'03", in NW ¼ SE ¼ sec.19, T.26 N., R.20 E., Chelan County, Hydrologic Unit 17020010, at Moe Ridge bridge, 0.35 mi. above mouth and about 100 ft. above concrete diversion at Ardenvoir.

DRAINAGE AREA.--92.4 mi².

PERIOD OF RECORD.--April to September 2002.

GAGE.--Water-stage recorder. Datum of gage is 1,260 ft above NGVD of 1929.

REMARKS.--Records good.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 698 ft³/s May 30, gage height 3.89 ft; minimum discharge during period Apr. 25 to Sept. 30, 21 ft³/s, Sept. 24-26, 29; 15.1 ft³/s measured Oct. 11.

DISCHARGE, CUBIC FEET PER SECOND, APRIL 2002 TO OCTOBER 2002
DAILY MEAN VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	182	560	186	53	28	24
2	---	210	545	170	51	28	23
3	---	221	535	156	51	29	24
4	---	210	537	146	50	28	27
5	---	195	578	137	49	28	24
6	---	185	554	128	49	29	23
7	---	176	457	122	52	28	22
8	---	166	374	129	49	28	22
9	---	157	324	119	46	28	22
10	---	150	313	116	45	27	22
11	---	148	324	111	43	26	22
12	---	157	349	104	42	25	22
13	---	177	401	100	41	24	22
14	---	188	474	95	39	24	22
15	---	191	523	90	39	23	22
16	---	202	521	87	38	24	22
17	---	222	432	83	37	24	22
18	---	246	369	79	36	23	22
19	---	260	321	76	36	22	22
20	---	296	294	73	35	22	22
21	---	336	285	71	35	22	22
22	---	338	299	68	35	22	22
23	---	316	312	65	34	22	22
24	---	310	297	63	33	22	21
25	---	317	273	61	33	22	21
26	128	341	266	59	32	22	21
27	131	375	266	58	32	22	21
28	129	481	250	57	31	22	22
29	136	600	237	57	31	22	21
30	152	659	203	56	30	22	e19
31	---	621	---	54	29	---	e14
TOTAL	---	8633	11473	2976	1236	738	679
MEAN	---	278	382	96.0	39.9	24.6	21.9
MAX	---	659	578	186	53	29	27
MIN	---	148	203	54	29	22	14
AC-FT	---	17120	22760	5900	2450	1460	1350

e Estimated

ENTIAT RIVER BASIN

12452990 ENTIAT RIVER NEAR ENTIAT, WA

LOCATION.--Lat 47°39'48", long 120°14'58", in NW ¼ SE ¼ sec.18, T.25 N., R.21 E., Chelan County, Hydrologic Unit 17020010, on left bank 200 ft upstream from bridge, 1.2 mi west of Entiat High School, and at mile 1.4.

DRAINAGE AREA.--419 mi².

PERIOD OF RECORD.--March 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 750 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation, but approximately 6 diversions and 50 small pumps divert water for agricultural irrigation upstream from station. U. S. Geological Survey telemeter at station.

AVERAGE DISCHARGE.--6 years (water years 1997-2002), 526 ft³/s, 381,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,600 ft³/s June 17, 1999, gage height, 11.20 ft; minimum daily discharge, 58 ft³/s Dec. 12, 2000, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,050 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0730	2,910	9.84	June 16	0645	*3,250	*10.04
June 6	0600	2,800	9.77	June 27	1115	2,080	9.27

Minimum daily discharge, 74 ft³/s Oct. 3-6, gage height 6.49 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	126	147	119	149	196	240	752	2420	1430	356	171
2	80	109	143	123	145	195	250	954	2320	1210	328	168
3	76	107	139	120	141	191	247	1100	2340	1080	313	165
4	76	104	137	116	139	188	248	1080	2360	1020	297	163
5	76	101	132	115	136	188	265	1010	2570	945	282	154
6	76	102	137	118	135	191	295	926	2690	866	273	147
7	77	99	133	128	137	186	311	850	2300	842	277	143
8	77	95	130	281	139	182	313	785	1830	1030	259	138
9	77	97	126	312	131	180	320	736	1560	1050	247	133
10	76	98	123	256	129	178	326	689	1480	959	246	126
11	85	96	127	235	128	184	352	666	1540	975	257	121
12	89	96	118	227	114	196	384	684	1760	1030	249	118
13	85	98	122	218	116	185	450	767	2150	982	236	117
14	91	141	139	208	127	180	822	855	2610	974	232	117
15	88	282	122	e174	125	179	859	915	2940	893	243	114
16	87	266	134	e170	125	181	751	946	3090	786	237	114
17	84	216	163	e160	129	179	674	1030	2600	737	225	114
18	84	190	136	e155	126	173	610	1160	2130	695	216	115
19	82	184	139	e160	126	172	564	1220	1800	659	204	113
20	85	187	141	e170	126	176	542	1370	1650	624	197	110
21	87	191	145	183	129	168	542	1560	1650	571	192	111
22	89	188	139	165	162	167	560	1570	1800	534	189	110
23	113	179	132	165	291	167	567	1470	1980	523	185	106
24	106	161	131	174	256	172	552	1410	1970	528	184	102
25	105	157	126	172	222	189	549	1420	1810	518	193	101
26	105	150	121	166	212	202	551	1500	1840	505	200	101
27	105	145	122	e140	209	206	559	1630	2030	500	186	102
28	108	148	124	e135	209	204	548	1980	1930	460	181	100
29	101	133	121	e120	---	209	561	2550	1920	433	177	e99
30	102	142	121	e130	---	210	622	2840	1760	410	175	e98
31	118	---	121	e140	---	222	---	2690	---	387	178	---
TOTAL	2772	4388	4091	5255	4313	5796	14434	39115	62830	24156	7214	3691
MEAN	89.4	146	132	170	154	187	481	1262	2094	779	233	123
MAX	118	282	163	312	291	222	859	2840	3090	1430	356	171
MIN	76	95	118	115	114	167	240	666	1480	387	175	98
AC-FT	5500	8700	8110	10420	8550	11500	28630	77580	124600	47910	14310	7320
CFSM	0.21	0.35	0.31	0.40	0.37	0.45	1.15	3.01	5.00	1.86	0.56	0.29
IN.	0.25	0.39	0.36	0.47	0.38	0.51	1.28	3.47	5.58	2.14	0.64	0.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	1996	1997	1998	1999	2000	2001	2002
MEAN	163	209	168	172	169	255	621
MAX	301	412	316	235	202	385	1090
(WY)	1998	2000	2000	2000	1997	1997	1996
MIN	89.4	133	118	108	92.1	125	165
(WY)	2002	1999	2001	2001	2001	2001	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1996 - 2002

ANNUAL TOTAL	74988	178055	
ANNUAL MEAN	205	488	526
HIGHEST ANNUAL MEAN			699
LOWEST ANNUAL MEAN			209
HIGHEST DAILY MEAN	1480	May 25	3090
LOWEST DAILY MEAN	60	Feb 7	76
ANNUAL SEVEN-DAY MINIMUM	76	Oct 3	76
ANNUAL RUNOFF (AC-FT)	148700	353200	381300
ANNUAL RUNOFF (CFSM)	0.49	1.16	1.26
ANNUAL RUNOFF (INCHES)	6.66	15.81	17.07
10 PERCENT EXCEEDS	441	1520	1470
50 PERCENT EXCEEDS	127	185	219
90 PERCENT EXCEEDS	85	102	116

e Estimated

COLUMBIA RIVER MAIN STEM

12453700 COLUMBIA RIVER AT ROCKY REACH DAM, WA

LOCATION.--Lat 47°31'28", long 120°18'04", in SW ¼ NW ¼ sec.2, T.23 N., R.20 E., Chelan County, Hydrologic Unit 17020010, on right bank 0.5 mi downstream from Rocky Reach Dam, 1.5 mi downstream from Swakane Creek, 7.4 mi north of Wenatchee, and at mile 473.4.

DRAINAGE AREA.--87,800 mi², approximately.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929. Oct. 1, 1960, to July 22, 1988, water-stage recorder with auxiliary water-stage recorder 1.9 mi downstream from base gage at same datum.

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

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

AVERAGE DISCHARGE.--42 years (water years 1961-2002), 115,200 ft³/s, 83,460,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 535,000 ft³/s June 10, 1961, elevation, about 635.50 ft; minimum daily discharge, 25,100 ft³/s Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 254,000 ft³/s June 20; minimum daily discharge, 30,100 ft³/s March 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72600	56900	50700	76000	103000	89300	58500	130000	142000	243000	139000	49300
2	49900	50700	48200	93500	85800	76300	67500	134000	154000	251000	146000	65300
3	59700	48500	93000	108000	74900	53200	61600	133000	192000	248000	117000	91500
4	65700	51200	96800	116000	127000	74200	51700	124000	234000	218000	92400	65800
5	42700	74400	97600	99200	102000	68100	58200	110000	236000	188000	116000	70600
6	45300	78200	74400	64800	110000	84900	39900	160000	218000	189000	121000	70300
7	40600	77400	78600	80600	91100	94400	37800	160000	238000	159000	143000	53000
8	62000	79600	49600	78500	104000	100000	56800	128000	229000	143000	148000	51400
9	56300	65800	56000	68200	94300	64600	61400	148000	202000	175000	133000	89400
10	59600	56600	95100	61800	86800	57800	46400	135000	227000	206000	118000	72300
11	61300	59700	105000	74500	126000	90200	107000	112000	203000	204000	95300	62900
12	65600	69600	96800	69900	110000	85400	120000	103000	209000	213000	124000	76400
13	47800	61400	94500	66700	104000	75500	100000	136000	186000	204000	125000	77200
14	43200	68300	82800	106000	92500	72500	109000	137000	194000	161000	125000	50200
15	70500	75400	66700	114000	118000	82700	141000	132000	182000	162000	123000	44000
16	75200	80700	49100	106000	102000	67900	173000	142000	173000	211000	105000	79000
17	72900	54400	87400	111000	71100	60700	187000	131000	191000	184000	75400	71500
18	62400	65600	99700	106000	96500	86600	185000	120000	213000	179000	81600	76200
19	66300	85600	101000	97100	98900	78200	186000	117000	233000	200000	118000	95700
20	50600	85100	111000	68400	93400	99700	180000	136000	254000	181000	114000	91900
21	44500	91300	103000	107000	90000	86600	154000	125000	235000	160000	111000	85300
22	64300	56600	79800	113000	70800	48900	187000	140000	195000	169000	125000	71500
23	59100	69600	67200	113000	82000	31000	164000	149000	158000	170000	117000	97800
24	71300	74500	89900	89600	65100	41300	160000	147000	177000	156000	95800	97800
25	65100	65700	57200	112000	82200	46000	157000	124000	215000	145000	69000	95000
26	56000	103000	102000	79800	87400	67500	145000	141000	207000	122000	112000	87600
27	45700	102000	99800	72400	95000	57000	125000	159000	236000	103000	109000	57500
28	50700	105000	93300	111000	81500	52800	110000	155000	245000	107000	116000	62900
29	72900	98800	74100	122000	---	50200	153000	159000	219000	129000	109000	41800
30	62900	86000	58300	125000	---	36300	154000	156000	194000	143000	106000	84300
31	49200	---	91100	126000	---	30100	---	161000	---	149000	92700	---
TOTAL	1811900	2197600	2549700	2937000	2645300	2109900	3536800	4244000	6191000	5472000	3522200	2185400
MEAN	58450	73250	82250	94740	94480	68060	117900	136900	206400	176500	113600	72850
MAX	75200	105000	111000	126000	127000	100000	187000	161000	254000	251000	148000	97800
MIN	40600	48500	48200	61800	65100	30100	37800	103000	142000	103000	69000	41800
AC-FT	3594000	4359000	5057000	5826000	5247000	4185000	7015000	8418000	12280000	10850000	6986000	4335000
CAL YR 2001	TOTAL 26117900	MEAN 71560	MAX 125000	MIN 28600	AC-FT 51800000							
WTR YR 2002	TOTAL 39402800	MEAN 108000	MAX 254000	MIN 30100	AC-FT 78160000							

WENATCHEE RIVER BASIN

12457000 WENATCHEE RIVER AT PLAIN, WA

LOCATION.--Lat 47°45'47", long 120°39'54", in NE 1/4 SW 1/4 sec.12, T.26 N., R.17 E., Chelan County, Hydrologic Unit 17020011, on left bank 300 ft downstream from county road bridge at Plain, 0.3 mi downstream from Beaver Creek, 2.2 mi downstream from Chiwawa River, 11.3 mi north of Leavenworth, and at mile 46.2.

DRAINAGE AREA.--591 mi².

PERIOD OF RECORD.--August 1904 to November 1910 estimates of monthly mean discharges are published in Washington State Water-Supply Bulletin No. 5, December 1910 to September 1950 (monthly discharges only for some periods, published in WSP 1316), October 1950 to September 1979, October 1989 to current year. Published as "near Leavenworth" 1911-31.

REVISED RECORDS.--WSP 482: 1911-14. WSP 1316: 1914(M), 1916(M), 1919(M), 1921-23(M), 1927(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,805 ft above NGVD of 1929, from river-profile map. Prior to Jan. 8, 1932, nonrecording gages at site 0.2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Wenatchee Park Land and Irrigation Company diverts water from the Chiwawa River, upstream from the station for irrigation of 1,400 acres near Plain. Natural regulation by Wenatchee Lake 8.0 mi upstream. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--82 years (water years 1911-79, 1990-2002), 2,252 ft³/s, 51.75 in/yr, 1,632,000 acre-ft/yr. Includes mean discharges for water years 1930 and 1931, which were estimated for WSP 1316.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,100 ft³/s Nov. 30, 1995, gage height, 14.97 ft; minimum daily discharge, 160 ft³/s Nov. 25, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,400 ft³/s June 16, gage height, 8.98 ft; minimum discharge, 217 ft³/s Oct. 9-10, gage height 1.30 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	283	1130	1110	632	966	1660	1250	4320	8970	6970	1910	751
2	271	1130	1080	637	921	1540	1310	5310	8500	5750	1720	730
3	258	1150	1020	620	896	1440	1300	5640	8660	5080	1530	743
4	247	1060	967	600	863	1390	1320	5200	8850	4800	1410	717
5	238	1020	920	587	836	1360	1440	4660	9090	4390	1310	659
6	235	982	932	597	831	1310	1590	4190	9530	4090	1280	612
7	225	905	897	911	842	1260	1820	3720	8510	4240	1200	584
8	226	838	844	3440	828	1210	1910	3330	6970	5330	1160	548
9	224	782	811	4410	784	1160	1940	3070	5810	5500	1140	523
10	225	736	774	3590	759	1140	2050	2870	5520	5150	1230	504
11	329	694	748	2900	756	1210	2260	2800	6310	5670	1300	493
12	351	664	729	2510	711	1300	2500	2930	7440	6140	1240	483
13	433	681	832	2240	702	1220	3430	3440	8950	5880	1210	478
14	440	1810	992	1970	682	1150	6800	3880	10600	5950	1210	473
15	473	4510	929	1760	666	1100	7310	4020	11600	5540	1230	471
16	434	4760	962	1610	658	1070	5960	4040	12200	4830	1180	456
17	410	3590	1130	1480	649	1040	4880	4310	10900	4540	1120	456
18	387	2740	1060	1380	642	998	4150	4840	9340	4220	1030	440
19	387	2260	1020	1320	652	1010	3700	5020	8160	4030	961	421
20	528	2200	960	1280	662	1050	3500	5720	7380	3790	914	411
21	491	2190	908	1240	706	989	3500	6580	7370	3430	875	407
22	540	2100	855	1170	1250	939	3480	6440	8030	3260	848	396
23	828	1960	825	1140	2800	920	3410	5900	8650	3200	833	388
24	828	1740	786	1180	2920	925	3180	5520	8520	3240	843	378
25	772	1580	757	1340	2560	954	3040	5430	8060	3260	854	374
26	744	1440	731	1290	2230	988	2990	5620	8330	3330	858	368
27	732	1320	706	1190	2000	1010	2980	6040	9230	3100	833	367
28	722	1260	696	1120	1800	1010	2950	7220	8930	2700	820	360
29	675	1200	675	1050	---	1040	3100	9100	9080	2510	813	354
30	646	1130	656	1010	---	1070	3440	10200	8800	2350	812	363
31	863	---	646	1000	---	1150	---	9870	---	2170	777	---
TOTAL	14445	49562	26958	47204	31572	35613	92490	161230	258290	134440	34451	14708
MEAN	466	1652	870	1523	1128	1149	3083	5201	8610	4337	1111	490
MAX	863	4760	1130	4410	2920	1660	7310	10200	12200	6970	1910	751
MIN	224	664	646	587	642	920	1250	2800	5520	2170	777	354
AC-FT	28650	98310	53470	93630	62620	70640	183500	319800	512300	266700	68330	29170
CFSM	0.79	2.80	1.47	2.58	1.91	1.94	5.22	8.80	14.6	7.34	1.88	0.83
IN.	0.91	3.12	1.70	2.97	1.99	2.24	5.82	10.15	16.26	8.46	2.17	0.93

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2002, BY WATER YEAR (WY)

	MEAN	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	891	1405	1341	1091	1080	1208	2663	5791	6400	3467	1215	679																																																																																	
MAX	2722	6702	4395	3938	3010	3719	8162	9771	11760	7540	3154	1573																																																																																	
(WY)	1960	1991	1976	1918	1924	1934	1956	1974	1954	1974	1954	1959																																																																																	
MIN	251	236	296	335	306	487	913	2613	1861	886	456	312																																																																																	
(WY)	1943	1937	1953	1929	1929	1917	1915	1915	1941	1941	1941	1942																																																																																	

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1911 - 2002
ANNUAL TOTAL	457216	900963	
ANNUAL MEAN	1253	2468	2273
HIGHEST ANNUAL MEAN			3344
LOWEST ANNUAL MEAN			1133
HIGHEST DAILY MEAN	8380	12200	32900
LOWEST DAILY MEAN	224	224	160
ANNUAL SEVEN-DAY MINIMUM	231	231	205
ANNUAL RUNOFF (AC-FT)	906900	1787000	1647000
ANNUAL RUNOFF (CFSM)	2.12	4.18	3.85
ANNUAL RUNOFF (INCHES)	28.78	56.71	52.26
10 PERCENT EXCEEDS	3020	6360	5850
50 PERCENT EXCEEDS	767	1210	1200
90 PERCENT EXCEEDS	319	476	485

WENATCHEE RIVER BASIN

12458000 ICICLE CREEK ABOVE SNOW CREEK, NEAR LEAVENWORTH, WA

LOCATION.--Lat 47°32'28", long 120°43'08", in SE 1/4 SE 1/4 sec.28, T.24 N., R.17 E., Chelan County, Hydrologic Unit 17020011, on right bank 1,000 ft upstream from Icicle Canal diversion dam, 0.4 mi upstream from Snow Creek, 4.8 mi southwest of Leavenworth, and at mile 5.8.

DRAINAGE AREA.--193 mi².

PERIOD OF RECORD.--September 1936 to September 1971, October 1993 to current year.

REVISED RECORDS.--WSP 1246: 1936-41. WSP 1286: 1948. WSP 1446: 1943(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,450 ft above NGVD of 1929, from river-profile map.

REMARKS.--No estimated daily discharges. Records fair. No diversion. Some regulation in headwater lakes. Suspended sediment data are available from the district office.

AVERAGE DISCHARGE.--44 years (water years 1937-71, 1994-2002), 622 ft³/s, 43.80 in/yr, 450,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,800 ft³/s Nov. 29, 1995, gage height, 16.04 ft, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily discharge, 44 ft³/s Nov. 30, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	2100	2,700	8.96	June 16	0045	*3,970	*10.21
Apr. 14	0915	2,650	8.91	June 27	0315	2,840	9.12
May 30	0015	3,690	9.96				

Minimum discharge 65 ft³/s Oct. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	319	340	218	295	407	309	1050	2500	1570	415	188
2	71	291	337	218	282	381	327	1350	2480	1400	377	187
3	70	290	322	211	272	378	327	1320	2540	1290	348	185
4	68	255	297	205	262	371	328	1150	2630	1220	326	184
5	67	262	284	199	255	363	357	1030	2850	1080	308	175
6	67	251	278	200	249	354	401	928	2800	1040	302	165
7	65	223	275	816	249	341	448	833	2120	1130	294	164
8	65	206	264	2010	247	322	455	765	1680	1450	278	159
9	69	195	251	1300	239	319	461	716	1430	1290	266	149
10	73	184	237	927	230	315	496	674	1510	1200	262	142
11	116	176	229	778	225	330	553	672	1880	1370	263	136
12	138	176	219	710	199	409	618	739	2300	1410	257	131
13	238	229	264	656	218	387	909	916	2860	1330	248	125
14	184	1610	353	590	218	362	2250	1000	3380	1330	242	115
15	183	1880	320	531	212	342	1630	991	3610	1150	239	111
16	141	1290	379	519	207	328	1230	1020	3360	956	232	108
17	136	861	636	469	203	317	1030	1170	2580	916	222	108
18	125	677	507	454	199	304	893	1340	2540	871	212	107
19	141	644	441	441	197	295	822	1350	2160	829	202	105
20	239	725	393	420	196	295	794	1900	2010	772	194	103
21	173	677	356	405	206	297	798	1970	2130	696	189	101
22	192	617	327	381	527	291	769	1700	2380	661	184	97
23	305	566	304	365	774	283	743	1490	2440	647	180	95
24	234	504	288	364	663	279	689	1430	2220	642	176	93
25	200	462	276	384	546	283	668	1510	2140	628	174	91
26	210	420	265	383	498	286	668	1670	2420	619	174	90
27	220	388	256	353	468	288	694	1860	2620	584	171	89
28	201	363	248	333	438	287	685	2610	2270	532	169	89
29	176	373	239	298	---	286	710	3400	2620	504	166	87
30	169	353	231	309	---	289	801	3310	2040	488	165	90
31	295	---	225	305	---	296	---	2870	---	457	183	---
TOTAL	4704	15467	9641	15752	8774	10085	21863	44734	72500	30062	7418	3769
MEAN	152	516	311	508	313	325	729	1443	2417	970	239	126
MAX	305	1880	636	2010	774	409	2250	3400	3610	1570	415	188
MIN	65	176	219	199	196	279	309	672	1430	457	165	87
AC-FT	9330	30680	19120	31240	17400	20000	43370	88730	143800	59630	14710	7480
CFSM	0.79	2.67	1.61	2.63	1.62	1.69	3.78	7.48	12.5	5.02	1.24	0.65
IN.	0.91	2.98	1.86	3.04	1.69	1.94	4.21	8.62	13.97	5.79	1.43	0.73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

	242	379	343	278	292	282	662	1708	1936	903	271	159
MEAN	242	379	343	278	292	282	662	1708	1936	903	271	159
MAX	703	1992	1062	813	994	669	1099	2798	3429	2292	764	380
(WY)	1960	1996	1996	1968	1996	1997	1943	1956	1948	1954	1954	1959
MIN	74.5	66.2	72.9	72.4	72.5	112	275	984	736	269	121	86.3
(WY)	1994	1953	1953	1937	1937	1937	1967	1941	2001	1941	1941	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1937 - 2002

ANNUAL TOTAL		125475		244769								
ANNUAL MEAN		344		671						622		
HIGHEST ANNUAL MEAN										905		1956
LOWEST ANNUAL MEAN										299		2001
HIGHEST DAILY MEAN			2640	May 24		3610	Jun 15		14100		Nov 29	1995
LOWEST DAILY MEAN			65	Oct 7		65	Oct 7		44		Nov 30	1936
ANNUAL SEVEN-DAY MINIMUM			67	Oct 3		67	Oct 3		50		Nov 25	1952
ANNUAL RUNOFF (AC-FT)		248900		485500					450700			
ANNUAL RUNOFF (CFSM)			1.78			3.47				3.22		
ANNUAL RUNOFF (INCHES)			24.18			47.18				43.80		
10 PERCENT EXCEEDS			796			1870				1640		
50 PERCENT EXCEEDS			200			342				299		
90 PERCENT EXCEEDS			79			142				117		

WENATCHEE RIVER BASIN

12462500 WENATCHEE RIVER AT MONITOR, WA

LOCATION.--Lat 47°29'58", long 120°25'24", in NE ¼ SW ¼ sec.11, T.23 N., R.19 E., Chelan County, Hydrologic Unit 17020011, on right bank 1.0 mi north of Monitor, 3.5 mi downstream from Mission Creek, and at mile 7.0.

DRAINAGE AREA.--1,301 mi².

PERIOD OF RECORD.--August to November 1897, October 1962 to current year. Published as "near Wenatchee" 1897.

GAGE.--Water-stage recorder. Elevation of gage is 680 ft above NGVD of 1929, from topographic map. Aug. 7 to Nov. 7, 1897, nonrecording gage 1 mi downstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation of about 25,000 acres upstream from station. Chelan County Public Utility District No. 1 telemeter at station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--40 years (water years 1963-2002), 3,281 ft³/s, 2,377,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,500 ft³/s Nov. 30, 1995, gage height, 30.02 ft; minimum discharge, 208 ft³/s Nov. 26, 1993, gage height, 16.45 ft, but may have been less during period of frozen intakes Nov. 27 to Dec. 11, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,000 ft³/s June 16, gage height, 24.32 ft; minimum discharge, 248 ft³/s Oct. 10, gage height, 16.60 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	359	1500	1810	1130	1630	2670	2330	6240	13400	9960	2600	1090
2	344	1540	1780	1140	1570	2490	2440	7800	12700	8300	2340	1050
3	331	1570	1690	1110	1510	2360	2380	8370	12800	7300	2140	1020
4	304	1490	1600	1080	1470	2270	2390	7780	13100	6830	1940	1040
5	282	1410	1530	1060	1420	2230	2550	6970	13800	6270	1800	991
6	272	1400	1510	1080	1400	2180	2760	6310	14200	5830	1740	942
7	268	1300	1500	1810	1420	2100	3030	5630	12400	5940	1660	910
8	260	1200	1420	6060	1410	2030	3160	5060	10200	7250	1570	882
9	261	1130	1360	7130	1350	1950	3160	4670	8550	7660	1500	858
10	253	1070	1300	5790	1290	1900	3270	4350	8080	7080	1530	831
11	315	1020	1260	4740	1270	2000	3550	4200	9230	7590	1640	785
12	516	975	1220	4100	1220	2310	3920	4360	10800	8250	1620	760
13	649	1000	1320	3730	1190	2200	4910	5050	13000	7980	1570	734
14	753	2870	1740	3300	1190	2060	10300	5740	15400	7990	1570	701
15	730	6900	1660	2950	1150	1970	11100	5940	17000	7470	1600	689
16	701	6940	1680	2730	1140	1920	9040	5960	17600	6470	1580	685
17	648	5390	2350	2510	1130	1860	7450	6350	15500	6050	1510	713
18	624	4170	2150	2360	1120	1760	6330	7120	13700	5670	1440	723
19	593	3520	1940	2260	1110	1720	5640	7370	12000	5390	1330	725
20	753	3480	1810	2170	1140	1840	5270	8700	10700	5090	1260	689
21	791	3420	1670	2120	1200	1780	5230	9910	10700	4620	1220	658
22	757	3290	1560	2000	2160	1700	5210	9550	11600	4340	1170	622
23	1070	3080	1480	1940	4440	1660	5090	8710	12400	4190	1140	589
24	1230	2770	1420	1910	4600	1690	4780	8160	12200	4200	1130	590
25	1100	2520	1360	2120	4000	1830	4560	8130	11600	4200	1140	618
26	1070	2310	1310	2140	3530	1920	4480	8570	11900	4290	1130	618
27	1050	2130	1270	2000	3190	1970	4580	9200	13200	4070	1130	618
28	1050	2040	1240	1900	2920	1960	4510	11100	12800	3620	1120	590
29	994	1970	1210	1760	---	2000	4630	14200	13000	3310	1120	572
30	942	1860	1180	1720	---	2040	5070	e15300	12500	3140	1110	547
31	1080	---	1160	1670	---	2200	---	14800	---	2910	1110	---
TOTAL	20350	75265	47490	79520	52170	62570	143120	241600	376060	183260	46460	22840
MEAN	656	2509	1532	2565	1863	2018	4771	7794	12540	5912	1499	761
MAX	1230	6940	2350	7130	4600	2670	11100	15300	17600	9960	2600	1090
MIN	253	975	1160	1060	1110	1660	2330	4200	8080	2910	1110	547
AC-FT	40360	149300	94200	157700	103500	124100	283900	479200	745900	363500	92150	45300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2002, BY WATER YEAR (WY)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	1071	2132	2010	1788	1984	1984	2353	3966	8061	9085	4559	1530	818																											
MAX	3095	9636	6983	4309	5447	6853	7260	12970	17020	9880	3985	1628																												
(WY)	1998	1991	1976	1984	1996	1972	1990	1972	1974	1974	1999	1978																												
MIN	346	426	556	527	518	995	1678	3565	3898	1135	576	362																												
(WY)	1988	1988	2001	1988	2001	2001	1967	2001	1977	2001	1994	2001																												

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1963 - 2002
ANNUAL TOTAL	651066	1350705	
ANNUAL MEAN	1784	3701	3281
HIGHEST ANNUAL MEAN			5261
LOWEST ANNUAL MEAN			1589
HIGHEST DAILY MEAN	11900	17600	45200
LOWEST DAILY MEAN	253	253	221
ANNUAL SEVEN-DAY MINIMUM	271	271	271
ANNUAL RUNOFF (AC-FT)	1291000	2679000	2377000
10 PERCENT EXCEEDS	4270	9360	8140
50 PERCENT EXCEEDS	1070	1970	1840
90 PERCENT EXCEEDS	403	745	651

e Estimated

12462600 COLUMBIA RIVER BELOW ROCK ISLAND DAM, WA

LOCATION.--Lat 47°19'57", long 120°04'48", in NE ¼ NW ¼ sec.9, T.21 N., R.22 E., Douglas County, Hydrologic Unit 17020010, on left bank 1.0 mi downstream from Rock Island Dam, 2.0 mi downstream from Rock Island Creek, 12 mi southeast of Wenatchee, and at mile 452.4.

DRAINAGE AREA.--89,400 mi², approximately.

PERIOD OF RECORD.--January to December 1910 (gage heights only), May 1913 to December 1916, October 1930 to current year. Published as "at Wenatchee" January 1910 to December 1916, and as "at Trinidad" October 1930 to May 1961.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929. Prior to Jan. 1, 1916, nonrecording gage 1.2 mi upstream from highway bridge at Wenatchee, at mile 466.3, at datum 583 ft above NGVD of 1929. Jan. 1 to Dec. 31, 1916, nonrecording gage on pier of highway bridge at Wenatchee, at mile 465.1, at datum 579.30 ft above NGVD of 1929. Oct. 1, 1930, to May 31, 1961, water-stage recorder 0.5 mi southwest of Trinidad, at mile 441.7, at datum 499.3 ft above NGVD of 1929 (river-profile survey). June 1, 1961, to July 22, 1988, water-stage recorder at present site and datum; May 21, 1963, to July 22, 1988, auxiliary water-stage recorder 2.0 mi downstream at same datum.

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

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

AVERAGE DISCHARGE.--75 years (water years 1914-16, 1931-2002), 119,300 ft³/s, 86,430,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum discharge, 4,120 ft³/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, from floodmarks at Wenatchee.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 251,000 ft³/s June 20; minimum daily discharge, 31,300 ft³/s Mar. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71400	57400	55600	80300	106000	91500	60200	132000	158000	242000	138000	51600
2	47800	51100	48900	92600	88200	81900	69700	136000	164000	250000	144000	66400
3	57600	49800	94500	113000	78000	56700	65000	136000	198000	250000	120000	93200
4	65300	52700	100000	121000	136000	76600	54800	129000	242000	218000	93400	68200
5	40100	73000	101000	102000	104000	70900	58900	114000	242000	191000	118000	72300
6	46200	80800	77200	71500	113000	87600	43100	157000	228000	188000	119000	71300
7	38400	79700	80900	80900	94800	97400	40200	158000	241000	163000	141000	54500
8	59900	79600	53200	84100	108000	105000	59600	129000	238000	144000	149000	50800
9	56000	68800	58300	75900	97000	66200	64600	152000	207000	177000	134000	93700
10	57300	55900	97700	69400	91100	60400	55100	138000	229000	207000	121000	72400
11	62000	60600	109000	77600	130000	92300	105000	114000	209000	205000	97300	64600
12	63500	72500	99000	78600	115000	89800	127000	105000	217000	210000	124000	77900
13	49400	62300	99200	70700	106000	79200	107000	142000	198000	205000	126000	76900
14	43100	69400	86800	111000	94900	74400	120000	140000	204000	168000	126000	53800
15	70700	81400	69800	119000	121000	86600	146000	134000	199000	161000	125000	45800
16	73600	89200	53200	113000	106000	71000	175000	146000	183000	210000	104000	79100
17	74900	58600	88500	117000	71600	63200	187000	136000	200000	185000	77300	74900
18	62200	69000	105000	110000	99300	91300	189000	125000	215000	179000	83900	75800
19	66300	89200	107000	99800	101000	79700	187000	125000	236000	200000	117000	96300
20	50400	89100	113000	72800	97400	102000	184000	144000	251000	182000	116000	95600
21	46300	93500	108000	110000	91500	90000	160000	133000	236000	164000	114000	88400
22	65000	60600	83000	119000	73100	52100	187000	149000	201000	169000	128000	73500
23	59800	70800	68800	116000	85200	33000	168000	157000	172000	170000	122000	99100
24	73100	76100	91900	92900	74200	42400	162000	156000	181000	156000	96000	99500
25	64500	69200	61200	117000	86400	47700	159000	131000	216000	145000	71400	96600
26	56400	90700	106000	83200	92200	68700	148000	149000	212000	125000	114000	90300
27	44300	106000	103000	77000	99100	59800	126000	170000	239000	103000	112000	58800
28	52300	108000	96200	115000	86900	52500	116000	167000	249000	108000	119000	64700
29	74100	103000	80400	127000	---	55200	153000	172000	227000	127000	113000	41100
30	63700	86900	59600	130000	---	37600	148000	174000	202000	142000	106000	86100
31	49100	---	90400	132000	---	31300	---	172000	---	148000	96900	---
TOTAL	1804700	2254900	2646300	3079300	2746900	2194000	3625200	4422000	6394000	5492000	3566200	2233200
MEAN	58220	75160	85360	99330	98100	70770	120800	142600	213100	177200	115000	74440
MAX	74900	108000	113000	132000	136000	105000	189000	174000	251000	250000	149000	99500
MIN	38400	49800	48900	69400	71600	31300	40200	105000	158000	103000	71400	41100
AC-FT	3580000	4473000	5249000	6108000	5448000	4352000	7191000	8771000	12680000	10890000	7074000	4430000
CAL YR 2001	TOTAL 26897900	MEAN 73690	MAX 126000	MIN 29700	AC-FT 53350000							
WTR YR 2002	TOTAL 40458700	MEAN 110800	MAX 251000	MIN 31300	AC-FT 80250000							

CRAB CREEK BASIN

12464770 CRAB CREEK AT ROCKY FORD ROAD, NEAR RITZVILLE, WA

LOCATION.--Lat 47°18'10", long 118°22'05", in NW ¼ NE ¼ sec.23, T.21 N., R.35 E., Lincoln County, Hydrologic Unit 17020013, on left bank, 100 ft downstream from Rocky Ford Road bridge crossing, 13 mi north of Ritzville.

DRAINAGE AREA.--384 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1993 to September 1995, August 1997 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,660 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Several diversions for irrigation upstream from station. No regulation.

AVERAGE DISCHARGE.--7 years (water years 1994-95, 1998-2002), 53.8 ft³/s, 1.91 in/yr, 39,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,530 ft³/s Feb. 1, 1995, gage height, 6.72 ft; minimum discharge, 2.9 ft³/s Sept. 20, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 451 ft³/s Feb. 8, gage height, 3.21 ft; minimum discharge, 8.9 ft³/s Oct. 4, 5 and 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	17	34	51	76	71	50	28	22	18	12
2	9.8	12	17	34	52	75	69	49	28	22	17	12
3	9.5	12	17	34	52	73	69	48	27	22	17	12
4	9.3	12	17	33	51	72	68	47	26	22	17	12
5	9.4	12	18	33	53	71	67	47	25	22	17	12
6	9.4	12	18	50	52	71	66	47	24	22	17	12
7	9.6	12	19	59	58	72	65	48	24	22	15	12
8	9.6	12	20	52	127	71	65	48	24	22	15	12
9	9.6	12	20	56	113	70	65	45	24	22	15	11
10	9.6	12	21	54	82	70	68	44	24	22	15	11
11	9.6	13	21	52	75	70	69	43	24	22	14	11
12	10	13	22	51	69	73	68	41	24	21	14	11
13	9.7	13	24	51	65	73	67	40	23	21	14	12
14	9.6	13	26	51	63	72	68	40	23	21	14	11
15	9.5	13	32	51	61	71	68	39	23	21	14	11
16	9.5	13	34	50	60	71	68	38	23	21	14	11
17	9.5	14	33	50	59	72	67	38	23	21	14	11
18	9.7	13	36	50	58	73	65	37	23	21	14	11
19	9.9	14	37	51	60	74	63	37	23	21	13	11
20	9.8	14	37	51	107	74	62	36	22	21	13	12
21	10	14	37	51	103	75	60	36	22	20	13	12
22	10	15	36	50	101	75	59	36	23	20	13	12
23	10	15	36	49	98	75	57	36	23	20	13	12
24	10	15	36	50	87	75	56	34	23	20	13	12
25	11	15	36	54	83	75	55	33	22	19	13	12
26	10	15	35	54	81	75	54	32	22	19	13	12
27	11	15	35	54	79	75	55	31	22	19	12	12
28	11	16	35	53	78	74	53	30	22	18	12	12
29	11	16	34	52	---	73	51	30	22	18	12	12
30	11	16	34	52	---	72	51	29	22	18	12	12
31	12	---	34	51	---	71	---	28	---	18	12	---
TOTAL	309.6	404	874	1517	2078	2259	1889	1217	708	640	439	350
MEAN	9.99	13.5	28.2	48.9	74.2	72.9	63.0	39.3	23.6	20.6	14.2	11.7
MAX	12	16	37	59	127	76	71	50	28	22	18	12
MIN	9.3	11	17	33	51	70	51	28	22	18	12	11
AC-FT	614	801	1730	3010	4120	4480	3750	2410	1400	1270	871	694
CFSM	0.03	0.04	0.07	0.13	0.19	0.19	0.16	0.10	0.06	0.05	0.04	0.03
IN.	0.03	0.04	0.08	0.15	0.20	0.22	0.18	0.12	0.07	0.06	0.04	0.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002		
MEAN	14.5	17.8	43.5	138	134	113	72.4	47.7	27.6	21.9	15.4	13.0
MAX	24.5	31.4	155	373	266	213	113	77.7	47.0	47.6	27.3	23.7
(WY)	1998	1998	1999	1998	1999	1999	2000	2000	1997	1997	1997	1997
MIN	3.63	4.09	8.75	30.5	22.2	16.7	14.7	11.5	11.4	8.87	4.69	3.72
(WY)	1995	1995	1995	2001	1994	1994	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1993 - 2002

ANNUAL TOTAL	9075.6	12684.6		
ANNUAL MEAN	24.9	34.8	53.9	
HIGHEST ANNUAL MEAN			88.2	1999
LOWEST ANNUAL MEAN			13.7	1994
HIGHEST DAILY MEAN	50	Mar 16	127	Feb 8
LOWEST DAILY MEAN	9.3	Oct 4	9.3	Oct 4
ANNUAL SEVEN-DAY MINIMUM	9.5	Oct 3	9.5	Oct 3
ANNUAL RUNOFF (AC-FT)	18000	25160	39020	
ANNUAL RUNOFF (CFSM)	0.065	0.091	0.14	
ANNUAL RUNOFF (INCHES)	0.88	1.23	1.91	
10 PERCENT EXCEEDS	44	71	119	
50 PERCENT EXCEEDS	23	23	24	
90 PERCENT EXCEEDS	11	11	11	

12464770 CRAB CREEK AT ROCKY FORD ROAD, NEAR RITZVILLE, WA
(National Water-Quality Assessment station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1992 to September 1995, June 1997 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1993 to September 1994. February to September 2002.

WATER TEMPERATURE: October 1993 to September 1995. July 1997 to current year.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Temperature record excellent. Specific conductance record excellent except Mar. 24-26, which is good, Mar. 27-29, fair, and Mar. 30-31 is poor. In June 1997, station became a Central Columbia Plateau National Water-Quality Assessment Program (NAWQA) surface-water quality trend site.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 387 microsiemens Feb. 17, 18, 2002, but may have been higher during periods of missing record; minimum recorded, 140 microsiemens Feb. 9, 2002.

WATER TEMPERATURE: Maximum recorded, 20.5°C (rounded) July 24, 25, 1994; May 24, 1999; minimum, 0.0 (rounded) Jan. 9, 10, 1995.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 387 microsiemens Feb. 17, 18, but may have been higher during periods of missing record; minimum recorded, 140 microsiemens Feb. 9.

WATER TEMPERATURE: Maximum, 18.6°C July 11, 12; minimum recorded, 2.2°C on Mar. 21.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), FEBRUARY 2002 TO SEPTEMBER 2002

DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	334	313	325	377	364	370	379	347	365
2	---	---	---	344	334	339	372	364	368	378	346	365
3	---	---	---	355	344	350	371	364	368	378	347	364
4	---	---	---	372	355	370	372	364	369	377	354	367
5	---	---	---	373	369	371	373	365	369	377	352	365
6	---	---	---	371	366	368	374	364	370	376	351	366
7	380	356	375	368	365	366	374	365	370	377	351	365
8	356	180	274	368	349	361	374	361	369	376	348	364
9	281	140	193	370	367	368	372	363	368	376	346	363
10	311	192	286	370	368	369	368	359	364	375	345	362
11	374	311	348	371	369	370	370	361	365	376	342	361
12	381	362	371	372	367	369	370	358	365	377	341	360
13	378	368	374	370	366	368	370	360	366	377	345	362
14	383	377	380	371	367	369	371	361	367	376	344	362
15	385	381	382	372	367	370	373	361	368	377	348	364
16	386	382	384	372	366	369	373	362	368	376	345	363
17	387	384	385	371	364	367	372	361	367	377	347	365
18	387	384	385	370	362	366	373	361	368	377	350	366
19	386	381	383	367	362	365	374	359	368	379	347	365
20	383	329	372	369	361	365	376	358	368	379	359	371
21	329	262	277	365	359	361	377	356	369	378	354	368
22	278	230	258	367	360	362	377	356	368	379	358	370
23	294	208	259	368	361	365	376	356	368	376	351	365
24	242	179	202	371	366	368	376	355	367	378	353	367
25	275	233	260	374	367	371	378	353	367	379	354	368
26	283	270	277	371	364	367	378	353	367	380	352	367
27	304	277	298	374	368	371	375	351	365	378	351	366
28	313	294	305	378	373	375	374	349	364	380	354	368
29	---	---	---	378	371	375	377	348	365	380	360	371
30	---	---	---	378	369	373	379	348	366	379	353	368
31	---	---	---	377	365	371	---	---	---	380	355	368
MONTH	---	---	---	378	313	365	379	348	367	380	341	366

CRAB CREEK BASIN

12464770 CRAB CREEK AT ROCKY FORD ROAD, NEAR RITZVILLE, WA--Continued
(National Water-Quality Assessment station)

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	380	355	368	374	364	370	372	354	364	377	360	370
2	378	358	368	374	363	369	371	353	364	375	362	370
3	380	357	369	375	362	369	371	357	364	376	361	370
4	378	358	369	373	359	368	373	359	367	374	361	368
5	379	357	368	374	362	369	374	358	367	375	361	370
6	377	358	368	374	362	369	374	358	367	374	363	370
7	375	358	367	374	363	370	373	359	367	375	362	370
8	375	362	369	375	363	370	374	358	368	375	362	370
9	376	363	370	---	358	---	375	360	369	376	363	371
10	376	358	368	371	359	366	376	360	370	376	364	371
11	376	359	369	371	353	364	375	359	369	377	363	371
12	376	361	369	368	355	363	375	360	369	377	364	371
13	376	359	369	368	355	362	376	361	370	377	364	372
14	375	359	368	369	357	364	376	360	370	377	364	371
15	375	359	369	371	356	364	375	360	369	377	363	371
16	375	361	369	370	354	363	375	359	369	377	366	372
17	375	361	370	371	353	363	374	351	361	377	368	373
18	375	365	371	371	355	364	371	350	358	375	365	371
19	376	361	369	372	349	362	374	358	368	377	366	372
20	375	361	369	374	355	363	375	347	364	377	366	373
21	375	361	369	372	356	365	375	359	369	376	365	372
22	375	359	368	372	354	364	375	362	369	376	360	371
23	376	365	371	372	357	366	376	360	369	376	360	371
24	376	361	369	374	355	366	376	359	369	376	366	372
25	376	361	369	374	355	366	375	359	369	377	366	373
26	376	361	370	374	353	365	375	360	369	377	368	373
27	377	361	370	371	354	363	376	361	370	378	368	374
28	377	365	371	372	354	363	376	361	370	377	368	374
29	374	362	369	371	354	364	376	361	370	378	368	374
30	376	364	370	372	354	364	376	361	370	377	358	372
31	---	---	---	373	355	365	375	362	370	---	---	---
MONTH	380	355	369	---	349	---	376	347	368	378	358	371

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.4	9.6	11.5	10.1	8.4	9.3	8.4	7.5	7.9	7.7	6.6	6.9
2	12.9	9.5	11.3	11.0	9.0	9.9	8.0	7.2	7.6	8.1	7.0	7.5
3	12.8	9.0	10.9	10.6	8.4	9.5	8.4	7.5	7.9	8.3	8.1	8.2
4	11.8	8.7	10.3	10.3	8.1	9.3	7.6	6.9	7.3	8.4	8.0	8.2
5	11.7	8.3	9.9	10.6	8.9	9.8	8.0	7.2	7.5	8.4	7.8	8.1
6	11.2	8.1	9.8	8.9	7.6	8.2	8.0	7.2	7.5	8.7	3.6	7.6
7	10.3	8.3	9.5	8.7	6.9	7.8	7.8	6.6	7.3	8.6	3.8	7.0
8	11.4	9.3	10.2	8.7	6.9	7.8	8.7	7.6	8.3	8.7	7.8	8.4
9	10.7	7.8	9.3	8.7	6.9	7.9	8.7	7.8	8.2	7.8	6.6	7.2
10	9.5	8.0	8.8	9.0	6.9	7.9	8.3	7.6	8.0	7.6	6.4	7.0
11	11.5	8.9	10	9.0	7.2	8.3	8.9	8.1	8.4	7.6	6.9	7.3
12	10.6	9.2	9.9	9.8	8.3	9.1	8.6	7.8	8.1	7.8	6.9	7.4
13	11.2	8.9	10.1	10.0	8.9	9.5	9.0	7.8	8.4	7.2	5.9	6.6
14	12.3	10.1	11.0	10.6	10.0	10.3	8.9	7.2	7.7	6.9	6.2	6.6
15	11.0	8.4	9.8	10.6	9.6	10.2	7.6	6.6	7.1	6.4	5.2	5.8
16	11.4	9.3	10.3	10.6	10.3	10.4	8.6	7.5	8.0	6.1	5.2	5.7
17	10.4	8.6	9.5	10.4	8.9	10.0	8.6	6.9	7.5	6.4	5.2	5.8
18	10.3	8.4	9.4	9.2	8.1	8.6	7.3	6.6	6.9	6.2	4.7	5.5
19	11.4	9.3	10.1	9.5	8.1	8.8	7.6	7.0	7.2	6.9	5.9	6.3
20	10.7	8.6	9.7	10.0	8.9	9.5	7.8	6.6	7.1	7.0	5.8	6.3
21	9.8	8.7	9.3	10.0	9.2	9.6	8.4	7.8	8.1	6.6	5.5	6.0
22	10.0	8.7	9.4	10.0	9.3	9.6	8.4	7.2	7.9	6.1	5.0	5.6
23	9.6	7.8	8.6	9.4	8.2	8.9	7.3	6.6	7.0	5.6	4.4	5.2
24	8.9	7.3	8.2	8.2	7.3	7.6	7.2	6.4	6.8	6.9	5.5	6.2
25	10.9	8.7	9.6	8.4	7.6	8.0	6.6	5.9	6.4	7.5	6.2	6.9
26	10.9	8.7	9.9	8.7	8.0	8.5	6.7	5.8	6.2	6.9	5.5	6.1
27	10.3	9.3	9.8	8.3	7.4	7.8	6.6	5.8	6.2	6.1	4.8	5.4
28	10.3	8.4	9.3	7.4	6.1	6.7	7.8	6.4	7.0	5.6	4.2	4.9
29	9.8	8.4	9.2	8.3	6.9	7.5	7.5	6.4	6.9	5.5	3.9	4.8
30	10.3	9.6	10	7.6	7.0	7.3	7.8	6.1	6.9	6.1	5.0	5.5
31	10.4	9.3	9.9	---	---	---	8.1	7.3	7.7	6.1	5.6	5.9
MONTH	13.4	7.3	9.8	11.0	6.1	8.8	9.0	5.8	7.5	8.7	3.6	6.5

CRAB CREEK BASIN

12464770 CRAB CREEK AT ROCKY FORD ROAD, NEAR RITZVILLE, WA--Continued
(National Water-Quality Assessment station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WATER TOT IT FIELD (MG/L AS CACO3) (39086)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	
Date		SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, PAR TICULATE SUSP WAT FLT (MG/L AS N) (49570)	NITROGEN, TOTAL (MG/L AS N) (00600)	ORTHO-PHOSPHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, INORG + ORGANIC PARTIC. TOTAL (MG/L AS C) (00694)	CARBON, INORGANIC, PARTIC. TOTAL (MG/L AS C) (00688)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTICULATE TOTAL (MG/L AS C) (00689)
OCT														
02...	1110		9.7	721	11.5	110	8.1	396	12.9	10.8	152	187	0	15.0
NOV														
06...	0940		12	717	10.0	89	7.9	404	3.3	7.7	150	183	0	14.7
DEC														
11...	1030		22	714	11.2	102	8.1	403	.8	8.5	148	179	0	11.8
JAN														
03...	1050		34	721	10.6	95	8.0	400	2.9	8.2	151	184	0	14.6
FEB														
06...	1040		52	716	11.5	97	8.1	374	.0	5.5	148	180	0	11.1
MAR														
05...	1230		70	712	11.8	103	8.4	365	4.7	6.4	149	179	1	11.3
APR														
01...	1210		70	720	12.3	112	8.6	371	11.1	8.7	148	175	3	10.6
MAY														
07...	1020		48	718	13.4	119	8.6	372	3.3	7.6	148	176	2	11.2
JUN														
03...	1030		27	721	12.6	125	8.5	376	17.1	12.5	146	175	2	11.8
JUL														
09...	1020		22	728	11.7	116	8.3	376	26.1	13.0	149	179	0	12.0
AUG														
05...	1110		16	721	10.9	106	8.3	385	19.0	11.5	152	182	0	12.5
SEP														
09...	0930		11	725	11.1	105	8.0	384	21.1	10.8	147	178	0	13.2

CRAB CREEK BASIN

12464770 CRAB CREEK AT ROCKY FORD ROAD, NEAR RITZVILLE, WA--Continued
(National Water-Quality Assessment station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	TRI-BENURON METHYL WATER FLTRD (UG/L) (61159)	TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI-FLUR-ALIN WAT FLT 0.7 U (UG/L) (82661)	UREA 3 (4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692)	SEDI-MENT, DIS-CHARGE, SUS-PENDEDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDEDED (T/DAY) (80155)		
OCT 02...	--	--	--	--	3.0	.08		
NOV 06...	--	--	--	--	5.0	.16		
DEC 11...	--	--	--	--	6.0	.36		
JAN 03...	--	<.02	<.009	<.02	5.0	.46		
FEB 06...	--	<.02	<.009	<.02	16	2.2		
MAR 05...	--	<.02	<.009	<.02	17	3.2		
APR 01...	--	<.02	<.009	<.02	7.0	1.3		
MAY 07...	<.009	<.02	<.009	<.02	3.0	.39		
JUN 03...	--	<.02	<.009	<.02	3.0	.22		
JUL 09...	--	<.02	<.009	<.02	1.0	.06		
AUG 05...	--	<.02	<.009	<.02	1.0	.04		
SEP 09...	--	--	--	--	2.0	.06		
Date	Time	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH FREE DRY WEIGHT G/SQ M (49954)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS) (70950)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)
JUL 22...	1840	354	17.6	11	255.5	244.20	1700	144

CRAB CREEK BASIN

12465000 CRAB CREEK AT IRBY, WA

LOCATION.--Lat 47°21'38", long 118°50'56", in NW 1/4 NW 1/4 sec.31, T.22 N., R.32 E., Lincoln County, Hydrologic Unit 17020013, on right bank 8 ft upstream from highway bridge at Irby, 5.4 mi downstream from Lake Creek, 7.5 mi west of Odessa, and at mile 111.5.

DRAINAGE AREA.--1,042 mi².

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1446: 1949-51. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,386.30 ft above NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. Pumpage from ground-water wells for irrigation has been on the increase upstream from station since 1964. U.S. Geological Survey satellite telemeter at station. Some diversions for irrigation upstream from station. No regulation.

AVERAGE DISCHARGE.--60 years (water years 1943-2002), 66.3 ft³/s, 48,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,370 ft³/s Feb. 27, 1957, gage height, 11.94 ft; no flow several days during 1969, 1977, 1978, 1979, 1980, 1989, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 09	0315	*252	*3.20

Minimum discharge, 1.4 ft³/s Sept. 22-25, gage height, 1.77 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	4.2	4.8	11	53	84	78	60	28	e11	6.3	2.7
2	2.8	4.0	4.0	12	53	85	79	59	27	11	6.6	3.1
3	2.3	4.3	4.0	14	53	83	79	54	27	11	6.3	3.0
4	2.3	4.5	3.7	15	54	82	77	50	26	11	5.8	2.7
5	2.5	4.4	3.9	16	55	82	77	48	24	11	5.7	2.7
6	2.5	4.0	3.9	18	55	85	77	47	22	10	5.6	2.7
7	2.3	4.3	3.7	19	57	84	77	49	22	10	5.0	2.6
8	2.5	4.8	3.6	21	60	83	78	52	22	11	4.5	2.6
9	2.8	4.7	3.6	23	138	83	81	52	23	11	4.3	2.8
10	3.0	4.6	3.8	28	87	81	80	50	23	10	4.5	2.7
11	2.8	4.5	3.8	32	79	77	79	49	22	9.4	4.5	2.7
12	2.8	4.5	3.7	34	78	75	82	48	21	9.1	4.3	2.6
13	2.4	4.5	4.1	34	75	77	83	47	19	8.8	4.5	2.3
14	2.5	4.7	3.7	37	73	79	83	44	18	9.1	4.2	2.3
15	2.6	4.5	3.7	39	72	79	82	42	16	9.0	3.8	2.3
16	2.6	4.7	3.7	40	72	77	83	39	16	9.0	4.5	2.7
17	2.3	5.1	3.6	43	73	79	83	38	15	8.7	4.7	2.7
18	2.3	3.8	4.0	44	70	78	83	37	15	8.6	4.9	2.6
19	2.3	3.6	3.9	44	68	77	80	37	15	7.8	4.8	2.3
20	2.5	3.6	4.0	43	65	79	73	38	13	e8.0	4.4	2.0
21	2.8	3.7	4.0	43	68	80	74	37	12	e8.0	3.7	1.9
22	2.9	4.1	4.0	44	71	79	73	36	12	e7.0	3.3	1.5
23	2.7	3.8	4.3	43	77	79	71	35	12	e7.0	3.7	1.5
24	3.0	3.7	4.5	48	83	78	73	35	12	6.7	3.6	1.4
25	3.1	3.7	6.4	46	84	78	72	35	e11	6.9	3.1	1.5
26	3.3	3.7	7.4	47	85	79	66	36	e11	7.0	3.3	2.0
27	3.8	3.4	7.1	48	86	78	67	35	e11	6.5	3.6	2.0
28	4.0	4.5	6.9	49	86	78	68	34	e11	6.4	3.3	1.7
29	4.2	4.1	7.2	49	---	77	66	32	e11	6.3	3.0	2.0
30	4.8	4.3	7.9	52	---	78	62	30	e11	6.1	2.6	2.1
31	4.4	---	8.9	54	---	78	---	29	---	6.2	2.7	---
TOTAL	90.1	126.3	145.8	1090	2030	2471	2286	1314	528	268.6	135.1	69.7
MEAN	2.91	4.21	4.70	35.2	72.5	79.7	76.2	42.4	17.6	8.66	4.36	2.32
MAX	4.8	5.1	8.9	54	138	85	83	60	28	11	6.6	3.1
MIN	2.3	3.4	3.6	11	53	75	62	29	11	6.1	2.6	1.4
AC-FT	179	251	289	2160	4030	4900	4530	2610	1050	533	268	138

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
	7.72	34.7	1949	0.33	1993
	8.03	47.8	1998	0.58	1993
	18.6	295	1956	0.27	1993
	109	1163	1956	0.26	1993
	227	744	1949	0.63	1992
	205	1141	1956	4.26	1992
	104	441	1969	8.61	1992
	49.9	189	1997	5.46	1990
	35.7	451	1948	3.06	1992
	20.2	109	1948	1.49	1990
	12.8	61.2	1948	0.54	1992
	8.92	41.9	1948	0.27	1992

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1942 - 2002
ANNUAL TOTAL	6687.9	10554.6	
ANNUAL MEAN	18.3	28.9	66.3
HIGHEST ANNUAL MEAN			299
LOWEST ANNUAL MEAN			2.73
HIGHEST DAILY MEAN	55	Apr 4	7470
LOWEST DAILY MEAN	2.3	Oct 3	0.00
ANNUAL SEVEN-DAY MINIMUM	2.4	Oct 13	0.00
ANNUAL RUNOFF (AC-FT)	13270	20940	48020
10 PERCENT EXCEEDS	45	79	147
50 PERCENT EXCEEDS	11	11	17
90 PERCENT EXCEEDS	3.3	2.7	2.7

e Estimated

CRAB CREEK BASIN

12469500 LENORE LAKE NEAR SOAP LAKE, WA

LOCATION.--Lat 47°30'52", long 119°30'06", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.1, T.23 N., R.26 E., Grant County, Hydrologic Unit 17020014, on east shore 1,000 ft downlake from outlet gate on Alkali Lake, and 8.8 mi north of town of Soap Lake.

DRAINAGE AREA.--367 mi², of which 281 mi² in the vicinity of Banks Lake is noncontributing.

PERIOD OF RECORD.--July 1936, March 1938 to December 1956 (fragmentary), January 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929, adjustment of 1937 (Bureau of Reclamation datum). Prior to Dec. 20, 1956, nonrecording gages 0.90 mi uplake at same datum.

REMARKS.--Some diversion from tributaries for irrigation. During extreme high stages of Soap Lake, water is pumped from Soap Lake into Lenore Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,087.73 ft June 12, 1953; minimum, 1,072.72 ft Jan. 2, 1959 (affected by wind).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 1,092.2 ft, from well-defined alkali line at gage, date unknown.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,077.19 ft Apr. 13, 14; minimum, 1,074.12 ft Sept. 29.

ELEVATION (FEET USBR DATUM), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1074.69	1074.69	1075.06	1075.43	1075.97	1076.50	1076.91	1076.63	1075.82	1075.26	1074.78	1074.43
2	1074.68	1074.69	1075.06	1075.46	1075.98	1076.52	1076.92	1076.60	1075.81	1075.24	1074.77	1074.41
3	1074.65	1074.70	1075.09	1075.49	1076.01	1076.53	1076.94	1076.55	1075.81	1075.24	1074.74	1074.40
4	1074.60	1074.71	1075.10	1075.50	1076.03	1076.55	1076.95	1076.52	1075.81	1075.21	1074.75	1074.38
5	1074.63	1074.72	1075.11	1075.52	1076.05	1076.56	1076.97	1076.49	1075.81	1075.19	1074.72	1074.37
6	1074.63	1074.71	1075.14	1075.54	1076.07	1076.56	1076.98	1076.44	1075.78	1075.18	1074.70	1074.35
7	1074.63	1074.72	1075.13	1075.57	1076.09	1076.59	1076.99	1076.40	1075.75	1075.18	1074.69	1074.34
8	1074.63	1074.72	1075.14	1075.59	1076.16	1076.61	1076.99	1076.38	1075.72	1075.21	1074.68	1074.32
9	1074.62	1074.73	1075.14	1075.60	1076.16	1076.62	1077.01	1076.34	1075.72	1075.20	1074.68	1074.32
10	1074.62	1074.73	1075.16	1075.62	1076.18	1076.64	1077.05	1076.30	1075.74	1075.20	1074.66	1074.31
11	1074.62	1074.74	1075.18	1075.64	1076.20	1076.68	1077.06	1076.28	1075.78	1075.20	1074.63	1074.32
12	1074.62	1074.74	1075.19	1075.65	1076.22	1076.68	1077.08	1076.25	1075.76	1075.20	1074.62	1074.32
13	1074.60	1074.76	1075.21	1075.67	1076.24	1076.69	1077.10	1076.23	1075.74	1075.18	1074.62	1074.31
14	1074.60	1074.77	1075.22	1075.66	1076.26	1076.70	1077.15	1076.19	1075.72	1075.18	1074.60	1074.31
15	1074.61	1074.78	1075.22	1075.68	1076.27	1076.72	1077.14	1076.16	1075.71	1075.16	1074.59	1074.31
16	1074.61	1074.79	1075.25	1075.70	1076.29	1076.73	1077.13	1076.14	1075.68	1075.15	1074.56	1074.30
17	1074.60	1074.79	1075.27	1075.72	1076.31	1076.72	1077.10	1076.13	1075.65	1075.14	1074.56	1074.28
18	1074.60	1074.80	1075.27	1075.74	1076.33	1076.75	1077.05	1076.10	1075.60	1075.12	1074.53	1074.27
19	1074.60	1074.81	1075.28	1075.76	1076.36	1076.77	1077.01	1076.08	1075.57	1075.09	1074.54	1074.26
20	1074.60	1074.83	1075.28	1075.78	1076.37	1076.74	1076.99	1076.08	1075.53	1075.05	1074.53	1074.23
21	1074.61	1074.85	1075.30	1075.80	1076.41	1076.78	1076.95	1076.05	1075.52	1075.01	1074.51	1074.23
22	1074.62	1074.88	1075.31	1075.81	1076.43	1076.80	1076.92	1076.01	1075.50	1074.98	1074.50	1074.23
23	1074.61	1074.89	1075.32	1075.82	1076.42	1076.81	1076.87	1076.00	1075.48	1074.99	1074.50	1074.23
24	1074.61	1074.88	1075.33	1075.85	1076.40	1076.83	1076.83	1075.98	1075.45	1074.98	1074.50	1074.21
25	1074.61	1074.90	1075.34	1075.87	1076.44	1076.85	1076.80	1075.96	1075.43	1074.96	1074.49	1074.18
26	1074.62	1074.92	1075.35	1075.88	1076.46	1076.87	1076.76	1075.95	1075.41	1074.94	1074.47	1074.20
27	1074.63	1074.92	1075.36	1075.89	1076.47	1076.88	1076.75	1075.93	1075.38	1074.90	1074.47	1074.17
28	1074.62	1074.96	1075.38	1075.90	1076.47	1076.88	1076.72	1075.93	1075.36	1074.86	1074.47	1074.19
29	1074.63	1075.00	1075.39	1075.92	---	1076.89	1076.69	1075.90	1075.34	1074.83	1074.47	1074.19
30	1074.66	1075.01	1075.41	1075.93	---	1076.90	1076.65	1075.87	1075.31	1074.81	1074.46	1074.18
31	1074.69	---	1075.42	1075.95	---	1076.92	---	1075.84	---	1074.79	1074.45	---
MEAN	1074.62	1074.81	1075.24	1075.71	1076.25	1076.72	1076.95	1076.18	1075.62	1075.09	1074.59	1074.29
MAX	1074.69	1075.01	1075.42	1075.95	1076.47	1076.92	1077.15	1076.63	1075.82	1075.26	1074.78	1074.43
MIN	1074.60	1074.69	1075.06	1075.43	1075.97	1076.50	1076.65	1075.84	1075.31	1074.79	1074.45	1074.17
CAL YR 2001	MEAN	1075.70	MAX	1077.36	MIN	1074.60						
WTR YR 2002	MEAN	1075.50	MAX	1077.15	MIN	1074.17						

12470000 SOAP LAKE NEAR SOAP LAKE, WA

LOCATION.--Lat 47°24'11", long 119°29'11", in NW ¼ SW ¼ sec.18, T.22 N., R.27 E., Grant County, Hydrologic Unit 17020014, on east shore 0.9 mi north of town of Soap Lake.

DRAINAGE AREA.--413 mi², of which 281 mi² in the vicinity of Banks Lake is noncontributing.

PERIOD OF RECORD.--May to August 1936, March 1938 to February 1957 (fragmentary), March 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929, adjustment of 1937 (Bureau of Reclamation datum). Prior to Feb. 4, 1953, nonrecording gage at site 0.2 mi uplake. Feb. 4, 1953, to June 8, 1954, nonrecording gage at site 1.5 mi uplake and June 9, 1954, to June 21, 1957, water-stage recorder at site 0.2 mi uplake.

REMARKS.--Some diversion from tributaries for irrigation. During extreme high stages of Soap Lake, water is pumped from Soap Lake into Lenore Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,079.20 ft Jan. 28, 1953; minimum observed, 1,070.87 ft Oct. 21, 1939.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 1,083.1 ft, from well-defined alkali line at gage, date unknown.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1073.30 ft Apr. 14; minimum daily, 1,071.58 ft Sept. 30.

ELEVATION (FEET USBR DATUM), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1072.71	1072.53	1072.78	1072.96	1073.11	1073.23	1073.25	1073.22	1073.02	1072.70	---	1071.86
2	1072.70	1072.54	1072.79	1072.98	1073.11	1073.23	1073.25	1073.22	1073.01	1072.68	---	1071.82
3	1072.69	1072.54	1072.82	1073.00	1073.12	1073.23	1073.25	1073.20	1073.00	1072.67	---	1071.81
4	1072.66	1072.55	1072.82	1073.00	1073.12	1073.24	1073.25	1073.18	1072.99	1072.65	---	1071.79
5	1072.64	1072.54	1072.83	1073.01	1073.12	1073.24	1073.25	1073.17	1072.98	1072.62	---	1071.77
6	1072.63	1072.54	1072.84	1073.02	1073.13	1073.24	1073.25	1073.16	1072.96	1072.62	---	1071.77
7	1072.62	1072.54	1072.85	1073.03	1073.14	1073.24	1073.25	1073.15	1072.92	1072.62	---	1071.76
8	1072.61	1072.54	1072.85	1073.04	1073.18	1073.24	1073.24	1073.14	1072.90	1072.63	---	1071.74
9	1072.59	1072.54	1072.85	1073.04	1073.19	1073.24	1073.25	1073.14	1072.89	1072.62	---	1071.74
10	1072.59	1072.54	1072.86	1073.05	1073.19	1073.24	1073.26	1073.14	1072.90	1072.62	---	1071.73
11	1072.58	1072.54	1072.87	1073.06	1073.19	1073.25	1073.26	1073.13	1072.94	1072.61	---	1071.73
12	1072.56	1072.54	1072.87	1073.06	1073.20	1073.25	1073.27	1073.13	1072.94	1072.61	---	1071.73
13	1072.55	1072.55	1072.89	1073.06	1073.20	1073.25	1073.27	1073.12	1072.94	1072.60	---	1071.72
14	1072.55	1072.56	1072.89	1073.06	1073.20	1073.25	1073.27	1073.11	1072.94	1072.59	---	1071.72
15	1072.54	1072.57	1072.89	1073.06	1073.20	1073.25	1073.27	1073.10	1072.93	1072.57	---	1071.72
16	1072.54	1072.59	1072.90	1073.06	1073.21	1073.26	1073.26	1073.09	1072.92	1072.56	---	1071.70
17	1072.52	1072.60	1072.90	1073.07	1073.21	1073.26	1073.26	1073.09	1072.90	1072.55	---	1071.70
18	1072.51	1072.60	1072.91	1073.07	1073.21	1073.25	1073.26	1073.09	1072.89	1072.54	---	1071.69
19	1072.51	1072.60	1072.92	1073.08	1073.22	1073.25	1073.25	1073.09	1072.86	1072.51	---	1071.67
20	1072.50	1072.62	1072.92	1073.08	1073.23	1073.25	1073.25	1073.10	1072.84	1072.48	---	1071.66
21	1072.51	1072.64	1072.92	1073.08	1073.23	1073.24	1073.24	1073.09	1072.81	1072.47	---	1071.65
22	1072.51	1072.66	1072.92	1073.08	1073.23	1073.24	1073.24	1073.07	1072.81	1072.46	---	1071.64
23	1072.50	1072.66	1072.93	1073.08	1073.25	1073.25	1073.22	1073.06	1072.80	1072.45	---	1071.64
24	1072.49	1072.66	1072.93	1073.09	1073.24	1073.25	1073.21	1073.06	1072.79	1072.44	---	1071.64
25	1072.50	1072.68	1072.93	1073.09	1073.23	1073.26	1073.21	1073.06	1072.78	1072.42	---	1071.62
26	1072.50	1072.68	1072.94	1073.10	1073.23	1073.26	1073.21	1073.06	1072.78	1072.40	---	1071.61
27	1072.50	1072.68	1072.94	1073.10	1073.23	1073.26	1073.22	1073.06	1072.77	1072.36	---	1071.60
28	1072.49	1072.72	1072.94	1073.10	1073.23	1073.26	1073.23	1073.06	1072.76	1072.33	---	1071.60
29	1072.49	1072.75	1072.95	1073.10	---	1073.25	1073.23	1073.06	1072.76	1072.29	---	1071.60
30	1072.51	1072.76	1072.95	1073.10	---	1073.25	1073.23	1073.05	1072.73	---	1071.88	1071.58
31	1072.53	---	1072.96	1073.10	---	1073.25	---	1073.03	---	---	1071.88	---
MEAN	1072.56	1072.60	1072.89	1073.06	1073.19	1073.25	1073.24	1073.11	1072.88	1072.54	1071.88	1071.70
MAX	1072.71	1072.76	1072.96	1073.10	1073.25	1073.26	1073.27	1073.22	1073.02	1072.70	1071.88	1071.86
MIN	1072.49	1072.53	1072.78	1072.96	1073.11	1073.23	1073.21	1073.03	1072.73	1072.29	1071.88	1071.58

12471000 MOSES LAKE AT MOSES LAKE, WA

LOCATION.--Lat 47°06'11", long 119°19'02", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.28, T.19 N., R.28 E., Grant County, Hydrologic Unit 17020015, on east shore 35 ft north of Interstate 90, 1.7 mi upstream from outlet, at town of Moses Lake, and at mile 55.9.

DRAINAGE AREA.--3,080 mi², of which 665 mi² is noncontributing.

PERIOD OF RECORD.--June 1909 to September 1914 and November 1936 to September 1945 (fragmentary), October 1945 to current year. Published as "at Neppel" 1912-14.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929, adjustment of 1937 (Bureau of Reclamation datum). Prior to Apr. 3, 1910, nonrecording gage at site 0.6 mi northeast at different datum. Apr. 3, 1910, to Sept. 30, 1914, and Nov. 19, 1936, to Nov. 24, 1944, nonrecording gages at site 2.8 mi northeast at Parker Horn at various datums. Oct. 30, 1945, to Mar. 12, 1955, water-stage recorder at site near west shore on downstream side of bridge on U.S. Highway 10 at present datum.

REMARKS.--Elevation controlled between 1,041 ft and 1,047 ft by two outlet structures at south end of lake. Many small diversions for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,048.29 ft Mar. 10, 1950; minimum observed, 1,038.17 ft Aug. 27, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,047.11 ft Apr. 14; minimum, 1,042.63 ft Jan. 24.

ELEVATION (FEET USBR DATUM), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1046.73	1046.73	1043.29	1042.79	1042.88	1043.45	1045.46	1046.74	1046.79	1046.74	1046.77	1046.64
2	1046.73	1046.73	1043.30	1042.80	1042.92	1043.45	1045.59	1046.74	1046.78	1046.71	1046.76	1046.60
3	1046.73	1046.73	1043.28	1042.81	1042.96	1043.45	1045.64	1046.71	1046.78	1046.68	1046.77	1046.68
4	1046.71	1046.77	1043.23	1042.80	1043.00	1043.45	1045.70	1046.68	1046.77	1046.64	1046.78	1046.75
5	1046.70	1046.67	1043.21	1042.79	1043.03	1043.46	1045.77	1046.67	1046.77	1046.64	1046.79	1046.75
6	1046.73	1046.32	1043.20	1042.80	1043.07	1043.50	1045.84	1046.65	1046.75	1046.65	1046.76	1046.70
7	1046.75	1045.99	1043.17	1042.79	1043.12	1043.46	1045.91	1046.63	1046.72	1046.68	1046.75	1046.70
8	1046.78	1045.70	1043.14	1042.79	1043.18	1043.40	1045.96	1046.62	1046.72	1046.69	1046.76	1046.72
9	1046.74	1045.45	1043.11	1042.79	1043.21	1043.34	1046.10	1046.65	1046.69	1046.70	1046.77	1046.77
10	1046.72	1045.23	1043.09	1042.77	1043.24	1043.26	1046.37	1046.67	1046.67	1046.71	1046.80	1046.83
11	1046.71	1045.02	1043.07	1042.77	1043.27	1043.20	1046.63	1046.68	1046.71	1046.70	1046.80	1046.92
12	1046.68	1044.84	1043.05	1042.76	1043.29	1043.15	1046.84	1046.70	1046.73	1046.71	1046.80	1046.98
13	1046.71	1044.66	1043.03	1042.75	1043.25	1043.11	1046.96	1046.71	1046.75	1046.74	1046.79	1047.03
14	1046.75	1044.50	1043.02	1042.76	1043.27	1043.07	1047.04	1046.71	1046.77	1046.75	1046.80	1047.05
15	1046.77	1044.38	1042.99	1042.74	1043.30	1043.03	1046.87	1046.70	1046.79	1046.76	1046.80	1047.02
16	1046.77	1044.27	1042.95	1042.75	1043.32	1042.99	1046.71	1046.70	1046.81	1046.77	1046.81	1046.92
17	1046.76	1044.20	1042.95	1042.73	1043.34	1042.98	1046.66	1046.74	1046.81	1046.78	1046.82	1046.81
18	1046.72	1044.07	1042.95	1042.73	1043.37	1042.92	1046.70	1046.79	1046.84	1046.78	1046.83	1046.75
19	1046.67	1043.97	1042.94	1042.72	1043.39	1042.89	1046.71	1046.80	1046.82	1046.78	1046.84	1046.73
20	1046.64	1043.88	1042.93	1042.70	1043.41	1042.91	1046.74	1046.83	1046.83	1046.77	1046.83	1046.73
21	1046.68	1043.81	1042.90	1042.70	1043.41	1042.83	1046.78	1046.80	1046.84	1046.79	1046.82	1046.73
22	1046.71	1043.75	1042.89	1042.70	1043.42	1042.81	1046.82	1046.76	1046.85	1046.80	1046.81	1046.74
23	1046.72	1043.67	1042.87	1042.69	1043.45	1042.94	1046.80	1046.79	1046.85	1046.81	1046.78	1046.74
24	1046.73	1043.61	1042.86	1042.66	1043.47	1043.13	1046.77	1046.85	1046.86	1046.81	1046.77	1046.71
25	1046.74	1043.56	1042.85	1042.70	1043.43	1043.27	1046.76	1046.90	1046.84	1046.80	1046.78	1046.68
26	1046.75	1043.49	1042.84	1042.73	1043.43	1043.37	1046.76	1046.91	1046.81	1046.77	1046.77	1046.72
27	1046.76	1043.43	1042.83	1042.74	1043.43	1043.47	1046.77	1046.92	1046.78	1046.74	1046.76	1046.74
28	1046.77	1043.41	1042.82	1042.76	1043.45	1043.83	1046.76	1046.94	1046.76	1046.73	1046.76	1046.77
29	1046.77	1043.39	1042.81	1042.76	---	1044.28	1046.75	1046.87	1046.77	1046.73	1046.76	1046.79
30	1046.76	1043.35	1042.80	1042.80	---	1044.71	1046.75	1046.84	1046.76	1046.76	1046.73	1046.78
31	1046.75	---	1042.80	1042.84	---	1045.12	---	1046.89	---	1046.76	1046.69	---
MEAN	1046.73	1044.72	1043.01	1042.76	1043.26	1043.36	1046.46	1046.76	1046.78	1046.74	1046.78	1046.78
MAX	1046.78	1046.77	1043.30	1042.84	1043.47	1045.12	1047.04	1046.94	1046.86	1046.81	1046.84	1047.05
MIN	1046.64	1043.35	1042.80	1042.66	1042.88	1042.81	1045.46	1046.62	1046.67	1046.64	1046.69	1046.60
CAL YR 2001	MEAN	1045.38	MAX	1046.94	MIN	1042.80						
WTR YR 2002	MEAN	1045.35	MAX	1047.05	MIN	1042.66						

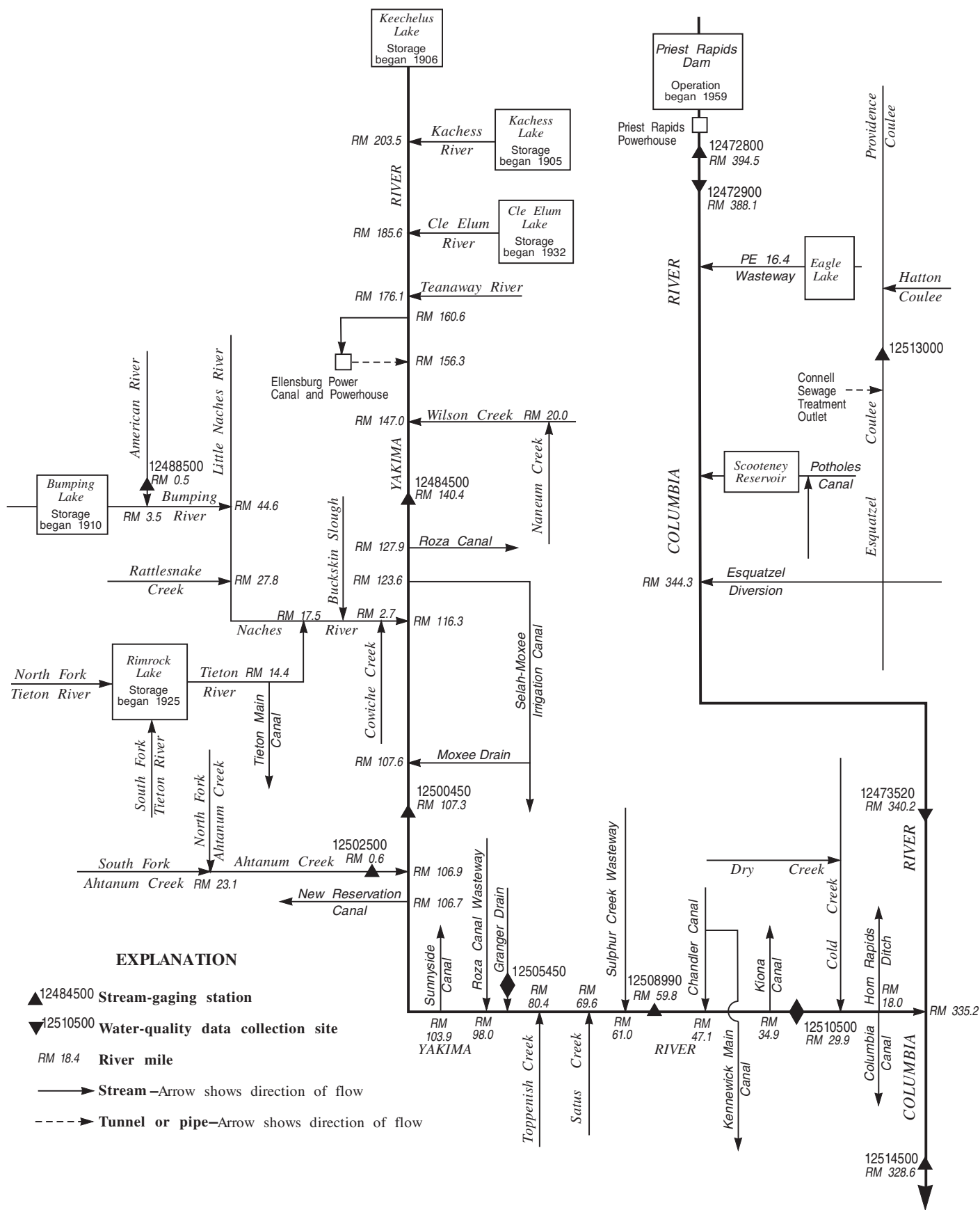


Figure 44. Schematic diagram showing surface-water and water-quality stations in the Columbia River Basin from Priest Rapids Dam to Kennewick including Yakima River and Esquatzel Coulee Basins.

COLUMBIA RIVER MAIN STEM

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA

LOCATION.--Lat 46°37'44", long 119°51'49", in SE 1/4 NW 1/4 sec.7, T.13 N., R.24 E., Grant County, Hydrologic Unit 17020016, on left bank 2.6 mi downstream from Priest Rapids Dam, 14.7 mi south of Beverly, and at mile 394.5.

DRAINAGE AREA.--96,000 mi², approximately.

PERIOD OF RECORD.--January 1917 to current year. January 1917 to September 1930, at site 3.4 mi downstream, published as "at Vernita." October 1930 to July 27, 1959, at site 46.5 mi upstream, published as "at Trinidad."

REVISED RECORDS.--WSP 1933: Drainage area. WDR WA-82-2: 1965(m), 1971(m).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Oct. 1, 1930, nonrecording gages at site 3.4 mi downstream at datum 388.7 ft above sea level. Oct. 1, 1930, to July 27, 1959, water-stage recorder at site 46.5 mi upstream at datum 499.3 ft above NGVD of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Records good. Diversions for irrigation of about 600,000 acres upstream from station. Flow regulated by 10 major reservoirs and numerous smaller reservoirs and powerplants. U.S. Geological Survey satellite telemeter at station. Water temperatures March 1980 to April 1993. Temperature records for site "at Vernita Bridge, near Priest Rapids Dam" (station 12472900) for period July 1974 to September 1980 are equivalent.

AVERAGE DISCHARGE.--85 years (water years 1918-2002), 119,400 ft³/s, 86,490,000 acre-ft/yr, unadjusted.
43 years (water years 1960-2002), 119,600 ft³/s, 86,660,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum discharge, 4,120 ft³/s Feb. 10, 1932, due to construction at Rock Island Dam, site and datum then in use; minimum daily discharge prior to construction of Rock Island Dam (1932), 22,000 ft³/s Feb. 1-7, 1930, site and datum then in use; minimum daily discharge after completion of Rock Island Dam (1932), 20,000 ft³/s Jan. 31 to Feb. 10, 1937, site and datum then in use; minimum discharge since completion of Priest Rapids Dam (1959), 16,300 ft³/s Nov. 7, 1998, due to emergency flow reduction from Priest Rapids Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, based on a rating extension for a Weather Bureau gage at Wenatchee.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 318,000 ft³/s Jul. 1, elevation, 418.11 ft; minimum discharge, 36,400 ft³/s Nov. 18, elevation, 396.40 ft; minimum daily discharge, 39,900 ft³/s Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79600	61900	75500	92800	128000	85100	53300	140000	191000	249000	113000	59200
2	63100	53500	54700	87700	94300	88800	50300	137000	138000	270000	129000	67100
3	55000	47600	68800	119000	86800	74800	55100	134000	191000	258000	108000	88000
4	59000	43700	110000	121000	108000	64000	62300	148000	249000	235000	89700	77700
5	61300	70400	95900	101000	113000	75800	62600	101000	252000	195000	103000	83200
6	39900	75800	88700	92000	106000	80300	52000	163000	236000	197000	94400	67700
7	42700	89300	75100	78800	109000	88900	50000	168000	245000	208000	118000	63500
8	60100	86500	68800	76500	112000	113000	50600	143000	254000	185000	128000	47000
9	66700	85800	53100	87500	101000	76200	56700	139000	208000	135000	114000	79600
10	80000	48200	87100	76300	88000	73000	80200	148000	230000	178000	110000	84400
11	61100	44300	114000	72100	109000	72000	74300	122000	224000	226000	103000	66700
12	70200	68400	93900	85100	125000	95600	133000	114000	231000	195000	94000	68400
13	48400	86700	107000	70500	132000	91000	112000	157000	200000	218000	114000	69700
14	51100	70600	90100	93500	97500	73800	104000	139000	197000	207000	113000	79900
15	69200	71200	75400	129000	111000	69600	144000	119000	208000	150000	120000	52500
16	71400	86900	72600	116000	107000	80400	181000	137000	192000	195000	110000	59600
17	101000	74400	79200	104000	81200	74700	194000	139000	200000	219000	78300	79600
18	69700	68900	95000	121000	93600	88800	211000	121000	219000	165000	81900	67500
19	49500	68300	102000	97000	109000	84300	175000	131000	250000	192000	117000	99400
20	43800	91100	119000	103000	93400	95100	189000	140000	267000	184000	122000	94300
21	43300	88500	106000	89100	97900	78000	170000	143000	252000	188000	114000	97800
22	69200	80800	92700	121000	83200	88400	196000	135000	216000	152000	122000	84400
23	84500	67900	87100	128000	80700	54500	185000	163000	210000	179000	130000	89800
24	66900	87300	75900	105000	83600	50800	164000	154000	189000	151000	109000	97000
25	60200	68600	75300	94900	92200	50600	166000	144000	191000	159000	81400	107000
26	71300	94900	90100	100000	88900	50400	160000	135000	218000	125000	96000	98500
27	62700	112000	114000	80000	99400	51300	115000	171000	244000	104000	122000	67600
28	47800	115000	96100	102000	95800	51200	117000	179000	261000	110000	113000	55900
29	63000	106000	86600	124000	---	53800	149000	156000	242000	133000	117000	55700
30	56400	94400	73300	125000	---	54100	169000	179000	200000	128000	89100	67100
31	71700	---	70900	138000	---	53600	---	165000	---	139000	112000	---
TOTAL	1939800	2308900	2693900	3130800	2826500	2281900	3681400	4464000	6605000	5629000	3365800	2275800
MEAN	62570	76960	86900	101000	100900	73610	122700	144000	220200	181600	108600	75860
MAX	101000	115000	119000	138000	132000	113000	211000	179000	267000	270000	130000	107000
MIN	39900	43700	53100	70500	80700	50400	50000	101000	138000	104000	78300	47000
AC-FT	3848000	4580000	5343000	6210000	5606000	4526000	7302000	8854000	13100000	11170000	6676000	4514000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 2002, BY WATER YEAR (WY)

	72040	73200	77420	80310	81570	82390	104200	192300	266800	197900	120400	82300
MEAN	72040	73200	77420	80310	81570	82390	104200	192300	266800	197900	120400	82300
MAX	119800	121200	163800	168400	195000	201800	196500	348500	590700	385400	192000	131700
(WY)	1928	1991	1996	1996	1996	1983	1934	1934	1948	1950	1920	1927
MIN	45950	32290	26840	21710	20900	26500	37160	61840	78810	56650	66740	60050
(WY)	1932	1937	1937	1937	1937	1937	1944	2001	1977	2001	1985	1994

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR

ANNUAL TOTAL	27625500
ANNUAL MEAN	75690
HIGHEST ANNUAL MEAN	
LOWEST ANNUAL MEAN	
HIGHEST DAILY MEAN	135000 Jan 3
LOWEST DAILY MEAN	36800 Jul 29
ANNUAL SEVEN-DAY MINIMUM	44600 May 14
ANNUAL RUNOFF (AC-FT)	54800000
10 PERCENT EXCEEDS	106000
50 PERCENT EXCEEDS	70500
90 PERCENT EXCEEDS	50400

FOR 2002 WATER YEAR

ANNUAL TOTAL	41202800
ANNUAL MEAN	112900
HIGHEST ANNUAL MEAN	
LOWEST ANNUAL MEAN	
HIGHEST DAILY MEAN	270000 Jul 2
LOWEST DAILY MEAN	39900 Oct 6
ANNUAL SEVEN-DAY MINIMUM	51700 Mar 24
ANNUAL RUNOFF (AC-FT)	81730000
10 PERCENT EXCEEDS	195000
50 PERCENT EXCEEDS	97000
90 PERCENT EXCEEDS	56600

WATER YEARS 1918 - 2002

ANNUAL TOTAL	119400
ANNUAL MEAN	165600
HIGHEST ANNUAL MEAN	1997
LOWEST ANNUAL MEAN	1944
HIGHEST DAILY MEAN	690000 Jun 12 1948
LOWEST DAILY MEAN	20000 Jan 31 1937
ANNUAL SEVEN-DAY MINIMUM	20100 Jan 30 1937
ANNUAL RUNOFF (AC-FT)	86490000
10 PERCENT EXCEEDS	231000
50 PERCENT EXCEEDS	93800
90 PERCENT EXCEEDS	46500

12472900 COLUMBIA RIVER AT VERNITA BRIDGE, NEAR PRIEST RAPIDS DAM, WA

LOCATION.--Lat 46°38'34", long 119°43'54", in NW ¼ SE ¼ sec.6, T.13 N., R.25 E., Grant County, Hydrologic Unit 17020016, at State Highway 24 Vernita Bridge crossing, 9.0 mi downstream from Priest Rapids Dam, and at mile 388.1.

DRAINAGE AREA.--96,000 mi², approximately.

PERIOD OF RECORD.--Water years 1962-63, 1972, 1974 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1974 to September 1980.

REMARKS.--October 1971 to September 1972, at site 6.4 mi upstream, published as 12472800 "below Priest Rapids Dam." Prior to October 1971 published as 12472800 "at Vernita Ferry." Discharge determined by routing flows from the gaging station below Priest Rapids Dam (station 12472800) 6.4 miles upstream. National Stream Quality Accounting Network (NASQAN) 1975-2000.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY LAB HACH 2100AN (NTU) (99872)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	HARDNESS TOTAL AS CACO3 (MG/L) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
DEC 11...	1130	75700	1.3	753	11.2	98	8.0	144	4.0	9.0	4	64	18.3
MAR 06...	1155	62100	1.6	749	13.0	101	8.2	150	1.0	4.0	1	65	18.2
JUN 26...	1300	209000	3.0	751	11.0	113	7.7	110	40.0	15.8	--	47	13.4
SEP 25...	1220	21000	1.6	756	9.2	99	7.6	130	27.0	18.6	11	61	17.5

Date	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITROGEN, AMMONIA + DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
DEC 11...	4.53	60	73	0	.91	<.1	8.6	<10	80	<.04	.13	.10	E.004
MAR 06...	4.79	64	78	0	1.32	E.1	10.0	<10	90	<.04	E.06	.14	<.008
JUN 26...	3.36	50	60	0	1.78	E.10	5.9	<10	58	<.04	.13	.05	<.008
SEP 25...	4.20	50	61	0	1.29	E.06	8.5	<10	74	<.04	.13	E.04	<.008

Date	NITROGEN, TOTAL (MG/L AS N) (00600)	ORTHOPHOSPHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	SEDIMENT, SUS-PENDED (MG/L) (80154)	SEDIMENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
DEC 11...	.23	E.01	<.06	1.3	<.8	<10	2.0	409
MAR 06...	--	<.02	<.06	1.2	<.8	<10	2.0	335
JUN 26...	.18	<.02	<.06	2.0	<.8	10	4.0	2260
SEP 25...	--	<.02	<.06	1.4	<.8	<10	3.0	170

COLUMBIA RIVER MAIN STEM

12473520 COLUMBIA RIVER AT RICHLAND, WA

LOCATION.--Lat 46°18'46", long 119°15'28", in NW ¼ NW ¼ sec.36, T.10 N., R.28 E., Benton County, Hydrologic Unit 17020016, at city of Richland pumping plant, 4.8 mi upstream from Yakima River, and at mile 340.2. Columbia River at Richland

DRAINAGE AREA.--96,900 mi², approximately.

PERIOD OF RECORD.--October 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1974 to March 1993.

REMARKS.--Water temperatures as recorded for the period July 1974 to January 1977 did not represent mean stream temperatures (see previous state reports for correlation between thermal load measurements and recorded temperatures). Temperature probe, relocated January 1977, represents both horizontal and vertical cross section of the river. Unpublished records of stage at site 2.3 miles downstream are available in files of the Geological Survey and U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 22.0°C July 21, Aug. 4, 5, 1985; minimum, 0.0°C Feb. 3, 6-9, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TURBID- ITY LAB HACH 2100AN (NTU) (99872)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	PH WATER FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS DISSOLV FLD. AS CACO3 (MG/L) (00904)	HARD- NESS TOTAL (MG/L CACO3) (00900)	CALCIUM DIS- SOLVED AS CA (MG/L) (00915)	MAGNE- SIUM, DIS- SOLVED AS MG (MG/L) (00925)	
DEC	12...	1.9	760	11.2	96	7.9	147	4.0	8.5	5	65	18.5	4.66
MAR	08...	2.3	764	13.6	103	8.3	152	7.5	4.0	4	68	19.0	4.98
JUN	27...	1120	752	10.6	110	7.4	112	33.4	16.3	--	48	13.4	3.40
SEP	26...	1110	751	8.7	94	7.6	133	17.5	18.2	7	60	17.3	4.17

Date	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00600)	
DEC	12...	60	73	0	1.02	.1	9.3	<10	84	<.04	.13	.11	<.008	.23
MAR	08...	64	78	0	1.31	E.1	10.1	<10	78	<.04	E.09	.17	<.008	--
JUN	27...	50	60	0	1.74	.14	6.1	<10	60	<.04	.21	.06	<.008	.27
SEP	26...	54	65	0	1.50	E.07	8.7	<10	73	<.04	.17	.08	<.008	.25

Date	ORTHO- PHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	
DEC	12...	E.01	<.06	1.1	<.8	<10	3.0
MAR	08...	<.02	<.06	1.2	<.8	<10	3.0
JUN	27...	<.02	<.06	2.1	<.8	E7	8.0
SEP	26...	<.02	<.06	1.4	E.5	31	2.0

12484500 YAKIMA RIVER AT UMTANUM, WA

LOCATION.--Lat 46°51'46", long 120°28'44", in SW ¼ NW ¼ sec.20, T.16 N., R.19 E., Kittitas County, Hydrologic Unit 17030001, on right bank at Umtanum railway siding, 0.5 mi upstream from Umtanum Creek, 4.2 mi upstream from McPherson Canyon, 10 mi south of Ellensburg, and at mile 140.4.

DRAINAGE AREA.--1,594 mi².

PERIOD OF RECORD.--August 1906 to current year. Monthly discharge for some months during the 1907, 1908, 1916-31 water years, published in WSP 1316.

REVISED RECORDS.--WSP 412: 1914. WSP 1286: 1910. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,300.00 ft above NGVD of 1929. Prior to Sept. 28, 1911, nonrecording gage at approximately same site at various datums. Sept. 28, 1911, to Nov. 23, 1936, water-stage recorder at site about 300 ft upstream at datum 26.70 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow partly regulated by Keechelus, Kachess, and Cle Elum Lakes. Diversions upstream from station for irrigation of about 105,000 acres. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--2 discharge measurements were provided by the Bureau of Reclamation.

AVERAGE DISCHARGE.--69 years (water years 1934-2002), 2,450 ft³/s, 1,775,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,000 ft³/s Nov. 15 or 16, 1906, gage height, 41.1 ft, from floodmarks, present datum; minimum recorded discharge, 138 ft³/s Oct. 3, 1915, gage height, 2.86 ft, datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,550 ft³/s Apr. 14, gage height, 34.58 ft; minimum discharge, 532 ft³/s Oct. 2-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	567	1020	980	840	1130	1600	2180	3050	5440	4810	4260	3820
2	557	1050	993	850	1080	1500	2390	3800	5450	3520	4190	3620
3	539	1030	947	833	1050	1420	2310	3850	5400	2680	4210	3290
4	543	987	905	815	1010	1380	2240	3330	5580	2760	4180	2870
5	536	948	884	805	993	1370	2340	2930	5590	3180	4150	2560
6	557	926	881	818	977	1400	2460	2640	5560	3040	4090	2310
7	616	891	913	945	987	1370	2680	2360	5340	2990	4060	2080
8	639	850	907	2600	1020	1290	2680	2120	5100	3120	3980	1840
9	638	822	865	3130	987	1260	2690	2010	4510	3050	4040	1730
10	629	792	852	2580	955	1230	2800	1960	3970	3110	4110	1610
11	630	762	834	2190	939	1240	3010	1880	3820	3140	4140	1490
12	637	744	818	1970	900	1710	3200	2040	3900	3150	4080	1460
13	645	741	847	1960	894	1750	3740	2440	4360	3260	4020	1440
14	656	997	1380	1800	894	1630	6710	2810	5300	3370	4110	1410
15	678	2200	1430	1620	876	1540	7130	2770	6510	3420	4120	1410
16	671	1890	1290	1500	872	1490	5020	2630	6810	3460	4120	1420
17	645	1580	1570	1420	878	1440	3870	2590	6490	3570	4160	1410
18	630	1370	1720	1330	871	1360	3140	2780	5210	3750	4170	1370
19	625	1250	1530	1290	888	1360	2760	2900	4770	3860	4210	1360
20	624	1190	1370	1270	924	1480	2650	3580	4480	3980	4190	1350
21	631	1150	1250	1300	948	1460	2690	4010	4150	3940	4120	1350
22	651	1200	1160	1220	1250	1350	2610	3680	4310	3950	4070	1360
23	699	1250	1090	1160	2640	1320	2500	3380	4580	3980	3950	1360
24	891	1290	1030	1170	2780	1410	2300	3100	5000	4170	3880	1340
25	962	1210	987	1440	2430	1620	2090	3050	4690	4190	3870	1320
26	895	1120	949	1500	2100	1720	2070	3220	4490	4230	3850	1320
27	804	1050	923	1370	1890	1760	2270	3460	4570	4260	3850	1340
28	789	1060	911	1280	1740	1730	2350	3930	5050	4270	3900	1370
29	768	1020	889	1190	---	1800	2390	4590	4800	4270	3850	1390
30	770	974	866	1170	---	1850	2540	4860	5270	4230	3870	1420
31	837	---	858	1150	---	1990	---	5050	---	4260	3890	---
TOTAL	20959	33364	32829	44516	34903	46830	89810	96800	150500	112970	125690	53420
MEAN	676	1112	1059	1436	1247	1511	2994	3123	5017	3644	4055	1781
MAX	962	2200	1720	3130	2780	1990	7130	5050	6810	4810	4260	3820
MIN	536	741	818	805	871	1230	2070	1880	3820	2680	3850	1320
AC-FT	41570	66180	65120	88300	69230	92890	178100	192000	298500	224100	249300	106000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	1158	1074	1725	1620	1848	2127	3225	3979	3882	3278	3330	2113																																																									
MAX	3197	3596	9214	7166	8547	8355	8831	8215	9077	4485	4221	3235																																																									
(WY)	1950	1960	1934	1934	1996	1972	1972	1997	1948	1985	1978	1950																																																									
MIN	412	352	331	337	463	541	1370	1493	1556	2075	1521	1053																																																									
(WY)	1974	1953	1953	1979	1944	1977	2001	2001	1941	1941	1979	1994																																																									

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1934 - 2002
ANNUAL TOTAL	533850	842591	
ANNUAL MEAN	1463	2308	
HIGHEST ANNUAL MEAN			4204
LOWEST ANNUAL MEAN			1335
HIGHEST DAILY MEAN	3110	7130	29600
LOWEST DAILY MEAN	536	536	151
ANNUAL SEVEN-DAY MINIMUM	552	559	217
ANNUAL RUNOFF (AC-FT)	1059000	1671000	1775000
10 PERCENT EXCEEDS	2860	4260	4380
50 PERCENT EXCEEDS	1200	1730	2170
90 PERCENT EXCEEDS	719	829	640

YAKIMA RIVER BASIN

12488500 AMERICAN RIVER NEAR NILE, WA

LOCATION.--Lat 46°58'40", long 121°10'03", in SE ¼ NW ¼ sec.12, T.17 N., R.13 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, on right bank 300 ft upstream from Bumping Lake Road bridge, 4.9 mi downstream from Hall Creek, 16.0 mi northwest of Nile, and at mile 0.5.

DRAINAGE AREA.--78.9 mi².

PERIOD OF RECORD.--April 1909 to March 1912, July to September 1913, June to September 1914, June to September 1915, October 1939 to current year. Monthly discharge only for period 1909 to 1915, published in WSP 1316.

REVISED RECORDS.--WSP 982: 1940-42. WSP 1216: Drainage area. WSP 1286: 1911.

GAGE.--Water-stage recorder. Datum of gage is 2,700.00 ft above NGVD of 1929 (Washington State Highway Department benchmark). Prior to Sept. 12, 1915, nonrecording gage at site 300 ft downstream at different datum. Oct. 12 to Dec. 7, 1939, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--63 years (water years, 1940-2002), 235 ft³/s, 40.47 in/yr, 170,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,230 ft³/s Dec. 26, 1980, gage height, 77.99 ft; minimum discharge, 20 ft³/s Nov. 22, 1940, Jan. 7, 1993, but may have been lower during period of ice effect that day.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,680 ft³/s Jan 8, gage height, 75.39 ft, but may have been higher during period of missing record that day; minimum discharge, 30 ft³/s Oct. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	78	147	104	121	185	137	431	1050	556	131	72
2	32	74	137	103	117	175	151	560	981	491	126	72
3	31	73	131	98	114	169	154	594	e960	453	123	71
4	31	66	127	95	110	164	170	545	e1000	431	119	70
5	31	65	123	95	108	160	193	495	e970	396	120	70
6	31	62	120	111	107	157	207	445	1020	378	120	72
7	31	58	113	782	107	151	227	397	878	406	115	78
8	31	55	109	e1560	104	144	231	360	721	528	111	74
9	31	52	105	1170	99	139	243	333	606	426	109	70
10	31	50	102	788	97	138	270	312	596	396	106	68
11	35	48	100	e600	95	165	301	303	697	424	104	66
12	36	52	97	e560	89	187	343	318	808	428	101	64
13	35	72	134	e460	92	169	495	370	940	408	99	64
14	35	584	191	e360	91	159	1220	399	1080	382	97	64
15	34	633	161	e300	89	152	1130	409	1150	332	95	62
16	34	441	199	259	88	147	830	423	1110	297	93	61
17	34	305	322	235	87	140	626	466	949	282	91	62
18	33	237	260	218	87	135	500	533	854	270	90	61
19	33	255	224	208	89	133	432	551	743	255	88	59
20	33	343	201	197	86	130	394	667	683	234	87	57
21	33	319	180	187	111	124	379	739	712	213	87	56
22	36	292	165	176	260	120	369	697	790	201	85	56
23	45	263	153	166	297	117	349	641	848	194	84	55
24	42	228	143	161	265	115	330	638	780	185	82	54
25	41	205	135	161	235	116	323	666	726	178	81	53
26	41	183	129	152	221	118	325	761	787	172	79	52
27	42	167	124	144	208	117	330	867	845	164	78	51
28	42	157	120	135	198	117	319	1010	785	154	76	51
29	41	160	115	126	---	118	319	1310	978	147	75	51
30	45	154	111	130	---	119	345	1370	766	143	74	50
31	86	---	108	126	---	127	---	1210	---	137	73	---
TOTAL	1148	5731	4586	9967	3772	4407	11642	18820	25813	9661	2999	1866
MEAN	37.0	191	148	322	135	142	388	607	860	312	96.7	62.2
MAX	86	633	322	1560	297	187	1220	1370	1150	556	131	78
MIN	31	48	97	95	86	115	137	303	596	137	73	50
AC-FT	2280	11370	9100	19770	7480	8740	23090	37330	51200	19160	5950	3700
CFSM	0.47	2.42	1.87	4.07	1.71	1.80	4.92	7.69	10.9	3.95	1.23	0.79
IN.	0.54	2.70	2.16	4.70	1.78	2.08	5.49	8.87	12.17	4.55	1.41	0.88

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
MEAN	70.4	132	168	138	155
MAX	248	407	532	464	718
(WY)	1948	1996	1976	1974	1996
MIN	28.4	30.3	33.2	31.2	37.7
(WY)	1988	1994	1953	1979	1985

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1940 - 2002
ANNUAL TOTAL	46103	100412	
ANNUAL MEAN	126	275	235
HIGHEST ANNUAL MEAN			379
LOWEST ANNUAL MEAN			94.2
HIGHEST DAILY MEAN	787	1560	3070
LOWEST DAILY MEAN	31	31	20
ANNUAL SEVEN-DAY MINIMUM	31	31	24
ANNUAL RUNOFF (AC-FT)	91450	199200	170300
ANNUAL RUNOFF (CFSM)	1.60	3.49	2.98
ANNUAL RUNOFF (INCHES)	21.74	47.34	40.47
10 PERCENT EXCEEDS	303	741	589
50 PERCENT EXCEEDS	71	151	122
90 PERCENT EXCEEDS	35	52	46

e Estimated

12500450 YAKIMA RIVER ABOVE AHTANUM CREEK, AT UNION GAP, WA

LOCATION.--Lat 46°32'04", long 120°27'58", in NW ¼ NE ¼ sec.17, T.12 N., R.19 E., Yakima County, Hydrologic Unit 17030003, on left bank 2,200 ft upstream from Ahtanum Creek, 0.8 mi upstream from Wapato Dam, 1.4 mi southeast of Union Gap, and at about mile 107.3.

DRAINAGE AREA.--3,479 mi².

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft above NGVD of 1929; gage readings have been reduced to elevations above NGVD of 1929. Prior to Apr. 4, 1967, at site 1,200 ft downstream at same datum.

REMARKS.--Records fair. Diversions upstream from station for irrigation of about 212,000 acres. Flow partly regulated by Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes. Records at this site plus those for Ahtanum Creek at Union Gap (station 12502500) are equivalent to discontinued station 12503000, Yakima River at Union Gap. Chemical analyses, water years 1969, 1971, March 1975 to September 1993. Water temperature, March 1981 to December 1981.

AVERAGE DISCHARGE.--36 years (water years 1967-2002), 3,617 ft³/s, 2,621,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,300 ft³/s Feb. 9, 1996, elevation, 953.88 ft, from high-water mark, from rating curve extended above 18,000 ft³/s on basis of discharge information provided by the Bureau of Reclamation for their station on the Yakima River near Parker; minimum daily discharge, 300 ft³/s Jan. 1, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,900 ft³/s April 15, elevation, 945.73 ft; minimum discharge, 888 ft³/s Oct. 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1840	1140	1380	1220	2010	2850	2930	5070	e11800	8200	3900	3380
2	1870	1260	1410	1220	1970	2680	3280	6400	e11800	6040	3810	3490
3	1850	1270	1380	1220	1910	2540	3270	6850	e11600	4240	3800	3270
4	1840	1250	1300	1190	1870	2490	3090	6220	e11200	3880	3810	3080
5	1850	1220	1250	1170	1830	2450	3300	5540	10900	4400	3820	2970
6	1810	1190	1240	1180	1820	2470	3630	4850	11100	4110	3790	2970
7	1800	1160	1240	1590	1830	2430	4040	4210	10700	3960	3730	2960
8	1860	1140	1240	5790	1900	2300	4180	3690	9940	4220	3610	2870
9	1880	1110	1210	7310	1850	2240	4110	3490	9190	4150	3530	2830
10	1850	1090	1190	5920	1790	2210	4280	3430	8360	4000	3680	2750
11	1830	1070	1180	5080	1750	2220	4620	3290	7760	3930	3680	2620
12	1850	1040	1160	4550	1710	2830	5060	3440	7360	3890	3630	2580
13	1830	1030	1160	4290	1660	3070	5870	4030	7570	3910	3460	2620
14	1820	1110	1610	4000	1650	2860	11500	4650	9130	4000	3490	2640
15	1790	2790	1880	3630	1640	2690	13800	4740	11300	3960	3470	2720
16	1770	2720	1690	3350	1630	2590	9240	4630	12100	3810	3520	2770
17	1420	2260	1950	3180	1620	2460	6970	4550	11600	3810	3560	2770
18	1100	1900	2310	2860	1620	2200	5520	4920	9650	3980	3600	2680
19	989	1710	2040	2670	1630	2010	4770	5230	8520	4000	3670	2660
20	926	1730	1880	2560	1650	2070	4390	6160	7560	3990	3720	2640
21	893	1760	1720	2550	1680	2140	4380	7240	6810	3890	3680	2620
22	913	1770	1600	2430	2180	2030	4350	6890	6830	3940	3660	2630
23	984	1770	1510	2340	4090	2000	4120	6340	7220	3810	3530	2620
24	1050	1760	1460	2320	4700	2020	3770	6010	7740	4020	3390	2590
25	1140	1650	1410	2470	4270	2130	3420	6220	7880	3970	3380	2610
26	1140	1550	1360	2660	3750	2270	3460	6660	7420	3870	3360	2640
27	1100	1460	1330	2470	3360	2410	4010	7350	7720	3920	3320	2670
28	1050	1470	1300	2330	3100	2370	4140	8090	8200	3920	3380	2600
29	1040	1430	1280	2200	---	2390	4080	9580	8150	3930	3350	2610
30	1050	1370	1260	2130	---	2480	4320	10800	8800	3840	3350	2620
31	1050	---	1230	2060	---	2620	---	e11200	---	3870	3430	---
TOTAL	45185	45180	45160	89940	62470	74520	147900	181770	275910	129460	111110	83480
MEAN	1458	1506	1457	2901	2231	2404	4930	5864	9197	4176	3584	2783
MAX	1880	2790	2310	7310	4700	3070	13800	11200	12100	8200	3900	3490
MIN	893	1030	1160	1170	1620	2000	2930	3290	6810	3810	3320	2580
AC-FT	89620	89610	89570	178400	123900	147800	293400	360500	547300	256800	220400	165600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

MEAN	1710	1915	2892	2928	3540	3895	4720	6114	5888	3792	3349	2683
MAX	2574	5354	11200	7490	14290	14340	12780	15160	13410	6878	4123	3355
(WY)	1998	1991	1976	1976	1996	1972	1972	1997	1974	1974	1974	1974
MIN	896	710	882	540	889	752	1608	2475	2480	2650	2351	1411
(WY)	1980	1988	1994	1979	1977	1977	1977	1977	2001	2001	1979	1979

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1967 - 2002
ANNUAL TOTAL	683224	1292085	
ANNUAL MEAN	1872	3540	3617
HIGHEST ANNUAL MEAN			6622
LOWEST ANNUAL MEAN			1884
HIGHEST DAILY MEAN	3820	May 25	44000
LOWEST DAILY MEAN	893	Oct 21	300
ANNUAL SEVEN-DAY MINIMUM	979	Oct 18	387
ANNUAL RUNOFF (AC-FT)	1355000	2563000	2621000
10 PERCENT EXCEEDS	2740	7330	6910
50 PERCENT EXCEEDS	1770	2830	3000
90 PERCENT EXCEEDS	1050	1230	1250

e Estimated

YAKIMA RIVER BASIN

12502500 AHTANUM CREEK AT UNION GAP, WA

LOCATION.--Lat 46°32'08", long 120°28'20", in SE ¼ SW ¼ sec.8, T.12 N., R.19 E., Yakima County, Hydrologic Unit 17030003, on right downstream wingwall of Union Pacific Railway bridge at Union Gap, 1.0 mi south of town of Union Gap, and at mile 0.6.

DRAINAGE AREA.--173 mi².

PERIOD OF RECORD.--May to November 1904, August 1907 to July 1908, March to October 1910, April 1911 to September 1914, May 1951 to April 1953, August 1960 to current year. Published as "near Yakima" 1904, 1907-08, 1910-12. Records for water years 1913-14 are published in WSP 1286.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 940 ft above NGVD of 1929, from topographic map. Prior to Sept. 30, 1914, nonrecording gage at approximately same site at various datums. May 12, 1951, to Sept. 30, 1972, water-stage recorder at present site at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Extreme high flows may include transbasin flow from Wide Hollow Creek. Diversions and ground-water withdrawals for irrigation of about 9,000 acres upstream from station. Return from transbasin irrigation flows contribute to base flow. Chemical data (irrigation seasons only) for 1975-76 water years. Water temperature records March to December 1981. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1961-2002), 78.1 ft³/s, 56,610 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft³/s Jan. 16, 1974, gage height, 10.36 ft; maximum gage height, 13.5 ft, from high-water mark, backwater from Yakima River; no flow many days during September and October 1904.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 380 ft³/s Apr. 15, gage height, 5.78 ft; minimum discharge, 9.2 ft³/s Oct. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	22	36	25	35	75	82	100	227	46	18	27
2	10	23	41	27	32	71	88	112	209	35	20	28
3	10	23	35	25	30	72	82	134	208	28	23	28
4	11	24	29	24	28	73	80	139	201	26	28	28
5	14	22	27	26	32	73	79	132	206	23	28	29
6	13	22	26	28	32	71	87	121	215	21	27	29
7	14	24	26	35	35	68	104	105	187	18	28	29
8	13	25	25	151	39	60	108	91	171	18	24	30
9	13	25	24	151	35	66	112	86	164	18	21	29
10	16	24	23	89	34	62	111	82	153	23	23	27
11	16	25	22	73	34	59	108	76	145	15	21	26
12	15	26	22	69	31	73	114	75	135	16	19	24
13	15	26	22	67	30	73	120	74	130	18	19	19
14	15	26	28	65	33	74	250	76	136	16	16	20
15	15	27	24	57	33	83	346	80	138	16	18	24
16	16	26	20	51	32	78	267	78	141	16	19	26
17	16	25	22	50	34	76	211	83	129	17	19	29
18	15	26	24	43	34	71	163	96	120	16	21	32
19	15	31	21	48	35	72	140	103	107	15	26	31
20	15	34	20	46	38	68	123	131	87	31	25	29
21	16	34	22	43	37	68	118	163	81	41	26	29
22	16	34	20	40	53	67	112	162	73	37	28	31
23	16	30	18	43	95	67	105	154	71	17	28	31
24	17	29	20	38	117	64	92	149	68	14	27	29
25	17	29	21	39	106	66	91	153	56	13	26	26
26	17	29	24	38	95	67	89	169	50	12	25	26
27	17	27	25	34	89	69	103	187	46	11	30	30
28	17	32	25	34	84	68	103	212	46	12	30	32
29	17	31	25	29	---	69	96	241	58	13	27	31
30	18	30	26	31	---	69	103	258	53	16	26	34
31	19	---	26	34	---	74	---	244	---	12	27	---
TOTAL	463.8	811	769	1553	1342	2166	3787	4066	3811	630	743	843
MEAN	15.0	27.0	24.8	50.1	47.9	69.9	126	131	127	20.3	24.0	28.1
MAX	19	34	41	151	117	83	346	258	227	46	30	34
MIN	9.8	22	18	24	28	59	79	74	46	11	16	19
AC-FT	920	1610	1530	3080	2660	4300	7510	8060	7560	1250	1470	1670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

MEAN	20.8	29.5	51.7	75.0	122	136	135	164	139	33.9	15.7	20.1
MAX	34.4	96.7	210	413	564	408	270	383	438	124	26.7	31.8
(WY)	1983	1963	1978	1974	1996	1972	1974	1995	1972	1974	1999	1978
MIN	9.30	8.99	8.64	10.3	15.7	21.5	16.5	22.8	12.2	8.31	7.33	9.34
(WY)	1978	1995	1989	1993	1994	1994	1977	1977	1992	1994	1977	1981

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1961 - 2002	
ANNUAL TOTAL	8211.0		20984.8			
ANNUAL MEAN	22.5		57.5		78.1	
HIGHEST ANNUAL MEAN					171	
LOWEST ANNUAL MEAN					20.2	
HIGHEST DAILY MEAN	50		346		2560	
LOWEST DAILY MEAN	7.1		9.8		3.5	
ANNUAL SEVEN-DAY MINIMUM	7.5		12		5.1	
ANNUAL RUNOFF (AC-FT)	16290		41620		56610	
10 PERCENT EXCEEDS	34		133		199	
50 PERCENT EXCEEDS	22		32		35	
90 PERCENT EXCEEDS	12		16		12	

YAKIMA RIVER BASIN

12505450 GRANGER DRAIN AT GRANGER, WA

LOCATION.--Lat 46°20'37", long 120°11'09", in NW ¼ NW ¼ sec.22, T.10 N., R.21 E., Yakima County, Hydrologic Unit 17030003, on right bank, 330 ft upstream from E Street, at Granger, WA.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1975 to September 1976, August to September 1981 (discharge measurements only), May to September 1991, August 1999 to current year.

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

REMARKS.--No estimated daily discharges. Records fair. Most flow is return and waste from irrigation.

COOPERATION.--Gage-height records and nineteen discharge measurements were provided by Sunnyside Valley Irrigation District.

AVERAGE DISCHARGE.--3 years (water years 2000-2002), 34.1 ft³/s, 24,730 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 175 ft³/s June 20, 1991, gage height, 4.62 ft; minimum discharge, 15 ft³/s part or all of each day Mar. 26-29, 2002.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 73 ft³/s Sept. 3; minimum discharge, 15 ft³/s part or all of each day Mar. 26-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	19	22	20	18	19	16	44	47	58	49	63
2	29	19	22	23	17	19	17	49	46	54	49	64
3	27	19	23	22	17	19	18	43	48	54	51	66
4	29	19	21	21	16	19	19	43	45	54	56	63
5	30	20	21	22	17	19	25	45	46	53	55	58
6	31	20	24	22	e17	20	27	43	47	50	50	55
7	33	19	21	22	e17	19	23	42	48	50	51	55
8	35	19	20	23	e18	19	26	43	50	51	50	58
9	33	19	20	22	18	19	31	44	57	46	50	59
10	38	19	21	22	18	19	36	44	51	48	48	53
11	36	19	21	21	18	19	42	43	48	48	53	54
12	35	19	20	20	19	19	39	45	43	48	50	53
13	31	19	21	19	20	19	41	44	43	48	48	55
14	31	19	20	19	19	19	45	44	43	52	50	57
15	31	20	20	19	18	18	41	42	42	54	49	61
16	32	21	20	19	18	18	35	42	45	49	47	61
17	33	21	20	19	19	17	34	44	48	47	50	61
18	23	20	21	19	19	18	30	46	51	47	55	58
19	19	21	22	20	19	17	33	50	51	48	55	56
20	17	21	20	23	18	17	38	54	48	52	52	57
21	18	22	20	23	18	16	40	50	45	53	53	56
22	25	22	23	20	18	17	37	50	45	50	55	58
23	21	20	20	20	19	17	32	48	45	47	56	59
24	19	21	20	21	19	17	29	47	44	47	58	55
25	19	20	20	20	18	16	36	46	43	48	63	54
26	21	19	20	18	19	16	41	50	43	48	61	55
27	21	19	20	17	20	15	45	49	45	46	53	59
28	20	20	20	16	20	16	44	50	47	50	55	60
29	19	21	20	16	---	16	44	50	58	54	56	61
30	20	20	21	17	---	16	44	47	61	50	55	60
31	20	---	20	17	---	16	---	46	---	48	56	---
TOTAL	821	596	644	622	511	550	1008	1427	1423	1552	1639	1744
MEAN	26.5	19.9	20.8	20.1	18.2	17.7	33.6	46.0	47.4	50.1	52.9	58.1
MAX	38	22	24	23	20	20	45	54	61	58	63	66
MIN	17	19	20	16	16	15	16	42	42	46	47	53
AC-FT	1630	1180	1280	1230	1010	1090	2000	2830	2820	3080	3250	3460

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

	2000	2001	2002	2000	2001	2002	2000	2001	2002	2000	2001	2002
MEAN	40.9	22.7	21.5	21.5	21.3	20.6	31.9	41.5	44.5	45.9	48.1	48.4
MAX	49.9	24.2	22.1	23.0	24.5	23.8	36.0	46.2	55.1	58.7	59.2	61.4
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MIN	26.5	19.9	20.8	20.1	18.2	17.7	26.0	32.3	30.9	28.8	32.2	25.8
(WY)	2002	2002	2002	2002	2002	2002	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 2000 - 2002
ANNUAL TOTAL	9313	12537	
ANNUAL MEAN	25.5	34.3	34.1
HIGHEST ANNUAL MEAN			40.4
LOWEST ANNUAL MEAN			27.6
HIGHEST DAILY MEAN	40	Jun 4	66
LOWEST DAILY MEAN	17	Oct 20	15
ANNUAL SEVEN-DAY MINIMUM	18	Sep 20	16
ANNUAL RUNOFF (AC-FT)	18470	24870	24730
10 PERCENT EXCEEDS	35	55	58
50 PERCENT EXCEEDS	23	31	27
90 PERCENT EXCEEDS	19	18	19

e Estimated

12505450 GRANGER DRAIN AT GRANGER, WA
(National Water-Quality Assessment Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1990 to September 1991, August 1999 to June 2000, November 2000 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1999 to June 2000, October 2001 to September 2002.

WATER TEMPERATURE: August 1999 to June 2000, October 2001 to September 2002.

REMARKS.--Specific conductance records excellent except those for Oct. 10 to Jan. 8, Apr. 16-17, and June 4-28, which are good. Water temperature records excellent. Interruptions in the record were caused by instrument malfunction.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 883 microsiemens Nov. 29, 2001; minimum, 268 microsiemens July 1, 2002.

WATER TEMPERATURE: Maximum, 24.7°C July 13, 2002; minimum 7.2°C Jan. 29, 2002.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 883 microsiemens Nov. 29; minimum, 263 microsiemens July 1.

WATER TEMPERATURE: Maximum, 24.7°C July 13; minimum, 7.2°C Jan. 29.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	624	620	622	717	684	698	672	666	670
2	---	---	---	649	618	625	753	643	680	801	663	712
3	---	---	---	623	615	618	815	661	704	708	688	693
4	---	---	---	621	617	619	677	666	670	690	681	685
5	504	460	476	622	617	620	670	659	665	712	673	686
6	479	446	462	624	619	621	701	663	684	715	687	698
7	480	442	455	622	616	619	701	672	683	734	696	707
8	451	436	444	623	617	620	674	671	673	749	695	719
9	455	432	446	625	619	622	674	661	666	730	695	703
10	441	417	428	624	620	622	670	660	664	703	684	692
11	442	429	437	625	621	623	671	663	667	700	694	696
12	447	423	435	---	---	---	684	661	669	701	694	698
13	450	433	442	---	---	---	684	677	680	702	691	695
14	442	426	435	---	---	---	682	667	674	733	691	700
15	439	419	432	631	625	628	668	663	666	707	684	692
16	447	425	435	---	---	---	787	667	750	705	692	697
17	462	415	433	---	---	---	799	659	742	700	693	696
18	518	462	492	---	---	---	684	656	668	697	689	692
19	565	514	543	---	---	---	682	676	678	696	692	694
20	588	552	573	---	---	---	682	675	678	699	689	693
21	586	570	581	---	---	---	712	678	682	708	688	695
22	719	459	558	701	671	688	730	680	705	710	684	696
23	571	513	549	671	650	658	695	684	687	709	700	704
24	587	571	580	654	649	651	684	675	680	705	699	702
25	612	587	598	653	645	649	676	671	673	707	700	702
26	615	565	576	648	642	644	676	671	673	704	695	698
27	577	568	571	646	639	642	676	671	673	700	692	695
28	577	570	572	652	629	641	675	671	673	695	688	691
29	608	577	599	883	652	677	673	671	672	696	685	690
30	658	607	629	805	668	689	674	669	671	693	686	690
31	655	624	637	---	---	---	673	670	671	692	685	688
MONTH	719	415	512	883	615	638	815	643	681	801	663	696

(National Water-Quality Assessment Station)--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	13.7	12.1	12.8	11.6	10.3	10.8	10.6	9.8	10.2
2	---	---	---	13.9	12.0	12.8	10.5	9.2	9.9	10.3	9.4	9.9
3	---	---	---	13.6	11.4	12.3	10.4	8.6	9.7	11.0	10.1	10.5
4	---	---	---	12.8	11.5	12.2	10.6	9.3	10.0	10.6	10.1	10.4
5	15.0	11.7	13.3	13.2	11.3	12.5	10.4	9.7	10.2	10.9	9.9	10.4
6	14.8	11.8	13.2	12.3	10.6	11.2	10.2	9.0	9.6	10.7	10.2	10.4
7	13.5	11.7	12.7	11.5	9.5	10.4	10.9	8.8	9.7	11.7	10.5	11.0
8	14.1	11.8	12.8	11.4	9.2	10.2	11.0	9.9	10.3	11.4	10.1	11.1
9	14.1	11.2	12.5	11.4	9.3	10.2	10.3	9.0	9.6	10.6	9.2	9.9
10	12.7	10.9	11.8	11.3	9.5	10.3	10.4	9.2	9.9	10.6	9.6	10.1
11	13.8	11.4	12.4	11.3	9.8	10.5	10.2	9.8	10.0	11.3	10.3	10.7
12	14.2	11.7	12.8	---	---	---	10.5	9.9	10.1	10.6	9.4	10.0
13	14.2	11.6	12.9	---	---	---	11.5	9.9	10.7	10.6	8.8	9.6
14	15.0	12.5	13.4	---	---	---	10.8	8.9	9.4	10.3	8.9	9.5
15	14.0	11.1	12.5	13.2	12.4	12.8	10.5	8.9	9.7	10.0	8.0	8.9
16	14.1	11.8	12.8	---	---	---	11.7	10.3	11.0	9.9	8.0	8.9
17	13.0	10.5	11.7	---	---	---	11.3	9.1	9.9	9.9	8.5	9.1
18	13.4	10.7	12.0	---	---	---	9.8	9.1	9.4	9.9	8.0	8.9
19	14.5	11.7	12.8	---	---	---	9.7	8.7	9.2	10.2	8.6	9.4
20	13.8	10.9	12.3	---	---	---	10.3	9.2	9.8	10.1	9.0	9.4
21	13.4	11.8	12.5	---	---	---	10.6	9.8	10.2	10.2	8.5	9.4
22	13.2	11.6	12.4	12.8	11.3	11.9	10.0	9.5	9.8	9.7	8.1	8.7
23	12.1	10.7	11.3	11.5	10.4	11.0	11.2	9.4	10.3	9.9	8.2	9.0
24	12.8	10.4	11.5	11.2	10.1	10.6	9.9	9.0	9.5	10.8	9.2	10
25	13.9	11.5	12.5	12.0	10.4	11.2	9.8	8.5	9.1	11.3	9.4	10.3
26	13.6	11.1	12.4	10.7	9.3	9.9	10.4	9.4	9.7	10.3	8.6	9.4
27	12.9	11.8	12.4	10.5	8.8	9.6	10.0	9.2	9.6	10.1	8.2	9.0
28	12.2	10.1	11.3	10.0	8.1	9.4	9.9	9.1	9.5	9.7	7.9	8.9
29	12.3	10.7	11.5	10.7	9.4	9.8	10.1	9.4	9.7	9.8	7.2	8.5
30	12.4	11.8	12.1	11.1	9.3	10.2	10.4	9.5	9.8	10.3	8.8	9.5
31	13.4	12.0	12.5	---	---	---	10.5	9.6	10.0	10.4	9.1	9.7
MONTH	15.0	10.1	12.4	13.9	8.1	11.0	11.7	8.5	9.9	11.7	7.2	9.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	11.2	9.3	10.0	11.9	7.6	9.4	15.7	10.1	12.4	17.9	11.2	14.2
2	10.6	8.3	9.3	12.3	8.0	9.7	14.2	9.8	11.7	17.2	11.8	13.9
3	10.9	8.5	9.5	12.5	7.9	9.8	16.0	8.7	11.8	16.8	10.7	13.2
4	10.4	7.7	9.0	12.1	8.5	10.1	16.6	8.8	12.2	14.1	10.6	12.0
5	10.1	8.0	9.0	11.7	9.3	10.4	14.0	9.5	11.5	13.7	10.0	11.8
6	10.5	8.4	9.4	10.9	8.8	10	15.2	9.3	12.0	13.0	9.0	10.9
7	10.6	9.1	9.9	12.5	9.0	10.2	15.8	9.9	12.3	14.1	8.7	10.9
8	10.6	8.2	9.2	11.4	7.6	9.3	16.2	8.9	12.1	15.1	8.6	11.5
9	10.8	8.2	9.3	12.0	9.0	10.1	13.3	10.8	11.7	14.5	10.2	12.0
10	10.9	8.5	9.6	12.1	9.1	10.4	15.5	10.2	12.1	16.5	10.1	12.9
11	10.8	8.4	9.4	13.0	10.4	11.3	14.8	10.6	12.3	17.6	10.2	13.4
12	10.5	7.6	8.9	13.3	9.2	10.7	16.0	10.3	12.6	17.8	10.9	14.1
13	10.4	7.5	8.8	12.6	9.6	10.8	16.3	11.5	13.6	15.8	12.0	13.6
14	10.9	7.8	9.2	13.7	8.3	10.4	13.8	10.4	12.1	17.6	10.9	13.8
15	11.0	7.8	9.1	13.7	8.8	10.8	14.1	9.4	11.4	18.0	10.9	13.9
16	11.6	8.8	9.8	13.6	8.8	10.6	12.7	9.4	10.6	18.1	10.8	14.1
17	11.9	8.8	10.1	12.7	9.2	10.4	14.5	8.3	10.9	18.8	12.7	15.2
18	12.3	9.0	10.5	10.8	8.2	9.6	14.2	8.1	10.8	15.4	13.0	14.1
19	12.8	9.6	10.9	13.6	8.6	10.6	15.9	9.3	11.9	17.0	13.1	14.8
20	12.2	8.7	10.1	10.3	8.2	9.6	16.2	9.1	12.2	16.8	13.2	14.6
21	13.3	10.0	11.4	10.5	7.6	8.8	16.6	9.9	12.6	18.0	12.5	14.6
22	12.9	11.3	12.2	12.4	8.4	10.1	15.3	9.8	12.1	16.9	11.7	14.0
23	13.0	10.8	11.6	11.3	8.7	10.1	15.7	9.0	11.7	18.4	11.7	14.6
24	11.3	9.0	10.1	14.8	9.8	11.6	16.0	8.7	11.9	18.3	11.8	14.8
25	11.4	7.7	9.2	15.7	9.1	11.9	14.7	9.5	12.0	16.8	12.9	14.6
26	11.7	8.2	9.4	12.5	9.2	10.7	14.9	9.7	12.0	17.6	13.5	15.1
27	11.5	7.7	9.3	14.6	9.0	11.1	13.5	10.3	11.6	17.4	13.2	15.2
28	11.5	8.5	9.6	15.9	9.8	11.9	16.4	9.3	12.4	17.0	13.5	15.2
29	---	---	---	15.5	9.9	12.1	16.6	9.7	12.7	17.7	13.9	15.3
30	---	---	---	16.5	10.2	12.8	16.0	10.9	13.2	19.8	13.2	16.0
31	---	---	---	16.7	9.9	12.7	---	---	---	19.5	12.8	15.9
MONTH	13.3	7.5	9.8	16.7	7.6	10.6	16.6	8.1	12.0	19.8	8.6	13.9

(National Water-Quality Assessment Station)--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	18.4	13.6	15.6	20.2	14.7	17.2	20.6	15.3	17.8	20.3	17.7	18.9
2	19.6	13.0	15.9	20.3	14.7	17.2	20.3	15.7	17.8	20.4	16.8	18.5
3	19.2	13.2	16.0	19.7	15.7	17.3	20.2	15.1	17.5	19.6	17.2	18.3
4	20.8	14.1	17.0	19.9	14.6	17.0	18.4	15.8	17.1	18.6	15.4	16.9
5	19.6	14.4	16.4	20.1	14.7	17.3	18.9	14.7	16.6	18.0	15.3	16.5
6	17.1	12.8	14.8	20.5	15.3	17.9	19.2	14.5	16.7	17.4	14.5	15.9
7	16.8	11.9	13.9	21.9	16.0	18.7	19.4	14.5	16.8	17.5	14.0	15.7
8	15.9	10.8	13.0	22.0	17.1	19.1	19.8	14.9	17.2	17.1	13.7	15.5
9	14.8	11.8	13.2	22.1	16.1	18.9	20.5	15.3	17.8	18.0	14.3	16.0
10	18.6	12.1	14.9	22.9	16.6	19.5	21.2	16.5	18.6	18.5	14.3	16.3
11	19.9	12.9	16.1	23.6	17.7	20.4	20.9	16.2	18.4	19.1	15.1	17.0
12	20.9	13.9	17.0	24.4	18.6	21.3	20.9	16.3	18.4	19.4	15.5	17.3
13	21.5	14.8	17.7	24.7	20.1	22.1	21.3	16.4	18.7	19.4	15.8	17.5
14	21.7	15.6	18.1	23.9	19.6	21.4	21.7	17.0	19.1	18.6	15.8	17.2
15	22.0	15.8	18.4	22.8	17.6	20.0	21.4	17.1	19.0	18.6	16.1	17.2
16	19.0	15.2	17.0	22.5	17.2	19.7	21.1	17.2	18.9	17.7	15.7	16.6
17	16.8	14.4	15.5	23.2	17.9	20.2	20.6	16.1	18.2	18.2	15.7	16.7
18	17.9	13.9	15.5	23.4	17.8	20.3	20.2	16.0	18.0	17.6	14.1	15.8
19	19.3	12.6	15.6	23.0	18.0	20.2	19.8	15.8	17.8	17.9	14.6	16.2
20	19.8	13.3	16.3	22.4	17.1	19.5	20.0	15.9	17.8	17.7	14.8	16.1
21	20.5	14.3	17.2	22.2	17.1	19.5	19.8	15.9	17.7	17.2	13.9	15.3
22	20.7	15.1	17.7	22.7	17.1	19.7	20.0	15.8	17.8	16.5	13.2	14.8
23	21.3	16.0	18.1	22.6	18.0	19.9	20.9	17.3	18.8	16.7	13.0	14.7
24	21.6	15.3	18.2	23.0	17.9	20.1	21.1	16.9	18.9	17.0	13.4	15.1
25	22.2	15.8	18.6	23.0	18.1	20.3	21.1	17.3	19.1	17.2	14.2	15.5
26	22.8	16.1	19.2	22.8	17.8	20.0	20.9	17.5	19.1	16.1	13.8	15.0
27	22.1	17.7	19.4	22.3	17.3	19.5	21.1	17.1	18.9	16.7	14.5	15.4
28	18.5	16.9	17.6	22.1	17.1	19.3	21.2	17.2	19.1	16.5	13.4	14.9
29	20.6	16.1	17.8	22.2	17.2	19.5	21.3	17.5	19.3	15.8	13.8	14.8
30	20.3	15.0	17.3	21.9	17.2	19.2	21.0	17.6	19.2	15.0	12.8	13.7
31	---	---	---	20.8	15.9	18.1	20.9	17.2	19.0	---	---	---
MONTH	22.8	10.8	16.6	24.7	14.6	19.4	21.7	14.5	18.2	20.4	12.8	16.2
YEAR	24.7	7.2	13.4									

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	PH WATER FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT													
17...	1140	32	754	9.6	89	8.0	465	13.4	11.6	162	197	0	10.4
NOV													
21...	1240	22	741	9.1	88	8.3	716	--	12.4	231	278	0	18.9
DEC													
18...	1140	20	743	10.2	92	8.3	715	-5.0	9.6	238	286	0	18.3
JAN													
22...	1120	20	744	9.4	83	8.3	713	1.1	9.0	237	285	0	16.9
FEB													
19...	1120	19	741	10.6	100	8.4	700	11.0	11.3	235	281	2	18.3
MAR													
04...	1130	19	749	11.6	106	8.4	692	9.8	10.5	--	--	--	--
18...	1140	18	751	11.8	108	8.4	680	7.2	10.5	228	273	3	17.1
25...	1130	16	748	10.8	105	8.4	667	15.1	13.0	--	--	--	--
APR													
01...	1110	16	750	10.9	106	8.3	589	18.8	13.5	--	--	--	--
17...	1120	39	742	10.2	95	8.1	364	13.0	11.0	128	154	0	7.52
MAY													
01...	1210	45	746	9.7	99	8.2	336	24.2	15.1	--	--	--	--
07...	1110	45	750	11.2	103	8.0	338	16.1	11.0	--	--	--	--
14...	1050	48	750	9.7	95	7.9	328	18.5	13.5	--	--	--	--
21...	1150	52	741	9.3	95	8.0	332	20.2	15.0	126	152	0	8.33
29...	1050	53	744	9.0	92	7.9	324	25.7	15.0	--	--	--	--
JUN													
04...	1130	47	747	9.0	93	8.1	342	29.0	16.0	--	--	--	--
19...	1340	54	749	9.4	100	8.1	294	26.0	17.5	114	137	0	6.02
25...	1110	49	747	9.0	98	8.0	314	28.3	18.3	--	--	--	--
JUL													
10...	1210	55	748	8.8	98	8.0	328	37.0	19.8	--	--	--	--
24...	1250	48	746	8.4	95	8.1	326	37.8	20.5	128	152	0	7.42
31...	1150	54	752	9.0	96	8.0	317	31.9	18.0	--	--	--	--
AUG													
07...	1210	57	752	9.6	101	8.0	332	26.2	17.0	--	--	--	--
20...	1040	55	743	8.7	92	8.0	327	23.5	17.0	112	135	0	7.65
26...	1130	65	750	8.8	96	8.0	319	25.8	18.8	--	--	--	--
SEP													
18...	1130	62	749	8.9	90	8.0	337	19.6	15.3	116	140	0	7.01

(National Water-Quality Assessment Station)--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SULFATE DIS-SOLVED (MG/L) (AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L) (AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L) (AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L) (AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L) (AS N) (00613)	NITRO-GEN, PAR TICULATE SUSP (MG/L) (AS N) (49570)	NITRO-GEN, TOTAL (MG/L) (AS N) (00600)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L) (AS P) (00671)	PHOS-PHORUS TOTAL (MG/L) (AS P) (00665)	CARBON, INORG + ORGANIC TOTAL (MG/L) (AS C) (00694)	CARBON, INOR-GANIC, PARTIC. TOTAL (MG/L) (AS C) (00688)	CARBON, ORGANIC DIS-SOLVED (MG/L) (AS C) (00681)	CARBON, ORGANIC PARTICULATE TOTAL (MG/L) (AS C) (00689)
OCT 17...	47.3	E.03	.40	2.73	.024	.12	3.1	.09	.20	1.2	--	7.0	--
NOV 21...	86.9	.04	.66	5.36	.040	.10	6.0	.10	.20	1.1	<.1	8.3	1.0
DEC 18...	83.2	.05	.55	6.27	.033	.16	6.8	.10	.20	1.5	<.1	9.9	1.4
JAN 22...	82.6	.05	.47	6.35	.028	.13	6.8	.12	.164	1.1	<.1	2.0	1.1
FEB 19...	81.1	<.04	.31	5.80	.021	.06	6.1	.08	.117	.5	M	2.3	E.4
MAR 04...	--	<.04	.26	5.45	.021	--	5.7	.07	.115	--	--	--	--
18...	77.7	<.04	.54	5.34	.022	.07	5.9	.07	.110	.6	<.1	2.2	.6
25...	--	E.02	.31	5.23	.029	--	5.5	.08	.128	--	--	--	--
APR 01...	--	<.04	.33	4.18	.020	--	4.5	.08	.152	--	--	--	--
17...	34.1	E.02	.48	2.31	.011	.11	2.8	.08	.40	1.2	<.1	7.0	1.2
MAY 01...	--	E.04	1.0	1.97	.013	--	3.0	.11	.38	--	--	--	--
07...	--	E.02	.61	2.14	.012	--	2.7	.10	.34	--	--	--	--
14...	--	<.04	.59	1.86	.013	--	2.4	.11	.36	--	--	--	--
21...	30.1	E.03	.62	1.97	.018	.21	2.6	.11	.30	2.0	<.1	9.9	2.0
29...	--	<.04	.60	1.93	.013	--	2.5	.11	.33	--	--	--	--
JUN 04...	--	<.04	.61	2.14	.017	--	2.7	.15	.39	--	--	--	--
19...	25.9	<.04	.64	1.84	.010	.18	2.5	.11	.27	1.7	<.1	3.1	1.7
25...	--	<.04	.47	1.96	.019	--	2.4	.10	.21	--	--	--	--
JUL 10...	--	<.04	.44	2.21	.020	--	2.7	.11	.24	--	--	--	--
24...	28.4	<.04	.51	2.02	.022	.24	2.5	.11	.28	1.7	<.1	3.1	1.7
31...	--	<.04	.56	2.33	.020	--	2.9	.10	.20	--	--	--	--
AUG 07...	--	<.04	.39	2.24	.017	--	2.6	.11	.22	--	--	--	--
20...	28.2	<.04	.34	.87	E.007	.08	1.2	.10	.188	.7	<.1	2.8	.7
26...	--	<.04	.34	2.12	.014	--	2.5	.10	.188	--	--	--	--
SEP 18...	28.9	<.04	.37	1.95	.034	.10	2.3	.12	.21	.7	<.1	3.8	.7

Date	2,4-D METHYL ESTER, WATER FLTRD REC (UG/L) (50470)	2,4-DB WATER, FLTRD, GF 0.7U (UG/L) (38746)	2,6-DI-ETHYL ANILINE, WAT FLT 0.7 U GF, REC (UG/L) (82660)	3HYDRXY CARBO-FURAN, WAT, FLT REC (UG/L) (49308)	3-KETO CARBO-FURAN, WATER FLTRD REC (UG/L) (50295)	ACETO-CHLOR ESA, FLTRD 0.7 UM GF REC (UG/L) (61029)	ACETO-CHLOR OA, FLTRD 0.7 UM GF REC (UG/L) (61030)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ACIFL-UORFEN, WATER, FLTRD, GF 0.7U (UG/L) (49315)	ALA-CHLOR OA, FLTRD 0.7 UM GF REC (UG/L) (61031)	ALA-CHLOR ESA, WAT FLT GF 0.7U REC (UG/L) (50009)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	
OCT 17...	<.009	.02	<.02	<.002	<.006	<2	--	--	<.004	<.007	--	--	<.002
NOV 21...	<.009	.04	<.02	<.002	<.006	<2	<.05	<.05	<.004	<.007	<.05	.19	<.002
DEC 18...	<.009	<.02	<.02	<.002	<.006	<2	.06	.05	<.004	<.007	<.05	.18	<.002
JAN 22...	<.009	<.02	<.02	<.006	<.006	<2	.05	.05	<.006	<.007	<.05	.22	<.004
FEB 19...	.137	.81	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.18	<.004
MAR 04...	<.009	.03	<.02	<.006	<.006	<2	.22	<.05	<.006	<.007	<.05	<.05	<.004
18...	<.009	<.02	<.02	<.006	<.006	<2	.14	<.05	<.006	<.200	<.05	<.05	<.004
25...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.103	<.05	.13	<.004
APR 01...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.12	<.004
17...	<.009	.04	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.08	<.004
MAY 01...	.010	.10	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.05	.007
07...	<.009	.21	<.02	<.006	<.006	<2	.06	<.05	<.006	<.007	<.05	<.05	<.004
14...	.178	E1.59	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
21...	.035	.80	<.02	<.006	<.006	<2	.09	<.05	<.006	<.007	<.05	<.05	<.004
29...	<.009	.07	<.02	<.006	<.006	<2	.09	<.05	<.006	<.007	<.05	<.05	<.004
JUN 04...	<.009	.13	<.02	<.006	<.006	<2	<.05	<.05	.109	<.007	<.05	.05	<.004
19...	<.009	.04	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.06	<.004
25...	<.009	.04	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.07	<.004
JUL 10...	<.009	.09	<.02	<.006	<.006	<2	.06	.09	.020	<.007	<.05	.12	.023
24...	<.009	.17	<.02	<.006	<.006	<2	<.05	.05	<.006	<.007	<.05	.08	E.004
31...	.293	E1.67	<.02	<.006	<.006	<2	.05	<.05	<.006	<.007	<.05	.06	<.004
AUG 07...	.061	E1.18	<.02	<.006	<.006	<2	.05	<.05	<.006	<.007	<.05	.07	<.004
20...	<.009	.20	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.09	<.004
26...	<.009	.14	<.02	<.006	<.006	<2	.06	.08	<.006	<.007	<.05	.07	<.004
SEP 18...	.034	E.35	<.02	<.006	<.006	<2	<.05	.05	<.006	<.007	<.05	.07	<.004

(National Water-Quality Assessment Station)--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ALDI-CARB SULFONE WAT, FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT, FLT GF 0.7U REC (UG/L) (49314)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	BENDIO- CARB, WATER, FLTRD REC (UG/L) (50299)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BENOMYL WATER FLTRD REC (UG/L) (50300)	BEN- SUL- FURON METHYL WAT FLT REC (UG/L) (61693)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
OCT													
17...	<.02	<.008	<.04	<.005	.009	<.03	<.010	<.004	<.02	M	<.03	<.02	<.002
NOV													
21...	<.02	<.008	<.04	<.005	.013	<.03	<.010	<.004	<.02	<.01	E.32	<.02	<.002
DEC													
18...	<.02	<.008	<.04	<.005	.012	<.03	<.010	<.004	<.02	E.01	E.03	<.02	<.002
JAN													
22...	<.02	<.008	<.04	<.005	.010	<.03	<.010	<.004	<.02	M	E.02	<.02	<.002
FEB													
19...	<.02	<.008	<.04	<.005	.012	<.03	<.010	<.004	<.02	E.01	E.03	<.02	<.002
MAR													
04...	<.02	<.008	<.04	<.005	.011	<.03	<.010	<.004	<.02	E.01	E.03	<.02	<.002
18...	<.02	<.008	<.04	<.005	.008	<.03	<.010	<.004	<.02	.01	.03	<.02	<.002
25...	<.02	<.008	<.04	<.005	.034	<.03	<.010	<.004	<.02	E.01	E.02	<.02	<.002
APR													
01...	<.02	<.008	<.04	<.005	.007	<.03	<.010	<.004	<.02	E.01	E.02	<.02	<.002
17...	<.02	<.008	<.04	<.005	.012	<.03	<.010	<.004	<.02	M	E.03	<.02	<.002
MAY													
01...	<.02	<.008	<.04	<.005	.010	<.03	<.010	<.004	<.02	<.01	E.02	<.02	<.002
07...	<.02	<.008	<.04	<.005	.014	<.03	<.010	<.004	<.02	<.01	<.03	<.0028	<.002
14...	<.02	<.008	<.04	<.005	.022	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
21...	<.02	<.008	<.04	<.005	.031	<.03	<.010	<.004	<.02	<.01	E.02	<.02	<.002
29...	<.02	<.008	<.04	<.005	.053	<.03	<.010	<.004	<.02	<.01	E.02	<.02	<.002
JUN													
04...	<.02	<.008	<.04	<.005	.041	<.03	<.010	<.004	<.02	<.01	E.02	<.02	<.002
19...	<.02	<.008	<.04	<.005	.028	<.03	<.010	<.004	<.02	<.01	<.03	E.02	<.002
25...	<.02	<.008	<.04	<.005	.093	<.03	<.010	<.004	<.02	E.01	<.03	E.02	<.002
JUL													
10...	<.02	<.008	<.04	<.005	.049	<.03	<.010	<.004	<.02	<.01	E.01	<.02	<.002
24...	<.02	<.008	<.04	<.005	.027	<.03	<.010	<.004	<.02	<.01	E.01	<.02	<.002
31...	<.02	<.008	<.04	<.005	.032	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
AUG													
07...	<.02	<.008	<.04	<.005	.022	<.03	<.010	<.004	<.02	E.03	E.01	<.02	<.002
20...	<.02	<.008	<.04	<.005	.019	<.03	<.010	<.004	<.02	E.02	E.01	<.02	<.002
26...	<.02	<.008	<.04	<.005	.013	<.03	<.010	<.004	<.02	<.01	E.01	<.02	<.002
SEP													
18...	<.02	<.008	<.04	<.005	.008	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
Date	CAF- FEINE, WATER FLTRD REC (UG/L) (50305)	CAR- BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310)	CAR- BARYL WATER, FLTRD GF 0.7U REC (UG/L) (82680)	CARBO- FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309)	CARBO- FURAN WATER FLTRD GF 0.7U REC (UG/L) (82674)	CHLOR- AMBEN, METHYL ESTER WATER FLTRD REC (UG/L) (61188)	CHLORI- MURON, WATER FLTRD REC (UG/L) (50306)	CHLORO- THALO- NIL, WAT, FLT GF 0.7U REC (UG/L) (49306)	CHLOR- PYRIFOS DIS- SOLVED REC (UG/L) (38933)	CLOPYR- ALID, WATER, FLTRD, GF 0.7U REC (UG/L) (49305)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	CY- CLOATE, WATER, DISS, REC (UG/L) (04031)	DACTHAL MONO- ACID, WAT, FLT GF 0.7U REC (UG/L) (49304)
OCT													
17...	<.010	M	E.008	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
NOV													
21...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
DEC													
18...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
JAN													
22...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
FEB													
19...	E.007	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
MAR													
04...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
18...	.019	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
25...	<.010	<.03	E.004	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
APR													
01...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	.010	<.01	<.018	<.01	--
17...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	.007	<.01	<.018	<.01	<.01
MAY													
01...	<.010	E.01	E.056	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
07...	<.010	.03	E.098	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
14...	<.010	<.03	E.023	<.006	<.020	<.02	<.010	<.04	E.003	<.01	<.018	<.01	<.01
21...	<.010	E.02	E.031	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
29...	<.010	E.01	E.013	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
JUN													
04...	<.010	<.03	E.004	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
19...	<.010	E.01	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
25...	<.010	M	E.005	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
JUL													
10...	<.010	<.03	E.007	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
24...	<.010	M	E.011	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
31...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
AUG													
07...	<.010	.87	E1.89	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
20...	<.010	E.02	E.044	<.006	E.003	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
26...	<.010	E.02	E.028	<.006	E.003	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
SEP													
18...	<.010	.05	E.101	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01

(National Water-Quality Assessment Station)--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DEETHYL DEISO- PROPYL ATRAZIN DISS, REC (UG/L) (04039)	DEISO- PROPYL WATER, DISS, REC (UG/L) (04038)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	DIMETH- ENAMID WATER FLT, REC (UG/L) (62482)	DIMETH- ENAMID, ESA, WAT FLT (UG/L) (61951)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DIPHEN- AMID, WATER, DISS, REC (UG/L) (04033)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)
OCT													
17...	<.003	E.008	E.01	<.04	.025	<.01	<.01	<.005	--	--	<.01	<.03	<.02
NOV													
21...	<.003	E.013	M	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
DEC													
18...	<.003	E.012	M	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
JAN													
22...	<.003	E.011	E.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
FEB													
19...	<.003	E.011	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
MAR													
04...	<.003	E.013	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
18...	<.003	E.010	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
25...	<.003	E.010	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
APR													
01...	<.003	E.007	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
17...	<.003	E.008	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
MAY													
01...	<.003	E.006	<.01	<.04	<.005	<.01	.01	<.005	<.05	<.05	<.01	<.03	<.02
07...	<.003	E.005	<.01	<.04	<.005	E.02	<.01	<.005	<.05	<.05	<.01	<.03	<.02
14...	<.003	E.006	<.01	E.09	<.005	.19	<.01	<.005	<.05	<.05	<.01	<.03	<.02
21...	<.003	E.008	<.01	<.04	E.004	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
29...	<.003	E.009	<.01	M	<.005	.03	.01	<.005	<.05	<.05	<.01	<.03	<.02
JUN													
04...	<.003	E.009	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
19...	<.003	E.009	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
25...	<.003	E.018	<.01	<.04	<.005	.03	<.01	<.005	<.05	<.05	<.01	<.03	<.02
JUL													
10...	<.003	E.024	<.01	E.01	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
24...	<.003	E.016	<.01	<.04	<.005	.16	<.01	<.005	<.05	<.05	<.01	<.03	<.02
31...	<.003	E.019	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
AUG													
07...	<.003	E.017	<.01	M	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	E.49
20...	<.003	E.016	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
26...	<.003	E.012	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
SEP													
18...	<.003	E.008	<.01	<.04	<.005	.05	<.01	<.005	<.05	<.05	<.01	<.03	<.02
Date	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUFEN- ACET, ESA, FLT, WAT FLT (UG/L) (61952)	FLUFE- NACET OA, WATER FLT, REC (UG/L) (62483)	FLUMET- SULAM WATER FLTRD REC (UG/L) (61694)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS WATER DISS REC (UG/L) (04095)	HYDROXY ATRA- ZINE WATER FLTRD REC (UG/L) (50355)	IMAZ- AQUIN WATER FLTRD REC (UG/L) (50356)	IMAZE- THAPYR WATER FLTRD REC (UG/L) (50407)
OCT													
17...	E.01	<.002	<.009	<.005	<.03	--	--	<.01	<.03	<.003	E.011	<.02	<.02
NOV													
21...	.43	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
DEC													
18...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.005	<.02	<.02
JAN													
22...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
FEB													
19...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.003	<.02	E.02
MAR													
04...	.03	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
18...	.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
25...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.007	<.02	<.02
APR													
01...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
17...	E.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
MAY													
01...	E.06	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
07...	.35	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.008	<.02	<.02
14...	.05	E.001	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.871	<.02	<.02
21...	.07	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
29...	.05	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.012	<.02	<.02
JUN													
04...	.04	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
19...	.03	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.013	<.02	<.02
25...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.043	<.02	<.02
JUL													
10...	.02	.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.012	<.02	<.02
24...	.04	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.029	<.02	<.02
31...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.015	<.02	<.02
AUG													
07...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
20...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.010	<.02	<.02
26...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.007	<.02	--
SEP													
18...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02

(National Water-Quality Assessment Station)--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	IMID-ACLOP-RID WATER FLTRD REC (UG/L) (61695)	LINDANE DIS- SOLVED (UG/L) (39341)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	METAL- AXYL WATER FLTRD REC (UG/L) (50359)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METOLA- CHLOR ESA FLTRD 0.7 UM GF REC (UG/L) (61043)
	OCT												
17...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	--
NOV													
21...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
DEC													
18...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
JAN													
22...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
FEB													
19...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
MAR													
04...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
18...	<.007	<.004	<.01	<.035	<.027	<.20	<.01	<.02	<.008	<.004	<.050	<.006	<.05
25...	<.007	<.004	<.01	<.035	<.027	<.09	<.01	<.02	<.008	<.004	<.050	<.006	<.05
APR													
01...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
17...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
MAY													
01...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
07...	<.007	<.004	<.01	<.035	<.027	M	<.01	<.02	<.008	<.004	<.050	<.006	<.05
14...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
21...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.019	<.006	<.05
29...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	E.01	<.008	<.004	E.035	<.006	<.05
JUN													
04...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.045	<.006	<.05
19...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.170	<.006	<.05
25...	<.007	<.004	<.01	<.035	.125	<.02	<.01	<.02	<.008	<.004	E.045	<.006	<.05
JUL													
10...	<.007	<.004	<.01	<.035	E.007	<.02	<.01	<.02	<.008	<.004	E.054	<.006	<.05
24...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.061	<.006	<.05
31...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.049	<.006	<.05
AUG													
07...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.037	<.006	<.05
20...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.025	<.006	<.05
26...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.018	<.006	<.05
SEP													
18...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
	METOLA- CHLOR OA FLTRD 0.7 UM GF REC (UG/L) (61044)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MET- SUL- FURON METHYL WAT FLT REC (UG/L) (61697)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NICOSUL FURON WATER FLTRD REC (UG/L) (50364)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	P, P' DDE DISSOLV (UG/L) (34653)	PARA- THION, DIS- SOLVED (UG/L) (39542)
OCT													
17...	--	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.007
NOV													
21...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	.003	<.007
DEC													
18...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.007
JAN													
22...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
FEB													
19...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
MAR													
04...	<.05	<.013	<.006	<.03	<.010	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
18...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
25...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
APR													
01...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
17...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
MAY													
01...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
07...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	M	<.02	<.02	<.01	<.003	<.010
14...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
21...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
29...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
JUN													
04...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	E.01	<.02	<.02	<.01	<.003	<.010
19...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	E.02	<.0008	<.02	<.01	<.003	<.010
25...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
JUL													
10...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	.003	<.010
24...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	.004	<.010
31...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	.004	<.010
AUG													
07...	<.05	<.013	<.006	<.03	<.005	<.007	<.01	<.01	<.02	<.02	<.01	.004	<.010
20...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	.003	<.010
26...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
SEP													
18...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010

(National Water-Quality Assessment Station)--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PIC- LORAM, FLTRD, GF 0.7U REC (UG/L) (49291)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PROP- ICONA- ZOLE , WATER FLTRD REC (UG/L) (50471)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)
OCT													
17...	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
NOV													
21...	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
DEC													
18...	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
JAN													
22...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
FEB													
19...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
MAR													
04...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
18...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
25...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
APR													
01...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
17...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
MAY													
01...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
07...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
14...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
21...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
29...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
JUN													
04...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
19...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
25...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
JUL													
10...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
24...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
31...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
AUG													
07...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
20...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
26...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
SEP													
18...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
Date	SIDURON WATER FLTRD REC (UG/L) (38548)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SULFO- MET- RURON METHYL WTR FLT REC (UG/L) (50337)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL, WATER, DISS, REC (UG/L) (04032)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TER- BUTHYL- AZINE, WATER, DISS, REC (UG/L) (04022)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- BENURON METHYL WATER FLTRD REC (UG/L) (61159)	TRI- CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
OCT													
17...	<.02	<.011	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	<.009	<.02	E.003
NOV													
21...	<.02	<.011	.053	<.02	<.010	<.034	<.02	U	<.005	<.002	<.009	<.02	<.009
DEC													
18...	<.02	<.010	E.003	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
JAN													
22...	<.02	<.010	E.004	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
FEB													
19...	<.02	<.010	E.004	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
MAR													
04...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
18...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
25...	<.02	.008	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
APR													
01...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
17...	<.02	<.010	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
MAY													
01...	<.02	.017	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	E.007
07...	<.02	<.010	<.009	<.02	E.015	E.069	<.02	--	<.005	<.002	--	<.02	.052
14...	<.02	.005	<.009	<.02	<.010	E.065	<.02	--	<.005	<.002	--	<.02	.029
21...	<.02	<.005	<.009	<.02	<.010	E.016	<.02	--	<.005	<.002	--	<.02	E.007
29...	<.02	.007	<.009	<.02	E.005	E.015	<.02	--	<.005	<.002	--	<.02	E.005
JUN													
04...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	.019
19...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	<.009	<.02	.015
25...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
JUL													
10...	<.02	.007	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	E.009
24...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
31...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
AUG													
07...	<.02	<.005	<.009	<.02	<.010	<.040	<.02	--	<.005	<.002	--	<.02	<.009
20...	<.02	E.003	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	E.005
26...	<.02	E.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
SEP													
18...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	.016

(National Water-Quality Assessment Station)--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	UREA 3 (4-CHLOROPHENYL METHYL WAT FLT REC (UG/L) (61692)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, DISCHARGE, SUS-PENDEDED (MG/L) (80154)	SEDI-MENT, DISCHARGE, SUS-PENDEDED (T/DAY) (80155)
OCT 17...	<.02	92	64	5.5
NOV 21...	<.02	86	59	3.5
DEC 18...	<.02	86	79	4.3
JAN 22...	<.02	90	49	2.6
FEB 19...	<.02	66	23	1.2
MAR 04...	<.02	77	18	.92
18...	<.02	60	20	.96
25...	<.02	91	60	2.6
APR 01...	<.02	78	47	2.0
17...	<.02	69	281	29.6
MAY 01...	<.02	71	241	29.3
07...	<.02	70	218	26.5
14...	<.02	78	176	22.8
21...	<.02	79	163	22.9
29...	<.02	79	180	25.8
JUN 04...	<.02	86	170	21.6
19...	<.02	83	110	16.0
25...	<.02	88	103	13.6
JUL 10...	<.02	78	104	15.4
24...	<.02	82	102	13.2
31...	<.02	67	54	7.9
AUG 07...	<.02	51	73	11.2
20...	<.02	70	52	7.7
26...	<.02	65	30	5.3
SEP 18...	<.02	83	30	5.0

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	PERI-PHYTON BIOMASS ASH WEIGHT (G/SQ M) (00572)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT (G/SQ M) (00573)	PERI-PHYTON BIOMASS ASH FREE PERI-DRY (G/SQ M) (49954)	BIOMASS CHLORO-PHYLL RATIO PHYTON (UNITS) (70950)	CLOSTR-IDIUM PERFRIN MCP MF, WATER (COL/ 100 ML) (90915)	COLI-PHAGE, E. COLI, 1-AGAR (PLAQUE 100 ML) (90903)	COLI-PHAGE, E. COLI, 1-AGAR, (PLAQUE 100 ML) (90904)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)
AUG 20...	1040	55	327	17.0	--	--	--	--	E28	1300	620	300	--
20...	1500	--	339	19.7	2600	2666	80.800	1610	--	--	--	--	50.3

YAKIMA RIVER BASIN

12508990 YAKIMA RIVER AT MABTON, WA

LOCATION.--Lat 46°13'53", long 119°59'54", in SW ¼ SW ¼ sec.30, T.9 N., R.23 E., Yakima County, Hydrologic Unit 17030003, on right bank at highway bridge, at east boundary of Yakama Nation Reservation, 1.1 mi north of Mabton, and at mile 59.8.

DRAINAGE AREA.--5,359 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 643 ft above NGVD of 1929, from topographic map. Prior to Oct. 1, 1976, at datum 10 ft higher.

REMARKS.--Records fair. Flow affected by storage in five reservoirs, by diversions upstream from station for irrigation upstream and downstream from station of about 424,000 acres, and by return flow. Water temperatures March 1981 to February 1982.

AVERAGE DISCHARGE.--32 years (water years 1971-2002), 3,408 ft³/s, 2,469,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,500 ft³/s Feb. 10, 1996, gage height, 28.18 ft present datum, from high-water mark; minimum discharge, 320 ft³/s Mar. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,100 ft³/s Apr. 16, gage height, 17.07 ft; minimum discharge, 840 ft³/s Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	1530	1940	1900	2770	4220	3240	3470	9850	6410	1440	1470
2	955	1710	1960	1930	2690	3910	3490	4240	9880	5220	1530	1500
3	928	1750	2100	1920	2580	3670	3670	5370	9610	3460	1520	1580
4	875	1740	2010	1930	2510	3490	3590	5430	9280	2280	1530	1620
5	858	1710	1920	1900	2440	3380	3560	4860	9200	2040	1590	1590
6	871	1670	1880	1910	2410	3380	3850	4300	9280	2210	1590	1580
7	854	1630	1850	2800	2390	3380	4110	3690	9400	1940	1560	1620
8	869	1600	1860	e6000	2460	3250	4500	3140	8800	1840	1520	1640
9	917	1560	1840	e11000	2450	3110	4420	2660	8210	1950	1450	1620
10	940	1520	1810	e9000	2380	3040	4400	2490	7410	1810	1460	1560
11	922	1490	1780	e8000	2310	2990	4580	2300	6600	1680	1730	1490
12	891	1460	1770	e7000	2270	3670	4890	2130	5920	1570	1620	1380
13	957	1440	1750	e6600	2190	4310	5270	2280	5540	1490	1490	1340
14	937	1430	2200	e6000	2160	4210	6750	2820	5980	1470	1290	1380
15	957	1770	2740	e5400	2170	4010	11900	3250	7670	1540	1270	1390
16	1000	3200	2720	e5000	2150	3810	13200	3270	9560	1490	1270	1440
17	1250	3040	2930	e4600	2130	3670	9460	3130	10100	1380	1310	1500
18	1380	2650	3300	e4200	2130	3500	7030	3150	9110	1340	1390	1510
19	1380	2400	e3280	3770	2110	2820	5590	3610	7110	1440	1460	1460
20	1430	2300	3040	3530	2180	2740	4880	4160	6030	1490	1500	1460
21	1360	2310	2810	3390	2250	2890	4510	5210	5170	1510	1500	1480
22	1300	2320	2570	3320	2570	2890	4270	5780	4620	1500	1480	1490
23	1260	2290	2430	3180	3940	2750	3990	5380	4770	1520	1480	1540
24	1380	2340	2310	3040	5880	2690	3450	4950	5160	1440	1440	1510
25	1540	2330	2220	3020	5840	2690	3100	4730	5420	1570	1400	1480
26	1630	2210	2140	3260	5340	2670	2830	4990	5150	1450	1400	1480
27	1590	2100	2080	3350	4890	2880	2890	5520	5000	1380	1390	1530
28	1530	2040	2030	3140	4520	2950	3340	6150	5320	1410	1360	1560
29	1490	2030	1990	e3000	---	2900	3330	7110	5750	1440	1370	1500
30	1500	1960	1960	2870	---	2960	3250	8680	6010	1450	1350	1540
31	1490	---	1930	2830	---	3040	---	9620	---	1390	1380	---
TOTAL	36281	59530	69150	128790	82110	101870	147340	137870	216910	60110	45070	45240
MEAN	1170	1984	2231	4155	2932	3286	4911	4447	7230	1939	1454	1508
MAX	1630	3200	3300	11000	5880	4310	13200	9620	10100	6410	1730	1640
MIN	854	1430	1750	1900	2110	2670	2830	2130	4620	1340	1270	1340
AC-FT	71960	118100	137200	255500	162900	202100	292200	273500	430200	119200	89400	89730

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2002, BY WATER YEAR (WY)

MEAN	1871	2465	3664	4043	4715	4999	4802	4964	4328	1911	1522	1714
MAX	2532	5144	12030	9554	17760	16580	13350	14110	12610	5320	2155	2309
(WY)	1973	1991	1976	1974	1996	1972	1972	1997	1972	1974	1976	1978
MIN	856	1333	1427	1214	1019	543	607	936	1014	658	755	814
(WY)	1980	1988	1994	1979	1977	1977	1977	1977	1994	1994	1979	1979

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1971 - 2002
ANNUAL TOTAL	533075	1130271	
ANNUAL MEAN	1460	3097	3408
HIGHEST ANNUAL MEAN			6566
LOWEST ANNUAL MEAN			1215
HIGHEST DAILY MEAN	3300	13200	44000
LOWEST DAILY MEAN	693	854	320
ANNUAL SEVEN-DAY MINIMUM	758	882	344
ANNUAL RUNOFF (AC-FT)	1057000	2242000	2469000
10 PERCENT EXCEEDS	2120	5940	7220
50 PERCENT EXCEEDS	1520	2310	2200
90 PERCENT EXCEEDS	845	1380	1270

e Estimated

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA

LOCATION.--Lat 46°15'13", long 119°28'37", in SE ¼ NE ¼ sec.19, T.9 N., R.27 E., Benton County, Hydrologic Unit 17030003, on left bank just upstream from abandoned highway bridge pier at Kiona, 0.1 mi upstream from highway bridge, 3.6 mi downstream from Corral Canyon Creek, 5.0 mi downstream from intake of Kiona Canal, and at mile 29.9.

DRAINAGE AREA.--5,615 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to December 1895 (gage heights only, fragmentary), August 1896 to March 1915, February 1933 to current year. Monthly discharge only 1887 to 1933, published in WSP 1316 and are available at the Pasco, Washington, field office.

REVISED RECORDS.--WSP 214: 1905. WSP 1122: 1934(M). WSP 1216: 1949-50. WSP 1286: 1907(M), 1909, 1936. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 454.41 ft above NGVD of 1929. Prior to Mar. 31, 1915, nonrecording gages at approximately same site and datum. Feb. 6, 1933, to July 26, 1934, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Diversion upstream from station for irrigation of about 424,000 acres. Flow affected by diversions and by Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes. The Kiona Canal bypasses station with a mean flow of approximately 23 ft³/s for irrigation of about 1,100 acres downstream from station. Diversion by the Kennewick Canal, which bypasses station, began in August 1956, and diverts about 96,000 acre-ft per year. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--69 years (water years 1934-2002), 3,537 ft³/s, 2,563,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft³/s Dec. 23, 1933, gage height, 21.57 ft, from high-water marks; minimum discharge observed, 105 ft³/s Sept. 11, 1906.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,800 ft³/s Apr. 16, gage height, 11.09 ft; minimum discharge, 724 ft³/s Oct. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	1800	2410	2170	2940	4550	3230	3150	9340	6220	1210	1410
2	1080	1990	2400	2210	2880	4200	3460	3660	9460	5960	1320	1600
3	950	2120	2570	2170	2790	3910	3690	4860	9380	4100	1370	1710
4	866	2090	2510	2160	2690	3690	3720	5570	9080	2680	1380	1830
5	804	2060	2420	2150	2640	3550	3610	5250	8900	2070	1460	1840
6	839	2000	2330	2120	2560	3480	3830	4640	8850	2050	1490	1790
7	868	1940	2270	2460	2550	3490	4140	4020	8960	2050	1430	1810
8	847	1910	2270	5350	2630	3410	4510	3390	8850	1870	1360	1820
9	927	1830	2270	8890	2640	3250	4630	2920	8350	1790	1290	1830
10	938	1790	2230	9180	2580	3160	4460	2610	7790	1800	1170	1720
11	871	1770	2200	7930	2510	3090	4620	2430	7010	1630	1400	1510
12	872	1690	2150	7190	2450	3370	4920	2250	6340	1360	1600	1360
13	880	1680	2120	6680	2400	4410	5350	2160	5790	1360	1400	1170
14	971	1640	2290	6330	2310	4470	6140	2360	5670	1290	1150	1260
15	989	1680	3150	5890	2330	4240	9740	2980	6540	1270	893	1370
16	1330	3750	3340	5420	2320	4020	13300	3220	8150	1280	950	1510
17	1670	4410	3300	5020	2290	3840	10400	3200	9270	1240	999	1690
18	1860	3750	4100	4660	2280	3690	7810	3120	9240	1110	1100	1800
19	1850	3250	4190	4230	2290	3210	6270	3280	7580	1260	1320	1770
20	1840	2990	3810	3930	2280	2710	5450	3900	6490	1330	1370	1720
21	1820	2930	3450	3740	2420	2770	4870	4710	5670	1360	1400	1770
22	1680	3020	3140	3630	2510	2950	4650	5970	4890	1390	1390	1800
23	1770	2980	2900	3480	3610	2910	4130	5780	4700	1370	1370	1830
24	1700	2950	2740	3330	5860	2840	3660	5290	4940	1320	1400	1880
25	1860	2980	2610	3230	6250	2800	3260	4930	5310	1290	1350	1810
26	2060	2840	2540	3340	5800	2740	2950	5020	5420	1370	1320	1760
27	2020	2680	2440	3580	5300	2810	2810	5490	5010	1200	1350	1820
28	1920	2590	2380	3430	4900	3030	3020	6100	5070	1170	1290	1880
29	1830	2560	2310	3240	---	2990	3300	6730	5530	1250	1260	1910
30	1860	2480	2260	3080	---	3000	3150	8000	5780	1290	1270	1900
31	1850	---	2220	3000	---	3120	---	9040	---	1240	1260	---
TOTAL	42742	74150	83320	133220	87010	105700	149080	136030	213360	57970	40322	50880
MEAN	1379	2472	2688	4297	3108	3410	4969	4388	7112	1870	1301	1696
MAX	2060	4410	4190	9180	6250	4550	13300	9040	9460	6220	1600	1910
MIN	804	1640	2120	2120	2280	2710	2810	2160	4700	1110	893	1170
AC-FT	84780	147100	165300	264200	172600	209700	295700	269800	423200	115000	79980	100900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

	MEAN	2256	2870	4012	3995	4521	4649	4710	5287	4886	1950	1575	1828
MAX	4252	6293	17330	14100	17570	16750	13190	13930	16470	5398	2333	2549	
(WY)	1950	1960	1934	1934	1996	1972	1956	1997	1948	1954	1976	1978	
MIN	1021	1462	1546	1335	1163	486	493	902	869	598	751	784	
(WY)	1980	1988	1936	1937	1977	1977	1977	1977	1994	1994	1979	1979	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1934 - 2002

ANNUAL TOTAL		561651		1173784								
ANNUAL MEAN		1539		3216						3537		
HIGHEST ANNUAL MEAN										7055		1956
LOWEST ANNUAL MEAN										1293		1977
HIGHEST DAILY MEAN				4410	Nov 17	13300	Apr 16	59400	Dec 24	1933		
LOWEST DAILY MEAN				572	Jul 26	804	Oct 5	225	Apr 4	1977		
ANNUAL SEVEN-DAY MINIMUM				678	Aug 9	870	Oct 4	263	Apr 19	1977		
ANNUAL RUNOFF (AC-FT)		1114000		2328000					2563000			
10 PERCENT EXCEEDS		2410		6020					7230			
50 PERCENT EXCEEDS		1650		2590					2420			
90 PERCENT EXCEEDS		739		1290					1360			

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA

National Water-Quality Assessment Station

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953-94, 1999 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1952 to September 1969 (composite samples), October 1969 to September 1977, July 1999 to June 2000, February to September 2002.

WATER TEMPERATURE: December 1952 to September 1980, March 1981 to February 1982, July 1999 to June 2000, October 2000 to current year.

SUSPENDED SEDIMENT: June 1977 to October 1980.

INSTRUMENTATION.--Water-quality monitor since July 1999. Electronic data logger, with 15-minute logging interval. Bureau of Reclamation satellite telemeter at station.

REMARKS.--Specific conductance records excellent except those for Mar. 14-20, Mar. 30 to Apr. 11, Apr. 17-24, May 7-22, and June 4 to Sept. 17, which are good; Apr. 25 to May 6, and May 23-25, which are fair; and Apr. 12-13 and May 26 to June 3, which are poor. Interruptions in the record were due to malfunction of the instrument.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum observed, 674 microsiemens Dec. 3, 1970; minimum recorded, 82 microsiemens June 17, 2002.

WATER TEMPERATURE: Maximum 30.8°C July 9, 2001; minimum, 0.0°C on several days during winter months most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 300 microsiemens May 27; minimum recorded, 82 microsiemens June 17.

WATER TEMPERATURE: Maximum, 30.2°C July 13; minimum recorded, 3.5°C Feb. 27.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	163	155	159	183	176	179	173	163	168
2	---	---	---	168	162	165	177	170	173	177	170	175
3	---	---	---	174	168	170	171	164	167	170	149	161
4	---	---	---	179	174	176	164	160	161	149	135	141
5	---	---	---	183	179	181	164	159	161	136	132	135
6	---	---	---	184	182	183	164	160	161	137	129	132
7	---	---	---	185	183	184	162	155	158	148	137	141
8	---	---	---	187	183	185	155	150	151	160	148	153
9	---	---	---	191	187	188	150	145	146	172	160	165
10	---	---	---	195	191	192	146	138	143	183	172	177
11	---	---	---	198	194	196	138	128	132	191	183	189
12	---	---	---	199	197	198	129	115	121	197	191	194
13	---	---	---	199	170	183	116	103	110	200	196	198
14	---	---	---	174	169	171	---	---	---	204	198	201
15	---	---	---	170	167	168	---	---	---	198	174	186
16	---	---	---	172	168	170	---	---	---	174	162	166
17	---	---	---	174	172	173	131	123	128	164	159	162
18	---	---	---	175	173	174	133	125	129	167	163	165
19	---	---	---	180	174	177	141	133	136	169	163	166
20	---	---	---	189	180	184	148	140	144	163	152	157
21	---	---	---	199	189	193	148	145	146	158	142	152
22	---	---	---	190	184	187	149	143	147	142	136	140
23	225	185	212	191	184	186	153	148	151	179	135	147
24	185	136	161	189	186	188	158	152	154	228	179	203
25	136	133	134	191	187	189	158	153	156	264	228	245
26	140	133	136	195	191	193	162	157	159	288	264	277
27	148	140	145	195	192	194	164	159	161	300	288	295
28	155	148	151	194	190	193	166	163	164	299	217	260
29	---	---	---	190	180	182	163	158	160	217	128	174
30	---	---	---	185	181	183	163	155	158	128	97	112
31	---	---	---	186	181	184	---	---	---	97	86	91
MONTH	225	133	156	199	155	182	183	103	150	300	86	175

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	86	84	85	112	105	109	257	250	254	263	253	258
2	88	84	86	112	105	109	255	248	252	260	249	254
3	99	88	94	137	112	124	257	251	254	252	241	246
4	104	99	102	164	137	151	254	233	247	243	235	239
5	103	98	102	194	164	180	243	235	239	240	232	236
6	101	96	99	211	194	205	241	231	237	240	221	230
7	98	94	96	215	205	210	237	231	233	271	239	256
8	100	94	97	208	204	206	239	233	236	259	247	252
9	104	99	102	215	207	211	244	235	238	266	254	261
10	125	104	114	222	213	218	250	241	244	263	249	258
11	142	125	134	225	217	221	250	244	247	256	244	252
12	163	139	151	233	223	227	252	246	250	264	255	261
13	182	156	168	245	231	236	246	229	236	281	264	274
14	178	165	169	250	237	244	248	231	237	282	272	277
15	182	166	177	253	242	248	256	243	247	283	272	277
16	166	100	126	253	245	250	258	250	254	278	270	274
17	103	82	90	253	244	250	265	247	252	283	270	277
18	93	83	88	253	242	248	262	251	256	282	273	277
19	105	93	99	253	245	250	255	244	249	275	268	272
20	111	105	108	256	250	254	248	235	241	273	266	270
21	121	111	116	257	234	248	245	234	240	272	266	269
22	131	120	126	243	228	236	246	239	243	273	266	269
23	133	130	132	245	232	238	247	239	243	271	264	268
24	130	122	126	243	233	237	247	238	243	269	263	267
25	122	117	120	247	238	243	247	237	242	270	265	267
26	118	115	117	251	243	247	249	238	243	271	265	269
27	123	117	120	252	244	249	255	243	248	274	268	270
28	122	117	120	254	245	250	260	248	253	273	267	270
29	117	112	115	257	248	253	263	250	257	269	262	265
30	114	111	113	257	251	254	264	253	260	265	258	262
31	---	---	---	256	250	254	265	254	260	---	---	---
MONTH	182	82	116	257	105	221	265	229	246	283	221	263
YEAR	300	82	193									

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	18.6	14.9	16.6	10.2	9.3	9.8	---	---	---	---	---	---
2	18.6	15.2	16.8	11.5	9.7	10.6	---	---	---	---	---	---
3	18.5	15.0	16.5	11.3	10.1	10.6	---	---	---	---	---	---
4	17.4	14.4	15.7	11.0	9.8	10.3	---	---	---	---	---	---
5	17.1	13.1	14.7	10.8	9.7	10.1	---	---	---	---	---	---
6	---	---	---	9.8	8.5	9.2	---	---	---	---	---	---
7	---	---	---	9.1	7.8	8.4	---	---	---	---	---	---
8	---	---	---	8.4	7.1	7.7	---	---	---	---	---	---
9	---	---	---	7.3	6.3	6.8	---	---	---	---	---	---
10	---	---	---	6.5	5.9	6.2	---	---	---	---	---	---
11	---	---	---	6.3	5.5	5.9	---	---	---	---	---	---
12	---	---	---	6.8	5.7	6.2	---	---	---	---	---	---
13	---	---	---	7.8	6.1	6.9	---	---	---	---	---	---
14	---	---	---	9.0	7.7	8.4	---	---	---	---	---	---
15	---	---	---	9.3	8.5	8.9	---	---	---	---	---	---
16	---	---	---	10.1	9.2	9.6	---	---	---	---	---	---
17	---	---	---	10.1	9.2	9.8	---	---	---	---	---	---
18	---	---	---	9.3	8.3	8.7	---	---	---	---	---	---
19	---	---	---	8.3	7.6	8.0	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	10.5	9.2	9.7	---	---	---	---	---	---	---	---	---
MONTH	18.6	9.2	15.0	11.5	5.5	8.5	---	---	---	---	---	---

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT DIS FIELD MG/L AS CACO3 (39086)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT													
16...	1220	1300	752	11.2	109	8.3	301	14.0	13.4	120	146	0	7.01
NOV													
20...	1230	3000	748	11.2	97	8.0	186	11.3	8.1	74	90	0	4.96
DEC													
17...	1220	3150	757	12.8	101	8.2	195	9.0	5.2	80	96	0	5.10
JAN													
23...	1050	3490	758	13.1	98	7.9	189	1.7	3.0	76	92	0	4.39
FEB													
20...	1140	2270	760	13.5	112	8.3	228	11.0	7.1	91	110	0	5.29
MAR													
07...	1030	3490	749	12.8	105	8.0	182	7.0	6.0	--	--	--	--
20...	1140	2630	762	13.1	106	8.3	189	2.0	6.1	76	91	0	3.86
APR													
16...	1110	13700	747	10.9	96	7.5	104	--	8.9	41	49	0	2.03
30...	1150	3130	747	10.8	107	8.0	166	18.4	14.1	--	--	--	--
MAY													
06...	1130	4670	755	11.4	105	8.0	139	15.0	11.4	--	--	--	--
20...	1040	3820	746	9.4	98	7.9	165	18.9	16.2	73	88	0	3.50
JUN													
03...	1105	9400	752	9.8	101	7.9	104	26.0	16.0	--	--	--	--
18...	1110	9330	750	9.9	100	7.6	93	--	15.1	44	53	0	1.85
JUL													
09...	1050	1780	760	10.8	126	8.3	216	30.4	22.8	--	--	--	--
23...	1200	1360	750	9.9	125	8.5	231	40.5	26.2	102	120	2	5.25
AUG													
06...	1120	1480	759	10.0	111	8.2	232	18.0	20.0	--	--	--	--
21...	1220	1330	752	10.0	115	8.3	243	25.2	21.5	96	114	0	5.34
SEP													
17...	1140	1670	748	9.3	102	8.2	274	19.0	18.9	108	126	0	5.74

Date	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, PARTICULATE SUSP (MG/L AS N) (49570)	NITROGEN, TOTAL (MG/L AS N) (00600)	ORTHOPHOSPHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, INORG + ORGANIC PARTIC. TOTAL (MG/L AS C) (00694)	CARBON, INORGANIC, PARTIC. TOTAL (MG/L AS C) (00688)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTICULATE TOTAL (MG/L AS C) (00689)
OCT													
16...	16.6	<.04	.25	1.09	.012	.08	1.3	.10	.143	.7	--	1.8	--
NOV													
20...	8.6	E.03	.26	.79	.009	.13	1.1	.06	.109	.9	<.1	1.8	.9
DEC													
17...	8.6	<.04	.31	.80	E.006	.12	1.1	.05	.112	1.0	<.1	2.3	1.0
JAN													
23...	8.2	E.03	.22	.78	E.005	.07	1.0	.07	.094	.7	<.1	8.9	.7
FEB													
20...	10.7	<.04	.13	.87	E.006	.05	1.0	.06	.092	.5	E.1	3.0	E.4
MAR													
07...	--	E.04	.17	.58	E.004	--	.75	.07	.102	--	--	--	--
20...	7.8	<.04	.19	.46	<.008	.06	.65	.06	.096	.6	<.1	5.4	.6
APR													
16...	4.2	.08	1.5	.29	E.006	.30	1.8	.05	.62	2.6	<.1	5.4	2.5
30...	--	<.04	.21	.44	.012	--	.66	.06	.103	--	--	--	--
MAY													
06...	--	<.04	.24	.36	E.004	--	.60	.05	.107	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	7.1	<.04	.36	.41	.010	.18	.77	.05	.137	1.3	<.1	2.1	1.3
JUN													
03...	--	<.04	.33	.27	.010	--	.60	.03	.177	--	--	--	--
18...	3.4	<.04	.29	.24	E.005	.12	.53	.03	.157	1.0	<.1	1.6	1.0
26...	4.7	--	--	--	--	--	--	--	--	--	--	1.4	--
JUL													
09...	--	<.04	.20	.64	.013	--	.84	.03	.058	--	--	--	--
23...	11.9	<.04	.34	.74	.022	.12	1.1	.07	.125	.7	<.1	2.4	.7
AUG													
06...	--	<.04	.24	.85	.011	--	1.1	.09	.113	--	--	--	--
21...	12.3	<.04	.24	.92	<.008	.05	1.2	.03	.138	.3	<.1	1.8	.3
SEP													
17...	14.3	<.04	.24	1.12	.015	.04	1.4	.10	.136	.2	<.1	2.0	.2

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	2,4-D METHYL ESTER, WATER, FLTRD REC (UG/L) (50470)	2,4-DB WATER, FLTRD, GF 0.7U (UG/L) (38746)	2,6-DI-ETHYL ANILINE, WAT FLT 0.7 U GF, REC (UG/L) (82660)	3HYDRXY CARBO-FURAN, WAT,FLT GF 0.7U REC (UG/L) (49308)	3-KETO CARBO-FURAN, WATER, FLTRD REC (UG/L) (50295)	ACETO-CHLOR ESA, FLTRD GF REC (UG/L) (61029)	ACETO-CHLOR OA, FLTRD GF REC (UG/L) (61030)	ACETO-CHLOR, WATER, FLTRD REC (UG/L) (49260)	ACIFL-UORFEN, WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALA-CHLOR OA, FLTRD GF REC (UG/L) (61031)	ALA-CHLOR ESA, WAT FLT GF 0.7U REC (UG/L) (50009)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	
OCT													
16...	<.009	E.01	<.02	<.002	<.006	<2	--	--	<.004	<.007	--	--	<.002
NOV													
20...	<.009	<.02	<.02	<.002	<.006	<2	<.05	<.05	<.004	<.007	<.05	<.05	<.002
DEC													
17...	<.009	<.02	<.02	<.002	<.006	<2	<.05	<.05	<.004	<.007	<.05	<.05	<.002
JAN													
23...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
FEB													
20...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
MAR													
07...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
20...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.104	<.05	<.05	<.004
APR													
16...	<.009	<.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
30...	<.009	.09	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
MAY													
06...	<.009	.04	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
20...	<.009	.08	<.02	<.006	<.006	<2	--	--	<.006	<.007	--	--	<.004
JUN													
03...	--	--	--	<.006	--	--	<.05	<.05	<.006	--	<.05	<.05	<.004
18...	<.009	E.01	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
JUL													
09...	<.009	E.05	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
23...	<.009	.04	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
AUG													
06...	<.009	.03	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.05	<.004
21...	<.009	.11	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	<.05	<.004
SEP													
17...	<.009	E.02	<.02	<.006	<.006	<2	<.05	<.05	<.006	<.007	<.05	.07	<.004

Date	ALDI-CARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICA-RB SUL-FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	ALDI-CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	BENDIO-CARB, WATER, FLTRD REC (UG/L) (50299)	BEN-FLUR-ALIN, WAT FLD 0.7 U GF, REC (UG/L) (82673)	BENOMYL, WATER, FLTRD REC (UG/L) (50300)	BEN-SUL-FURON METHYL, WAT FLT REC (UG/L) (61693)	BENTA-ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	BRO-MACIL, WATER, DISS, REC (UG/L) (04029)	BRO-MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)
OCT													
16...	<.02	<.008	<.04	<.005	<.010	<.03	<.010	<.004	<.02	E.01	<.03	<.02	<.002
NOV													
20...	<.02	<.008	<.04	<.005	E.006	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
DEC													
17...	<.02	<.008	<.04	<.005	E.005	<.03	<.010	<.004	<.02	M	<.03	<.02	<.002
JAN													
23...	<.02	<.008	<.04	<.005	E.004	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
FEB													
20...	<.02	<.008	<.04	<.005	E.006	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
MAR													
07...	<.02	<.008	<.04	<.005	E.004	<.03	<.010	<.004	<.02	<.01	M	<.02	<.002
20...	<.02	<.008	<.04	<.005	E.003	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
APR													
16...	<.02	<.008	<.04	<.005	<.007	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
30...	<.02	<.008	<.04	<.005	.009	<.03	<.010	<.004	<.02	<.01	E.02	E.01	<.002
MAY													
06...	<.02	<.008	<.04	<.005	.008	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<.02	<.008	<.04	<.005	.011	<.03	<.010	<.004	<.02	<.01	E.01	<.02	<.002
JUN													
03...	--	--	--	<.005	<.007	--	<.010	--	--	--	--	--	<.002
18...	<.02	<.008	<.04	<.005	<.007	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
09...	<.02	<.008	<.04	<.005	.014	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002
23...	<.02	<.008	<.04	<.005	.012	<.03	<.010	<.004	<.02	E.02	<.03	<.02	<.002
AUG													
06...	<.02	<.008	<.04	<.005	.011	<.03	<.010	<.004	<.02	E.02	<.03	<.02	<.002
21...	<.02	<.008	<.04	<.005	.009	<.03	<.010	<.004	<.02	E.02	<.03	<.02	<.002
SEP													
17...	<.02	<.008	<.04	<.005	.007	<.03	<.010	<.004	<.02	E.01	<.03	<.02	<.002

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CAF-FEINE, WATER, FLTRD REC (UG/L) (50305)	CAR-BARYL, WATER, FLTRD GF 0.7U (UG/L) (49310)	CAR-BARYL, WATER, FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN, WATER, FLTRD GF 0.7U (UG/L) (49309)	CARBO-FURAN, WATER, FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR-AMBEN, METHYL, ESTER, WATER, FLTRD (UG/L) (61188)	CHLORI-MURON, WATER, FLTRD REC (UG/L) (50306)	CHLORO-THALO-NIL, WAT, FLT GF 0.7U (UG/L) (49306)	CHLOR-PYRIFOS, DIS-SOLVED (UG/L) (38933)	CLOPYR-ALID, WATER, FLTRD GF 0.7U (UG/L) (49305)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	CY-CLOATE, WATER, DISS, REC (UG/L) (04031)	DACTHAL MONO-ACID, WAT, FLT GF 0.7U REC (UG/L) (49304)
OCT 16...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
NOV 20...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
DEC 17...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
JAN 23...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
FEB 20...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
MAR 07...	E.007	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
20...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
APR 16...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	E.004	<.01	<.018	<.01	<.01
30...	<.010	E.01	E.055	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
MAY 06...	.014	E.01	E.048	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
20...	<.010	E.01	E.016	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
JUN 03...	--	--	<.041	--	<.020	--	--	--	<.005	--	<.018	--	--
18...	E.008	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
JUL 09...	<.010	<.03	E.008	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
23...	<.010	<.03	<.041	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
AUG 06...	<.010	<.03	E.007	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
21...	E.010	M	E.007	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01
SEP 17...	<.010	M	E.009	<.006	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01

Date	DCPA WATER, FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL-ATRAZINE, WATER, DISS, REC (UG/L) (04040)	DEETHYL-DEISO-PROPYL, ATRAZIN, DISS, REC (UG/L) (04039)	DEISO-PROPYL, ATRAZIN, WATER, DISS, REC (UG/L) (04038)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U (UG/L) (38442)	DICHLOR PROP, WATER, FLTRD, GF 0.7U (UG/L) (49302)	DI-ELDRIN, DIS-SOLVED (UG/L) (39381)	DIMETH-ENAMID, OA, WATER, FLT, REC (UG/L) (62482)	DIMETH-ENAMID, ESA, WAT FLT (UG/L) (61951)	DINOSEB, WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033)	DISUL-FOTON, WATER, FLTRD 0.7 U GF, REC (UG/L) (82677)
OCT 16...	<.003	E.009	<.01	<.04	<.005	<.01	<.01	<.005	--	--	M	<.03	<.02
NOV 20...	<.003	E.005	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
DEC 17...	<.003	E.004	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
JAN 23...	<.003	E.004	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
FEB 20...	<.003	E.006	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
MAR 07...	<.003	E.004	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
20...	<.003	E.004	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
APR 16...	<.003	<.006	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
30...	<.003	E.005	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
MAY 06...	<.003	E.004	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<.003	E.006	<.01	<.04	E.004	<.01	<.01	<.005	--	--	M	<.03	<.02
JUN 03...	<.003	<.006	--	--	<.005	--	--	<.005	<.05	<.05	--	--	<.02
18...	<.003	<.006	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	<.003	E.009	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
23...	<.003	E.009	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
AUG 06...	<.003	E.012	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02
21...	<.003	E.011	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	M	<.03	<.02
SEP 17...	<.003	E.008	<.01	<.04	<.005	<.01	<.01	<.005	<.05	<.05	<.01	<.03	<.02

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUFEN- ACET, ESA, FLT, WAT FLT (UG/L) (61952)	FLUFE- NACET OA, WATER FLT, REC (UG/L) (62483)	FLUMET- SULAM WATER FLTRD REC (UG/L) (61694)	FLUO- METURON, WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFOS WATER DISS FLTRD REC (UG/L) (04095)	HYDROXY ATRA- ZINE WATER FLTRD REC (UG/L) (50355)	IMAZ- AQUIN WATER FLTRD REC (UG/L) (50356)	IMAZE- THAPYR WATER FLTRD REC (UG/L) (50407)
OCT 16...	<.01	<.002	<.009	<.005	<.03	--	--	<.01	<.03	<.003	<.008	<.02	<.02
NOV 20...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
DEC 17...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	E.02
JAN 23...	<.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
FEB 20...	M	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	M	<.02
MAR 07...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
20...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
APR 16...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
30...	.04	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
MAY 06...	.02	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.006	<.02	<.02
20...	.03	.020	<.009	<.005	<.03	--	--	<.01	<.03	<.003	<.008	<.02	E.01
JUN 03...	--	<.002	<.009	<.005	--	<.05	<.05	--	--	<.003	--	--	--
18...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
JUL 09...	<.01	.004	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
23...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.008	M	<.02
AUG 06...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	E.014	<.02	<.02
21...	E.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02
SEP 17...	<.01	<.002	<.009	<.005	<.03	<.05	<.05	<.01	<.03	<.003	<.008	<.02	<.02

Date	IMID- ACLOP- RID WATER FLTRD REC (UG/L) (61695)	LINDANE DIS- SOLVED (UG/L) (39341)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	METAL- AXYL WATER FLTRD REC (UG/L) (50359)	METHIO- CARB- WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METOLA- CHLOR ESA FLTRD 0.7 UM GF REC (UG/L) (61043)
OCT 16...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	--
NOV 20...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
DEC 17...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
JAN 23...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
FEB 20...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
MAR 07...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
20...	<.007	<.004	<.01	<.035	<.027	<.08	<.01	<.02	<.008	<.004	<.050	<.006	<.05
APR 16...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
30...	<.007	<.004	<.01	<.035	<.027	.06	M	<.02	<.008	<.004	<.050	<.006	<.05
MAY 06...	<.007	<.004	<.01	<.035	<.027	.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.011	<.006	--
JUN 03...	--	<.004	--	<.035	<.027	--	--	--	--	--	<.050	<.006	<.05
18...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	<.007	<.004	<.01	<.035	E.010	<.02	<.01	<.02	<.008	<.004	E.026	<.006	<.05
23...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	E.034	<.006	<.05
AUG 06...	<.007	<.004	<.01	<.035	.057	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05
21...	<.007	<.004	<.01	<.035	E.004	<.02	<.01	<.02	<.008	<.004	E.015	<.006	<.05
SEP 17...	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02	<.008	<.004	<.050	<.006	<.05

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	METOLA- CHLOR OA FLTRD 0.7 UM GF REC (UG/L) (61044)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MET- SUL- FURON METHYL WAT FLT (UG/L) (61697)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NICOSUL FURON WATER FLTRD REC (UG/L) (50364)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L) (49292)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	P, P' DDE DISSOLV (UG/L) (34653)	PARA- THION, DIS- SOLVED (UG/L) (39542)
OCT													
16...	--	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.007
NOV													
20...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.007
DEC													
17...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.007
JAN													
23...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
FEB													
20...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
MAR													
07...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
20...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
APR													
16...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
30...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
MAY													
06...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
20...	--	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
JUN													
03...	<.05	<.013	<.006	--	<.002	<.007	--	--	--	--	--	<.003	<.010
18...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
JUL													
09...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
23...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
AUG													
06...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
21...	<.05	E.004	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
SEP													
17...	<.05	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02	<.01	<.003	<.010
Date	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PIC- LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PROP- ICONA- ZOLE , WATER FLTRD REC (UG/L) (50471)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)
OCT													
16...	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
NOV													
20...	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
DEC													
17...	<.002	<.010	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
JAN													
23...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
FEB													
20...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
MAR													
07...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
20...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
APR													
16...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
30...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
MAY													
06...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
JUN													
03...	<.004	<.022	<.006	<.011	--	<.01	<.004	<.010	<.011	<.02	--	--	--
18...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
09...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
23...	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02	<.010	<.02	<.008
AUG													
06...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
21...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008
SEP													
17...	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02	<.010	<.02	<.008

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SIDURON WATER FLTRD REC (UG/L) (38548)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SULFO- MET- RURON METHYL WTR FLT REC (UG/L) (50337)	TEBU- THIURON FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL, WATER, DISS, REC (UG/L) (04032)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TER- BUTHYL- AZINE, WATER, DISS, REC (UG/L) (04022)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- BENURON METHYL WATER FLTRD (UG/L) (61159)	TRI- CLOPYR, WATER, GF 0.7U REC (UG/L) (49235)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
OCT													
16...	<.02	<.011	<.009	<.02	<.010	E.043	<.02	U	<.005	<.002	<.009	<.02	<.009
NOV													
20...	<.02	<.011	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	<.009	<.02	<.009
DEC													
17...	<.02	<.011	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
JAN													
23...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
FEB													
20...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
MAR													
07...	<.02	E.004	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
20...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002	--	<.02	<.009
APR													
16...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
30...	<.02	.009	<.009	<.02	<.010	E.106	<.02	--	<.005	<.002	--	<.02	<.009
MAY													
06...	<.02	<.005	<.009	<.02	E.022	E.102	<.02	--	<.005	<.002	--	<.02	<.009
20...	<.02	<.005	<.009	<.02	<.010	E.034	<.02	--	<.005	<.002	--	<.02	E.004
JUN													
03...	--	<.005	--	<.02	--	<.034	<.02	--	<.005	<.002	--	--	<.009
18...	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002	--	<.02	<.009
JUL													
09...	<.02	.008	<.009	<.02	<.010	E.028	<.02	--	<.005	<.002	--	<.02	<.009
23...	<.02	.008	<.009	<.02	E.027	E.057	<.02	--	<.005	<.002	--	<.02	<.009
AUG													
06...	<.02	<.005	<.009	<.02	E.017	E.033	<.02	--	<.005	<.002	--	<.02	<.009
21...	<.02	.005	<.009	<.02	<.010	E.018	<.02	--	<.005	<.002	--	<.02	<.009
SEP													
17...	<.02	<.005	<.009	<.02	E.018	E.033	<.02	--	<.005	<.002	--	<.02	<.009

Date	UREA 3 (4- CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)
OCT				
16...	<.02	--	12	42.1
NOV				
20...	<.02	90	24	194
DEC				
17...	<.02	89	24	204
JAN				
23...	<.02	81	16	151
FEB				
20...	<.02	--	10	61.3
MAR				
07...	<.02	77	24	226
20...	<.02	--	12	85.2
APR				
16...	<.02	81	525	19400
30...	<.02	91	21	177
MAY				
06...	<.02	84	35	441
16...	--	--	--	--
20...	<.02	83	39	402
JUN				
03...	--	77	93	2360
18...	<.02	72	100	2520
26...	--	--	--	--
JUL				
09...	<.02	--	9.0	43.3
23...	<.02	--	10	36.7
AUG				
06...	<.02	85	17	67.9
21...	<.02	--	11	39.5
SEP				
17...	<.02	--	4.0	18.0

12513000 ESQUATZEL COULEE AT CONNELL, WA

LOCATION.--Lat 46°39'49", long 118°51'44", in SW ¼ SE ¼ sec.25, T.14 N., R.31 E., Franklin County, Hydrologic Unit 17020016, on right bank, at Clark Street Bridge in Connell, and 7.8 mi downstream from Hatton Coulee.

DRAINAGE AREA.--234 mi², approximately.

PERIOD OF RECORD.--October 1952 to current year. Records published for period August 1959 to September 1964 include effluent from sewage treatment plant 0.8 mi downstream; records adjusted to exclude effluent October 1964 to June 1967.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 820 ft above NGVD of 1929, from topographic map. Prior to Aug. 7, 1959, at site 0.4 mi downstream at different datum, Aug. 7, 1959, to July 8, 1967, at site 0.9 mi downstream at different datum, July 9, 1967, to Oct. 28, 1981, at site 0.7 mi downstream at different datum, and Oct. 29, 1981, to Sept. 30, 1984 at datum 10 ft lower.

REMARKS.--Records poor. No diversion upstream from station. Most flow for October, and April through September is return and waste from water imported for irrigation, entering about 3 mi upstream on the right bank. U.S. Geological Survey satellite telemeter at gage.

AVERAGE DISCHARGE.--33 years (water years 1953-85), 1.73 ft³/s, 1,253 acre-ft/yr, adjusted for effluent from sewage treatment plant 1959-64. Average discharge is not computed after the 1985 water year because of ground-water withdrawals and return flows from irrigation occurring during the summer months upstream from the gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,560 ft³/s Feb. 21, 1956, gage height, 12.68 ft, site and datum then in use; no flow at times during most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25 ft³/s Apr. 15, gage height, 11.57 ft; maximum gage height, 11.94 ft Oct. 22; no flow most days, November through March.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	0.12	0.00	0.00	0.00	e0.00	5.7	8.7	4.6	15	7.5	7.8
2	2.1	0.06	0.00	0.00	0.00	e0.00	8.3	4.2	5.2	8.4	9.5	12
3	2.4	0.02	0.00	0.00	0.00	e0.00	14	9.7	6.5	10	4.8	9.1
4	3.4	0.00	0.00	0.00	0.00	e0.00	12	5.8	7.2	16	4.4	7.8
5	3.4	0.00	0.00	0.00	0.00	e0.00	7.3	6.8	3.1	14	7.7	8.1
6	11	0.00	0.00	0.00	0.00	e0.00	4.6	7.9	3.7	5.9	7.6	12
7	10	0.00	0.00	0.00	0.00	e0.00	4.0	12	12	7.1	10	11
8	5.4	0.00	0.00	0.00	0.00	e0.00	5.4	8.8	7.1	13	3.3	6.0
9	8.9	0.00	0.00	0.00	0.00	e0.00	12	9.0	6.9	15	2.1	7.4
10	2.7	0.00	0.00	0.00	0.00	e0.00	11	11	7.8	12	3.1	5.5
11	10	0.00	0.00	0.00	0.00	e0.00	7.6	10	5.7	8.1	5.4	6.0
12	11	0.00	0.00	0.00	0.00	e0.00	7.7	8.2	5.1	5.5	5.7	7.1
13	18	0.00	0.00	0.00	0.00	e0.00	13	6.7	2.4	2.9	7.0	8.7
14	7.5	0.00	0.00	0.00	0.00	e0.00	15	8.3	3.0	7.8	5.3	3.0
15	5.5	0.00	0.00	0.00	0.00	e0.00	22	7.3	2.2	6.0	6.1	3.4
16	3.5	0.00	0.00	0.00	0.00	e0.00	21	6.6	3.6	7.9	4.1	7.5
17	6.4	0.00	0.00	0.00	0.00	e0.00	15	8.1	7.6	7.2	8.6	15
18	7.8	0.00	0.00	0.00	0.00	e0.00	17	5.0	11	5.8	9.5	11
19	9.2	0.00	0.00	0.00	0.00	e0.00	11	4.5	7.0	10	7.5	12
20	5.8	0.00	0.00	0.00	0.00	0.49	7.0	5.5	3.4	5.9	7.3	9.2
21	6.8	0.00	0.00	0.00	e0.00	0.59	3.1	6.6	2.6	7.9	8.6	2.9
22	22	0.00	0.00	0.00	e0.00	0.52	3.0	5.3	4.4	5.4	10	7.3
23	21	0.00	0.00	0.00	e0.00	0.51	2.1	5.3	4.2	3.3	9.1	10
24	18	0.00	e0.00	0.00	e0.00	0.65	2.2	6.2	6.9	5.1	6.6	7.9
25	5.0	0.00	e0.00	0.00	e0.00	0.36	5.6	7.3	8.0	6.8	9.2	6.0
26	5.2	0.00	e0.00	0.00	e0.00	0.44	4.5	4.6	2.4	6.1	8.8	6.2
27	1.4	0.00	e0.00	0.00	e0.00	0.45	5.6	6.2	3.2	4.5	11	11
28	0.21	0.00	e0.00	0.00	e0.00	0.37	11	6.1	4.0	7.4	2.8	9.0
29	0.12	0.00	e0.00	0.00	---	0.46	11	7.6	8.4	9.4	12	13
30	0.32	0.00	e0.00	0.00	---	2.4	11	6.0	17	4.6	10	12
31	0.16	---	e0.00	0.00	---	4.1	---	4.4	---	5.0	9.3	---
TOTAL	216.01	0.20	0.00	0.00	0.00	11.34	279.7	219.7	176.2	249.0	223.9	254.9
MEAN	6.97	0.007	0.00	0.00	0.00	0.37	9.32	7.09	5.87	8.03	7.22	8.50
MAX	22	0.12	0.00	0.00	0.00	4.1	22	12	17	16	12	15
MIN	0.12	0.00	0.00	0.00	0.00	0.00	2.1	4.2	2.2	2.9	2.1	2.9
AC-FT	428	0.4	0.00	0.00	0.00	22	555	436	349	494	444	506
CAL YR 2001	TOTAL 1042.97	MEAN 2.86	MAX 22	MIN 0.00	AC-FT 2070							
WTR YR 2002	TOTAL 1630.95	MEAN 4.47	MAX 22	MIN 0.00	AC-FT 3230							

e Estimated

COLUMBIA RIVER MAIN STEM

12514500 COLUMBIA RIVER ON CLOVER ISLAND, AT KENNEWICK, WA

LOCATION.--Lat 46°13'00", long 119°06'29", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.31, T.9 N., R.30 E., Benton County, Hydrologic Unit 17020016, on east end of U.S. Coast Guard wharf on south side of Clover Island, at the north city limit of Kennewick, 6.6 mi downstream from mouth of Yakima River, 4.4 mi upstream from mouth of Snake River, and at mile 328.6.

DRAINAGE AREA.--104,000 mi², approximately.

PERIOD OF RECORD.-- November 1987 to current year. Records for October 1963 to September 1966 (discharge) and October 1979 to February 1988 (elevations), published as Columbia River at Pasco (station 12514000) 1.4 mi upstream, are not equivalent for elevations because of fall between sites.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Corps of Engineers' benchmark).

REMARKS.--Gage is within the pool formed by McNary Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 343.71 ft June 13, 1997; minimum, 335.73 ft Dec. 31, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 341.95 ft June 18; minimum, 337.32 ft Sept. 5.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339.57	339.48	339.60	337.67	339.59	338.65	339.58	339.47	340.74	340.91	339.04	339.64
2	339.65	339.62	339.33	337.69	339.56	338.59	339.09	338.74	340.25	340.81	339.01	337.95
3	339.07	339.45	339.07	338.26	339.40	338.87	338.67	339.11	340.48	340.84	339.75	337.92
4	339.16	339.54	339.32	339.13	339.36	338.81	338.49	339.07	341.09	340.44	339.01	337.97
5	339.35	339.43	339.73	339.39	339.50	338.43	338.59	338.50	341.65	340.40	337.75	337.59
6	339.56	339.09	339.59	339.58	339.26	338.49	339.20	338.45	340.86	340.39	337.64	337.67
7	339.39	338.88	339.75	339.27	339.18	338.45	339.40	339.22	340.47	340.00	337.86	337.51
8	339.01	339.11	339.67	339.25	338.77	339.00	338.96	339.12	341.29	339.85	338.63	337.47
9	339.17	338.92	339.52	339.94	338.26	339.31	338.70	338.22	340.63	339.45	339.42	338.03
10	339.48	339.15	338.81	339.79	337.74	339.44	338.33	338.83	340.76	339.07	339.55	338.66
11	339.54	338.98	339.14	339.46	337.77	339.71	338.18	338.95	340.83	340.16	339.82	338.56
12	339.57	338.36	339.04	339.36	338.12	339.90	338.49	338.65	340.78	340.35	339.31	338.48
13	339.79	337.87	339.25	339.81	338.42	340.14	339.12	338.71	340.61	340.47	339.12	338.53
14	339.79	338.69	339.61	339.62	339.00	339.73	339.19	338.94	340.34	340.34	339.11	338.90
15	339.67	339.07	339.67	339.89	338.15	339.40	340.17	338.85	339.96	339.49	339.26	338.92
16	339.78	339.34	339.96	339.47	338.49	338.77	339.93	339.11	340.26	339.40	339.28	338.67
17	339.75	339.57	339.88	338.99	338.90	338.26	339.22	339.07	340.91	340.33	339.32	339.01
18	339.67	339.39	339.64	338.81	338.86	338.24	339.45	338.70	341.37	340.14	338.51	339.07
19	339.66	339.31	339.29	339.50	338.93	338.22	339.42	338.61	340.96	339.90	337.87	338.70
20	339.62	339.10	339.31	339.70	338.80	338.67	339.34	339.37	341.18	340.50	338.52	338.69
21	339.63	339.46	339.21	339.28	339.02	339.36	338.94	339.95	341.04	340.43	338.30	338.62
22	339.75	339.39	339.27	339.70	339.20	339.28	338.69	339.28	340.85	340.15	337.99	338.86
23	339.89	339.84	339.25	339.83	338.99	339.38	339.39	339.42	341.00	339.46	338.40	338.29
24	339.56	339.59	339.13	339.77	339.57	339.40	339.28	339.61	340.68	339.88	339.25	338.30
25	339.47	339.36	339.13	339.53	339.87	339.20	339.37	339.66	340.17	340.23	339.65	338.67
26	339.69	338.56	338.57	339.66	339.28	339.01	339.27	339.48	340.70	340.71	338.74	339.23
27	339.89	339.12	338.33	339.62	339.68	339.15	339.33	340.08	340.64	340.57	338.93	338.91
28	339.58	339.33	338.34	339.47	339.20	339.68	338.95	339.98	341.34	340.24	339.44	338.32
29	339.44	339.61	338.70	339.74	---	339.70	338.99	340.38	341.06	338.70	339.45	338.61
30	339.50	339.65	338.77	339.42	---	339.56	338.86	340.21	340.64	338.35	339.56	338.02
31	339.42	---	338.23	339.58	---	339.69	---	340.78	---	338.47	339.82	---
MAX	339.89	339.84	339.96	339.94	339.87	340.14	340.17	340.78	341.65	340.91	339.82	339.64
MIN	339.01	337.87	338.23	337.67	337.74	338.22	338.18	338.22	339.96	338.35	337.64	337.47
CAL YR 2001	MAX 340.40	MIN 337.44										
WTR YR 2002	MAX 341.65	MIN 337.47										

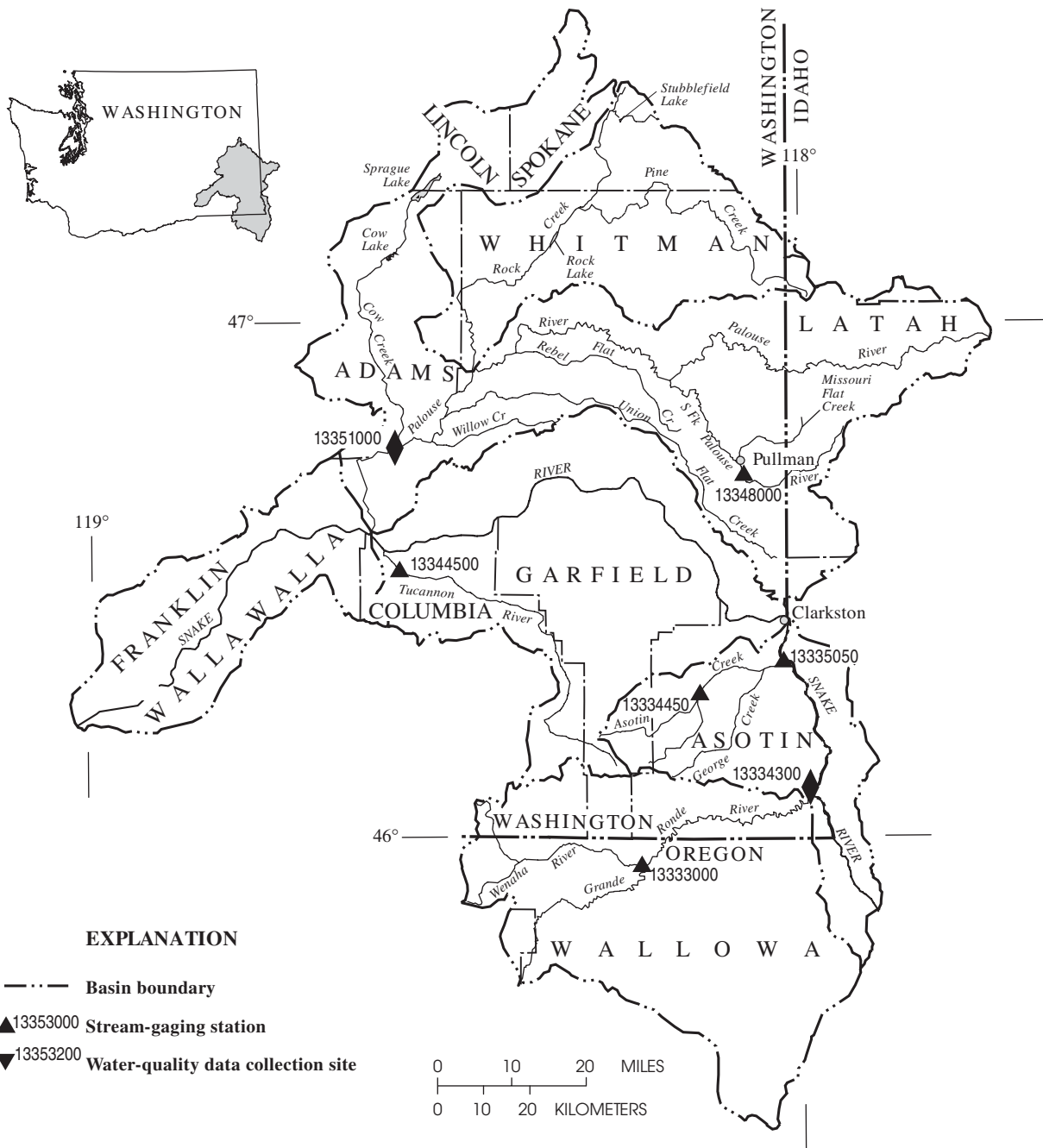


Figure 45. Location of surface-water and water-quality stations in the Snake River Basin including the Grande Ronde River, Asotin Creek, Tucannon River, and Palouse River Basins.

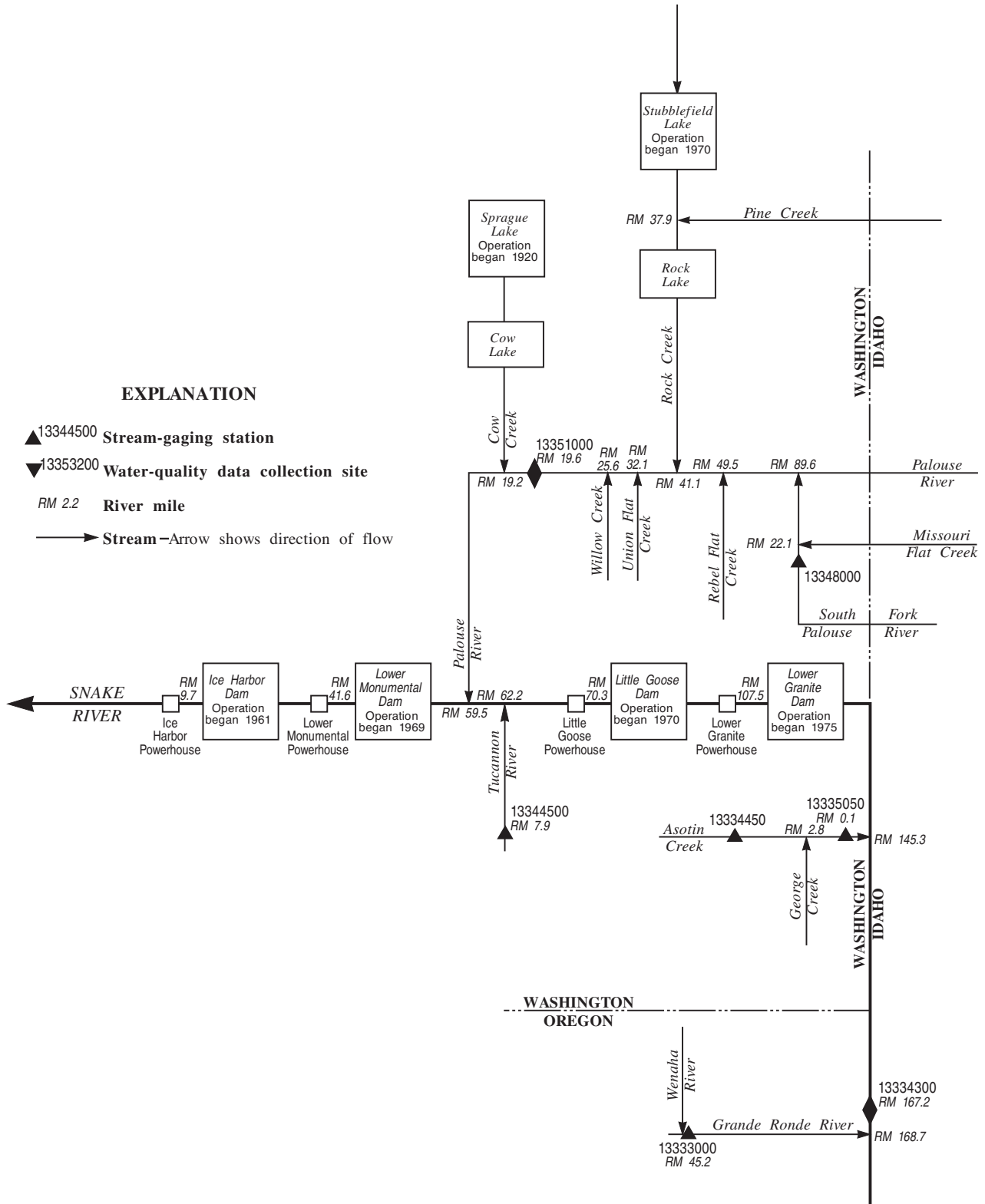


Figure 46. Schematic diagram showing surface-water and water-quality stations in the Snake River Basin including the Grande Ronde River, Asotin Creek, Tucannon River, and Palouse River Basins.

GRANDE RONDE RIVER BASIN

13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'45", long 117°27'00", in NE 1/4 NW 1/4 sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank, on upstream side of bridge at Troy, 100 ft downstream from Wenaha River, and at mile 45.3.

DRAINAGE AREA.--3,275 mi².

PERIOD OF RECORD.--August 1944 to current year. Monthly discharge only August 1944, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1946(M), 1948-50.

GAGE.--Water-stage recorder. Datum of gage is 1,585.98 ft above NGVD of 1929. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at datum 1.15 ft higher. Sept. 6, 1963 to Oct. 19, 1994, water-stage recorder at site 500 ft downstream, at present datum.

REMARKS.--No estimated daily discharges. Records fair. Flow slightly regulated by Wallowa Lake and small reservoirs. Diversions for irrigation upstream from station, chiefly in vicinity of LaGrande, Enterprise, and Wallowa; transbasin diversions for irrigation from Big Sheep Creek and tributaries in Imnaha River Basin to Wallowa River Basin, and from South Fork Catherine Creek to the Powder River Basin. U.S. Geological Survey satellite telemeter and National Weather Service telemeter at station.

AVERAGE DISCHARGE.--58 years (water years 1945-2002), 3,068 ft³/s, 2,222,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft³/s Feb. 9, 1996, gage height, 13.76 ft, from rating curve extended above 20,000 ft³; minimum discharge, 321 ft³/s Nov. 25, 1993; result of freezeup, but may have been less during period of ice effect that day.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 14	1730	*22,600	*10.44	May 30	1030	11,200	8.01

Minimum discharge, 438 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	443	1200	922	902	1300	2020	6390	6280	8530	4000	644	622
2	460	1020	894	903	1240	1820	6100	6770	8140	3340	619	614
3	480	971	923	991	1220	1670	5870	6970	7430	2950	591	615
4	481	900	922	1020	1180	1620	5950	6710	7010	2790	599	604
5	480	852	930	1010	1130	1600	6440	6340	7000	2550	626	585
6	489	824	939	1020	1130	1660	7150	5780	7070	2360	695	572
7	485	800	957	1470	1170	2150	7560	5260	6550	2300	685	580
8	492	773	939	3480	1210	2100	7320	4760	5660	2430	690	586
9	517	761	945	3960	1170	1940	7260	4210	4950	2330	691	589
10	524	750	911	3100	1160	1860	8390	3790	4610	2030	667	593
11	679	736	888	2570	1180	2030	9080	3500	4180	1860	646	595
12	714	740	888	2300	1150	4210	10300	3460	3910	1750	634	596
13	622	738	982	2190	1140	4310	11600	3730	3850	1680	613	585
14	638	833	1240	2040	1180	3670	19100	4370	4250	1640	593	557
15	636	907	1330	1880	1190	3170	17200	4660	5040	1530	590	540
16	638	866	1220	1730	1200	2850	13300	4620	6040	1410	572	536
17	607	843	1220	1620	1270	2610	10900	4740	6620	1290	568	554
18	591	834	1220	1540	1320	2370	9260	4930	6390	1210	549	596
19	586	805	1110	1510	1410	2340	8020	6050	6160	1090	526	584
20	584	796	1100	1460	1600	2730	7270	8130	5200	1040	535	537
21	578	883	1070	1510	1700	3020	6650	7960	4890	967	541	520
22	620	990	1050	1500	2010	3170	6540	6670	4810	895	621	525
23	784	1450	923	1430	2680	3480	6680	5860	4880	868	641	517
24	835	1230	880	1390	3900	4970	6030	5230	4970	844	631	524
25	705	1100	934	1480	3550	6640	5750	4920	5160	835	615	519
26	690	1020	1080	1600	2830	6330	5750	4970	5230	790	634	502
27	674	958	1040	1580	2420	6250	5730	5610	5540	745	631	503
28	692	976	1030	1400	2220	5810	5630	7200	5450	724	623	519
29	684	926	979	1240	---	5310	5670	8970	5160	714	627	514
30	712	876	918	1330	---	5250	5870	10700	4850	703	634	546
31	1120	---	888	1310	---	5710	---	9510	---	667	631	---
TOTAL	19240	27358	31272	52466	45860	104670	244760	182660	169530	50332	19162	16829
MEAN	621	912	1009	1692	1638	3376	8159	5892	5651	1624	618	561
MAX	1120	1450	1330	3960	3900	6640	19100	10700	8530	4000	695	622
MIN	443	736	880	902	1130	1600	5630	3460	3850	667	526	502
AC-FT	38160	54260	62030	104100	90960	207600	485500	362300	336300	99830	38010	33380

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	877	1239	1984	2189	3193	4300	6333	7351	5652	2155	842	764
MEAN	877	1239	1984	2189	3193	4300	6333	7351	5652	2155	842	764
MAX	2559	3766	7212	6280	14390	11520	11390	13820	11610	4951	1385	1291
(WY)	1960	1996	1996	1974	1996	1972	1997	1948	1974	1975	1984	1984
MIN	528	618	685	702	769	888	2257	2368	1501	520	438	409
(WY)	1988	1988	1945	1979	1977	1977	1968	1977	1992	1977	1977	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1945 - 2002

ANNUAL TOTAL	582663	964139	
ANNUAL MEAN	1596	2641	
HIGHEST ANNUAL MEAN			3068
LOWEST ANNUAL MEAN			5253
HIGHEST DAILY MEAN	7460	May 15	19100
LOWEST DAILY MEAN	385	Sep 1	443
ANNUAL SEVEN-DAY MINIMUM	389	Sep 7	474
ANNUAL RUNOFF (AC-FT)	1156000		1912000
10 PERCENT EXCEEDS	4180		6540
50 PERCENT EXCEEDS	894		1220
90 PERCENT EXCEEDS	434		585

SNAKE RIVER MAIN STEM

13334300 SNAKE RIVER NEAR ANATONE, WA

LOCATION.--Lat 46°05'50", long 116°58'36", in SE ¼ SE ¼ NE ¼ sec.12, T.7 N., R.46 E., Asotin County, Hydrologic Unit 17060103, on left bank 1.2 mi downstream from Grande Ronde River, 7.8 mi east of Anatone, 22 mi south of Clarkston, and at mile 167.2.

DRAINAGE AREA.--92,960 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1958 to current year.

REVISED RECORDS.--WDR WA-76-1: 1974 and 1975.

GAGE.--Water-stage recorder. Datum of gage is 806.78 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Diversions upstream from station for irrigation of about 4,090,000 acres, of which about 750,000 acres are irrigated by withdrawals from ground water. Flow regulated by many reservoirs upstream from station with a total usable capacity of more than 10,000,000 acre-feet, the most effective of which is Brownlee Reservoir 117.8 mi upstream. Diurnal fluctuations caused by Hells Canyon powerplant. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--44 years (water years 1958-2002), 35,480 ft³/s, 25,710,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 195,000 ft³/s June 18, 1974, gage height, 24.45 ft; minimum discharge, 6,010 ft³/s Sept. 2, 1958, gage height, 1.29 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86,200 ft³/s May 31, gage height, 13.55 ft; minimum discharge, 8,220 ft³/s Oct. 1 gage height, 2.10 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9960	15800	13400	14100	21600	17600	43000	30600	83200	30600	12800	12700
2	14600	16200	13900	15400	24400	17800	35300	33000	81100	28900	12700	11800
3	15500	15800	13900	18000	22200	16300	35600	40300	80600	27800	12700	16000
4	13600	15300	14000	18800	23700	17500	25300	41100	76900	28300	12600	15600
5	15300	15000	13900	21700	26400	17800	29200	36200	71000	23300	12900	17300
6	12900	14600	14000	19500	23900	14600	36400	36500	67400	22500	14100	15900
7	12000	14300	13900	20300	20700	15100	39900	39500	65500	22000	13200	11800
8	15300	14100	13900	25500	18700	18300	38400	35500	62000	21900	13200	11300
9	12000	14000	13900	26700	13900	17400	39300	32600	58200	20800	12700	12400
10	11800	13800	13700	23900	14100	15300	39800	30200	54600	20100	15600	12900
11	12200	13700	13400	23600	18400	19300	39000	28900	50200	21800	17600	13600
12	12600	13600	13400	20900	22400	23800	35700	27000	46700	21600	15100	16800
13	12700	13600	17100	17700	26400	24400	36700	27100	44100	21300	16800	19100
14	12900	13700	19200	17100	23700	25000	45200	33400	42600	21400	20600	19900
15	13000	13900	16700	21700	19400	24800	57100	34500	43700	17000	19800	16600
16	13300	13900	16000	23200	16200	20400	60000	36500	47300	18300	20600	17100
17	13000	13800	18500	23700	13900	18900	60200	36400	50300	19400	17900	18600
18	12700	13800	22600	24000	16100	19900	54900	37500	50500	20300	18300	15900
19	12600	13800	22300	17500	16300	25200	50500	41800	52700	16000	14600	15900
20	12400	13700	17300	15600	14800	22000	43200	54700	47900	15700	18200	17200
21	12400	13800	17100	17800	14700	20000	37100	63800	44500	15800	14400	15300
22	12500	14100	16400	25900	14900	19600	37900	63500	42100	15300	15700	14600
23	12900	14700	15700	24500	15800	21900	44600	61300	43100	15100	17000	14700
24	13200	14900	15300	23400	17100	23800	41200	59300	43200	17500	17400	18200
25	13400	14600	16200	24500	19700	32500	34700	52100	46500	17500	15800	18500
26	13200	14300	12000	19900	22100	37700	29500	45700	41700	14200	14400	17700
27	13200	14000	15000	18000	21100	39200	28300	49400	41200	13800	17500	16200
28	13100	13900	14900	18200	17600	39600	28600	60100	42600	13800	16000	17500
29	13200	13500	13200	23200	---	39800	28500	63900	38900	13800	18600	18600
30	13900	13300	13400	24500	---	38100	29000	74800	35300	13100	20700	18400
31	14400	---	14100	22300	---	41300	---	84200	---	16000	15000	---
TOTAL	405760	427500	478300	651100	540200	744900	1184100	1391400	1595600	604900	494500	478100
MEAN	13090	14250	15430	21000	19290	24030	39470	44880	53190	19510	15950	15940
MAX	15500	16200	22600	26700	26400	41300	60200	84200	83200	30600	20700	19900
MIN	9960	13300	12000	14100	13900	14600	25300	27000	35300	13100	12600	11300
AC-FT	804800	847900	948700	1291000	1071000	1478000	2349000	2760000	3165000	1200000	980800	948300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2002, BY WATER YEAR (WY)

MEAN	21370	22070	25000	29490	33390	39780	48900	66510	71560	30720	18030	19390
MAX	31540	36960	41630	71930	72520	90400	88700	118700	134200	63860	29140	31730
(WY)	1985	1985	1965	1997	1965	1972	1974	1984	1984	1982	1997	1997
MIN	13090	13620	13570	16140	15780	18680	18880	20610	16850	12830	9765	10180
(WY)	2002	1993	1993	2001	2001	1977	1977	1977	1992	1977	1992	1992

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1958 - 2002

ANNUAL TOTAL	6750080	8996360	
ANNUAL MEAN	18490	24650	35480
HIGHEST ANNUAL MEAN			59030
LOWEST ANNUAL MEAN			18050
HIGHEST DAILY MEAN	58000	May 17	84200
LOWEST DAILY MEAN	9820	Sep 2	9960
ANNUAL SEVEN-DAY MINIMUM	11300	Aug 20	12500
ANNUAL RUNOFF (AC-FT)	13390000		17840000
10 PERCENT EXCEEDS	29200		74100
50 PERCENT EXCEEDS	15300		18300
90 PERCENT EXCEEDS	12400		13200

13334300 SNAKE RIVER NEAR ANATONE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to May 1984, October 1985 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1959 to May 1984, April 1986 to current year.

INSTRUMENTATION.--Temperature recorder since October 1959.

REMARKS.--Records poor. Records rounded to the nearest half degree. Interruption in record this year was due to malfunction of the recording instrument. Prior to October 1990, records furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 25.5°C (rounded) Aug. 26, 28, 1991, Aug. 2-4, 1994, Aug. 14, 1998; minimum, 0.0°C several days during winter months.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 24.5°C Jul. 23, 30; minimum, 2.5°C Jan 29-31, Feb. 1, 3-7, 12-16, 26, 27, Mar. 2, 3.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	17.5	---	12.0	11.5	11.5	7.5	7.0	7.0	4.5	4.0	4.0
2	19.5	18.0	18.5	12.0	11.5	11.5	7.0	6.5	7.0	4.5	4.0	4.5
3	19.5	18.5	18.5	12.0	11.5	11.5	7.0	6.5	6.5	5.0	4.5	5.0
4	19.0	17.5	18.0	12.0	11.0	11.5	7.0	6.5	6.5	5.0	4.5	4.5
5	18.5	17.5	18.0	11.5	11.0	11.5	7.0	6.0	6.5	5.0	4.5	4.5
6	18.5	17.0	17.5	11.0	10.5	11.0	6.5	6.0	6.0	5.0	4.5	4.5
7	17.5	16.5	17.0	10.5	10.0	10.5	6.5	5.5	6.0	5.5	4.5	5.0
8	17.5	16.5	17.0	10.5	9.5	10.0	6.5	6.0	6.0	5.5	5.5	5.5
9	17.0	16.0	16.5	10.0	9.0	9.5	6.5	6.0	6.0	5.5	5.0	5.0
10	16.0	15.0	15.5	9.5	9.0	9.5	6.0	5.5	5.5	5.0	4.5	4.5
11	16.0	15.0	15.0	9.5	9.0	9.0	6.0	5.5	5.5	5.0	4.5	5.0
12	15.0	14.0	14.5	9.5	9.0	9.5	6.0	5.5	5.5	5.0	5.0	5.0
13	15.5	14.0	14.5	10.0	9.0	9.5	6.0	5.5	6.0	5.0	4.5	4.5
14	15.5	14.5	15.0	10.0	9.5	10.0	6.5	5.5	6.0	4.5	4.0	4.0
15	15.5	14.5	14.5	10.5	9.5	10.0	5.5	5.0	5.5	4.5	4.0	4.0
16	15.0	14.0	14.5	10.0	9.5	10.0	5.5	5.0	5.5	4.0	4.0	4.0
17	15.0	14.0	14.0	10.0	10.0	10.0	5.5	5.0	5.5	4.0	4.0	4.0
18	14.0	13.5	13.5	10.5	9.5	10.0	5.5	5.0	5.5	4.5	4.0	4.0
19	14.0	13.5	13.5	9.5	9.5	9.5	5.5	5.0	5.5	4.5	4.0	4.0
20	14.5	13.5	14.0	10.0	9.0	9.5	5.5	5.0	5.0	4.0	3.5	4.0
21	14.5	13.5	13.5	10.0	9.5	9.5	5.5	5.0	5.0	4.0	4.0	4.0
22	14.0	13.5	13.5	10.0	9.5	9.5	5.5	4.5	5.5	4.0	4.0	4.0
23	13.5	13.0	13.0	9.5	8.5	9.5	5.0	4.0	4.5	4.0	3.5	4.0
24	13.0	12.0	12.5	8.5	8.0	8.5	4.5	3.5	4.0	4.0	4.0	4.0
25	13.0	12.0	12.5	8.5	8.0	8.0	5.0	4.0	4.5	4.5	4.0	4.0
26	13.0	12.0	12.5	8.5	8.0	8.5	4.0	3.5	4.0	4.5	4.0	4.5
27	12.5	12.0	12.5	8.0	7.5	8.0	4.5	3.5	4.0	4.5	3.5	4.0
28	12.5	12.0	12.0	7.5	7.0	7.0	4.5	4.0	4.0	3.5	3.0	3.0
29	12.5	12.0	12.0	7.5	7.0	7.0	4.0	3.5	4.0	3.0	2.5	3.0
30	12.0	12.0	12.0	7.0	7.0	7.0	4.0	3.5	4.0	3.0	2.5	3.0
31	12.0	12.0	12.0	---	---	---	4.0	3.5	4.0	3.0	2.5	2.5
MONTH	---	12.0	---	12.0	7.0	9.6	7.5	3.5	5.4	5.5	2.5	4.2

SNAKE RIVER MAIN STEM

13334300 SNAKE RIVER NEAR ANATONE, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	3.5	2.5	3.0	3.5	3.0	3.0	7.5	7.0	7.5	12.0	10.0	11.0
2	3.5	3.0	3.5	3.5	2.5	3.0	8.0	6.5	7.0	12.0	10.5	11.5
3	3.0	2.5	3.0	3.5	2.5	3.0	8.0	7.0	7.5	12.0	10.5	11.0
4	3.0	2.5	2.5	4.0	3.0	3.5	9.0	7.5	8.0	11.0	10.0	10.5
5	3.0	2.5	2.5	4.0	3.0	3.5	8.5	8.0	8.0	10.5	9.5	10.0
6	3.0	2.5	3.0	4.5	3.5	4.0	9.0	8.0	8.0	10.0	9.5	9.5
7	3.0	2.5	3.0	4.5	4.0	4.0	9.0	7.5	8.0	10.0	9.0	9.5
8	4.0	3.0	3.5	4.0	3.5	4.0	9.0	7.5	8.0	10.0	8.5	9.5
9	4.0	3.0	3.5	4.5	3.5	3.5	8.5	8.0	8.5	10.0	9.0	9.5
10	4.0	3.0	3.5	5.0	3.5	4.0	8.5	7.5	8.0	10.5	9.0	10.0
11	3.5	3.0	3.0	5.0	4.5	4.5	8.5	8.0	8.5	11.0	9.0	10.0
12	3.5	2.5	3.0	6.5	5.0	5.5	9.0	8.5	8.5	12.0	10.5	11.0
13	3.0	2.5	3.0	5.5	5.0	5.0	9.5	8.5	9.0	12.5	11.5	12.0
14	3.5	2.5	3.0	6.0	5.0	5.0	9.5	8.0	9.0	12.5	11.5	12.0
15	3.5	2.5	3.0	5.0	4.5	4.5	8.0	7.0	7.5	12.5	11.5	12.0
16	3.5	2.5	3.0	5.5	4.5	5.0	7.5	7.0	7.5	13.0	11.0	12.0
17	3.5	3.0	3.0	5.0	4.0	4.5	8.0	7.0	7.5	12.5	11.5	12.0
18	4.0	3.0	3.5	4.5	3.5	4.0	8.0	7.5	7.5	13.0	11.5	12.0
19	4.0	3.5	3.5	4.5	4.0	4.0	9.0	7.5	8.0	13.5	12.0	12.5
20	4.5	3.0	4.0	5.0	4.5	4.5	9.0	8.0	8.5	13.0	11.0	12.0
21	4.0	3.5	4.0	5.5	4.5	5.0	10.0	8.5	9.0	11.0	10.0	10.0
22	4.5	4.0	4.0	6.0	5.5	6.0	10.5	9.0	9.5	10.0	9.5	10.0
23	5.0	4.5	4.5	7.0	6.0	6.0	10.0	9.5	10.0	10.5	10.0	10.0
24	5.0	4.0	4.5	6.5	5.5	6.0	10.0	8.5	9.5	12.0	10.0	11.0
25	4.0	3.0	3.5	6.5	5.5	6.0	10.5	9.0	9.5	12.5	11.5	12.0
26	3.0	2.5	2.5	6.5	5.5	6.0	11.0	9.5	10.0	13.0	11.5	12.5
27	3.0	2.5	2.5	7.5	6.5	6.5	10.5	9.5	10.0	13.0	12.5	12.5
28	3.5	3.0	3.0	7.5	6.5	6.5	11.0	9.0	10.0	13.5	13.0	13.5
29	---	---	---	7.0	6.0	6.5	11.5	10.0	10.5	14.0	13.0	13.5
30	---	---	---	8.0	6.5	7.0	12.0	10.0	11.0	13.5	12.0	13.0
31	---	---	---	7.5	7.0	7.5	---	---	---	13.0	12.0	12.5
MONTH	5.0	2.5	3.3	8.0	2.5	4.9	12.0	6.5	8.6	14.0	8.5	11.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	13.0	12.0	12.5	19.5	18.0	19.0	23.5	21.5	22.5	22.0	20.5	21.0
2	12.5	11.5	12.0	20.0	18.0	19.0	23.5	21.5	22.0	22.5	20.5	21.5
3	13.5	12.0	12.5	20.0	19.0	19.5	23.0	21.0	22.0	22.5	21.0	21.5
4	14.0	13.0	13.0	19.5	19.0	19.5	22.0	21.0	21.5	22.0	20.5	21.0
5	14.0	13.0	13.5	20.0	18.5	19.5	22.5	20.5	21.0	21.0	20.0	20.5
6	14.0	13.0	13.5	21.0	19.0	20.0	21.5	20.5	21.0	21.0	20.0	20.5
7	13.5	13.0	13.0	21.0	20.0	20.5	22.0	20.0	20.5	21.5	19.5	20.0
8	13.0	11.5	12.0	21.5	20.5	21.0	22.0	20.0	21.0	21.0	19.0	19.5
9	12.0	11.5	11.5	22.0	20.0	21.0	22.5	20.5	21.5	20.5	19.0	19.5
10	12.0	11.5	11.5	22.5	20.5	21.5	23.0	21.0	21.5	21.0	19.0	20.0
11	13.0	11.5	12.5	23.0	21.5	22.0	22.5	21.5	22.0	21.5	19.5	20.5
12	14.5	13.0	13.5	24.0	22.0	23.0	23.0	21.0	22.0	21.5	20.0	20.5
13	15.5	14.0	15.0	24.0	22.5	23.0	23.0	21.0	22.0	21.5	20.0	20.5
14	16.5	15.0	15.5	23.5	22.5	23.0	23.0	21.5	22.0	21.5	20.0	20.5
15	17.0	15.5	16.0	24.0	22.5	23.5	23.5	21.5	22.5	20.5	20.0	20.0
16	17.5	16.0	16.5	24.0	22.5	23.0	23.0	22.0	22.0	20.5	19.5	20.0
17	16.5	15.0	15.5	24.0	22.5	23.0	23.0	21.5	22.0	20.0	19.5	19.5
18	15.0	14.0	14.5	23.5	22.5	23.0	23.0	21.5	22.0	21.0	19.0	19.5
19	15.0	14.0	14.5	24.0	23.0	23.5	23.0	21.5	22.0	20.5	19.0	19.5
20	16.5	14.0	15.0	24.0	22.5	23.0	23.0	21.5	22.0	20.5	19.0	19.5
21	16.5	15.5	16.0	24.0	22.5	23.0	21.5	20.5	21.0	20.0	18.5	19.0
22	17.0	16.0	16.5	24.0	22.5	23.0	22.0	20.5	20.5	19.5	18.0	18.5
23	18.0	17.0	17.0	24.5	22.5	23.0	22.0	20.5	21.0	19.5	18.0	18.5
24	18.5	16.5	17.5	23.5	22.5	23.0	22.0	20.5	21.0	19.5	18.5	19.0
25	19.0	17.5	18.0	23.5	22.5	23.0	22.0	20.5	21.0	19.5	18.5	19.0
26	19.5	18.0	19.0	24.0	22.5	23.0	21.5	20.5	21.0	19.0	18.0	18.5
27	20.5	19.0	19.5	24.0	22.0	23.0	22.0	20.5	21.0	19.0	18.0	18.5
28	20.0	19.0	19.5	24.0	22.0	23.0	22.5	20.5	21.5	19.0	18.0	18.0
29	20.0	18.5	19.0	24.0	22.0	23.0	22.0	21.0	21.5	18.5	17.5	18.0
30	19.5	18.5	19.0	24.5	22.5	23.5	21.5	21.0	21.0	18.0	17.0	17.5
31	---	---	---	23.5	22.0	22.5	22.5	20.5	21.5	---	---	---
MONTH	20.5	11.5	15.2	24.5	18.0	22.0	23.5	20.0	21.5	22.5	17.0	19.6

13334450 ASOTIN CREEK BELOW CONFLUENCE NEAR ASOTIN, WA

LOCATION.--Lat 46°16'25", long 117°17'29", in SW ¼ NW ¼ sec.10, T.9 N., R.44 E., Asotin County, Hydrologic Unit 17060103, on left bank 0.1 mi downstream from confluence of North Fork and South Forks of Asotin Creek, at upstream side of county road bridge 11 mi southwest of Asotin, and at mile 14.6.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--January 2001 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,810 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. No regulation. No diversion. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--1 year (water year 2002) 55.5 ft³/s, 7.25 in/yr, 40,220 acre ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 539 ft³/s Apr. 14, 2002, gage height 3.17 ft; minimum discharge, 20 ft³/s Sept. 18, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 539 ft³/s Apr. 14, gage height, 3.17 ft; minimum daily discharge, 21 ft³/s Aug. 13-18.

REVISIONS.--The maximum gage height for the period January through September 2001 has been revised to 2.13 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	34	30	31	28	46	99	106	175	44	e23	e25
2	23	31	30	31	27	42	99	119	160	42	e23	e25
3	22	29	29	34	27	39	96	135	148	40	e23	e24
4	22	28	29	35	26	38	97	126	140	39	e24	e24
5	22	28	29	35	26	38	107	117	135	38	e26	e26
6	22	28	29	36	26	40	137	106	131	36	e26	25
7	22	27	29	59	28	39	152	97	120	35	e26	26
8	23	27	29	104	28	37	144	88	108	36	e25	26
9	23	27	29	95	26	37	139	82	105	e34	e24	25
10	22	27	28	74	26	37	141	76	114	e34	e23	25
11	33	27	29	60	26	43	148	72	107	e32	e22	25
12	25	27	29	53	26	104	171	72	104	e30	e22	25
13	24	27	31	47	27	98	213	89	104	e30	e21	25
14	25	29	46	43	27	88	382	111	107	e30	e21	25
15	25	29	39	39	26	78	224	116	108	e30	e21	26
16	25	29	37	36	27	70	145	109	106	e29	e21	26
17	24	29	39	34	28	64	116	115	99	e28	e21	27
18	24	28	37	33	28	58	99	128	101	e28	e21	27
19	25	28	36	32	29	56	91	161	90	e28	e22	26
20	25	28	35	31	29	54	89	198	84	e28	e22	26
21	25	31	34	31	30	51	89	176	78	e28	e24	26
22	26	32	33	30	42	52	90	151	73	e27	e30	26
23	27	35	32	29	66	60	95	137	69	e26	e26	25
24	25	32	31	29	78	80	88	129	65	e26	e24	25
25	25	32	30	31	69	93	87	132	60	e27	e25	25
26	24	31	30	31	61	100	88	144	56	e26	e26	26
27	25	29	30	30	55	109	92	169	53	e26	e25	26
28	26	30	32	28	51	107	88	212	51	e25	e24	26
29	26	30	31	28	---	98	87	231	60	e24	e25	26
30	27	29	30	29	---	93	97	220	49	e24	e26	27
31	34	---	31	29	---	92	---	190	---	e24	e26	---
TOTAL	769	878	993	1267	993	2041	3790	4114	2960	954	738	767
MEAN	24.8	29.3	32.0	40.9	35.5	65.8	126	133	98.7	30.8	23.8	25.6
MAX	34	35	46	104	78	109	382	231	175	44	30	27
MIN	22	27	28	28	26	37	87	72	49	24	21	24
AC-FT	1530	1740	1970	2510	1970	4050	7520	8160	5870	1890	1460	1520
CFSM	0.24	0.28	0.31	0.39	0.34	0.63	1.21	1.28	0.95	0.30	0.23	0.25
IN.	0.28	0.31	0.36	0.45	0.36	0.73	1.36	1.47	1.06	0.34	0.26	0.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
MEAN	24.8	29.3	32.0	32.3	30.4	48.3	88.0	110	67.7	30.9	25.1	24.0
MAX	24.8	29.3	32.0	40.9	35.5	65.8	126	133	98.7	31.0	26.3	25.6
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2001	2001	2001	2002
MIN	24.8	29.3	32.0	23.8	25.3	30.8	49.7	88.3	36.8	30.8	23.8	22.4
(WY)	2002	2002	2002	2001	2001	2001	2001	2001	2002	2002	2002	2001

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 2001 - 2002

ANNUAL TOTAL	12821	20264		
ANNUAL MEAN	35.1	55.5		55.5
HIGHEST ANNUAL MEAN				55.5
LOWEST ANNUAL MEAN				55.5
HIGHEST DAILY MEAN	128	382	May 1	Apr 14 2002
LOWEST DAILY MEAN	21	21	Sep 15	Sep 15 2001
ANNUAL SEVEN-DAY MINIMUM	21	21	Sep 13	Aug 12 2002
ANNUAL RUNOFF (AC-FT)	25430	40190		40220
ANNUAL RUNOFF (CFSM)	0.34	0.53		0.53
ANNUAL RUNOFF (INCHES)	4.59	7.25		7.25
10 PERCENT EXCEEDS	48	116		116
50 PERCENT EXCEEDS	29	31		31
90 PERCENT EXCEEDS	23	24		24

e Estimated

ASOTIN CREEK BASIN

13335050 ASOTIN CREEK AT ASOTIN, WA

LOCATION.--Lat 46°20'27", long 117°03'18", in SW ¼ SW ¼ sec.16, T.10 N., R.46 E., Asotin County, Hydrologic Unit 17060103, on right bank near mouth, at upstream side of bridge on State Highway 129, at Asotin, and at mile 0.1.

DRAINAGE AREA.--323 mi².

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

REVISED RECORDS.--WDR WA-93-1: 1992(M,m). WDR WA-96-1: 1991(M).

GAGE.--Water-stage recorder. Datum of gage is 742.57 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good except for those above 300 ft³/s, which are poor. Several diversions for irrigation. Miscellaneous data from January through September 1989 are available in the Spokane Field Office.

AVERAGE DISCHARGE.--11 years (water years 1992-2002), 105 ft³/s, 4.40 in/yr, 75,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,050 ft³/s Jan. 1, 1997, gage height, 7.50 ft, from high-water mark, from rating curve extended above 550 ft³/s, on basis of slope-area measurement of peak flow; minimum daily discharge, 17 ft³/s Aug. 6, 1998.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 963 ft³/s Apr. 14, gage height, 4.45 ft; minimum discharge, 29 ft³/s Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	53	46	46	49	87	154	192	186	71	39	36
2	36	47	46	47	47	77	154	200	175	68	39	36
3	35	44	46	53	46	72	150	209	165	66	39	35
4	35	43	45	55	45	67	147	197	155	63	40	35
5	35	42	44	55	44	65	164	183	146	63	44	37
6	36	41	45	55	44	65	206	170	143	60	44	37
7	36	40	44	64	46	74	243	154	134	59	44	39
8	36	40	44	131	49	69	224	142	129	61	41	40
9	36	40	44	147	45	66	214	133	127	57	40	38
10	36	40	44	122	44	63	225	126	136	55	39	37
11	44	40	45	104	44	70	242	122	129	53	38	35
12	43	41	45	91	43	343	237	119	124	51	37	34
13	39	40	46	84	44	248	307	129	121	51	36	34
14	39	40	59	79	44	198	724	154	122	50	36	33
15	40	41	59	75	44	134	498	162	122	49	36	35
16	39	40	56	69	44	116	311	152	119	48	35	37
17	37	41	57	65	46	94	248	153	116	47	36	41
18	38	40	56	61	46	88	213	165	119	46	36	41
19	38	40	56	59	48	74	187	189	111	46	36	39
20	39	40	54	57	53	79	172	232	104	47	37	37
21	39	44	53	56	55	87	162	224	99	45	43	37
22	39	47	52	54	79	81	167	190	95	43	46	37
23	41	51	50	51	156	87	177	174	92	43	41	37
24	41	49	49	50	171	246	168	169	89	44	39	37
25	40	50	47	52	124	213	159	169	85	46	39	37
26	40	47	46	58	105	181	162	173	81	44	41	38
27	40	45	46	54	103	173	173	185	78	43	39	39
28	41	46	48	50	97	160	170	212	75	41	38	38
29	41	46	47	47	---	157	166	231	84	41	39	40
30	44	46	46	50	---	141	177	222	77	40	40	40
31	49	---	46	50	---	138	---	196	---	39	38	---
TOTAL	1208	1304	1511	2091	1805	3813	6701	5428	3538	1580	1215	1116
MEAN	39.0	43.5	48.7	67.5	64.5	123	223	175	118	51.0	39.2	37.2
MAX	49	53	59	147	171	343	724	232	186	71	46	41
MIN	35	40	44	46	43	63	147	119	75	39	35	33
AC-FT	2400	2590	3000	4150	3580	7560	13290	10770	7020	3130	2410	2210
CFSM	0.12	0.13	0.15	0.21	0.20	0.38	0.69	0.54	0.37	0.16	0.12	0.12
IN.	0.14	0.15	0.17	0.24	0.21	0.44	0.77	0.63	0.41	0.18	0.14	0.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	37.5	49.7	89.7	108	143	154	190	216	139	56.9	35.6	35.4
MAX	51.4	74.0	235	435	420	367	382	442	429	90.2	49.0	43.1
(WY)	2000	1999	1999	1997	1996	1999	1996	1997	1999	1999	1999	1998
MIN	25.9	30.7	33.4	28.1	35.6	57.9	82.8	58.1	35.5	26.5	23.8	25.3
(WY)	1999	1994	1993	1993	1993	2001	1992	1992	1994	1994	1994	1994

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1991 - 2002
ANNUAL TOTAL	19848	31310	
ANNUAL MEAN	54.4	85.8	105
HIGHEST ANNUAL MEAN			197
LOWEST ANNUAL MEAN			44.6
HIGHEST DAILY MEAN	205	724	3000
LOWEST DAILY MEAN	32	33	17
ANNUAL SEVEN-DAY MINIMUM	32	35	21
ANNUAL RUNOFF (AC-FT)	39370	62100	75810
ANNUAL RUNOFF (CFSM)	0.17	0.27	0.32
ANNUAL RUNOFF (INCHES)	2.29	3.61	4.40
10 PERCENT EXCEEDS	83	177	234
50 PERCENT EXCEEDS	45	50	51
90 PERCENT EXCEEDS	33	37	32

TUCANNON RIVER BASIN

13344500 TUCANNON RIVER NEAR STARBUCK, WA

LOCATION.--Lat 46°30'17", long 118°03'55", in NE 1/4 SW 1/4 sec.21, T.12 N., R.38 E., Columbia County, Hydrologic Unit 17060107, on right bank, 180 ft downstream from County road bridge, 0.5 mi downstream from Smith Hollow, 3.0 mi east of Starbuck, 3.3 mi downstream from Pataha Creek, and at mile 7.9.

DRAINAGE AREA.--431 mi².

PERIOD OF RECORD.--October 1914 to September 1917, August 1928 to September 1931, October 1958 to September 1990, October 1994 to current year. Monthly discharge only for October and November 1914, published in WSP 1317.

REVISED RECORDS.--WSP 1347: 1930.

GAGE.--Water-stage recorder. Elevation of gage is 735.9 ft above NGVD of 1929, from plane-table survey. Nov. 8, 1914, to Sept. 30, 1917, nonrecording gage at site 2.8 mi upstream at different datum. Aug. 9, 1928, to Sept. 30, 1931, nonrecording gages at site 2.5 mi upstream at various datums.

REMARKS.--Records good. Many small diversions for irrigation upstream from station. Water temperatures and sediment records October 1962 to June 1970. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--46 years (water years 1915-17, 1929-31, 1959-90, 1995-2002), 171 ft³/s, 124,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,980 ft³/s Dec. 22, 1964, gage height, 9.84 ft, from rating curve extended above 2,500 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 15 ft³/s July 11, 12, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 15	0130	*789	*1.65	No other peak greater than base discharge.			

Minimum discharge, 41 ft³/s Aug. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	110	103	100	134	185	228	218	369	137	55	55
2	66	97	102	102	130	167	231	240	347	128	55	56
3	65	91	104	109	125	155	224	262	320	118	56	57
4	66	87	105	113	120	148	217	266	300	115	58	55
5	65	85	104	116	117	143	214	251	294	114	61	54
6	65	87	107	118	114	144	232	234	296	107	61	58
7	67	88	105	125	121	144	256	224	281	104	61	58
8	69	87	102	166	137	138	261	211	266	107	60	60
9	69	86	101	219	133	131	252	196	259	102	58	57
10	70	85	101	212	133	132	252	184	273	94	59	56
11	77	85	103	193	134	134	256	175	261	88	56	53
12	92	85	103	181	134	186	272	168	249	83	55	53
13	79	84	108	169	131	260	303	173	243	78	56	53
14	77	85	145	159	131	272	e500	200	245	76	54	56
15	83	90	153	150	129	255	e680	221	252	75	50	53
16	78	88	146	142	127	234	e515	221	254	73	46	55
17	74	91	143	136	125	216	e410	219	251	70	48	61
18	74	89	141	131	126	198	e345	232	262	69	51	67
19	73	87	138	130	126	186	e300	266	247	70	50	60
20	74	86	132	126	124	178	e270	318	218	72	49	61
21	76	92	128	125	123	168	e255	339	202	75	53	65
22	78	102	124	122	128	160	e240	302	191	72	60	65
23	83	128	119	117	149	158	e235	284	182	71	57	68
24	84	128	114	115	198	170	e250	268	177	66	54	67
25	77	118	110	128	241	208	e245	261	168	69	56	67
26	77	112	106	159	228	239	e225	267	158	68	55	65
27	78	107	106	159	213	266	e240	288	151	61	55	65
28	82	108	107	150	198	274	e235	330	143	61	54	66
29	83	106	105	144	---	263	e220	389	154	59	53	68
30	84	105	103	145	---	245	203	416	148	57	54	69
31	95	---	101	140	---	232	---	392	---	54	54	---
TOTAL	2345	2879	3569	4401	4029	5989	8566	8015	7161	2593	1704	1803
MEAN	75.6	96.0	115	142	144	193	286	259	239	83.6	55.0	60.1
MAX	95	128	153	219	241	274	680	416	369	137	61	69
MIN	65	84	101	100	114	131	203	168	143	54	46	53
AC-FT	4650	5710	7080	8730	7990	11880	16990	15900	14200	5140	3380	3580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 2002, BY WATER YEAR (WY)

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	83.2	109	163	214	261	245	274	296	202	84.3	60.7	70.4																																																																												
MAX	125	186	673	635	1057	717	668	986	599	203	114	108																																																																												
(WY)	1960	1996	1965	1974	1996	1972	1917	1917	1974	1974	1974	1972																																																																												
MIN	51.7	60.0	66.8	49.3	84.0	103	114	93.9	58.9	32.9	21.5	42.2																																																																												
(WY)	1930	1930	1915	1930	1931	1977	1977	1977	1930	1930	1931	1931																																																																												

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1915 - 2002
ANNUAL TOTAL	39421	53054	
ANNUAL MEAN	108	145	171
HIGHEST ANNUAL MEAN			327
LOWEST ANNUAL MEAN			89.6
HIGHEST DAILY MEAN	373	680	5000
LOWEST DAILY MEAN	33	46	15
ANNUAL SEVEN-DAY MINIMUM	38	50	18
ANNUAL RUNOFF (AC-FT)	78190	105200	124000
10 PERCENT EXCEEDS	177	262	329
50 PERCENT EXCEEDS	101	121	118
90 PERCENT EXCEEDS	51	57	58

e Estimated

PALOUSE RIVER BASIN

13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WA

LOCATION.--Lat 46°43'57", long 117°10'48", in NE ¼ NE ¼ sec.6, T.14 N., R.45 E., Whitman County, Hydrologic Unit 17060108, on right bank at State Street crossing in Pullman, 600 ft upstream from Missouri Flat Creek, and at mile 22.2.

DRAINAGE AREA.--132 mi².

PERIOD OF RECORD.--February 1934 to September 1942, December 1959 to September 1981, May 2001 to current year. Chemical analyses water years 1974, 1978 to June 1980.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,326.3 ft above NGVD of 1929. Prior to March 19, 1934, nonrecording gage at site 30 ft upstream.

REMARKS.--Records fair. Minor diversions for domestic use above station. Slight regulation caused by pondage at Robinson Park Dam on headwaters and by Moscow sewage disposal plant on Paradise Creek. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--30 years (water years 1935-42, 1961-81, 2002), 39.2 ft³/s, 4.03 in/yr, 28,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,570 ft³/s Jan. 21, 1972, gage height, 9.46 ft; minimum, 0.1 ft³/s Sept. 23, 1942, gage height, 0.50 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1910, 9.5 ft Feb. 26, 1948, discharge, 5,000 ft³/s. Flood of Jan. 24, 1959, reached a stage of 6.5 ft from floodmarks, discharge, 1,860 ft³/s. Flood of Dec. 22, 1933, reached a stage of 6.0 ft from gage readings furnished by Washington State University, discharge, 1,800 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 902 ft³/s Mar. 12, gage height, 4.85 ft; minimum discharge, 2.0 ft³/s Aug. 20, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	15	20	15	49	80	98	43	18	7.8	3.2	4.8
2	4.8	9.8	27	20	46	68	91	42	18	6.9	3.2	4.3
3	4.9	8.3	31	29	43	63	85	40	17	6.7	3.3	5.0
4	4.5	7.6	e27	38	42	64	81	38	16	6.0	3.4	4.0
5	3.9	7.2	21	33	39	62	81	40	15	5.8	4.1	4.5
6	5.5	7.3	24	36	41	109	89	41	14	5.3	4.0	4.1
7	5.9	6.9	30	227	60	103	85	40	13	4.8	4.1	4.4
8	7.2	7.0	24	290	113	75	80	e41	13	7.4	3.7	4.7
9	6.5	6.6	24	155	117	70	76	e38	16	8.0	3.4	5.2
10	5.9	7.7	23	82	97	86	78	34	22	6.8	3.4	4.7
11	19	8.5	21	62	87	334	79	31	20	6.3	3.8	4.1
12	10	6.5	19	53	74	540	78	e30	15	5.0	4.0	3.8
13	9.6	6.6	65	53	64	204	78	29	12	4.3	3.2	3.7
14	12	12	121	46	58	136	202	36	9.9	4.3	3.0	4.4
15	9.7	10	74	39	52	113	123	27	10	4.0	2.8	4.3
16	7.0	9.8	55	33	53	106	95	27	8.3	3.8	3.5	4.4
17	6.3	17	59	30	60	100	83	26	8.7	4.0	2.9	7.0
18	5.9	12	51	28	73	84	75	27	25	3.4	2.7	7.4
19	6.4	8.3	38	28	104	109	67	26	22	3.4	2.7	5.7
20	6.3	9.0	31	32	130	218	63	25	14	3.4	2.7	5.0
21	6.2	16	29	46	118	152	60	26	10	3.4	2.7	5.0
22	9.7	24	26	38	331	123	57	27	9.4	3.3	8.2	5.0
23	13	32	22	33	362	113	55	29	9.2	3.8	6.2	4.8
24	7.8	15	19	45	584	419	53	25	9.4	3.4	4.6	4.6
25	7.1	19	17	397	164	328	51	23	7.9	3.1	4.4	4.5
26	6.3	26	16	322	107	205	50	22	7.2	2.8	5.1	4.0
27	7.3	20	15	132	92	163	53	22	7.1	2.7	5.0	4.9
28	10	15	15	79	87	131	51	31	6.8	2.7	5.0	5.7
29	9.1	16	15	63	---	116	47	24	17	3.0	4.6	6.1
30	17	18	15	55	---	106	45	22	9.6	3.3	8.5	6.1
31	27	---	15	50	---	100	---	20	---	3.7	4.9	---
TOTAL	267.1	384.1	989	2589	3247	4680	2309	952	400.5	142.6	126.3	146.2
MEAN	8.62	12.8	31.9	83.5	116	151	77.0	30.7	13.3	4.60	4.07	4.87
MAX	27	32	121	397	584	540	202	43	25	8.0	8.5	7.4
MIN	3.9	6.5	15	15	39	62	45	20	6.8	2.7	2.7	3.7
AC-FT	530	762	1960	5140	6440	9280	4580	1890	794	283	251	290
CFSM	0.07	0.10	0.24	0.63	0.88	1.14	0.58	0.23	0.10	0.03	0.03	0.04
IN.	0.08	0.11	0.28	0.73	0.92	1.32	0.65	0.27	0.11	0.04	0.04	0.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	4.31	9.17	36.0	84.9	111	118	58.4	23.3	10.3	3.72	2.95	3.23																																																									
MAX	9.43	40.9	219	401	360	313	137	58.4	40.5	7.81	8.89	6.03																																																									
(WY)	1976	1974	1974	1974	1972	1969	1969	1975	1971	1975	1972	1972																																																									
MIN	1.08	1.44	2.70	1.77	10.5	14.0	8.20	5.75	1.52	0.86	0.50	0.49																																																									
(WY)	1940	1940	1937	1937	1977	1977	1977	1934	1940	1940	1940	1942																																																									

SUMMARY STATISTICS

	FOR 2002 WATER YEAR	WATER YEARS 1934 - 2002
ANNUAL TOTAL	16232.8	
ANNUAL MEAN	44.5	39.2
HIGHEST ANNUAL MEAN		111 1974
LOWEST ANNUAL MEAN		7.73 1977
HIGHEST DAILY MEAN	584 Feb 24	3200 Jan 21 1972
LOWEST DAILY MEAN	2.7 Jul 27	0.30 Sep 1 1942
ANNUAL SEVEN-DAY MINIMUM	2.9 Aug 15	0.31 Sep 1 1942
ANNUAL RUNOFF (AC-FT)	32200	28360
ANNUAL RUNOFF (CFSM)	0.34	0.30
ANNUAL RUNOFF (INCHES)	4.57	4.03
10 PERCENT EXCEEDS	106	97
50 PERCENT EXCEEDS	19	8.3
90 PERCENT EXCEEDS	4.0	1.8

e Estimated

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA

LOCATION.--Lat 46°45'31", long 118°08'52", in NE ¼ SE ¼ sec.27, T.15 N., R.37 E., Whitman County, Hydrologic Unit 17060108, on left bank 150 ft downstream from bridge on State Highway 26 at Hooper, 0.3 mi upstream from Cow Creek, 3.5 mi downstream from right bank tributary, 6.0 mi downstream from Willow Creek, and at mile 19.6.

DRAINAGE AREA.--2,500 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to August 1897 (gage heights only), September 1897 to December 1899, April 1900 to April 1907, June 1908 to July 1912, March 1913 to March 1916, February 1951 to current year. Prior to 1904 sometimes published as "near Hooper."

REVISED RECORDS.--WSP 1287: 1897-1904, 1910(M), 1915-16(M). WSP 1447: 1910. WSP 1934: Drainage area. WSP 1447: 1906(M). WSP 1567: 1908-09(M).

GAGE.--Water-stage recorder. Datum of gage is 1,040.8 ft above NGVD of 1929. Apr. 1 to Aug. 31, 1897, nonrecording gage at site 2.5 mi upstream at different datum. Sept. 9, 1897, to March 1916, various nonrecording gages at site 1.5 mi upstream from present site at different datums. Feb. 8 to Mar. 28, 1951, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges which are fair. Diversions upstream from station for irrigation and municipal use. U. S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1898-99, 1901-06, 1909-11, 1914-15, 1952-2002), 611 ft³/s, 442,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s Feb. 4, 1963, gage height, 19.13 ft, from rating curve extended above 18,000 ft³/s on basis of slope-area measurement of peak flow; no flow part or all of each day June 25, 1910, Aug. 1-17, Aug. 28 to Sept. 4, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 26	1515	4,020	9.69	Mar. 25	0845	4,830	10.27
Mar. 13	0145	*6,080	*11.04	Apr. 16	0230	5,530	10.72

Minimum discharge, 22 ft³/s Aug. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	91	192	264	931	e800	2010	996	495	121	35	40
2	37	109	206	264	853	e700	2080	1060	449	123	35	40
3	40	112	213	277	789	e700	2040	1130	413	116	33	38
4	41	138	226	285	711	e1000	1890	1140	382	110	34	40
5	39	122	259	327	e680	1010	1800	1110	344	108	39	40
6	41	108	253	369	e600	1000	1850	1000	311	105	37	42
7	41	101	231	416	e550	1300	2090	971	291	96	36	41
8	44	96	222	1770	e900	1330	2250	906	276	94	35	41
9	46	91	227	2630	e1500	1070	2240	838	272	94	32	41
10	45	88	235	2110	e1600	1000	2040	757	280	97	30	38
11	50	86	243	1450	e1300	1200	1960	682	286	107	30	36
12	51	85	240	1110	e1100	4370	2260	626	290	105	31	36
13	54	82	245	919	e900	5280	2270	593	276	104	34	34
14	56	86	270	881	e750	3420	2650	596	256	98	31	36
15	65	88	1170	835	e600	2580	4250	680	232	102	31	37
16	71	90	1030	716	e550	2170	4660	788	214	90	28	36
17	81	103	663	625	e600	1930	2770	738	199	81	26	37
18	81	104	625	559	e700	1740	2060	687	193	75	25	40
19	91	131	667	530	e850	1560	1670	661	186	71	24	42
20	85	123	510	514	e1000	2020	1460	652	211	73	24	45
21	78	120	460	485	e2000	3070	1370	705	245	70	30	45
22	75	126	414	512	e2600	2590	1310	772	228	72	34	47
23	72	128	378	544	e2400	2300	1340	729	195	70	34	46
24	71	141	318	489	e3200	2280	1410	808	176	65	35	42
25	71	236	271	504	e1800	4270	1350	780	160	63	36	41
26	77	334	229	2830	e1300	3520	1200	677	147	64	39	43
27	78	260	e200	3080	e1200	2960	1110	609	135	57	41	44
28	92	233	e190	1970	e1000	2790	1070	591	123	51	41	44
29	88	215	e190	1340	---	2470	1040	594	123	49	43	45
30	88	192	e200	1120	---	2330	997	599	118	44	41	46
31	89	---	e240	1030	---	2100	---	549	---	38	42	---
TOTAL	1974	4019	11017	30755	32964	66860	58497	24024	7506	2613	1046	1223
MEAN	63.7	134	355	992	1177	2157	1950	775	250	84.3	33.7	40.8
MAX	92	334	1170	3080	3200	5280	4660	1140	495	123	43	47
MIN	36	82	190	264	550	700	997	549	118	38	24	34
AC-FT	3920	7970	21850	61000	65380	132600	116000	47650	14890	5180	2070	2430

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1898	68.2	147	454	1037	1734
1899	151	349	2198	4602	5744
1900	1960	1956	1974	1974	1996
1901	17.7	39.6	36.9	46.6	162
1902	1916	1905	1915	1915	1994
1903					1977
1904					1977
1905					1992
1906					1992
1907					1992
1908					1968
1909					1968
1910					1967

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1898 - 2002

ANNUAL TOTAL		101151		242498	
ANNUAL MEAN		277		664	
HIGHEST ANNUAL MEAN				611	
LOWEST ANNUAL MEAN				1595	1997
HIGHEST DAILY MEAN				106	1977
LOWEST DAILY MEAN				27800	Mar 2 1910
ANNUAL SEVEN-DAY MINIMUM		1980	May 2	5280	Mar 13
ANNUAL RUNOFF (AC-FT)		15	Aug 19	24	Aug 19
10 PERCENT EXCEEDS		17	Aug 17	27	Aug 15
50 PERCENT EXCEEDS		692		2030	
90 PERCENT EXCEEDS		190		245	
		28		39	
					31

e Estimated

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA--Continued
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SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	189	166	178	287	279	282	314	300	307	381	367	374
2	200	180	188	293	287	289	318	309	315	382	370	376
3	204	171	184	293	290	291	331	315	325	383	362	375
4	181	174	178	299	290	294	336	328	333	371	346	361
5	192	181	186	300	288	293	341	325	333	373	346	362
6	198	180	192	297	289	293	343	326	335	384	363	376
7	201	197	198	305	294	298	342	335	339	391	379	388
8	208	196	205	308	292	299	343	323	336	397	387	394
9	211	207	209	297	288	294	335	316	329	400	392	396
10	215	208	211	293	284	288	324	311	317	403	336	365
11	220	214	215	292	286	289	319	308	314	343	335	338
12	221	213	217	295	288	291	328	308	320	344	335	340
13	222	216	219	304	295	300	333	322	330	345	338	341
14	225	204	222	310	303	306	339	330	335	344	338	341
15	232	206	223	314	308	311	341	333	336	344	338	342
16	239	222	232	314	308	311	339	334	336	347	339	344
17	243	228	237	314	308	311	340	333	336	349	342	345
18	242	222	235	315	310	313	341	334	338	351	344	349
19	243	223	237	318	309	314	341	331	335	355	348	352
20	248	228	242	319	311	315	343	333	337	357	348	353
21	250	223	239	322	304	316	342	333	336	354	331	346
22	241	221	235	322	312	317	341	333	336	331	306	318
23	250	241	244	322	309	316	342	334	338	311	302	307
24	273	250	261	319	303	312	345	337	343	316	308	311
25	282	269	275	317	303	310	346	340	343	321	309	316
26	274	257	264	317	303	310	350	337	344	328	317	323
27	269	260	266	317	306	311	355	333	345	344	325	338
28	275	269	273	320	310	314	356	339	350	355	343	353
29	276	271	274	325	311	318	365	348	359	363	355	360
30	281	274	277	324	304	315	371	359	366	364	354	361
31	---	---	---	317	304	311	375	364	370	---	---	---
MONTH	282	166	227	325	279	304	375	300	336	403	302	352

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.6	14.3	15.6	9.6	8.2	8.8	4.2	3.2	3.7	1.8	1.0	1.3
2	16.5	13.8	15.4	10.7	8.8	9.6	4.3	3.7	4.0	2.1	1.0	1.6
3	16.2	13.0	14.8	10.8	8.8	9.7	4.3	3.4	3.8	2.7	2.1	2.5
4	16.0	12.4	13.9	10.4	8.7	9.5	3.7	2.7	3.3	3.2	2.6	2.8
5	14.1	11.0	12.9	9.6	8.5	9.2	2.9	2.6	2.7	2.9	2.4	2.7
6	14.0	11.0	12.6	8.5	6.6	7.7	3.1	2.3	2.6	3.4	2.4	2.8
7	13.0	10.4	11.5	6.8	5.2	6.1	3.4	2.3	2.7	4.5	3.4	4.0
8	11.9	10.5	11.2	5.9	4.0	4.9	3.4	2.3	2.8	5.6	4.0	4.9
9	11.2	9.1	10.4	5.6	3.8	4.6	3.7	2.7	3.1	4.2	3.7	3.9
10	11.1	8.6	9.7	5.4	4.3	4.7	3.1	2.4	2.7	3.7	2.7	3.1
11	11.1	9.2	10.2	5.7	4.6	5.1	2.6	2.1	2.4	4.0	3.1	3.5
12	10.8	9.1	9.8	6.2	4.8	5.4	3.1	2.4	2.6	4.5	3.7	4.1
13	11.7	9.2	10.5	7.1	5.2	6.1	4.5	2.7	3.5	4.5	2.9	3.4
14	12.8	10.5	11.6	8.5	6.8	7.9	4.6	3.7	4.3	3.4	2.9	3.1
15	12.5	9.7	11.2	9.4	7.7	8.6	3.7	1.6	2.4	2.9	1.6	2.0
16	12.5	10.3	11.4	9.7	9.1	9.4	3.7	2.4	2.9	1.9	1.5	1.6
17	11.2	9.4	10.4	9.9	8.8	9.4	3.8	2.4	3.3	1.9	1.8	1.8
18	10.8	8.8	9.8	9.1	7.7	8.5	2.4	1.5	1.7	2.4	1.6	1.9
19	10.6	9.4	9.9	7.7	7.1	7.5	1.6	1.3	1.4	3.2	2.4	2.8
20	11.1	8.6	9.8	7.7	6.8	7.3	1.9	1.6	1.8	3.2	2.7	3.0
21	10.0	8.8	9.2	8.0	7.3	7.7	2.6	1.9	2.3	3.7	2.7	3.4
22	10.3	8.8	9.5	8.3	7.7	8.0	2.4	1.5	2.1	2.7	1.6	2.2
23	9.7	7.7	8.5	7.9	6.8	7.5	1.5	0.7	1.3	1.8	1.3	1.5
24	8.1	6.8	7.5	6.8	5.4	5.9	1.1	0.2	0.7	3.8	1.6	2.6
25	9.5	7.4	8.3	5.4	4.6	5.0	0.7	0.2	0.5	5.4	3.8	4.8
26	9.8	7.7	8.7	5.1	4.0	4.6	0.5	0.0	0.2	5.1	1.5	3.6
27	9.5	8.5	9.0	4.5	3.1	3.8	0.0	0.0	0.0	1.8	1.0	1.4
28	10.2	8.2	9.2	3.1	2.3	2.6	0.3	0.0	0.0	1.1	0.2	0.7
29	9.1	8.3	8.8	3.2	2.3	2.7	0.2	0.0	0.0	1.1	0.0	0.5
30	9.1	8.5	8.8	3.4	2.6	3.0	0.8	0.2	0.5	1.8	0.7	1.1
31	9.6	8.7	9.0	---	---	---	1.8	0.8	1.3	2.3	1.5	1.8
MONTH	16.6	6.8	10.6	10.8	2.3	6.7	4.6	0.0	2.1	5.6	0.0	2.6

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WATER TOT IT FIELD (MG/L AS CACO3) (39086)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT													
01...	1040	36	734	10.1	103	8.7	386	14.4	14.5	157	187	2	13.4
NOV													
07...	1030	100	747	12.8	104	8.5	328	10.3	5.7	130	156	1	12.6
DEC													
10...	1030	235	730	13.3	103	8.1	310	3.1	2.8	114	138	0	15.1
JAN													
02...	1130	265	732	13.4	101	8.2	344	2.8	1.9	129	155	0	9.91
FEB													
05...	1110	680	735	13.4	100	8.2	282	4.9	1.8	96	116	0	6.53
MAR													
04...	1040	1040	735	12.6	98	8.1	238	5.0	3.3	82	100	0	4.57
19...	0950	1570	733	12.6	97	8.2	214	4.0	3.0	--	--	--	--
APR													
02...	1120	2130	740	11.6	99	8.1	180	13.9	7.4	59	71	0	3.11
23...	1230	1360	740	11.0	100	8.2	161	12.2	9.7	--	--	--	--
MAY													
06...	1050	995	735	11.6	102	8.3	131	9.9	8.3	51	62	0	2.49
20...	1040	646	728	8.2	89	9.2	159	9.3	17.2	--	--	--	--
JUN													
03...	1230	415	735	8.6	98	8.1	164	20.1	20.0	67	81	0	3.35
17...	1120	199	735	10.7	121	9.2	231	18.7	19.5	--	--	--	--
JUL													
08...	1120	92	740	9.2	108	8.3	291	24.2	21.8	122	147	0	7.04
22...	1040	72	734	8.5	104	8.5	311	23.4	23.5	--	--	--	7.66
AUG													
06...	1320	37	738	10.3	114	8.9	338	25.7	18.8	148	171	5	8.98
20...	1130	22	733	8.9	104	8.9	330	25.1	21.2	146	167	5	--
SEP													
10...	1050	38	738	9.5	103	8.4	359	24.4	17.7	149	177	2	11.4

Date	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, PAR TICULATE WAT FLT SUSP (MG/L AS N) (49570)	NITROGEN, TOTAL (MG/L AS N) (00600)	ORTHO-PHOSPHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, INORG + ORGANIC PARTIC. TOTAL (MG/L AS C) (00694)	CARBON, INORGANIC, PARTIC. TOTAL (MG/L AS C) (00688)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTICULATE TOTAL (MG/L AS C) (00689)
OCT													
01...	16.2	<.04	.86	.38	.012	.35	1.2	<.02	.105	2.2	--	3.3	--
NOV													
07...	11.5	E.03	.39	1.14	.009	.09	1.5	.10	.139	.6	<.1	4.3	.6
DEC													
10...	24.7	E.03	.15	1.27	.008	.04	1.4	.10	.120	.2	<.1	1.5	.2
JAN													
02...	16.7	<.04	.47	4.75	.014	.06	5.2	.12	.158	.4	<.1	3.3	.4
FEB													
05...	14.4	<.04	.45	4.93	.013	.10	5.4	.10	.148	.9	<.1	4.1	.9
MAR													
04...	13.8	E.02	.55	4.98	.011	.10	5.5	.09	.170	1.0	<.1	4.7	1.0
19...	--	<.04	.56	4.58	.009	--	5.1	.08	.176	--	--	--	--
APR													
02...	10.0	<.04	.45	3.60	.008	.14	4.0	.07	.164	1.2	<.1	4.9	1.2
23...	--	<.04	.39	1.83	E.005	--	2.2	.05	.108	--	--	--	--
MAY													
06...	6.4	<.04	.25	.88	<.008	.06	1.1	<.02	.037	.6	<.1	3.0	.6
20...	--	<.04	.47	.45	.008	--	.92	<.02	.041	--	--	--	--
JUN													
03...	6.0	.06	.54	.65	.008	.15	1.2	.07	.129	.9	<.1	3.4	.9
17...	--	<.04	1.4	.24	.017	--	1.6	E.01	.20	--	--	--	--
JUL													
08...	10.8	<.04	.46	.66	.011	.08	1.1	.09	.140	.6	<.1	3.3	.6
22...	13.0	<.04	.48	.49	.008	--	.96	.09	.131	--	--	--	--
AUG													
06...	14.3	<.04	1.1	.17	.008	.68	1.2	E.01	.036	4.0	<.1	3.9	4.0
20...	--	<.04	.70	.10	E.004	--	.81	.03	.090	--	--	--	--
SEP													
10...	14.1	<.04	.60	.52	E.005	.37	1.1	.02	.080	2.1	<.1	3.1	2.1

PALOUSE RIVER BASIN

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WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	2,4-D METHYL ESTER, WATER, FLTRD REC (UG/L) (50470)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L) (38746)	2,6-DI- ETHYL- ANILINE WAT FLT GF, REC (UG/L) (82660)	3HYDRXY CARBO- FURAN WAT,FLT GF 0.7U REC (UG/L) (49308)	3-KETO CARBO- FURAN WATER FLTRD REC (UG/L) (50295)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ACIFL- UORFEN WATER, FLTRD, GF 0.7U REC (UG/L) (49315)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ALDI- CARB SULFONE WAT,FLT GF 0.7U REC (UG/L) (49313)	ALDICA- RB SUL- FOXIDE, WAT,FLT GF 0.7U REC (UG/L) (49314)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (49312)	ALPHA BHC DIS- SOLVED (UG/L) (34253)
OCT													
01...	<.009	E.02	<.02	<.002	<.006	<2	<.004	<.007	<.002	<.02	<.008	<.04	<.005
NOV													
07...	<.009	.02	<.02	<.002	<.006	<2	<.004	<.007	<.002	<.02	<.008	<.04	<.005
DEC													
10...	<.009	.03	<.02	<.002	<.006	<2	<.004	<.007	<.002	<.02	<.008	<.04	<.005
JAN													
02...	<.009	E.01	<.02	<.002	<.006	<2	<.004	<.007	<.002	<.02	<.008	<.04	<.005
FEB													
05...	<.009	<.02	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
MAR													
04...	<.009	E.01	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
19...	<.009	<.02	<.02	<.006	<.006	<2	<.006	<.200	<.004	<.02	<.008	<.04	<.005
APR													
02...	<.009	E.01	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
23...	<.009	E.01	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
MAY													
06...	<.009	.03	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
20...	<.009	.04	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
JUN													
03...	<.009	.07	<.02	--	<.006	<2	--	<.007	--	<.02	<.008	<.04	--
17...	<.009	.18	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
JUL													
08...	<.009	.03	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
22...	<.009	.03	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
AUG													
06...	<.009	E.01	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
20...	<.009	E.01	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005
SEP													
10...	<.009	E.02	<.02	<.006	<.006	<2	<.006	<.007	<.004	<.02	<.008	<.04	<.005

Date	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	BENDIO- CARB, WATER, FLTRD REC (UG/L) (50299)	BEN- FLUR- ALIN WAT FLD GF, REC (UG/L) (82673)	BENOMYL WATER FLTRD REC (UG/L) (50300)	BEN- SUL- FURON METHYL WAT FLT REC (UG/L) (61693)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L) (38711)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	BRO- MOXYNIL WATER, FLTRD, GF 0.7U REC (UG/L) (49311)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAF- FEINE, WATER FLTRD GF 0.7U REC (UG/L) (50305)	CAR- BARYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49310)	CAR- BARYL WATER FLTRD GF, REC (UG/L) (82680)	CARBO- FURAN, WATER, FLTRD, GF 0.7U REC (UG/L) (49309)
OCT													
01...	E.005	<.03	<.010	<.004	<.02	M	<.03	<.02	<.002	<.010	<.03	<.041	<.006
NOV													
07...	<.007	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	<.010	<.03	<.041	<.006
DEC													
10...	E.006	<.03	<.010	<.004	<.02	E.04	E.02	M	<.002	<.010	<.03	E.003	<.006
JAN													
02...	<.007	<.03	<.010	<.004	<.02	E.01	<.03	<.02	<.002	.035	<.03	<.041	<.006
FEB													
05...	E.006	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	.039	<.03	<.041	<.006
MAR													
04...	<.007	<.03	<.010	<.004	<.02	E.01	<.03	<.02	<.002	.017	<.03	<.041	<.006
19...	E.006	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	.083	<.03	E.005	<.006
APR													
02...	E.004	<.03	<.010	<.004	<.02	E.01	<.03	<.02	<.002	.036	<.03	<.041	<.006
23...	<.007	<.03	<.010	<.004	<.02	<.01	<.03	E.01	<.002	.017	<.03	<.041	<.006
MAY													
06...	<.007	<.03	<.010	<.004	<.02	<.01	<.03	E.01	<.002	E.026	E.01	E.047	<.006
20...	<.007	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	.010	<.03	<.041	<.006
JUN													
03...	--	<.03	--	<.004	<.02	<.01	E.02	E.01	--	.044	<.03	--	<.006
17...	<.007	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	<.010	<.03	<.041	<.006
JUL													
08...	<.007	<.03	<.010	<.004	<.02	E.01	<.03	<.02	<.002	.074	<.03	E.005	<.006
22...	E.006	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	.038	<.03	<.041	<.006
AUG													
06...	<.007	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	<.010	<.03	<.041	<.006
20...	E.004	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	<.010	<.03	<.041	<.006
SEP													
10...	E.003	<.03	<.010	<.004	<.02	<.01	<.03	<.02	<.002	.042	<.03	<.041	<.006

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA--Continued
(National Water-Quality Assessment station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR-AM BEN, METHYL ESTER WATER FLTRD (UG/L) (61188)	CHLORO- MURON, WATER FLTRD REC (UG/L) (50306)	CHLORO- THALO- NIL, FLT WAT, REC (UG/L) (49306)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CLOPYR- ALID, WATER, FLTRD REC (UG/L) (49305)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	CY- CLOATE, WATER, DISS, REC (UG/L) (04031)	DACTHAL MONO- ACID, WAT, REC (UG/L) (49304)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	DEETHYL DEISO- PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04039)	DEISO- PROPYL ATRAZIN WATER, DISS, REC (UG/L) (04038)
OCT 01...	<.020	<.02	<.010	<.04	<.005	.03	<.018	<.01	<.01	<.003	<.006	<.01	<.04
NOV 07...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	<.006	<.01	<.04
DEC 10...	<.020	<.02	<.010	<.04	<.005	.05	<.018	<.01	<.01	<.003	E.004	<.01	<.04
JAN 02...	<.020	<.02	<.010	<.04	<.005	.03	<.018	<.01	<.01	<.003	E.002	<.01	<.04
FEB 05...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.004	<.01	<.04
MAR 04...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.004	<.01	<.04
19...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.003	<.01	<.04
APR 02...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	--	<.003	E.002	<.01	<.04
23...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	<.006	<.01	<.04
MAY 06...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	<.006	<.01	<.04
20...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	<.006	<.01	<.04
JUN 03...	--	<.02	<.010	<.04	--	<.01	--	<.01	<.01	--	--	<.01	<.04
17...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	<.006	<.01	<.04
JUL 08...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.006	<.01	<.04
22...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.005	<.01	<.04
AUG 06...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	<.006	<.01	<.04
20...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.004	<.01	<.04
SEP 10...	<.020	<.02	<.010	<.04	<.005	<.01	<.018	<.01	<.01	<.003	E.003	<.01	<.04

Date	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L) (38442)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L) (49302)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L) (49301)	DIPHEN-AMID, WATER, DISS, REC (UG/L) (04033)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L) (49300)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLTRD 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FEN-URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49297)	FLUMET-SULAM WATER FLTRD REC (UG/L) (61694)
OCT 01...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	M	<.002	<.009	<.005	<.03	<.01
NOV 07...	<.005	.04	<.01	<.005	<.01	<.03	<.02	<.01	<.002	<.009	<.005	<.03	<.01
DEC 10...	<.005	.05	<.01	<.005	.01	<.03	<.02	.03	<.002	<.009	<.005	<.03	<.01
JAN 02...	<.005	.03	<.01	<.005	E.01	<.03	<.02	.02	<.002	<.009	<.005	<.03	<.01
FEB 05...	E.003	<.01	<.01	<.005	<.01	<.03	<.02	.02	<.002	<.009	<.005	<.03	<.01
MAR 04...	<.005	E.01	<.01	<.005	<.01	<.03	<.02	.02	<.002	<.009	<.005	<.03	<.01
19...	E.005	<.01	<.01	<.005	E.01	<.03	<.02	E.01	<.002	<.009	<.005	<.03	<.01
APR 02...	<.005	<.01	<.01	<.005	E.01	<.03	<.02	.03	<.002	<.009	<.005	<.03	<.01
23...	<.005	<.01	<.01	<.005	M	<.03	<.02	.02	<.002	<.009	<.005	<.03	<.01
MAY 06...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	E.02	<.002	<.009	<.005	<.03	<.01
20...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	E.01	<.002	<.009	<.005	<.03	<.01
JUN 03...	--	<.01	<.01	--	<.01	<.03	--	.02	--	--	--	<.03	<.01
17...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	<.01	<.002	<.009	<.005	<.03	<.01
JUL 08...	E.003	<.01	<.01	<.005	<.01	<.03	<.02	.02	<.002	<.009	<.005	<.03	<.01
22...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	<.01	<.002	<.009	<.005	<.03	<.01
AUG 06...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	<.01	<.002	<.009	<.005	<.03	<.01
20...	E.002	<.01	<.01	<.005	<.01	<.03	<.02	<.01	<.002	<.009	<.005	<.03	<.01
SEP 10...	<.005	<.01	<.01	<.005	<.01	<.03	<.02	<.01	<.002	<.009	<.005	<.03	<.01

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA--Continued
(National Water-Quality Assessment station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L) (38811)	FONOFO S WATER DISS REC (UG/L) (04095)	HYDROXY ATRA- ZINE WATER FLTRD REC (UG/L) (50355)	IMAZ- AQUIN WATER FLTRD REC (UG/L) (50356)	IMAZE- THAPYR WATER FLTRD REC (UG/L) (50407)	IMID- ACLOP- RID WATER FLTRD REC (UG/L) (61695)	LINDANE DIS- SOLVED (UG/L) (39341)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L) (38478)	LIN- URON WATER FLTRD GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L) (38482)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L) (38487)	METAL- AXYL WATER FLTRD REC (UG/L) (50359)
	OCT												
01...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
NOV													
07...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
DEC													
10...	<.03	<.003	<.008	<.02	E.02	<.007	<.004	<.01	<.035	<.027	E.01	<.01	M
JAN													
02...	<.03	<.003	<.008	<.02	E.04	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
FEB													
05...	<.03	<.003	<.008	<.02	E.12	<.007	E.003	<.01	<.035	<.027	<.02	<.01	<.02
MAR													
04...	<.03	<.003	<.008	<.02	E.05	<.007	<.004	<.01	<.035	<.027	E.01	<.01	<.02
19...	<.03	<.003	<.008	<.02	<.02	<.007	.004	<.01	<.035	<.027	<.20	<.01	<.02
APR													
02...	<.03	<.003	<.008	<.02	E.06	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
23...	<.03	<.003	<.008	<.02	E.02	<.007	<.004	<.01	<.035	<.027	.05	<.01	<.02
MAY													
06...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	E.02	<.01	<.02
20...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
JUN													
03...	<.03	--	<.008	<.02	<.02	<.007	--	<.01	--	--	.04	<.01	<.02
17...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	.03	<.01	<.02
JUL													
08...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
22...	<.03	<.003	<.008	<.02	--	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
AUG													
06...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
20...	<.03	<.003	<.008	<.02	<.02	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
SEP													
10...	<.03	<.003	<.008	<.02	E.04	<.007	<.004	<.01	<.035	<.027	<.02	<.01	<.02
Date	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L) (38501)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (49296)	METHYL AZIN- PHOS WAT FLT GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MET- SUL- FURON METHYL WAT FLT REC (UG/L) (61697)	MOL- INATE WATER FLTRD GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD GF, REC (UG/L) (82684)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L) (49294)	NICOSUL FURON WATER FLTRD REC (UG/L) (50364)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L) (49293)	ORY- ZALIN, WATER, FLTRD, REC (UG/L) (49292)
	OCT												
01...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
NOV													
07...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
DEC													
10...	<.008	<.004	<.050	<.006	<.013	.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
JAN													
02...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
FEB													
05...	<.008	<.004	<.050	<.006	<.013	.007	<.03	<.002	<.007	<.01	<.01	<.02	<.02
MAR													
04...	<.008	<.004	<.050	<.006	<.013	.007	<.03	<.002	<.007	<.01	<.01	<.02	<.02
19...	<.008	<.004	<.050	<.006	<.013	.009	<.03	<.002	<.007	<.01	<.01	<.02	<.02
APR													
02...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
23...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
MAY													
06...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
20...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
JUN													
03...	<.008	<.004	--	--	--	--	<.03	--	--	<.01	<.01	<.02	<.02
17...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
JUL													
08...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
22...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
AUG													
06...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
20...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02
SEP													
10...	<.008	<.004	<.050	<.006	<.013	<.006	<.03	<.002	<.007	<.01	<.01	<.02	<.02

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L) (38866)	P,P' DDE DISSOLV (UG/L) (34653)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PIC- LORAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49291)	PRO- METON, WATER, DISS, 0.7 U GF, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA- CHLOR, WATER, DISS, 0.7 U GF, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)
OCT													
01...	<.01	<.003	<.007	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02
NOV													
07...	<.01	<.003	<.007	<.002	<.010	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02
DEC													
10...	<.01	<.003	<.007	<.002	<.010	<.006	<.011	.10	E.01	<.004	<.010	<.011	<.02
JAN													
02...	<.01	<.003	<.007	<.002	<.010	<.006	<.011	.07	<.01	<.004	<.010	<.011	<.04
FEB													
05...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02
MAR													
04...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02
19...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02
APR													
02...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02
23...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02
MAY													
06...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02
20...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02
JUN													
03...	<.01	--	--	--	--	--	--	<.02	--	--	--	--	--
17...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02
JUL													
08...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	E.01	<.004	<.010	<.011	<.02
22...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	E.01	<.004	<.010	<.011	<.02
AUG													
06...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	<.01	<.004	<.010	<.011	<.02
20...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02
SEP													
10...	<.01	<.003	<.010	<.004	<.022	<.006	<.011	<.02	M	<.004	<.010	<.011	<.02

Date	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L) (49236)	PROP- ICONA- ZOLE , WATER FLTRD FLTRD (UG/L) (50471)	PRO- POXUR, WATER, FLTRD, GF 0.7U REC (UG/L) (38538)	SIDURON WATER FLTRD REC (UG/L) (38548)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SULFO- MET- RURON METHYL WTR FLT REC (UG/L) (50337)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL, WATER, DISS, 0.7 U GF, REC (UG/L) (04032)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TER- BUTHYL- AZINE, WATER, DISS, 0.7 U REC (UG/L) (04022)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)
OCT													
01...	<.010	<.02	<.008	<.02	<.011	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002
NOV													
07...	<.010	<.02	<.008	<.02	<.011	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002
DEC													
10...	<.010	<.02	<.008	<.02	<.011	E.004	E.01	<.010	<.034	<.02	U	<.005	.011
JAN													
02...	<.010	<.02	<.008	<.02	<.011	<.009	<.02	<.010	<.034	<.02	U	<.005	<.002
FEB													
05...	<.010	<.02	<.008	<.02	.006	<.009	<.02	<.010	<.034	<.02	U	<.005	.016
MAR													
04...	<.010	<.02	<.008	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	.016
19...	<.010	<.02	<.008	<.02	<.005	<.009	<.02	<.010	<.034	<.02	U	<.005	.018
APR													
02...	<.010	<.02	<.008	<.02	.006	<.009	<.02	<.010	<.034	<.02	U	<.005	.010
23...	<.010	<.02	<.008	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	.010
MAY													
06...	<.010	<.02	<.008	<.02	<.010	<.009	<.02	<.010	<.034	<.02	--	<.005	.007
20...	<.010	<.02	<.008	<.02	<.010	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002
JUN													
03...	<.010	<.02	<.008	<.02	--	<.009	--	<.010	--	--	--	--	--
17...	<.010	<.02	<.008	<.02	<.030	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002
JUL													
08...	<.010	<.02	<.008	<.02	.009	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002
22...	<.010	<.02	<.008	<.02	.008	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002
AUG													
06...	<.010	<.02	<.008	<.02	<.005	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002
20...	<.010	<.02	<.008	<.02	E.004	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002
SEP													
10...	<.010	<.02	<.008	<.02	E.004	<.009	<.02	<.010	<.034	<.02	--	<.005	<.002

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA--Continued
(National Water-Quality Assessment station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	TRI-BENURON METHYL WATER FLTRD (UG/L) (61159)	TRI-CLOPYR, WATER, FLTRD, GF 0.7U REC (UG/L) (49235)	TRI-FLUR-ALIN WAT FLT 0.7 U (UG/L) (82661)	UREA 3 (4-CHLOR OPHENYL METHYL WAT FLT REC (UG/L) (61692)	SEDI-MENT, DIS-CHARGE, SUS-PENDEDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDEDED (T/DAY) (80155)
OCT 01...	<.009	<.02	<.009	<.02	23	2.2
NOV 07...	<.009	<.02	<.009	<.02	4.0	1.1
DEC 10...	--	E.01	E.003	<.02	11	7.0
JAN 02...	--	<.02	<.009	<.02	14	10.0
FEB 05...	--	<.02	<.009	<.02	25	45.9
MAR 04...	--	<.02	<.009	<.02	26	73.0
19...	--	<.02	<.009	<.02	70	297
APR 02...	--	<.02	<.009	<.02	61	351
23...	--	<.02	<.009	<.02	29	106
MAY 06...	--	<.02	<.009	<.02	9.0	24.2
20...	--	<.02	<.009	<.02	5.0	8.7
JUN 03...	--	<.02	--	<.02	9.0	10.1
17...	--	<.02	<.009	<.02	35	18.8
JUL 08...	--	<.02	E.004	<.02	9.0	2.2
22...	--	<.02	E.004	<.02	12	2.3
AUG 06...	--	<.02	<.009	<.02	18	1.8
20...	--	<.02	E.004	<.02	14	.83
SEP 10...	--	<.02	<.009	<.02	16	1.6

Date	Time	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH FREE DRY WEIGHT G/SQ M (49954)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS) (70950)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)
AUG 22...	1155	338	20.8	510	539.9	34.100	397	85.8

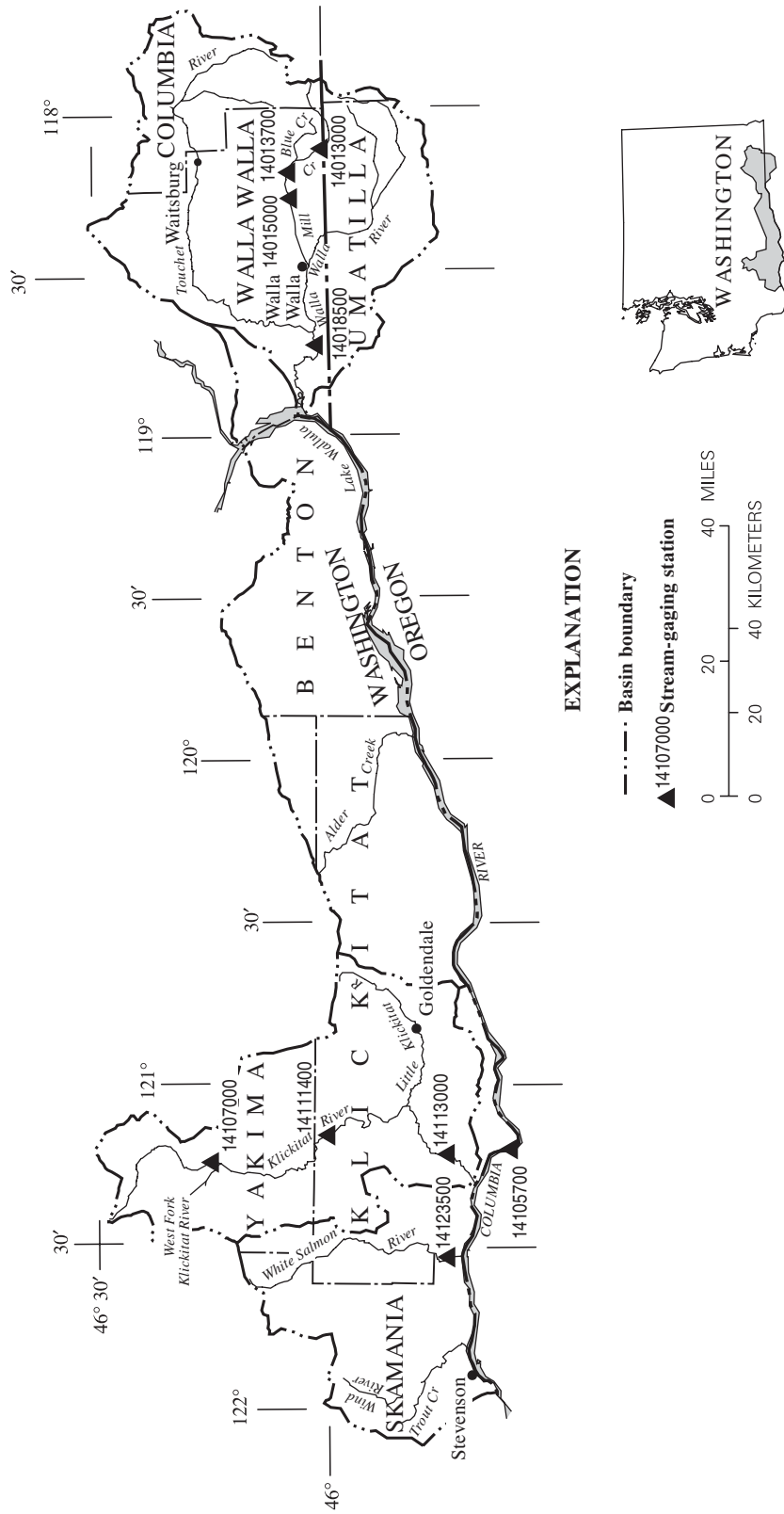


Figure 47. Location of surface-water stations in the Columbia River Basin between Wallulla Lake and Stevenson including Walla Walla, Klickitat, and White Salmon River Basins.

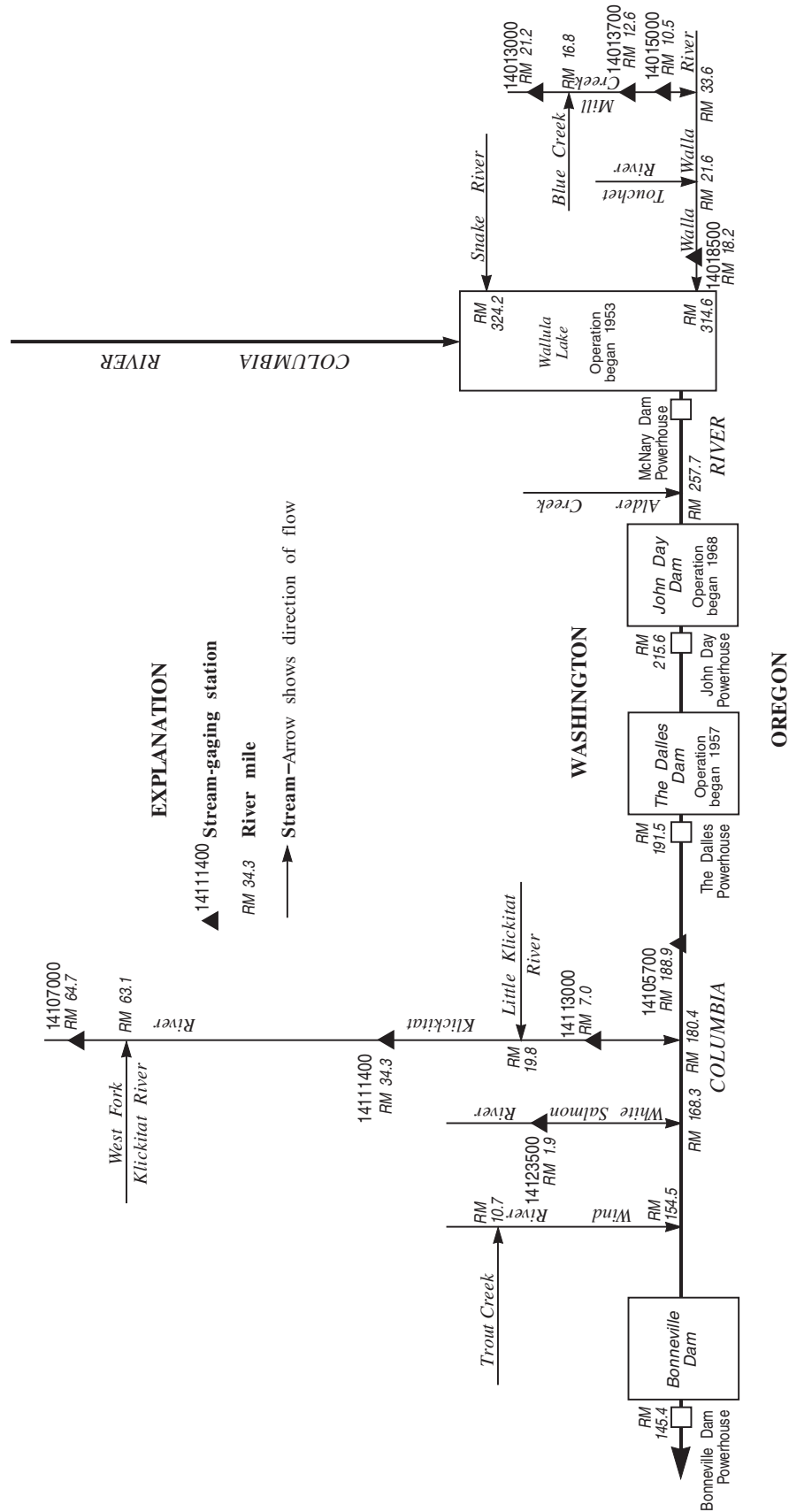


Figure 48. Schematic diagram showing surface-water stations in the Columbia River Basin between Wallula Lake and Stevenson including Walla Walla, Klickitat, and White Salmon River Basins.

WALLA WALLA RIVER BASIN

14013000 MILL CREEK NEAR WALLA WALLA, WA

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

DRAINAGE AREA.--59.6 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records fair. No regulation. City of Walla Walla diverts about 28 ft³/s 4.0 mi upstream from station for municipal use. Water temperatures March 1962 to July 1965. Sediment records March 1962 to July 1965. U.S. Geological Survey telephone telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1914-17, 1940-76, 1980-2002), 96.1 ft³/s, 69,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,350 ft³/s Feb. 9, 1996, gage height, 20.43 ft, from rating curve extended above 1,600 ft³/s on basis of slope-area measurement of peak flow; minimum daily discharge, 9.5 ft³/s Dec. 9, 10, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 31 or Apr. 1, 1931, reached a discharge of about 11,000 ft³/s, based on slope-area measurement about 900 ft upstream at old City of Walla Walla diversion dam.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 24	0100	*1,380	*17.05	Apr. 14	1030	1,350	17.02

Minimum discharge, 23 ft³/s Aug. 16-18, 24, 25, 29, 30, Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	48	77	55	83	154	253	132	113	41	28	26
2	28	46	77	60	80	129	227	146	100	39	28	26
3	28	41	87	82	78	109	204	155	87	39	28	26
4	28	39	86	94	74	101	201	131	80	36	28	26
5	28	38	79	93	73	99	235	120	79	36	28	28
6	28	37	76	97	75	111	287	97	75	34	28	29
7	28	35	77	199	94	118	278	91	71	33	27	27
8	30	34	77	462	123	117	250	84	70	36	27	27
9	27	34	78	356	119	111	239	90	72	33	27	25
10	28	34	76	235	110	109	304	81	75	30	27	25
11	50	34	74	158	104	140	343	80	69	30	26	25
12	35	34	70	134	98	410	371	83	64	30	26	26
13	30	34	220	121	93	379	430	107	59	30	26	26
14	34	64	428	109	90	297	1080	127	61	32	25	26
15	31	52	220	99	87	241	745	118	58	30	27	26
16	30	45	138	88	87	206	470	108	57	30	25	27
17	29	52	123	82	91	177	344	110	54	30	25	34
18	28	51	117	79	93	153	268	129	70	30	25	35
19	28	48	103	80	99	163	215	161	60	30	25	29
20	28	47	93	79	108	185	181	189	56	30	25	28
21	29	59	84	80	124	185	160	148	50	30	27	28
22	41	164	77	77	247	176	151	113	47	29	25	28
23	41	413	72	75	609	167	153	111	48	29	27	28
24	34	171	68	78	970	231	136	103	45	29	25	29
25	33	117	64	151	451	416	122	107	44	32	25	28
26	32	96	62	221	304	398	118	113	42	31	25	28
27	33	85	60	168	228	358	110	120	43	29	26	30
28	37	80	61	128	187	297	105	168	41	29	26	28
29	34	79	58	109	---	248	107	186	48	29	25	30
30	38	77	56	100	---	225	117	167	45	29	25	32
31	61	---	56	88	---	232	---	132	---	29	26	---
TOTAL	1016	2188	3094	4037	4979	6442	8204	3807	1883	984	813	836
MEAN	32.8	72.9	99.8	130	178	208	273	123	62.8	31.7	26.2	27.9
MAX	61	413	428	462	970	416	1080	189	113	41	28	35
MIN	27	34	56	55	73	99	105	80	41	29	25	25
AC-FT	2020	4340	6140	8010	9880	12780	16270	7550	3730	1950	1610	1660

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2002, BY WATER YEAR (WY)

	36.8	73.1	113	130	155	159	175	138	75.2	37.8	30.9	31.4
MEAN	36.8	73.1	113	130	155	159	175	138	75.2	37.8	30.9	31.4
MAX	105	263	376	362	548	410	420	495	260	69.8	48.7	47.5
(WY)	1952	1996	1965	1965	1996	1997	1917	1974	1974	1974	1975	1959
MIN	19.4	24.1	32.9	33.7	44.3	45.4	46.5	40.1	27.7	23.0	20.4	20.7
(WY)	1940	1940	1966	1944	1994	1941	1941	1992	1992	1994	1987	1983

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1914 - 2002

ANNUAL TOTAL		25438		38283								
ANNUAL MEAN		69.7		105						96.1		
HIGHEST ANNUAL MEAN										180		1997
LOWEST ANNUAL MEAN										54.1		1941
HIGHEST DAILY MEAN			428	Dec 14		1080	Apr 14		3240	9.5	Feb 9	1996
LOWEST DAILY MEAN			27	Sep 17		25	Aug 14				Dec 9	1972
ANNUAL SEVEN-DAY MINIMUM			27	Sep 17		25	Aug 14			10	Dec 8	1972
ANNUAL RUNOFF (AC-FT)		50460		75930						69610		
10 PERCENT EXCEEDS			135			229				204		
50 PERCENT EXCEEDS			51			75				58		
90 PERCENT EXCEEDS			28			27				28		

WALLA WALLA RIVER BASIN

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

LOCATION.--Lat 46°05'09", long 118°13'38", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.18, T.7 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, on right bank 4.2 mi downstream from Blue Creek, 3.0 mi upstream from diversion to Bennington Lake, 6 mi east of Walla Walla, and at mile 12.6.

DRAINAGE AREA.--Not determined.

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

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 ft³/s, Nov. 26, 1999, gage height, 9.65 ft; maximum gage height, 9.91 ft Feb. 24, 2002; minimum discharge, 41 ft³/s, Nov. 8, 9, 12, 13, 2001.

EXTREMES FOR PERIOD NOVEMBER TO APRIL.--Maximum discharge, 1,830 ft³/s Feb. 24, gage height, 9.91 ft; minimum discharge, 41 ft³/s Nov. 8, 9, 12, 13.

DISCHARGE, CUBIC FEET PER SECOND, NOVEMBER 2001 TO APRIL 2002
DAILY MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR
1	54	120	70	115	190	247
2	51	120	75	106	169	227
3	47	137	102	101	152	208
4	46	138	121	95	143	203
5	45	126	122	94	139	226
6	44	120	124	95	154	259
7	42	126	237	147	159	252
8	42	126	498	205	158	231
9	41	125	400	183	154	227
10	42	120	270	162	156	270
11	42	116	202	149	196	294
12	41	107	174	137	453	312
13	42	268	155	129	382	358
14	69	550	137	120	291	865
15	64	312	122	114	247	567
16	53	217	107	112	224	352
17	65	191	98	115	202	276
18	64	173	93	119	182	234
19	59	150	100	126	191	206
20	57	132	97	136	206	187
21	74	116	101	178	203	176
22	215	104	98	411	197	172
23	617	94	93	997	192	173
24	263	88	100	1030	273	161
25	189	83	225	457	460	151
26	151	80	308	317	407	148
27	130	78	245	253	341	145
28	120	79	192	217	288	138
29	121	75	159	---	251	137
30	120	72	140	---	233	144
31	---	71	123	---	234	---
TOTAL	3010	4414	5088	6420	7227	7546
MEAN	100	142	164	229	233	252
MAX	617	550	498	1030	460	865
MIN	41	71	70	94	139	137
AC-FT	5970	8760	10090	12730	14330	14970

WALLA WALLA RIVER BASIN

14015000 MILL CREEK AT WALLA WALLA, WA

LOCATION.--Lat 46°04'35", long 118°16'21", in NE 1/4 NW 1/4 sec.23, T.7 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 200 ft downstream from diversion dam, 1.5 mi east of Walla Walla, and at mile 10.5.

DRAINAGE AREA.--95.7 mi².

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

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

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

AVERAGE DISCHARGE.--61 years (water years 1942-2002), 79.9 ft³/s, 57,900 acre-ft/yr.

REMARKS.--No estimated daily discharges. Records fair except for those below 10 ft³/s, which are poor. Some regulation at diversion dam 200 ft upstream from station where water is diverted into Yellowhawk and Garrison Creeks for stock and irrigation. Since Nov. 19, 1941, water has been diverted 1.0 mi upstream into Mill Creek Reservoir for flood control with release of stored water after flood into Russell Creek, and is also diverted as required to replenish losses from seepage and evaporation from small recreation pool maintained in the reservoir. City of Walla Walla diverts water for municipal supply about 11 mi upstream. Other small diversions upstream from station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,190 ft³/s Feb. 9, 1996, gage height, 6.89 ft (inside high-water mark), from rating curve extended above 1,500 ft³/s; no flow many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 31 or Apr. 1, 1931, discharge not determined, was greatest since at least 1913. A discharge of about 11,000 ft³/s, based on a slope-area measurement, was determined for the 1931 peak at old City of Walla Walla diversion dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,320 ft³/s Feb. 24, gage height, 4.46 ft; no flow part or all of each day July 12-18, Aug. 16 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.60	20	34	41	74	116	167	99	91	12	4.2	0.00
2	0.60	13	35	43	68	87	150	108	81	12	4.5	0.00
3	0.60	0.67	46	67	64	68	124	116	73	11	4.4	0.00
4	0.60	0.22	47	87	59	59	136	97	66	11	4.4	0.00
5	0.60	0.22	41	87	53	65	160	91	63	11	4.4	0.00
6	0.60	0.72	31	85	51	78	197	79	56	9.7	4.4	0.00
7	0.60	0.22	35	182	77	76	194	79	51	8.7	4.4	0.00
8	0.60	0.22	36	420	141	71	171	71	48	8.4	4.1	0.00
9	0.60	0.22	37	393	125	70	162	71	51	8.0	3.6	0.00
10	0.43	0.22	32	275	104	70	210	62	57	7.7	3.6	0.00
11	0.60	0.22	27	188	92	90	251	61	48	7.4	3.6	0.00
12	0.44	0.22	20	155	83	398	270	64	43	4.8	3.6	0.00
13	0.22	0.22	98	134	68	409	326	79	32	0.00	3.9	0.00
14	0.22	21	370	115	58	265	918	97	35	0.00	3.9	0.00
15	6.0	17	213	96	59	198	679	96	29	0.22	3.9	0.00
16	0.53	9.0	127	82	59	165	431	90	28	0.00	2.2	0.00
17	0.61	15	104	74	61	138	315	89	25	0.00	0.00	0.00
18	0.60	18	128	69	64	106	241	98	45	1.6	0.00	0.00
19	0.60	13	127	76	67	103	194	122	37	2.9	0.00	0.00
20	0.60	12	108	74	76	121	141	162	29	2.9	0.00	0.00
21	0.60	12	89	76	84	121	119	122	21	2.9	0.00	0.00
22	0.60	20	75	74	171	117	113	106	17	2.9	0.00	0.00
23	4.6	360	67	69	443	108	122	97	17	2.9	0.00	0.00
24	0.14	155	62	70	1070	164	105	86	15	2.9	0.00	0.00
25	0.10	91	58	160	530	446	97	88	14	2.9	0.00	0.00
26	0.10	69	53	256	347	421	95	90	12	2.9	0.00	0.00
27	0.10	43	48	203	216	343	96	92	11	2.9	0.00	0.07
28	0.10	33	49	151	149	249	85	127	11	2.9	0.00	0.00
29	0.10	33	46	117	---	190	83	143	14	2.9	0.00	0.00
30	0.10	35	43	101	---	160	89	132	14	3.3	0.00	0.00
31	25	---	43	83	---	159	---	104	---	3.9	0.00	---
TOTAL	47.79	992.37	2329	4103	4513	5231	6441	3018	1134	152.62	63.10	0.07
MEAN	1.54	33.1	75.1	132	161	169	215	97.4	37.8	4.92	2.04	0.002
MAX	25	360	370	420	1070	446	918	162	91	12	4.5	0.07
MIN	0.10	0.22	20	41	51	59	83	61	11	0.00	0.00	0.00
AC-FT	95	1970	4620	8140	8950	10380	12780	5990	2250	303	125	0.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)
1941	6.14	45.6	112	149
1942	96.0	233	433	372
1943	1952	1996	1965	1974
1944	0.000	0.14	4.81	15.8
1945	1989	1988	1953	1944
1946				1977
1947				1947
1948				1947
1949				1968
1950				1973
1951				1973
1952				1973
1953				1985

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1941 - 2002

ANNUAL TOTAL	16114.95	28024.95	79.9
ANNUAL MEAN	44.2	76.8	182
HIGHEST ANNUAL MEAN			18.1
LOWEST ANNUAL MEAN			3070
HIGHEST DAILY MEAN	383	Feb 5	1070
LOWEST DAILY MEAN	0.10	Oct 25	0.00
ANNUAL SEVEN-DAY MINIMUM	0.11	Oct 24	0.00
ANNUAL RUNOFF (AC-FT)	31960	55590	57900
10 PERCENT EXCEEDS	127	175	218
50 PERCENT EXCEEDS	18	46	29
90 PERCENT EXCEEDS	0.60	0.00	0.06

WALLA WALLA RIVER BASIN

14018500 WALLA WALLA RIVER NEAR TOUCHET, WA

LOCATION.--Lat 46°01'40", long 118°43'43", in NW ¼ SE ¼ sec.6, T.6 N., R.33 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.8 mi upstream from Gardena Creek, 2.8 mi southwest of Touchet, 3.4 mi downstream from Touchet River, and at mile 18.2.

DRAINAGE AREA.--1,657 mi².

WATER DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--51 years (water years 1952-2002), 573 ft³/s, 415,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft³/s Dec. 22, 1964, gage height, 18.90 ft, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 20.58 ft Feb. 10, 1996, from high-water mark; no flow July 30 to Aug. 8, Aug. 12, 13, 1968, Oct. 5-7, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 24	1700	*5,050	*10.99	Apr. 15	0300	4,960	*10.99
Mar. 25	1600	3,320	9.16				

Minimum discharge, 4.9 ft³/s Aug. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	205	396	422	719	1100	1260	864	868	178	21	8.8
2	44	171	402	427	670	976	1230	914	861	131	17	16
3	35	128	413	487	628	886	1110	968	790	112	16	18
4	31	109	469	592	604	827	1040	930	693	97	15	15
5	36	95	470	624	581	808	1060	852	597	90	20	18
6	27	93	453	615	570	855	1190	800	569	90	26	22
7	25	99	445	777	604	938	1310	714	517	80	22	28
8	27	104	470	1630	946	899	1260	694	494	76	19	32
9	36	105	473	2260	1030	868	1150	647	504	71	23	31
10	48	104	481	1630	926	847	1240	614	547	72	19	30
11	58	106	472	1200	852	862	1470	589	529	52	14	28
12	106	107	457	989	786	1760	1580	572	474	43	13	26
13	108	108	456	896	738	2570	1790	635	382	30	13	24
14	65	125	1600	806	684	1890	2910	791	328	29	e11	22
15	55	168	1760	726	645	1540	4200	844	333	30	8.4	28
16	70	173	1120	657	626	1360	2590	804	307	31	6.3	27
17	60	165	930	618	616	1220	1910	777	294	34	5.6	27
18	53	180	950	577	616	1090	1540	768	323	31	5.9	42
19	55	180	833	576	621	998	1290	845	471	29	6.5	51
20	54	166	719	576	720	1040	1100	1010	364	29	7.6	40
21	52	172	645	564	737	1020	1010	1050	300	30	9.0	34
22	61	225	586	577	999	975	965	895	268	29	8.5	35
23	80	724	547	562	1780	945	978	810	233	26	8.8	40
24	128	906	515	542	4250	1130	935	777	210	23	13	38
25	88	584	491	772	3310	2820	866	729	174	19	11	35
26	72	489	469	1820	2100	2710	841	728	151	18	9.0	38
27	70	417	452	1630	1570	2210	879	762	133	23	9.5	43
28	76	367	456	1250	1280	1810	833	904	121	24	11	41
29	96	372	450	1000	---	1520	777	1050	128	26	8.9	38
30	94	385	436	889	---	1340	802	1050	186	25	9.2	41
31	109	---	426	784	---	1260	---	931	---	23	8.3	---
TOTAL	1971	7332	19242	27475	30208	41074	41116	25318	12149	1601	395.5	916.8
MEAN	63.6	244	621	886	1079	1325	1371	817	405	51.6	12.8	30.6
MAX	128	906	1760	2260	4250	2820	4200	1050	868	178	26	51
MIN	25	93	396	422	570	808	777	572	121	18	5.6	8.8
AC-FT	3910	14540	38170	54500	59920	81470	81550	50220	24100	3180	784	1820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2002, BY WATER YEAR (WY)

	MEAN	81.1	298	801	1090	1290	1199	1076	721	259	42.7	19.1	39.9
MAX	392	1056	2890	2698	3700	3105	2437	1544	1130	139	82.7	181	
(WY)	1952	1996	1965	1965	1996	1972	1974	1993	1974	1974	1976	1959	
MIN	9.20	55.3	190	306	286	339	242	60.6	21.2	5.85	3.07	3.07	
(WY)	1989	1988	1988	1979	1977	1973	1968	1968	1968	1973	1994	1994	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1952 - 2002

ANNUAL TOTAL		149425		208798.3								
ANNUAL MEAN		409		572						573		
HIGHEST ANNUAL MEAN										1212		1974
LOWEST ANNUAL MEAN										166		1977
HIGHEST DAILY MEAN			2180	Feb 6		4250	Feb 24		20300		Dec 23	1964
LOWEST DAILY MEAN			13	Aug 31		5.6	Aug 17			0.00	Jul 30	1968
ANNUAL SEVEN-DAY MINIMUM			14	Aug 28		7.0	Aug 15			0.00	Jul 30	1968
ANNUAL RUNOFF (AC-FT)		296400		414200						415000		
10 PERCENT EXCEEDS		1040		1260						1430		
50 PERCENT EXCEEDS		312		470						300		
90 PERCENT EXCEEDS		22		22						14		

e Estimated

WALLA WALLA RIVER BASIN

14018500 WALLA WALLA RIVER NEAR TOUCHET, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August to September 2002.

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

REMARKS.--Records excellent.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 28.8°C Aug. 15, 2002; minimum, 11.2°C Sept. 30, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum 28.8°C Aug. 15; minimum, 11.2°C Sept. 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR AUGUST TO SEPTEMBER 2002

DAY	JUNE			JULY			AUGUST			SEPTEMBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	---	---	---	24.2	19.7	21.9
2	---	---	---	---	---	---	---	---	---	24.7	19.4	22.0
3	---	---	---	---	---	---	---	---	---	21.4	18.4	20.4
4	---	---	---	---	---	---	---	---	---	21.6	16.6	18.9
5	---	---	---	---	---	---	---	---	---	21.6	17.4	19.0
6	---	---	---	---	---	---	---	---	---	20.3	16.5	18.2
7	---	---	---	---	---	---	---	---	---	19.7	16.5	18.0
8	---	---	---	---	---	---	---	---	---	19.6	15.9	17.8
9	---	---	---	---	---	---	---	---	---	20.6	16.2	18.4
10	---	---	---	---	---	---	---	---	---	21.1	16.9	18.9
11	---	---	---	---	---	---	---	---	---	21.4	17.3	19.4
12	---	---	---	---	---	---	---	---	---	22.3	17.8	20.0
13	---	---	---	---	---	---	---	---	---	22.6	18.3	20.4
14	---	---	---	---	---	---	---	---	---	21.6	18.4	20.0
15	---	---	---	---	---	---	28.8	21.8	25.1	21.0	18.2	19.3
16	---	---	---	---	---	---	26.0	20.5	23.1	19.0	16.8	17.8
17	---	---	---	---	---	---	26.1	18.3	22.0	19.5	16.8	17.7
18	---	---	---	---	---	---	26.6	18.4	22.3	18.9	15.8	17.4
19	---	---	---	---	---	---	26.0	18.6	21.9	19.2	16.0	17.6
20	---	---	---	---	---	---	23.7	17.5	20.3	19.3	16.4	17.8
21	---	---	---	---	---	---	23.0	17.0	19.9	18.5	15.1	16.8
22	---	---	---	---	---	---	24.9	18.1	21.1	17.8	14.0	15.9
23	---	---	---	---	---	---	25.4	18.5	21.8	17.5	13.8	15.6
24	---	---	---	---	---	---	25.4	19.7	22.6	17.4	13.9	15.7
25	---	---	---	---	---	---	25.1	20.3	22.5	17.6	14.2	15.8
26	---	---	---	---	---	---	24.9	18.4	21.6	16.0	13.9	15.1
27	---	---	---	---	---	---	26.2	19.9	22.8	17.1	14.5	15.5
28	---	---	---	---	---	---	26.8	20.7	23.6	17.1	13.8	15.4
29	---	---	---	---	---	---	27.6	21.0	23.8	15.3	12.5	14.2
30	---	---	---	---	---	---	24.3	18.2	21.3	13.9	11.2	12.4
31	---	---	---	---	---	---	25.8	18.4	21.8	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	24.7	11.2	17.8

COLUMBIA RIVER MAIN STEM

14105700 COLUMBIA RIVER AT THE DALLES, OR

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

DRAINAGE AREA.--237,000 mi², approximately.

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

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

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

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

AVERAGE DISCHARGE.--124 years (water years 1879-2002), 191,200 ft³/s, 138,500,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (since 1858), 1,240,000 ft³/s June 6, 1894, elevation, 106.5 ft; minimum discharge (since 1878), 12,100 ft³/s Apr. 16, 1968 (due to closure of John Day dam, recorded by UVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 377,000 ft³/s June 6; maximum elevation, 82.95 ft June 5; minimum daily discharge, 64,800 ft³/s Oct. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94000	97700	110000	120000	173000	143000	158000	215000	351000	315000	169000	117000
2	107000	93400	106000	116000	147000	133000	177000	200000	320000	318000	159000	103000
3	86100	87100	96500	115000	125000	104000	147000	249000	306000	307000	172000	103000
4	72400	86000	116000	e125000	161000	125000	139000	235000	331000	319000	144000	126000
5	85600	82400	124000	e140000	154000	116000	135000	221000	367000	266000	164000	113000
6	74800	116000	111000	e135000	157000	124000	120000	219000	377000	264000	160000	118000
7	69500	115000	106000	e130000	161000	131000	114000	240000	340000	239000	155000	95100
8	72100	124000	116000	e105000	165000	115000	170000	257000	371000	228000	172000	79400
9	79500	114000	96700	151000	168000	128000	e155000	215000	334000	216000	174000	89000
10	97200	100000	117000	157000	124000	91300	178000	191000	293000	211000	143000	114000
11	81100	79500	127000	135000	145000	113000	190000	209000	351000	238000	153000	115000
12	84100	96200	132000	115000	168000	132000	184000	183000	298000	257000	155000	83100
13	64800	105000	e125000	115000	144000	169000	216000	211000	314000	249000	163000	84700
14	68800	98400	119000	130000	184000	141000	212000	e205000	274000	240000	152000	112000
15	101000	90000	118000	165000	159000	152000	269000	212000	290000	249000	163000	86700
16	87000	98000	101000	190000	126000	140000	346000	191000	256000	191000	162000	74300
17	114000	111000	110000	161000	114000	118000	350000	229000	303000	252000	133000	105000
18	113000	93400	151000	158000	130000	131000	322000	206000	305000	243000	127000	114000
19	85800	109000	136000	112000	134000	129000	296000	220000	348000	220000	140000	113000
20	76800	112000	148000	135000	151000	e115000	277000	224000	368000	212000	151000	123000
21	75400	119000	154000	136000	144000	e145000	287000	260000	358000	222000	163000	116000
22	79100	99900	137000	135000	132000	132000	255000	278000	319000	241000	159000	104000
23	88200	98300	131000	174000	105000	114000	e280000	265000	295000	195000	139000	139000
24	110000	120000	119000	171000	124000	83300	267000	283000	327000	202000	150000	110000
25	84400	112000	127000	128000	155000	143000	244000	251000	284000	185000	123000	124000
26	89800	116000	125000	152000	165000	125000	225000	238000	283000	154000	138000	127000
27	89400	132000	140000	122000	149000	125000	235000	237000	313000	156000	145000	126000
28	90500	150000	127000	144000	159000	122000	179000	283000	329000	147000	147000	86200
29	91400	123000	117000	164000	--	135000	215000	309000	361000	179000	130000	75600
30	91500	133000	118000	167000	--	140000	234000	294000	297000	188000	133000	102000
31	91600	--	119000	171000	--	121000	--	303000	--	165000	145000	--
TOTAL	2695900	3211300	3780200	4374000	4123000	3935600	6576000	7333000	9663000	7068000	4683000	3178100
MEAN	86960	107000	121900	141100	147200	127000	219200	236500	322100	228000	151100	105900
MAX	114000	150000	154000	190000	184000	169000	350000	309000	377000	319000	174000	139000
MIN	64800	79500	96500	105000	105000	83300	114000	183000	256000	147000	123000	74300
AC-FT	5347000	6370000	7498000	8676000	8178000	7806000	13040000	14550000	19170000	14020000	9289000	6304000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 2002, BY WATER YEAR (WY)

	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	104500	108200	116100	119200	129100	147000	204300	338300	435900	297800	172200	119900																																																																																																																
MAX	174800	200800	258300	275000	340400	345000	386400	624400	1002000	793300	385700	198200																																																																																																																
(WY)	1960	1928	1996	1997	1996	1983	1881	1897	1894	1880	1880	1880																																																																																																																
MIN	69430	57830	52380	42430	51420	69820	98350	136100	123700	86780	91970	75760																																																																																																																
(WY)	1930	1937	1937	1937	1937	1937	1944	1977	1977	2001	1994	1994																																																																																																																

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1879 - 2002	
ANNUAL TOTAL	40919600		60621100			
ANNUAL MEAN	112100		166100		191200	
HIGHEST ANNUAL MEAN					313600	
LOWEST ANNUAL MEAN					117600	
HIGHEST DAILY MEAN	173000		377000		1230000	
LOWEST DAILY MEAN	62800		64800		36000	
ANNUAL SEVEN-DAY MINIMUM	76000		77100		38200	
ANNUAL RUNOFF (AC-FT)	81160000		120200000		138500000	
10 PERCENT EXCEEDS	140000		291000		381000	
50 PERCENT EXCEEDS	115000		141000		142000	
90 PERCENT EXCEEDS	80000		91400		80600	

e Estimated

KLICKITAT RIVER BASIN

14107000 KLICKITAT RIVER ABOVE WEST FORK NEAR GLENWOOD, WA

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

DRAINAGE AREA.--151 mi².

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

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

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

AVERAGE DISCHARGE.--44 years (water years 1945-77, 1992-2002), 327 ft³/s, 29.41 in/yr, 236,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,500 ft³/s Feb. 8, 1996, gage height, 5.70 ft, from high-water mark, from rating curve extended above 2,600 ft³/s; minimum discharge, 4.4 ft³/s Feb. 1, 1957 (result of freezeup, discharge measurement).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 4,850 ft³/s Dec. 2, 1977, from high-water mark.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 08	0915	1,470	2.75	May 29	2115	1,450	2.73
Apr. 14	0845	*2,120	*3.37	Jun. 15	0500	1,010	2.27
May 02	2115	1,100	2.36				

Minimum discharge, 52 ft³/s Oct. 2-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	134	155	124	112	166	218	800	1120	419	138	92
2	55	123	127	126	108	161	251	997	1090	377	134	92
3	55	120	122	119	106	157	244	1010	1050	346	130	89
4	54	114	122	113	104	154	271	919	1020	329	130	88
5	53	116	119	112	103	151	321	842	1080	297	130	88
6	55	112	117	141	101	154	364	745	1060	282	127	88
7	55	105	110	612	102	144	427	659	865	286	126	88
8	58	102	113	1380	102	145	432	593	741	351	122	88
9	59	100	111	973	94	135	456	551	657	290	118	88
10	64	98	109	625	91	136	553	517	645	274	117	88
11	88	96	107	467	89	158	624	515	707	282	114	85
12	74	98	105	392	95	201	704	566	760	276	110	85
13	83	106	158	321	100	170	1050	641	837	265	110	85
14	79	208	242	280	93	157	1940	671	923	256	107	81
15	77	247	183	257	96	153	1500	685	963	232	106	81
16	71	239	207	245	87	149	1130	696	900	215	103	81
17	69	190	326	220	85	143	901	758	781	209	103	81
18	68	163	288	203	85	141	741	810	729	202	103	81
19	68	167	242	201	96	145	661	836	631	197	103	81
20	68	189	216	191	92	140	635	1000	585	190	103	81
21	68	190	195	184	103	131	633	1000	583	181	99	81
22	76	193	181	194	207	128	644	942	612	174	101	81
23	115	210	170	163	263	129	610	889	636	179	99	80
24	93	172	159	160	242	129	582	880	601	172	99	78
25	91	158	134	159	210	135	588	922	548	166	99	78
26	93	140	152	149	201	142	600	994	560	163	95	78
27	91	135	147	146	190	141	588	1070	587	159	95	78
28	90	147	139	146	180	142	561	1190	544	151	95	78
29	85	153	132	e140	---	148	601	1350	665	150	92	78
30	99	129	128	e130	---	156	678	1350	513	146	92	78
31	163	---	126	e120	---	184	---	1210	---	142	92	---
TOTAL	2372	4454	4942	8793	3537	4625	19508	26608	22993	7358	3392	2499
MEAN	76.5	148	159	284	126	149	650	858	766	237	109	83.3
MAX	163	247	326	1380	263	201	1940	1350	1120	419	138	92
MIN	53	96	105	112	85	128	218	515	513	142	92	78
AC-FT	4700	8830	9800	17440	7020	9170	38690	52780	45610	14590	6730	4960
CFSM	0.51	0.98	1.06	1.88	0.84	0.99	4.31	5.68	5.08	1.57	0.72	0.55
IN.	0.58	1.10	1.22	2.17	0.87	1.14	4.81	6.56	5.66	1.81	0.84	0.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

	127	192	239	219	259	236	460	921	730	294	139	104
MEAN	127	192	239	219	259	236	460	921	730	294	139	104
MAX	291	464	983	615	1470	713	990	1714	1730	637	257	174
(WY)	1998	1996	1996	1974	1996	1972	1997	1956	1974	1974	1974	1997
MIN	58.1	61.3	71.1	69.3	78.3	98.1	170	224	170	89.8	61.7	56.8
(WY)	1994	1994	1993	1993	1994	1977	1955	1977	1992	1977	1994	2001

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1945 - 2002
ANNUAL TOTAL	53196	111081	
ANNUAL MEAN	146	304	327
HIGHEST ANNUAL MEAN			539
LOWEST ANNUAL MEAN			126
HIGHEST DAILY MEAN	521	1940	5000
LOWEST DAILY MEAN	52	53	4.5
ANNUAL SEVEN-DAY MINIMUM	53	55	5.6
ANNUAL RUNOFF (AC-FT)	105500	220300	236800
ANNUAL RUNOFF (CFSM)	0.97	2.02	2.16
ANNUAL RUNOFF (INCHES)	13.11	27.37	29.41
10 PERCENT EXCEEDS	285	804	774
50 PERCENT EXCEEDS	109	153	188
90 PERCENT EXCEEDS	59	81	90

e Estimated

KLICKITAT RIVER BASIN

14111400 KLICKITAT RIVER BELOW SUMMIT CREEK, NEAR GLENWOOD, WA

LOCATION.--Lat 45°57'45", long 121°06'04", in NW ¼ SE ¼ sec.31, T.6 N., R.14 E., Klickitat County, Bureau of Land Management lands, Hydrologic Unit 17070106, on right bank, 3 mi downstream from Summit Creek, 10 miles southeast of Glenwood, and at mile 34.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 900 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation. Some upstream diversions for irrigation.

AVERAGE DISCHARGE.--6 years (water years 1997-2002), 1,515 ft³/s, 1,097,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,030 ft³/s Apr. 20, 1997, gage height, 7.92 ft; minimum discharge, 502 ft³/s Oct. 2, 5-10, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 21,000 ft³/s Feb. 8, 1996, gage height, 14.4 ft, from high-water mark, from rating extended above 4,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 08	1545	4,930	7.27	May 30	0130	3,310	6.26
Apr. 14	1230	*5,480	*7.60				

Minimum discharge, 502 ft³/s Oct. 2, 5-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	516	710	778	793	1120	1490	1600	2100	2690	1540	796	655
2	514	653	821	828	1090	1420	1710	2390	2610	1430	787	665
3	513	633	775	815	1060	1360	1680	2480	2540	1360	785	656
4	516	617	743	793	1020	1330	1710	2330	2430	1310	781	623
5	509	609	729	790	1010	1310	1810	2210	2540	1240	763	609
6	511	601	732	950	1000	1340	1880	2060	2560	1210	743	607
7	506	586	731	2680	1030	1290	1980	1920	2230	1220	727	612
8	507	578	732	4750	1070	1230	2000	1810	1980	1320	721	608
9	507	573	722	3970	1030	1200	2050	1740	1820	1210	726	607
10	512	568	710	3120	1010	1220	2170	1670	1790	1200	739	608
11	556	563	703	2560	991	1540	2300	1640	1840	1230	741	613
12	536	570	697	2320	943	2410	2400	1690	1910	1230	737	616
13	543	607	831	2090	942	2150	2890	1800	2000	1240	739	612
14	545	1280	1250	1880	937	1970	5060	1840	2170	1230	752	609
15	538	1130	1050	1710	914	1850	4260	1860	2320	1150	749	607
16	531	1000	1120	1610	912	1770	3500	1880	2290	1100	744	601
17	524	849	1620	1520	902	1670	3010	1950	2080	1080	730	617
18	518	765	1440	1440	891	1580	2650	2060	1980	1060	709	605
19	519	799	1300	1410	1020	1560	2410	2090	1840	1030	703	612
20	517	917	1210	1380	1080	1530	2320	2320	1730	963	693	612
21	516	906	1130	1350	1170	1430	2230	2360	1700	940	685	603
22	530	969	1060	1280	1600	1390	2220	2280	1730	929	687	598
23	608	963	1010	1230	2100	1370	2140	2190	1770	924	687	599
24	571	850	973	1220	2150	1350	2030	2150	1740	932	685	602
25	551	789	919	1380	1920	1360	1990	2170	1670	913	694	602
26	550	741	909	1370	1770	1370	1990	2280	1670	900	687	599
27	545	701	895	1300	1670	1370	1960	2400	1730	880	678	594
28	541	717	871	1230	1590	1370	1880	2620	1730	876	658	592
29	536	724	841	1180	---	1390	1900	3070	2250	912	666	607
30	589	719	818	1170	---	1410	1970	3150	1780	880	649	610
31	734	---	805	1150	---	1490	---	2910	---	822	640	---
TOTAL	16709	22687	28925	51269	33942	46520	69700	67420	61120	34261	22281	18360
MEAN	539	756	933	1654	1212	1501	2323	2175	2037	1105	719	612
MAX	734	1280	1620	4750	2150	2410	5060	3150	2690	1540	796	665
MIN	506	563	697	790	891	1200	1600	1640	1670	822	640	592
AC-FT	33140	45000	57370	101700	67320	92270	138200	133700	121200	67960	44190	36420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

	1997	1998	1999	2000	2001	2002
MEAN	859	1052	1199	1560	1594	1924
MAX	1274	1521	1711	2343	2107	2800
(WY)	1998	2000	1999	1997	1999	1997
MIN	539	691	642	619	615	701
(WY)	2002	2001	2001	2001	2001	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1997 - 2002

ANNUAL TOTAL	269407	473194	
ANNUAL MEAN	738	1296	1515
HIGHEST ANNUAL MEAN			1988
LOWEST ANNUAL MEAN			731
HIGHEST DAILY MEAN	1620	Dec 17	5590
LOWEST DAILY MEAN	506	Oct 7	506
ANNUAL SEVEN-DAY MINIMUM	510	Oct 4	510
ANNUAL RUNOFF (AC-FT)	534400	938600	1097000
10 PERCENT EXCEEDS	1130	2280	2680
50 PERCENT EXCEEDS	638	1080	1240
90 PERCENT EXCEEDS	549	593	636

KLICKITAT RIVER BAISN

14113000 KLICKITAT RIVER NEAR PITT, WA

LOCATION.--Lat 45°45'24", long 121°12'32", in SW 1/4 sec.8, T.3 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, on left bank 2.8 mi south of Pitt, 4.8 mi southwest of Klickitat, 5.3 mi upstream from Silvias Creek, and at mile 7.0.

DRAINAGE AREA.--1,297 mi².

PERIOD OF RECORD.--July 1909 to January 1912, October 1928 to current year. Published as "at Klickitat" 1909-12 and as "at Pitt" 1928-35.

REVISED RECORDS.--WSP 1348: 1910(M), 1929-33(M), 1934, 1935-38(M), 1940(M), 1942-43(M), 1946(M), 1948(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.9 ft above NGVD of 1929 (river-profile survey). July 3, 1909, to Jan. 31, 1912, nonrecording gage at site 7 mi upstream at different datum. Oct. 1, 1928, to Sept. 30, 1935, nonrecording gage at site 3.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Several small diversions upstream from station for irrigation of about 7,500 acres, mostly in vicinity of Glenwood. The largest of these is Hellroaring Irrigation Canal, which at times diverts the entire flow of Hellroaring Creek (tributary to Big Muddy Creek). No regulation. Water temperatures October 1950 to September 1970. Chemical analyses October 1950 to September 1970, October 1975 to September 1986. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--76 years (water years 1909-11, 1929-2002), 1,589 ft³/s, 1,151,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,000 ft³/s Feb. 8, 1996, gage height, 17.90 ft from high-water mark in well, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement at gage height 14.34 ft; minimum discharge, 412 ft³/s Jan. 16, 1979, gage height, 3.81 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 08	1230	*6,660	*8.19	Apr. 14	1600	6,020	7.87
Mar. 12	0600	4,190	6.83				

Minimum discharge, 497 ft³/s Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	512	795	889	989	1520	2030	1970	2350	2940	1770	906	715
2	510	696	1090	1120	1440	1900	2090	2620	2790	1620	891	729
3	507	663	1030	1190	1390	1790	2070	2770	2740	1530	876	736
4	512	642	934	1140	1330	1730	2070	2650	2630	1460	870	700
5	506	629	923	1110	1290	1680	2190	2530	2680	1400	842	683
6	509	622	967	1530	1270	1830	2270	2390	2810	1350	827	680
7	509	607	1010	3600	1350	1800	2390	2210	2520	1340	808	688
8	508	594	941	6260	1730	1650	2460	2060	2240	1450	795	683
9	507	590	899	5430	1500	1580	2480	1970	2070	1370	794	686
10	510	584	860	4140	1440	1580	2610	1880	2020	1320	807	685
11	549	578	849	3470	1390	1920	2760	1800	2080	1340	818	690
12	552	578	840	3140	1300	3900	2860	1840	2160	1350	806	694
13	540	614	960	2880	1280	3570	3160	1960	2220	1360	807	694
14	548	1180	2070	2560	1260	3200	5240	2020	2390	1370	813	689
15	547	1240	1590	2280	1220	2910	4950	2030	2520	1290	830	692
16	537	1180	1550	2090	1200	2670	4050	2040	2550	1230	814	682
17	530	975	2320	1950	1180	2450	3510	2100	2370	1210	802	696
18	524	855	2050	1830	1160	2250	3130	2230	2260	1180	781	690
19	522	831	1780	1790	1280	2200	2860	2250	2120	1160	776	690
20	524	1030	1660	1750	1460	2150	2700	2450	1970	1090	769	695
21	522	1020	1520	1770	1490	1980	2610	2540	1900	1070	751	686
22	531	1080	1410	1630	2100	1890	2590	2470	1920	1050	756	678
23	607	1110	1320	1520	3380	1850	2500	2370	1970	1050	753	680
24	607	976	1250	1490	3430	1810	2380	2320	1960	1050	748	681
25	567	890	1190	2060	3010	1780	2340	2310	1880	1040	759	679
26	562	823	1130	2150	2660	1780	2310	2430	1860	1020	750	677
27	559	760	1120	1940	2400	1780	2300	2550	1910	1000	749	672
28	554	807	1090	1800	2230	1760	2220	2720	1910	985	713	669
29	549	791	1050	1670	---	1780	2170	3130	2410	1020	726	690
30	591	817	1010	1620	---	1780	2240	3330	2080	1010	716	695
31	734	---	999	1560	---	1850	---	3160	---	952	707	---
TOTAL	16846	24557	38301	69459	47690	64830	81480	73480	67880	38437	24560	20704
MEAN	543	819	1236	2241	1703	2091	2716	2370	2263	1240	792	690
MAX	734	1240	2320	6260	3430	3900	5240	3330	2940	1770	906	736
MIN	506	578	840	989	1160	1580	1970	1800	1860	952	707	669
AC-FT	33410	48710	75970	137800	94590	128600	161600	145700	134600	76240	48710	41070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2002, BY WATER YEAR (WY)

	763	983	1476	1851	2245	2277	2340	2482	1947	1163	833	745
MEAN	763	983	1476	1851	2245	2277	2340	2482	1947	1163	833	745
MAX	1299	2763	6160	7325	8225	6111	4942	5235	4161	2250	1387	1082
(WY)	1998	1910	1934	1974	1996	1910	1943	1956	1974	1974	1999	1997
MIN	501	501	521	524	610	742	866	900	784	603	473	448
(WY)	1945	1994	1931	1979	1994	1977	1977	1977	1992	1994	1994	1994

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1909 - 2002

ANNUAL TOTAL	291153	568224	
ANNUAL MEAN	798	1557	1589
HIGHEST ANNUAL MEAN			2876
LOWEST ANNUAL MEAN			751
HIGHEST DAILY MEAN	2320	Dec 17	40000
LOWEST DAILY MEAN	506	Oct 5	360
ANNUAL SEVEN-DAY MINIMUM	508	Oct 3	395
ANNUAL RUNOFF (AC-FT)	577500	1127000	1151000
10 PERCENT EXCEEDS	1190	2650	3020
50 PERCENT EXCEEDS	713	1350	1150
90 PERCENT EXCEEDS	547	611	638

WHITE SALMON RIVER BASIN

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW ¼ NW ¼ sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft downstream from bridge, 1,000 ft downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi north of Underwood, and at mile 1.9.

DRAINAGE AREA.--386 mi².

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

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

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

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

AVERAGE DISCHARGE.--82 years (water years 1916-30, 1936-2002), 1,123 ft³/s, 813,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,200 ft³/s Feb. 8, 1996, result of flashboard failure on Condit Dam, gage height, 19.16 ft, from rating curve extended above 8,030 ft³/s, on basis of theoretical weir computation of peak flow; minimum discharge, practically no flow at times when powerplant is shut down; minimum daily discharge, 158 ft³/s Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,590 ft³/s Jan. 8, gage height, 7.65 ft; minimum discharge, 159 ft³/s Nov. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	441	726	818	775	1250	1390	1300	1620	1940	1330	820	635
2	455	622	1000	886	1180	1310	1360	1770	1880	1260	816	657
3	457	599	911	892	1140	1240	1290	1770	1850	1210	785	650
4	455	554	809	846	1120	1230	1290	1680	1800	1180	790	639
5	455	524	788	820	1070	1230	1350	1630	1800	1120	787	634
6	455	513	826	1010	1100	1300	1370	1580	1790	1100	760	636
7	455	534	900	2050	1200	1210	1450	1500	1680	1090	772	632
8	479	481	803	3620	1340	1160	1450	1430	1580	1110	760	637
9	464	478	758	3350	1240	1130	1480	1410	1480	1110	763	635
10	474	488	720	2550	1210	1170	1720	1370	1460	1040	772	632
11	502	501	684	2100	1180	1680	1870	1400	1490	1070	765	629
12	466	484	719	1990	1120	2890	1980	1420	1490	1050	736	619
13	485	521	1030	1900	1140	2570	2150	1500	1520	1030	729	621
14	487	1130	2120	1730	1090	2180	3260	1520	1640	1050	735	617
15	488	1000	1620	1570	1050	1940	3110	1550	1670	989	714	625
16	483	852	1770	1500	1060	1810	2560	1570	1640	978	717	620
17	482	713	2590	1330	1040	1680	2220	1600	1570	946	709	613
18	469	629	2260	1320	1040	1570	1970	1650	1570	972	698	612
19	488	614	1800	1260	1150	1580	1830	1650	1540	917	717	617
20	481	833	1560	1310	1220	1550	1770	1690	1440	922	690	618
21	436	1010	1380	1340	1310	1470	1730	1750	1370	924	700	614
22	501	1280	1240	1320	1660	1410	1680	1740	1400	899	697	610
23	562	1410	1120	1230	1910	1380	1620	1730	1370	870	670	585
24	600	1150	1020	1270	1940	1340	1550	1720	1360	899	671	620
25	520	920	971	1920	1770	1330	1560	1680	1330	865	671	616
26	500	802	942	1960	1630	1290	1500	1700	1350	884	668	638
27	521	714	893	1720	1530	1290	1530	1760	1260	888	662	650
28	502	819	890	1550	1460	1260	1470	1850	1300	841	659	607
29	503	687	841	1420	---	1250	1490	2100	1640	885	654	597
30	560	759	819	1350	---	1250	1530	2150	1530	877	657	589
31	752	---	811	1260	---	1260	---	2030	---	851	648	---
TOTAL	15378	22347	35413	49149	36150	46350	52440	51520	46740	31157	22392	18704
MEAN	496	745	1142	1585	1291	1495	1748	1662	1558	1005	722	623
MAX	752	1410	2590	3620	1940	2890	3260	2150	1940	1330	820	657
MIN	436	478	684	775	1040	1130	1290	1370	1260	841	648	585
AC-FT	30500	44330	70240	97490	71700	91940	104000	102200	92710	61800	44410	37100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 2002, BY WATER YEAR (WY)

	633	811	1155	1333	1533	1511	1514	1519	1268	892	701	632
MEAN	633	811	1155	1333	1533	1511	1514	1519	1268	892	701	632
MAX	1210	1607	2984	3362	4110	3417	2518	2631	2506	1911	1225	1026
(WY)	1998	1956	1918	1974	1996	1972	1943	1997	1956	1916	1916	1997
MIN	429	396	452	430	508	558	651	659	587	456	424	391
(WY)	1993	1930	1945	1979	1929	1977	1977	1977	1992	1977	1994	1994

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1916 - 2002

ANNUAL TOTAL	255944	427740	
ANNUAL MEAN	701	1172	1123
HIGHEST ANNUAL MEAN			1765
LOWEST ANNUAL MEAN			554
HIGHEST DAILY MEAN	2590	Dec 17	3620
LOWEST DAILY MEAN	436	Oct 21	436
ANNUAL SEVEN-DAY MINIMUM	451	Sep 1	453
ANNUAL RUNOFF (AC-FT)	507700		848400
10 PERCENT EXCEEDS	1010		1800
50 PERCENT EXCEEDS	600		1130
90 PERCENT EXCEEDS	469		546

COLUMBIA RIVER MAIN STEM

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR

LOCATION.--Lat 45°38'00", long 121°57'33", in sec.21, T.2 N., R.7 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.9 mi downstream from Bonneville Dam left bank powerhouse, 50 ft upstream from Tanner Creek, and at mile 144.5.

DRAINAGE AREA.--239,900 mi², approximately.

PERIOD OF RECORD.--May 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to August 15, 1990, at a site 0.5 mi upstream at the same datum.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 35.11 ft Feb. 9, 1996; minimum, 6.14 ft July 15, 16, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 27.79 ft June 6; minimum, 6.20 ft Oct. 9.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	10.69	6.75	8.38	10.26	8.83	9.50	17.34	11.70	13.80	11.98	11.36	11.68
2	11.36	7.61	9.31	10.37	8.25	9.50	17.14	11.45	13.80	12.22	11.54	11.77
3	10.54	7.74	8.78	9.77	8.10	8.89	16.77	11.59	13.58	11.96	11.57	11.73
4	8.27	6.58	7.32	9.89	7.03	8.23	15.79	11.26	13.11	12.07	11.45	11.67
5	9.26	6.32	7.35	10.55	7.49	8.58	17.22	11.42	13.37	13.31	11.54	12.26
6	9.47	7.06	7.81	11.24	9.59	10.23	16.57	11.47	13.25	13.42	11.54	12.41
7	8.57	6.60	7.39	11.41	9.47	10.32	14.72	11.50	12.65	14.80	12.41	14.02
8	8.01	6.35	6.96	12.73	9.38	10.73	13.52	11.50	12.20	15.33	13.94	14.57
9	7.97	6.20	6.85	12.87	9.67	10.96	13.27	11.37	11.90	18.09	14.50	15.80
10	9.85	6.66	8.15	11.34	7.65	9.23	13.78	11.50	12.19	18.11	15.54	16.82
11	10.03	7.58	8.60	8.66	7.35	7.88	15.41	11.51	12.70	15.85	13.62	14.78
12	8.82	7.31	7.96	10.70	7.39	9.24	16.19	11.43	13.38	13.95	12.75	13.35
13	8.04	6.49	7.28	10.27	8.61	9.52	17.31	11.44	13.28	15.24	13.42	14.02
14	8.87	6.53	7.58	12.92	8.88	10.79	17.19	12.08	14.40	15.03	12.10	13.37
15	10.75	7.91	9.19	12.01	9.56	10.71	16.91	12.02	14.46	17.53	11.45	13.30
16	10.51	7.47	9.19	11.39	9.64	10.32	18.00	11.56	13.88	18.31	15.90	17.15
17	13.68	9.08	10.59	13.02	9.51	10.91	18.55	12.15	14.82	17.55	13.78	15.87
18	13.16	9.94	11.05	12.94	9.51	10.67	19.27	12.33	16.72	16.10	12.36	15.02
19	11.25	7.86	9.32	11.23	8.19	9.51	18.78	12.96	16.22	14.52	11.82	13.14
20	8.93	6.96	7.96	11.70	9.80	11.01	18.30	11.68	14.43	15.40	11.66	12.93
21	8.41	6.51	7.31	11.56	10.89	11.26	18.82	13.21	16.49	15.47	12.02	14.07
22	8.86	6.54	7.41	11.71	11.12	11.33	18.63	11.47	13.94	15.59	11.87	13.99
23	9.05	7.38	8.05	11.57	11.05	11.24	16.55	11.47	13.41	16.81	14.04	15.67
24	10.12	7.42	9.23	13.19	11.09	11.88	13.82	11.53	11.82	17.43	14.19	16.21
25	9.70	7.29	8.09	12.81	11.02	11.66	11.84	11.55	11.70	16.22	11.52	13.48
26	9.88	6.67	7.83	13.01	11.01	11.70	13.52	11.28	11.75	17.37	13.37	16.02
27	9.63	7.62	8.63	16.31	11.01	12.77	12.02	11.37	11.70	16.33	13.82	14.64
28	9.58	7.60	8.53	15.94	11.07	13.16	13.05	11.38	11.84	16.68	13.55	15.26
29	10.01	9.01	9.46	17.19	11.45	13.84	12.18	11.54	11.74	18.26	13.73	16.42
30	9.97	8.02	9.03	17.50	11.46	13.92	12.07	11.48	11.73	18.09	14.06	16.67
31	9.47	7.36	8.39	---	---	---	12.01	11.31	11.67	18.13	13.65	16.27
MONTH	13.68	6.20	8.35	17.50	7.03	10.65	19.27	11.26	13.29	18.31	11.36	14.33

COLUMBIA RIVER MAIN STEM

14144700 COLUMBIA RIVER AT VANCOUVER, WA

LOCATION.--Lat 45°37'15", long 122°40'20", in NE 1/4 NW 1/4 sec.34, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, near right bank in control house of Interstate Highway 5 bridge at south edge of Vancouver, 5.0 mi upstream from Willamette River, and at mile 106.5.

DRAINAGE AREA.--241,000 mi², approximately.

PERIOD OF RECORD.--October 1963 to June 1970 (discharge), February 1998 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1.82 ft above NGVD of 1929. Prior to February 1998, datum of gage was NGVD of 1929.

REMARKS.--Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant operations at Bonneville Dam and tides. Gage maintained by National Weather Service.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 27.60 ft Dec. 25, 1964, present datum, (backwater from Willamette River).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a stage of 34.4 ft, present datum, from information provided by U.S. Army Corps of Engineers. Flood of June 13, 14, 1948, reached a stage of 31.0 ft, present datum, from Weather Bureau records.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 12.92 ft Apr. 18; minimum, -0.68 ft Oct. 26.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	3.30	-0.02	1.62	4.60	1.28	2.74	8.32	6.42	7.37	---	---	---
2	3.68	0.42	1.99	4.72	1.38	2.81	8.22	7.12	7.84	6.72	---	---
3	3.72	0.50	2.04	4.44	1.30	2.57	8.32	6.92	7.65	5.62	3.72	4.63
4	3.24	0.16	1.66	4.04	0.86	2.18	7.22	6.12	6.75	5.02	3.12	4.14
5	3.78	0.00	1.68	3.88	0.80	2.10	6.92	5.82	6.49	5.12	2.92	4.04
6	3.64	0.48	1.84	4.04	0.72	2.23	6.82	5.72	6.40	5.52	3.12	4.27
7	3.32	0.20	1.50	3.32	0.98	1.97	6.72	5.42	6.04	7.42	4.22	5.90
8	3.28	-0.10	1.32	3.24	0.56	1.74	6.02	4.92	5.50	8.42	6.82	7.48
9	2.88	-0.26	1.06	3.22	0.92	2.05	5.92	4.52	5.30	8.12	7.12	7.60
10	3.44	-0.64	1.03	3.68	0.72	2.11	6.02	4.02	4.91	8.52	7.52	7.97
11	3.48	0.22	1.60	3.68	0.32	1.97	6.22	4.02	5.05	7.72	6.22	7.24
12	2.98	-0.46	1.28	4.36	0.64	2.41	6.12	4.32	5.15	7.02	5.42	6.16
13	3.28	-0.26	1.42	4.82	1.40	2.94	7.02	4.42	5.65	6.62	5.02	5.64
14	3.28	0.00	1.68	6.42	1.62	4.05	8.22	6.32	7.54	6.02	4.62	5.37
15	3.96	0.36	2.08	6.52	3.42	4.69	8.02	6.82	7.55	5.32	3.92	4.76
16	4.40	0.90	2.48	6.02	2.92	4.20	8.62	7.02	7.77	6.52	4.32	5.48
17	4.60	1.00	2.56	5.42	2.52	3.67	9.22	8.12	8.67	6.22	5.02	5.58
18	4.76	1.50	2.92	4.92	2.42	3.44	9.52	8.02	8.67	5.42	4.22	4.77
19	4.42	1.04	2.51	4.92	1.62	2.97	9.52	8.02	8.81	5.02	3.72	4.30
20	3.84	0.64	1.99	5.02	2.02	3.45	8.82	6.62	7.61	4.92	2.92	3.98
21	3.52	0.14	1.60	4.52	2.42	3.61	7.82	6.82	7.18	5.62	3.82	4.84
22	3.80	0.00	1.62	5.12	2.32	3.90	7.82	5.52	6.69	5.92	4.42	5.27
23	3.40	0.76	1.94	4.72	3.42	4.06	6.12	4.72	5.51	6.52	5.32	5.93
24	2.28	-0.40	1.12	5.02	3.52	4.17	5.32	3.92	4.68	7.22	5.82	6.51
25	2.48	-0.08	1.21	4.82	3.32	4.06	4.72	3.12	3.86	7.22	6.12	6.74
26	2.44	-0.68	0.97	4.42	2.72	3.54	4.82	2.92	3.68	8.72	6.82	7.84
27	3.04	-0.08	1.48	4.62	2.72	3.56	5.42	3.02	3.85	8.42	7.52	8.01
28	2.92	-0.16	1.33	6.72	3.32	4.87	6.02	3.02	4.21	8.62	7.42	7.91
29	3.44	0.28	1.71	7.22	4.92	6.33	6.12	3.32	4.37	8.52	7.12	7.64
30	4.12	0.68	2.15	7.22	5.82	6.61	6.22	3.22	4.36	8.22	6.82	7.47
31	4.44	0.98	2.59	---	---	---	6.32	3.22	4.42	7.72	6.12	6.95
MONTH	4.76	-0.68	1.74	7.22	0.32	3.37	9.52	2.92	6.11	---	---	---

COLUMBIA RIVER MAIN STEM

14144700 COLUMBIA RIVER AT VANCOUVER, WA--Continued

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	7.22	5.92	6.54	5.92	4.02	4.89	5.42	2.62	3.92	6.82	5.42	6.07
2	6.52	5.02	5.78	5.42	2.92	4.07	5.72	3.72	4.54	6.42	4.92	5.66
3	6.12	4.22	5.10	5.32	2.52	3.65	5.02	2.82	3.93	6.12	4.92	5.53
4	5.12	3.22	4.20	5.12	2.12	3.31	4.12	2.12	3.16	6.02	4.92	5.58
5	6.02	4.32	4.98	5.22	2.22	3.31	3.92	2.12	3.17	6.02	5.12	5.61
6	5.82	4.02	4.81	5.02	2.32	3.32	3.72	1.82	3.00	5.72	4.32	4.96
7	6.22	4.32	5.11	4.62	2.72	3.42	3.82	1.92	3.04	5.82	4.32	5.27
8	6.92	4.82	6.04	4.32	2.22	3.46	4.22	1.82	3.21	6.62	5.12	6.03
9	7.12	5.92	6.51	4.32	2.12	3.17	4.92	3.12	4.13	6.62	4.82	5.77
10	6.42	4.62	5.76	5.12	2.12	3.71	5.82	3.42	4.86	5.82	4.02	4.83
11	5.62	3.92	4.78	6.02	2.72	4.27	6.72	4.72	5.83	5.32	3.82	4.63
12	6.02	4.42	5.14	6.92	3.92	5.55	6.82	5.72	6.31	6.02	4.22	4.96
13	5.62	3.72	4.79	7.82	5.82	6.95	7.62	5.92	6.81	5.52	3.92	4.66
14	5.72	3.62	4.64	7.62	6.22	7.07	9.62	7.32	8.82	6.02	4.42	5.18
15	5.22	3.32	4.51	6.72	5.52	6.15	10.32	9.02	9.51	6.12	4.52	5.24
16	4.52	2.22	3.56	6.82	5.52	6.10	12.42	10.32	11.45	6.12	4.42	5.21
17	4.72	2.62	3.46	5.92	4.22	5.04	12.92	12.42	12.67	5.72	4.32	4.95
18	4.52	2.22	3.21	4.92	3.02	4.02	12.92	12.02	12.46	6.32	4.72	5.47
19	5.32	2.42	3.71	5.32	3.82	4.40	12.02	10.82	11.49	5.62	4.42	5.05
20	4.62	3.02	3.63	5.22	3.82	4.35	10.82	8.92	9.92	5.72	4.82	5.33
21	5.02	3.22	3.90	4.42	3.22	3.78	9.42	8.62	9.15	6.32	5.32	5.94
22	5.12	3.32	4.08	4.42	2.82	3.64	8.82	7.42	8.24	7.42	6.02	7.10
23	5.52	3.52	4.32	4.32	2.42	3.38	7.92	7.32	7.63	8.42	7.22	7.79
24	5.62	3.52	4.48	4.42	2.32	3.32	7.92	7.22	7.55	8.32	7.32	7.73
25	5.62	3.92	4.84	4.72	2.32	3.45	8.12	6.72	7.36	---	7.32	---
26	6.22	3.92	4.96	5.22	2.52	3.71	7.82	6.62	7.11	8.22	6.62	7.32
27	6.22	3.92	5.17	5.52	2.72	4.04	7.62	6.22	6.87	7.72	6.02	6.84
28	6.02	4.12	5.02	5.62	3.32	4.37	7.82	5.62	6.61	8.42	6.72	7.71
29	---	---	---	5.42	3.12	4.20	6.82	5.02	5.77	9.52	8.02	8.91
30	---	---	---	5.52	2.92	4.05	7.12	5.22	6.09	9.42	8.82	9.14
31	---	---	---	5.62	2.92	3.94	---	---	---	9.42	8.92	9.14
MONTH	7.22	2.22	4.75	7.82	2.12	4.26	12.92	1.82	6.82	---	3.82	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	10.22	9.12	9.44	9.22	8.32	8.68	4.24	2.05	2.92	3.90	1.05	1.98
2	10.42	9.22	9.82	9.02	8.42	8.63	4.30	1.90	2.81	3.52	0.60	1.68
3	9.42	8.32	8.78	8.92	7.52	8.24	4.27	2.24	2.93	3.50	0.05	1.72
4	9.22	8.62	8.97	8.22	7.62	7.86	4.42	1.79	2.84	4.06	0.38	2.26
5	10.42	9.12	9.67	8.32	6.72	7.49	4.28	1.51	2.84	4.87	1.28	2.87
6	11.32	10.42	11.08	7.52	5.62	6.34	5.36	2.73	3.81	4.93	1.31	2.97
7	11.42	10.52	11.03	7.22	5.42	6.11	5.35	---	---	4.99	1.30	2.97
8	10.72	10.42	10.59	7.12	5.22	6.07	5.39	2.31	3.62	4.51	0.95	2.61
9	10.62	9.42	10.01	6.62	---	---	5.92	3.06	4.35	4.32	0.73	2.40
10	9.82	8.52	9.15	---	---	---	5.81	2.59	4.05	5.02	0.94	2.59
11	9.62	8.42	8.89	6.99	4.95	5.78	5.40	2.65	3.87	4.93	1.22	2.85
12	9.92	8.22	9.10	7.28	5.66	6.37	5.25	2.17	3.60	4.08	0.66	2.31
13	9.12	8.12	8.64	7.79	5.97	6.82	5.69	2.34	3.67	3.67	0.31	1.64
14	9.32	7.82	8.60	7.07	5.42	6.29	5.78	2.53	3.81	4.03	0.33	1.85
15	8.42	7.52	7.97	6.98	5.58	6.15	5.67	2.43	3.69	4.22	0.86	2.03
16	8.22	7.02	7.75	6.98	4.63	5.78	5.66	2.70	3.71	3.42	0.01	1.62
17	8.22	6.82	7.31	6.27	4.29	5.00	5.33	2.10	3.33	3.55	0.19	1.95
18	8.62	7.52	7.99	6.73	5.25	5.81	4.66	1.54	2.79	4.17	0.80	2.41
19	9.32	8.12	8.79	7.03	4.59	5.55	4.83	1.86	3.11	4.03	0.88	2.43
20	10.32	9.32	10.11	6.61	4.34	5.24	5.03	2.13	3.38	4.07	1.03	2.58
21	10.82	10.22	10.45	6.70	4.50	5.65	5.23	2.46	3.59	4.16	1.16	2.62
22	10.82	9.32	10.07	6.70	4.97	5.77	5.22	2.22	3.52	3.93	0.78	2.37
23	9.82	8.22	8.92	7.03	4.50	5.63	5.00	2.23	3.46	4.77	1.06	2.74
24	9.62	8.32	8.92	6.53	4.21	5.23	4.90	2.25	3.49	4.55	1.64	3.03
25	9.62	8.22	8.83	6.47	4.17	5.16	4.61	1.70	3.17	4.34	1.07	2.42
26	8.82	7.62	8.18	5.89	3.38	4.56	3.87	1.31	2.50	4.65	1.28	2.54
27	8.62	7.72	8.18	5.14	2.89	3.94	4.08	1.11	2.41	4.42	1.48	2.64
28	9.22	8.32	8.74	4.41	2.19	3.44	4.39	1.37	2.59	3.73	0.83	2.10
29	10.42	9.22	9.98	4.10	1.75	3.07	3.99	1.49	2.63	3.38	0.53	1.65
30	10.42	9.02	9.67	4.81	2.70	3.39	3.97	0.91	1.99	3.25	0.13	1.41
31	---	---	---	4.75	1.91	3.18	3.87	1.26	2.08	---	---	---
MONTH	11.42	6.82	9.19	---	---	---	5.92	---	---	5.02	0.01	2.31

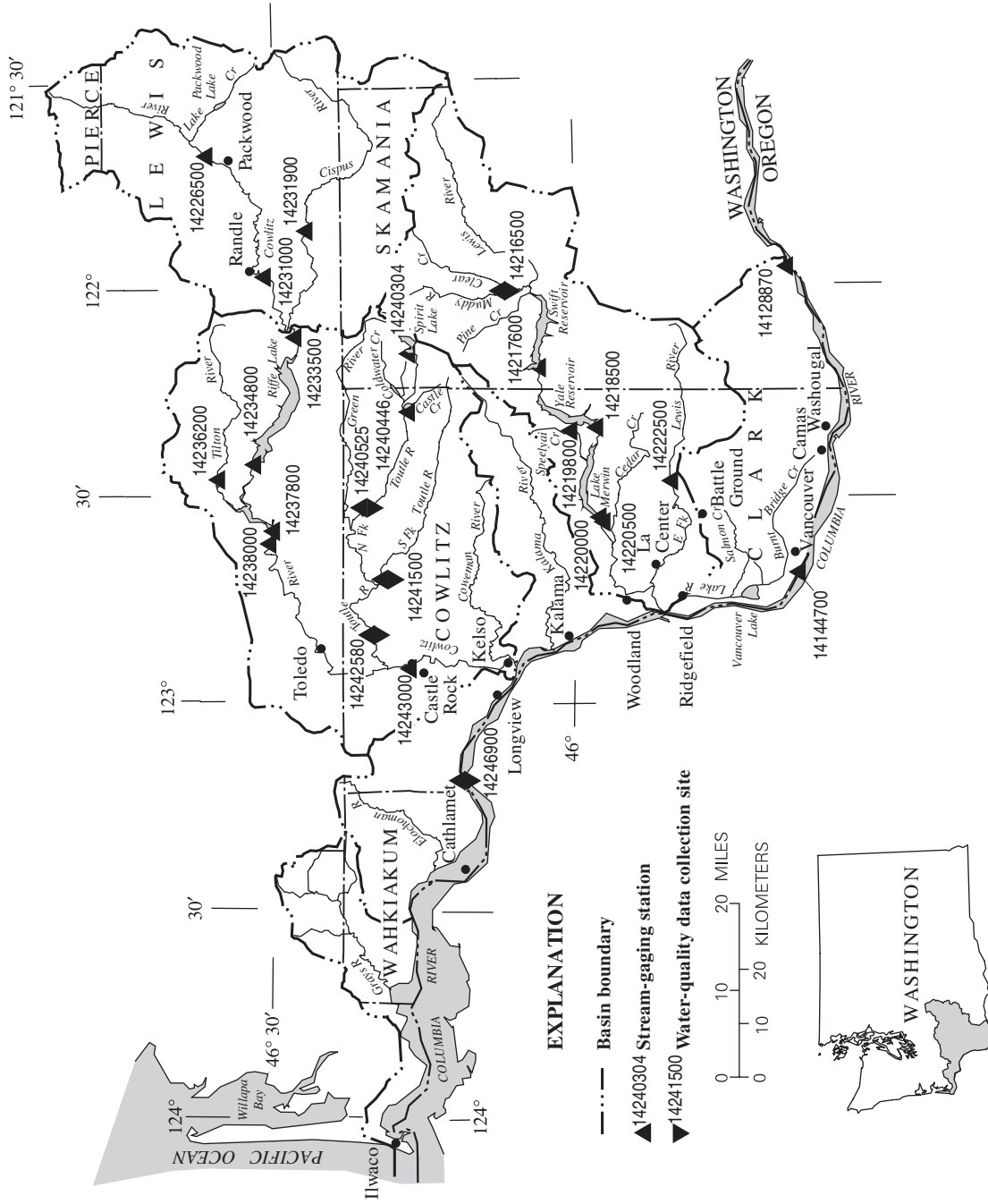


Figure 49. Location of surface-water and water-quality stations in the Lewis and Cowlitz River Basins and downstream to mouth of Columbia River.

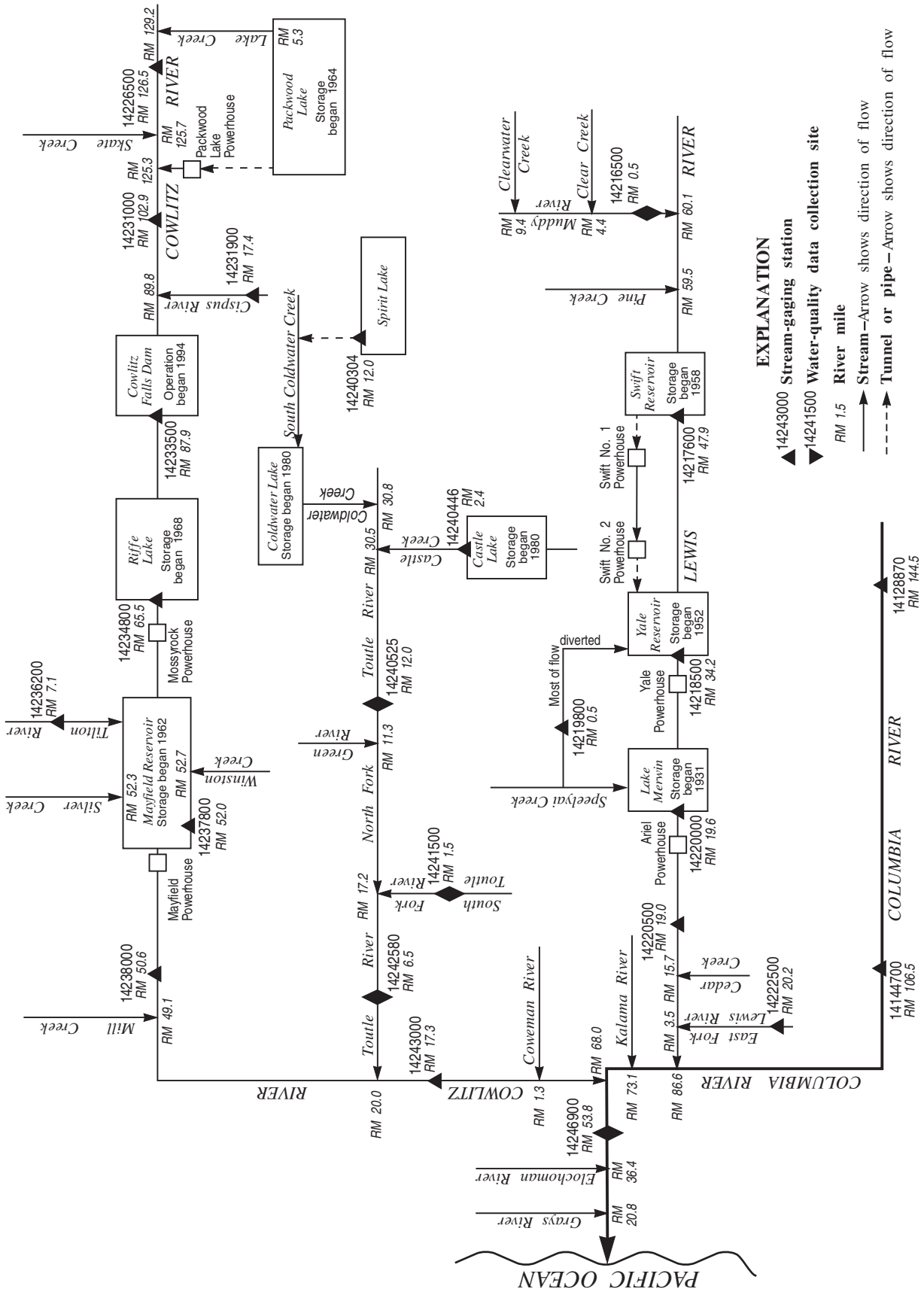


Figure 50. Schematic diagram showing surface-water and water-quality stations in the Lewis and Cowlitz River Basins and downstream to mouth of Columbia River.

LEWIS RIVER BASIN

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA

LOCATION.-- Lat 46°04'33", long 121°59'51", in NE ¼ SE ¼ sec.24, T.7 N., R.6 E., Skamania County, Hydrologic Unit 17080002, Gifford Pinchot National Forest, on left bank 3.9 mi downstream from Clear Creek, approximately 14 mi northeast of Cougar, and 0.5 mi upstream from mouth.

DRAINAGE AREA.--135 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1927 to September 1934, October 1954 to December 1973 (destroyed by flood of January 1974), October 1983 to current year. Monthly discharge only for October, December 1933 and January 1934 published in WSP 1318. Published as "near Cougar" 1927-34. Records for August to October 1909, published in WSP 272 and 492, have been found to be unreliable and should not be used.

REVISED RECORDS.--WDR WA-99-1: 1991 (m), 1996-97 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,032.90 ft above NGVD of 1929. Aug. 1927 to Sept. 1934, at same site at different datum; Oct. 1954 to Dec. 1973 at site 3.7 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1928-34, 1955-73, 1984-2002), 875 ft³/s, 88.02 in/yr, 633,900 acre-ft/yr, includes monthly data published in WSP 1318.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft³/s, Feb. 8, 1996, gage height, 33.26 ft from high-water marks, from rating curve extended above 8,000 ft³/s; minimum, 94 ft³/s Dec. 5-7, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood occurred about 0900 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	1500	4,020	20.62	Dec. 17	0030	6,450	22.99
Nov. 22	2300	4,920	21.56	Jan. 7	2245	*10,300	*25.81
Dec. 13	2300	4,010	20.60	Apr. 14	0200	6,400	23.11

Minimum discharge, 102 ft³/s Oct. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	648	2010	886	828	1310	1150	1410	1550	547	227	161
2	111	636	2140	1040	792	1230	1210	1590	1450	502	222	160
3	109	557	1920	928	800	1160	1230	1600	1380	474	219	159
4	107	513	1730	892	760	1130	1340	1530	1280	452	217	156
5	105	510	1550	948	745	1120	1460	1460	1230	428	216	155
6	104	462	1520	1800	818	1160	1510	1330	1200	411	213	154
7	106	432	1380	6890	1010	1080	1550	1230	1080	411	210	153
8	113	407	1240	7650	989	1020	1540	1140	945	423	207	153
9	115	388	1160	4110	937	995	1790	1030	836	398	205	151
10	153	371	1090	2590	936	1110	2650	958	804	386	204	149
11	181	354	1030	2100	934	2300	3280	937	830	384	201	148
12	169	379	973	2060	899	2370	3450	983	895	376	198	146
13	233	721	2180	1770	871	2120	3780	1150	996	366	195	145
14	204	3410	2930	1590	842	1880	5390	1230	1060	350	192	143
15	171	3090	2440	1450	830	1640	3600	1290	1040	334	190	141
16	151	2670	3870	1340	829	1500	2550	1330	953	320	188	142
17	144	2270	4990	1240	817	1350	1950	1370	836	309	186	147
18	135	1920	3580	1180	847	1220	1610	1430	834	302	183	142
19	130	1980	2700	1140	1160	1200	1410	1420	751	294	181	140
20	128	2320	2230	1120	1100	1150	1280	1460	695	287	180	139
21	134	2790	1880	1070	1880	1080	1200	1490	682	279	178	137
22	240	4260	1640	966	2220	1030	1150	1480	696	274	178	136
23	429	4260	1440	904	2420	1010	1100	1420	683	268	176	135
24	313	3260	1300	974	2160	1020	1050	1400	634	263	175	133
25	283	2580	1180	1310	1920	1030	1060	1420	600	259	175	132
26	258	2070	1090	1110	1700	1040	1080	1450	605	255	173	131
27	258	1740	1020	1010	1550	1020	1080	1550	604	248	171	130
28	256	1640	982	953	1430	1020	1060	1810	612	244	169	129
29	246	1780	903	902	---	1040	1100	2390	904	240	165	132
30	570	1610	848	881	---	1050	1200	2130	632	237	163	148
31	832	---	829	871	---	1080	---	1780	---	231	162	---
TOTAL	6601	50028	55775	53675	33024	39465	54810	44198	27297	10552	5919	4327
MEAN	212.9	1668	1799	1731	1179	1273	1827	1426	909.9	340.4	190.9	144.2
MAX	832	4260	4990	7650	2420	2370	5390	2390	1550	547	227	161
MIN	104	354	829	871	745	995	1050	937	600	231	162	129
AC-FT	13090	99230	110600	106500	65500	78280	108700	87670	54140	20930	11740	8580
CFSM	1.58	12.4	13.3	12.8	8.74	9.43	13.5	10.6	6.74	2.52	1.41	1.07
IN.	1.82	13.79	15.37	14.79	9.10	10.87	15.10	12.18	7.52	2.91	1.63	1.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2002, BY WATER YEAR (WY)

MEAN	343.2	1102	1241	1214	1221	1186	1296	1279	842.1	371.3	204.0	184.1
MAX	1567	2609	2828	2308	3222	2841	2318	2467	2341	1163	438	385
(WY)	1998	1984	1974	1997	1996	1972	1997	1956	1933	1971	1933	1968
MIN	107	102	313	365	254	386	620	425	194	143	116	122
(WY)	1988	1930	1931	1985	1929	1955	1973	1934	1992	1992	1992	1934

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR

ANNUAL TOTAL	255534	385671	871.8
ANNUAL MEAN	700.1	1057	1297
HIGHEST ANNUAL MEAN			465
LOWEST ANNUAL MEAN			2001
HIGHEST DAILY MEAN	4990	Dec 17	7650
LOWEST DAILY MEAN	104	Aug 20	104
ANNUAL SEVEN-DAY MINIMUM	108	Oct 1	108
ANNUAL RUNOFF (AC-FT)	506900	765000	631600
ANNUAL RUNOFF (CFSM)	5.19	7.83	6.46
ANNUAL RUNOFF (INCHES)	70.41	106.27	87.75
10 PERCENT EXCEEDS	1510	2130	1840
50 PERCENT EXCEEDS	480	948	633
90 PERCENT EXCEEDS	124	151	156

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1983 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: October 1983 to March 1995, October 1998 to current year. Water years 1995 and 1996, daily sediment discharge values for period October to March, monthly sediment discharge values only for the period April to September. Water years 1997 and 1998, annual sediment discharge estimates only (on file at the Cascades Volcano Observatory in Vancouver, WA). Records prior to October 1985 are published in U.S. Geological Survey Open-File Report 85-632; records for 1984-87 are published in U.S. Geological Survey Open-File Report 91-219.

INSTRUMENTATION.--Water-quality monitor May 1990 to September 1991. Automatic pumping sediment sampler August 1983 to September 1996, October 1998 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily, 37,800 mg/L Oct. 26, 1986; minimum, 1 mg/L on several days in water years 2001, 2002.
SEDIMENT DISCHARGE: Maximum daily, 1,400,000 tons (estimated) Feb. 8, 1996; minimum, 0.45 tons Oct. 9, 2001.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily 4,010 mg/L (estimated) Jan. 8; minimum daily 1 mg/L Oct. 9 and Sept. 26.
SEDIMENT DISCHARGE: Maximum daily 88,300 tons (estimated) Jan. 8; minimum daily 0.45 tons Oct. 9.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN	MEAN	SEDIMENT DISCHARGE (TONS/DAY)	MEAN	MEAN	SEDIMENT DISCHARGE (TONS/DAY)	MEAN	MEAN	SEDIMENT DISCHARGE (TONS/DAY)
	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)		DISCHARGE (CFS)	CONCEN- TRATION (MG/L)		DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	
	OCTOBER			NOVEMBER			DECEMBER		
1	113	3.0	0.88	648	96	170	2010	134	746
2	111	4.0	1.0	636	181	316	2140	118	683
3	109	2.0	0.71	557	101	152	1920	79	413
4	107	2.0	0.70	513	90	125	1730	51	238
5	105	3.0	0.95	510	96	132	1550	38	159
6	104	3.0	0.75	462	77	97.0	1520	28	113
7	106	5.0	1.3	432	70	82.0	1380	23	87.0
8	113	2.0	0.62	407	62	68.0	1240	19	65.0
9	115	1.0	0.45	388	55	57.0	1160	17	53.0
10	153	22	12.0	371	47	47.0	1090	11	32.0
11	181	25	13.0	354	39	38.0	1030	10	27.0
12	169	15	8.0	379	37	38.0	973	19	50.0
13	233	48	34.0	721	157	511	2180	494	4440
14	204	31	18.0	3410	1780	16900	2930	836	6920
15	171	11	5.3	3090	855	7200	2440	276	1830
16	151	6.0	2.4	2670	619	4500	3870	1590	19900
17	144	4.0	1.5	2270	299	1850	4990	2220	31600
18	135	6.0	2.1	1920	176	918	3580	1010	9940
19	130	5.0	1.7	1980	130	701	2700	450	3340
20	128	5.0	1.7	2320	253	1630	2230	200	1220
21	134	3.0	1.1	2790	e524	e3980	1880	118	605
22	240	50	52.0	4260	e2070	e25300	1640	73	324
23	429	81	94.0	4260	e1410	e16500	1440	63	246
24	313	20	18.0	3260	e608	e5460	1300	59	208
25	283	9.0	6.8	2580	247	1740	1180	55	175
26	258	8.0	5.6	2070	147	831	1090	51	149
27	258	8.0	5.3	1740	102	479	1020	47	129
28	256	7.0	5.0	1640	76	338	982	43	113
29	246	9.0	5.8	1780	83	404	903	38	94.0
30	570	545	1290	1610	69	299	848	34	78.0
31	832	e414	e1100	---	---	---	829	30	67.0
TOTAL	6601	---	2690.66	50028	---	90863.0	55775	---	84044.0

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	886	42	108	828	22	49.0	1310	90	320
2	1040	60	168	792	18	39.0	1230	75	247
3	928	47	117	800	15	33.0	1160	59	185
4	892	37	89.0	760	12	24.0	1130	43	132
5	948	38	100	745	8.0	17.0	1120	41	126
6	1800	e253	e1740	818	43	108	1160	47	147
7	6890	e3900	e83700	1010	120	328	1080	38	111
8	7650	e4010	e88300	989	78	208	1020	28	77.0
9	4110	e1550	e17700	937	37	93.0	995	24	66.0
10	2590	942	6660	936	31	78.0	1110	72	220
11	2100	495	2830	934	39	98.0	2300	e661	e5280
12	2060	501	2820	899	25	60.0	2370	e563	e3690
13	1770	293	1410	871	17	40.0	2120	e229	e1320
14	1590	214	919	842	15	34.0	1880	164	833
15	1450	154	604	830	13	30.0	1640	118	526
16	1340	129	465	829	13	28.0	1500	72	293
17	1240	103	345	817	13	28.0	1350	35	127
18	1180	82	259	847	18	42.0	1220	29	94.0
19	1140	73	223	1160	109	353	1200	25	82.0
20	1120	74	225	1100	130	387	1150	22	70.0
21	1070	59	174	1880	e452	e2470	1080	19	57.0
22	966	30	78.0	2220	e516	e3090	1030	16	46.0
23	904	23	56.0	2420	e531	e3480	1010	13	36.0
24	974	68	183	2160	e237	e1400	1020	10	28.0
25	1310	283	1040	1920	156	809	1030	8.0	21.0
26	1110	160	482	1700	137	629	1040	8.0	22.0
27	1010	108	295	1550	121	507	1020	9.0	24.0
28	953	76	195	1430	106	408	1020	10	26.0
29	902	48	117	---	---	---	1040	10	29.0
30	881	33	79.0	---	---	---	1050	11	32.0
31	871	25	59.0	---	---	---	1080	12	36.0
TOTAL	53675	---	211540.0	33024	---	14870.0	39465	---	14303.0
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	APRIL			MAY			JUNE		
1	1150	14	42.0	1410	186	712	1550	235	989
2	1210	18	60.0	1590	308	1320	1450	162	637
3	1230	23	78.0	1600	264	1140	1380	112	420
4	1340	29	104	1530	161	669	1280	75	261
5	1460	33	132	1460	104	412	1230	54	179
6	1510	37	149	1330	97	351	1200	45	147
7	1550	42	175	1230	63	211	1080	37	108
8	1540	60	250	1140	54	165	945	26	65.0
9	1790	107	538	1030	40	112	836	15	34.0
10	2650	644	4820	958	31	80.0	804	16	34.0
11	3280	1130	10000	937	22	57.0	830	22	49.0
12	3450	1040	9660	983	27	73.0	895	29	69.0
13	3780	1360	14300	1150	50	155	996	29	77.0
14	5390	2430	36100	1230	64	212	1060	38	109
15	3600	2170	21000	1290	74	259	1040	40	112
16	2550	1220	8560	1330	75	270	953	26	67.0
17	1950	571	3040	1370	114	424	836	17	39.0
18	1610	476	2080	1430	125	482	834	14	31.0
19	1410	274	1050	1420	85	327	751	12	24.0
20	1280	192	666	1460	100	395	695	9.0	17.0
21	1200	171	555	1490	138	556	682	5.0	9.1
22	1150	147	458	1480	90	358	696	6.0	12.0
23	1100	120	356	1420	68	261	683	9.0	17.0
24	1050	100	284	1400	56	211	634	7.0	11.0
25	1060	88	251	1420	69	263	600	6.0	9.9
26	1080	106	307	1450	65	254	605	7.0	12.0
27	1080	87	253	1550	108	453	604	8.0	14.0
28	1060	67	192	1810	362	1900	612	e11	e19.0
29	1100	73	218	2390	939	6050	904	e40	e105
30	1200	103	337	2130	502	2900	632	11	19.0
31	---	---	---	1780	376	1820	---	---	---
TOTAL	54810	---	116015.0	44198	---	22852.0	27297	---	3696.0

LEWIS RIVER BASIN

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT
	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)
	JULY			AUGUST			SEPTEMBER		
1	547	9.0	14.0	227	6.0	3.7	161	4.0	1.7
2	502	6.0	7.9	222	5.0	3.0	160	5.0	2.1
3	474	5.0	7.0	219	7.0	4.2	159	4.0	1.8
4	452	3.0	3.8	217	26	15.0	156	5.0	2.0
5	428	6.0	7.2	216	15	8.5	155	3.0	1.4
6	411	7.0	7.3	213	3.0	1.8	154	3.0	1.4
7	411	4.0	4.1	210	3.0	2.0	153	5.0	2.2
8	423	4.0	4.6	207	3.0	1.9	153	3.0	1.4
9	398	5.0	5.9	205	6.0	3.5	151	3.0	1.0
10	386	4.0	4.2	204	16	9.0	149	5.0	2.1
11	384	1.0	1.5	201	8.0	4.6	148	4.0	1.8
12	376	2.0	1.6	198	10	5.2	146	5.0	1.8
13	366	6.0	6.1	195	12	6.4	145	3.0	1.2
14	350	11	10.0	192	9.0	4.7	143	7.0	2.6
15	334	9.0	8.3	190	5.0	2.5	141	4.0	1.6
16	320	7.0	6.3	188	5.0	2.8	142	2.0	0.67
17	309	7.0	5.5	186	10	5.1	147	3.0	1.4
18	302	6.0	5.2	183	11	5.3	142	3.0	1.3
19	294	9.0	7.0	181	4.0	1.9	140	4.0	1.4
20	287	10	8.0	180	6.0	2.7	139	3.0	1.1
21	279	8.0	6.3	178	7.0	3.2	137	7.0	2.6
22	274	14	10.0	178	5.0	2.6	136	7.0	2.4
23	268	17	12.0	176	6.0	2.7	135	5.0	1.9
24	263	11	7.8	175	5.0	2.5	133	4.0	1.4
25	259	9.0	6.2	175	5.0	2.6	132	2.0	0.87
26	255	11	7.9	173	3.0	1.5	131	1.0	0.50
27	248	7.0	4.6	171	7.0	3.2	130	3.0	0.95
28	244	10	6.3	169	6.0	2.8	129	3.0	1.0
29	240	7.0	4.4	165	5.0	2.3	132	2.0	0.76
30	237	6.0	3.9	163	5.0	2.1	148	2.0	0.78
31	231	7.0	4.2	162	3.0	1.2	---	---	---
TOTAL	10552	---	199.1	5919	---	120.5	4327	---	45.13
YEAR	385671		561238.39						

e Estimated

14217600 SWIFT RESERVOIR AT COUGAR, WA

LOCATION.-- Lat 46°03'38", long 122°11'44", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.28, T.7 N., R.5 E., Skamania County, Hydrologic Unit 17080002, at the intake structure near left bank on Swift Dam on Lewis River, 5.0 mi east of Cougar, and at mile 47.9.

DRAINAGE AREA.--481 mi².

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder and long distance indicator in powerhouse. Datum of gage is NGVD of 1929 (levels by PacifiCorp).

REMARKS.--Hourly elevations for the year were furnished by PacifiCorp. Reservoir is formed by rock and earthfill dam; storage began Sept. 29, 1958; dam completed in December 1958. Usable capacity, 446,600 acre-ft between elevations 878 ft, lower limit for economic operation, and 1,000.5 ft, maximum operating limit. Dead storage unknown. Figures given herein represent total contents. Water is used by PacifiCorp for power generation. Capacity table furnished by PacifiCorp.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 759,100 acre-ft, Nov. 15, 1973, elevation 1,000.77 ft; minimum contents since reservoir was first filled, 325,100 acre-ft, May 1, 1967, elevation 883.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 755,500 acre-ft, Jul. 1, elevation 999.99 ft; minimum contents 516,900 acre-ft, Mar. 8, elevation 942.16 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	980.62	669,600	--
Oct. 31.....	963.55	599,000	-70,600
Nov. 30.....	980.34	668,400	+69,400
Dec. 31.....	977.05	654,500	-13,900
CAL YR 2001.....	--	--	+206,700
Jan. 31.....	965.63	607,400	-47,100
Feb. 28.....	948.97	542,200	-65,200
Mar. 31.....	958.22	577,900	+35,700
Apr. 30.....	996.24	738,500	+160,600
May 31.....	994.09	728,800	-9,700
June 30.....	999.74	754,400	+25,600
July 31.....	998.94	750,700	-3,700
Aug. 31.....	998.05	746,700	-4,000
Sept. 30.....	999.39	752,800	+6,100
WTR YR 2002.....	--	--	+83,200

LEWIS RIVER BASIN

14218500 YALE RESERVOIR NEAR YALE, WA

LOCATION.-- Lat 45°57'50", long 122°19'53", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.32, T.6 N., R.4 E., Clark County, Hydrologic Unit 17080002, at left bank on Yale Dam on Lewis River just upstream from intake, 500 ft upstream from powerhouse, 1.0 mi upstream from Canyon Creek, 3.2 mi southeast of Yale, and at mile 34.2.

DRAINAGE AREA.--596 mi².

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

GAGE.--Water-stage recorder and long distance indicator in powerhouse. Datum of gage is NGVD of 1929 (levels by PacifiCorp). Prior to Feb. 1, 1954, nonrecording indicator gage at same site and datum.

REMARKS.--Hourly elevations for the year were furnished by PacifiCorp. Reservoir is formed by rock and earthfill dam; storage began July 31, 1952; dam completed in 1952. Usable capacity, 189,500 acre-ft between elevations 430 ft, lower limit for economic operation, and 490 ft, top of spillway gates. Dead storage below elevation 417 ft, 178,000 acre-ft. Figures given herein represent total contents. Water is used by PacifiCorp for power generation. Capacity table furnished by PacifiCorp.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 402,500 acre-ft, May 13, 1961, elevation 490.15 ft; minimum contents observed since reservoir was first filled, 227,600 acre-ft, Feb. 22, 1957, elevation 435.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 401,900 acre-ft, Jul. 12, elevation 490.04 ft; minimum contents 308,300 acre-ft, Jan. 6, elevation 463.02 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	473.71	343,200	--
Oct. 31.....	476.47	352,700	+9,500
Nov. 30.....	482.03	372,300	+19,600
Dec. 31.....	468.72	326,600	-45,700
CAL YR 2001.....	--	--	+25,300
Jan. 31.....	479.79	364,300	+37,700
Feb. 28.....	486.75	389,600	+25,300
Mar. 31.....	485.83	386,200	-3,400
Apr. 30.....	485.99	386,800	+600
May 31.....	489.35	399,300	+2,500
June 30.....	488.44	395,900	-3,400
July 31.....	488.65	396,700	+800
Aug. 31.....	487.96	394,100	-2,600
Sept. 30.....	479.95	364,900	-29,200
WTR YR 2002.....	--	--	+21,700

LEWIS RIVER BASIN

14220000 LAKE MERWIN NEAR ARIEL, WA

LOCATION.-- Lat 45°57'23", long 122°33'13", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.34, T.6 N., R.2 E., Clark County, Hydrologic Unit 17080002, on left bank on Merwin Dam on Lewis River at Ariel, and at mile 19.6.

DRAINAGE AREA.--730 mi².

PERIOD OF RECORD.--March 1931 to current year.

GAGE.--Water-stage recorder and long distance indicator in powerhouse. Datum of gage is NGVD of 1929 (levels by PacifiCorp).

REMARKS.--Hourly elevations for the year were furnished by PacifiCorp. Reservoir is formed by combination gravity-concrete-arch dam; some storage began March 1931; completed May 13, 1931. Usable capacity, 245,600 acre-ft between elevations 165 ft, lower limit of regulation set by Federal Energy Regulatory Commission, and 235 ft, top of spillway gates. Additional storage of 18,200 acre-ft is provided by flashboards to elevation 239.6 ft. Unused storage below elevation 165 ft, 159,000 acre-ft. Figures given herein represent total contents. Water is used by PacifiCorp for power generation. Capacity table furnished by PacifiCorp.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents during the period 1931-52 not determined; maximum since 1953, 424,000 acre-ft Jan. 24, 1959, elevation 239.86 ft; minimum contents observed since reservoir was first filled, 164,200 acre-ft, Dec. 5, 1936, elevation 166.7 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 422,100 acre-ft, July 13, elevation 239.43 ft; minimum contents 364,300 acre-ft, Apr.28, elevation 224.48 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	232.54	395,000	--
Oct. 31.....	236.87	412,000	+17,000
Nov. 30.....	233.35	398,200	-13,800
Dec. 31.....	232.63	395,400	-2,800
CAL YR 2001.....	--	--	+13,800
Jan. 31.....	237.36	413,900	+18,500
Feb. 28.....	239.02	420,500	+6,600
Mar. 31.....	231.88	392,500	-28,000
Apr. 30.....	225.99	370,000	-22,500
May 31.....	238.00	416,400	+46,400
June 30.....	237.93	416,200	-200
July 31.....	236.85	411,900	-4,300
Aug. 31.....	234.90	404,200	-7,700
Sept. 30.....	234.57	402,900	-1,300
WTR YR 2002.....	--	--	+7,900

14220500 LEWIS RIVER AT ARIEL, WA

LOCATION.--Lat 45°57'07", long 122°33'46", in NW ¼ NE ¼ sec.4, T.5 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 0.4 mi southeast of Ariel, 0.5 mi downstream from Merwin Dam and powerplant, 3.3 mi upstream from Cedar Creek, and at mile 19.0.

DRAINAGE AREA.--731 mi².

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" water years 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi downstream; low discharges not equivalent due to local inflow.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30 (M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft above NGVD of 1929 (levels by Pacificorp). July to November 1909, nonrecording gage at site 4 mi upstream at different datum. July 27 to Oct. 29, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi downstream at datums 3.90 ft and 0.90 ft higher respectively, than present datum.

REMARKS.--No estimated daily discharges. Records good. No diversion upstream from station. Flow regulated by Swift and Yale Reservoirs, and Lake Merwin (stations 14217600, 14218500, 14220000). Chemical analyses July 1959 to June 1960, April 1979 to September 1986. Additional data from April to August 1980 are published in U.S. Geological Survey Open-File Report 81-1007. Water temperatures October 1950 to September 1963.

AVERAGE DISCHARGE.--79 years (water years 1924-2002), 4,816 ft³/s, 89.47 in/yr, 3,489,000 acre-ft/yr, adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft³/s Dec. 22, 1933, gage height, 35.0 ft, from floodmarks, from rating curve extended above 56,000 ft³/s on basis of computation of peak flow over dam; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Merwin Dam); minimum daily discharge, 1 ft³/s July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,700 ft³/s Dec. 17, gage height, 8.60 ft; minimum discharge, 1,030 ft³/s Oct. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2150	1900	11600	6100	8510	6410	4970	5050	5930	3550	1500	1160
2	2140	2900	11800	6150	8500	5960	4950	5630	5920	3140	1500	1160
3	2100	2900	11800	5920	8520	5980	4950	5610	5940	3030	1500	1160
4	2070	2940	11800	5690	8540	5980	4960	5620	5980	2760	1480	1160
5	2060	4670	11800	5440	8500	5930	4960	5620	5970	2580	1470	1170
6	2030	5330	11800	5450	8470	5910	4970	5640	5960	2810	1400	2360
7	2040	4500	11800	9830	8460	5920	4990	5650	5660	2480	1170	1460
8	2020	2460	10700	11800	8450	5940	5000	5650	4670	2490	1180	1210
9	2010	4960	10100	11700	8490	5960	4980	5640	3360	2480	1180	1210
10	2010	4970	10100	11700	8100	5950	5800	5630	3280	2360	1190	1220
11	2000	4980	10100	11700	5980	5350	6460	5630	3290	2250	1190	1210
12	1990	4990	10100	11700	5890	5710	7880	5630	3550	2260	1200	1210
13	1980	4990	9140	11600	5920	5930	9450	5320	3920	2290	1210	1210
14	2000	5500	11500	11300	5890	5910	11500	4930	4030	2290	1210	1210
15	2000	5110	11900	10100	5860	6210	11400	4920	3990	2120	1210	1210
16	2000	2700	12300	9580	5900	6460	11400	4920	3990	1970	1200	1200
17	2000	5960	13500	9020	5920	6450	10900	4940	3990	1950	1200	1210
18	2000	5970	11900	9010	5930	6420	9520	4360	4010	1950	1200	1210
19	1980	6260	11900	9010	5930	6400	8310	3580	3730	1960	1200	1210
20	1990	6130	11900	9050	5890	7380	7380	3690	3570	1930	1200	1210
21	2010	4080	11900	9150	5910	7930	7370	3850	3450	1690	1190	1210
22	2020	6320	11800	9130	5920	6470	5480	3850	3260	1700	1190	1210
23	2410	7970	11800	9090	5970	6430	4380	3870	3260	1450	1190	1210
24	2690	9000	10900	9070	5980	6450	3170	3880	3280	1430	1150	1200
25	1770	9230	10000	11100	5970	6180	3180	3890	3270	1430	1160	1200
26	2680	11400	10100	9490	5930	5700	3880	3860	3280	1430	1160	1230
27	2670	11800	9650	9070	6250	5450	4930	3890	3260	1430	1160	1310
28	2670	11800	9120	8810	6410	5440	4930	3850	3260	1430	2430	1230
29	2790	11800	9120	8470	---	5150	4910	4060	3750	1430	1710	1230
30	2910	11600	9130	8470	---	5000	4910	5830	3930	1460	1170	1220
31	2900	---	7870	8480	---	5000	---	5930	---	1500	1160	---
TOTAL	68090	185120	338930	282180	191990	187360	191870	150420	124740	65030	40260	37610
MEAN	2196	6171	10930	9103	6857	6044	6396	4852	4158	2098	1299	1254
MAX	2910	11800	13500	11800	8540	7930	11500	5930	5980	3550	2430	2360
MIN	1770	1900	7870	5440	5860	5000	3170	3580	3260	1430	1150	1160
AC-FT	135100	367200	672300	559700	380800	371600	380600	298400	247400	129000	79860	74600
MEAN†	1480	7435	9919	9251	6257	6113	8727	5653	4527	1981	1066	844
CFSM†	2.02	10.17	13.57	12.66	8.56	8.36	11.94	7.73	6.19	2.71	1.46	1.15
IN.†	2.33	11.35	15.65	14.59	8.92	9.64	13.32	8.92	6.91	3.13	1.68	1.29
AC-FT†	91000	442400	609900	568800	347500	375900	519300	347600	269400	121800	65560	50200

CAL YR 2001 TOTAL 1199850 MEAN 3287 MAX 13500 MIN 1020 AC-FT 2380000 MEAN† 3627 CFSM† 4.96 IN.† 67.37 AC-FT† 2626000
WTR YR 2002 TOTAL 1863600 MEAN 5106 MAX 13500 MIN 1150 AC-FT 3696000 MEAN† 5261 CFSM† 7.20 IN.† 97.72 AC-FT† 3809000

† Adjusted for change in contents in Lake Merwin, Swift Reservoir and Yale Reservoir.

LEWIS RIVER BASIN

14222500 EAST FORK LEWIS RIVER NEAR HEISSON, WA

LOCATION.--Lat 45°50'13", long 122°27'54", in NE 1/4 NW 1/4 sec.17, T.4 N., R.3 E., Clark County, Hydrologic Unit 17080002, on right bank 60 ft downstream from Basket Creek, 1.5 mi northeast of Heisson, 3.4 mi southwest of Yacolt, and at mile 20.2.

DRAINAGE AREA.--125 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 356.8 ft above NGVD of 1929 (from river-profile survey). Prior to Oct. 1, 1987, at datum 10.00 ft higher.

REMARKS.--Records good, except for estimated daily discharges which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--73 years (water years 1930-2002), 741 ft³/s, 80.52 in/yr, 536,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,600 ft³/s Feb. 8, 1996, from indirect measurement, gage height, 25.26 ft; minimum discharge, 29 ft³/s Nov. 3, 1935, Sept. 27, 28, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 25	1015	*6,330	*18.01	No other peak greater than base discharge.			
Minimum discharge, 42 ft ³ /s Oct. 5.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	854	3580	540	1130	758	687	550	462	320	79	57
2	49	1010	3240	638	985	666	685	549	414	271	77	56
3	49	786	2370	627	1010	598	662	532	375	240	76	55
4	47	571	2050	600	956	551	671	479	356	218	77	54
5	43	546	1820	594	929	549	801	509	356	198	87	54
6	44	434	1990	937	1080	788	901	494	338	182	78	54
7	49	370	2160	4400	1870	717	1020	445	305	174	76	55
8	66	326	1740	4360	2100	630	938	409	292	186	74	55
9	65	293	1550	2550	1760	576	1110	385	266	162	72	55
10	88	265	1390	1720	1450	746	2170	362	249	143	71	52
11	186	241	1320	1300	1250	3030	2090	349	244	135	72	51
12	111	247	1330	1360	1060	3520	1830	370	249	129	69	51
13	194	451	2910	1320	916	2280	2070	466	259	123	66	50
14	157	2880	2720	1080	794	1810	3560	480	256	119	64	49
15	134	1580	e2100	889	711	1490	2140	439	235	114	63	49
16	105	1240	e4200	780	668	1280	1670	410	219	110	63	58
17	108	977	e3700	691	620	1080	1480	421	219	106	63	107
18	90	781	e2500	669	619	980	1270	421	366	103	62	65
19	84	776	e2100	974	1350	1900	1100	415	293	100	63	57
20	79	923	1820	1260	1240	2010	959	435	235	101	64	55
21	82	1260	1460	1490	2070	1610	847	414	213	97	64	53
22	252	3210	1190	1290	2430	1310	762	551	202	93	66	50
23	725	3200	985	1140	3120	1100	691	493	190	89	63	48
24	553	1850	839	1750	2780	1160	635	440	176	88	61	48
25	344	1290	732	4860	1790	1130	601	416	165	87	60	49
26	268	995	649	3030	1320	1040	594	419	158	91	63	48
27	242	814	588	2050	1050	947	596	425	153	90	63	47
28	235	1260	592	1530	882	868	539	554	189	88	59	48
29	202	2350	515	1210	---	804	526	968	848	86	57	59
30	493	2370	471	1020	---	742	544	677	414	83	56	177
31	1170	---	474	1110	---	708	---	539	---	81	59	---
TOTAL	6364	34150	55085	47769	37940	37378	34149	14816	8696	4207	2087	1766
MEAN	205	1138	1777	1541	1355	1206	1138	478	290	136	67.3	58.9
MAX	1170	3210	4200	4860	3120	3520	3560	968	848	320	87	177
MIN	43	241	471	540	619	549	526	349	153	81	56	47
AC-FT	12620	67740	109300	94750	75250	74140	67730	29390	17250	8340	4140	3500
CFSM	1.64	9.11	14.2	12.3	10.8	9.65	9.11	3.82	2.32	1.09	0.54	0.47
IN.	1.89	10.16	16.39	14.22	11.29	11.12	10.16	4.41	2.59	1.25	0.62	0.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	(WY)	(WY)	(WY)
MEAN	348	1090	1489	1407	1287	1105	917
MAX	1318	2502	3957	3460	2636	2432	1818
(WY)	1952	1996	1934	1953	1961	1932	1937
MIN	36.7	53.7	288	303	394	352	312
(WY)	1988	1937	1977	1979	1977	1992	1941

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1930 - 2002
ANNUAL TOTAL	209482	284387	
ANNUAL MEAN	574	779	741
HIGHEST ANNUAL MEAN			1117
LOWEST ANNUAL MEAN			411
HIGHEST DAILY MEAN	4200	4860	21000
LOWEST DAILY MEAN	43	43	30
ANNUAL SEVEN-DAY MINIMUM	47	47	32
ANNUAL RUNOFF (AC-FT)	415500	564100	536700
ANNUAL RUNOFF (CFSM)	4.59	6.23	5.93
ANNUAL RUNOFF (INCHES)	62.34	84.63	80.52
10 PERCENT EXCEEDS	1320	2030	1760
50 PERCENT EXCEEDS	374	515	449
90 PERCENT EXCEEDS	62	59	64

e Estimated

COWLITZ RIVER BASIN

14226500 COWLITZ RIVER AT PACKWOOD, WA

LOCATION.--Lat 46°36'47", long 121°40'41", in SE 1/4 SE 1/4 sec.16, T.13 N., R.9 E., Lewis County, Hydrologic Unit 17080004, on right bank on upstream side of Forest Service bridge, 0.6 mi northwest of Packwood, 0.8 mi upstream from Skate Creek, and at mile 126.5.

DRAINAGE AREA.--287 mi².

PERIOD OF RECORD.--July 1911 to December 1919, September 1929 to current year. Published as "at Lewis" 1911-19.

REVISED RECORDS.--WSP 884: 1938. WSP 1348: 1916-18(M), 1934. WSP 1638: 1947(P).

GAGE.--Water-stage recorder. Datum of gage is 1,048.0 ft above NGVD of 1929 (Bureau of Public Roads benchmark). July 1, 1911, to Dec. 31, 1919, nonrecording gages at site about 1 mi upstream at different datums. Sept. 30, 1929, to Jan. 1, 1930, nonrecording gage at present site and datum.

REMARKS.--Records good. Minor regulation by Packwood Lake beginning June 1964. Small diversions for domestic use. Water temperatures November 1970 to April 1971. U.S. Geological Survey satellite telemeter at station. Water is diverted from Packwood Lake for power generation and is discharged into Cowlitz River about 1 mi downstream from station. Monthly mean diversion in cubic feet per second for the current water year, as furnished by Energy Northwest is as follows:

October.....	0.3	January.....	82.4	April.....	74.1	July.....	148
November.....	3.8	February.....	48.7	May.....	125	August.....	45.9
December.....	93.3	March.....	51.8	June.....	180	September.....	78.0

AVERAGE DISCHARGE.--73 years (water years 1930-2002), 1,591 ft³/s, 1,153,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s Dec. 21, 1933, gage height, 13.0 ft; maximum gage height, 13.73 ft Dec. 2, 1977; minimum discharge, 130 ft³/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 11	0830	13,800	8.80	May 29	0630	7,640	6.75
Jan. 8	0015	*17,400	*9.79	Jun. 29	0645	9,280	7.28
Apr. 14	0600	11,800	8.05				

Minimum discharge, 224 ft³/s Oct. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	302	2000	1230	656	741	1130	878	1670	4470	3120	946	577
2	311	2000	1380	717	671	1020	908	2110	4410	2790	904	562
3	309	1640	1250	718	658	938	930	1900	4230	2630	825	613
4	320	1340	1150	684	632	895	1050	1530	4140	2380	805	493
5	298	1360	1060	692	633	869	1350	1300	5130	2070	733	442
6	289	1100	1050	1210	653	859	1530	1110	5110	2200	693	417
7	253	935	1000	11000	749	798	1730	946	3510	2720	652	400
8	256	837	916	11500	786	759	1650	821	2580	3470	665	369
9	238	762	877	5670	758	723	1680	762	2080	2500	719	375
10	304	705	836	3690	724	722	2240	720	2530	2780	780	411
11	509	678	780	2670	705	1350	2510	766	3700	3190	777	450
12	573	763	751	2450	665	2080	3140	992	4790	3050	753	480
13	743	1270	2100	2200	663	1650	4630	1600	5860	2990	790	490
14	972	10200	3530	1860	630	1390	8980	1770	6290	2600	847	479
15	585	5580	2330	1590	589	1200	4860	1680	6240	2150	846	472
16	443	3650	3120	1390	582	1070	2960	1660	5560	1990	794	460
17	378	2550	4710	1230	580	951	2020	1850	4410	1960	738	419
18	324	1920	2970	1120	583	881	1530	2120	4470	1890	681	368
19	333	1970	2170	1060	656	869	1280	2150	3670	1750	650	391
20	360	2500	1700	1020	713	896	1160	2940	3560	1540	631	435
21	351	2500	1420	999	1650	842	1140	3070	4110	1450	597	393
22	601	2800	1240	965	3890	807	1060	2680	4700	1490	632	380
23	1150	3260	1110	941	3320	791	967	2300	4590	1500	641	395
24	760	2470	995	1040	2820	785	889	2300	3930	1480	663	410
25	714	1920	913	1230	2160	803	877	2630	4120	1460	668	393
26	782	1570	845	1120	1740	848	932	3250	4960	1360	636	372
27	850	1330	787	976	1470	853	931	3920	4930	1200	657	337
28	760	1240	768	899	1280	854	882	5350	4800	1110	702	325
29	660	1240	720	839	---	857	931	7120	7370	1180	719	340
30	1160	1150	685	794	---	849	1140	6150	4380	1210	656	297
31	2530	---	673	782	---	868	---	5110	---	1030	591	---
TOTAL	18418	63240	45066	63712	31701	30207	56765	74277	134630	64240	22391	12745
MEAN	594	2108	1454	2055	1132	974	1892	2396	4488	2072	722	425
MAX	2530	10200	4710	11500	3890	2080	8980	7120	7370	3470	946	613
MIN	238	678	673	656	580	722	877	720	2080	1030	591	297
AC-FT	36530	125400	89390	126400	62880	59920	112600	147300	267000	127400	44410	25280

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

	811	1609	1760	1515	1411	1215	1709	2817	3058	1790	824	577
MEAN	811	1609	1760	1515	1411	1215	1709	2817	3058	1790	824	577
MAX	2683	5023	6025	4104	4690	3478	2833	5209	6085	4265	1824	1527
(WY)	1956	1996	1934	1974	1996	1972	1991	1949	1974	1933	1999	1959
MIN	237	196	319	364	396	495	668	1548	842	527	445	344
(WY)	1988	1953	1953	1937	1933	1955	1975	1977	1992	1992	1987	1987

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1930 - 2002

ANNUAL TOTAL		417460		617392								
ANNUAL MEAN		1144		1691						1591		
HIGHEST ANNUAL MEAN										2411		1956
LOWEST ANNUAL MEAN										923		1941
HIGHEST DAILY MEAN			10200		Nov 14		11500		Jan 8	27700		Dec 2 1977
LOWEST DAILY MEAN			238		Oct 9		238		Oct 9	144		Nov 29 1952
ANNUAL SEVEN-DAY MINIMUM			280		Oct 4		280		Oct 4	156		Nov 26 1952
ANNUAL RUNOFF (AC-FT)			828000				1225000			1153000		
10 PERCENT EXCEEDS			2150				3920			3360		
50 PERCENT EXCEEDS			787				1020			1090		
90 PERCENT EXCEEDS			423				447			450		

COWLITZ RIVER BASIN

14231000 COWLITZ RIVER AT RANDLE, WA

LOCATION.--Lat 46°31'57", long 121°57'20", in NW ¼ NE ¼ sec.17, T.12 N., R.7 E., Lewis County, Hydrologic Unit 17080004, on left bank on upstream side of Cispus Road bridge in the town of Randle, and at mile 102.9.

DRAINAGE AREA.--541 mi².

PERIOD OF RECORD.--October 1910 to December 1911, October 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 900 ft above NGVD of 1929 from topographic map. October 1910 to December 1911, nonrecording gage at same site at different datum.

REMARKS.--Records good except for period of Oct. 1-Nov. 13 and estimated daily discharges, which are fair. Small diversions for domestic use and irrigation upstream from station. Minor regulation by Packwood Lake for power production. U.S. Geological Survey satellite telemeter at station. Due to bank overflow, discharges above 19.00 ft gage height cannot be determined by direct methods.

AVERAGE DISCHARGE.--9 years (water years 1994-2002), 2,916 ft³/s, 73.22 in/yr, 2,112,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 24.90 ft Feb. 9, 1996, from outside high-water mark; minimum discharge, 292 ft³/s Nov. 26, 1993.

EXTREMES FOR CURRENT YEAR.--Peak gage heights greater than base gage heights of 18.00 ft (National Weather Service flood stage) and maximum (*):

Date	Time	Gage height (ft)	Date	Time	Gage height (ft)
Jan. 8	1130	*19.77	No other peak greater than base gage height.		

Minimum discharge, 397 ft³/s Oct. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	519	3470	2750	1770	1980	2880	2270	4050	7440	4830	1300	764
2	499	3210	3090	1820	1880	2590	2320	4780	7100	4310	1250	742
3	504	2840	2890	1910	1810	2410	2360	4720	6930	4010	1120	770
4	530	2340	2670	1790	1770	2300	2520	4230	6680	3740	1070	743
5	519	2180	2470	1750	1740	2230	2900	3870	7220	3370	1020	699
6	511	1890	2440	2100	1760	2200	3240	3560	7860	3250	1000	667
7	467	1660	2440	11400	1960	2090	3580	3230	6260	3540	977	654
8	470	1470	2340	e22000	2120	1990	3590	2990	5270	4290	937	624
9	458	1360	2250	15300	2070	1920	3550	2820	4620	3570	954	619
10	448	1250	2140	8810	2000	1880	4500	2700	4590	3490	997	627
11	705	1170	2030	6420	1960	2550	5110	2690	5360	3890	1010	658
12	623	1150	1940	5730	1870	4490	5730	2910	6260	3880	986	672
13	1100	1480	3540	5320	1730	3910	7630	3710	7320	3760	998	683
14	1110	10100	7890	4660	1640	3430	16300	4180	8620	3480	1030	672
15	997	11300	5720	4090	1580	3090	13200	4200	8790	3030	1050	690
16	772	6920	6290	3640	1550	2840	8240	4150	8140	2770	1010	746
17	689	4910	10500	3280	1520	2600	6240	4250	6800	2690	958	752
18	611	3930	7420	3010	1510	2430	5240	4630	6460	2610	921	702
19	575	3550	5500	2850	1590	2440	4660	4700	5960	2480	887	693
20	609	3960	4480	2810	1720	2540	4290	5400	5560	2180	864	723
21	589	4110	3830	2790	2470	2490	4090	5890	5840	2030	818	648
22	705	4530	3350	2610	5570	2390	3880	5680	6360	1990	824	606
23	1770	6310	2980	2460	5740	2330	3640	5270	6530	2010	848	610
24	1440	5020	2710	2600	5610	2300	3420	5120	5810	1950	831	636
25	1270	4070	2490	3190	4730	2310	3310	5290	5690	1930	846	630
26	1370	3450	2310	3090	4050	2350	3310	5930	6260	1850	827	616
27	1420	2980	2160	2750	3590	2350	3280	6720	6670	1680	855	588
28	1350	2770	2050	2470	3210	2320	3170	8220	5980	1560	888	574
29	1180	2770	1930	2280	---	2310	3170	10400	8670	1510	901	584
30	1290	2640	1840	2140	---	2260	3380	10200	6460	1570	843	581
31	3400	---	1800	2040	---	2270	---	8550	---	1430	788	---
TOTAL	28500	108790	108240	138880	70730	78490	142120	155040	197510	88680	29608	19973
MEAN	919	3626	3492	4480	2526	2532	4737	5001	6584	2861	955	666
MAX	3400	11300	10500	22000	5740	4490	16300	10400	8790	4830	1300	770
MIN	448	1150	1800	1750	1510	1880	2270	2690	4590	1430	788	574
AC-FT	56530	215800	214700	275500	140300	155700	281900	307500	391800	175900	58730	39620
CFSM	1.70	6.70	6.45	8.28	4.67	4.68	8.76	9.24	12.2	5.29	1.77	1.23
IN.	1.96	7.48	7.44	9.55	4.86	5.40	9.77	10.66	13.58	6.10	2.04	1.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

MEAN	1428	3501	3926	3661	3510	2874	3274	4389	4191	2363	1122	805
MAX	3690	9466	6632	5981	8136	4912	4737	6748	6662	4822	2382	1493
(WY)	1998	1996	1996	1997	1996	1997	2002	1997	1999	1999	1999	1997
MIN	417	365	930	1391	1323	1658	2132	3239	2404	1290	715	593
(WY)	1994	1994	2001	2001	1994	2001	1998	1996	2001	2001	1994	1998

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1994 - 2002

ANNUAL TOTAL	728336		1166561		2916	
ANNUAL MEAN	1995		3196		3982	
HIGHEST ANNUAL MEAN					1573	
LOWEST ANNUAL MEAN					2001	
HIGHEST DAILY MEAN	11300		Nov 15		22000	
LOWEST DAILY MEAN	448		Oct 10		448	
ANNUAL SEVEN-DAY MINIMUM	486		Oct 4		486	
ANNUAL RUNOFF (AC-FT)	1445000		2314000		2112000	
ANNUAL RUNOFF (CFSM)	3.69		5.91		5.39	
ANNUAL RUNOFF (INCHES)	50.08		80.21		73.22	
10 PERCENT EXCEEDS	3830		6380		5560	
50 PERCENT EXCEEDS	1490		2480		2300	
90 PERCENT EXCEEDS	745		692		697	

e Estimated

COWLITZ RIVER BASIN

14231900 CISPUS RIVER ABOVE YELLOWJACKET CREEK, NEAR RANDLE, WA

LOCATION.--Lat 46°26'38", long 121°50'28", in NE 1/4 sec.18, T.11 N., R.8 E., (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on right bank 600 ft downstream from Forest Service Road 28 bridge, 2.5 mi downstream from North Pork, 8.5 mi southeast of Randle, and at mile 17.4.

DRAINAGE AREA.--250 mi².

PERIOD OF RECORD.--August 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,260 ft above NGVD of 1929.

REMARKS.--Records good except estimated daily values, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--7 years (water years 1996-2002), 1,077 ft³/s, 58.55 in/yr, 780,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,840 ft³/s Nov. 25, 1999, gage height, 8.24 ft; minimum daily discharge, 170 ft³/s Oct. 9, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996, reached stage of 12.50 ft, discharge not determined.

EXTREMES FOR CURRENT YEAR--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 08	0300	*8,480	*8.10	May 29	1530	4,060	5.64
Apr. 14	0930	5,570	6.75				

Minimum daily discharge, 170 ft³/s Oct. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e235	757	1100	683	688	1000	896	1550	2970	1800	662	416
2	e240	674	1150	736	656	950	935	1730	2890	1660	642	432
3	e235	612	1040	731	642	907	934	1710	2840	1560	610	429
4	e245	541	986	689	614	878	988	1600	2740	1470	601	379
5	e230	530	933	678	605	854	1120	1510	2860	1370	579	360
6	e225	481	893	838	618	858	1240	1390	2870	1330	551	346
7	e190	432	853	3730	694	814	1360	1290	2500	1360	540	338
8	e190	402	849	6550	702	774	1360	1200	2210	1520	528	334
9	e170	385	779	4230	666	750	1390	1150	1990	1350	535	333
10	e210	367	748	2850	652	763	1680	1110	1980	1350	551	339
11	e270	360	718	2130	635	1060	1790	1110	2160	1390	545	346
12	e280	366	672	1900	606	1450	1900	1190	2400	1340	540	344
13	e310	425	983	1700	593	1270	2200	1430	2830	1340	548	342
14	e350	1670	1700	1530	570	1170	4600	1560	3060	1260	555	339
15	e310	1590	1440	1360	555	1090	3470	1580	3060	1150	539	336
16	e280	1400	1740	1250	547	1030	2500	1590	2870	1090	515	330
17	e265	1180	2680	1140	540	972	2040	1640	2560	1080	499	330
18	e250	1020	2090	1070	538	921	1770	1720	2450	1040	480	322
19	e250	1020	1750	1040	631	915	1610	1750	2270	1000	472	325
20	e270	1210	1500	1000	647	885	1510	1970	2150	942	457	325
21	e260	1410	1330	971	817	852	1460	2050	2160	907	443	318
22	e320	1700	1200	918	1340	821	1390	2030	2240	899	450	315
23	450	1920	1080	880	1490	808	1320	1980	2260	895	442	319
24	383	1570	1010	870	1490	797	1250	1950	2190	876	449	323
25	e330	1320	945	929	1340	806	1230	2000	2070	857	472	e315
26	e335	1150	895	891	1230	824	1240	2130	2140	850	450	e300
27	e350	1040	852	843	1140	828	1220	2350	2180	809	457	e285
28	e340	1000	816	799	1070	828	1200	2780	2050	771	470	e280
29	e320	1010	756	760	---	840	1240	3750	2590	809	463	e300
30	379	951	718	741	---	840	1340	3680	2120	789	431	e270
31	828	---	705	718	---	860	---	3260	---	717	411	---
TOTAL	9300	28493	34911	45155	22316	28415	48183	57740	73660	35581	15887	10070
MEAN	300.0	949.8	1126	1457	797.0	916.6	1606	1863	2455	1148	512.5	335.7
MAX	828	1920	2680	6550	1490	1450	4600	3750	3060	1800	662	432
MIN	170	360	672	678	538	750	896	1110	1980	717	411	270
AC-FT	18450	56520	69250	89560	44260	56360	95570	114500	146100	70570	31510	19970
CFSM	1.20	3.80	4.50	5.83	3.19	3.67	6.42	7.45	9.82	4.59	2.05	1.34
IN.	1.38	4.24	5.19	6.72	3.32	4.23	7.17	8.59	10.96	5.29	2.36	1.50

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	1996	1997	1998	1999	2000	2001	2002
MEAN	520.9	1036	1143	1271	899.6	992.6	1277
MAX	1172	1720	1763	2322	1345	1617	1756
(WY)	1998	2000	1999	1997	1997	1997	1999
MIN	300	359	369	426	414	574	785
(WY)	2002	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1996 - 2002
ANNUAL TOTAL	247907	409711	
ANNUAL MEAN	679.2	1122	1077
HIGHEST ANNUAL MEAN			1381
LOWEST ANNUAL MEAN			580
HIGHEST DAILY MEAN	2680	Dec 17	7560
LOWEST DAILY MEAN	170	Oct 9	170
ANNUAL SEVEN-DAY MINIMUM	209	Oct 4	209
ANNUAL RUNOFF (AC-FT)	491700	812700	780500
ANNUAL RUNOFF (CFSM)	2.72	4.49	4.31
ANNUAL RUNOFF (INCHES)	36.89	60.96	58.55
10 PERCENT EXCEEDS	1410	2160	2030
50 PERCENT EXCEEDS	506	899	864
90 PERCENT EXCEEDS	283	330	360

e Estimated

COWLITZ RIVER BASIN

14233500 COWLITZ RIVER NEAR KOSMOS, WA

LOCATION.--Lat 46°27'59", long 122°06'28", in NE ¼ SW ¼ sec.6, T.11 N., R.6 E., Lewis County, Hydrologic Unit 17080005, at Cowlitz Falls Dam, 1.1 mi downstream from Cispus River, 8 mi southwest of Randle, 4.5 mi southeast of Kosmos.

DRAINAGE AREA.--1,040 mi².

PERIOD OF RECORD.--October 1947 to current year. October 1967 to March 1994, published as "14233400 Cowlitz River near Randle."

GAGE.--Discharge determined from flow through turbines and outlet structures of Cowlitz Falls Dam. Prior to December 1948, nonrecording gage at site 0.8 mi downstream. December 1948 to September 1967, water-stage recorder at site 0.3 mi downstream, at datum 760.96 ft above sea level. October 1967 to March 1994, water-stage recorder, at site 0.6 mi upstream, at datum 799.42 ft above NGVD of 1929.

REMARKS.--Flow regulated by Cowlitz Falls Dam since Mar. 8, 1994. Water temperatures November 1952 to August 1968, April 1969 to September 1982. Chemical analyses July 1959 to September 1970, December 1973 to September 1985.

COOPERATION.--Records provided by Lewis County Public Utility District since Mar. 8, 1994.

AVERAGE DISCHARGE.--55 years (water years 1948-2002), 4,833 ft³/s, 63.14 in/yr, 3,501,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103,000 ft³/s Feb. 9, 1996; no flow part or all of many days 1994-2002 water years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 48,700 ft³/s April 14; no flow part of many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	671	4800	5290	2880	3360	4490	3580	6640	12000	7020	2070	1320
2	631	4240	5940	3120	3180	3970	3710	7810	11400	6170	2040	1280
3	628	3920	5410	3210	3020	3700	3730	7940	11200	5680	1970	1290
4	594	3290	4860	3020	2960	3480	4030	7030	10700	5330	1930	1290
5	606	3060	4390	2920	2890	3410	4740	6440	11200	4840	1930	1210
6	585	2660	4310	3510	2960	3380	5500	5890	12100	4630	1430	1200
7	566	2340	4110	21100	3500	3180	5990	5260	9940	5000	1940	1190
8	504	2170	4030	36200	3820	2940	6100	4780	8160	6000	1430	1180
9	574	2030	3850	23800	3630	2840	6050	4390	6930	5170	1690	785
10	563	1800	3660	15700	3520	2880	8030	4210	6730	4940	1920	1110
11	832	1760	3500	11400	3410	4330	9470	4160	8000	5460	1530	1240
12	856	1820	3330	9960	3250	8130	9930	4540	9430	5460	1910	1210
13	957	2140	5550	8950	3020	6900	12600	5920	10900	5260	1390	1200
14	1000	13900	12900	7570	2820	5780	26100	6850	13000	4970	1930	889
15	1470	13600	10200	6740	2690	5340	18600	6990	13200	4350	1910	1200
16	1280	10500	11200	6000	2630	4830	14200	6890	12300	3960	1420	1130
17	861	7390	19000	5350	2510	4310	10600	7010	10500	3810	1890	1220
18	767	5830	14000	4850	2570	4030	8610	7690	9790	3750	1370	1160
19	722	5020	10600	4720	2780	4230	7410	7820	8890	3520	1630	1140
20	723	6340	8410	4680	2980	4180	6690	9250	8160	3240	1530	1160
21	723	7320	7000	4670	4160	3870	6370	9620	8440	3060	1460	1180
22	839	9090	5910	4320	8750	3820	5990	9560	9220	2970	1500	1120
23	1800	12200	5220	4020	9420	3750	5560	8820	9490	3010	1480	933
24	2180	9480	4650	4380	9230	3640	5240	8520	8510	2950	1470	1080
25	1790	7290	4240	5580	7720	3660	5050	8750	8090	2880	1560	816
26	1880	5990	3960	5430	6450	3740	5100	9870	8780	2800	1580	1010
27	1880	5000	3660	4850	5720	3760	5100	11000	9480	2660	1460	992
28	1910	4710	3450	4300	5070	3690	4880	13000	8420	2460	1460	968
29	1820	4940	3230	3670	---	3620	4940	16200	11600	2440	1520	936
30	1760	4570	2970	3680	---	3570	5330	16200	9480	2480	1500	971
31	4370	---	2980	3480	---	3580	---	13800	---	2290	1390	---
TOTAL	36342	169200	191810	234060	118020	127030	229230	252850	296040	128560	51240	33410
MEAN	1172	5640	6187	7550	4215	4098	7641	8156	9868	4147	1653	1114
MAX	4370	13900	19000	36200	9420	8130	26100	16200	13200	7020	2070	1320
MIN	504	1760	2970	2880	2510	2840	3580	4160	6730	2290	1370	785
AC-FT	72080	335600	380500	464300	234100	252000	454700	501500	587200	255000	101600	66270
CFSM	1.13	5.42	5.95	7.26	4.05	3.94	7.35	7.84	9.49	3.99	1.59	1.07
IN.	1.30	6.05	6.86	8.37	4.22	4.54	8.20	9.04	10.59	4.60	1.83	1.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

MEAN	2145	5033	6279	5810	5734	4689	5742	7963	7335	3944	1938	1472
MAX	6302	14650	16520	13820	15610	14510	9738	13760	16130	8580	3705	2881
(WY)	1960	1996	1978	1974	1996	1972	1990	1949	1974	1974	1974	1959
MIN	675	648	1100	1640	1815	2270	2656	4017	2176	1336	1042	952
(WY)	1988	1953	1953	1979	1977	1955	1975	1992	1992	1992	1992	2001

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1948 - 2002

ANNUAL TOTAL	1169067	1867792	
ANNUAL MEAN	3203	5117	4833
HIGHEST ANNUAL MEAN			7236
LOWEST ANNUAL MEAN			2509
HIGHEST DAILY MEAN	19000	Dec 17	36200
LOWEST DAILY MEAN	504	Oct 8	504
ANNUAL SEVEN-DAY MINIMUM	570	Oct 4	570
ANNUAL RUNOFF (AC-FT)	2319000		3705000
ANNUAL RUNOFF (CFSM)	3.08		4.92
ANNUAL RUNOFF (INCHES)	41.82		66.81
10 PERCENT EXCEEDS	6270		10300
50 PERCENT EXCEEDS	2340		4030
90 PERCENT EXCEEDS	913		1170

14234800 RIFFE LAKE NEAR MOSSYROCK, WA

LOCATION.--Lat 46°32'07", long 122°25'25", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, in emergency generator room on top of Mossyrock Dam on Cowlitz River, 2.8 mi east of Mossyrock, and at mile 65.5.

DRAINAGE AREA.--1,154 mi².

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

REVISED RECORDS.--WDR WA-74-1: 1973.

GAGE.--Water-stage recorder; nonrecording gage prior to July 25, 1968. Datum of gage is NGVD of 1929 (levels by City of Tacoma).

REMARKS.--Reservoir is formed by concrete arch dam, completed in April 1968; storage began Apr. 3, 1968. Useable capacity, 1,297,400 acre-ft between elevations 600 ft, minimum operating level, and 770 ft, normal operating pool. Unused storage below elevation 600 ft, 288,900 acre-ft. Crest of spillway is at elevation 728.5 ft and top of taintor gates are at elevation 778.5 ft. Water used by City of Tacoma for power generation. Figures given herein represent total contents. Capacity table furnished by City of Tacoma. Chemical analyses December 1973 to September 1983 (samples were taken near the dam).

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,686,300 acre-ft July 31, 1972, elevation, 778.63 ft; minimum contents since normal low operating level was attained, 517,233 acre-ft Mar. 9, 2001, elevation, 644.93 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,674,020 acre-ft June 24, elevation, 777.59 ft; minimum contents, 1,084,409 acre-ft Oct. 22, elevation 719.96 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	725.39	1,133,890	---
Oct. 31.....	722.58	1,108,154	-25,736
Nov. 30.....	740.12	1,273,441	+165,287
Dec. 31.....	741.33	1,285,279	+11,838
CAL YR 2001.....	---	---	+628,708
Jan. 31.....	736.94	1,242,617	-42,662
Feb. 28.....	743.12	1,302,905	+60,288
Mar. 31.....	743.43	1,305,971	+3,066
Apr. 30.....	763.15	1,510,310	+204,339
May 31.....	773.50	1,626,328	+116,018
June 30.....	777.31	1,670,726	+44,398
July 31.....	774.71	1,640,340	-30,386
Aug. 31.....	765.56	1,536,717	-103,623
Sept. 30.....	751.68	1,389,138	-147,579
WTR YR 2002.....	---	---	+255,248

COWLITZ RIVER BASIN

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA

LOCATION.--Lat 46°35'44", long 122°27'30", in NE 1/4 SW 1/4 sec.20, T.13 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.9 mi upstream from Bear Canyon Creek, 3.5 mi southeast of Cinebar, and at mile 7.1.

DRAINAGE AREA.--141 mi².

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WDR WA-72-1: 1957(M), 1959(P), 1960(P), 1961(M), 1963(P), 1964(M), 1965, 1967(P), 1971(P).

GAGE.--Water-stage recorder. Elevation of gage is 600 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Several small diversions for municipal and domestic use upstream from station. No regulation. U.S. Geological Survey satellite telemeter at station. Water temperatures May 1965 to September 1982.

AVERAGE DISCHARGE.--46 years (water years 1957-2002), 828 ft³/s, 79.78 in/yr, 599,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s Feb. 8, 1996, gage height, 17.90 ft, from rating curve extended above 10,500 ft³/s on basis of slope-area measurement at gage height of 14.79 ft; minimum discharge, 49 ft³/s Oct. 22-26, 28-30, 1987, gage height, 1.93 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	0830	7,180	9.37	Jan. 7	2330	7,480	9.55
Dec. 13	2345	8,270	10.01	Apr. 14	0445	8,250	10.00
Dec. 17	0100	*8,360	*10.06				

Minimum discharge, 58 ft³/s Sep. 25-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	1540	2120	764	857	895	1000	974	656	439	112	73
2	79	1420	2260	1180	782	787	1000	962	608	362	108	73
3	79	1100	1770	1150	830	713	990	872	553	316	106	75
4	76	838	1500	1000	831	671	1050	757	527	288	109	74
5	72	736	1280	913	828	695	1210	789	604	262	115	72
6	72	608	1530	1300	977	714	1420	802	546	241	110	71
7	72	523	1560	5610	1360	643	1550	720	468	234	107	71
8	80	458	1360	5470	1470	595	1320	664	425	257	105	71
9	81	412	1340	2990	1320	553	1410	628	387	222	101	72
10	98	375	1220	1950	1170	569	2780	593	370	202	99	70
11	209	347	1160	1470	1120	2870	2900	586	364	189	98	69
12	172	347	1110	1600	983	3020	3500	648	360	180	95	67
13	307	488	4410	1530	878	1930	4140	840	354	174	91	67
14	388	5610	5560	1250	788	1580	6230	886	344	166	89	65
15	320	2930	2990	1050	735	1340	3270	807	325	161	87	64
16	242	1870	5780	912	740	1170	2480	733	300	158	87	72
17	205	1330	5850	806	723	993	1990	765	290	152	87	83
18	177	1030	3100	743	848	886	1650	761	353	150	84	73
19	171	943	2290	856	1170	1090	1420	724	350	144	83	69
20	165	936	1770	1230	1280	1820	1290	751	295	143	83	67
21	166	1160	1420	1400	2740	1560	1150	905	270	137	86	67
22	400	2570	1190	1110	3300	1370	1060	814	253	133	85	64
23	1270	3460	1020	978	3440	1310	988	721	239	128	82	62
24	1030	2200	893	2010	3240	1300	906	646	226	127	79	61
25	1230	1590	796	4260	2060	1300	863	644	213	125	79	59
26	895	1280	719	2530	1530	1280	856	662	202	126	79	58
27	690	1050	663	1750	1230	1270	852	686	197	125	81	58
28	569	1220	717	1330	1040	1280	798	902	269	121	79	58
29	467	2150	682	1090	---	1210	787	1300	984	120	76	61
30	537	1890	643	971	---	1110	866	954	606	116	75	73
31	1360	---	683	931	---	1050	---	760	---	115	74	---
TOTAL	11762	42411	59386	52134	38270	37574	51726	24256	11938	5813	2831	2039
MEAN	379	1414	1916	1682	1367	1212	1724	782	398	188	91.3	68.0
MAX	1360	5610	5850	5610	3440	3020	6230	1300	984	439	115	83
MIN	72	347	643	743	723	553	787	586	197	115	74	58
AC-FT	23330	84120	117800	103400	75910	74530	102600	48110	23680	11530	5620	4040
CFSM	2.69	10.0	13.6	11.9	9.69	8.60	12.2	5.55	2.82	1.33	0.65	0.48
IN.	3.10	11.19	15.67	13.75	10.10	9.91	13.65	6.40	3.15	1.53	0.75	0.54

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

	403	1265	1588	1553	1398	1129	1040	706	416	194	118	164
MEAN	403	1265	1588	1553	1398	1129	1040	706	416	194	118	164
MAX	1240	3014	3418	2869	3039	2940	1724	1283	1082	620	294	667
(WY)	1960	1996	1976	1971	1982	1972	2002	1974	1981	1983	1968	1959
MIN	52.0	185	401	415	377	374	520	304	134	93.4	64.3	60.5
(WY)	1988	1994	1977	1977	1977	1992	1998	1980	1992	1970	1970	1967

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1957 - 2002

ANNUAL TOTAL		243049		340140								
ANNUAL MEAN		666		932						828		
HIGHEST ANNUAL MEAN										1228		1972
LOWEST ANNUAL MEAN										464		2001
HIGHEST DAILY MEAN			5850	Dec 17		6230	Apr 14		21000	Feb 8	1996	
LOWEST DAILY MEAN			72	Oct 5		58	Sep 26		49	Oct 23	1987	
ANNUAL SEVEN-DAY MINIMUM			76	Oct 2		60	Sep 23		50	Oct 23	1987	
ANNUAL RUNOFF (AC-FT)		482100		674700					599800			
ANNUAL RUNOFF (CFSM)			4.72			6.61			5.87			
ANNUAL RUNOFF (INCHES)			64.12			89.74			79.78			
10 PERCENT EXCEEDS			1370			1970			1780			
50 PERCENT EXCEEDS			431			733			537			
90 PERCENT EXCEEDS			98			78			95			

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'13", long 122°35'11", in SE 1/4 SW 1/4 sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005, on right bank at Mayfield Dam on Cowlitz River, 0.3 mi downstream from Silver Creek, 4 mi south of town of Silver Creek, and at mile 52.0.

DRAINAGE AREA.--1,392 mi².

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Mar. 5, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam, completed April 1962; storage began Apr. 14, 1962. Usable capacity, 21,380 acre-ft between elevation 415 ft, lower limit of operation, and 425 ft, top of taintor gates. Dead storage below elevation 415 ft, 112,340 acre-ft. Crest of spillway is at elevation 385 ft. Water is used by City of Tacoma for power generation. Figures given herein represent total contents. Capacity table furnished by City of Tacoma. Chemical analyses December 1973 to September 1983 (samples were taken near the dam).

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,850 acre-ft Dec. 9, 1971, elevation, 425.50 ft; minimum contents since normal operating level was attained, 112,830 acre-ft June 4, 1969, elevation, 415.24 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,188 acre-ft Jan. 24, elevation, 424.76 ft; minimum contents, 121,438 acre-ft Dec. 16, elevation, 419.38 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	423.68	130,766	---
Oct. 31.....	423.80	131,040	+274
Nov. 30.....	423.18	129,664	-1,376
Dec. 31.....	422.85	128,940	-724
CAL YR 2001.....	---	---	+5,802
Jan. 31.....	423.77	130,971	+2,031
Feb. 28.....	423.61	130,612	-359
Mar. 31.....	420.56	123,952	-6,660
Apr. 30.....	423.86	131,172	+7,220
May 31.....	421.49	125,968	-5,204
June 30.....	424.05	131,590	+5,622
July 31.....	424.13	131,769	+179
Aug. 31.....	423.94	131,348	-421
Sept. 30.....	423.82	131,084	-264
WTR YR 2002.....	---	---	+318

COWLITZ RIVER BASIN

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA

LOCATION.--Lat 46°30'38", long 122°36'54", in SE ¼ NE ¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, on right bank 1.1 mi upstream from fish barrier dam, 1.4 mi downstream from Mayfield Dam, 1.5 mi upstream from Mill Creek, 2.1 mi downstream from Winston Creek, and at mile 50.6.

DRAINAGE AREA.--1,400 mi².

PERIOD OF RECORD.--August to October 1910, December 1910 to September 1911, October to November 1911 (monthly discharge only), April 1934 to current year. Published as "at Mayfield" water years 1910-11 and "near Mayfield" water years 1934-61.

REVISED RECORDS.--WSP 1318: 1949(M). WSP 1348: Drainage area. WSP 1718: 1943, 1947.

GAGE.--Water-stage recorder. Datum of gage is 226.6 ft above NGVD of 1929. August 1910 to November 1911 nonrecording gage at site 2.5 mi upstream at different datum. Apr. 27 to July 2, 1934, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Riffe Lake (station 14234800) at mile 65.5 and Mayfield Reservoir (station 14237800) at mile 52.0. Minor diversions for domestic and farm use upstream from station. U.S. Geological Survey satellite telemeter at station. Sediment records October 1978 to September 1980. Water temperatures October 1950 to September 1980.

AVERAGE DISCHARGE.--68 years (water years 1935-2002), 6,265 ft³/s, 60.77 in/yr, 4,539,000 acre-ft/yr, adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,400 ft³/s Nov. 28, 1995; gage height, 26.19 ft; minimum discharge, 37 ft³/s Apr. 16, 1962, gage height, 6.42 ft; minimum daily discharge, 451 ft³/s Apr. 16, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 is known to have exceeded that of Nov. 28, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,900 ft³/s Dec. 19, Jan. 9, 22, 23,28; maximum gage height 15.17 on Jan. 22; minimum discharge, 2,470 ft³/s many days in October and November 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2550	2480	10100	6010	8930	8210	5200	8960	9420	10300	2980	3000
2	2550	2480	9760	5980	5900	7170	5170	8960	9170	10600	2980	3500
3	2540	2490	12100	5880	5830	5340	5140	7560	10400	9360	2990	4450
4	2500	2500	12500	5870	7070	5160	6470	5980	9890	7590	2990	4620
5	2500	2590	12500	5870	7370	5140	6670	5860	9850	5680	2990	4620
6	2510	3550	12500	5890	7360	5140	5210	8420	9840	5160	2990	4350
7	2520	3500	11500	10600	7330	5140	5210	9040	9860	5150	2990	3150
8	2510	3510	7630	13200	5650	5140	6740	9050	9850	6820	3000	3070
9	2510	3500	7400	13700	4990	5140	6730	9070	9850	6220	3000	4300
10	2510	3500	9020	13600	5010	5170	6190	7540	10400	5860	3000	4610
11	2500	3510	9540	13600	5010	5180	6210	6030	10600	5850	3010	4600
12	2500	3520	9510	13600	5010	5140	6180	5200	10500	5230	4100	4610
13	2500	3520	10600	13600	5010	5150	6180	8310	10500	5170	4320	4440
14	2500	4740	13000	13500	5010	5160	6430	8940	10500	5190	4320	3260
15	2490	5370	13700	13500	5000	5150	8400	8960	9930	5170	4310	3070
16	2490	4320	13600	13500	5020	5290	8970	9000	10500	4990	4210	4300
17	2490	3510	13600	13600	5020	7430	8980	7540	11100	4010	3170	4610
18	2490	3520	13600	13600	5000	8300	9000	5920	11100	3920	3000	4600
19	2490	5660	13700	13600	5000	10200	8970	5240	10600	3810	4040	4600
20	2490	7280	13600	13600	4990	10200	7540	8750	9650	3080	4290	4470
21	2500	7180	13600	13700	5220	10200	6010	9060	7600	3120	4280	3310
22	2500	6010	12400	13800	5520	10100	8440	6910	7680	3940	4280	3070
23	2490	5930	9580	13800	5040	7790	11300	6710	8070	3930	4000	4220
24	2490	5900	8490	13700	5020	6270	9640	5800	10300	3930	3000	4400
25	2480	5880	6000	13700	6380	8380	9410	5140	11500	3920	2990	3510
26	2490	9970	6010	13600	8410	8550	7550	5140	11400	3270	4020	3230
27	2500	12500	5990	13600	8410	8510	5920	5140	10200	2970	4290	3220
28	2500	13600	5980	13700	8330	8460	5190	7550	9880	2970	4290	3060
29	2500	13700	5960	12700	---	6810	8180	10100	9810	2980	4300	3070
30	2490	13500	5960	9770	---	5230	8950	12400	9120	2980	4200	3360
31	2490	---	5980	9780	---	5190	---	13400	---	2980	3140	---
TOTAL	77570	169220	315410	364150	167840	209440	216180	241680	299070	156150	111470	116680
MEAN	2502	5641	10170	11750	5994	6756	7206	7796	9969	5037	3596	3889
MAX	2550	13700	13700	13800	8930	10200	11300	13400	11500	10600	4320	4620
MIN	2480	2480	5960	5870	4990	5140	5140	5140	7600	2970	2980	3000
AC-FT	153900	335600	625600	722300	332900	415400	428800	479400	593200	309700	221100	231400
MEAN†	2088	8397	10350	11080	7074	6696	10770	9597	10810	4545	1904	1405
CFSM†	1.49	6.00	7.39	7.91	5.05	4.78	7.69	6.86	7.72	3.25	1.36	1.00
IN.†	1.72	6.69	8.53	9.13	5.26	5.52	8.58	7.90	8.61	3.74	1.57	1.12
AC-FT†	128400	499500	636700	681700	392800	411800	640400	590200	643200	279500	117100	83560

CAL YR 2001 TOTAL 1382830 MEAN 3789 MAX 13700 MIN 2480 AC-FT 2743000 MEAN† 4665 CFSM† 3.33 IN.† 45.24 AC-FT† 3378000
WTR YR 2002 TOTAL 2444860 MEAN 6698 MAX 13800 MIN 2480 AC-FT 4849000 MEAN† 7050 CFSM† 5.04 IN.† 68.37 AC-FT† 5105000

† Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14240304 SPIRIT LAKE AT TUNNEL, AT SPIRIT LAKE, WA

LOCATION.--Lat 46°16'35", long 122°09'41", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.10, T.9 N., R.5 E., Skamania County, Hydrologic Unit 17080005, Mount St. Helens National Volcanic Monument, at entrance of Spirit Lake Outlet Tunnel, 5.6 mi north-northeast of the Mount St. Helens volcanic edifice.

DRAINAGE AREA.--18.0 mi², at entrance to Spirit Lake Outlet Tunnel. Prior to the volcanic eruption on May 18, 1980, 14.9 mi².

PERIOD OF RECORD.--October 1987 to current year. Records of contents published in WDR-WA-94-1 are unreliable and should not be used.

GAGE.--Water-stage recorder. Elevation of gage is 3,470 ft above NGVD of 1929, from topographic map.

REMARKS.--As a result of the May 18, 1980, eruption, a gravitational landslide ensued, transporting an estimated 0.6 mi³ of debris into the upper North Toutle River drainage basin. A massive debris avalanche completely filled the lake, blocking the natural outlet to the North Fork Toutle River with a deposit several hundred feet thick. This filling caused the lake to rise 200 ft to elevation 3,400 ft. Refer to report by Schuster, R. L., ed., 1986, Landslide Dams: Processes, Risk and Mitigation: Geotechnical Special Publication no. 3, American Society of Civil Engineers, 164 p., for history of Spirit Lake as it was impacted by the eruption and actions taken to reduce the resulting flood threat.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded elevation, 3,460.13 ft Feb. 5, 1997; minimum recorded elevation, 3,437.00 ft Oct. 28, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum recorded elevation, 3,443.47 ft Jan 12; minimum recorded elevation, 3,437.92 ft Oct. 10.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3438.09	3438.82	3443.23	3441.79	3442.21	3440.99	3440.32	3441.58	3442.28	3441.68	3439.73	3438.52
2	3438.06	3438.87	3443.18	3441.71	3442.12	3440.93	3440.29	3441.64	3442.32	3441.61	3439.67	3438.50
3	3438.04	3438.96	3443.07	3441.64	3442.05	3440.86	3440.27	3441.66	3442.33	3441.53	3439.61	3438.47
4	3438.00	3439.06	3443.05	3441.55	3441.95	3440.81	3440.26	3441.65	3442.34	3441.46	3439.57	3438.44
5	3437.98	3439.13	3442.95	3441.55	3441.86	3440.76	3440.27	3441.68	3442.37	3441.39	3439.51	3438.41
6	3437.95	3439.18	3442.92	3441.79	3441.83	3440.75	3440.31	3441.71	3442.37	3441.32	3439.46	3438.38
7	3437.95	3439.23	3442.80	3442.75	3441.89	3440.72	3440.34	3441.68	3442.36	3441.32	3439.41	3438.35
8	3437.97	3439.28	3442.73	3443.27	3441.86	3440.64	3440.34	3441.64	3442.32	3441.23	3439.36	3438.34
9	3437.95	3439.33	3442.62	3443.37	3441.74	3440.62	3440.44	3441.58	3442.27	3441.17	3439.33	3438.31
10	3438.02	3439.36	3442.57	3443.39	3441.67	3440.64	3440.57	3441.53	3442.24	3441.11	3439.29	3438.30
11	3438.03	3439.41	3442.52	3443.34	3441.58	3440.87	3440.68	3441.49	3442.22	3441.05	3439.25	3438.28
12	3438.13	3439.51	3442.41	3443.45	3441.48	3440.93	3440.77	3441.47	3442.22	3441.00	3439.20	3438.26
13	3438.14	3439.72	3442.61	3443.36	3441.38	3440.94	3441.08	3441.52	3442.23	3440.92	3439.16	3438.24
14	3438.21	3440.15	3442.63	3443.29	3441.29	3440.93	3441.64	3441.52	3442.25	3440.86	3439.12	3438.23
15	3438.19	3440.39	3442.60	3443.20	3441.20	3440.91	3441.80	3441.53	3442.25	3440.79	3439.08	3438.20
16	3438.18	3440.53	3442.82	3443.13	3441.13	3440.88	3441.87	3441.53	3442.21	3440.72	3439.05	3438.20
17	3438.17	3440.63	3442.85	3443.03	3441.05	3440.81	3441.87	3441.56	3442.20	3440.66	3439.01	3438.17
18	3438.15	3440.74	3442.93	3442.93	3441.00	3440.79	3441.84	3441.61	3442.21	3440.59	3438.97	3438.15
19	3438.16	3441.16	3442.87	3442.94	3441.00	3440.85	3441.81	3441.63	3442.16	3440.52	3438.93	3438.14
20	3438.13	3441.57	3442.78	3442.95	3440.91	3440.78	3441.80	3441.67	3442.11	3440.46	3438.88	3438.11
21	3438.18	3441.87	3442.69	3442.89	3441.06	3440.72	3441.77	3441.73	3442.07	3440.40	3438.86	3438.09
22	3438.22	3442.42	3442.59	3442.86	3441.15	3440.65	3441.74	3441.78	3442.04	3440.34	3438.82	3438.07
23	3438.42	3442.64	3442.50	3442.77	3441.26	3440.60	3441.70	3441.79	3442.00	3440.27	3438.79	3438.05
24	3438.45	3442.80	3442.38	3442.73	3441.26	3440.57	3441.67	3441.80	3441.94	3440.22	3438.76	3438.04
25	3438.45	3442.93	3442.29	3442.77	3441.21	3440.52	3441.63	3441.83	3441.91	3440.15	3438.73	3438.02
26	3438.46	3443.03	3442.18	3442.71	3441.17	3440.50	3441.63	3441.87	3441.86	3440.09	3438.71	---
27	3438.49	3443.05	3442.13	3442.66	3441.12	3440.46	3441.60	3441.91	3441.80	3440.03	3438.68	---
28	3438.48	3443.14	3442.03	3442.55	3441.06	3440.45	3441.56	3442.04	3441.87	3439.97	3438.65	3437.98
29	3438.48	3443.12	3441.94	3442.46	---	3440.41	3441.54	3442.17	3441.83	3439.91	3438.62	3438.13
30	3438.61	3443.17	3441.82	3442.37	---	3440.37	3441.55	3442.24	3441.76	3439.85	3438.59	3438.12
31	3438.75	---	3441.77	3442.32	---	3440.33	---	3442.28	---	3439.79	3438.55	---
MEAN	3438.21	3440.77	3442.59	3442.69	3441.45	3440.71	3441.16	3441.72	3442.14	3440.72	3439.08	3438.23
MAX	3438.75	3443.17	3443.23	3443.45	3442.21	3440.99	3441.87	3442.28	3442.37	3441.68	3439.73	3438.52
MIN	3437.95	3438.82	3441.77	3441.55	3440.91	3440.33	3440.26	3441.47	3441.76	3439.79	3438.55	3437.98

14240525 NORTH FORK TOUTLE RIVER BELOW SEDIMENT RETENTION STRUCTURE, NEAR KID VALLEY, WA

LOCATION.--Lat 46°22'19", long 122°34'40", in NE ¼ NE ¼ sec.8, T.10 N., R.2 E., Cowlitz County, Hydrologic Unit 17080005, 1.3 mi downstream from Sediment Retention Structure, on left bank, 0.7 mi upstream from the mouth of the Green River, 1.8 mi east of Kid Valley, and at mile 12.0.

DRAINAGE AREA.--175 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1989 to September 1998, October 2000 to September 2002 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers).

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

AVERAGE DISCHARGE.--11 years (water years 1990-98, 2001-02), 774 ft³/s, 60.12 in/yr, 561,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s, Feb. 8, 1996, gage height, 62.13 ft; minimum discharge, 141 ft³/s, Sept. 24, 25, 2001.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 14	0815	2,350	57.25	Jan. 08	0100	*5,710	*59.66
Nov. 22	1800	2,910	57.75	Jan. 25	0830	2,650	57.51
Nov. 29	0600	1,980	56.89	Feb. 23	0715	2,360	57.26
Dec. 01	2030	2,550	57.42	Mar. 11	2000	2,810	57.66
Dec. 14	0015	3,270	58.05	Apr. 14	0545	3,320	58.09
Dec. 17	0100	5,260	59.42				

Minimum discharge, 178 ft³/s Oct. 4-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	188	808	2210	889	973	1010	871	876	e840	558	344	230
2	187	720	1970	997	926	947	861	892	e800	541	339	232
3	186	563	1650	984	970	910	842	894	e780	530	343	233
4	186	489	1510	929	892	870	820	838	e750	523	339	227
5	184	500	1370	914	899	877	870	863	e740	524	338	221
6	184	427	1390	1080	980	903	909	827	e740	523	332	224
7	189	383	1270	3180	1260	847	973	776	e680	528	328	227
8	202	353	1190	3970	1310	813	934	734	e660	507	311	222
9	197	333	1180	2460	1150	822	1020	702	e580	486	299	219
10	265	312	1120	1840	1090	913	1440	665	e560	474	291	217
11	298	297	1130	1550	1010	1790	1530	645	574	468	286	220
12	264	314	1050	e1500	958	1880	1570	640	562	468	279	215
13	338	406	1730	e1400	906	1620	1710	677	592	472	273	214
14	318	1810	2510	e1300	862	1420	2840	682	626	466	279	214
15	284	1410	1790	e1200	836	1280	2330	649	637	464	276	215
16	282	1200	2820	e1100	844	1160	1990	643	626	455	272	224
17	275	1000	3600	e1050	823	1040	1720	685	623	451	266	219
18	251	820	2250	e980	844	952	1490	716	678	443	263	212
19	248	831	1790	e1150	1040	1180	1320	733	616	417	262	210
20	240	1030	1540	e1250	1020	1240	1200	794	586	403	265	212
21	253	1150	1350	e1400	1470	1110	1140	799	587	395	269	211
22	322	1960	1210	e1250	1790	1040	1080	797	575	392	256	204
23	584	2130	1100	e1100	2150	1020	1050	750	563	387	247	201
24	477	1610	1030	e1300	1870	1040	958	722	552	379	246	201
25	455	1310	973	2120	1560	1000	906	733	548	391	243	203
26	507	1090	935	1590	1370	974	908	731	541	379	248	202
27	567	965	910	1350	1220	942	918	747	540	378	243	201
28	513	1380	922	1160	1100	957	882	818	582	379	236	201
29	452	1750	874	1050	---	922	872	e1300	710	378	232	228
30	580	1620	854	994	---	913	847	e1100	592	367	235	225
31	875	---	880	1030	---	865	---	e950	---	350	232	---
TOTAL	10351	28971	46108	44067	32123	33257	36801	24378	19040	13876	8672	6484
MEAN	334	966	1487	1422	1147	1073	1227	786	635	448	280	216
MAX	875	2130	3600	3970	2150	1880	2840	1300	840	558	344	233
MIN	184	297	854	889	823	813	820	640	540	350	232	201
AC-FT	20530	57460	91460	87410	63720	65970	72990	48350	37770	27520	17200	12860
CFSM	1.91	5.52	8.50	8.12	6.56	6.13	7.01	4.49	3.63	2.56	1.60	1.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2002, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	433	934	1188	1108	1203	1005	1046	851	633	405	277	238	
MAX	929	1523	1810	1582	2323	1767	1461	1206	913	581	408	369	
(WY)	1998	1996	1996	1997	1996	1997	1991	1996	1990	1997	1997	1997	
MIN	218	404	497	448	402	539	658	515	278	225	182	173	
(WY)	1992	2001	2001	2001	1993	1992	1992	1992	1992	1992	1990	1990	

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1990 - 2002

ANNUAL TOTAL	215819	304128		
ANNUAL MEAN	591	833		
HIGHEST ANNUAL MEAN			774	
LOWEST ANNUAL MEAN			1074	1996
HIGHEST DAILY MEAN	3600	Dec 17	465	2001
LOWEST DAILY MEAN	147	Sep 24	11000	Feb 8 1996
ANNUAL SEVEN-DAY MINIMUM	162	Sep 19	140	Oct 1 1989
ANNUAL RUNOFF (AC-FT)	428100		156	Aug 12 1990
ANNUAL RUNOFF (CFSM)	3.38		561000	
10 PERCENT EXCEEDS	1110		4.76	4.42
50 PERCENT EXCEEDS	460		1540	
90 PERCENT EXCEEDS	223		799	
			229	

e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1990-91, February 2001 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May to September 1990, May to September 1991.

WATER TEMPERATURE: May to September 1990, May to September 1991, May 2001 to September 2002 (discontinued).

SUSPENDED SEDIMENT: February 2001 to September 2002 (discontinued).

INSTRUMENTATION.--Temperature sensor and electronic data logger, with 15-minute logging interval. Automatic pumping sediment sampler.

REMARKS.--Water temperature records good, except Oct. 13-14, Dec. 6-14, Feb. 12-19, 21-27, May 7, 15-17, May 23-June 7, July 2-12, Sept. 7-15, which are fair; and Oct. 15-22, 24-27, Mar. 11-14, 19, 20, Apr. 9-May 5, May 8-12, 14, July 13-15, July 17-Aug. 13, Sept. 16-17, 19-30, which are poor.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 999 microsiemens Sept. 26, 1991; minimum recorded, 322 microsiemens May 26, 1991.

WATER TEMPERATURE: Maximum recorded (more than 20 percent missing record), 29.7°C, July 22, 2002; minimum recorded, 1.0°C Jan. 29, 2002.

SEDIMENT CONCENTRATION: Maximum daily, 18,100 mg/L Jan. 8, 2002; minimum daily, 82 mg/L Feb. 12, 2001.

SEDIMENT DISCHARGE: Maximum daily, 200,000 tons Jan. 8, 2002; minimum daily, 45 tons Sept. 22, 2001.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded (more than 20 percent missing record), 29.7°C, July 22; minimum recorded 1.0°C, Jan. 29.

SEDIMENT CONCENTRATION: Maximum daily, 18,100 mg/L Jan. 8; minimum daily, 119 mg/L Oct. 5.

SEDIMENT DISCHARGE: Maximum daily, 200,000 tons Jan. 8, minimum daily, 59 tons Oct. 5.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	6.8	5.8	6.3	6.7	3.9	5.6
2	---	---	---	---	---	---	6.4	5.6	6.0	8.1	5.4	6.8
3	---	---	---	---	---	---	7.2	4.8	5.8	7.8	5.0	6.1
4	---	---	---	---	---	---	5.3	4.4	4.8	7.7	4.6	5.9
5	---	---	---	---	---	---	6.7	3.7	5.0	7.5	5.2	6.4
6	---	---	---	---	---	---	6.7	5.5	6.0	9.4	5.8	7.6
7	---	---	---	---	---	---	7.4	4.2	5.6	9.3	8.0	8.8
8	---	---	---	---	---	---	7.1	5.7	6.2	8.0	6.7	7.4
9	15.7	---	---	---	---	---	7.1	4.8	5.8	7.2	5.2	6.2
10	11.9	7.8	9.6	---	---	---	5.7	4.7	5.2	7.0	5.0	5.9
11	13.5	9.5	11.1	---	---	---	6.3	4.6	5.4	8.0	6.2	6.9
12	11.4	9.1	10.0	---	---	---	6.4	4.3	5.2	6.7	4.9	6.2
13	15.6	9.8	12.2	---	---	---	8.0	6.4	7.2	6.6	4.2	5.1
14	16.4	12.0	13.4	11.7	---	---	6.4	4.2	5.0	5.9	3.5	4.8
15	17.1	9.1	12.4	10.8	9.4	10.3	5.9	4.7	5.1	5.3	1.9	3.4
16	13.0	10.1	11.6	9.7	8.6	9.2	7.5	5.9	7.0	4.5	2.8	3.5
17	15.9	9.4	11.9	10.5	6.1	8.5	6.7	4.4	5.3	4.4	2.7	3.6
18	14.5	9.1	11.5	9.5	4.9	6.9	5.6	4.4	4.9	5.5	3.8	4.4
19	14.2	11.8	12.7	10.6	7.2	9.1	5.9	4.5	5.2	---	---	---
20	15.8	10.3	12.5	9.5	8.1	8.9	---	---	---	---	---	---
21	13.4	10.8	11.9	9.0	7.6	8.2	7.3	4.8	5.7	4.4	3.0	3.6
22	12.4	11.1	11.7	8.9	7.5	8.3	6.3	3.2	4.4	4.4	2.6	3.3
23	---	---	---	---	---	---	6.3	2.9	4.1	5.2	2.9	4.0
24	10.2	9.4	9.8	7.9	6.6	7.1	6.0	2.6	3.7	5.5	4.6	5.0
25	12.2	10.2	10.9	7.3	5.6	6.5	4.8	2.0	3.1	5.5	3.9	5.1
26	13.0	11.0	11.8	7.8	5.3	6.2	4.5	1.8	3.1	4.3	1.7	3.4
27	13.0	11.6	12.2	7.1	4.7	5.7	5.2	3.8	4.5	4.2	1.8	2.9
28	11.6	10.4	11.0	6.5	4.7	5.6	7.5	4.0	5.6	5.7	1.9	3.3
29	---	---	---	6.9	5.3	6.2	6.5	3.0	4.3	4.0	1.0	2.3
30	---	---	---	6.1	5.2	5.6	6.6	2.8	4.5	5.3	2.6	3.6
31	---	---	---	---	---	---	7.4	4.1	5.9	5.1	3.6	4.2
MONTH	17.1	7.8	11.6	11.7	4.7	7.5	8.0	1.8	5.2	9.4	1.0	5.0

COWLITZ RIVER BASIN

14240525 NORTH FORK TOUTLE RIVER BELOW SRS NEAR KID VALLEY, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	OCTOBER			NOVEMBER			DECEMBER		
1	188	167	86.0	808	653	1430	2210	2610	15800
2	187	161	82.0	720	630	1220	1970	1780	9550
3	186	121	60.0	563	559	855	1650	1900	8420
4	186	121	61.0	489	461	609	1510	1760	7250
5	184	119	59.0	500	444	601	1370	1180	4380
6	184	133	66.0	427	372	429	1390	1230	4630
7	189	139	71.0	383	389	401	1270	1260	4300
8	202	127	69.0	353	311	297	1190	1070	3460
9	197	132	70.0	333	304	273	1180	1160	3720
10	265	452	363	312	296	250	1120	1090	3300
11	298	358	296	297	299	240	1130	976	2960
12	264	219	159	314	325	277	1050	845	2390
13	338	508	491	406	532	650	1730	3120	18300
14	318	493	440	1810	6360	33400	2510	3000	21600
15	284	286	219	1410	1880	7180	1790	1500	7270
16	282	243	185	1200	1360	4410	2820	5630	52300
17	275	235	174	1000	1220	3310	3600	12900	137000
18	251	214	145	820	1430	3140	2250	6420	39100
19	248	201	135	831	1560	3580	1790	5210	25200
20	240	198	128	1030	2010	5580	1540	4440	18400
21	253	235	161	1150	1660	5200	1350	2910	10600
22	322	368	346	1960	3750	23500	1210	2050	6700
23	584	990	1550	2130	4120	25700	1100	1800	5360
24	477	508	657	1610	1550	6700	1030	1670	4650
25	455	444	546	1310	1550	5510	973	1570	4140
26	507	e517	e709	1090	1000	2960	935	1530	3860
27	567	e727	e1130	965	1190	3110	910	1560	3830
28	513	e650	e907	1380	1730	6700	922	1330	3310
29	452	511	624	1750	2040	9840	874	1140	2700
30	580	858	1430	1620	1500	6580	854	955	2200
31	875	1260	3030	---	---	---	880	1030	2450
TOTAL	10351	---	14449.0	28971	---	163932	46108	---	439130
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	889	1050	2520	973	1830	4820	1010	2040	5550
2	997	1110	2980	926	1730	4330	947	447	1150
3	984	1060	2820	970	1610	4230	910	345	849
4	929	1020	2550	892	1480	3570	870	347	814
5	914	942	2320	899	1370	3340	877	348	823
6	1080	2560	8460	980	1610	4460	903	349	850
7	3180	13400	125000	1260	2880	9780	847	350	800
8	3970	18100	200000	1310	3050	10700	813	351	770
9	2460	11200	74800	1150	2950	9180	822	352	781
10	1840	9270	46300	1090	3050	9000	913	e1940	e4810
11	1550	6230	26100	1010	3160	8630	1790	e7560	e42300
12	e1500	5420	e22000	958	2820	7300	1880	e8350	e43000
13	e1400	5090	e19000	906	2410	5910	1620	e5450	e23900
14	e1300	4280	e15000	862	2250	5230	1420	357	1360
15	e1200	3930	e13000	836	2060	4660	1280	358	1240
16	e1100	4000	e12000	844	1810	4120	1160	359	1130
17	e1050	3840	e11000	823	1400	3120	1040	361	1010
18	e980	3540	e9400	844	1510	3440	952	362	930
19	e1150	3350	e10000	1040	2310	6570	1180	e3100	e10300
20	e1250	3160	e11000	1020	2270	6280	1240	e3830	e12900
21	e1400	2940	e11000	1470	4470	18500	1110	365	1090
22	e1250	2710	e9100	1790	6200	29900	1040	366	1030
23	e1100	2570	e7600	2150	6960	40600	1020	367	1020
24	e1300	e4860	e17000	1870	4960	25200	1040	368	1030
25	2120	e8050	e46500	1560	3970	16700	1000	369	997
26	1590	e4970	e21600	1370	3610	13300	974	370	973
27	1350	e3450	e12600	1220	3210	10600	942	371	944
28	1160	2760	8700	1100	2600	7740	957	372	962
29	1050	2330	6590	---	---	---	922	373	930
30	994	2100	5630	---	---	---	913	375	923
31	1030	1940	5390	---	---	---	865	376	877
TOTAL	44067	---	767960	32123	---	281210	33257	---	166043

COWLITZ RIVER BASIN

14240525 NORTH FORK TOUTLE RIVER BELOW SRS NEAR KID VALLEY, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	871	377	886	876	409	967	e840	1750	e4000
2	861	378	878	892	410	988	e800	1820	e3900
3	842	379	862	894	411	993	e780	1850	e3900
4	820	380	841	838	412	933	e750	1850	e3700
5	870	381	895	863	413	963	e740	1830	e3700
6	909	382	937	827	414	925	e740	1800	e3600
7	973	383	1010	776	415	870	e680	1780	e3300
8	934	384	969	734	417	826	e660	1780	e3200
9	1020	385	1060	702	418	792	e580	1830	e2900
10	1440	386	1500	665	419	752	e560	2070	e3100
11	1530	387	1600	645	420	731	574	453	703
12	1570	389	1650	640	421	727	562	454	689
13	1710	390	1800	677	422	772	592	455	728
14	2840	391	2990	682	423	779	626	456	771
15	2330	392	2460	649	424	743	637	458	787
16	1990	393	2100	643	425	739	626	459	775
17	1720	394	1830	685	426	789	623	460	773
18	1490	395	1580	716	427	827	678	461	843
19	1320	396	1400	733	428	848	616	462	768
20	1200	397	1280	794	430	921	586	463	733
21	1140	398	1220	799	431	928	587	464	736
22	1080	399	1160	797	432	929	575	465	722
23	1050	400	1130	750	433	876	563	466	708
24	958	401	1040	722	434	846	552	467	697
25	906	403	984	733	435	861	548	468	693
26	908	404	989	731	436	861	541	469	686
27	918	405	1000	747	437	881	540	470	686
28	882	406	966	818	438	968	582	e1290	e2050
29	872	407	958	e1300	2320	e8100	710	e1840	e3590
30	847	408	933	e1100	2250	e6700	592	e1180	e1900
31	---	---	---	e950	1990	e5100	---	---	---
TOTAL	36801	---	38908	24378	---	43935	19040	---	55338

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	558	475	715	344	508	472	230	542	336
2	541	476	695	339	509	466	232	543	339
3	530	477	683	343	510	472	233	544	342
4	523	478	675	339	511	468	227	545	334
5	524	479	678	338	512	467	221	546	325
6	523	480	678	332	514	460	224	547	330
7	528	481	686	328	515	455	227	548	336
8	507	482	660	311	516	433	222	549	328
9	486	483	635	299	517	417	219	550	325
10	474	484	620	291	518	407	217	551	323
11	468	486	613	286	519	400	220	552	328
12	468	487	615	279	520	392	215	553	321
13	472	488	622	273	521	384	214	555	320
14	466	489	615	279	522	393	214	556	321
15	464	490	614	276	523	389	215	557	322
16	455	491	603	272	524	385	224	558	337
17	451	492	600	266	525	378	219	559	330
18	443	493	590	263	527	374	212	560	321
19	417	494	557	262	528	374	210	561	318
20	403	495	540	265	529	378	212	562	321
21	395	496	530	269	530	385	211	563	320
22	392	497	527	256	531	366	204	564	310
23	387	498	521	247	532	354	201	565	307
24	379	500	512	246	533	353	201	566	307
25	391	501	529	243	534	350	203	567	311
26	379	502	514	248	535	359	202	569	311
27	378	503	513	243	536	352	201	570	309
28	379	504	516	236	537	342	201	571	310
29	378	505	515	232	538	337	228	572	351
30	367	506	501	235	539	342	225	567	344
31	350	507	480	232	541	339	---	---	---
TOTAL	13876	---	18352	8672	---	12243	6484	---	9737
YEAR	304128		2011237.0						

e Estimated

COWLITZ RIVER BASIN

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA

LOCATION.--Lat 46°19'26", long 122°42'28", in SE 1/4 NW 1/4 sec.29, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank at upstream side of bridge on South Toutle Road, 3.1 mi downstream from Johnson Creek, 0.8 mi upstream from Studebaker Creek, approximately 1.0 mi upstream from mouth, and 1.3 mi southeast of Toutle.

DRAINAGE AREA.--120 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to December 1957, February 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 460 ft above NGVD of 1929, from topographic map. Prior to Feb. 9, 1996, water-stage recorder at site 0.6 mi upstream, at datum at NGVD of 1929 (river-profile survey).

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

AVERAGE DISCHARGE.--24 years (water years 1940-57, 1997-2002), 636 ft³/s, 72.02 in/yr, 460,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined Feb. 8, 1996, gage height, 28.81 ft, from high-water mark; maximum daily discharge, 17,400 ft³/s Feb. 8, 1996; minimum discharge, 62 ft³/s Nov. 29, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 9, 1990, produced discharge of 19,200 ft³/s as recorded at station 14241490, 2.2 mi upstream. A flood believed to be in excess of 100,000 ft³/s (from Ph.d. thesis by Fairchild, U. Wash., 1985) occurred at about 1000 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	0745	6,060	24.94	Jan 07	2215	10,400	*26.57
Nov 22	1800	4,910	24.55	Mar 11	2000	4,860	24.87
Dec 13	2300	7,410	25.34	Apr 14	0545	4,910	24.89
Dec 17	0000	*11,200	26.43				

Minimum discharge, 66 ft³/s Sept. 26-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	821	3110	392	650	668	602	654	602	298	108	80
2	79	648	2640	623	558	579	609	700	544	261	106	80
3	77	499	1730	623	628	509	589	632	499	239	102	81
4	77	402	1430	529	571	466	607	548	471	231	107	79
5	73	397	1230	502	556	464	689	565	456	219	117	78
6	72	328	1300	952	699	512	783	526	431	203	117	78
7	76	289	1220	6880	1220	422	834	481	396	200	108	77
8	89	261	1090	5970	1280	378	766	457	400	210	106	79
9	91	239	1040	2640	1080	367	951	420	339	193	106	79
10	113	221	932	1640	920	588	1780	391	319	180	110	77
11	161	205	894	1230	819	2560	1970	380	312	169	109	76
12	120	210	849	1300	679	2870	2020	403	315	163	102	76
13	170	351	2810	1180	580	1900	2280	542	325	160	98	74
14	152	4450	4520	1030	496	1480	3890	604	333	156	96	73
15	137	2120	2300	875	445	1190	2190	555	320	150	97	73
16	123	1440	5420	788	449	1010	1590	524	300	147	94	75
17	127	976	6010	714	418	840	1300	552	285	143	96	81
18	112	738	2810	644	445	725	1120	551	376	140	e93	77
19	108	707	1870	757	896	990	986	550	318	137	e92	74
20	109	1000	1400	885	905	1250	883	615	270	136	e93	74
21	113	1360	1120	1090	1830	1040	795	643	251	130	e91	72
22	168	3210	944	867	2230	900	733	628	240	127	92	70
23	540	2950	759	698	2450	815	668	595	232	122	90	69
24	422	1600	637	1160	2140	804	614	535	223	121	87	69
25	327	1110	526	2880	1510	778	593	533	214	120	87	68
26	279	934	454	1720	1160	739	596	557	208	122	89	67
27	299	794	412	1240	950	707	601	581	206	122	90	67
28	289	1070	791	1010	791	684	552	826	249	119	87	68
29	245	1780	359	797	---	652	546	1310	636	120	85	80
30	420	1600	326	667	---	618	586	905	368	115	84	120
31	982	---	347	686	---	597	---	714	---	112	83	---
TOTAL	6231	32710	50901	42969	27355	28102	32723	18477	10438	5065	3022	2291
MEAN	201	1090	1642	1386	977	907	1091	596	348	163	97.5	76.4
MAX	982	4450	6010	6880	2450	2870	3890	1310	636	298	117	120
MIN	72	205	326	392	418	367	546	380	206	112	83	67
AC-FT	12360	64880	101000	85230	54260	55740	64910	36650	20700	10050	5990	4540
CFSM	1.68	9.09	13.7	11.6	8.14	7.55	9.09	4.97	2.90	1.36	0.81	0.64
IN.	1.93	10.14	15.78	13.32	8.48	8.71	10.14	5.73	3.24	1.57	0.94	0.71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	384	915	1198	1031	1094	825	754	659	416	197	118	135
MAX	1222	1655	2031	2488	2451	1647	1142	1097	772	414	172	409
(WY)	1998	1956	1997	1953	1996	1950	1996	1948	1955	1955	1954	1941
MIN	75.3	106	389	318	381	297	257	211	132	97.2	78.8	76.4
(WY)	1953	1953	1945	2001	1941	1941	1941	1947	1940	1940	1940	2002

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1940 - 2002

ANNUAL TOTAL		177425		260284								
ANNUAL MEAN		486		713						636		
HIGHEST ANNUAL MEAN										928		1997
LOWEST ANNUAL MEAN										317		2001
HIGHEST DAILY MEAN			6010	Dec 17		6880	Jan 7		17400	Feb 8	1996	
LOWEST DAILY MEAN			72	Oct 6		67	Sep 26		64	Sep 4	1947	
ANNUAL SEVEN-DAY MINIMUM			76	Oct 1		68	Sep 22		68	Aug 31	1947	
ANNUAL RUNOFF (AC-FT)		351900		516300					460800			
ANNUAL RUNOFF (CFSM)		4.05		5.94					5.30			
ANNUAL RUNOFF (INCHES)		55.00		80.69					72.02			
10 PERCENT EXCEEDS		989		1590					1350			
50 PERCENT EXCEEDS		289		502					430			
90 PERCENT EXCEEDS		90		82					100			

e Estimated

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1996 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: February 1996 to March 1999, October 1999 to current year. Water year 1999, daily sediment discharge values for period October to March, monthly sediment discharge values only for the period April to September.

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

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

EXTREMES FOR PERIOD OF DAILY RECORDS.--

SEDIMENT CONCENTRATION: Maximum daily, 18,000 mg/L (estimated) Oct. 4, 1997; minimum, 1 mg/L on many days 1996, 1998-2002, SEDIMENT DISCHARGE: Maximum daily, 356,000 tons Jan. 1, 1997; minimum, 0.25 tons Aug. 29, 2002.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily, 8,260 mg/L Nov. 14; minimum, 1 mg/L on several days.
SEDIMENT DISCHARGE: Maximum daily, 124,000 tons Dec. 17; minimum, 0.25 tons Aug. 29.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN	MEAN	SEDIMENT DISCHARGE (TONS/DAY)	MEAN	MEAN	SEDIMENT DISCHARGE (TONS/DAY)	MEAN	MEAN	SEDIMENT DISCHARGE (TONS/DAY)
	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)		DISCHARGE (CFS)	CONCEN- TRATION (MG/L)		DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	
OCTOBER			NOVEMBER			DECEMBER			
1	81	18	3.9	821	426	959	3110	1800	15400
2	79	13	2.8	648	216	382	2640	1210	9100
3	77	9.0	1.8	499	107	147	1730	603	2860
4	77	6.0	1.2	402	56	61.0	1430	312	1230
5	73	3.0	0.56	397	46	50.0	1230	232	780
6	72	5.0	0.90	328	24	21.0	1300	265	951
7	76	9.0	1.9	289	15	11.0	1220	272	908
8	89	14	3.4	261	13	9.4	1090	97	286
9	91	12	3.0	239	10	6.7	1040	70	196
10	113	41	18.0	221	12	7.4	932	81	204
11	161	80	36.0	205	9.0	4.9	894	63	153
12	120	27	8.8	210	9.0	5.0	849	49	112
13	170	84	40.0	351	301	643	2810	1010	15800
14	152	55	23.0	4450	8260	106000	4520	1650	23600
15	137	29	11.0	2120	4060	23700	2300	313	2000
16	123	14	4.5	1440	2000	8080	5420	e3610	e76000
17	127	10	3.5	976	1170	3090	6010	e6890	e124000
18	112	12	3.7	738	844	1690	2810	e2630	e20600
19	108	8.0	2.4	707	785	1500	1870	805	4200
20	109	6.0	1.6	1000	989	2730	1400	329	1270
21	113	5.0	1.4	1360	1360	5020	1120	169	513
22	168	47	37.0	3210	3960	40300	944	106	272
23	540	652	994	2950	3440	29600	759	59	122
24	422	167	204	1600	1290	5670	637	41	72.0
25	327	52	47.0	1110	686	2070	526	16	24.0
26	279	34	26.0	934	656	1640	454	10	12.0
27	299	52	47.0	794	604	1280	412	7.0	7.5
28	289	36	29.0	1070	873	2460	412	1.0	1.5
29	245	9.0	5.9	1780	1010	5080	359	1.0	1.1
30	420	290	549	1600	696	3110	326	2.0	1.8
31	982	1080	2910	---	---	---	347	2.0	2.1
TOTAL	6231	---	5022.26	32710	---	245327.4	50901	---	300679.0

COWLITZ RIVER BASIN

14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	392	24	31.0	650	90	159	668	16	29.0
2	623	70	120	558	65	98.0	579	14	22.0
3	623	67	113	628	69	117	509	8.0	11.0
4	529	36	52.0	571	49	77.0	466	7.0	8.2
5	502	8.0	10.0	556	69	105	464	6.0	7.2
6	952	186	871	699	97	208	512	5.0	6.6
7	6880	4720	97100	1220	191	628	422	2.0	2.3
8	5970	6320	107000	1280	125	433	378	2.0	2.4
9	2640	2340	18000	1080	78	230	367	3.0	2.7
10	1640	992	4380	920	41	102	588	59	103
11	1230	1990	6450	819	39	86.0	2560	922	9450
12	1300	2880	9770	679	28	51.0	2870	948	7700
13	1180	956	3060	580	16	26.0	1900	329	1730
14	1030	448	1260	496	14	18.0	1480	167	671
15	875	280	665	445	11	13.0	1190	132	423
16	788	220	468	449	13	16.0	1010	120	328
17	714	206	397	418	8.0	9.2	840	111	253
18	644	251	439	445	12	15.0	725	76	149
19	757	969	1990	896	66	167	990	75	224
20	885	274	656	905	47	116	1250	104	357
21	1090	252	751	1830	205	1160	1040	38	108
22	867	130	309	2230	252	1530	900	21	51.0
23	698	60	114	2450	320	2140	815	16	35.0
24	1160	275	1040	2140	227	1340	804	14	31.0
25	2880	1360	11300	1510	86	359	778	18	37.0
26	1720	377	1820	1160	49	154	739	14	28.0
27	1240	233	778	950	22	58.0	707	12	22.0
28	1010	244	668	791	19	41.0	684	11	20.0
29	797	119	260	---	---	---	652	10	17.0
30	667	55	101	---	---	---	618	9.0	15.0
31	686	80	151	---	---	---	597	9.0	14.0
TOTAL	42969	---	270124.0	27355	---	9456.2	28102	---	21857.4
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	APRIL			MAY			JUNE		
1	602	9.0	14.0	654	17	30.0	602	20	33.0
2	609	8.0	14.0	700	13	25.0	544	16	23.0
3	589	8.0	13.0	632	11	19.0	499	11	15.0
4	607	10	16.0	548	9.0	13.0	471	10	13.0
5	689	13	24.0	565	4.0	5.2	456	11	13.0
6	783	16	34.0	526	4.0	5.2	431	7.0	7.7
7	834	19	43.0	481	5.0	6.8	396	9.0	9.7
8	766	17	35.0	457	4.0	5.4	400	7.0	7.8
9	951	e24	e68.0	420	5.0	5.4	339	6.0	5.2
10	1780	e111	e561	391	4.0	4.2	319	4.0	3.6
11	1970	e122	e648	380	3.0	3.1	312	6.0	5.2
12	2020	e120	e661	403	6.0	7.0	315	6.0	4.8
13	2280	e174	e1140	542	8.0	13.0	325	8.0	6.9
14	3890	e985	e11500	604	12	20.0	333	4.0	3.3
15	2190	e171	e1030	555	9.0	13.0	320	2.0	2.2
16	1590	e117	e505	524	3.0	4.7	300	2.0	1.8
17	1300	e97	e341	552	5.0	7.6	285	3.0	2.4
18	1120	e88	e266	551	6.0	9.1	376	23	23.0
19	986	80	214	550	5.0	8.1	318	10	8.9
20	883	73	175	615	8.0	13.0	270	6.0	4.7
21	795	66	142	643	9.0	16.0	251	5.0	3.3
22	733	59	116	628	11	19.0	240	4.0	2.7
23	668	51	93.0	595	10	16.0	232	4.0	2.8
24	614	44	73.0	535	8.0	12.0	223	5.0	2.8
25	593	39	63.0	533	10	14.0	214	5.0	3.0
26	596	37	59.0	557	9.0	13.0	208	6.0	3.6
27	601	34	55.0	581	11	18.0	206	4.0	2.3
28	552	31	47.0	826	52	121	249	11	8.8
29	546	28	42.0	1310	154	564	636	52	93.0
30	586	26	41.0	905	77	192	368	17	17.0
31	---	---	---	714	42	81.0	---	---	---
TOTAL	32723	---	18033.0	18477	---	1283.8	10438	---	333.5

COWLITZ RIVER BASIN

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14241500 SOUTH FORK TOUTLE RIVER AT TOUTLE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT
	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)	DISCHARGE (CFS)	CONCEN- TRATION (MG/L)	DISCHARGE (TONS/DAY)
	JULY			AUGUST			SEPTEMBER		
1	298	5.0	4.2	108	2.0	0.65	80	2.0	0.43
2	261	4.0	2.9	106	2.0	0.63	80	2.0	0.43
3	239	5.0	3.1	102	2.0	0.59	81	2.0	0.44
4	231	4.0	2.6	107	2.0	0.60	79	2.0	0.43
5	219	4.0	2.3	117	2.0	0.64	78	2.0	0.42
6	203	3.0	1.7	117	1.0	0.43	78	2.0	0.42
7	200	4.0	2.1	108	1.0	0.29	77	2.0	0.41
8	210	11	6.0	106	1.0	0.32	79	2.0	0.43
9	193	3.0	1.6	106	2.0	0.57	79	2.0	0.43
10	180	4.0	1.9	110	3.0	0.85	77	2.0	0.41
11	169	2.0	0.71	109	3.0	0.88	76	2.0	0.41
12	163	2.0	0.84	102	3.0	0.95	76	2.0	0.41
13	160	2.0	0.86	98	4.0	1.2	74	2.0	0.40
14	156	2.0	0.78	96	3.0	0.82	73	2.0	0.39
15	150	1.0	0.45	97	3.0	0.76	73	2.0	0.45
16	147	3.0	1.0	94	2.0	0.54	75	4.0	0.71
17	143	3.0	1.2	96	2.0	0.52	81	5.0	1.0
18	140	3.0	1.1	e93	e3.0	e0.68	77	4.0	0.85
19	137	3.0	1.1	e92	e2.0	e0.50	74	3.0	0.60
20	136	3.0	1.1	e93	e2.0	e0.50	74	2.0	0.31
21	130	3.0	1.0	e91	e3.0	e0.78	72	3.0	0.50
22	127	3.0	0.95	92	4.0	0.92	70	2.0	0.42
23	122	3.0	0.90	90	4.0	0.92	69	2.0	0.40
24	121	3.0	0.88	87	2.0	0.56	69	4.0	0.66
25	120	3.0	0.85	87	3.0	0.67	68	3.0	0.56
26	122	3.0	0.84	89	3.0	0.72	67	2.0	0.28
27	122	3.0	0.83	90	3.0	0.67	67	3.0	0.48
28	119	2.0	0.79	87	1.0	0.30	68	3.0	0.55
29	120	2.0	0.78	85	1.0	0.25	80	6.0	1.3
30	115	2.0	0.73	84	2.0	0.43	120	7.0	2.1
31	112	2.0	0.70	83	2.0	0.45	---	---	---
TOTAL	5065	---	46.79	3022	---	19.59	2291	---	17.03
YEAR	260284		872199.97						

e Estimated

COWLITZ RIVER BASIN

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA

LOCATION.--Lat 46°20'05", long 122°50'27", in NW ¼ SW ¼ sec.20, T.10 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 10.7 mi downstream from confluence of North and South Forks, 2.9 mi northwest of Silver Lake, and at mile 6.5.

DRAINAGE AREA.--496 mi². A large debris avalanche generated by the eruption of Mount St. Helens on May 18, 1980 blocked tributaries in the upper North Fork Toutle River valley. As a result, from May 19, 1980 to July 7, 1981, approximately 40 mi² was noncontributing. From July 7, 1981 (Coldwater Lake, station 14240446, release) to October 1981, the noncontributing portion was approximately 21 mi². From October 1981 (Coldwater Lake release) to November 1982, the noncontributing portion was approximately 19.7 mi². Since November 1982 (Spirit Lake, station 14240304, release), effectively all areas are contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1981 to current year.

REVISED RECORDS.--WDR WA-86-1: 1982 (M) (P), 1983 (M) (P), 1984 (M) (P), 1985 (M).

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. Some quality of water data available from Washington Office for this station.

AVERAGE DISCHARGE.--21 years (water years 1982-2002), 2,105 ft³/s, 57.65 in/yr, 1,525,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,800 ft³/s, Feb. 8, 1996, gage height, 24.91 ft; maximum gage height, 28.03 ft Dec. 3, 1982; minimum daily, 243 ft³/s Oct. 14, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods occurred on May 18, 1980, from mudflows caused by the eruption of Mount St. Helens. A flood about 1200 hours was due to mudflow from South Fork Toutle River and a larger flood about 2100 hours was due to mudflow from North Fork Toutle River.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	2330	10,600	10.23	Jan. 25	1045	10,800	10.24
Dec. 14	0145	13,100	11.22	Mar. 11	2115	10,900	10.29
Dec. 17	0300	*23,300	*14.76	Apr. 14	0700	11,900	10.75
Jan. 08	0230	22,300	14.53				

Minimum discharge, 288 ft³/s Oct. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	324	2330	7530	1690	2710	2440	2240	2100	2190	1200	512	367
2	316	1990	7230	2120	2470	2190	2230	2270	2060	1070	495	376
3	310	1630	5570	2130	2570	2020	2160	2220	2010	1020	484	383
4	310	1370	4940	1970	2440	1900	2150	2020	1940	979	488	379
5	299	1360	4470	1890	2360	1890	2280	2000	1940	935	526	366
6	295	1170	4330	2280	2520	2070	2480	1990	1940	885	531	363
7	301	1030	4050	11500	3760	1860	2650	1910	1780	895	485	361
8	330	931	3550	15800	4620	1740	2540	1810	1720	991	468	370
9	357	858	3480	8290	4050	1670	2730	1680	1520	e920	454	380
10	364	801	3120	5860	3520	1960	4590	1590	1430	e900	449	365
11	625	751	3180	4560	3280	5370	5230	1520	1460	858	452	357
12	484	750	2990	4310	2820	7520	5380	1540	1500	842	437	351
13	686	956	5340	3800	2530	5670	5770	1800	e1600	816	427	346
14	650	6750	10200	3280	2280	4780	9960	2040	e1800	790	420	340
15	644	5120	6460	2920	2120	4020	6930	1930	1680	756	414	339
16	547	4170	10100	2740	2140	3560	5590	1870	1550	727	411	351
17	554	3290	16500	2650	2040	3090	4640	1930	1430	712	406	381
18	485	2600	8640	2430	2040	2750	3890	1980	1580	699	395	358
19	454	2390	6340	2830	2710	3500	3340	1950	1510	685	396	343
20	457	2900	4940	3070	2760	4410	2980	2120	1340	673	401	343
21	453	3650	3880	3590	4260	3640	2710	2260	1300	643	406	334
22	563	6270	3220	3160	5700	3130	2560	2180	1300	629	407	327
23	1400	8170	2750	2830	6700	2880	2370	2090	1280	613	394	321
24	1410	5160	2440	3480	6370	2780	2190	1940	1220	603	385	318
25	1190	3820	2200	8630	4850	2730	2100	1920	1160	595	381	315
26	1080	3010	2030	6450	3860	2610	2090	2010	1170	597	394	311
27	1150	2450	1890	4870	3210	2550	2160	2090	1200	595	402	311
28	1210	3250	1900	3840	2780	2470	2010	2470	1230	571	390	309
29	992	5500	1740	3200	---	2460	1940	3430	1870	568	377	352
30	1160	5160	1630	2880	---	2370	1980	2920	1440	546	373	496
31	2340	---	1660	2850	---	2290	---	2480	---	530	373	---
TOTAL	21740	89587	148300	131900	93470	94320	101870	64060	47150	23843	13333	10613
MEAN	701	2986	4784	4255	3338	3043	3396	2066	1572	769	430	354
MAX	2340	8170	16500	15800	6700	7520	9960	3430	2190	1200	531	496
MIN	295	750	1630	1690	2040	1670	1940	1520	1160	530	373	309
AC-FT	43120	177700	294200	261600	185400	187100	202100	127100	93520	47290	26450	21050
CFMSM	1.41	6.02	9.64	8.58	6.73	6.13	6.85	4.17	3.17	1.55	0.87	0.71
IN.	1.63	6.72	11.12	9.89	7.01	7.07	7.64	4.80	3.54	1.79	1.00	0.80

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	960	2964	3516	3429	3445	2922	2675	2109	1574	820	484	452
MAX	2931	5290	6954	5939	7754	5500	4697	3192	2643	1653	771	925
(WY)	1998	1996	1997	1997	1996	1997	1991	1999	1990	1983	1999	1997
MIN	310	418	1350	1167	1185	1315	1707	1226	539	412	306	277
(WY)	1988	1994	2001	2001	1993	1992	1998	1992	1992	1992	1992	1989

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR			FOR 2002 WATER YEAR			WATER YEARS 1981 - 2002		
ANNUAL TOTAL	588200			840186					
ANNUAL MEAN	1612			2302			2105		
HIGHEST ANNUAL MEAN							3118		
LOWEST ANNUAL MEAN							1168		
HIGHEST DAILY MEAN	16500			Dec 17			16500		
LOWEST DAILY MEAN	268			Sep 24			295		
ANNUAL SEVEN-DAY MINIMUM	288			Sep 19			308		
ANNUAL RUNOFF (AC-FT)	1167000			1667000			1525000		
ANNUAL RUNOFF (CFSM)	3.25			4.64			4.24		
ANNUAL RUNOFF (INCHES)	44.11			63.01			57.65		
10 PERCENT EXCEEDS	3140			4940			4170		
50 PERCENT EXCEEDS	1140			1940			1640		
90 PERCENT EXCEEDS	376			375			401		

e Estimated

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May to October 1990, May to September 1991.

WATER TEMPERATURE: May to October 1990, May to September 1991.

SUSPENDED SEDIMENT DISCHARGE: February 1981 to current year. Records prior to October 1985 are published in U.S. Geological Survey Open-File Report 85-632; records for 1984-87 are published in U.S. Geological Survey Open-File Report 91-219.

INSTRUMENTATION.--Water-quality monitor May 1990 to September 1991. Automatic pumping sediment sampler since February 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily, 232,000 mg/L Mar. 20, 1982; minimum, 1 mg/L Oct. 3, 1989.

SEDIMENT DISCHARGE: Maximum daily, 5,930,000 tons Feb. 20, 1982; minimum, 0.71 tons Oct. 3, 1989.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily, 10,200 mg/L Jan. 8; minimum, 8 mg/L on several days.

SEDIMENT DISCHARGE: Maximum daily, 464,000 tons Jan. 8; minimum, 6.5 tons Sept. 27.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	OCTOBER			NOVEMBER			DECEMBER		
1	324	9.0	8.2	2330	590	3770	7530	1480	31000
2	316	11	9.4	1990	356	1910	7230	1100	22000
3	310	14	12.0	1630	271	1200	5570	613	9310
4	310	8.0	6.6	1370	228	844	4940	490	6570
5	299	9.0	7.0	1360	286	1050	4470	340	4130
6	295	9.0	7.2	1170	214	682	4330	305	3600
7	301	9.0	7.0	1030	145	405	4050	239	2660
8	330	10	9.4	931	106	268	3550	170	1630
9	357	9.0	8.5	858	73	169	3480	193	1830
10	364	12	13.0	801	68	147	3120	157	1330
11	625	81	137	751	68	138	3180	161	1380
12	484	47	62.0	750	79	161	2990	142	1150
13	686	132	255	956	275	753	5340	1150	27700
14	650	97	171	6750	6070	128000	10200	2440	72000
15	644	60	106	5120	2060	29200	6460	812	14400
16	547	56	82.0	4170	1290	14700	10100	1960	66600
17	554	89	134	3290	830	7450	16500	5930	289000
18	485	86	113	2600	456	3250	8640	2000	47200
19	454	76	94.0	2390	287	1870	6340	1200	20800
20	457	66	82.0	2900	711	5580	4940	893	12000
21	453	62	76.0	3650	836	8270	3880	688	7230
22	563	84	129	6270	2750	59100	3220	543	4740
23	1400	466	1950	8170	2610	60700	2750	443	3300
24	1410	286	1160	5160	902	12800	2440	428	2820
25	1190	108	349	3820	453	4730	2200	381	2270
26	1080	82	240	3010	274	2250	2030	414	2260
27	1150	111	355	2450	222	1470	1890	313	1590
28	1210	163	539	3250	619	6490	1900	310	1590
29	992	57	155	5500	1150	17500	1740	289	1360
30	1160	143	526	5160	716	10100	1630	259	1140
31	2340	1680	11200	---	---	---	1660	258	1160
TOTAL	21740	---	18003.3	89587	---	384957	148300	---	665750

COWLITZ RIVER BASIN

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14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	1690	268	1230	2710	380	2800	2440	593	3910
2	2120	449	2570	2470	294	1960	2190	536	3170
3	2130	401	2310	2570	355	2480	2020	440	2400
4	1970	367	1960	2440	300	1990	1900	369	1900
5	1890	259	1320	2360	276	1760	1890	411	2100
6	2280	613	4230	2520	377	2620	2070	518	2900
7	11500	7210	249000	3760	1380	14200	1860	343	1720
8	15800	10200	464000	4620	1240	15600	1740	207	976
9	8290	4940	112000	4050	690	7630	1670	102	460
10	5860	4000	63600	3520	498	4750	1960	289	1580
11	4560	2390	29900	3280	486	4350	5370	3950	81500
12	4310	1940	22700	2820	423	3230	7520	3340	72000
13	3800	1500	15500	2530	338	2310	5670	1520	23300
14	3280	1140	10100	2280	280	1730	4780	947	12300
15	2920	1020	8040	2120	250	1440	4020	709	7710
16	2740	1160	8610	2140	310	1800	3560	567	5460
17	2650	1080	7800	2040	278	1530	3090	442	3700
18	2430	888	5830	2040	253	1400	2750	362	2690
19	2830	1370	10500	2710	722	5540	3500	927	10000
20	3070	1520	12900	2760	582	4370	4410	1140	14100
21	3590	1770	17400	4260	2670	35100	3640	560	5540
22	3160	956	8150	5700	3440	52900	3130	394	3350
23	2830	773	5930	6700	3920	71800	2880	333	2580
24	3480	1580	16500	6370	2660	46300	2780	408	3070
25	8630	4570	108000	4850	1600	21300	2730	392	2890
26	6450	1520	27200	3860	1080	11300	2610	377	2660
27	4870	803	10700	3210	835	7290	2550	361	2490
28	3840	524	5460	2780	661	4970	2470	345	2300
29	3200	385	3330	---	---	---	2460	330	2190
30	2880	354	2750	---	---	---	2370	314	2010
31	2850	425	3300	---	---	---	2290	298	1840
TOTAL	131900	---	1242820	93470	---	334450	94320	---	284796
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	APRIL			MAY			JUNE		
1	2240	305	1850	2100	657	3740	2190	764	4520
2	2230	321	1940	2270	708	4350	2060	674	3740
3	2160	299	1740	2220	590	3550	2010	678	3670
4	2150	278	1610	2020	495	2710	1940	642	3360
5	2280	269	1660	2000	475	2570	1940	671	3520
6	2480	384	2580	1990	467	2520	1940	701	3680
7	2650	520	3720	1910	440	2270	1780	621	2980
8	2540	460	3170	1810	404	1980	1720	638	2970
9	2730	801	6490	1680	299	1350	1520	532	2180
10	4590	2970	37300	1590	238	1020	1430	459	1770
11	5230	2450	34700	1520	197	813	1460	596	2360
12	5380	2080	30200	1540	218	907	1500	676	2750
13	5770	2320	36700	1800	456	2260	e1600	832	e3600
14	9960	7510	208000	2040	623	3430	e1800	1010	e4900
15	6930	3750	71000	1930	329	1730	1680	878	3980
16	5590	2340	35600	1870	176	887	1550	749	3140
17	4640	1700	21400	1930	146	762	1430	652	2520
18	3890	1500	15800	1980	123	658	1580	851	3630
19	3340	1250	11300	1950	125	661	1510	687	2820
20	2980	1030	8330	2120	322	1850	1340	491	1780
21	2710	866	6350	2260	518	3160	1300	443	1550
22	2560	794	5500	2180	498	2920	1300	486	1720
23	2370	724	4640	2090	449	2540	1280	491	1710
24	2190	655	3880	1940	401	2110	1220	385	1270
25	2100	585	3320	1920	380	1970	1160	368	1160
26	2090	542	3050	2010	376	2030	1170	436	1380
27	2160	528	3080	2090	367	2070	1200	542	1760
28	2010	513	2790	2470	595	3990	1230	638	2160
29	1940	504	2650	3430	1890	17700	1870	2900	15000
30	1980	560	2990	2920	1320	10500	1440	897	3530
31	---	---	---	2480	946	6340	---	---	---
TOTAL	101870	---	573340	64060	---	95348	47150	---	95110

COWLITZ RIVER BASIN

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT	MEAN	MEAN	SEDIMENT
	DISCHARGE	CONCEN-	DISCHARGE	DISCHARGE	CONCEN-	DISCHARGE	DISCHARGE	CONCEN-	DISCHARGE
	(CFS)	TRATION	(TONS/DAY)	(CFS)	TRATION	(TONS/DAY)	(CFS)	TRATION	(TONS/DAY)
		(MG/L)			(MG/L)			(MG/L)	
	JULY			AUGUST			SEPTEMBER		
1	1200	434	1410	512	31	43.0	367	9.0	8.6
2	1070	400	1160	495	31	41.0	376	11	11.0
3	1020	215	590	484	30	39.0	383	9.0	9.1
4	979	211	558	488	29	39.0	379	10	9.7
5	935	300	760	526	29	41.0	366	12	12.0
6	885	175	418	531	29	42.0	363	9.0	8.4
7	895	189	458	485	30	40.0	361	8.0	7.5
8	991	196	526	468	18	23.0	370	9.0	9.0
9	e920	172	e430	454	15	18.0	380	9.0	9.5
10	e900	140	e340	449	18	22.0	365	9.0	8.6
11	858	157	363	452	15	18.0	357	9.0	8.5
12	842	139	316	437	13	16.0	351	10	9.4
13	816	137	301	427	14	16.0	346	11	11.0
14	790	134	285	420	15	17.0	340	9.0	8.5
15	756	111	228	414	13	15.0	339	8.0	7.6
16	727	84	166	411	17	19.0	351	9.0	8.5
17	712	73	141	406	14	16.0	381	11	11.0
18	699	79	150	395	14	15.0	358	9.0	8.6
19	685	60	111	396	11	12.0	343	12	11.0
20	673	65	119	401	12	13.0	343	13	12.0
21	643	54	93.0	406	16	18.0	334	11	9.9
22	629	43	73.0	407	9.0	10.0	327	13	11.0
23	613	34	56.0	394	12	13.0	321	10	8.6
24	603	31	50.0	385	10	11.0	318	11	9.8
25	595	35	56.0	381	9.0	9.2	315	12	9.9
26	597	33	54.0	394	8.0	8.8	311	9.0	7.9
27	595	34	54.0	402	11	11.0	311	8.0	6.5
28	571	34	52.0	390	10	10.0	309	8.0	7.0
29	568	33	51.0	377	10	10.0	352	9.0	8.9
30	546	32	48.0	373	10	10.0	496	30	41.0
31	530	32	46.0	373	12	12.0	---	---	---
TOTAL	23843	---	9463.0	13333	---	628.0	10613	---	310.0
YEAR	840186		3704975.3						

e Estimated

COWLITZ RIVER BASIN

14243000 COWLITZ RIVER AT CASTLE ROCK, WA

LOCATION.--Lat 46°16'28", long 122°54'45", in SW ¼ SE ¼ sec.10, T.9 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, on left bank 40 ft downstream from Arkansas Valley Road bridge in Castle Rock, 2.7 mi downstream from Toutle River, and at mile 17.3.

DRAINAGE AREA.--2,238 mi². A large debris avalanche generated by the eruption of Mount St. Helens on May 18, 1980 blocked tributaries in the upper North Fork Toutle River valley. As a result, from May 19, 1980 to July 7, 1981, approximately 40 mi² was noncontributing. From July 7, 1981 (Coldwater Lake, station 14240446, release) to October 1981, the noncontributing portion was approximately 21 mi². From October 1981 (Coldwater Lake release) to November 1982, the noncontributing portion was approximately 19.7 mi². Since November 1982 (Spirit Lake, station 14240304, release), effectively all areas are contributing.

PERIOD OF RECORD.--December 1926 to current year; October 1985 to April 2000 (seasonal records).

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1638: 1947(P), 1951.

GAGE.--Water-stage recorder. Datum of gage is NAVD of 1988. Prior to Dec. 18, 1933, nonrecording gage at site 2 mi upstream at datum 38.58 ft higher. Dec. 18, 1933, to June 13, 1934, nonrecording gage, and June 14 to Sept. 30, 1934, water-stage recorder, at present site at datum 28.65 ft higher. Oct. 1, 1934, to May 21, 1980, water-stage recorder, on right bank at datum 23.65 ft higher. May 23, 1980, to July 29, 1997, water-stage recorder at present site at datum 23.65 ft higher.

REMARKS.--Records good. Flow regulated by Riffe Lake (station 14234800) at mile 65.5, and Mayfield Reservoir (station 14237800) at mile 52.0. Minor diversions for domestic and farm use upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1928-85, 2001-02), 9,213 ft³/s, 55.90 in/yr, 6,675,000 acre-ft/yr, adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 139,000 ft³/s Dec. 23, 1933, gage height, 55.25 ft present datum, from rating curve extended above 80,000 ft³/s; maximum gage height, 55.76 ft Feb. 8, 1996; minimum discharge, 998 ft³/s Nov. 7, 8, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 51,400 ft³/s Dec. 17, gage height, 44.78 ft; minimum discharge, 2,900 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3050	5310	26100	9040	14300	11700	8440	11800	13300	11600	3700	3500
2	3040	4830	24000	10000	10800	10600	8360	12000	11900	12200	3680	3630
3	3030	4420	21000	9700	10200	8720	8190	11100	12500	11400	3670	4690
4	2970	4110	21400	9330	10700	7800	9010	9250	12600	9830	3680	5110
5	2960	4070	21000	9140	11200	7650	9910	8540	12400	7850	3730	5110
6	2960	4620	19700	9740	11300	7980	9010	10200	12400	6590	3750	5050
7	2980	4790	18700	21500	12900	7820	8550	11700	12200	6560	3680	4010
8	3010	4660	14300	33800	15000	7610	9680	11600	12200	7570	3650	3590
9	3030	4580	13000	25600	12200	7490	10300	11500	12000	8100	3640	4230
10	3040	4510	13200	21300	10700	7860	12000	10400	12200	7200	3620	5080
11	3210	4460	14500	19300	10200	13500	12800	8720	12600	7160	3620	5090
12	3140	4470	14500	18900	9330	18000	13000	7550	12600	6740	4190	5080
13	3240	4760	18400	18300	8820	15000	13400	9480	12700	6400	4900	5070
14	3230	14500	31500	17500	8390	13500	19600	11600	12800	6380	4900	4150
15	3250	14700	24400	17000	8080	12000	17400	11500	12200	6320	4900	3540
16	3170	11400	31000	16700	8070	11300	16400	11500	12600	6260	4890	4210
17	3160	8150	41600	17000	7980	12400	15300	10700	12800	5360	4160	5130
18	3130	7000	27500	16600	7870	12600	14500	9030	13400	4970	3580	5130
19	3110	7510	24200	17200	8590	15600	13700	8010	12700	4930	4130	5090
20	3100	11300	21600	17900	8820	17300	12300	10300	12000	4270	4860	5070
21	3110	12900	19600	18800	11200	15900	10500	12000	10200	4000	4870	4240
22	3210	15400	18200	18300	13600	15100	11200	10500	9410	4540	4870	3540
23	3950	17800	14600	18000	14100	13200	13200	9520	10000	4780	4820	4110
24	4190	13700	13500	19400	14000	11200	13400	8660	11100	4780	3810	e4900
25	3870	11400	10400	31300	12100	12000	12400	7790	13000	4770	3540	e4200
26	3730	12100	9670	25900	13500	12600	11200	7660	13100	4470	4090	3710
27	3770	14800	9360	21400	12700	12400	9590	7750	12400	3810	4850	3690
28	3940	18000	9430	19500	12100	12300	8350	9440	11700	3780	4860	3570
29	3680	23100	9130	18100	---	11100	9790	13400	12400	3780	4850	3560
30	3740	22600	8880	14700	---	9230	11800	14700	11500	3750	4840	3740
31	5050	---	8890	14400	---	8530	---	15900	---	3720	4050	---
TOTAL	104050	295950	573260	555350	308750	359990	353280	323800	364910	193870	130380	130820
MEAN	3356	9865	18490	17910	11030	11610	11780	10450	12160	6254	4206	4361
MAX	5050	23100	41600	33800	15000	18000	19600	15900	13400	12200	4900	5130
MIN	2960	4070	8880	9040	7870	7490	8190	7550	9410	3720	3540	3500
AC-FT	206400	587000	1137000	1102000	612400	714000	700700	642300	723800	384500	258600	259500
MEAN†	2942	12620	18670	17260	12110	11550	15330	12250	13000	5762	2514	1875
CFMS†	1.31	5.64	8.34	7.71	5.41	5.16	6.85	5.47	5.81	2.57	1.12	0.84
IN.†	1.52	6.29	9.62	8.89	5.64	5.95	7.64	6.31	6.48	2.97	1.30	0.93
AC-FT†	180900	750900	1148000	1061000	672300	710400	912200	753100	773800	354300	154600	111600

CAL YR 2001 TOTAL 2208160 MEAN 6050 MAX 41600 MIN 2890 AC-FT 4380000 MEAN† 6926 CFMS† 3.09 IN.† 42.02 AC-FT† 5014000
WTR YR 2002 TOTAL 3694410 MEAN 10120 MAX 41600 MIN 2960 AC-FT 7328000 MEAN† 10480 CFMS† 4.68 IN.† 63.58 AC-FT† 7584000

† Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.
e Estimated

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR

LOCATION.--Lat 46°10'55", long 123°10'50", in NE 1/4 sec.16, T.8 N., R.4 W., Columbia County, Hydrologic Unit 17080003, on left bank, 0.7 mi downstream from Crims Island, 3.0 mi northwest of Quincy, and at mile 53.8.

DRAINAGE AREA.--256,900 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1968 to June 1970, June 1991 to current year.

GAGE.--Water-stage and velocity index recorder. Datum of gage is 0.52 ft above NGVD of 1929. May 1968 to June 1970 water-stage recorder with auxillary water-stage recorder 5.6 miles downstream, at datum 10.00 ft lower.

REMARKS.--Records fair. Flow regulated by many reservoirs on Columbia River and in tributary basins. Flows affected by tide which can cause reverse direction during tidal cycle when mean daily flows are less than 250,000 ft³/s. Mean discharge values are based on a 24 hour day, not a tidal cycle.

AVERAGE DISCHARGE.--12 years (water years 1969, 1992-2002), 239,300 ft³/s, 173,300,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 864,000 ft³/s Feb. 10, 1996; minimum daily discharge, 63,600 ft³/s Sept. 9, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 464,000 ft³/s Apr. 18; maximum gage height, 9.57 ft Dec. 1; minimum daily discharge, 68,000 ft³/s Oct. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88700	124000	274000	171000	272000	215000	173000	264000	369000	355000	166000	143000
2	101000	127000	317000	159000	249000	189000	212000	261000	384000	352000	169000	120000
3	106000	121000	325000	185000	233000	177000	202000	270000	365000	349000	166000	103000
4	91700	104000	293000	188000	210000	152000	176000	279000	363000	334000	166000	118000
5	70100	106000	291000	189000	231000	154000	183000	277000	375000	319000	147000	134000
6	85400	118000	288000	181000	218000	152000	177000	265000	406000	284000	178000	121000
7	84600	138000	302000	227000	222000	173000	183000	265000	417000	266000	164000	115000
8	69400	126000	267000	315000	271000	198000	178000	283000	403000	265000	159000	96300
9	79800	131000	265000	338000	298000	176000	203000	282000	388000	241000	176000	88500
10	75300	124000	242000	348000	268000	162000	223000	249000	e380000	219000	158000	90200
11	113000	111000	241000	324000	230000	164000	256000	225000	e370000	216000	147000	117000
12	97400	111000	245000	266000	232000	222000	231000	231000	357000	239000	145000	108000
13	102000	123000	218000	254000	224000	283000	281000	212000	327000	256000	151000	89400
14	92800	132000	291000	243000	218000	306000	328000	237000	330000	247000	154000	91800
15	105000	165000	323000	225000	220000	268000	375000	238000	315000	244000	163000	120000
16	101000	157000	305000	250000	195000	264000	423000	244000	319000	242000	181000	93300
17	104000	159000	370000	272000	164000	245000	459000	240000	301000	221000	164000	101000
18	127000	165000	364000	247000	165000	209000	464000	249000	326000	242000	145000	123000
19	109000	133000	376000	227000	167000	221000	439000	239000	346000	247000	146000	116000
20	91700	146000	346000	206000	195000	234000	400000	249000	381000	228000	154000	122000
21	80100	175000	328000	238000	195000	234000	373000	268000	388000	239000	163000	132000
22	68000	170000	319000	266000	205000	209000	351000	297000	381000	230000	153000	113000
23	122000	237000	283000	291000	203000	191000	337000	317000	348000	225000	148000	112000
24	113000	227000	258000	299000	222000	186000	328000	314000	336000	199000	148000	131000
25	118000	227000	221000	301000	240000	182000	304000	305000	340000	205000	153000	118000
26	97800	220000	211000	331000	220000	177000	284000	281000	314000	186000	130000	117000
27	112000	215000	194000	338000	220000	182000	269000	264000	316000	171000	130000	129000
28	109000	200000	182000	321000	214000	187000	264000	284000	335000	170000	138000	114000
29	117000	252000	184000	308000	---	185000	240000	329000	369000	159000	144000	94800
30	111000	286000	178000	295000	---	184000	248000	350000	383000	171000	132000	102000
31	107000	---	170000	280000	---	174000	---	361000	---	181000	143000	---
TOTAL	3049800	4830000	8471000	8083000	6201000	6255000	8611000	8429000	10732000	7502000	4781000	3373300
MEAN	98380	161000	273300	260700	221500	201800	287000	271900	357700	242000	154200	112400
MAX	127000	286000	376000	348000	298000	306000	464000	361000	417000	355000	181000	143000
MIN	68000	104000	170000	159000	164000	152000	173000	212000	301000	159000	130000	88500
AC-FT	6049000	9580000	16800000	16030000	12300000	12410000	17080000	16720000	21290000	14880000	9483000	6691000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002				
MEAN	144800	196500	269100	288900	282400	255900	273600	325100	327800	217400	157400	129600																											
MAX	212300	256500	430800	444300	543400	388700	406500	507500	514500	279300	223000	177300																											
(WY)	1998	1996	1996	1997	1996	1997	1969	1997	1997	1997	1999	1997																											
MIN	98380	136100	175400	153400	141500	142100	150500	174700	151700	98390	106300	90080																											
(WY)	2002	1994	1994	2001	2001	2001	2001	2001	2001	2001	2001	2001																											

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1968 - 2002
ANNUAL TOTAL	53007600	80318100	
ANNUAL MEAN	145200	220000	239300
HIGHEST ANNUAL MEAN			338200
LOWEST ANNUAL MEAN			140000
HIGHEST DAILY MEAN	376000	Dec 19	864000
LOWEST DAILY MEAN	63600	Sep 9	63600
ANNUAL SEVEN-DAY MINIMUM	78700	Sep 5	78700
ANNUAL RUNOFF (AC-FT)	105100000		173300000
10 PERCENT EXCEEDS	211000		390000
50 PERCENT EXCEEDS	140000		217000
90 PERCENT EXCEEDS	88900		123000

e Estimated

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites. The description and location of some sites may have been updated from previously published miscellaneous measurements sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at low-flow partial-record sites and peak flows at miscellaneous sites and for special studies are given in separate tables.

Crest-Stage Partial-Record Stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual Maximum Discharge at Crest-Stage Partial-Record Stations During Water Year 2002

Station name and number	Location of drainage area	Period of record	Water year 2002 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis-charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
PUYALLUP RIVER BASIN								
Puyallup River at Alderton (12096500)	Lat 47°11'07", long 122°13'42", on line between sec.25, T.20 N., R.4 E., and sec.30, T.20 N., R.5 E., Pierce County, at State Highway 162 road crossing, 1.0 mi north of Alderton, 1.0 mi south of Sumner, and at mile 12.2. Drainage area is 438 mi ² .	1914-27, 1943-57‡, 1997-2002	04-14-02	51.95a,b	12,300	02-09-96	61.15a	41,500
SNOHOMISH RIVER BASIN								
Snoqualmie River at Duvall (12150400)	Lat 47°44'36", long 121°59'12", in SW 1/4 NW 1/4 sec.13, T26. N, R.6 E., King County Hydrologic Unit 17110010, on right bank at downstream side of abandoned bridge pier 100 ft south of the present Woodinville-Duvall Road bridge in Duvall. Drainage area is 645 mi ² .	2001-2002	04-15-02	39.75a	--	04-15-02	39.75 a	--
PEND OREILLE RIVER BASIN								
Calispell Creek near Dalkena, (12396000)	Lat 48°14'40", long 117°20'26", in NE 1/4 SW 1/4 sec.26, T.32N, R.43E., Pend Oreille County, 2.4 mi upstream from Calispell Lake, and 4.8 mi west of Dalkena. Drainage area is 68.3 mi ² .	1950-73‡, 1974-2002	04-14-02	10.14	1,280	01-15-74	14.38	3,190

-- No data or undetermined.

‡ Operated as a continuous-record gaging station.

a Gage height shown is at NGVD of 1929.

b From crest-stage gage. Station operated Oct. 15 to Apr. 15.

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
CHEHALIS RIVER BASIN						
Thompson Creek	Skookumchuck River	Lat 46°47'39", long 122°45'49", in SE¼SE¼ sec.11, T.15 N., R.1 W., Thurston County, Hydrologic Unit 17100103, at road bridge, 4.9 mi east of Bucoda, and 0.2 mi upstream from mouth.	7.16	--	12-17-01	226
Unnamed Tributary	Skookumchuck River	Lat 46°46'26", long 122°55'20", in SW¼NW¼ sec.22, T.15 N., R.2 W., Thurston County, Hydrologic Unit 17100103, at mobile home park, 3.2 mi southwest of Bucoda, 0.1 mi upstream from mouth.	--	--	12-14-01	91
Porter Creek	Chehalis River	Lat 46°56'15", long 123°18'30", in NW¼NE¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, at railroad bridge, at Porter, and at mouth.	39.8	1963-65 1972 1976-78 1980-82 2000-01	07-31-02	17
HUMPTULIPS RIVER BASIN						
12039000 Humptulips River	Grays Harbor	Lat 47°13'42", long 123°56'23", in NE 1/4 NE 1/4 sec. 17, T. 20 N., R. 10 W., Grays Harbor County, Hydrologic Unit 17100105, 2.3 mi upstream from Stevens Creek, 3.3 mi downstream from confluence of east and west forks, 0.9 mi southeast of Humptulips, and at mile 24.8.	130	1933-35‡ 1942 1942-79‡ 1980-97	09-16-02	217
BETWEEN DUNGENESS RIVER AND QUILCENE RIVER BASINS						
Chimacum Creek	Port Townsend	Lat 47°56'20", long 122°48'34", in NW¼NE¼ sec.9, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 20 ft upstream from sediment basin, and 0.8 mi west of Center.	--	--	06-26-02	0.84
Unnamed Tributary	Chimacum Creek	Lat 47°56'54", long 122°47'56", in SE¼NE¼ sec.4, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, at West Valley Road, 0.6 mi northwest of Center, and 5 ft upstream from mouth.	--	--	06-26-02	0.17
Chimacum Creek	Port Townsend	Lat 47°56'54", long 122°47'54", in SW¼NW¼ sec.3, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 50 ft downstream from West Valley Road, and 0.6 mi northwest of Center.	9.38	1952-53	06-26-02	2.4
Chimacum Creek	Port Townsend	Lat 47°57'49", long 122°46'47", in SE¼NE¼ sec.34, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, at Center Road bridge, and 1.7 mi north of Center.	--	--	06-26-02	2.8
12051500 Chimacum Creek	Port Townsend	Lat 47°58'26", long 122°46'35", in NW¼SW¼ sec.26, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 100 ft downstream from road bridge, and 2.4 mi north of Center.	13.8	1952-58‡	06-26-02 06-26-02	4.4 3.7

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Unnamed Tributary	Chimacum Creek	Lat 47°58'54", long 122°47'11", in NW¼NE¼ sec.27, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 10 ft upstream from wier, 50 ft downstream from West Valley Road, and 2.8 mi north of Center.	--	--	06-26-02	0.32
Unnamed Tributary	Chimacum Creek	Lat 48°00'16", long 122°46'59", in NW¼SE¼ sec.15, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 10 ft downstream from West Valley Road, and 0.9 mi southwest of Chimacum.	--	--	06-26-02	0.14
Chimacum Creek	Port Townsend	Lat 48°00'43", long 122°46'24", in NW¼NW¼ sec.14, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, at Rhody Drive bridge, and 0.3 mi west of Chimacum.	21.7	1947	06-26-02	3.9
Unnamed Tributary	Chimacum Creek	Lat 47°57'18", long 122°44'24", in NE¼NE¼ sec.1, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 30 ft upstream from Egg and I Road, and 2.0 mi north of Beaver Valley.	--	--	06-26-02	0.62
Unnamed Tributary	Chimacum Creek	Lat 47°58'37", long 122°44'40", in NW¼SE¼ sec.25, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, upstream from culvert, and 3.2 mi south of Chimacum.	--	--	06-26-02	1.5
Unnamed Tributary	Chimacum Creek	Lat 47°59'29", long 122°45'10", in NW¼SW¼ sec.24, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, Lamberton site, and 1.7 mi southeast of Chimacum.	--	--	06-26-02	1.6
Unnamed Tributary	Chimacum Creek	Lat 48°01'11", long 122°46'12", in NE¼SW¼ sec.11, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, 20 ft downstream from Chimacum Road, and 0.6 mi north of Chimacum.	--	--	06-26-02	1.4
Chimacum Creek	Port Townsend	Lat 48°01'39", long 122°46'26", in NW¼NW¼ sec.11, T.29 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, at PUD gage, 50 ft upstream from footbridge, 300 ft east of end of Hilda Road, 1.2 mi north of Chimacum, and at mile 2.3.	--	--	06-26-02	6.3
Chimacum Creek	Port Townsend	Lat 48°02'57", long 122°47'16", in NE¼SW¼ sec.34, T.30 N., R.1 W., Jefferson County, Hydrologic Unit 17110019, and 0.7 mi upstream from mouth.	--	--	06-26-02	7.1
Tarboo Creek	Tarboo Bay	Lat 47°54'51", long 122°49'28", in SE¼SE¼ sec.17, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, 20 ft upstream from culvert under Dabob Road, and 2.4 mi southwest of Center.	--	--	07-02-02	0.70

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Unnamed Tributary	Tarboo Creek	Lat 47°53'55", long 122°49'36", in SE¼SE¼ sec.20, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, upstream from Old Tarboo Road, 3.3 mi southwest of Center, and 0.1 mi upstream from mouth.	--	--	07-02-02	0.18
Tarboo Creek	Tarboo Bay	Lat 47°53'48", long 122°49'22", in SE¼SE¼ sec.20, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, 40 ft upstream from Old Tarboo Road, and 3.3 mi southwest of Center.	--	--	07-02-02	2.1
Unnamed Tributary	Tarboo Creek	Lat 47°53'44", long 122°49'16", in NW¼NW¼ sec.28, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, at ditch next to Dabob Road, 0.2 mi south of Old Tarboo Road, and 3.4 mi southwest of Center.	--	--	07-02-02	0.03
Tarboo Creek	Tarboo Bay	Lat 47°53'20", long 122°49'11", in NW¼SW¼ sec.28, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, 0.6 mi south of intersection of Old Tarboo Road and Dabob Road, and 3.8 mi southwest of Center.	--	--	07-02-02	2.0
Tarboo Creek	Tarboo Bay	Lat 47°52'12", long 122°49'01", in SW¼SW¼ sec.33, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, 100 ft downstream from Dabob P.O. Road, and 1.6 mi north of Dabob.	11.3	1951	07-02-02	2.4
Unnamed Tributary	Tarboo Creek	Lat 47°52'11", long 122°49'03", in SW¼SW¼ sec.33, T.28 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, near intersection of Carl Johnson Road and Dabob P.O. Road, and 1.6 mi north of Dabob.	--	--	07-02-02	0.02
Unnamed Tributary	Tarboo Creek	Lat 47°52'04", long 122°48'55", in NW¼NW¼ sec.4, T.27 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, 100 ft downstream from intersection of Dabob P.O. Road and Coyle Road, and 1.5 mi north of Dabob.	--	--	07-02-02	0.44
Tarboo Creek	Tarboo Bay	Lat 47°51'48", long 122°48'53", in SE¼NW¼ sec.4, T.27 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, and 0.1 mi upstream from mouth.	--	--	07-02-02	3.4
Unnamed Tributary	Tarboo Creek	Lat 47°51'42", long 122°48'53", in SE¼NW¼ sec.4, T.27 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, at wier 30 ft downstream from Carl Johnson Road, and 2.4 mi northwest of Dabob.	--	--	07-02-02	0.22

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
QUILCENE RIVER BASIN						
12051900 Little Quilcene River	Quilcene Bay	Lat 47°52'34", long 122°57'42", in SE¼NW¼ sec.32, T.28 N., R.2 W., Clallam County, Hydrologic Unit 17110018, downstream from diversion dam, and 8.7 mi northwest of Quilcene.	--	1992-2001	10-04-01	4.3
					10-04-01	4.1
					12-11-01	20
					02-01-02	17
					04-23-02	19
					06-17-02	16
08-15-02	4.9					
Little Quilcene River	Quilcene Bay	Lat 47°50'48", long 122°53'31", in SW¼NE¼ sec.11, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, 400 ft upstream from small diversion, and 1.8 mi northwest of Quilcene.	--	--	06-18-02	39
Unnamed Diversion	Diverts from Little Quilcene River	Lat 47°50'46", long 122°53'31", in SE¼NE¼ sec.11, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, 20 ft downstream from diversion of Little Quilcene River, and 1.8 mi northwest of Quilcene.	--	--	06-18-02	1.8
12052000 Little Quilcene River	Quilcene Bay	Lat 47°50'15", long 122°53'09", in NE¼NE¼ sec.14, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, at Hwy 101 bridge, and 1.0 mi northwest of Quilcene.	23.7	1926 1926-27‡ 1951-58‡	06-18-02	34
Leland Creek	Little Quilcene River	Lat 47°50'18", long 122°53'08", in NE¼NE¼ sec.14, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, 1.0 mi northwest of Quilcene, and 100 ft upstream from mouth.	11.3	1951	06-18-02	3.0
Little Quilcene River	Quilcene Bay	Lat 47°49'51", long 122°52'52", in NW¼SW¼ sec.13, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, and 0.6 mi northwest of Quilcene.	--	--	06-18-02	36
Little Quilcene River	Quilcene Bay	Lat 47°49'48", long 122°52'24", in NW¼SE¼ sec.13, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, at Center Road, and 0.4 mi north of Quilcene.	35.5	1926	06-18-02	41
Little Quilcene River	Quilcene Bay	Lat 47°49'39", long 122°51'45", in SW¼SW¼ sec.18, T.27 N., R.1 W., Jefferson County, Hydrologic Unit 17110018, south of intersection of McInnes Road and East Quilcene Road, 0.6 mi northeast of Quilcene, and near mouth.	--	--	06-18-02	35
Big Quilcene River	Quilcene Bay	Lat 47°48'02", long 122°55'20", in NW¼SW¼ sec.27, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, at Hiddendale Community Park, 0.9 mi southwest of Hwy 101 bridge, and 2.8 mi southwest of Quilcene.	--	--	06-17-02	166 _k
12052390 Big Quilcene River	Quilcene Bay	Lat 47°48'32", long 122°54'43", in NW¼NE¼ sec.27, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, at hatchery, 2.1 mi southwest of Quilcene, and at mile 2.7.	59.7	1993-2001	10-04-01	19
					12-11-01	138
					02-01-02	97
					04-24-02	107
					06-17-02	140
					08-14-02	26

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Penny Creek	Big Quilcene River	Lat 47°48'39", long 122°54'48", in SW¼SE¼ sec.22, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, upstream from hatchery, upstream from diversion, and 2.1 mi southwest of Quilcene.	6.78	1951 1965	06-17-02	5.7
Big Quilcene River	Quilcene Bay	Lat 47°49'06", long 122°52'27", in SW¼NE¼ sec.24, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, at Rodgers Road, and 0.4 mi south of Quilcene.	--	--	06-17-02	187
Big Quilcene River	Quilcene Bay	Lat 47°49'09", long 122°51'53", in SE¼NE¼ sec.24, T.27 N., R.2 W., Jefferson County, Hydrologic Unit 17110018, 0.3 mi downstream from Linger Longer Road, and near mouth.	--	--	06-17-02	184
NISQUALLY RIVER BASIN						
12089300 Nisqually River	Puget Sound	Lat 46°53'58", long 122°29'48", in NE 1/4 SW 1/4 sec. 1, T. 16 N., R. 2 E., Thurston County, Hydrologic Unit 17110015, 60 ft downstream from diversion dam, and 3.7 mi southeast of McKenna.	--	2001	10-10-01 07-09-02 08-05-02	562 502 337
BETWEEN NISQUALLY RIVER AND PUYALLUP RIVER BASINS						
Leach Creek	Chambers Creek	Lat 47°11'55", long 122°31'12", in NE¼NW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, and 4.2 mi northeast of Steilacoom.	--	2000-01	10-02-01 12-07-01	6.3 11
PUYALLUP RIVER BASIN						
Evans Creek	Carbon River	Lat 47°00'13", long 122°00'23", in NE¼SW¼ sec.35, T.18 N., R.6 E., Pierce County, Hydrologic Unit 17110014, at Carbon Glacier Road bridge.	--	1999-2000	11-14-01 04-16-02 06-06-02	97 84 40
BETWEEN SNOHOMISH RIVER AND STILLAGUAMISH RIVER BASINS						
12157000 Quilceda Creek	Ebey Slough	Lat 48°06'18", long 122°09'42", in NE¼NE¼ sec.9, T.30 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, 50 ft downstream from Middle Fork, and 3.5 mi north of Marysville.	15.4	1946-69‡ 1975-77 2001	10-31-01 11-28-01 12-20-01 01-24-02 02-27-02 03-19-02 04-24-02 05-21-02 06-25-02 07-23-02 09-10-02	28 38 54 56 30 45 23 16 7.1 6.1 4.4

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
12157020 West Fork Quilceda Creek	Quilceda Creek	Lat 48°06'03", long 122°11'05", in SE¼NE¼ sec.8, T.30 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, 200 ft north of county road, and 0.5 mi west of Kruse.	9.41	1946-47; 1957 1959-60 1975-77 2001	10-31-01	15
					11-28-01	22
					12-20-01	37
					01-24-02	39
					02-27-02	18
					03-19-02	30
					04-24-02	15
					05-21-02	6.8
					06-25-02	3.0
					07-22-02	2.5
09-12-02	1.4					
12157030 Unnamed Tributary	Quilceda Creek	Lat 48°04'34", long 122°11'17", in NE¼NE¼ sec.20, T.30 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, at road crossing at Boeing Test Facility perimeter boundary, 1.4 mi north of Marysville, and 0.8 mi upstream from mouth.	2.88	1975-77 2001	10-31-01	2.1
					11-29-01	9.9
					12-21-01	8.7
					01-23-02	7.2
					02-27-02	3.7
					03-19-02	6.6
					04-24-02	3.6
					05-21-02	1.8
					06-25-02	0.61
					07-22-02	0.20
09-11-02	0.20					
12157035 Sturgeon Creek	Quilceda Creek	Lat 48°03'27", long 122°11'47", in NE¼SW¼ sec.29, T.30 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, 0.6 mi west of Marysville, and 0.3 mi upstream from mouth.	1.87	1975-77 2001	10-30-01	0.99
					11-27-01	1.4
					12-19-01	2.5
					01-22-02	4.1
					02-28-02	2.4
					03-20-02	8.6
					04-25-02	1.7
					05-22-02	2.1
					06-25-02	0.65
					07-23-02	0.90
09-10-02	0.65					
12157140 Mission Creek below John Sam Lake	Tulalip Bay	Lat 48°06'42", long 122°14'52", in SE¼SE¼ sec.2, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, at road crossing 200 ft west of lake outlet, and 3.6 mi northeast of Tulalip.	.33	--	10-31-01	0
					11-28-01	0
					12-20-01	1.7
					01-24-02	1.1
					02-27-02	0.31
					03-19-02	1.0
					04-24-02	0.37 _e
					05-21-02	0.10 _e
					05-31-02	0
					06-25-02	0
07-23-02	0					
09-12-02	0					
12157150 Mission Creek	Tulalip Bay	Lat 48°05'08", long 122°14'50", in SW¼SW¼ sec.13, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, 0.2 mi upstream from confluence with unnamed tributary, and 2.3 mi northeast of Tulalip.	1.34	1975-77 2001	10-29-01	0.74
					11-26-01	0.84
					12-18-01	6.5
					01-22-02	4.1
					02-26-02	1.4
					03-18-02	2.4
					04-23-02	1.7
					05-20-02	0.93
					06-24-02	0.75
					07-23-02	0.69
09-09-02	0.69					

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
12157170 Unnamed Tributary	Mission Creek	Lat 48°05'00", long 122°14'58", in SE¼SE¼ sec.14, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, 2.1 mi northeast of Tulalip, and 100 ft upstream from mouth.	1.33	1975-77 2001	10-29-01	0.16
					11-26-01	0.46
					12-18-01	3.2
					01-22-02	1.7
					02-26-02	0.98
					03-18-02	1.2
					04-23-02	0.76
					05-20-02	0.26
					06-24-02	0.09 _e
					07-23-02	0
09-09-02	0.64					
12157210 Unnamed Tributary	Mission Creek	Lat 48°04'45", long 122°14'36", in NW¼NW¼ sec.24, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, at road crossing, and 2.4 mi northeast of Tulalip.	1.57	1975-77 2001	10-29-01	0.52
					11-26-01	0.56
					12-18-01	3.0
					01-22-02	1.5
					02-26-02	0.96
					03-18-02	1.4
					04-23-02	1.0
					05-20-02	0.47
					06-24-02	0.35
					07-23-02	0.28
09-09-02	0.32					
Unnamed Spring	Mission Creek	Lat 48°03'27", long 122°14'19", in NE¼SW¼ sec.25, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, 1.2 mi north of Priest Point Grange, and 2.4 mi northeast of Tulalip.	--	1975 2001	10-30-01	0.35
					11-28-01	0.83
					12-20-01	0.32
					01-23-02	0.32
					02-28-02	0.20
					03-20-02	0.81
					04-25-02	0.17
					05-22-02	0.27
					06-26-02	0.17
					07-23-02	0.12
09-11-02	0.15					
12158001 Tulalip Creek	Tulalip Bay	Lat 48°07'24", long 122°18'24", in NE¼NW¼ sec.4, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, at Fire Trail Road, 0.3 mi southwest of Lake Shoecraft, and 4.0 mi north of Tulalip.	6.12	1946 1957 1972 1974-77 2001	10-31-01	0.09 _e
					11-28-01	3.3
					12-20-01	22
					01-24-02	7.1
					02-27-02	6.8
					03-19-02	6.7
					04-24-02	3.7
					05-21-02	1.8
					06-25-02	0
					07-23-02	0
09-12-02	0.10 _e					
12158025 East Branch Tulalip Creek	Tulalip Creek	Lat 48°06'47", long 122°15'45", in NE¼SW¼ sec.2, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, at old logging road, 400 ft upstream from Mary Shelton Lake, and 3.5 mi north of Tulalip.	0.80	1974-77 2001	10-31-01	0
					11-28-01	0.02 _e
					12-20-01	2.0
					01-24-02	1.8
					02-27-02	0.22
					03-19-02	0.70
					04-24-02	0.44
					05-21-02	0.02
					06-25-02	0
					07-23-02	0
09-12-02	0					

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Unnamed Spring	Tulalip Creek	Lat 48°04'58", long 122°16'15", in NE¼SE¼ sec.15, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, and 1.5 mi northeast of Tulalip.	--	1974-75 2001	10-30-01	0.15
					11-27-01	0.15
					12-19-01	0.20
					01-23-02	0.16
					02-28-02	0.12
					03-20-02	0.32
					04-25-02	0.15
					05-22-02	0.18
					06-26-02	0.13
07-23-02	0.14					
					09-11-02	0.11
PEND OREILLE RIVER BASIN						
12395900 Davis Creek	Pend Oreille River	Lat 48°13'51", long 117°17'14", in NE¼ sec.31, T.32 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, at State Highway 311, at outlet of Davis lake, and 2.5 mi southeast of Dalkena.	16.8	1954-73c 1962-63 1965 1969 1977-78	10-04-01	3.5
12396100 Winchester Creek	Calispell Creek	Lat 48°16'52", long 117°21'44", in NW¼ sec.15, T.32 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, at county road around Calispell Lake, and 4.8 mi southwest of Cusick.	16.8	1954-88c 1957‡ 1964-68 1975 1977 1980-88	10-04-01	1.8
Le Clerc Creek	Pend Oreille River	Lat 48°21'19", long 117°16'52", in SW¼NW¼ sec.20, T.35 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, at Le Clerc Road crossing, and 700 ft upstream from mouth.	87.7	1977	10-04-01	23
Cee Cee Ah Creek	Pend Oreille River	Lat 48°23'08", long 117°16'14", in SE¼SW¼ sec.5, T.33 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, at Le Clerc Road crossing, and 1500 ft upstream from mouth.	17.8	1977	10-04-01	2.2
12396450 Little Muddy Creek	Big Muddy Creek	Lat 48°43'58", long 117°25'36", in SW¼ sec.6, T.37 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, and at southwest edge of Ione.	11.3	1954-73c 1962-64 1967-68 1971-73 1977	10-04-01	0.63
BETWEEN PEND OREILLE RIVER AND KETTLE RIVER BASINS						
12399600 Deep Creek	Columbia River	Lat 48°55'47", long 117°44'59", in SE¼NW¼ sec.34, T.40 N., R.40 E., Stevens County, Hydrologic Unit 17020001, 2.0 mi northeast of Northport, and 0.5 mi upstream from mouth.	191	1972-75‡ 1976-77 1976-79c	10-04-01	8.5
Little Sheep Creek	Big Sheep Creek	Lat 48°59'10", long 117°49'35", in NW¼NE¼ sec.10, T.40 N., R.39 E., Pend Oreille County, Hydrologic Unit 17020001, at county road bridge, and at Velvet.	27.2	1929 1977	10-04-01	1.5
12400500 Big Sheep Creek	Columbia River	Lat 48°56'27", long 117°46'51", in NE¼NE¼ sec.25, T.40 N., R.39 E., Stevens County, Hydrologic Unit 17020001, 1.5 mi north of Northport, and 0.7 mi upstream from mouth.	225	1928-29 1929-42‡ 1948 1977	10-04-01	21

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
KETTLE RIVER BASIN						
Boulder Creek	Kettle River	Lat 48°50'10", long 118°11'03", in NW¼SE¼ sec.36, T.39 N., R.36 E., Ferry County, Hydrologic Unit 17020002, at Hwy 395 crossing, and 2.3 mi southeast of Orient.	101	1971-73 1977	10-05-01	4.0
Deadman Creek	Kettle River	Lat 48°42'27", long 118°07'31", in NW¼NW¼ sec.16, T.37 N., R.37 E., Ferry County, Hydrologic Unit 17020002, at Hwy 395 crossing, and 0.7 mi southeast of Boyds.	61.8	1914-15 1967 1971-72 1977	10-05-01	4.2
COLVILLE RIVER BASIN						
12407520 Deer Creek	Colville River	Lat 48°07'06", long 117°47'52", in NW¼NW¼ sec.8, T.30 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at county road bridge, 2.0 mi upstream from confluence with Sheep Creek, 5.2 mi southwest of Valley, and at mile 2.0.	36.0	1959-72± 1973-79c 1977	10-03-01	5.4
Grouse Creek	Jump Off Joe Lake	Lat 48°08'33", long 117°38'40", in NW¼SW¼ sec.33, T.31 N., R.41 E., Spokane County, Hydrologic Unit 17020003, at county road crossing, and 4.4 mi southwest of Valley.	8.19	1959-60 1977	10-02-01	0.64
Bulldog Creek	Colville River	Lat 48°10'06", long 117°43'42", in SE¼SW¼ sec.23, T.31 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at Valley, and at mouth.	--	--	10-02-01	7.3
Waitts Creek	Colville River	Lat 48°11'04", long 117°45'25", in NW¼SW¼ sec.15, T.31 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at Farm to Market Road, near Valley, and 0.9 mi upstream from mouth.	--	--	10-02-01	0.11
Waitts Creek	Colville River	Lat 48°11'23", long 117°44'13", in SE¼NE¼ sec.15, T.31 N., R.40 E., Stevens County, Hydrologic Unit 17020003, near Valley, and at mouth.	--	--	10-02-01	0.18
12407560 Huckleberry Creek	Colville River	Lat 48°12'29", long 117°45'49", in NW¼NW¼ sec.9, T.31 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at privately owned bridge, and 3.5 mi northwest of Valley.	41.8	1959-60 1977	10-02-01	0.22
12407580 Cottonwood Creek	Colville River	Lat 48°13'23", long 117°42'13", in NE¼NW¼ sec.1, T.31 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at county road crossing, 4.2 mi south of Chewelah, and 0.4 mi from mouth.	34.1	1977	10-03-01	2.9
North Fork Chewelah Creek	Chewelah Creek	Lat 48°17'25", long 117°43'01", in NE¼NE¼ sec.11, T.32 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at road crossing, and 0.6 mi north of Chewelah.	59.6	1957-60 1977	10-03-01	4.8

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
South Fork Chewelah Creek	Chewelah Creek	Lat 48°17'25", long 117°42'54", in NE¼NE¼ sec.11, T.32 N., R.40 E., Stevens County, Hydrologic Unit 17020003, and 0.6 mi north of Chewelah.	--	1957-58 1977	10-03-01	1.8
East Branch South Fork Chewelah Creek	Chewelah Creek	Lat 48°17'17", long 117°42'52", in NW¼SW¼ sec.12, T.32 N., R.40 E., Stevens County, Hydrologic Unit 17020003, at road crossing, and 0.5 mi north of Chewelah.	--	1957-58 1960 1977	10-03-01	2.0
12407700 Chewelah Creek	Colville River	Lat 48°17'01", long 117°42'50", in SW¼SW¼ sec.12, T.32 N., R.40 E., Stevens County, Hydrologic Unit 17020003, 10 ft downstream from small road bridge to highway north of the city park, in northern part of Chewelah, and at mile 2.0.	94.1	1957-74‡ 1977	10-03-01	9.6
12408120 Stranger Creek	Colville River	Lat 48°22'20", long 117°51'29", in NE¼SW¼ sec.11, T.33 N., R.39 E., Stevens County, Hydrologic Unit 17020003, at county road crossing, and 1.5 mi northwest of Addy.	42.9	1959-60 1977 2001	10-03-01	0.75
12408300 Little Pend Oreille River	Colville River	Lat 48°27'58", long 117°44'53", in NW¼NE¼ sec.10, T.34 N., R.40 E., Stevens County, Hydrologic Unit 17020003, 320 ft upstream from abandoned railroad bridge, 0.5 mi downstream from Bear Creek, 6.2 mi east of Arden, 9.2 mi southeast of Colville, and at mile 7.0.	132	1957-75‡ 1976-79c 1977	10-03-01	12
12408420 Haller Creek	Colville River	Lat 48°28'02", long 117°54'24", in SW¼SW¼ sec.4, T.34 N., R.39 E., Stevens County, Hydrologic Unit 17020003, 10 ft downstream from county road bridge, and 1.5 mi northwest of Arden.	37.0	1959-70‡ 1971-79c 1977	10-03-01	0.63
12408500 Mill Creek	Colville River	Lat 48°34'44", long 117°51'56", in SW¼SW¼ sec.23, T.34 N., R.36 E., Stevens County, Hydrologic Unit 17020003, 5.3 mi downstream from North Fork, 3.0 mi northeast of Colville, and at mile 10.9.	83.0	1939-72‡ 1973-77c 1977 2001	10-05-01	4.8
BETWEEN COLVILLE RIVER AND SPOKANE RIVER BASINS						
Barnaby Creek	Franklin D. Roosevelt Lake	Lat 48°26'04", long 118°13'31", in SW¼NE¼ sec.23, T.34 N., R.36 E., Ferry County, Hydrologic Unit 17020001, Colville Indian Reservation, 2.6 mi west of Rice, and 0.2 mi upstream from mouth.	45.9	1914 1919 1972-73 1977	10-05-01	2.8
12409500 Hall Creek	Franklin D. Roosevelt Lake	Lat 48°18'41", long 118°12'39", in SE¼NW¼ sec.1, T.32 N., R.36 E., Ferry County, Hydrologic Unit 17020002, Colville Indian Reservation, 1,000 ft upstream from county road crossing, and 1.0 mi northwest of Inchelium.	160	1913-29‡ 1967 1973 1977	10-04-01	6.2

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Stranger Creek	Franklin D. Roosevelt Lake	Lat 48°15'52", long 118°16'58", in NW¼NW¼ sec.21, T.32 N., R.36 E., Ferry County, Hydrologic Unit 17020001, Colville Indian Reservation, at county road crossing, 600 ft southeast of Meteor, and 4.7 mi southwest of Inchelium.	50.9	1916 1922 1925-28 1977	10-05-01	0.85
Wilmont Creek	Franklin D. Roosevelt Lake	Lat 48°04'34", long 118°19'29", in NW¼NW¼ sec.30, T.30 N., R.36 E., Ferry County, Hydrologic Unit 17020001, Colville Indian Reservation, at road crossing, and 5.9 mi west of Fruitland.	51.1	1967 1971-74 1977	10-16-01	0.02
Nine Mile	Franklin D. Roosevelt Lake	Lat 48°02'50", long 118°26'06", in NW¼NW¼ sec.5, T.29 N., R.35 E., Ferry County, Hydrologic Unit 17020001, Colville Indian Reservation, and 11.2 mi west of Fruitland.	106	1971-74 1977	10-16-01	2.6
SPOKANE RIVER BASIN						
Little Hangman Creek	Hangman Creek	Lat 47°13'35", long 117°04'18", in SW¼SE¼ sec.13, T.20 N., R.45 E., Whitman County, Hydrologic Unit 17010306, at SR 27, in Tekoa, and 0.2 mi upstream from mouth.	64.6 g	1958 1977	10-11-01	0.43
Hangman Creek	Spokane River	Lat 47°13'35", long 117°04'46", in SW¼NW¼ sec.13, T.20 N., R.45 E., Whitman County, Hydrologic Unit 17010306, above sewage treatment plant, 0.25 mi below Little Hangman Creek, and at Tekoa.	--	1967 1977	10-11-01	0.60
12425500 Deep Creek	Spokane River	Lat 47°40'57", long 117°40'34", in SW¼NE¼ sec.7, T.25 N., R.41 E., Spokane County, Hydrologic Unit 17010307, at county road crossing, 3.0 mi northeast of Deep Creek, 10 mi west of Spokane, and at mile 14.4.	77.3	1949-50‡ 1977	10-10-01	1.6
12427000 Little Spokane River	Spokane River	Lat 48°01'20", long 117°16'19", in NW¼SE¼ sec.8, T.29 N., R.44 E., Spokane County, Hydrologic Unit 17010308, 3.0 mi upstream from Dry Creek, 0.6 mi northeast of Elk, and at mile 37.6.	115	1948-71‡ 1972-79c 1973 1978-80	10-05-01	34
Dry Creek	Little Spokane River	Lat 47°59'11", long 117°17'39", in NW¼NE¼ sec.30, T.29 N., R.44 E., Spokane County, Hydrologic Unit 17010308, at county road crossing, and 2.1 mi northeast of Milan.	20.8	1948-49 1977	10-05-01	2.6
West Branch Little Spokane River	Little Spokane River	Lat 47°59'50", long 117°20'55", in SE¼NE¼ sec.22, T.29 N., R.43 E., Spokane County, Hydrologic Unit 17010308, at road crossing, and 6.8 mi north of Chattaroy.	--	1977	10-05-01	4.2
12429500 Little Spokane River	Spokane River	Lat 47°53'22", long 117°21'16", in NW¼NE¼ sec.34, T.28 N., R.43 E., Spokane County, Hydrologic Unit 17010308, 200 feet downstream from Hwy 2 and Hwy 195, 200 feet upstream from Deer Creek, at Chattaroy, and at mile	301 23.05	1948‡ 1952 1955-58 1960-70 1973 1977 1979-81 1984-89	10-05-01	66

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
12429600 Deer Creek	Little Spokane River	Lat 47°53'28", long 117°20'06", in SE¼SW¼ sec.26, T.28 N., R.43 E., Spokane County, Hydrologic Unit 17010308, at county road, 1 mi east of Chattaroy, and 1 mi upstream from mouth.	31.9	1962-75	10-05-01	0.17
12430100 Dragoon Creek	Little Spokane River	Lat 47°52'34", long 117°22'08", in SE¼SE¼ sec.33, T.27 N., R.42 E., Spokane County, Hydrologic Unit 17010308, 1.2 mi southwest of Chattaroy, and at mouth.	--	--	10-05-01	17
12430400 Deadman Creek	Little Spokane River	Lat 47°46'53", long 117°21'49", in SE¼NW¼ sec.3, T.26 N., R.43 E., Spokane County, Hydrologic Unit 17010308, 1000 ft downstream from Hwy 195, 1.1 mi north of Mead, and at mile 1.8.	94.7	1953 1955-58 1960-70 1973 1977	10-05-01	3.2
12430500 Little Deep Creek	Deadman Creek	Lat 47°49'17", long 117°20'44", in SE¼ sec.22, T.27 N., R.43 E., Spokane County, Hydrologic Unit 17010308, at Hwy 395 bridge, 0.5 mi south of Colbert, and at mile 3.5.	31.8	1948‡ 1952-53 1955-58 1960-70 1973 1977	10-05-01	0
Little Chamokane Creek	Spokane River	Lat 47°51'13", long 117°52'44", in NE¼SW¼ sec.10, T.27 N., R.39 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, 1.7 mi northwest of town of Long Lake, and 0.3 mi from mouth.	--	1977	10-10-01	0.50
BETWEEN SPOKANE RIVER AND SANPOIL RIVER BASINS						
Hawk Creek	Franklin D. Roosevelt Lake	Lat 47°48'55", long 118°18'55", in NE¼NE¼ sec.30, T.27 N., R.36 E., Lincoln County, Hydrologic Unit 17020001, at county road crossing, 4.6 mi east of Lincoln, and 2.7 mi upstream from mouth.	--	1977	10-10-01	7.9
SANPOIL RIVER BASIN						
12434110 West Fork Sanpoil River	Columbia River	Lat 48°27'33", long 118°44'57", in NE¼SW¼ sec.11, T.34 N., R.32 E., Ferry County, Hydrologic Unit 17020004, Colville Indian Reservation at Hwy 21 bridge, 13.9 mi south of Republic, and at mile 0.5.	308	1972-74‡ 1975-79c 1977	10-01-01	5.1
12434500 Sanpoil River	Columbia River	Lat 48°06'26", long 118°41'51", in NE¼NE¼ sec.18, T.30 N., R.33 E., Ferry County, Hydrologic Unit 17020004, Colville Indian Reservation, 0.3 mi upstream from Brush Creek, 2.2 mi north of Keller, and at mile 14.1.	880	1952-55‡ 1956-59c 1972-74‡ 1975-79c 1977	10-01-01	16
BETWEEN SANPOIL RIVER AND OKANOGAN RIVER BASINS						
12437505 Nespelem River	Columbia River	Lat 48°09'54", long 118°58'46", in SE¼SE¼ sec.24, T.31 N., R.30 E., Okanogan County, Hydrologic Unit 17020005, Colville Indian Reservation, at county bridge, 0.2 mi downstream from millpond, 3.9 mi upstream from Little Nespelem River, and at Nespelem.	123	1972-74‡ 1975-79c 1977 1981-93	10-11-01	7.6

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
OKANOGAN RIVER BASIN						
12442000 Toats Coulee Creek	Sinlahekin Creek	Lat 48°50'01", long 119°41'32", in NE¼SE¼ sec.33, T.39 N., R.25 E., Okanogan County, Hydrologic Unit 17020007, 600 ft upstream from Deer Creek, 1,800 ft upstream from intake of Whitestone Irrigation Canal, 2.8 mi northwest of Loomis, and at mile 2.2.	130	1920-26‡ 1957-70‡ 1971-79c 1975 1977 1979	10-02-01	8.2
12442300 Sinlahekin Creek	Palmer Lake	Lat 48°51'06", long 119°38'53", in SE¼NE¼ sec.26, T.39 N., R.25 E., Okanogan County, Hydrologic Unit 17020007, at road crossing 400 ft upstream from Chopaka Creek, 2.2 mi north of Loomis, and 2 mi upstream from mouth.	256	1957-65‡ 1977 1979	10-02-01	7.5
Palmer Creek	Similkameen River	Lat 48°55'25", long 119°39'17", in SW¼NE¼ sec.35, T.40 N., R.25 E., Okanogan County, Hydrologic Unit 17020007, at bridge, 3.2 mi southwest of Nighthawk, and 0.2 mi upstream from mouth.	296	1929-44 1961-62 1967 1970 1973 1977 1979	10-02-01	0.28
Antoine Creek	Okanogan River	Lat 48°45'34", long 119°24'29", in SE¼SE¼ sec.27, T.38 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, at Hwy 97 crossing, 2.1 mi south of Ellisford, and 0.2 mi upstream from mouth.	--	1970 1973 1977 1979	10-02-01	0.73
Bonaparte Creek	Okanogan River	Lat 48°42'05", long 119°26'29", in NE¼SW¼ sec.16, T.37 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, at Hwy 97 crossing, at Tonasket, and 0.3 mi upstream from mouth.	148	1912 1970 1973 1977 1979	10-02-01	0.36
Aeneas Creek	Okanogan River	Lat 48°39'34", long 119°28'41", in NW¼SE¼ sec.31, T.37 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, at county road crossing, and 3.5 mi southwest of Tonasket.	--	1967 1970-71 1977 1979	10-10-01	2.3
Johnson Creek	Okanogan River	Lat 48°29'33", long 119°32'05", in SW¼NW¼ sec.35, T.35 N., R.26 E., Okanogan County, Hydrologic Unit 17020006, 1.4 mi southwest of Riverside, and 1.5 mi upstream from mouth.	--	1977 1979	10-03-01	3.7
Omak Creek	Okanogan River	Lat 48°21'59", long 119°26'46", in NW¼NW¼ sec.16, T.33 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, Colville Indian Reservation, and 6.5 mi southeast of Omak.	--	1976-78	10-03-01	2.6
Loup Loup Creek	Okanogan River	Lat 48°16'58", long 119°42'27", in SW¼SW¼ sec.9, T.32 N., R.25 E., Okanogan County, Hydrologic Unit 17020006, at county road crossing, at Malott, and 0.2 mi upstream from mouth.	64.2	1970 1974 1977 1979	10-03-01	0

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
CHELAN RIVER BASIN						
Fish Creek	Lake Chelan	Lat 48°14'11", long 120°36'54", in SW¼SW¼ sec.28, T.32 N., R.18 E., Chelan County, Hydrologic Unit 17020009, near Lucerne, and 100 ft upstream of mouth.	--	--	10-22-01	6.2 _j
Railroad Creek	Lake Chelan	Lat 48°12'04", long 120°35'36", in NW¼NW¼ sec.10, T.31 N., R.18 E., Chelan County, Hydrologic Unit 17020009, 10 ft downstream from bridge, and at Lucerne.	--	--	10-22-01	54 _j
Prince Creek	Lake Chelan	Lat 48°08'50", long 120°29'46", in NE¼NE¼ sec.32, T.31 N., R.18 E., Chelan County, Hydrologic Unit 17020009, near Lucerne, and 400 ft upstream from mouth.	--	--	10-22-01	9.9 _j
Safety Harbor Creek	Lake Chelan	Lat 48°02'47", long 120°22'30", in SW¼SW¼ sec.32, T.30 N., R.20 E., Chelan County, Hydrologic Unit 17020009, near Lucerne, and 20 ft upstream from mouth.	--	--	10-22-01	3.0 _j
12451610 Falls Creek	Lake Chelan	Lat 48°05'08", long 120°19'24", in SE¼NW¼ sec.22, T.30 N., R.20 E., Chelan County, Hydrologic Unit 17020009, Wenatchee National Forest, 150 ft above diversion dam, 16 mi northwest of Mason, and 3.0 mi upstream from mouth.	4.77	1960-69 1977	10-11-01	1.1
12451620 Grade Creek	Lake Chelan	Lat 48°03'36", long 120°15'26", in SE¼SW¼ sec.30, T.30 N., R.21 E., Chelan County, Hydrologic Unit 17020009, Wenatchee National Forest, at road crossing, and 13 mi northwest of Mason.	8.45	1960-69‡ 1973 1977	10-11-01	0.99
North 25 Mile Creek	Lake Chelan	Lat 47°59'33", long 120°15'40", in SE¼SW¼ sec.19, T.29 N., R.21 E., Chelan County, Hydrologic Unit 17020009, at 25 Mile Creek State Park Campground Site #24, and near Manson.	--	--	10-29-01	4.9 _j
Poison Creek	Lake Chelan	Lat 48°02'06", long 120°13'06", in SE¼NW¼ sec.4, T.29 N., R.21 E., Chelan County, Hydrologic Unit 17020009, Wenatchee National Forest, and 10.7 mi northwest of Manson.	5.14	1961-68 1973 1977	10-11-01	0.38
12451660 Mitchell Creek	Lake Chelan	Lat 47°59'45", long 120°09'34", in NW¼SW¼ sec.24, T.29 N., R.21 E., Chelan County, Hydrologic Unit 17020009, at road crossing, and 7.5 mi north of Manson.	9.55	1960-69 1973 1977	10-11-01	0
Mitchell Creek	Lake Chelan	Lat 47°58'11", long 120°11'28", in SW¼NE¼ sec.34, T.29 N., R.21 E., Chelan County, Hydrologic Unit 17020009, near Manson, and 40 ft upstream from mouth.	--	--	10-22-01	0.76 _j
First Creek	Lake Chelan	Lat 47°52'26", long 120°11'58", in SW¼NE¼ sec.4, T.27 N., R.21 E., Chelan County, Hydrologic Unit 17020009, at South Lakeshore Drive culvert, and near Manson.	--	--	10-29-01	3.0 _j

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
ENTIAT RIVER BASIN						
12452890 Mad River	Entiat River	Lat 47°44'13", long 120°22'03", in NW¼SE¼ sec.19, T.26 N., R.20 E., Chelan County, Hydrologic Unit 17020010, 100 ft upstream from concrete diversion, at Moe Ridge Bridge, at Ardenvoir, and 0.35 mi above mouth.	92.4	1999-2001	10-11-01 10-11-01	15 28
WENATCHEE RIVER BASIN						
White River	Wenatchee Lake	Lat 47°57'50", long 120°56'35", in SW¼ sec.35, T.29 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 10.6 mi northwest of Telma, and at mile 15.3.	66.3	1970 1973 1975-77	10-01-01	77
Panther Creek	White River	Lat 47°56'24", long 120°55'41", in SE¼ sec.11, T.28 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 8.8 mi northwest of Telma, and 100 ft upstream from mouth.	19.1	1911 1975-77	10-02-01	5.7
Napeequa River	White River	Lat 47°55'17", long 120°53'38", in SW¼SE¼ sec.18, T.28 N., R.16 E., Chelan County, Hydrologic Unit 17020011, 6.8 mi northwest of Telma, and 200 ft upstream from mouth.	40.0	1911 1975-77	10-02-01	41
Canyon Creek	White River	Lat 47°54'27", long 120°53'38", in SW¼SE¼ sec.19, T.28 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 6.0 mi northwest of Telma, and about 500 ft upstream from mouth.	4.27	1975-77	10-02-01	0.09
Cady Creek	Little Wenatchee River	Lat 47°54'50", long 121°05'33", in SE¼ sec.14, T.28 N., R.13 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 15.0 mi northwest of Telma, and 20 ft upstream from mouth.	7.65	1975-77	10-03-01	2.4
Fish Creek	Little Wenatchee River	Lat 47°54'20", long 121°05'04", in NW¼ sec.24, T.28 N., R.13 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 13.9 mi northwest of Telma, and 80 ft upstream from mouth.	7.92	1975-77	10-03-01	3.0
Lake Creek	Little Wenatchee River	Lat 47°52'35", long 121°02'04", in SW¼SW¼ sec.31, T.28 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 10.9 mi northwest of Telma, and 0.2 mi upstream from mouth.	16.5	1911 1975-77	10-03-01	4.9
Theseus Creek	Little Wenatchee River	Lat 47°52'24", long 121°00'58", in NE¼ sec.6, T.27 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 11.0 mi northwest of Telma, and 150 ft upstream from mouth.	1.05	1975-77	10-03-01	0.10 _c

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Rainy Creek	Little Wenatchee River	Lat 47°51'02", long 120°57'37", in SW¼ sec.10, T.27 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 7.2 mi west of Telma, and 0.3 mi upstream from mouth.	17.2	1911 1973 1975-77	10-03-01	10
Little Wenatchee River	Wenatchee Lake	Lat 47°50'02", long 120°50'11", in SE¼SW¼ sec.15, T.27 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 0.8 mi upstream from Wenatchee Lake, and 1.5 mi southwest of Telma.	100	1911-13 1967 1970 1972 1973 1975-77	10-04-01	31
Nason Creek	Wenatchee River	Lat 47°47'26", long 120°42'55", in SE¼SE¼ sec.33, T.27 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Lake Wenatchee State Park, 2.8 mi northeast of Coles Corner, and at mile 1.6.	107	1973 1975-77	10-02-01	30
12456000 Phelps Creek	Chiwawa River	Lat 48°04'24", long 120°50'58", in NW¼ sec.27, T.30 N., R.16 E., Chelan County, Hydrologic Unit 17020011, at road crossing, 16.0 mi north of Telma, and 0.3 mi upstream from mouth. 2001	16.4	1927 1927-31‡ 1948 1975-77	10-04-01	11
Rock Creek	Chiwawa River	Lat 47°58'13", long 120°47'18", in SW¼NE¼ sec.36, T.29 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 8.9 mi north of Telma, and 0.6 mi upstream from mouth.	21.3	1975-77	10-04-01	9.2
Minnow Creek	Chikamin Creek	Lat 47°54'36", long 120°43'11", in NW¼SE¼ sec.21, T.28 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 10.9 mi northwest of Plain, and 100 ft upstream from mouth.	3.10	1975-77	10-09-01	0.13
Chikamin Creek	Chiwawa River	Lat 47°54'31", long 120°43'16", in NW¼SE¼ sec.21, T.28 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 4.2 mi northeast of Telma, and 0.5 mi upstream from mouth.	20.5	1975-77	10-09-01	4.0
12456300 Brush Creek	Chiwawa River	Lat 47°53'20", long 120°43'15", in NW¼NE¼ sec.33, T.28 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at logging road crossing, 6.2 mi northeast of Telma, and 1.0 mi upstream from mouth.	3.34	1965-69 1965-75c 1971-72 1976-77	10-04-01	0.23
Big Meadow Creek	Chiwawa River	Lat 47°52'04", long 120°41'44", in NE¼SE¼ sec.3, T.27 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 7.5 mi northwest of Plain, and 0.2 mi upstream from mouth.	16.5	1954 1973 1975-77	10-04-01	0.74

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Alder Creek	Chiwawa River	Lat 47°50'55", long 120°39'31", in SW¼SE¼ sec.12, T.27 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 6.0 mi north of Plain, and 0.4 mi upstream from mouth.	16.5	1954 1975-77	10-09-01	0.70
Goose Creek	Chiwawa River	Lat 47°50'21", long 120°38'46", in NW¼SW¼ sec.18, T.27 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 5.3 mi north of Plain, and 0.4 mi upstream from mouth.	2.43	1975-77	10-09-01	0.17
Deep Creek	Chiwawa River	Lat 47°49'12", long 120°38'00", in SW¼SE¼ sec.19, T.27 N., R.18 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at road crossing, 4.0 mi northeast of Plain, and 0.3 mi upstream from mouth.	2.82	1975-77	10-10-01	0.27
Beaver Creek	Wenatchee River	Lat 47°45'53", long 120°39'18", in NW¼SE¼ sec.12, T.26 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at Plain, and 0.3 mi upstream from mouth.	10.0	1910-11 1975-77	10-10-01	1.6
12457500 Chiwaukum Creek	Wenatchee River	Lat 47°40'50", long 120°43'50", in SE¼NW¼ sec.9, T.25 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 1.0 mi southeast of Chiwaukum, and 0.1 mi upstream from mouth.	49.6	1911‡ 1912-13 1926 1958 1967 1975-77	10-02-01	8.5
Icicle Creek	Wenatchee River	Lat 47°36'46", long 120°56'40", in NW¼NW¼ sec.2, T.24 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 100 ft upstream from Black Pine Creek, and 13.3 mi west of Leavenworth.	74.3	1975-77	10-05-01	21
Black Pine Creek	Icicle Creek	Lat 47°36'42", long 120°56'39", in NW¼NW¼ sec.2, T.24 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 13.3 mi west of Leavenworth, and 0.1 mi upstream from mouth.	3.33	1975-77	10-05-01	0
Jack Creek	Icicle Creek	Lat 47°36'31", long 120°54'26", in NE¼NE¼ sec.1, T.24 N., R.15 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at end of road, 11.5 mi west of Leavenworth, and near mouth.	29.1	--	10-05-01	7.6
Trout Creek	Icicle Creek	Lat 47°36'23", long 120°53'33", in NW¼ sec.6, T.24 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at foot trail crossing, 10.7 mi west of Leavenworth, and near mouth.	8.43	1911 1975-77	10-05-01	2.7

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
12457900 Chatter Creek	Icicle Creek	Lat 47°36'29", long 120°52'52", in SW¼NE¼ sec.5, T.24 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, at Icicle Creek Road, and 11 mi west of Leavenworth.	2.25	1965-69 1966-75c 1971-72 1975-77	10-05-01	0.09
Doctor Creek	Icicle Creek	Lat 47°36'26", long 120°51'54", in SE¼NE¼ sec.5, T.24 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 9.6 mi west of Leavenworth, and 200 ft upstream from mouth.	1.97	1975-77	10-05-01	0
Ida Creek	Icicle Creek	Lat 47°36'26", long 120°50'53", in SW¼NE¼ sec.4, T.24 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 8.8 mi west of Leavenworth, and 10 ft upstream from mouth.	1.42	1975-77	10-05-01	0.02
Johnny Creek	Icicle Creek	Lat 47°35'54", long 120°49'01", in NW¼SW¼ sec.2, T.24 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 7.4 mi west of Leavenworth, and 25 ft upstream from mouth.	1.24	1975-77	10-05-01	0.43
Bridge Creek	Icicle Creek	Lat 47°33'41", long 120°46'44", in NE¼NE¼ sec.24, T.24 N., R.16 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 6.1 mi west of Leavenworth, and 50 ft upstream from mouth.	1.16	1975-77	10-10-01	0.16
Chumstick Creek	Wenatchee River	Lat 47°36'18", long 120°38'50", in SE¼NE¼ sec.1, T.24 N., R.17 E., Chelan County, Hydrologic Unit 17020011, 0.8 mi northeast of Leavenworth, and 0.2 mi upstream from mouth.	79.3	1975-77	10-09-01	1.3
Derby Canyon	Wenatchee River	Lat 47°34'11", long 120°35'10", in SE¼SE¼ sec.16, T.24 N., R.18 E., Chelan County, Hydrologic Unit 17020011, 0.8 mi east of Peshastin, and 0.1 mi upstream from mouth.	12.6	1975-77	10-09-01	0
Scotty Creek	Peshastin Creek	Lat 47°22'40", long 120°38'41", in SW¼SE¼ sec.24, T.22 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 3.2 mi south of Blewett, and 100 ft upstream from mouth.	7.15	1975-77	10-10-01	0.10
Shaser Creek	Peshastin Creek	Lat 47°23'28", long 120°39'28", in SW¼SW¼ sec.13, T.22 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 2.2 mi south of Blewett, and 40 ft upstream from mouth.	8.92	1975-77	10-10-01	0.51
12459400 Tronsen Creek	Peshastin Creek	Lat 47°20'24", long 120°33'59", in NE¼SW¼ sec.3, T.21 N., R.18 E., Chelan County, Hydrologic Unit 17020011, at forest campground, 0.6 mi northeast of Swauk Pass, and 17 mi south of Peshastin.	3.96	1959 1960c 1962-74c 1966-67 1969 1972 1974-77	10-10-01	0.15

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Negro Creek	Peshastin Creek	Lat 47°26'37", long 120°39'38", in NE¼SW¼ sec.36, T.23 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 9.2 mi southwest of Peshastin, and 30 ft upstream from mouth.	12.2	1911 1975-77	10-10-01	1.9
Ingalls Creek	Peshastin Creek	Lat 47°27'48", long 120°39'38", in SE¼NW¼ sec.25, T.23 N., R.17 E., Chelan County, Hydrologic Unit 17020011, 9.4 mi south of Leavenworth, and 300 ft upstream from mouth.	36.8	1911 1973 1975-77	10-10-01	11
Hansel Creek	Peshastin Creek	Lat 47°28'17", long 120°39'21", in NW¼SE¼ sec.24, T.23 N., R.17 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 7.3 mi south of Peshastin, and 50 ft upstream from mouth.	3.76	1927 1975-77	10-10-01	0.35
Peshastin Creek	Wenatchee River	Lat 47°33'09", long 120°36'07", in NW¼NW¼ sec.28, T.24 N., R.18 E., Chelan County, Hydrologic Unit 17020011, at road crossing, 1.3 mi south of Peshastin, and 1.4 mi upstream from mouth.	133	1904 1914 1948 1975-77	10-10-01	16
12461100 East Fork Mission Creek	Mission Creek	Lat 47°22'51", long 120°29'16", in NE¼SW¼ sec.20, T.22 N., R.19 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National forest, at U.S. Forest Service road crossing, and 9.7 mi south of Cashmere. 2001	15.4	1955-61 1955-74c 1963 1965-67 1974-78 2001	10-09-01	0.19
12461500 Sand Creek	Mission Creek	Lat 47°25'48", long 120°30'25", in SW¼NE¼ sec.6, T.22 N., R.19 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 6.5 mi south of Cashmere, and 60 ft upstream from mouth.	18.6	1954-56‡ 1954c 1957 1957-73c 1959-60 1963 1965 1967 1970 1973 1975-77	10-09-01	0.27
12462000 Mission Creek	Wenatchee River	Lat 47°31'00", long 120°28'30", in NW¼NW¼ sec.9, T.23 N., R.19 E., Chelan County, Hydrologic Unit 17020011, Wenatchee National Forest, 0.4 mi downstream from former gage, and 1.0 mi south of Cashmere.	81.2	1954-58‡ 1954c 1959 1959-73c 1965 1967 1975-77	10-09-01	0
BETWEEN WENATCHEE RIVER AND CRAB CREEK BASINS						
12462800 Moses Creek	Douglas Creek	Lat 47°37'03", long 120°00'27", in NE¼SE¼ sec.36, T.25 N., R.22 E., Douglas County, Hydrologic Unit 17020012, at county road, and 0.3 mi southeast of Douglas.	15.4	1955c 1957-75c 1965 1976-77	10-04-01	0.21

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
12463000 Douglas Creek	Columbia River	Lat 47°35'02", long 120°01'19", in SW¼SW¼ sec.12, T.24 N., R.22 E., Douglas County, Hydrologic Unit 17020012, 1.5 mi northwest of Alstown, and 2.9 mi south of Douglas.	99.9	1949-55‡ 1956-60c 1963-68‡ 1977	10-04-01	0.26
Douglas Creek	Columbia River	Lat 47°25'12", long 119°54'56", in NW¼NW¼ sec.11, T.22 N., R.23 E., Douglas County, Hydrologic Unit 17020012, at road bridge, 350 ft west of post office, and at Palisades.	197	1948 1977	10-04-01	2.5
CRAB CREEK BASIN						
12464800 Coal Creek	Crab Creek	Lat 47°24'25", long 118°19'04", in SE¼SE¼ sec.7, T.22 N., R.36 E., Lincoln County, Hydrologic Unit 17020013, 0.3 mi east of Mohler, and at mile 0.3.	64.7	1963-74‡ 1975-79c 1977 1985	10-01-01	0.41
Goose Creek	Wilson Creek	Lat 47°45'25", long 118°42'08", in NE¼NE¼ sec.18, T.26 N., R.33 E., Lincoln County, Hydrologic Unit 17020013, in city park, at Wilbur, and 4.5 mi from mouth.	52.0	1977	10-01-01	0
Corbett Draw	Wilson Creek	Lat 47°39'52", long 118°55'35", in SE¼NW¼ sec.16, T.25 N., R.31 E., Lincoln County, Hydrologic Unit 17020013, 3 mi south of Almira, and 1000 ft upstream from mouth.	119	1976-77	10-01-01	2.0
12465400 Wilson Creek	Crab Creek	Lat 47°39'47", long 118°55'46", in SW¼NW¼ sec.16, T.25 N., R.31 E., Lincoln County, Hydrologic Unit 17020013, 65 ft downstream from Corbett Draw, and 3.5 mi south of Almira.	327	1969-71‡ 1972-79c 1977 1985	10-01-01	0.13
YAKIMA RIVER BASIN						
Gold Creek	Keechelus Lake	Lat 47°23'28", long 121°22'52", in NE¼SE¼ sec.15, T.22 N., R.11 E., Kittitas County, Hydrologic Unit 17030001, Wenatchee National Forest, between Interstate 90 bridges, and 0.5 mi east of Hyak.	14.0	1906 1910 1960 1968 1970 1973 1977	10-01-01	8.5
12474700 Mosquito Creek	Yakima River	Lat 47°17'32", long 121°19'23", in SE¼ sec.22, T.21 N., R.12 E., Kittitas County, Hydrologic Unit 17030001, at Forest Service road, 2.0 mi southeast of Keechelus Dam, and 8 mi northwest of Easton.	1.07	1968-77c 1969-75 1977	10-01-01	0.09
12475000 Cabin Creek	Yakima River	Lat 47°14'23", long 121°13'34", in NW¼SE¼ sec.9, T.20 N., R.13 E., Kittitas County, Hydrologic Unit 17030001, and 2.2 mi west of Easton.	29.3	1904 1907-09 1909-11‡ 1912-15 1958 1967 1970 1977	10-01-01	1.2

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Big Creek	Yakima River	Lat 47°12'44", long 121°06'09", in SE¼NW¼ sec.21, T.20 N., R.14 E., Kittitas County, Hydrologic Unit 17030001, at Interstate 90, and 3.5 mi southeast of Easton.	27.4	1909-10 1912 1967 1970 1973 1976-77	10-01-01	0.10 _e
Paris Creek	Cle Elum River	Lat 47°24'55", long 121°04'49", in NW¼NW¼ sec.10, T.22 N., R.14 E., Kittitas County, Hydrologic Unit 17030001, Wenatchee National Forest, 1.2 mi northeast of Salmon la Sac Guard Station, and 0.4 mi upstream from mouth.	3.90	1970 1973 1977	10-03-01	1.4
Cle Elum River	Yakima River	Lat 47°24'02", long 121°05'40", in NE¼NW¼ sec.16, T.22 N., R.14 E., Kittitas County, Hydrologic Unit 17030001, at Salmon la Sac Campground, 1.5 mi downstream from Waptus River, and 4.0 mi upstream from Cle Elum Lake.	--	1977	10-03-01	50
12480000 Teanaway River	Yakima River	Lat 47°15'03", long 120°52'18", in SW¼SW¼ sec.5, T.20 N., R.16 E., Kittitas County, Hydrologic Unit 17030001, 0.4 mi upstream from Story Creek, 0.5 mi downstream from North Fork, 5.0 mi northeast of Cle Elum, and 9.6 mi upstream from mouth.	172	1911-12‡ 1968-73‡ 1974-77c 1977	10-03-01	12
Manastash Creek	Yakima River	Lat 46°58'02", long 120°41'02", in NW¼NW¼ sec.14, T.17 N., R.17 E., Kittitas County, Hydrologic Unit 17030001, about 500 ft upstream from road crossing 0.2 mi upstream from Reed Canyon, about 1 mi upstream from entrance to Manastash Canyon, and 6.5 mi southwest of Ellensburg.	--	1977	10-01-01	4.9
Wenas Creek	Yakima River	Lat 46°50'14", long 120°43'02", in NW¼NW¼ sec.33, T.16 N., R.17 E., Yakima County, Hydrologic Unit 17030001, 200 ft downstream from road crossing, 2.0 mi upstream from Wenas Lake, and 8 mi north of Naches.	--	1967 1973 1977	10-04-01	0.96
Rattlesnake Creek	Naches River	Lat 46°49'10", long 120°56'07", in SE¼ sec.3, T.15 N., R.15 E., Yakima County, Hydrologic Unit 17030002, 200 ft upstream from road crossing, 50 ft upstream from diversion, 0.5 mi northwest of Nile, and 0.3 mi upstream from mouth	134	1904 1910 1912 1922-23 1963 1967 1970 1977	10-02-01	12
North Fork Tieton River	Naches River	Lat 46°37'14", long 121°18'01", Yakima County, Hydrologic Unit 17030002, unsurveyed, 0.5 mi upstream from Clear Lake, at county road bridge, and 6 mi east of White Pass.	--	--	10-02-01	36
12491700 Hause Creek	Tieton River	Lat 46°40'33", long 121°04'49", in NE¼ sec.28, T.14 N., R.14 E., Yakima County, Hydrologic Unit 17030002, at State Highway 14, 0.1 mi west of Tieton Ranger Station, and 2.5 mi east of Rimrock.	3.91	1955-88c 1967 1969 1971 1976-85	10-02-01	0.01 _e

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
Naches River	Yakima River	Lat 46°44'54", long 120°46'34", in SE¼NW¼ sec.36, T.15 N., R.16 E., Yakima County, Hydrologic Unit 17030002, 0.4 mi downstream from mouth of Tieton River, and 4 miles west of Naches.	--	--	08-15-02	194
Naches River	Yakima River	Lat 46°44'38", long 120°45'41", in NE¼SE¼ sec.36, T.15 N., R.16 E., Yakima County, Hydrologic Unit 17030002, 1.25 mi downstream from mouth of Tieton River, and 3.2 mi west of Naches.	--	--	08-15-02	253
Naches River	Yakima River	Lat 46°43'28", long 120°41'55", in SW¼SW¼ sec.3, T.14 N., R.17 E., Yakima County, Hydrologic Unit 17030002, 100 ft downstream from Naches-Tieton Rd bridge, and 0.5 mi south of Naches.	--	--	08-15-02	141
Naches River	Yakima River	Lat 46°38'15", long 120°36'18", in SE¼SW¼ sec.5, T.13 N., R.18 E., Yakima County, Hydrologic Unit 17030002, 1 mi upstream from Hwy 12 bridge, and 1.5 mi south of Glead.	--	--	08-15-02	414
Naches River	Yakima River	Lat 46°37'37", long 120°31'23", in NW¼SW¼ sec.12, T.13 N., R.18 E., Yakima County, Hydrologic Unit 17030002, 2 mi south of Selah, and 0.6 mi upstream from mouth.	--	--	08-16-02	381
12506300 North Fork Simcoe Creek	Simcoe Creek	Lat 46°27'27", long 120°52'06", in SW¼NE¼ sec.7, T.11 N., R.16 E., Yakima County, Hydrologic Unit 17030003, just upstream from diversion, 8.3 mi from White Swan, and 0.9 mi upstream from mouth.	24.8	1971-72‡ 1977 1980	10-04-01	3.7 _h
12506330 South Fork Simcoe Creek	Simcoe Creek	Lat 46°26'41", long 120°53'09", in NE¼NE¼ sec.13, T.11 N., R.15 E., Yakima County, Hydrologic Unit 17030003, 8.6 mi northwest of White Swan, and 1.3 mi upstream from mouth.	16.2	1971-72‡ 1977	10-04-01	2.7 _h
Logy Creek	Satus Creek	Lat 46°13'03", long 120°29'35", in SE¼SW¼ sec.31, T.9 N., R.19 E., Yakima County, Hydrologic Unit 17030003, 14.5 mi southwest of Toppenish, and 1.3 mi upstream from mouth.	97.5	1974 1977	10-04-01	12 _h
12508480 Dry Creek	Satus Creek	Lat 46°15'15", long 120°24'09", in SE¼NW¼ sec.23, T.9 N., R.19 E., Yakima County, Hydrologic Unit 17030003, at U.S. Highway 97 crossing, 10 mi southwest of Toppenish, and 0.8 mi upstream from mouth.	157	1971-74‡ 1977 1985	10-04-01	0 _i
SNAKE RIVER BASIN						
13349400 Pine Creek	Rock Creek	Lat 47°12'24", long 117°30'14", in NW¼NE¼ sec.27, T.20 N., R.42 E., Whitman County, Hydrologic Unit 17060109, 1.0 mi east of Pine City, and 2.3 mi west of Malden.	302 f	1961-75‡ 1976-78c 1977-78	10-09-01	2.6

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
13350500 Union Flat Creek	Palouse River	Lat 46°48'37", long 117°25'52", in NW¼NW¼ sec.8, T.15 N., R.43 E., Whitman County, Hydrologic Unit 17060108, 20 ft upstream from county road bridge, 6.0 mi southwest of Colfax, and at mile 32.3.	189	1953-71‡ 1972-78c 1977-78 1984 1994	10-09-01	1.6
13352500 Cow Creek	Palouse River	Lat 46°45'46", long 118°08'46", in NW¼NW¼ sec.26, T.15 N., R.37 E., Adams County, Hydrologic Unit 17060108, on county road bridge, 0.5 mile north of Hooper, and 0.5 mi upstream from mouth. 1996-99	679	1951-54‡ 1962-70‡ 1971-79c 1975 1977-78	10-05-01	2.9
WALLA WALLA RIVER BASIN						
Russell Creek	Yellowhawk Creek	Lat 46°01'46", long 118°20'37", in SW¼NW¼ sec.5, T.6 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, at county road crossing, 0.2 mi west of Langdon, and 0.1 mi upstream from mouth.	--	1970-73 1977	10-04-01	0
Cottonwood Creek	Yellowhawk Creek	Lat 46°01'33", long 118°20'42", in NW¼SE¼ sec.6, T.6 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, at county road crossing, 0.4 mi southwest of Langdon, and 1.0 mi upstream from mouth.	--	1970-73 1977	10-04-01	0
Mill Creek	Walla Walla River	Lat 46°02'31", long 118°28'11", in SE¼NW¼ sec., Walla Walla County, Hydrologic Unit 17070102, at county road bridge, 0.1 mi upstream from Doan Creek, 0.4 mi west of Whitman Mission, and 0.4 mi upstream from mouth.	--	1973-75 1977	10-04-01	3.6
BETWEEN WALLA WALLA RIVER AND KLICKITAT RIVER BASINS						
Glade Creek	Columbia River	Lat 45°53'40", long 119°41'31", in NW¼NE¼ sec.28, T.5 N., R.25 E., Benton County, Hydrologic Unit 17070101, at State Highway 14 crossing, 5.5 mi southwest of Patterson, and 0.5 mi upstream from mouth.	428	1977	10-03-01	18
14034325 Alder Creek	Columbia River	Lat 45°59'49", long 120°16'31", in NE¼NW¼ sec.23, T.6 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at county road, and 1.3 mi east of Patterson.	8.35	1963-77c 1964-65 1967 1973-75 1977 1985	10-04-01	0
Wood Gulch	Columbia River	Lat 45°45'00", long 120°11'58", in SW¼SW¼ sec.9, T.3 N., R.21 E., Klickitat County, Hydrologic Unit 17070101, 0.7 mi northwest of Roosevelt, and 0.2 mi upstream from mouth.	60.0	1977 1985	10-03-01	0
Rock Creek	Columbia River	Lat 45°50'31", long 120°31'49", in SW¼SW¼ sec.11, T.4 N., R.18 E., Klickitat County, Hydrologic Unit 17070101, at county road crossing, and 15 mi northeast of Goldendale.	67.6	1977 1985	10-03-01	0.25

Discharge Measurements Made at Miscellaneous Sites During Water Year 2002--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water year)	Measurements	
					Date	Discharge (ft ³ /s)
14036600 Rock Creek	Columbia River	Lat 45°44'55", long 120°26'04", in NE¼ sec.16, T.3 N., R.19 E., Klickitat County, Hydrologic Unit 17070101, at county highway bridge.	213	1962-68‡ 1973 1977	10-03-01	0
Klickitat River Basin						
McCreedy Creek	Klickitat River	Lat 46°19'21", long 121°15'06", in SE¼NE¼ sec.25, T.10 N., R.12 E., Yakima County, Hydrologic Unit 17070106, Yakama Nation Reservation, 21.2 mi north of Glenwood, and 300 ft upstream from mouth.	18.0	1973 1977	10-04-01	34 _h
14106500 Pearl Creek	Klickitat River	Lat 46°18'42", long 121°15'36", in NE¼NW¼ sec.36, T.10 N., R.12 E., Yakima County, Hydrologic Unit 17070106, Yakama Nation Reservation, 20.5 mi north of Glenwood, and at mouth.	4.31	1916‡ 1973 1977	10-03-01	0.18 _h
14108500 Cunningham Creek	Klickitat River	Lat 46°10'48", long 121°17'08", in NW¼SE¼ sec.15, T.8 N., R.12 E., Yakima County, Hydrologic Unit 17070106, Yakama Nation Reservation, 11.2 mi north of Glenwood, and 0.8 mi upstream from mouth.	15.4	1916‡ 1973 1977	10-03-01	6.7
Outlet Creek	Klickitat River	Lat 46°00'59", long 121°11'20", in SE¼SW¼ sec.9, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 0.9 mi upstream from Outlet Falls, and 4.8 mi east of Glenwood.	128	1974-75 1977	10-04-01	4.3
Summit Creek	Klickitat River	Lat 45°59'19", long 121°07'23", in SW¼SE¼ sec.24, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 9.6 mi southeast of Glenwood, and 0.2 mi upstream from mouth.	44.8	1974-75 1977 1985	10-04-01	7.6
14112000 Little Klickitat River	Klickitat River	Lat 45°50'40", long 120°47'42", in NE¼SW¼ sec.10, T.4 N., R.16 E., Klickitat County, Hydrologic Unit 17070106, 400 ft upstream from State Highway 97 bridge, and 2.1 mi northeast of Goldendale.	83.5	1910-12‡ 1946-51‡ 1957-70‡ 1971-78c 1973 1975-78 1985	10-02-01	0.3

- No data or undetermined.
- ‡ Operated as a continuous-record gaging site.
- a Not previously published.
- b Annual maximum discharge only.
- c Operated as a crest-stage gage.
- e Estimated.
- f Includes 281 sq mi in Washington.
- g Includes 19.9 sq mi in Washington.
- h Data provided by Yakama Nation.
- i Data provided by Bureau of Reclamation.
- j Data provided by US Forest Service.
- k Data provided by Jefferson County PUD.

GROUND-WATER LEVELS

BENTON COUNTY

462913119362102. Local number, 12N/26E-31C01D1.

LOCATION.--Lat 46°29'13", long 119°36'21", Hydrologic Unit 17030003, near Richland.

Owner: U.S. Department of Energy, Hanford Site Well 699-17-70.

AQUIFER.--Middle Part of Ringold Formation of Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation well, water table, diameter 8 in, depth 125 ft.

DATUM.--Elevation of land-surface datum is 561.18 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; perforated 8 in diameter casing from 75 to 125 ft, water level measured in 8 in casing. This well was originally 286 ft deep and was back-filled to 125 ft in July 1978. Water levels were measured in the original well (12N/26E-31C01) from November 1958 to December 1977. The gradual water-level rise exhibited by the reconstructed well may result from leakage across the plug at the top of the backfill material, and therefore not represent a true water-level trend in the aquifer.

PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 86.0 ft below land-surface datum, May 13, June 27, and Aug. 12, 2002; lowest measured, 87.8 ft below land-surface datum, Dec. 1, 1978, Dec. 1, 1980, and Dec. 1, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 14	86.1	FEB 11	86.1	MAY 13	86.0	AUG 12	86.0
DEC 28	86.1	MAR 28	86.1	JUN 27	86.0	SEP 30	86.1

COLUMBIA COUNTY

461935118081501. Local number, 10N/37E-23R01.

LOCATION.--Lat 46°19'34", long 118°08'14", Hydrologic Unit 17070102, near Dayton.

Owner: Joe McCown.

AQUIFER.--Grande Ronde Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt Group of Miocene Age.

WELL CHARACTERISTICS.--Drilled unused irrigation well, water table, diameter 6 in, depth 103 ft.

DATUM.--Elevation of land-surface datum is 1,390 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; uncertain, probably 6 in diameter open end casing at 103 ft., water level measured in 6 in casing

PERIOD OF RECORD.--June 1968 to November 1973. September 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 24.40 ft below land-surface datum, Sept. 8, 1997; lowest measured, 41.28 ft below land-surface datum, June 25, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 5	37.95	MAR 21	38.24	MAY 10	37.50	JUL 3	37.56
JAN 1	37.60						

LINCOLN COUNTY

473442118162201. Local number, 24N/36E-16A01.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Wanapum Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, water-table, diameter 10 in, depth 117 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 75 to 117 ft, water level measured in 10 in casing. A pressure transducer and data logger were installed on Feb. 1, 1998. Water levels were recorded at 4-hour intervals. The water levels below are average daily values for the dates given.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 26.57 ft below land-surface datum, April 9, 1997; lowest measured, 52.15 ft below land-surface datum, Sept. 23, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	37.8	FEB 15	36.4	MAY 5	34.8	JUL 20	35.9
OCT 10	37.9	FEB 20	35.7	MAY 10	34.9	JUL 25	36.0
OCT 15	38.1	FEB 25	35.2	MAY 15	34.9	JUL 30	36.1
OCT 20	38.0	FEB 28	35.0	MAY 20	34.8	AUG 5	36.3
OCT 25	38.2	MAR 5	34.9	MAY 25	34.8	AUG 10	36.4
OCT 30	38.2	MAR 10	35.1	MAY 30	35.0	AUG 15	36.5
NOV 5	38.2	MAR 15	34.9	JUN 5	35.1	AUG 20	36.6
NOV 10	38.4	MAR 20	35.1	JUN 10	35.1	AUG 25	36.8
NOV 15	38.4	MAR 25	34.7	JUN 15	35.1	AUG 30	36.9
NOV 20	38.3	MAR 30	34.8	JUN 20	35.2	SEP 5	37.0
NOV 25	38.0	APR 5	34.7	JUN 25	35.4	SEP 10	37.2
NOV 26	38.3	APR 10	34.8	JUN 30	35.4	SEP 15	37.2
JAN 31	36.3	APR 15	34.6	JUL 5	35.5	SEP 20	37.5
FEB 6	36.3	APR 20	34.8	JUL 10	35.6	SEP 25	37.6
FEB 8	36.4	APR 25	34.8	JUL 15	35.7	SEP 30	37.6
FEB 10	36.5	APR 30	34.7				

473442118162202. Local number, 24N/36E-16A02.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Wanapum Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 160 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 123 to 160 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.62 ft below land-surface datum, Apr. 9, 1997; lowest measured, 52.2 ft below land-surface datum, Sept. 23, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	38.1	FEB 6	36.2	APR 18	34.95	JUL 31	36.25
JAN 31	36.3						

473442118162203. Local number, 24N/36E-16A03.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Wanapum Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 224 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 208 to 224 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 26.58 ft below land-surface datum, Apr. 9, 1997; lowest measured 52.24 ft below land-surface datum, Sept. 23, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	38.1	FEB 6	36.3	APR 18	34.95	JUL 31	36.25
JAN 31	36.3						

473442118162204. Local number, 24N/36E-16A04.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Wanapum Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 261 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 242 to 261 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 26.04 ft below land-surface datum, Apr. 9, 1997; lowest measured, 52.28 ft below land-surface datum, Sept. 23, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	38.3	FEB 6	36.4	APR 18	35.10	JUL 31	36.3
JAN 31	36.5						

473442118162205. Local number, 24N/36E-16A05.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Wanapum and Grande Ronde Basalts of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 365 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 315 to 365 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 27.90 ft below land-surface datum, May 1, 1974; lowest measured, 57.55 below land-surface datum, Sept. 23, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	39.5	FEB 6	39.6	APR 18	38.60	JUL 31	38.50
JAN 31	39.6						

GROUND-WATER LEVELS

473442118162206. Local number, 24N/36E-16A06.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Grande Ronde Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 491 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 451 to 491 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 29.6 ft below land-surface datum Feb. 6, 1998; lowest measured, 87.9 ft below land-surface datum, Sept. 8, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	37.0	FEB 6	37.6	APR 18	38.12	JUL 31	38.84
JAN 31	37.7						

473442118162207. Local number, 24N/36E-16A07.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Grande Ronde Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 635 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 590 to 635 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 161.17 ft below land-surface datum Mar. 22, 1972; lowest measured, 217.88 ft below land-surface datum, July 26, 1994.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	199.61	FEB 6	193.65	APR 18	191.72	JUL 31	198.92
JAN 31	194.25						

473442118162208. Local number, 24N/36E-16A08.

LOCATION.--Lat 47°34'41", long 118°16'27", Hydrologic Unit 17020013, near Davenport.

Owner: Washington State, Department of Ecology.

AQUIFER.--Grande Ronde Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 10 in, depth 750 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter open hole from 728 to 750 ft, water level measured in 1.25 in diameter piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 161.52 ft below land-surface datum, Mar. 22, 1972; lowest measured, 217.93 ft below land-surface datum, July 26, 1994.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 18	199.6	FEB 6	193.8	APR 18	191.72	JUL 31	198.90
JAN 31	194.2						

GROUND-WATER LEVELS

OKANOGAN COUNTY

482252120134501. Local number, 33N/21E-09D02

LOCATION.--Lat 48°22'52.2",long 120°13'45.4", Hydrologic Unit 17020008, near Twisp.

Owner: Washington State, Department of Fish and Wildlife.

AQUIFER.--Unidentified gravel unit of Pleistocene Age and unidentified shale unit of Cretaceous Age.

WELL CHARACTERISTICS.--Drilled observation well, water table/confined, diameter 6 in, depth 61 ft.

INSTRUMENTATION.--A non-submersible pressure transducer and data logger.

DATUM.--Elevation of land-surface datum is 2000.4 feet above NGVD of 1929.

REMARKS.--Monitored depth interval; 6 in diameter open hole from 53-61 ft.

PERIOD OF RECORD.--May 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 41.2 ft below land-surface datum, May 25-28, 2002; lowest measured, 43.4 ft below land-surface datum, Dec. 27-29, Jan. 4-7, Jan. 9 to Mar. 26, 2002.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42.7	43.0	43.3	43.3	43.4	43.4	43.3	43.0	42.1	42.5	42.7	43.0
2	42.7	43.0	43.3	43.3	43.4	43.4	43.3	43.0	42.1	42.5	42.7	43.0
3	42.7	43.0	43.3	43.3	43.4	43.4	43.3	43.0	42.1	42.5	42.7	43.0
4	42.7	43.0	43.3	43.4	43.4	43.4	43.3	43.0	42.1	42.5	42.7	43.0
5	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.9	42.1	42.5	42.8	43.0
6	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.8	42.2	42.5	42.8	43.1
7	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.8	42.2	42.5	42.8	43.1
8	42.8	43.1	43.3	43.3	43.4	43.4	43.2	42.8	42.2	42.5	42.8	43.1
9	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.7	42.2	42.5	42.8	43.1
10	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.6	42.2	42.5	42.8	43.1
11	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.5	42.3	42.5	42.8	43.1
12	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.4	42.3	42.5	42.8	43.1
13	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.3	42.3	42.5	42.8	43.1
14	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.2	42.3	42.5	42.9	43.1
15	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.1	42.3	42.5	42.9	43.1
16	42.8	43.1	43.3	43.4	43.4	43.4	43.2	42.1	42.3	42.5	42.9	43.1
17	42.8	43.2	43.3	43.4	43.4	43.4	43.2	42.0	42.3	42.5	42.9	43.1
18	42.9	43.2	43.3	43.4	43.4	43.4	43.2	42.0	42.4	42.5	42.9	43.2
19	42.9	43.2	43.3	43.4	43.4	43.4	43.2	41.9	42.4	42.5	42.9	43.2
20	42.9	43.2	43.3	43.4	43.4	43.4	43.2	41.9	42.4	42.5	42.9	43.2
21	42.9	43.2	43.3	43.4	43.4	43.4	43.1	41.9	42.4	42.5	43.0	43.2
22	42.9	43.2	43.3	43.4	43.4	43.4	43.1	41.9	42.4	42.5	43.0	43.2
23	42.9	43.2	43.3	43.4	43.4	43.4	43.1	41.9	42.4	42.5	43.0	43.2
24	42.9	43.2	43.3	43.4	43.4	43.4	43.1	41.9	42.4	42.6	43.0	43.2
25	43.0	43.2	43.3	43.4	43.4	43.4	43.1	41.9	42.4	42.6	43.0	43.2
26	43.0	43.2	43.3	43.4	43.4	43.4	43.1	41.9	42.4	42.6	43.0	43.2
27	43.0	43.2	43.4	43.4	43.4	43.3	43.1	41.9	42.4	42.6	43.0	43.2
28	43.0	43.2	43.4	43.4	43.4	43.3	43.1	41.9	42.4	42.6	43.0	43.2
29	43.0	43.2	43.4	43.4	---	43.3	43.1	42.0	42.4	42.6	43.0	43.3
30	43.0	43.3	43.3	43.4	---	43.3	43.1	42.0	42.4	42.6	43.0	43.3
31	43.0	---	43.3	43.4	---	43.3	---	42.0	---	42.7	43.0	---
MEAN	42.9	43.1	43.3	43.4	43.4	43.4	43.2	42.3	42.3	42.5	42.9	43.1
MAX	43.0	43.3	43.4	43.4	43.4	43.4	43.3	43.0	42.4	42.7	43.0	43.3
MIN	42.7	43.0	43.3	43.3	43.4	43.3	43.1	41.9	42.1	42.5	42.7	43.0

GROUND-WATER LEVELS

482246120134101. Local number, 33N/21E-09D03.

LOCATION.--Lat 48°22'46.2", long 120°13'41.0", Hydrologic Unit 17020008, near Twisp.

Owner: Washington State, Department of Fish and Wildlife.

AQUIFER.-- Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 38 ft.

INSTRUMENTATION.--A non-submersible pressure transducer and data logger.

DATUM.--Elevation of land-surface datum is 1,964.8 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; perforated 6 in diameter casing from 33 to 38 ft.

PERIOD OF RECORD.--May 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 26.1 ft below land-surface datum, May 25, 2001; lowest measured, 30.9 ft below land-surface datum, Feb. 13-19, 2002.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.8	30.4	30.6	30.7	---	30.7	30.4	30.1	26.6	27.4	27.6	28.5
2	28.8	30.4	30.6	30.7	30.8	30.7	30.4	29.9	26.6	27.4	27.7	28.4
3	28.9	30.4	30.6	30.7	30.8	30.7	30.4	29.8	26.7	27.4	27.8	28.5
4	28.9	30.5	30.6	30.7	30.8	30.7	30.4	29.7	26.7	27.4	27.8	28.5
5	29.0	30.5	30.6	30.7	30.8	30.7	30.3	29.6	26.7	27.4	27.9	28.5
6	29.0	30.5	30.6	30.8	30.8	30.7	30.3	29.5	26.8	27.4	27.9	28.5
7	29.0	30.5	30.7	30.8	30.8	30.7	30.3	29.4	26.8	27.4	28.0	28.6
8	29.1	30.5	30.7	30.7	30.8	30.7	30.3	29.3	26.9	27.4	28.0	28.6
9	29.1	30.6	30.7	30.7	30.8	30.7	30.3	29.2	27.0	27.4	28.1	28.6
10	29.1	30.6	30.7	30.7	30.8	30.7	30.3	29.0	27.0	27.4	28.1	28.7
11	29.1	30.6	30.7	30.7	30.8	30.7	30.3	28.8	27.0	27.4	28.1	28.7
12	29.1	30.6	30.7	30.7	30.8	30.7	30.3	28.6	27.0	27.4	28.1	28.7
13	29.2	30.6	30.7	30.7	30.9	30.7	30.3	28.2	27.0	27.3	28.2	28.8
14	29.2	30.6	30.6	30.7	30.9	30.7	30.3	27.9	27.0	27.3	28.2	28.8
15	29.2	30.6	30.7	30.7	30.9	30.7	30.3	27.5	27.0	27.3	28.2	28.8
16	29.3	30.6	30.7	30.8	30.9	30.7	30.3	27.3	27.0	27.3	28.2	28.9
17	29.4	30.6	30.6	30.8	30.9	30.7	30.2	27.0	27.1	27.3	28.3	28.9
18	29.5	30.6	30.7	30.8	30.9	30.7	30.2	26.8	27.2	27.3	28.3	28.9
19	29.6	30.6	30.7	30.8	30.9	30.7	30.2	26.7	27.2	27.3	28.3	28.9
20	29.8	30.5	30.7	30.8	30.8	30.7	30.2	26.5	27.3	27.3	28.4	28.9
21	29.9	30.5	30.7	30.8	30.8	30.7	30.3	26.4	27.3	27.3	28.4	28.9
22	30.0	30.5	30.7	30.8	30.8	30.7	30.3	26.4	27.3	27.4	28.5	29.0
23	30.0	30.5	30.7	30.8	30.8	30.7	30.3	26.4	27.3	27.4	28.5	29.0
24	30.1	30.6	30.7	30.8	30.8	30.7	30.3	26.4	27.3	27.4	28.5	29.0
25	30.2	30.6	30.7	30.8	30.7	30.7	30.2	26.4	27.3	27.4	28.5	29.1
26	30.2	30.6	30.7	30.8	30.7	30.6	30.2	26.3	27.3	27.4	28.4	29.1
27	30.2	30.6	30.8	30.8	30.7	30.6	30.2	26.3	27.3	27.4	28.4	29.1
28	30.3	30.6	30.8	30.8	30.7	30.6	30.3	26.3	27.3	27.5	28.4	29.1
29	30.3	30.6	30.7	30.8	---	30.6	30.3	26.4	27.3	27.5	28.5	29.1
30	30.3	30.6	30.7	30.8	---	30.6	30.3	26.4	27.3	27.5	28.5	29.1
31	30.4	---	30.7	30.8	---	30.5	---	26.5	---	27.6	28.4	---
MEAN	29.5	30.6	30.7	30.8	30.8	30.7	30.3	27.8	27.1	27.4	28.2	28.8
MAX	30.4	30.6	30.8	30.8	30.9	30.7	30.4	30.1	27.3	27.6	28.5	29.1
MIN	28.8	30.4	30.6	30.7	30.7	30.5	30.2	26.3	26.6	27.3	27.6	28.4

GROUND-WATER LEVELS

545

482224120115401. Local number, 33N/21E-10L02.

LOCATION.--Lat 48°22'24.3", long 120°11'54.9", Hydrologic Unit 17020008, near Twisp.

Owner: Chris and Pat Christianson.

AQUIFER.-- Unidentified sand and gravel unit of Pleistocene Age and unidentified shale unit of Cretaceous-Jurassic Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 80 ft.

INSTRUMENTATION.--A non-submersible pressure transducer and data logger.

DATUM.--Elevation of land-surface datum is 1,851.1 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 6 in diameter open hole from 78 to 80 ft.

PERIOD OF RECORD.--April 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 29.5 ft below land-surface datum, June 15-16, 2002; lowest measured, 33.7 ft below land-surface datum, Nov. 7-13, 2001.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32.6	33.5	33.5	33.5	---	33.0	32.4	31.8	29.8	30.1	30.9	31.8
2	32.8	33.5	33.5	33.5	33.5	33.0	32.4	31.7	30.0	30.2	30.9	31.8
3	32.8	33.6	33.5	33.5	33.5	33.0	32.4	31.6	30.0	30.3	30.9	31.8
4	32.9	33.6	33.5	33.5	33.5	33.0	32.4	31.7	30.0	30.3	30.9	31.8
5	32.9	33.6	33.5	33.5	33.5	33.0	32.3	31.7	29.8	30.4	30.9	31.8
6	32.8	33.6	33.5	33.5	33.5	33.0	32.3	31.8	29.7	30.4	30.9	31.7
7	32.9	33.7	33.5	33.5	33.5	33.0	32.2	31.8	29.9	30.3	31.0	31.7
8	32.9	33.7	33.5	33.4	33.5	33.0	32.2	31.9	30.0	30.2	31.1	31.6
9	32.9	33.7	33.5	33.4	33.4	33.0	32.2	31.9	30.1	30.3	31.1	31.7
10	32.9	33.7	33.4	33.4	33.4	32.9	32.2	32.0	30.2	30.3	31.1	31.7
11	32.9	33.7	33.4	33.4	33.4	32.9	32.1	32.0	30.2	30.3	31.2	31.6
12	33.0	33.7	33.5	33.4	33.4	32.9	32.1	32.0	30.0	30.3	31.3	31.7
13	33.0	33.7	33.4	33.4	33.4	32.9	32.0	31.9	29.9	30.4	31.3	31.7
14	33.0	33.6	33.4	33.5	33.4	32.9	31.8	31.8	29.6	30.4	31.3	31.7
15	33.1	33.5	33.5	33.5	33.4	32.8	31.8	31.7	29.5	30.4	31.3	31.8
16	33.1	33.5	33.4	33.5	33.4	32.8	31.8	31.5	29.5	30.5	31.3	31.8
17	33.1	33.6	33.4	33.5	33.4	32.8	31.8	31.4	29.6	30.5	31.4	31.7
18	33.2	33.6	33.4	33.5	33.3	32.8	31.9	31.1	29.7	30.4	31.5	31.7
19	33.2	33.6	33.4	33.5	33.3	32.8	31.9	31.0	29.8	30.4	31.6	31.7
20	33.2	33.5	33.4	33.4	33.3	32.8	31.9	30.7	29.8	30.5	31.6	31.7
21	33.3	33.5	33.4	33.4	33.3	32.8	31.9	30.5	29.8	30.6	31.6	31.8
22	33.3	33.5	33.4	33.5	33.3	32.8	31.9	30.5	29.7	30.6	31.6	32.0
23	33.3	33.5	33.4	33.5	33.1	32.8	31.9	30.5	29.8	30.6	31.6	32.0
24	33.3	33.5	33.5	33.4	33.0	32.7	31.9	30.5	29.8	30.6	31.7	32.0
25	33.4	33.5	33.5	33.4	33.1	32.6	31.9	30.5	29.9	30.6	31.6	32.0
26	33.4	33.5	33.5	33.5	33.0	32.5	31.9	30.4	29.9	30.6	31.6	31.9
27	33.4	33.5	33.5	33.5	33.0	32.5	31.9	30.2	29.8	30.6	31.6	31.8
28	33.5	33.5	33.5	33.5	33.0	32.5	32.0	29.9	29.8	30.7	31.7	31.9
29	33.5	33.5	33.5	33.5	---	32.5	31.9	29.7	29.9	30.7	31.7	32.0
30	33.5	33.5	33.5	33.5	---	32.4	31.9	29.6	30.0	30.8	31.8	32.1
31	33.5	---	33.5	33.4	---	32.4	---	29.7	---	30.8	31.8	---
MEAN	33.1	33.6	33.5	33.5	33.3	32.8	32.0	31.1	29.9	30.5	31.3	31.8
MAX	33.5	33.7	33.5	33.5	33.5	33.0	32.4	32.0	30.2	30.8	31.8	32.1
MIN	32.6	33.5	33.4	33.4	33.0	32.4	31.8	29.6	29.5	30.1	30.9	31.6

GROUND-WATER LEVELS

482221120115601. Local number, 33N/21E-10L03.

LOCATION.--Lat 48°22'22.1", long 120°11'55.8", Hydrologic Unit 17020008, near Twisp.

Owner: Chris and Pat Christianson.

AQUIFER.-- Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 38 ft.

INSTRUMENTATION.--A non-submersible pressure transducer and data logger.

REMARKS.--Monitored depth interval; 6 in diameter open end casing at 38 ft.

DATUM.--Elevation of land-surface datum is 1,830.1 ft above NGVD of 1929.

PERIOD OF RECORD.--May 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 8.5 ft below land-surface datum, June 16-17, 2002; lowest measured, 12.4 ft below land- surface datum, May 9, 2001.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.4	12.1	12.1	12.1	12.2	11.9	11.3	10.8	8.8	9.0	9.8	10.8
2	11.5	12.1	12.1	12.1	12.2	11.9	11.3	10.6	8.8	9.1	9.8	10.8
3	11.6	12.2	12.1	12.1	12.3	11.9	11.3	10.6	8.9	9.2	9.8	10.8
4	11.6	12.2	12.1	12.1	12.3	11.9	11.3	10.6	8.9	9.2	9.8	10.8
5	11.7	12.2	12.1	12.1	12.3	11.9	11.3	10.6	8.9	9.3	9.9	10.8
6	11.7	12.2	12.1	12.2	12.3	11.9	11.2	10.6	8.7	9.3	9.9	10.8
7	11.7	12.2	12.1	12.2	12.3	11.9	11.2	10.6	8.8	9.3	9.9	10.8
8	11.7	12.2	12.1	12.2	12.3	11.8	11.2	10.6	8.8	9.3	9.9	10.7
9	11.7	12.2	12.1	12.1	12.3	11.8	11.1	10.7	8.9	9.3	10.0	10.7
10	11.7	12.3	12.1	12.1	12.3	11.8	11.1	10.7	9.0	9.3	10.0	10.7
11	11.7	12.3	12.1	12.1	12.3	11.8	11.1	10.8	9.1	9.3	10.1	10.7
12	11.7	12.3	12.1	12.1	12.3	11.8	11.1	10.8	9.1	9.4	10.1	10.7
13	11.8	12.3	12.1	12.2	12.3	11.8	11.0	10.8	9.0	9.4	10.2	10.7
14	11.8	12.3	12.1	12.2	12.3	11.8	10.8	10.7	8.8	9.4	10.2	10.7
15	11.8	12.2	12.1	12.2	12.2	11.8	10.7	10.6	8.6	9.4	10.2	10.8
16	11.8	12.2	12.1	12.3	12.2	11.7	10.7	10.6	8.5	9.4	10.3	10.8
17	11.8	12.2	12.1	12.3	12.2	11.7	10.7	10.4	8.5	9.5	10.3	10.8
18	11.9	12.2	12.1	12.3	12.2	11.7	10.8	10.2	8.6	9.5	10.3	10.8
19	11.9	12.2	12.1	12.2	12.2	11.7	10.8	10.0	8.6	9.5	10.4	10.8
20	11.9	12.2	12.0	12.2	12.2	11.7	10.8	9.8	8.7	9.5	10.5	10.8
21	11.9	12.2	12.0	12.2	12.2	11.7	10.8	9.6	8.8	9.5	10.5	10.8
22	12.0	12.2	12.0	12.2	12.2	11.7	10.8	9.6	8.8	9.6	10.6	10.8
23	12.0	12.1	12.0	12.2	12.0	11.7	10.8	9.6	8.8	9.6	10.6	10.8
24	12.0	12.2	12.0	12.2	11.9	11.7	10.8	9.6	8.8	9.6	10.6	10.9
25	12.0	12.2	12.0	12.2	11.9	11.5	10.8	9.6	8.8	9.6	10.6	10.9
26	12.0	12.2	12.0	12.2	11.9	11.4	10.8	9.5	8.8	9.6	10.6	10.9
27	12.0	12.2	12.1	12.2	11.9	11.4	10.8	9.4	8.8	9.6	10.7	10.9
28	12.0	12.2	12.1	12.2	11.9	11.4	10.8	9.1	8.9	9.7	10.7	10.9
29	12.1	12.2	12.1	12.3	---	11.4	10.8	8.8	9.0	9.7	10.7	10.9
30	12.1	12.2	12.1	12.3	---	11.4	10.9	8.7	9.0	9.7	10.7	10.9
31	12.1	---	12.1	12.2	---	11.3	---	8.7	---	9.7	10.8	---
MEAN	11.8	12.2	12.1	12.2	12.2	11.7	11.0	10.1	8.8	9.4	10.3	10.8
MAX	12.1	12.3	12.1	12.3	12.3	11.9	11.3	10.8	9.1	9.7	10.8	10.9
MIN	11.4	12.1	12.0	12.1	11.9	11.3	10.7	8.7	8.5	9.0	9.8	10.7

GROUND-WATER LEVELS

482213120103601. Local number, 33N/21E-11P03.

LOCATION.--Lat 48°22'13.2", long 120°10'36.7", Hydrologic Unit 17020008, near Twisp.

Owner: Connie and Barry Swanson.

AQUIFER.-- Unidentified igneous rock of Cretaceous-Jurassic Age.

WELL CHARACTERISTICS.--Drilled unused well, confined, diameter 6 in, depth 160 ft.

INSTRUMENTATION.--A non-submersible pressure transducer and data logger.

DATUM.--Elevation of land-surface datum is 1,825.6 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 6 in diameter open hole from 101-160 ft.

PERIOD OF RECORD.--April 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 76.8 ft below land-surface datum, Aug. 19 and Sept. 29, 2002;

lowest measured, 85.2 ft below land-surface datum, May 2-3, 2001.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78.8	80.0	81.0	82.1	82.7	82.8	83.1	83.4	82.0	79.6	77.4	77.0
2	78.8	80.1	81.0	82.1	82.7	82.9	83.1	83.2	81.9	79.5	77.3	77.0
3	78.8	80.1	81.2	82.1	82.7	82.9	83.0	83.3	81.9	79.3	77.3	77.0
4	78.8	80.0	81.3	82.2	82.7	82.8	83.0	83.3	81.8	79.3	77.2	77.0
5	78.8	80.1	81.3	82.2	82.6	82.7	82.9	83.3	81.7	79.3	77.2	77.0
6	78.7	80.2	81.3	82.1	82.5	82.8	82.8	83.4	81.6	79.2	77.2	77.0
7	78.7	80.4	81.5	82.1	82.5	82.8	82.8	83.4	81.5	79.1	77.2	76.9
8	78.7	80.4	81.4	82.1	82.6	82.9	82.8	83.4	81.4	79.0	77.2	77.0
9	78.9	80.4	81.4	82.2	82.8	83.0	82.7	83.3	81.3	79.0	77.1	77.0
10	78.9	80.4	81.4	82.3	82.7	82.9	82.8	83.3	81.2	78.8	77.0	77.0
11	78.9	80.4	81.4	82.4	82.8	82.7	82.8	83.2	81.2	78.7	77.0	76.9
12	78.8	80.4	81.5	82.2	82.9	82.7	82.8	83.2	81.1	78.6	77.0	76.9
13	78.8	80.4	81.3	82.3	82.7	82.8	82.8	83.2	81.1	78.4	77.0	76.9
14	78.9	80.5	81.3	82.3	82.9	82.9	82.7	83.1	81.0	78.4	76.9	76.9
15	79.0	80.5	81.5	82.3	82.9	82.9	82.8	83.0	80.8	78.4	76.9	76.9
16	79.0	80.6	81.4	82.4	82.8	82.8	82.8	82.9	80.7	78.3	76.9	76.9
17	79.1	80.8	81.6	82.4	82.6	82.9	82.9	82.8	80.6	78.2	76.9	77.0
18	79.1	80.9	81.7	82.5	82.6	83.0	83.0	82.7	80.5	78.2	76.9	77.1
19	79.0	80.8	81.8	82.4	82.6	83.0	82.9	82.6	80.4	78.1	76.8	77.0
20	79.0	80.7	81.7	82.3	82.8	83.1	82.8	82.5	80.3	78.1	76.9	77.0
21	79.0	80.7	81.8	82.3	82.8	83.1	82.9	82.5	80.2	78.1	76.9	77.1
22	79.1	80.6	81.9	82.3	82.7	83.0	82.8	82.5	80.1	78.0	77.0	77.1
23	79.3	80.8	82.0	82.4	82.6	82.9	82.9	82.5	80.0	77.9	77.0	77.0
24	79.5	80.7	82.1	82.4	82.8	83.0	82.9	82.4	79.9	77.8	77.0	77.0
25	79.6	80.6	82.1	82.3	82.8	83.0	82.9	82.3	79.8	77.8	77.0	77.0
26	79.7	80.9	82.1	82.3	82.8	83.0	82.9	82.3	79.7	77.6	77.0	76.9
27	79.7	81.0	82.0	82.4	82.7	83.0	83.1	82.3	79.5	77.6	77.0	76.9
28	79.9	80.8	82.0	82.5	82.7	83.0	83.5	82.2	79.4	77.6	77.0	76.9
29	80.0	80.9	82.1	82.6	---	83.0	83.5	82.2	79.4	77.6	76.9	76.8
30	79.9	81.0	82.1	82.6	---	83.1	83.5	82.1	79.5	77.5	76.9	76.9
31	79.8	---	82.1	82.6	---	83.0	---	82.1	---	77.5	77.0	---
MEAN	79.1	80.5	81.6	82.3	82.7	82.9	82.9	82.8	80.7	78.4	77.0	77.0
MAX	80.0	81.0	82.1	82.6	82.9	83.1	83.5	83.4	82.0	79.6	77.4	77.1
MIN	78.7	80.0	81.0	82.1	82.5	82.7	82.7	82.1	79.4	77.5	76.8	76.8

GROUND-WATER LEVELS

48221210104001. Local number, 33N/21E-11P04.

LOCATION.--Lat 48°22'12.0", long 120°10'40.0", Hydrologic Unit 17020008, near Twisp.

Owner: Connie and Barry Swanson.

AQUIFER.-- Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 30 ft.

INSTRUMENTATION.--A non-submersible pressure transducer and data logger.

DATUM.--Elevation of land-surface datum is 1,748.9 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; perforated 6 in diameter casing from 25 to 30 ft.

PERIOD OF RECORD.--May 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 5.9 ft below land-surface datum, May 30 and June 16, 2002;

lowest measured, 8.7 ft below land-surface datum, Dec. 30, 2001 to Jan.7, 2002, and Feb. 20, 21, 2002.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	8.4	8.6	8.7	8.4	8.4	7.8	7.5	6.1	6.6	7.6	7.9
2	8.2	8.5	8.6	8.7	8.5	8.4	7.8	7.3	6.1	6.8	7.7	7.9
3	8.3	8.5	8.6	8.7	8.6	8.4	7.8	7.2	6.1	6.9	7.7	7.9
4	8.3	8.5	8.6	8.7	8.6	8.4	7.9	7.2	6.1	7.0	7.7	7.9
5	8.3	8.5	8.6	8.7	8.6	8.4	7.9	7.2	6.0	7.0	7.7	7.9
6	8.2	8.5	8.6	8.7	8.6	8.4	7.8	7.2	6.0	7.1	7.7	7.8
7	8.2	8.5	8.6	8.7	8.6	8.4	7.8	7.2	6.1	7.1	7.7	7.8
8	8.2	8.6	8.6	8.6	8.6	8.4	7.8	7.2	6.3	7.0	7.7	7.8
9	8.2	8.6	8.6	8.6	8.6	8.4	7.8	7.2	6.4	7.0	7.8	7.8
10	8.2	8.6	8.6	8.6	8.6	8.4	7.8	7.2	6.5	7.0	7.8	7.8
11	8.2	8.6	8.6	8.6	8.7	8.4	7.8	7.3	6.5	7.0	7.8	7.9
12	8.2	8.6	8.6	8.6	8.6	8.4	7.8	7.3	6.4	7.0	7.8	7.9
13	8.2	8.6	8.6	8.6	8.6	8.4	7.7	7.2	6.3	7.0	7.8	8.0
14	8.2	8.6	8.6	8.6	8.5	8.4	7.6	7.2	6.1	7.0	7.9	8.0
15	8.2	8.6	8.6	8.6	8.5	8.4	7.5	7.1	6.0	7.1	7.9	8.0
16	8.2	8.5	8.6	8.6	8.6	8.4	7.5	7.0	5.9	7.1	8.0	8.0
17	8.2	8.5	8.6	8.5	8.6	8.4	7.5	7.0	6.1	7.2	8.0	8.0
18	8.2	8.6	8.6	8.4	8.6	8.4	7.5	6.9	6.2	7.2	8.0	8.0
19	8.3	8.5	8.6	8.4	8.6	8.4	7.5	6.8	6.4	7.3	8.0	8.0
20	8.3	8.5	8.5	8.4	8.7	8.4	7.5	6.7	6.5	7.3	8.0	8.0
21	8.3	8.5	8.5	8.5	8.7	8.4	7.5	6.5	6.5	7.3	8.0	7.9
22	8.3	8.5	8.6	8.5	8.6	8.4	7.5	6.5	6.5	7.4	8.0	7.9
23	8.3	8.5	8.6	8.4	8.5	8.4	7.6	6.5	6.5	7.4	8.0	7.9
24	8.3	8.5	8.6	8.3	8.5	8.4	7.6	6.6	6.5	7.5	8.0	7.9
25	8.3	8.5	8.6	8.4	8.5	8.2	7.5	6.6	6.5	7.5	8.0	8.0
26	8.3	8.5	8.6	8.4	8.4	8.1	7.6	6.5	6.5	7.5	7.8	8.0
27	8.3	8.6	8.6	8.5	8.4	8.1	7.6	6.5	6.4	7.5	7.9	7.9
28	8.4	8.5	8.6	8.5	8.4	8.0	7.6	6.3	6.4	7.5	7.9	7.9
29	8.4	8.6	8.6	8.6	---	7.9	7.6	6.0	6.4	7.6	7.9	7.9
30	8.4	8.6	8.7	8.5	---	7.9	7.6	5.9	6.5	7.6	7.9	7.9
31	8.4	---	8.7	8.4	---	7.8	---	6.0	---	7.6	7.9	---
MEAN	8.3	8.5	8.6	8.5	8.6	8.3	7.7	6.9	6.3	7.2	7.9	7.9
MAX	8.4	8.6	8.7	8.7	8.7	8.4	7.9	7.5	6.5	7.6	8.0	8.0
MIN	8.2	8.4	8.5	8.3	8.4	7.8	7.5	5.9	5.9	6.6	7.6	7.8

GROUND-WATER LEVELS

549

PIERCE COUNTY

471137122304701. Local number, 20N/02E-26C01.

LOCATION.--Lat 47°11'45.4", long 122°30'55.4", Hydrologic Unit 17110019, in Tacoma.

Owner: Meadow Park Golf Course, City of Tacoma.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled irrigation well, confined, diameter 10 in, depth 157 ft.

DATUM.--Elevation of land-surface datum is 242 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter screen from 142 to 157 ft, water level measured in 10 in casing. Measurements made by Tom Higgins, Meadow Park employee.

PERIOD OF RECORD.--November 1974, April 1989 to September 1990, February 2000 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 19.00 ft below land-surface datum, Feb. 15, 2000; lowest measured, 44.34 ft below land-surface datum, June 30, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	24.20	JAN 18	19.43	APR 30	32.90	SEP 27	30.82
DEC 5	20.45	MAR 28	31.70	JUL 18	38.81		

471148122305501. Local number, 20N/02E-26C02.

LOCATION.--Lat 47°11'47.6", long 122°30'55.2", Hydrologic Unit 17110019, in Tacoma.

Owner: Meadow Park Golf Course, City of Tacoma.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled irrigation well, confined, diameter 12 in, depth 265.5 ft.

DATUM.--Elevation of land-surface datum is 250 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 10 in diameter screens from 218.5 to 233.5 ft, 240.5 to 245.5 ft, and 250.5 to 260.5 ft, water level measured in 12 in casing. Measurements made by Tom Higgins, Meadow Park employee.

PERIOD OF RECORD.--October 1989 to June 1990, February 2000 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 27.86 ft below land-surface datum, Mar. 31, 2000; lowest measured, 54.67 ft below land-surface datum, June 30, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	33.42R	JAN 18	28.17	APR 30	42.79	SEP 27	40.51
DEC 5	28.77	MAR 28	41.39	JUL 18	52.86		R = well recently pumped

471032122292701. Local number, 20N/02E-36K01.

LOCATION.--Lat 47°10'31.0", long 122°29'31.9", Hydrologic Unit 17110019, in Lakewood.

Owner: U.S. Geological Survey.

AQUIFER.--Unidentified gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Augered observation well, water table, diameter 2 in, depth 90 ft.

DATUM.--Elevation of land-surface datum is 275 ft above NGVD of 1929.

REMARKS.--Monitored depth intervals; 2 in diameter screens from 55 to 65 ft and 75 to 85 ft, water level measured in 2 in casing.

PERIOD OF RECORD.--October 1997, July 2000 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 33.77 ft below land-surface datum, Feb. 22, 2002; lowest measured, 43.50 ft below land-surface datum, Aug. 3, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 8	39.12	JAN 17	34.02	APR 26	35.52	JUL 22	38.08
OCT 23	39.23	FEB 1	33.90	MAY 10	35.39	AUG 5	38.16
NOV 9	38.65	FEB 22	33.77	MAY 24	35.39	AUG 19	39.04
NOV 23	37.33	FEB 27	33.72	JUN 7	37.04	SEP 5	39.10
DEC 13	34.92	MAR 14	33.95	JUN 25	37.35	SEP 19	38.99
JAN 3	34.34	MAR 28	34.88	JUL 5	36.85		

GROUND-WATER LEVELS

472121122442011. Local number, 22N/01W-36H01D11.

LOCATION.--Lat 47°21'21", long 122°44'20", Hydrologic Unit 17110019, near Key Center.

Owner: Washington State, Department of Natural Resources.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Augered observation well, confined, diameter 1.25 in, depth 74 ft.

DATUM.--Elevation of land-surface datum is 183 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 1.25 in diameter screen from 71 to 74 ft, water level measured in 1.25 in casing.

PERIOD OF RECORD.--August 1992 to October 1993, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 24.67 ft below land-surface datum, Mar. 12, 1999; lowest measured, 44.44 ft below land-surface datum, Feb. 12, 1993.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	39.95	FEB 20	27.56	JUN 19	28.72	AUG 20	33.12
DEC 12	39.47	MAY 1	25.45				

472121122442012. Local number, 22N/01W-36H02.

LOCATION.--Lat 47°21'21", long 122°44'20", Hydrologic Unit 17110019, near Key Center.

Owner: Washington State, Department of Natural Resources.

AQUIFER.--Vashon Till of Pleistocene Age.

WELL CHARACTERISTICS.--Augered observation well, confined, diameter 1.25 in, depth 33 ft.

DATUM.--Elevation of land-surface datum is 183 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 1.25 in diameter screen from 30 to 33 ft, water level measured in 1.25 in casing.

PERIOD OF RECORD.--August 1992 to October 1993, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 21.60 ft below land-surface datum, Apr. 10, 1998; lowest measured, dry on numerous occasions.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	dry	FEB 20	25.38	JUN 19	26.78	AUG 20	30.94
DEC 12	31.70	MAY 1	23.38				

SPOKANE COUNTY

47401117072901. Local number, 25N/45E-16C01.

LOCATION.--Lat 47°40'11", long 117°07'29", Hydrologic Unit 17010305, near Greenacres.

Owner: Inland Empire paper Company.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Dug unused irrigation well, water table, diameter 96 in, depth 129 ft.

DATUM.--Elevation of land-surface datum is 2055.89 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 96 in diameter open end casing at 129 ft, water level measured in 96 in casing.

PERIOD OF RECORD.--November 1921, April 1929 to August 1955, April 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 82.63 ft below land-surface datum, May 30, 1997; lowest measured, 114.53 ft below land-surface datum, Dec. 8, 1931.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 31	103.23	JAN 31	100.06	APR 30	94.80	JUL 31	100.7
NOV 30	103.11	FEB 28	101.36	MAY 31	94.07	AUG 30	102.82
DEC 31	102.44	MAR 29	100.31	JUN 30	97.48	SEP 30	101.98

THURSTON COUNTY

465033122570201. Local number, 16N/02W-29L02P1.

LOCATION.--Lat 46°50'33.6", long 122°57'31.8", Hydrologic Unit 17100103, near Sunnydale.

Owner: Washington State, Department of Ecology.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 108 ft.

DATUM.--Elevation of land-surface datum is 217.65 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 6 in perforated casing from 103 to 108 ft, water level measured in 2 in diameter piezometer.

PERIOD OF RECORD.--August 1988, November 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 12.22 ft below land-surface datum, Mar. 9, 1999; lowest measured, 41.11 ft below land-surface datum, Nov. 6, 2001.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 1	40.83	DEC 6	22.45	FEB 20	16.35	MAY 30	21.40
NOV 6	41.11	JAN 4	17.22	APR 2	16.98	JUL 24	26.88
NOV 15	40.60	JAN 24	17.10				

GROUND-WATER LEVELS

551

465033122570202. Local number, 16N/02W-29L02P2.

LOCATION.--Lat 46°50'33.6", long 122°57'31.8", Hydrologic Unit 17100103, near Sunnydale.

Owner: Washington State, Department of Ecology.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 82 ft.

DATUM.--Elevation of land-surface datum is 217.65 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; 6 in diameter perforated casing from 74 to 82 ft, water level measured in 2 in diameter piezometer. A pressure transducer and data logger were installed on Nov. 6, 2001. Water levels were recorded at 1-hr intervals. The water levels below (starting with Nov. 10, 2001) are average daily values for the dates given.

PERIOD OF RECORD.--August 1988, November 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 12.25 ft below land-surface datum, Mar. 9, 1999; lowest measured, 41.60 ft below land-surface datum, Nov. 13, 2001.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 1	41.00	JAN 20	16.97	APR 15	18.19	JUL 10	25.28
NOV 5	41.19	JAN 25	16.49	APR 20	18.24	JUL 15	25.87
NOV 6	41.25	JAN 30	14.97	APR 25	18.51	JUL 20	26.46
NOV 10	41.43	FEB 5	15.20	APR 30	18.86	JUL 25	27.09
NOV 15	40.62	FEB 10	15.55	MAY 5	19.30	JUL 30	27.74
NOV 20	35.57	FEB 15	15.85	MAY 10	19.74	AUG 5	28.51
NOV 25	30.19	FEB 20	16.36	MAY 15	20.17	AUG 10	29.13
NOV 30	27.02	FEB 25	16.45	MAY 20	20.58	AUG 15	29.73
DEC 5	23.19	FEB 28	16.45	MAY 25	21.04	AUG 20	30.33
DEC 10	21.32	MAR 5	16.79	MAY 30	21.47	AUG 25	30.93
DEC 15	19.84	MAR 10	17.30	JUN 5	21.98	AUG 30	31.51
DEC 20	16.18	MAR 15	17.13	JUN 10	22.39	SEP 5	32.20
DEC 25	16.47	MAR 20	16.75	JUN 15	22.84	SEP 10	32.71
DEC 30	16.83	MAR 25	16.33	JUN 20	23.28	SEP 15	33.22
JAN 5	17.39	MAR 30	16.69	JUN 25	23.75	SEP 20	33.74
JAN 10	16.66	APR 5	17.34	JUN 30	24.25	SEP 25	34.25
JAN 15	16.64	APR 10	17.92	JUL 5	24.76	SEP 30	34.71

465033122570203. Local number, 16N/02W-29L02P3.

LOCATION.--Lat 46°50'33.6", long 122°57'31.8", Hydrologic Unit 17100103, near Sunnydale.

Owner: Washington State, Department of Ecology.

AQUIFER.--Unidentified sand and gravel unit of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation well, confined, diameter 6 in, depth 48 ft.

DATUM.--Elevation of land-surface datum is 217.65 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; perforated 6 in diameter casing from 41 to 48 ft, water level measured in 6 in casing. A pressure transducer and data logger were installed on Apr. 6, 2001 and removed on Nov. 6, 2001. Water levels were recorded at 1-hr intervals. The water levels below (from Oct. 5 through Oct. 20, 2001) are average daily values for the dates given.

PERIOD OF RECORD.--August 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 10.92 ft below land-surface datum, Mar. 4, 1992; lowest measured, 41.20 ft below land-surface datum, Nov. 6, 2001.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 5	39.20	NOV 1	40.99	DEC 6	23.11	APR 2	16.64
OCT 10	39.54	NOV 4	41.10	JAN 4	16.85	MAY 30	21.42
OCT 15	39.81	NOV 6	41.20	JAN 24	16.88	JUL 24	26.98
OCT 20	40.10	NOV 15	40.56	FEB 20	15.90		

GROUND-WATER LEVELS

WHITMAN COUNTY

470045117211701. Local number, 18N/43E-35L01.

LOCATION.--Lat 47°00'45", long 117°21'17", Hydrologic Unit 17060108, near Steptoe.

Owner: Johnathan Scholz.

AQUIFER.--Wanapum Basalt of the Yakima Basalt Subgroup of the Columbia River Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled unused domestic well, water table, diameter 6 in, depth 132 ft.

DATUM.--Elevation of land-surface datum is 2,331 ft above NGVD of 1929.

REMARKS.--Monitored depth interval; uncertain, probably 6 in diameter open end casing at 132 ft, water level measured in 6 in casing.

PERIOD OF RECORD.--1940-73, 1977, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest static water level measured, 5.10 ft below land-surface datum, Mar. 20, 1949; lowest measured, 19.16 ft below land-surface datum, June 25, 1959.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 2	12.52	FEB 13	7.65	MAY 20	7.88	JUL 22	10.46
DEC 1	9.63	APR 2	5.82	JUN 17	9.53	SEP 4	10.99

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

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WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	STATION NO.	GEO-LOGIC UNIT	DATE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	DEPTH OF WELL TOTAL (FEET) (72008)	ELEVATION OF LAND SURFACE DATUM (FT ABOVE NGVD) (72000)	TURBIDITY FIELD WATER UN-FLTRD (NTU) (61028)	BAROMETRIC PRES-SURE (MM OF HG) (00025)	
FRANKLIN COUNTY										
10N/29E-07R01	PN84	462141119130501	121RGLD	07-24-02	1620	41.84	72	540	0.5	752
13N/28E-11E02	PN17	463745119164601	121RGLD	07-23-02	1440	11.20	19	970	2.0	740
ADAMS COUNTY										
15N/29E-11E01	PN89	464819119091001	000OVBD	07-23-02	0845	7.02	38	1070	.2	732
GRANT COUNTY										
19N/26E-15B01	PN57	470850119323501	112GLCV	07-15-02	1200	67.95	79.5	1235	.3	740
19N/25E-06H01	PN49	471013119433401	112GLCV	07-16-02	0845	44.90	67	1220	.2	730
THURSTON COUNTY										
18N/01W-36B01	UR-12	470035122444601	112GLCV	08-20-02	1100	37.60	51	200	.9	755
18N/01W-28G03	UR-04A	470110122484201	112GLCV	08-20-02	1300	58.36	67	220	.7	755
PIERCE COUNTY										
18N/03E-13K01	UR-24	470240122214501	112GLCV	08-22-02	1030	30.24	47	490	4.4	752
19N/02E-26P01	LC-149C	470603122305101	112GLCV	08-19-02	1330	--	48	306.12	1.2	754
19N/03E-21C01	UR-32	470732122252801	112GLCV	08-21-02	1030	30.99	41.4	350	.8	758
20N/043-36P02	UR-35B	471018122143302	112GLCV	08-21-02	1300	42.30	52	400	4.8	758
WHATCOM COUNTY										
39N/04E-08G01	AG03	485303122190901	112GLCV	09-18-02	1110	8.00	29	115	.4	764
40N/03E-03G02	AG06	485917122241901	112SUMS	08-28-02	1050	14.87	28	140.00	.3	757
BRITISH COLUMBIA										
092G.009.1.2.1-ABB4		490011122193201	112SUMS	08-27-02	1500	76.50	96	213	.3	760
092G.008.2.2.2-99 ABB1		490042122241001	112SUMS	09-17-02	1410	10.35	26	150	.4	757
092G.009.1.1.4-18 BC-A-25		490101122221501	112SUMS	08-27-02	0950	16.67	25	170	.9	763

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN DIS-SOLVED (MG/L) (00300)	OXYGEN SATURATION (PER-CENT) (00301)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	HARDNESS DIS-SOLVED AS CaCO3 (MG/L) (00904)	CALCIUM DIS-SOLVED AS Ca (MG/L) (00915)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	934	7.5	37.0	15.2	5.7	58	280	--	68.4
13N/28E-11E02	PN	07-23-02	885	7.3	32.9	15.2	1.9	20	390	--	82.4
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	589	7.7	25.4	13.1	6.1	61	260	33	40.2
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	508	8.2	27.4	16.2	6.6	69	170	23	51.4
19N/25E-06H01	PN	07-16-02	858	7.7	24.4	14.6	6.4	65	280	97	56.1
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	134	6.4	20.6	11.5	9.4	87	48	11	13.9
18N/01W-28G03	UR	08-20-02	147	6.1	21.4	11.6	8.1	75	53	18	14.1
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	172	6.0	20.5	10.5	5.2	48	52	25	14.2
19N/02E-26P01	LC	08-19-02	120	6.7	19.1	11.1	9.6	88	48	--	11.7
19N/03E-21C01	UR	08-21-02	168	6.3	20.0	10.8	8.4	76	52	17	15.1
20N/043-36P02	UR	08-21-02	266	7.1	19.9	11.1	6.0	55	110	1	15.2
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	387	6.5	17.5	10.7	.2	2	180	75	24.5
40N/03E-03G02	AG	08-28-02	269	6.1	27.5	9.5	9.0	79	100	87	29.7
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	395	6.4	27.3	10.8	7.2	65	160	100	43.7
092G.008.2.2.2-99		09-17-02	444	5.6	19.8	11.8	.2	2	170	150	52.2
092G.009.1.1.4-18		08-27-02	103	6.0	20.3	10.1	8.7	77	34	20	10.4

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	MAG- NESIUM DIS- SOLVED (MG/L AS MG) (00925)	SODIUM DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PER- CENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WATER DIS TOT IT FIELD (MG/L AS CACO3) (39086)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBO- NATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	CHLOR- IDE DIS- SOLVED (MG/L AS CL) (00940)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	25.2	83.9	38	2	17.8	361	440	0	23.9
13N/28E-11E02	PN	07-23-02	44.0	41.7	19	.9	5.08	410	499	0	11.5
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	38.6	35.4	23	1	1.36	227	277	0	15.8
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	10.7	32.9	28	1	8.28	150	183	0	10.3
19N/25E-06H01	PN	07-16-02	33.6	61.6	32	2	5.62	182	222	0	27.7
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	3.22	5.53	20	.3	.70	37	45	0	5.26
18N/01W-28G03	UR	08-20-02	4.21	6.43	21	.4	.93	35	43	0	5.21
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	4.13	8.63	26	.5	.93	28	34	0	9.06
19N/02E-26P01	LC	08-19-02	4.50	4.61	17	.3	.94	50	60	0	2.31
19N/03E-21C01	UR	08-21-02	3.39	8.91	27	.5	1.08	34	42	0	6.64
20N/043-36P02	UR	08-21-02	17.4	8.41	14	.3	3.11	108	132	0	5.44
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	28.8	7.10	8	.2	2.44	105	128	0	9.16
40N/03E-03G02	AG	08-28-02	6.90	5.18	10	.2	1.34	16	20	0	4.31
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	12.3	9.49	11	.3	1.59	55	68	0	8.15
092G.008.2.2.2-99		09-17-02	9.70	8.93	10	.3	5.54	17	21	0	21.7
092G.009.1.1.4-18		08-27-02	1.96	3.45	18	.3	.76	14	17	0	2.86

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	FLUOR- IDE DIS- SOLVED (MG/L AS F) (00950)	SILICA DIS- SOLVED (MG/L AS SIO2) (00955)	SUL- FATE DIS- SOLVED (MG/L AS SO4) (00945)	BRO- MIDE DIS- SOLVED (MG/L AS BR) (71870)	SOLIDS RESI- DUE AT 180 DEG C DIS- SOLVED (MG/L) (70300)	SOLIDS SUM OF CONSTI- TUENTS DIS- SOLVED (MG/L) (70301)	SOLIDS DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN NITRITE DIS- SOLVED (MG/L AS N) (00613)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	0.82	40.0	73.3	0.11	595	603	0.81	12	<.008
13N/28E-11E02	PN	07-23-02	.65	36.1	57.4	.05	546	535	.74	2.5	<.008
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	.44	48.1	52.0	.09	394	390	.54	4.8	<.008
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	.28	38.4	36.2	.04	331	328	.45	--	<.008
19N/25E-06H01	PN	07-16-02	.49	56.9	78.8	.12	584	561	.79	30	<.008
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.10	22.8	10.3	<.03	96	93	.13	--	<.008
18N/01W-28G03	UR	08-20-02	<.10	27.2	10.7	<.03	108	105	.15	--	<.008
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.10	18.5	8.6	E.02	119	114	.16	--	<.008
19N/02E-26P01	LC	08-19-02	<.10	24.0	4.9	<.03	92	84	.12	--	<.008
19N/03E-21C01	UR	08-21-02	<.10	20.9	14.2	E.02	108	112	.15	--	<.008
20N/043-36P02	UR	08-21-02	E.09	44.0	11.1	.07	179	181	.24	--	E.005
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	E.07	33.6	58.1	.07	265	252	.36	--	.056
40N/03E-03G02	AG	08-28-02	<.10	14.5	23.0	.27	201	181	.27	--	<.008
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.10	24.0	25.8	.05	290	265	.39	--	<.008
092G.008.2.2.2-99		09-17-02	<.10	14.7	70.2	E.02	331	295	.45	23	.020
092G.009.1.1.4-18		08-27-02	<.10	15.2	5.1	<.03	84	76	.11	--	<.008

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	NITRO- GEN NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN AMMO- NIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN AMMO- NIA + ORGAN- IC DIS (MG/L AS N) (00623)	ORTHO- PHOS- PHATE DIS- SOLVED (MG/L AS P) (00671)	CAR- BON ORGAN- IC DIS- SOLVED (MG/L AS C) (00681)	ALUMI- NUM DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM DIS- SOLVED (UG/L AS BA) (01005)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	11.8	<.04	0.25	0.05	6.2	<1	0.23	6.2	72
13N/28E-11E02	PN	07-23-02	2.16	<.04	.33	E.01	8.3	<1	.27	3.4	62
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	4.67	<.04	.14	<.02	E.3	<1	.10	4.5	149
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	11.1	<.04	E.07	.04	1.0	2	.20	8.6	42
19N/25E-06H01	PN	07-16-02	29.4	<.04	.17	E.02	4.6	<1	.09	10.5	157
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	2.14	<.04	<.10	E.01	--	<1	E.03	E.2	3
18N/01W-28G03	UR	08-20-02	3.45	<.04	<.10	E.01	--	<1	.09	.2	4
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	7.41	<.04	E.07	E.01	--	1	.05	E.1	3
19N/02E-26P01	LC	08-19-02	.37	<.04	<.10	E.01	--	<1	<.05	.4	2
19N/03E-21C01	UR	08-21-02	4.71	<.04	E.07	<.02	--	<1	.06	.3	3
20N/043-36P02	UR	08-21-02	2.54	<.04	<.10	.03	--	<1	<.05	2.2	5
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	5.69	<.04	E.06	<.02	--	<1	.14	.4	67
40N/03E-03G02	AG	08-28-02	19.4	<.04	E.05	<.02	--	<1	E.05	.2	6
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	24.2	<.04	E.08	<.02	--	<1	.06	.2	14
092G.008.2.2.2-99		09-17-02	22.8	<.04	.15	<.02	--	16	.08	E.1	154
092G.009.1.1.4-18		08-27-02	6.35	<.04	<.10	<.02	--	2	E.04	E.1	4

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS
 WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	BERYL- LIUM DIS- SOLVED (UG/L AS BE) (01010)	BORON DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM DIS- SOLVED (UG/L AS CR) (01030)	COBALT DIS- SOLVED (UG/L AS CO) (01035)	COPPER DIS- SOLVED (UG/L AS CU) (01040)	IRON DIS- SOLVED (UG/L AS FE) (01046)	LEAD DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	<0.06	50	0.06	1.5	0.25	1.8	<10	E.05	12.9
13N/28E-11E02	PN	07-23-02	<.06	70	<.04	E.5	.21	2.5	<10	.10	7.4
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.06	16	<.04	<.8	.09	1.0	<10	.08	4.3
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.06	12	<.04	E.8	.11	.8	<10	<.08	4.2
19N/25E-06H01	PN	07-16-02	<.06	30	<.04	<.8	.18	1.1	<10	<.08	4.0
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.06	<7	<.04	1.2	.20	.5	<10	<.08	E.3
18N/01W-28G03	UR	08-20-02	<.06	11	<.04	E.5	.17	.7	<10	<.08	1.5
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.06	40	<.04	<.8	.13	.3	12	<.08	.4
19N/02E-26P01	LC	08-19-02	<.06	<7	<.04	1.2	.05	.3	<10	E.07	.7
19N/03E-21C01	UR	08-21-02	<.06	24	<.04	<.8	.47	.8	<10	.08	.3
20N/043-36P02	UR	08-21-02	<.06	E6	<.04	1.9	.10	.6	<10	.10	3.8
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.06	46	<.04	<.8	.73	.7	10	<.08	1.0
40N/03E-03G02	AG	08-28-02	<.06	28	E.02	<.8	.10	.4	<10	<.08	<.3
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.06	28	E.03	<.8	.09	.7	E6	<.08	1.0
092G.008.2.2.2-99		09-17-02	<.06	86	.22	<.8	.69	1.1	298	<.08	<.3
092G.009.1.1.4-18		08-27-02	<.06	15	<.04	<.8	.06	.6	<10	.08	<.3

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	MANGANESE DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM DIS- SOLVED (UG/L AS MO) (01060)	NICKEL DIS- SOLVED (UG/L AS NI) (01065)	SELEN- IUM DIS- SOLVED (UG/L AS SE) (01145)	SILVER DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM DIS- SOLVED (UG/L AS SR) (01080)	THAL- LIUM DIS- SOLVED (UG/L AS TL) (01057)	VANA- DIUM DIS- SOLVED (UG/L AS V) (01085)	ZINC DIS- SOLVED (UG/L AS ZN) (01090)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	0.2	14.0	1.35	0.6	<1	503	<0.04	9.0	<1
13N/28E-11E02	PN	07-23-02	.1	3.1	.20	.5	<1	510	<.04	5.6	1
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	E.1	1.0	.07	.3	<1	631	<.04	31.4	<1
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	.2	1.4	.69	E.2	<1	206	E.04	30.0	<1
19N/25E-06H01	PN	07-16-02	.1	3.3	.18	1.0	<1	572	<.04	45.8	1
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	.2	E.2	.33	<.3	<1	89.8	<.04	.7	1
18N/01W-28G03	UR	08-20-02	1.0	1.1	.64	E.2	<1	114	E.03	1.8	3
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	.5	<.2	.58	<.3	<1	104	<.04	.7	1
19N/02E-26P01	LC	08-19-02	.1	E.2	.22	<.3	<1	53.0	<.04	1.1	<1
19N/03E-21C01	UR	08-21-02	.3	E.2	.54	<.3	<1	93.1	<.04	.6	2
20N/043-36P02	UR	08-21-02	.2	.6	.85	.4	<1	74.4	E.03	7.6	3
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	37.9	.5	18.5	2.1	<1	203	<.04	1.3	<1
40N/03E-03G02	AG	08-28-02	.1	E.2	.15	.4	<1	158	<.04	.4	<1
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	1.0	E.1	1.68	E.3	<1	181	<.04	.9	3
092G.008.2.2.2-99		09-17-02	145	E.2	2.49	<.3	<1	249	E.03	.6	2
092G.009.1.1.4-18		08-27-02	.6	E.2	.29	E.2	<1	72.9	<.04	.5	2

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	2,6-DI-ETHYL-ANILINE	ACETO-CHLOR	ALA-CHLOR	ALPHA	ATRA-ZINE	BEN-FLUR-ALIN	BUTYL-ATE	CAR-BARYL	CARBO-FURAN	
		WAT FLT 0.7 U GF REC (UG/L) (82660)	WATER FLTRD REC (UG/L) (49260)	WATER DISS REC (UG/L) (46342)	BHC DIS- SOLVED (UG/L) (34253)	WATER DISS REC (UG/L) (39632)	0.7 U GF REC (UG/L) (82673)	WATER DISS REC (UG/L) (04028)	0.7 U GF REC (UG/L) (82680)	0.7 U GF REC (UG/L) (82674)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	<.006	<.006	<.004	<.005	0.033	<.010	<.002	<.041	<.020
13N/28E-11E02	PN	07-23-02	<.006	<.006	<.004	<.005	.014	<.010	<.002	<.041	<.020
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.006	<.006	<.004	<.005	.021	<.010	<.002	<.041	<.020
19N/25E-06H01	PN	07-16-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
18N/01W-28G03	UR	08-20-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
19N/02E-26P01	LC	08-19-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
19N/03E-21C01	UR	08-21-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
20N/043-36P02	UR	08-21-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
40N/03E-03G02	AG	08-28-02	<.006	<.006	<.004	<.005	E.003	<.010	<.002	<.041	E.006
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
092G.008.2.2.2-99		09-17-02	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020
092G.009.1.1.4-18		08-27-02	<.006	<.006	<.004	<.005	.046	<.010	<.002	<.041	<.020

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	CHLOR-PYRI-FOS DIS-SOLVED (UG/L) (38933)	CYAN-AZINE WATER DISS REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF REC (UG/L) (82682)	DE-ETHYL-ATRA-ZINE WATER DISS REC (UG/L) (04040)	DIAZ-INON DIS-SOLVED (UG/L) (39572)	DIEL-DRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF REC (UG/L) (82668)	ETHAL-FLURA-LIN WAT FLT 0.7 U GF REC (UG/L) (82663)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-20	<.005	<.018	<.003	E.043	<.005	<.005	<.02	<.002	<.009
13N/28E-11E02	PN	07-23-02	<.005	<.018	<.003	E.006	<.005	<.005	<.02	<.002	<.009
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.005	<.018	<.003	E.013	<.005	<.005	<.02	<.002	<.009
19N/25E-06H01	PN	07-16-02	<.005	<.018	<.003	E.007	<.005	<.005	<.02	<.002	<.009
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
18N/01W-28G03	UR	08-20-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
19N/02E-26P01	LC	08-19-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
19N/03E-21C01	UR	08-21-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
20N/043-36P02	UR	08-21-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
40N/03E-03G02	AG	08-28-02	<.005	<.018	<.003	E.003	<.005	<.005	<.02	<.002	<.009
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
092G.008.2.2.2-99		09-17-02	<.005	<.018	<.003	<.006	<.005	<.005	<.02	<.002	<.009
092G.009.1.1.4-18		08-27-02	<.005	<.018	<.003	E.009	<.005	<.005	<.02	<.002	<.009

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	ETHO-PROP WATER FLTRD 0.7 U GF REC (UG/L) (82672)	FONO-FOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF REC (UG/L) (82666)	MALA-THION DIS- SOLVED (UG/L) (39532)	METHYL-AZIN- PHOS WAT FLT 0.7 U GF REC (UG/L) (82686)	METHYL-PARA- THION WAT FLT 0.7 U GF REC (UG/L) (82667)	METOL-ACHLOR WATER DIS- SOLVED (UG/L) (39415)	METRI-BUZIN SENCOR WATER DIS- SOLVED (UG/L) (82630)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	<0.005	<0.003	<0.004	<0.035	<0.027	<0.050	<0.006	<.013	<.006
13N/28E-11E02	PN	07-23-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	.028
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
19N/25E-06H01	PN	07-16-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	.009
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
18N/01W-28G03	UR	08-20-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
19N/02E-26P01	LC	08-19-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
19N/03E-21C01	UR	08-21-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
10N/043-36P02	UR	08-21-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
40N/03E-03G02	AG	08-28-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
092G.008.2.2.2-99		09-17-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006
092G.009.1.1.4-18		08-27-02	<.005	<.003	<.004	<.035	<.027	<.050	<.006	<.013	<.006

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	MOLI- NATE WATER FLTRD 0.7 U GF REC (UG/L) (82671)	NAPRO- PAMIDE WATER FLTRD 0.7 U GF REC (UG/L) (82684)	P,P'-DDE DIS- SOLVED (UG/L) (34653)	PARA- THION DIS- SOLVED (UG/L) (39542)	PEBU- LATE WATER FLTRD 0.7 U GF REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF REC (UG/L) (82683)	PERME- THRIN CIS WAT FLT 0.7 U GF REC (UG/L) (82687)	PHO- RATE WATER FLTRD 0.7 U GF REC (UG/L) (82664)	PRO- METON WATER DISS REC (UG/L) (04037)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.006	<0.011	<0.01
13N/28E-11E02	PN	07-23-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
19N/25E-06H01	PN	07-16-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
18N/01W-28G03	UR	08-20-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
19N/02E-26P01	LC	08-19-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
19N/03E-21C01	UR	08-21-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
20N/043-36P02	UR	08-21-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
40N/03E-03G02	AG	08-28-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
092G.008.2.2.2-99		09-17-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01
092G.009.1.1.4-18		08-27-02	<.002	<.007	<.003	<.010	<.004	<.022	<.006	<.011	<.01

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	PRO-NAMIDE WATER FLTRD 0.7 U GF REC (UG/L) (82676)	PROPA-CHLOR WATER DISS REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF REC (UG/L) (82685)	SIMA-ZINE WATER DISS REC (UG/L) (04035)	TEBU-THIU-RON WATER FLTRD 0.7 U GF REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF REC (UG/L) (82665)	TERBU-FOS WATER FLTRD 0.7 U GF REC (UG/L) (82675)	THIO-BEN-CARB WATER FLTRD 0.7 U GF REC (UG/L) (82681)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	<0.004	<0.010	<0.011	<0.02	0.006	<0.02	<0.034	<0.02	<0.005
13N/28E-11E02	PN	07-23-02	<.004	<.010	<.011	<.02	.018	<.02	<.034	<.02	<.005
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
19N/25E-06H01	PN	07-16-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
18N/01W-28G03	UR	08-20-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
19N/02E-26P01	LC	08-19-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
19N/03E-21C01	UR	08-21-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
20N/043-36P02	UR	08-21-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
40N/03E-03G02	AG	08-28-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02	<.005
092G.008.2.2.2-99		09-17-02		<.010	<.011	<.02	.013	<.02	<.034	<.02	<.005
092G.009.1.1.4-18		08-27-02		<.010	<.011	<.02	.018	<.02	<.034	<.02	<.005

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	TRIAL- LATE WATER FLTRD 0.7 U GF REC (UG/L) (82678)	TRI- FLUR- ALIN WATER FLTRD 0.7 U GF REC (UG/L) (82661)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L) (34506)	1,1,2- TRI- CHLORO- ETHANE TOTAL (UG/L) (34511)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L) (34496)	1,1,-DI- CHLOR- OETHY- LENE TOTAL (UG/L) (34501)	1,1-DI- CHLOR- OPRO- PENE WAT WH TOTAL (UG/L) (77168)	123- TRI- CHLOR- OPRO- PANE WATER WHOLE TOTAL (UG/L) (77443)	1,2- DIBRO- MO- ETHANE WATER WHOLE TOTAL (UG/L) (77651)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	<0.002	<0.009	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	<.002	<.009	--	--	--	--	--	--	--
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	<.002	<.009	--	--	--	--	--	--	--
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	<.002	<.009	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	<.002	<.009	--	--	--	--	--	--	--
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<.002	<.009	<0.03	<0.06	<0.04	<0.04	<0.05	<0.16	<0.04
18N/01W-28G03	UR	08-20-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
19N/02E-26P01	LC	08-19-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
19N/03E-21C01	UR	08-21-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
20N/043-36P02	UR	08-21-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
40N/03E-03G02	AG	08-28-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
092G.008.2.2.2-99		09-17-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04
092G.009.1.1.4-18		08-27-02	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	1,2-DI- CHLORO- ETHANE TOTAL (UG/L) (32103)	1,2-DI- CHLOR- OPRO- PANE TOTAL (UG/L) (34541)	TRANS- 1,2-DI- CHLOR- OETHENE TOTAL (UG/L) (34546)	2,2-DI- CHLOR- OPRO- PANE WATWH TOTAL (UG/L) (77170)	2-BUTENE TRANS- 1,4-DI- CHLORO UNFLTRD RECOVER (UG/L) (73547)	2-HEX- ANONE WATER WHOLE TOTAL (UG/L) (77103)	ACETONE WATER WHOLE TOTAL (UG/L) (81552)	ACRYL- O- NITRILE TOTAL (UG/L) (34215)	1,2,3- TRI- CHLOR- OBEN- ZENE WAT WHREC (UG/L) (77613)
FRANKLIN COUNTY										
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--
ADAMS COUNTY										
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--
GRANT COUNTY										
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--
THURSTON COUNTY										
18N/01W-36B01	UR	08-20-02	<0.1	<0.03	<0.03	<0.05	<.7	<.7	<.7	<1
18N/01W-28G03	UR	08-20-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1
PIERCE COUNTY										
18N/03E-13K01	UR	08-22-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1
19N/02E-26P01	LC	08-19-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1
19N/03E-21C01	UR	08-21-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1
20N/043-36P02	UR	08-21-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1
WHATCOM COUNTY										
39N/04E-08G01	AG	09-18-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1
40N/03E-03G02	AG	08-28-02	<.1	.15	<.03	<.05	<.7	<.7	<.7	<1
BRITISH COLUMBIA										
092G.009.1.2.1-ABB		08-27-02	<.1	E.09	<.03	<.05	<.7	<.7	<.7	<1
092G.008.2.2.2-99		09-17-02	<.1	.10	<.03	<.05	<.7	<.7	<.7	<1
092G.009.1.1.4-18		08-27-02	<.1	<.03	<.03	<.05	<.7	<.7	<.7	<1

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	BEN- ZENE 123-TRI- METHYL- WATER UNFLTRD RECOV (UG/L) (77221)	BEN- ZENE 1,2,4-TRI- CHLORO WAT UNF REC (UG/L) (34551)	BEN- ZENE 124-TRI- METHYL UNFILT RECOV (UG/L) (77222)	BEN- ZENE 135-TRI- METHYL WATER UNFLTRD REC (UG/L) (77226)	BENZENE 1,3-DI- CHLORO WATER UNFLTD REC (UG/L) (34566)	BEN- ZENE 1,4-DI- CHLORO WATER UNFLTD REC (UG/L) (34571)	ISO- PROPYL- BEN- ZENE WATER WHOLE REC (UG/L) (77223)	BEN- ZENE N-BUTYL WATER UNFLTD REC (UG/L) (77342)	BEN- ZENE N-PROPY WATER UNFLTD REC (UG/L) (77224)
FRANKLIN COUNTY										
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--
ADAMS COUNTY										
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--
GRANT COUNTY										
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--
THURSTON COUNTY										
18N/01W-36B01	UR	08-20-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
18N/01W-28G03	UR	08-20-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
PIERCE COUNTY										
18N/03E-13K01	UR	08-22-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
19N/02E-26P01	LC	08-19-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
19N/03E-21C01	UR	08-21-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
20N/043-36P02	UR	08-21-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
WHATCOM COUNTY										
39N/04E-08G01	AG	09-18-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
40N/03E-03G02	AG	08-28-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
BRITISH COLUMBIA										
092G.009.1.2.1-ABB		08-27-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
092G.008.2.2.2-99		09-17-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04
092G.009.1.1.4-18		08-27-02	<.1	<.1	<.06	<.04	<.03	<.05	<.06	<.04

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS
 WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	BEN-ZENE O-DI-CHLORO WATER UNFLTD REC (UG/L) (34536)	BEN-ZENE SEC-BUTYL WATER UNFLTD REC (UG/L) (77350)	BEN-ZENE TERT-BUTYL WATER UNFLTD REC (UG/L) (77353)	BEN-ZENE TOTAL (UG/L) (34030)	BRO-MO-BEN-ZENE WATER WHOLE TOTAL (UG/L) (81555)	BRO-MO-ETHENE WATER UNFLTD REC (UG/L) (50002)	BROMO-FORM TOTAL (UG/L) (32104)	CAR-BON DI-SULFIDE WATER WHOLE TOTAL (UG/L) (77041)	CARBON TETRA-CHLOR-IDE TOTAL (UG/L) (32102)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--	--
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--	--
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--	--
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<0.03	<0.03	<0.05	<0.04	<0.04	<0.1	<0.06	<0.07	<0.06
18N/01W-28G03	UR	08-20-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
19N/02E-26P01	LC	08-19-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
19N/03E-21C01	UR	08-21-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
20N/043-36P02	UR	08-21-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
40N/03E-03G02	AG	08-28-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
092G.008.2.2.2-99		09-17-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06
092G.009.1.1.4-18		08-27-02	<0.03	<0.03	<0.05	<0.04	<0.04	<1	<0.06	<0.07	<0.06

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	CHLOR-OBENZENE TOTAL (UG/L) (34301)	CHLOR-ODI-BROMOETHANE TOTAL (UG/L) (32105)	CHLOROETHANE TOTAL (UG/L) (34311)	CHLOROFORM TOTAL (UG/L) (32106)	CIS-1,2-DI-CHLOROETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI-OPROPENE TOTAL (UG/L) (34704)	DI-BROMOCHLOROPROPANE WATER WHOLE TOT REC (UG/L) (82625)	DI-BROMOETHANE WATER WHOLE REC (UG/L) (30217)	BROMO-DI-CHLOROETHANE TOTAL (UG/L) (32101)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--	
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--	
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--	
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--	
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--	
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<0.03	<0.2	<0.1	<0.02	<0.04	<0.09	<0.5	<0.05	<0.05
18N/01W-28G03	UR	08-20-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.03	<.2	<.1	E.07	<.04	<.09	<.5	<.05	<.05
19N/02E-26P01	LC	08-19-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05
19N/03E-21C01	UR	08-21-02	<.03	<.2	<.1	.26	<.04	<.09	<.5	<.05	E.05
20N/043-36P02	UR	08-21-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05
40N/03E-03G02	AG	08-28-02	<.03	<.2	<.1	<.02	<.04	E.09	<.5	<.05	<.05
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.03	<.2	<.1	E.04	<.04	<.09	<.5	<.05	<.05
092G.008.2.2.2-99		09-17-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05
092G.009.1.1.4-18		08-27-02	<.03	<.2	<.1	<.02	<.04	<.09	<.5	<.05	<.05

QUALITY OF GROUND WATER
MULTIPLE STATION ANALYSIS
WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	DI- CHLOR- O-DI- FLUOR- OMETH- ANE TOTAL (UG/L) (34668)	DI- ISOPRO- PYL- ETHER WATER UNFLTD REC (UG/L) (81577)	ETHANE, 1112- TETRA- CHLORO- WAT UNF REC (UG/L) (77562)	ETHANE, 1,1,2,2- TETRA- CHLORO- WAT UNF REC (UG/L) (34516)	ETHANE HEXA- CHLORO WATER UNFLTD REC (UG/L) (34396)	ETHER ETHYL WATER UNFLTD REC (UG/L) (81576)	ETHER TERT- BUTYL ETHYL UNFLTD REC (UG/L) 50004)	ETHER TERT- PENTYL METHYL UNFLTD REC (UG/L) (50005)	ETHYL- BEN- ZENE TOTAL (UG/L) (34371)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--	--
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--	--
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--	--
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
18N/01W-28G03	UR	08-20-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
19N/02E-26P01	LC	08-19-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
19N/03E-21C01	UR	08-21-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
20N/043-36P02	UR	08-21-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
40N/03E-03G02	AG	08-28-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
092G.008.2.2.2-99		09-17-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03
092G.009.1.1.4-18		08-27-02	<0.18	<0.10	<0.03	<0.09	<0.2	<0.2	<0.05	<0.08	<0.03

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	FURAN, TETRA- HYDRO- WATER UNFLTD REC (UG/L) (81607)	HEXA- CHLOR- OBUTA- DIENE TOTAL (UG/L) (39702)	ISO- DUR- ENE WATER UNFLTD REC (UG/L) (50000)	METHA- CRY- LATE- ETHYL WATER UNFLTD REC (UG/L) (73570)	METHA- CRYLATE- METHYL WATER UNFLTD REC (UG/L) (81597)	METHA- CRYLO- NITRILE WAT UNFLTD REC (UG/L) (81593)	METH- ANE BROMO- CHLORO- WAT UNFLTD REC (UG/L) (77297)	METHYL ACRY- LATE WATER UNFLTD REC (UG/L) (49991)	METHYL- IODIDE WATER UNFLTD REC (UG/L) (77424)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--	--
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--	--
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--	--
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<2	<0.1	<0.2	<0.2	<0.3	<0.6	<0.07	<2.0	<0.25
18N/01W-28G03	UR	08-20-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
19N/02E-26P01	LC	08-19-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
19N/03E-21C01	UR	08-21-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
20N/043-36P02	UR	08-21-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
40N/03E-03G02	AG	08-28-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
092G.008.2.2.2-99		09-17-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25
092G.009.1.1.4-18		08-27-02	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS
 WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	METHYL- TERT- BUTYL- ETHER WAT UNF REC (UG/L) (78032)	METHYL- BRO- MIDE TOTAL (UG/L) (34413)	METHYL- CHLOR- IDE TOTAL (UG/L) (34418)	METH- YLENE- CHLOR- IDE TOTAL (UG/L) (34423)	METHYL- ETHYL- KETONE WATER TOTAL (UG/L) (81595)	METHY- ISO- BUTYL- KETONE WAT WH TOTAL (UG/L) (78133)	META- PARA- XYLENE WATER UNFLTD REC (UG/L) (85795)	NAPH- THA- LENE TOTAL (UG/L) (34696)	O- CHLOR- OTOL- UENE WATER TOTAL (UG/L) (77275)	
FRANKLIN COUNTY											
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--	--
ADAMS COUNTY											
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--	--
GRANT COUNTY											
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--	--
THURSTON COUNTY											
18N/01W-36B01	UR	08-20-02	<0.2	<0.3	<0.2	<0.2	<5.0	<0.4	<0.06	<0.5	<0.03
18N/01W-28G03	UR	08-20-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
PIERCE COUNTY											
18N/03E-13K01	UR	08-22-02	<.2	<.3	<.2	E.1	<5.0	<.4	<.06	<.5	<.03
19N/02E-26P01	LC	08-19-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
19N/03E-21C01	UR	08-21-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
20N/043-36P02	UR	08-21-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
WHATCOM COUNTY											
39N/04E-08G01	AG	09-18-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
40N/03E-03G02	AG	08-28-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
BRITISH COLUMBIA											
092G.009.1.2.1-ABB		08-27-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
092G.008.2.2.2-99		09-17-02	<.2	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03
092G.009.1.1.4-18		08-27-02	<.2	<.3	<.2	.9	<5.0	<.4	<.06	<.5	<.03

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	O-XYLENE WATER WHOLE TOTAL (UG/L) (77135)	P-ISO-PROPYL-TOLUENE WATER WHOLE REC (UG/L) (77356)	1234-TETRA-METHYL-BENZENE UNFLTD REC (UG/L) (49999)	1,3-DI-CHLOR-OPRO-PANE WAT WH TOTAL (UG/L) (77173)	PRO-PENE 3-CHLORO-WATER UNFLTD REC (UG/L) (78109)	STY-RENE TOTAL (UG/L) (77128)	TETRA-CHLOR-OETH-YLENE TOTAL (UG/L) (34475)	TOLUENE-O-ETHYL WATER UNFLTD REC (UG/L) (77220)	TOLUENE P-CHLOR WATER UNFLTD REC (UG/L) (77277)
FRANKLIN COUNTY										
10N/29E-07R01	PN	07-24-02	--	--	--	--	--	--	--	--
13N/28E-11E02	PN	07-23-02	--	--	--	--	--	--	--	--
ADAMS COUNTY										
15N/29E-11E01	PN	07-23-02	--	--	--	--	--	--	--	--
GRANT COUNTY										
19N/26E-15B01	PN	07-15-02	--	--	--	--	--	--	--	--
19N/25E-06H01	PN	07-16-02	--	--	--	--	--	--	--	--
THURSTON COUNTY										
18N/01W-36B01	UR	08-20-02	<0.07	<0.07	<0.2	<0.1	<0.07	<0.04	<0.03	<0.06
18N/01W-28G03	UR	08-20-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
PIERCE COUNTY										
18N/03E-13K01	UR	08-22-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
19N/02E-26P01	LC	08-19-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
19N/03E-21C01	UR	08-21-02	<.07	<.07	<.2	<.1	<.07	<.04	E.02	<.06
20N/043-36P02	UR	08-21-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
WHATCOM COUNTY										
39N/04E-08G01	AG	09-18-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
40N/03E-03G02	AG	08-28-02	<.07	<.07	<.2	M	<.07	<.04	<.03	<.06
BRITISH COLUMBIA										
092G.009.1.2.1-ABB		08-27-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
092G.008.2.2.2-99		09-17-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06
092G.009.1.1.4-18		08-27-02	<.07	<.07	<.2	<.1	<.07	<.04	<.03	<.06

QUALITY OF GROUND WATER
 MULTIPLE STATION ANALYSIS
 WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

LOCAL IDENTIFIER	DATE	TOLUENE TOTAL (UG/L) (34010)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L) (34699)	TRI- CHLORO- ETHYLENE TOTAL (UG/L) (39180)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L) (34488)	VINYL CHLORIDE TOTAL (UG/L) (39175)	URANIUM NATURAL DISSOLVED (UG/L) (22703)	
FRANKLIN COUNTY								
10N/29E-07R01	PN	07-24-02	--	--	--	--	25.6	
13N/28E-11E02	PN	07-23-02	--	--	--	--	11.1	
ADAMS COUNTY								
15N/29E-11E01	PN	07-23-02	--	--	--	--	17.5	
GRANT COUNTY								
19N/26E-15B01	PN	07-15-02	--	--	--	--	5.43	
19N/25E-06H01	PN	07-16-02	--	--	--	--	6.50	
THURSTON COUNTY								
18N/01W-36B01	UR	08-20-02	<0.05	<0.09	<0.04	<0.09	<0.1	E.01
18N/01W-28G03	UR	08-20-02	<.05	<.09	<.04	<.09	<.1	<.02
PIERCE COUNTY								
18N/03E-13K01	UR	08-22-02	<.05	<.09	<.04	<.09	<.1	<.02
19N/02E-26P01	LC	08-19-02	<.05	<.09	<.04	<.09	<.1	E.01
19N/03E-21C01	UR	08-21-02	<.05	<.09	<.04	<.09	<.1	<.02
20N/043-36P02	UR	08-21-02	<.05	<.09	<.04	<.09	<.1	.21
WHATCOM COUNTY								
39N/04E-08G01	AG	09-18-02	<.05	<.09	<.04	<.09	<.1	.02
40N/03E-03G02	AG	08-28-02	<.05	E.10	<.04	<.09	<.1	<.02
BRITISH COLUMBIA								
092G.009.1.2.1-ABB		08-27-02	<.05	<.09	<.04	<.09	<.1	E.02
092G.008.2.2.2-99		09-17-02	<.05	<.09	<.04	<.09	<.1	<.02
092G.009.1.1.4-18		08-27-02	<.05	<.09	<.04	<.09	<.1	<.02

Geologic Units:

000OVBD - UNCLASSIFIED OVERBURDEN

112GLCV - GLACIO-FLUVIATILE

121RGLD - UNDIFFERENTIATED RINGOLD FORMATION

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CONVERSION FACTORS

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$\text{°F} = (1.8 \times \text{°C}) + 32$$

U.S. DEPARTMENT OF THE INTERIOR
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